HomeBiogas

Farmer's system

Installation guide

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Farmers Biogas System Installation Protocol

The Farmers Biogas System installation team is composed of a team leader, technician, and helper.

The installation process is divided into two parts: biodigester installation and pipeline installation.

Biodigester Installation Steps:

1. Check that all conditions are suitable for installation (team leader).
2. Level the ground (installer + helper).
3. Compact the ground (installer + helper).
4. Spread and check the quality of the system (installer + helper).
5. Mark and excavate for rigid piping and docking straps (team leader).
6. Install the rigid pipe, docking straps, sink, and 4" T connection (technician).
7. Inflate the system and spread the inner liner.
8. Place the wooden posts.
9. Mark and dig the fertilizer pit (customer helper).
10. Fill the system with water (installation team).
11. Activate the system (installation team).

Pipeline Installation Steps:

1. Select the path for the gas pipeline layout (team leader).
2. Spread and bind the gas piping and cable (team leader).
3. Connect the stove and water trap (team leader/technician).
4. Connect the filter (team leader/technician).
5. Install the pressure release (team leader/technician).
6. Provide instructions to the customer until commissioning (team leader).

By following these steps, you can ensure that the Farmers Biogas System is installed correctly and efficiently.

Biodigester Installation

1. **Confirm that the installation location is ready** (team leader)**. The installation requires two technicians and a helper**

   Make sure the customer has:

- 5000 liters of water available.
- Cleared and leveled an area of 9*2.5 meters (if the chosen location is on a slope or a cliff, add a meter on the slope side for a total of 9 x 3.5 meters).
- Make sure the site is the right size for the biodigester.

2. **Level the ground** (recommendation: installer + helper)

- Leveling the ground is essential for proper installation and system performance. The team leader will verify that the ground is level, and the technician and helper will make any necessary corrections.

3. **Compact the ground** (installer + helper) Compacting the ground is an important step in the biodigester installation process because it helps to create a stable and secure foundation for the system.

4. **Spread and check the quality of the system** (installer + helper)

To ensure that the system is ready for installation and that it will function properly.

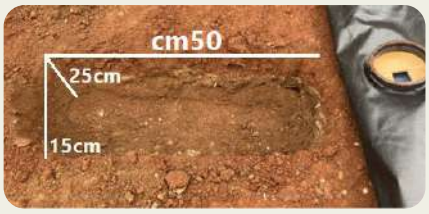
- Spread the system, make sure to have at least two people working together to carefully unroll the biodigester.
- Once the system is spread on the ground, make sure the system is not damaged on the outside by thoroughly checking the bag for holes and cuts.

5. **Mark and excavate for rigid piping and docking straps** (team leader)

   After spreading the system, mark the location for the rigid pipes using the 4" connection. Press lightly on the upper side.

Marking the ground

Marked location



Overflow excavation

Inlet excavation

6. **Install the rigid pipe, docking straps, sink, and 4" T connection** (technician)

   Connecting rigid pipes, the inlet & outlet to the system.

Part list: rigid pipes, docking straps, sink, 4" T-connector + leap seal x 8

- Connect the rigid pipes to the system and set them down in the ditch pipe over the docking strap.
- Make sure the inlet rigid pipe is sitting on top of the back docking strap.
- Make sure the rigid pipes are connected correctly.
- Make sure the rigid pipes are on the right angle (15 degrees) using the angel template.
- Make sure the rigid pipes are at the right height.
- Barring the rigid pipes.
- Connecting the sink and T-connector.






Inlet rigid pipe– 72 cm

Outlet rigid pipe– 65 cm



Inlet rigid pipe 65cm from the ground

Outlet rigid pipe 60cm from the ground

7. **Inflate the system fully with a leaf blower in order to spread the inner liner, let the air blow out and empty the system slowly (+/– 10 minutes).**

8. Fill the system with water

Make sure the system is fully spread before filling.

The filling is done from the most convenient side (inlet/outlet)

During the filling make sure the water spreads evenly in the system, if needed realign the liner.

9. Place the wooden posts

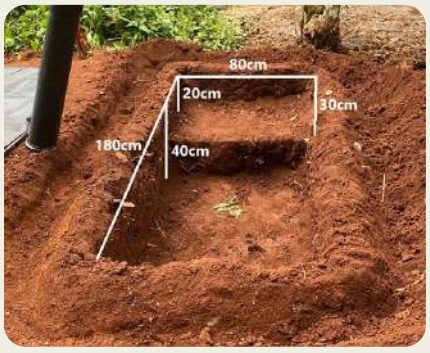
Post pit location
The wooden post will be placed 40cm to the side from the middle of the system when the system is empty

Fully dug post pit
The hole for the wooden post must be at least 80cm deep

Post with rocks
Place the post in the hole and fill the hole with rocks and dirt and compact

10. Mark and dig the fertilizer pit

- Mark the fertilizer pit and dig it.



Dug pit without liner
Make sure to dig side ditches for docking the liner

Done pit with liner
Make sure to properly spread the pit liner and dock it to the ground

11. Activating the system

Mix 500 liters of fresh cow manure with 500 liters of water.

Feed the mixture to the system through the inlet.

Fresh cow manure

Pipeline installation steps

1. **Selection of gas pipeline layout path**

- The pipeline path will be chosen by the team leader according to the customer's stove placement choice.
- Make sure the path has docking spots for the cable every 15–20 meters.
- Make sure to choose a high point in advance.
- Make sure the pipeline path will not be disturbed by trucks, cars, or people.

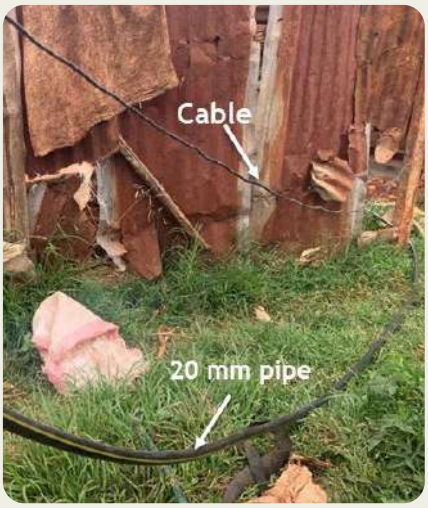
2. **Spreading and binding the gas piping and cable**

After the pipeline path is chosen, drill a hole in the kitchen for the pipe and connect the cable to the first docking point.

Drilling point in the kitchen wall

Insert the pipe through the hole and pull enough pipe to reach the stove location. Make sure to connect the pipe comfortably to the wall (consult the customer)

After inserting the pipe into the kitchen, and docking the cable, spread them up to the system and bind them together with electric wire.



spreading the pipe parallel to the cable. Make sure to unwind the pipe and cable to avoid cranks and pinches

Bind the cable and pipe together with 12cm long electric wire pipe every 50cm

- Make sure to keep the cable on one side of the pipe.
- Do not cut the pipe or cable until the cable is docked on both sides.
- Make sure the pipeline is always on an angle directing liquids to a water trap.
- Make sure the cable is under tension and not the pipe.
- Make sure each low point of the piping has a water trap.

- Make sure the docking points are strong and will not move.
- Make sure to connect the cable with protection to avoid friction.
- **Make sure the docking point will not be changed by the customer in the future.**

Midway docking spot

After the pipe and cable are bound and connected to the docking points, pull the cable to the wooden post using the manual pulley and cable clamp.
Connect the cable to the wooden post and disconnect the hand winch and cable clamp.

Manual pulley and cable clamp

After the cable is connected to the wooden post, cut the cable and pipe, and connect the pipe to the filter.
Make sure the pipe connecting to the filter is not under tension.

Pipe connection to filter

3. **Stove and water trap connection**

   the stoves should be located no more than 40 meters from the system

   When fixing the water trap, make sure it's located at the lowest point and positioned in a way that the condensed water can drain into it.

   make sure the 10mm pipe leading from the stove to the 10–20mm reducer is on an angle and will not accumulate water.

Connect the T-connector. It should be lower than the stove's table

Connect the water trap. The position should be easily accessible to open it

4. Filter connection

   Once the post is in place, connect the filter to the post at 190cm from the ground.

Connect the main gate valve and T-connector:

- Pipe distance between filter and gate valve should be 8cm.
- Pipe distance between gate valve and T-connector should be 8cm.

Connect the gas pipe from the T-connector to the system after the system is full.

The pipe should be 160cm long

Gas pipe connection to the system

Add the outlet cover to the gas pipe

Make sure to connect the pipe with the slant facing upwards

Place the cover on the gas outlet

5. Pressure release mechanism connection

The pressure release mechanism has a separate assembly manual!

After the post is in place and the filter is connected:

Dig a hole for the pressure release mechanism directly under the filter.

Place the pressure release mechanism into the hole.

Make sure:

- To fill the pressure release with water until water comes out of the pressure release overflow.
- To place the pressure release with the overflow above groundThe pipe leading from the filter to the pressure release is not pulling on the pressure release lid.

Customer Training

1. **After installation:**

- Make sure to fill up the system until liquid comes out from the overflow side.
- Do not feed the system for 2 weeks.
- Do not use the gas until a technician installs the stove.
- Do not jump on the system.
- Do not smoke or light a fire near the system or its parts.
- Make sure the system's surroundings are plant and weed-free.

Highly recommended to construct a fence around the system, with enough space to walk around

2. **After commissioning:**

Daily feeding:

- Mix 40 liters of cow dung with 80 liters of water.
- After the cow dung and water are mixed together, remove any sticks/ straw/ garbage from the top.
- After the cow dung and water are mixed and cleaned, feed the system by pouring the mixture into the feeding hopper.
- After feeding, make sure to agitate the system with your hands/ knees.
- (Agitation helps to mix the liquid, redosing scam and producing more gas).

3. **System maintenance:**

Make sure:

- The pressure release is full until it overflows (daily).
- The system outlet is clean and not clogged (daily).
- Use the bio-slurry daily. The pit should be empty and not overflowing (daily).
- The system's surroundings are weed and garbage-free (weekly).
- The system is clean of mud / cow dung for better sun absorption (weekly).