

SAFETY MATTERS



Safety Matters is intended to promote discussions of safety issues among underground construction professionals. You should always read and understand the operator's manual before operating any equipment. For additional information, please e-mail safety@ditchwitch.com.

TOPIC:

Vacuum Excavation

POTENTIAL HAZARDS

- Struck by
- Crushing
- Suffocation
- Fire
- Electrocutation

PRECAUTIONS

- When driving, consider effects of sloshing water or spoils in tanks. Make sure tow vehicle is appropriately sized.
- Wear appropriate personal protective equipment as needed. For vacuum excavation, the following are recommended depending on the job: Face shield, hard hat, safety glasses, dielectric boots and gloves and hearing protection.
- When cleaning filter, use respirator if necessary depending on material excavated. For example, when silica dust may be present.
- Wear appropriately rated electrically insulated boots with pant legs tucked in, and appropriately rated electrically insulated gloves when operating on an electrical jobsite.
- When exposing utilities with high-pressure water:
 - Never use a straight or 0° nozzle for exposing utilities.
 - Always use a rotating nozzle.
 - The wand should never remain motionless. Keep the tip moving.
 - Do not aim the tip directly at utilities.
 - Attempt to maintain at least 8" between the tip of the nozzle and the utility.
 - Do not insert the tip into the ground. Keep the nozzle above the soil.
 - When using heated water, reduce the pressure.
 - Limit maximum pressure to 3000 psi.
 - Reduce pressure depending on material of utility being exposed.
 - Never use more pressure than what is needed to break the soil.
- Keep pressure wand away from body parts.
- Do not put the end of the suction hose or tools on any body part.
- Do not open spoils tank door or filter doors until tank has been depressurized and fluids and any flowable spoils have been emptied.
- Reverse flow should not be engaged unless tank drain valves are open first.
- Drain fluids and flowable spoils before raising the tank.
- Stay away from door when opening and when dumping.
- No one should be under raised components, such as the tank door or the raised tank, without using lockout devices or ensuring component is over-center while on level ground.

- Ensure you have a clear view of the door area and beneath the tank when closing door or lowering tank.
- Flammable material should not be vacuumed. If using vacuum in the presence of natural gas, precautions should be taken to ensure inlet air/fuel ratio is outside of flammability range. This should only be performed by qualified individuals using appropriate measuring devices.
- Do not enter a spoils tank unless it has been evacuated with fresh air.

INFORMATION/FACTS

- High pressure water can cut through clothing, skin, wood and metal.
- Utility age and physical composition can affect vulnerability to damage by wand.
- Suction can quickly suffocate and can pull blood through the skin.
- Static charge can build in the vacuum hose. This can generate a spark and depending on the conditions and material being excavated may ignite.
- Hazardous materials require special transport vehicles. Most vacuum excavators are not equipped to transport hazardous materials.
- High pressure water or air can cause excavated material and rocks to be thrown.

TALES FROM THE TRENCH

- At the completion of a job, the crew was cleaning the spoils tank. The operator closed the tank door while standing at the front of the tank. He didn't know that his co-worker had spotted more spoils in the tank and was quickly trying to finish the cleanup. The operator closed the door on his co-worker, crushing him.
- A crew was transporting a vacuum tank which was half full of liquid. The only truck available that day was undersized. They decided that since the tank was only half full, it would work. The water began sloshing in the tank, causing them to lose control of the tow vehicle. They crashed into an oncoming vehicle.
- An operator was exposing an electric line using a straight nozzle and high pressure water. He was unaware of proper exposing techniques and cut the electric line. He was not wearing insulated boots and gloves and received an electrical shock. He was revived on the scene and transported to the hospital with burns on his hands and feet.

**DON'T LEARN SAFETY
BY ACCIDENT**

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