PRODUCER'S NOTE

WASHaLOT 3.0

Production and Quality Assurance

FIT FOR SCHOOL

Instruction video available on YouTube:
www.youtube.com/watch?v=Sob9-NxkOBQ&t=2s

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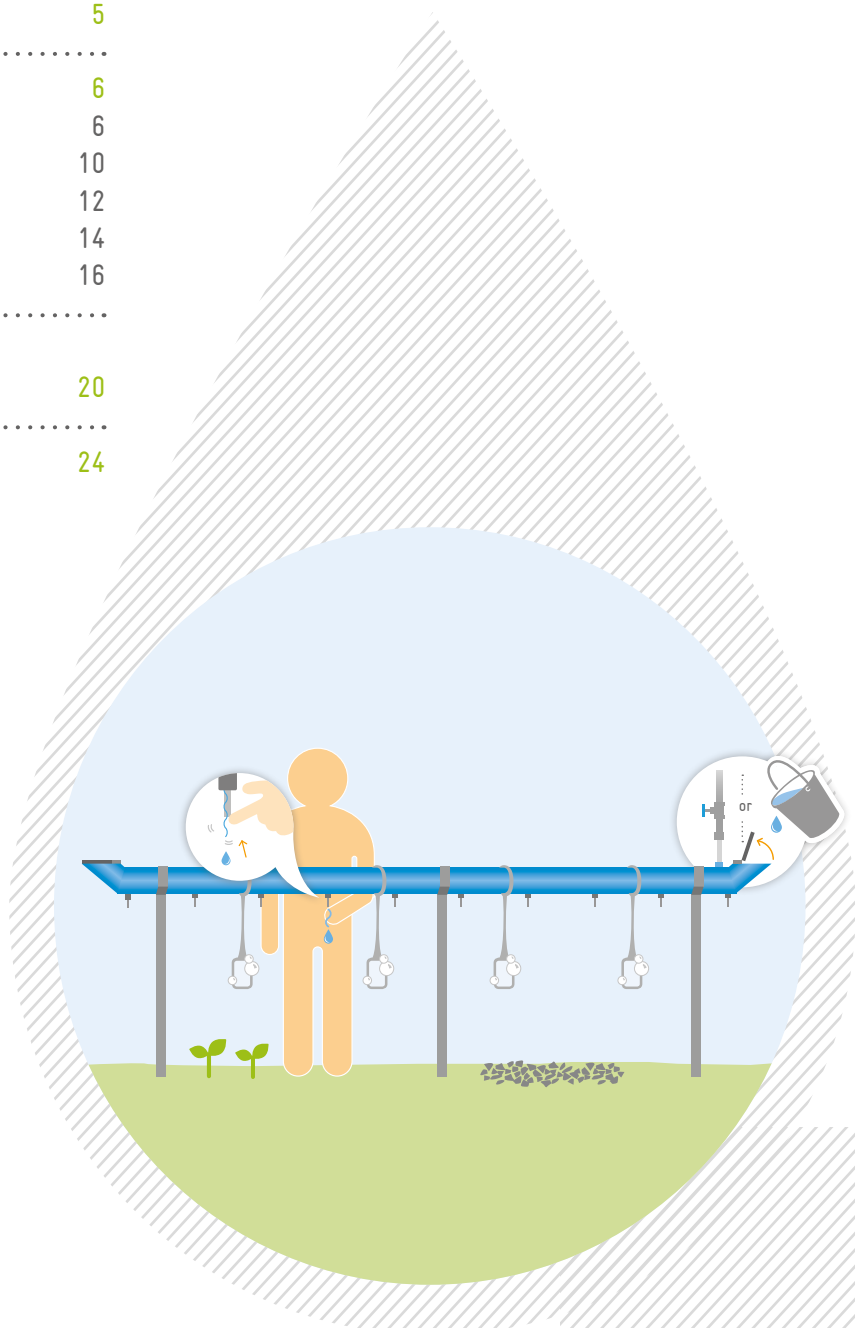
IMPRINT 24



INTRODUCTION

Handwashing with soap is one of the most effective interventions to prevent infectious diseases. If children adopt regular hygiene behaviour at an early age, they are healthier and less prone to be infected with diseases.

Access to functional and clean group washing facilities in schools allow for WASH activities for a larger number of children at various times throughout the day. Group washing facilities, which need to be water-saving, are designed to enable both group handwashing and individual handwashing. Based on this there is a demand for durable and scalable infrastructure which are long-lasting, low cost and can be mass produced which will facilitate personal hygiene for children in schools. The facility should be pre-fabricated to ensure quality and efficiency to a certain standard.

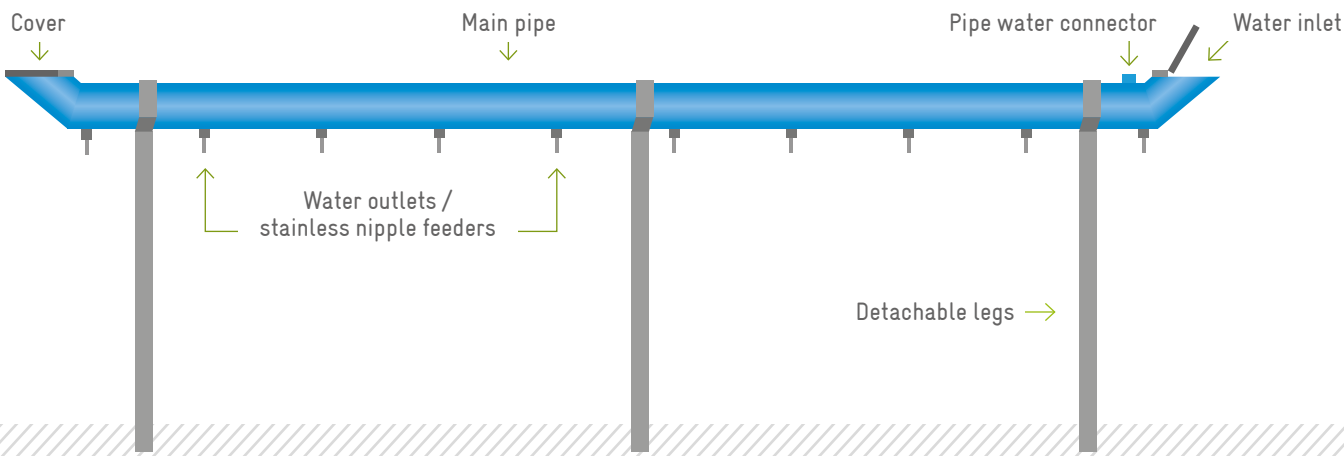
Pre-fabrication should be done in the respective country or the region, depending on locally available materials, proximity to schools and transportation options as well as location of a technically equipped producer, capable of adhering to certain production quality standards. In addition, pre-fabricated facilities help schools to prevent 're-inventing the wheel', making use of lessons learnt from many places around the world and applying the latest knowledge.

FURTHER INFORMATION:

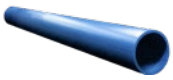
// Factsheet WASHaLOT 3.0 – Group Washing Facility
www.bit.ly/2vwFYnz

// Technology Applicability Framework – TAF Assessment WASHaLOT 3.0
www.bit.ly/2FvuyqA

WASHALOT 3.0 MAIN ELEMENTS



→ MATERIALS REQUIRED

	ITEM	QUANTITY	UNIT
	HDPE blue pipe 110 mm SDR 17	320	cm
	1/2" stainless nipple feeder (with strainer)	12*	pcs
	Polyethylene 1/2" adaptor (threaded male, no thread female)	1	pc
	1/2" teflon tape	3	roll
	Black HDPE plate 11 cm x 17 cm x 0.6 cm	2	pcs
	5/32" x 1/2" rivets for the hinge	8	pcs
	No 10 (4.8 mm) x 1/2" stainless screw	6	pcs
	Stainless hinge 5 cm x 3 cm	2	pcs
	1/8" (4.7 mm) x 2" flat bar	130	cm
	1/8" (4.7 mm) x 1/2" flat bar	20	cm
	2" flag tripple barrel hinge	3	pcs
	8 mm round bar	60	cm
	1 1/4" schedule 20 GI pipe	360	cm
	Steel welding rods	2	pcs

* 10 to be used during production and 2 for spare for schools

The following list are the materials required to produce one unit of WASHaLOT 3.0. During material canvassing and sampling make sure that materials are the right materials. This bill of materials reflects the supplies availabe in the Philippines. If certain materials are not availabe or only in different unit of measurement or colors, the local producer needs to update this list to the local context.

TIPS

HDPE pipe // SDR 17 HDPE pipe should have a wall thickness of 7.0 mm ± 0.4 mm (min. 6.6 mm and max 7.4 mm only). Use a caliper to measure the wall thickness of the HDPE pipe.

Stainless nipple feeders // For the stainless nipple feeders, use a magnet to see if it is stainless or just chrome plated. Place the magnet at least half a centimeter apart from the object, if the object is not attracted to it you have a stainless object and if the object is attracted then you might have a nipple feeder which is just chrome plated.

→ TOOLS AND EQUIPMENT NEEDED

ITEM		ITEM	
	HDPE pipe welding mirror		Electric cutting/grinding machine // cutting and grinding disc should be for stainless steel)
	Steel welding machine		Hand tap // M20 x 1.5 or 1/2–14 NPT
	Cut-off saw		Riveter
	Bending table		Protractor
	Drill press // 18 mm or 45/64 inch diameter drill bit to drill holes on the main pipe		Screw driver
	Electric hand drill // with 5/32" or 4mm diameter drill bit to drill holes on the cover		Tape measure

→ PRODUCTION STEPS

1

MAIN PIPE

→ Cut an HDPE pipe with a length of 280 cm.

→ At both ends of the 280 cm HDPE pipe, make a cut with an angle of 70 degrees.

DRAWING 1 // PAGE 7

→ Cut another two shorter HDPE pipes with a length of 20 cm each.

→ At both end of the shorter HDPE pipe, cut a 70° angle cut on one side and 40° angle on the other to form the water inlet.

DRAWING 2 // PAGE 8

→ Butt fuse the two shorter HDPE pipes at both ends of the longer HDPE pipe with the 70° angle cut facing each other.

DRAWING 3 // PAGE 8

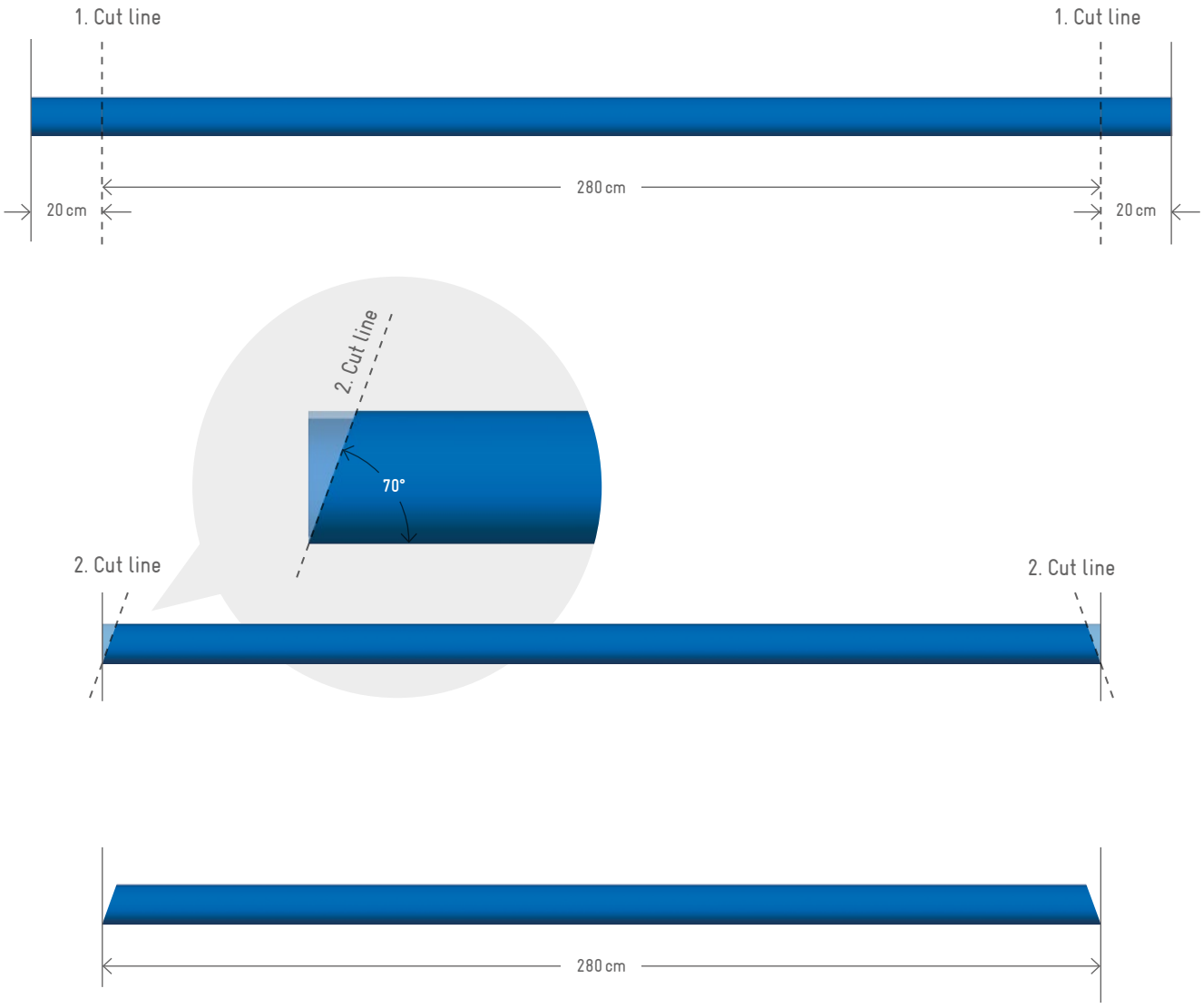
→ Position the newly butt fused main pipe and mark the locations indicated as "hole". The markings in the bottom part of the main pipe should be aligned to each other and the mark at the top part is directly on the other side of the other holes.

→ Using an 18 mm or 45/64 inch drill bit, drill holes on the markings. Make sure that the drill is perpendicular to the main pipe at all times.

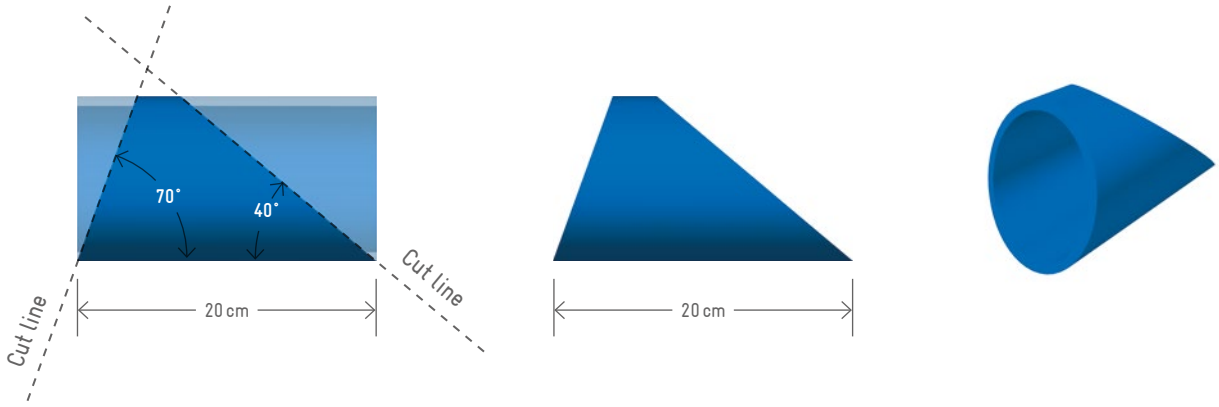
→ With a tap, make a thread in all 12 holes. Use a tap size of M20 x 1.5 for metric sizes or 1/2–14 NPT whichever is available.

DRAWING 4 // PAGE 9

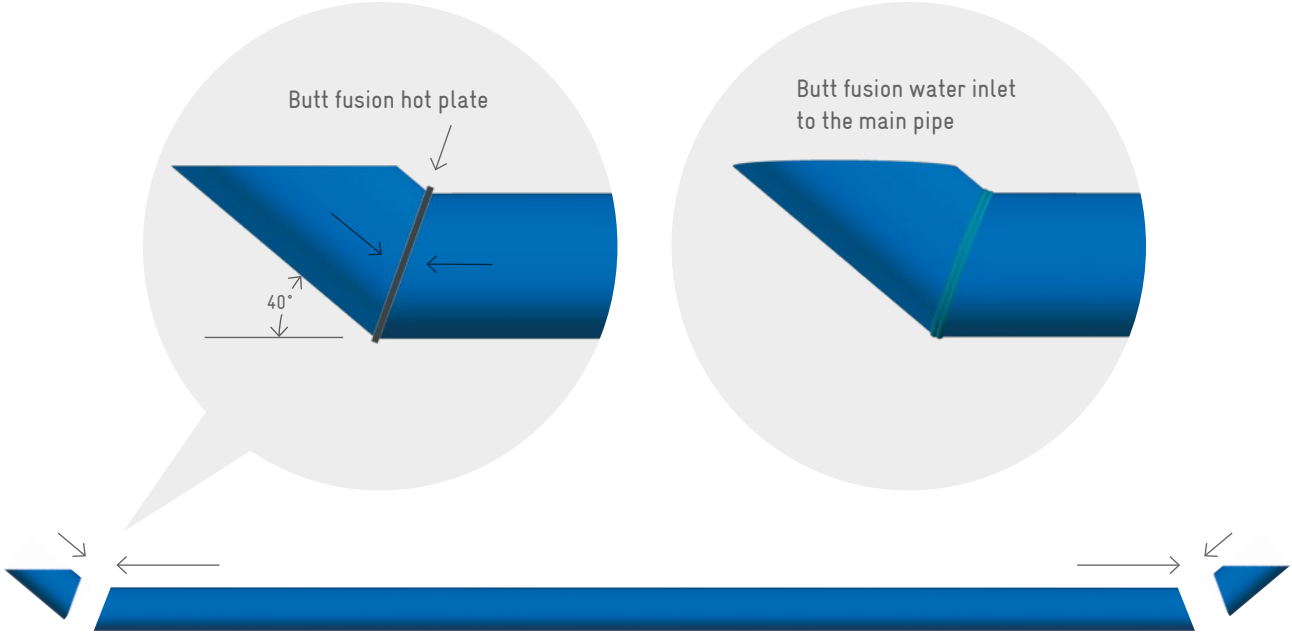
DRAWING 1 // ANGLED CUT FOR THE MAIN PIPE



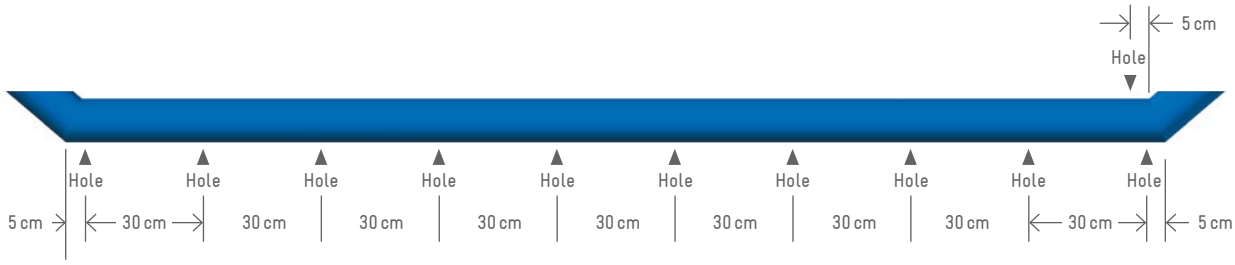
DRAWING 2 // ANGLED CUT FOR THE SHORTER PIPE



DRAWING 3 // BUTT FUSION CONNECTION



DRAWING 4 // LOCATIONS OF HOLES ON THE MAIN PIPE



STAINLESS NIPPLE FEEDER (WATER OUTLETS)

2

DRAWING 5 // PAGE 11

→ Disassemble the parts of the stainless nipple feeder. Make sure to keep all five parts not to get lost.

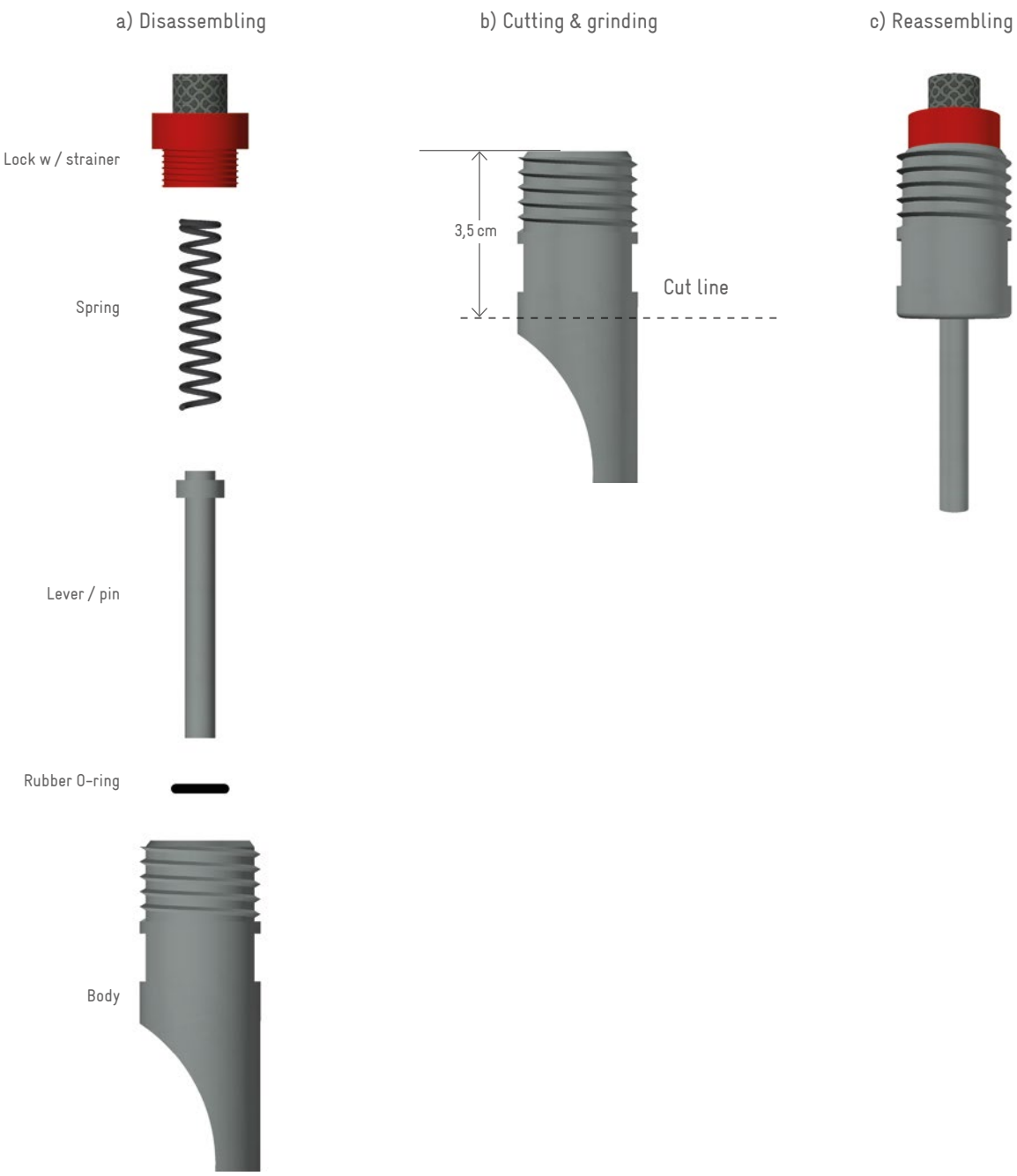
→ With an electric cutter, cut the bottom part of the body 3.5 cm from the top part of the thread.

→ After cutting, grind the cut part to remove sharp edges.

→ Assemble back the parts of the nipple feeder to the body. Be sure that parts are arranged in the right sequence as before it was disassembled.

Test the nipple feeder // Modified nipple feeders must be subjected to a simple pressure test. Attach the modified nipple feeder into a water source with a 1/2" coupling that serves as socket for the nipple feeder. Open the valve and check for leaks.

DRAWING 5 // PARTS AND MODIFICATION OF NIPPLE FEEDER



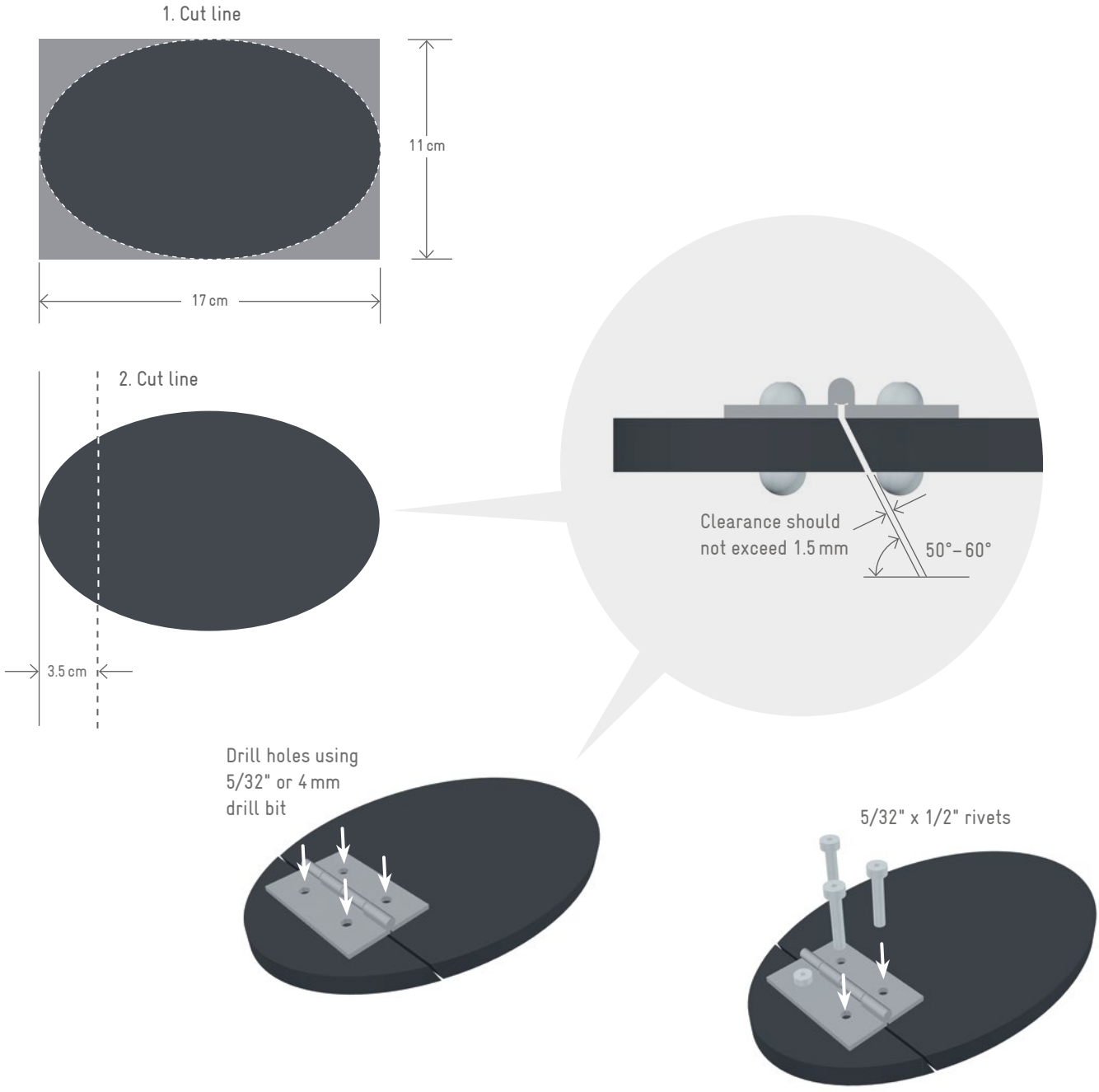
3

WATER INLET COVER

- Prepare a black 6 mm thick HDPE plate with dimensions of 17 cm x 11 cm.
- Cut the corners of the plate to form an elliptical shaped plate.
- From the elliptical plate, cut it horizontally 3.5 cm from the top. The cut should be made slanted at 50–60 degrees angle. The slant cut is to avoid sun light getting into the pipe thus minimizing algae accumulation.
- Position the hinge in the plate. Using a drill bit size of 5/32" or 4 mm, drill the holes for the rivets to anchor. Make sure that clearance between the slant cut should not exceed 1.5 mm.
- Fix the hinge using rivets to the drilled holes to form the cover.

DRAWING 6 // PAGE 13

DRAWING 6 // DETAILS OF WATER INLET COVER



ASSEMBLY OF PARTS

4

- Position the fabricated cover into the water inlet. Using a drill bit size of 5/32", drill holes on the location marked in drawing 7.
- Fix the fabricated cover to the water inlet with three No. 10 x 1/2" screws as showed in drawing 8. Leave the hole at the other end of the cover open to serve as a lock hole.

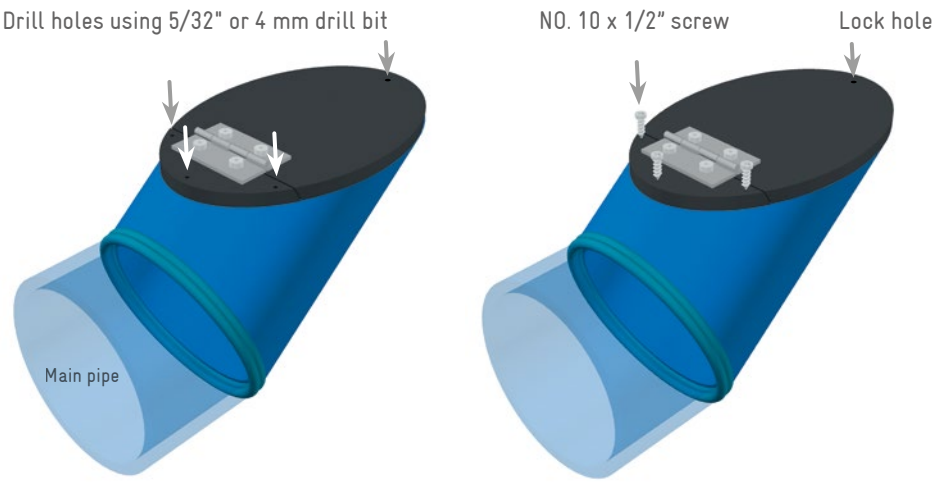
DRAWING 7 // PAGE 15

- Apply a teflon tape to 10 modified stainless nipple feeders and screw into the holes indicated in drawing 8 (water outlets)
- Apply Teflon to the polyethylene adaptor and screw it at the location marked "pipe water connector".

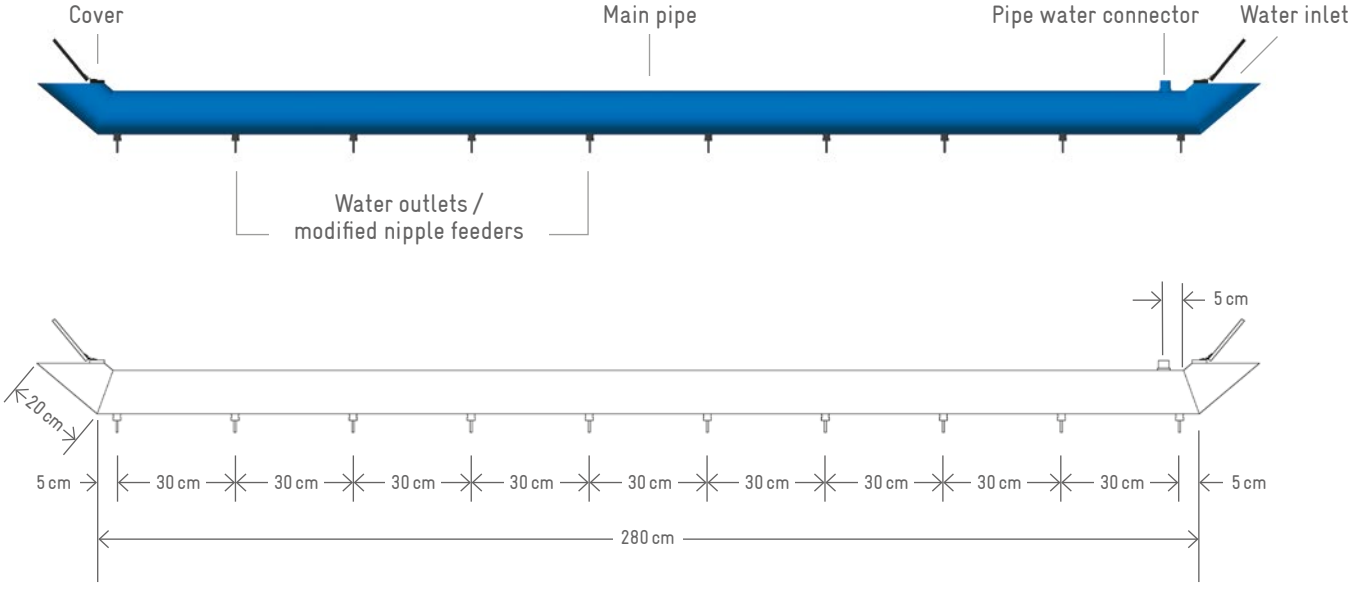
DRAWING 8 // PAGE 15

TEST THE ASSEMBLED WASHaLOT 3.0 // Test with water to check for leaks. Every finished WASHaLOT 3.0 should be leak tested.

DRAWING 7 // WATER INLET COVER INSTALLATION



DRAWING 8 // PARTS AND DIMENSIONS OF WASHALOT 3.0



DETACHABLE LEGS

5

- Cut three pcs of 1/8" x 2" flat bar each with a length of 30 cm.
- Bend the recently cut flat bar to a U-shape to form the pipe holder, follow the profile of the main pipe for the curvature of the bend.
- At one end of the pipe holder, weld a hinge. At the other side, weld the half part of the lock holder. The lock holder is a 1/8" x 1/2" flat bar with a length of 2.5 cm. Do not forget to drill a hole on the lock holder enough for common locks to go through.
- At the bottom part of each pipe holder, weld a 1 1/4" Schedule 20 GI pipe with a length of 120 cm to form the legs. Make sure that the leg is directly below of the pipe holder.

DRAWING 10 // PAGE 18

- Cut another three pcs of 1/8" x 2" flat bar each with a length of 11 cm.
- Weld hinges on both ends of the flat bar to form the press.

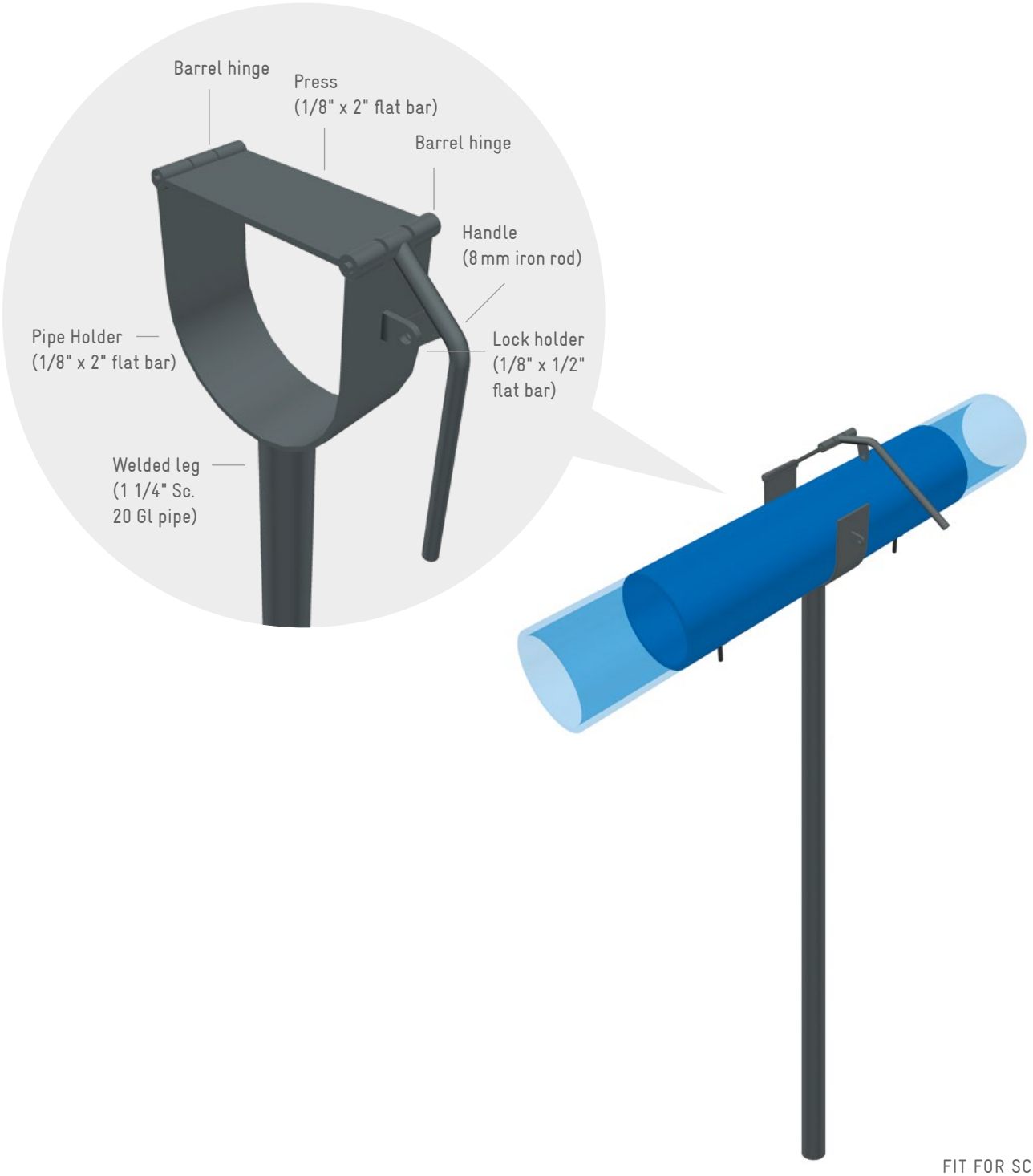
DRAWING 11 // PAGE 18

- Cut three pcs of 8 mm round bar each with a length of 18 cm.
- At one end of the 8 mm round bar cut, measure and put a mark at the 12.5 cm point.
- At the mark, bend the shorter end of the 8 mm round bar with an angle of 45 degrees to form the handle. .
- Same with that of the pipe holder, weld the other half of the lock holder. Cut a 1/8" x 1/2" flat bar with a length of 2.5 cm. Drill the same hole as that of the one welded to the pipe holder.

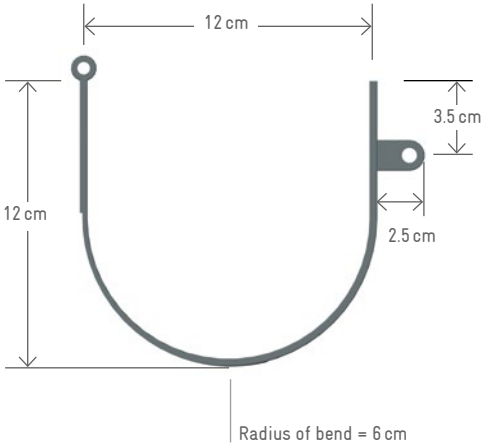
DRAWING 12 // PAGE 19

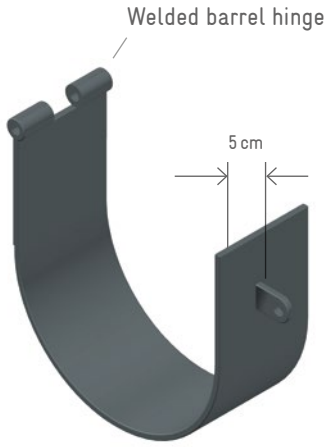
- Assemble the parts with the pin of the barrel hinges. Grind welded parts and sharp edges when finishing the assembly.
- Apply a base paint into the detachable legs to prevent it from rusting.

DRAWING 9 // DETACHABLE MECHANISM FOR THE LEGS

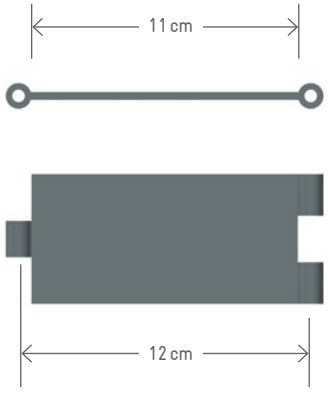


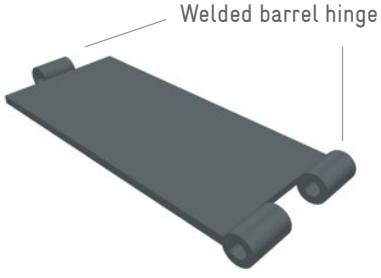
DRAWING 10 // DIMENSION AND DETAILS, PIPE HOLDER



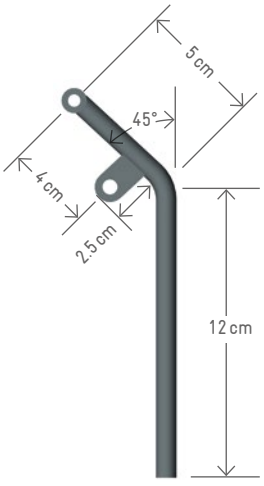


DRAWING 11 // DIMENSION AND DETAILS, PRESS





DRAWING 12 // DIMENSION AND DETAILS, HANDLE



→ CHECKLIST // WASHaLOT 3.0 QUALITY ASSURANCE

10 UNITS OF WASHaLOT 3.0

This QA form should be used to document quality checking of 10 units of WASHaLOT 3.0 at a time. Every 10 units of WASHaLOT 3.0 should have one QA form. All Units of WASHaLOT 3.0 should have a documented quality checking.

DATE PRODUCED MM/DD/YYYY _____

DATE CHECKED MM/DD/YYY _____

Check corresponding item under each ID no.	ID No.	ID No.	ID No.	ID No.	ID No.	ID No.	ID No.	ID No.	ID No.	ID No.
INSTALLED PARTS										
10 water outlets installed [b]										
Black HDPE plate installed [b]										
Pipe water connector [b]										
Drilled lock hole in the cover [b]										
MATERIAL QUALITY										
Non-magnetic water outlets [c]										
6.8 mm HDPE pipe thickness (± 0.3 mm) [d]										
CRAFTSMENSHIP										
Slanted cut for the cover [e]										
All water outlets are aligned										
Clean butt fuse connection										
Water outlets can't be turned by hand [f]										
LEAK FREE TEST										
All water outlets are leak free [g]										
Leak free butt-fuse connection [g]										
LEGS										
Main pipe fits to the pipe holder [h]										
Smooth swinging of the press and handle [i]										
Painted detachable legs [j]										

COMPANY / PRODUCER'S NAME _____

QUALITY INSPECTOR // PRINTED NAME & SIGNATURE _____

COMPANY MANAGER // PRINTED NAME & SIGNATURE _____

Prepare an original copy of this signed QA form to be submitted to the buyer/purchaser

CHECKLIST // NOTES AND INSTRUCTIONS

b Visually check the part indicated if properly fixed into the main pipe of the WASHaLOT 3.0.

c Using a magnet, check if all water outlets (modified nipple feeder) installed are stainless. The water outlet should not be attracted to the magnet when placed half a centimeter away.

d The inspector should have a caliper. Using the caliper, measure the wall thickness of the pipe. The thickness of the pipe should be 7.0 mm ± 0.4 mm.

e Check the cut of the elliptical plate. The clearance between of the plate should not exceed 1/16 of an inch and the cut should be slanted as indicated in drawing 7.

f Try turning all installed water outlets. If the outlets can still be turned by hand it can cause leaking. If this is the case, remove the water outlet and add more teflon tape onto the thread of the modified nipple feeder.

g Try turning all installed water outlets. If the outlets can still be turned by hand it can cause leaking. If this is the case, remove the water outlet and add more teflon tape onto the thread of the modified nipple feeder.

h Try fitting a sample of the HDPE pipe to ALL detachable legs especially the pipe holder part.

j ALL detachable legs should have a base paint to avoid rusting.

NOTES

NOTES

IMPRINT

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german cooperation
DEUTSCHE ZUSAMMENARBEIT

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sustainable sanitation alliance