Delta Plastics
Preserving Our Farmland

Polytube Issues and Tips

Polytube Issues

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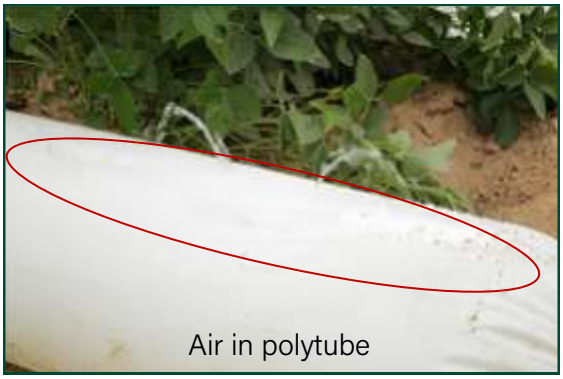
Polytube Tips

1. Polytube stretches and balloons to point of bursting.


Air in polytube

This occurs when the wrong size (diameter) and thickness (mil) of polytube is used. Air pockets in the polytube can also add to this issue and cause bursting.

- Refer to the technical guide sheets *"Characteristics and Flow Capacity for Irrigation Polytube"* for guidance on the size and millage of polytube to use for the application.
- Punch approximately $^{1}/_{8}$-inch diameter hole in air pockets that form in the top of the polytube with a pen, pencil or some other round object that will not slice the polytube. Driving a nail in the end of a round wooden handle and filing it down to a point provides a tool for punching air holes without having to bend over. Air pockets can reform in different places along the polytube. Inspect the polytube throughout the season as to prevent further air pockets from forming. Punching air holes along the polytube during the installation process could reduce the potential of polytube rupture. Water flow from the punched air holes is not significant enough to cause issues.

NOTE: Using a knife to relieve an air pocket can cause a rip in the polytube.

2. Polytube rips along the seam

This is usually the result of damage to the side of the polytube roll during handling or installation.

- Keep the polytube in the box and protected until ready to install in the field. During installation, protect the roll from any surfaces or objects that can nick or cut the polytube. Make sure the installation trench is free of crop stalks, sharp-edged dirt clods or anything else that could puncture or cut the polytube.

3. Polytube wears thin and leaks or rips near the connection point.


Folding back polytube


Attached to pipe at ground level


Pallet supporting polytube


Result of polytube flapping

Leaking or ripping near the connection point is usually caused by the polytube flapping or fluttering.

- At the connection point, the polytube should be attached to solid pipe at ground level. If this is not possible, support the polytube with some type of ramp as it drops from the connection point to the ground level.
- It is recommended that the polytube be double layered for the first 6 to 8 feet from the connection point. This can be accomplished by folding the polytube back over itself or by cutting off a 6- to 8-foot length and sliding it back into the polytube. Make sure to keep the seams of the polytube together so the inside piece does not twist.
- If the polytube continues to flap or flutter, the roll core, a board or mounded dirt can be installed under the polytube.

4. Polytube forms leak or rips where it crosses over a levee.


Choke


Squeeze Clamp

Problems at levee crossings are usually caused by the polytube flapping or fluttering.

- It is possible to go 2 to 3 levees down slope from where the flapping/fluttering starts and gradually choke or squeeze down on the polytube until the flapping/fluttering is controlled. Choking or squeezing of the polytube should only be done with materials that will not damage the polytube. If this problem occurs in Multiple Inlet Irrigated fields, it can be overcome by using a smaller diameter polytube once you have crossed half or more of the field. Using smaller-sized polytube in the remainder of the field will help keep the polytube better inflated.

5. Protecting polytube from unplanned increase in water flow.


Flow/Pressure Relief Tee

Water flow into the polytube can possibly increase during pumping. This can occur when the RPM of the power unit increases or another water outlet within the pumping system is suddenly closed.

- A "Tee" fitting with the outlet side leg secured in the vertical position can be used as an overflow/pressure relief at the polytube connection point. The "Tee" fitting and the discharge pipe should be the same diameter. When a PVC "Tee" is spliced to the polytube near the discharge, it should be the same diameter as the polytube to reduce restriction caused by the fitting. The vertical leg height should be approximately 3 feet above ground level if using 6- or 7-mil polytube and approximately 4 feet above ground level for 9- or 10-mil polytube.

6. Avoiding rupture at the end of the polytube.


Pallet support

Ruptures at the end of the polytube are usually caused by improper installation.

- During installation, the end of the polytube should be left open while it is being filled with water so that air and excess water flow can escape. The end of the polytube should be left open and placed over a barrel, wooden pallet, or mound of dirt. The 6- or 7-mil polytube should be elevated approximately 3 feet above ground level and the 9- or 10-mil approximately 4 feet. A PVC Elbow fitting that is the same diameter as the polytube can be attached at the end with the discharge secured in the vertical position to serve as an overflow and pressure relief. The vertical height should be approximately 3 feet above ground level if using 6- or 7-mil polytube and approximately 4 feet above ground level for 9- or 10-mil polytube.

7. Ensuring GPM is the same during testing and irrigation.


Field set up of polytube for checking pressure & flow

Water flow from underground pipe networks can vary, making it difficult to duplicate the same amount of water flow for each irrigation event.

- During the initial irrigation event, a piece of flexible plastic tubing can be punched into the polytube near the riser and raised until the water is just at the top of the tube or barely running out. Subsequent irrigations can now be applied by using this technique to verify that the same conditions exist for each irrigation.
- The height of the water in the plastic tubing also indicates the approximate pressure that is in the polytube.

8. Water "surges" or "pulses" in polytube being used for Multiple Inlet Rice Irrigation.

With Multiple Inlet Rice Irrigation, water inside the polytube sometimes flows downhill faster than it is being discharged and can cause a "surge" or "pulse" that can weaken the polytube at levee crossings.

- It is possible to go 2 to 3 levees down slope from where the surging/pulsing starts and gradually choke or squeeze down the polytube to decrease the surging/pulsing of the water. In some applications, this must be applied in multiple places along the polytube to completely address the problem. Choking or squeezing of the polytube should only be done with materials that will not damage the polytube.

9. Using polytube to go uphill from the water source.

Within limits, it is possible to use polytube to transfer water uphill from the water source.

- Transfer Polytube has been used to transfer water up to 5 feet uphill or across a significant low area before going uphill.

10. Other Issues & Tips

- A vacuum breaker or air gap must be installed at the polytube connection point to prevent the polytube from being sucked back into the pipe when pumping is stopped. A temporary air gap can be installed by using a 2½ -inch diameter Blumhardt gate in the top of the polytube where it connects to solid pipe. Open the gate before the pumping is stopped.

  NOTE: This should only be used temporarily until a vacuum breaker is installed or a more dependable solution is implemented.
- After installing polytube in the field, partially fill the polytube with water to avoid issues caused by wind.
- Remove debris, trash and other obstacles from the well and underground pipe networks by pumping water before installing the polytube.
- Polytube should always be placed in a well -defined trench that is 4 to 8 inches deep (depending on the polytube diameter) and a shovel of dirt placed on it every 15 feet.
- Polytube should cross over a levee in a perpendicular fashion. If possible, avoid crossing the levee at an angle.
- Avoid walking on the polytube if footwear contains rocks or debris.
- The polytube seams should be kept as parallel to the ground level as possible during installation.
- During initial application, make sure that the polytube is kept tight to avoid wrinkling or kinks.

  NOTE: Slack can build up when the polytube trench is wet and/or sticky. Also, the weight of the individual walking on the polytube can cause it to mash into the ground.
- Hard splicers used for splicing polytube should be as close to the same diameter of the polytube as possible to reduce restriction caused by the splice.
- Always be very careful when working around PTO shafts and install protective covers over the shafts, if possible.

11. Helpful Visual Guide

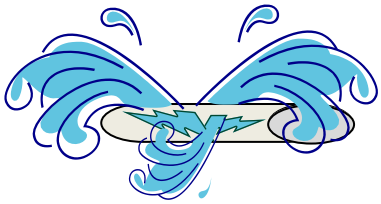
The following visual guide can be helpful for estimating and monitoring the polytube pressure in the field:

Pressure in feet

- **Oval Shaped:** Polytube at 0.5 to 1.5 feet of pressure.

- **Round / Tight:** Polytube at 1.5 to 3.0 feet of pressure.

- **Rupture:** Polytube at 3.0+ feet of pressure is probably ruptured or close to it unless it is Transfer Polytube.



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