

# Earth Tool Company LLC

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## Air Impactor Quick Start Guide

### A. Attach Impactor to Pipe String

1. Fuse the special machined Impactor HDPE adaptor to the new pipe. The adaptor is designed to provide clearance for the striker which will travel back beyond the Impactor body.
2. Insert the adaptor fully into the Impactor body. The O-ring must be inside the body.
3. Make sure the striker is fully forward when drilling holes into the HDPE adaptor. The striker in the rearward position will prevent drilling completely through the adaptor.

**Hint:** *Assembling the Impactor and pipe string to the drill rod will be easier further back from the launch pit. Let gravity help hold the drill rod in position, rather than trying to lift the Impactor to reach the drill rod.*

### B. Drill Out

1. When drilling into a manhole with a line directly across from the line to be burst, set the target above and slightly to the right or left of the opposite pipe. (10:00 or 2:00 o'clock) to avoid breaking into the pipe ahead of the manhole. For all other situations, set the target directly across from the line to be burst.
2. Get on line and grade to approach and enter the manhole flat or at a -3% angle about 10 feet back from the manhole.

**Hint:** *Don't underestimate setback. There is no harm in drilling 10 to 30 feet more than necessary if the site allows. Short setbacks make for awkward angles of entry requiring extreme corrections in the manhole.*

### C. Push Out Rod

1. Use of a pilot point will help to keep the drill rod inside the pipe, and reduce the chance for operator error. Sonde housing is removed to allow attaching pilot point.
2. Use of a drill head with a sonde will allow positive locates of the drill head while it is pushed out. It will be known immediately if the drill head leaves the pipe.
3. When using a drill head, it is critical to position the head at 12:00 o'clock and not rotate throughout the push. Rotation can cause the drill head to break through and exit the pipe. If a sonde goes to sleep, stop and rotate slowly until it wakes – do not push. Restart pushing at 12:00 o'clock position.

### D. Clean rods

**Note:** *It is very important to take the necessary time to clean drill rods – bentonite residue will build up behind rings inside the Impactor, preventing a proper seal or causing the striker to bind.*

1. Clean the water tanks and pumping equipment prior to mobilization. Use Baroid Aqua Clear or a similar clay mitigating additive to remove bentonite residue. As an alternative, fill the anti-freeze container with clean water, add two tablespoonfuls of Aqua Clear per 5 gallons, and pump contents through drill rods. Turn on air and blow clear. Repeat three or four times. Blow air only until clear.

2. During drill-out, use bentonite only if necessary. Most drill-outs will be relatively short and can be performed successfully with water alone.

**Hint:** *treat drill-out water with Aqua Clear to get a head start on cleaning bentonite out of the drill and drill rod.*

3. If the condition of the host pipe allows for good downstream flow, pump Aqua Clear-treated water through the drill stem while pushing drill rod through the host pipe. This will help to clean the drill rod, as well as the host pipe. Do not pump any water if this would cause the host pipe to remain full of water.
4. Once push-out is completed, and the drill rod is brought to the surface at the launch pit, pump the rod full of treated water. Then, attach the air compressor, protect the site and blow high-pressure air to purge water from the drill rod. Repeat until water comes out clean.

### **E. Attach Impactor to Drill Rod**

1. Once the drill rod is cleaned out, slide the blade set over the Impactor, followed by the anti-contamination sleeve. Be certain that the sleeve fits into the blade set and past the pullback pins in the ball joint.
2. Use the spanner wrench to rotate the ball joint into the starter rod, rather than rotating the drill rod.
3. Align the detents in the front of the ball joint pin with the holes in the starter rod.

**Hint:** *The detents at the front align with the spanner wrench detents.*

4. Torque the pullback pins to 40 foot pounds. Over-torquing could make it difficult to remove the pins at the end of the burst.
5. Use Anti-Seize on all threads.

### **F. Pull Back**

1. Pour about a quart of 80/90 gear oil into the air hose.
2. Restrain the front of the Impactor body – use a substantial chain, and attach to a backhoe to prevent the Impactor from being pulled forward. Turn the air on, and pull in the drill rod to test the operation of Impactor and spool valve.
3. Remove chain and pull the Impactor into the launch pit.
4. Restrain contamination sleeve and blade set to prevent them from riding down the drill rod. If the sleeve slides forward, it may allow material to pack in front of the body, preventing the proper operation of the spool valve.
5. Press down on the pipe with an excavator so that the Impactor enters the ground in line with the existing pipe. Note: Side loading on the valve shaft can bind the striker and prevent starting.
6. Before the Impactor enters the ground, turn the air on and allow the tool to vent.
7. The Impactor will be pulled into the ground passively until sufficient resistance is met to close the spool valve and activate the Impactor.
8. When pulling, do not allow the drill to move forward. If the drill begins to move against its stakedown, use less pull and let the tool do the work. Continuing to walk the drill forward will cause further loosening of the stakedown and could put excessive bend into the drill rods immediately ahead of the drill.

### **G. End Burst**