



Instructions

Bullet Mole® Pipe Installation System

READ ALL INSTRUCTIONS

ALTHOUGH THE BULLET MOLE® IS SAFE AND SIMPLE TO USE, THERE ARE CERTAIN SAFETY GUIDELINES YOU MUST FOLLOW TO ENSURE THAT IT REMAINS THE SAFEST AND EASIEST WAY FOR INSTALLING UNDERGROUND PIPE.



Call DigAlert Nationwide at (8-1-1) before starting any underground project.

Know Your Tool. Read this manual carefully and understand the tool's application and limitations as well as the potential hazards.

Keep Work Area Clear. Cluttered work areas invite accidents. Be sure your work area provides enough room to freely drive the tool through the ground.

Use the Right Tool. Do not attempt to install a pipe through a hole that is too small. Forcing the pipe through a hole diameter that is too small may damage the pipe. For smaller spans where space is limited, use a 2 ft. shaft and a slide hammer to drive the tool.

Use the Recommended Accessories. To insure a proper and safe installation, follow all guidelines below and use only recommended accessories.

Always Wear Goggles or Safety Glasses with Side Shields. When driving the tool through the ground, always wear the proper eye protection. Everyday glasses have only impact resistant lenses; they are not safety glasses.

Only Use a Sledgehammer or Jackhammer
We do not recommend using the backside of an axe to drive the Bullet Mole®. Only use a safety sledgehammer or jackhammer with approved adaptor to drive the Bullet Mole®. Only use equipment in good working order.

Know How to Safely use a Sledgehammer. Improper use of a sledgehammer will quickly bring about fatigue and could lead to injury. The power of a sledge comes from getting the head in motion. Save your back and make it easy by

bending your knees, and to lift it, bring the weight close to your body. Straighten your knees a little at the top of the swing. Then let the hammer fall of its' own weight. Check the hammer head often for looseness.

A sledgehammer's wood or fiberglass handle can be as short as 10 inches or as long as 36 inches. Head weights range from 2 to 20 pounds. Choose a hammer with a forged head. Avoid heads of cast steel; these break more easily and can send dangerous metal chips flying. Select a tool that feels right for your strength and swing.

A cracked handle must be replaced promptly, not repaired or covered with tape.



Caution:

- When using a sledgehammer always wear safety glasses or goggles, heavy-duty work gloves and steel toed shoes.
- Never use a hammer with a chipped head.
- Handles should be kept smooth and the head must be securely attached.
- Replace broken handles.
- Never use an ax as a maul or sledge
- Provide a clear area and adequate space to swing before using a sledge.

Know How to Operate The Driving Source. Although the Bullet Mole® is designed to be used with only a sledgehammer, an optional adaptor is available for a jackhammer. To avoid injury, be sure you are properly trained in the use of a jackhammer before attempting to use it to drive the Bullet Mole®. Only use an approved jackhammer adaptor when driving the tool.

Elevate the Tool From Trench Bottom. Before you drive the tool through the ground, the tool should be elevated using an approved method such as a Sled Guide. This will prevent the shaft from being misaligned while driving it through the ground.

Store Tools Properly When Not In Use. The Bullet Mole® is a solid tool that can become a projectile while transporting. Return the tool to its case after use and secure it firmly during transporting.

OVERVIEW

There are two fundamental ways to install underground pipe using the Bullet Mole.[®]

Installation Methods

Method #1 Install the pipe as you make hole

Method #2 Pull the pipe back through after making the hole.

Method #1 is performed using our Quick Shaft[®] Unit and it is primarily for 1" through 2" pipe (match compression point to pipe o.d.) on shorter runs of 6 ft or less. For longer runs of 1¼" to 2" pipe, you can add pipe sections as you add extensions shafts to the tool and install the pipe at the same time you drive the tool.

Method #2 is used for longer runs of ¾" & 1" pipe in applications under driveways, patios, or large paved areas requiring additional extension shafts to span the required distance. While it is possible to run 1¼" to 2" pipe using this method, we recommend method #1 in all cases other than the most ideal soil conditions.

Additional Tools Required

In every case the only items required are:

- 1) The Bullet Mole[®]
- 2) Shovel
- 3) Sledgehammer (or jackhammer with approved adaptor)



(Optional Driver)

Easy Three-Step Process

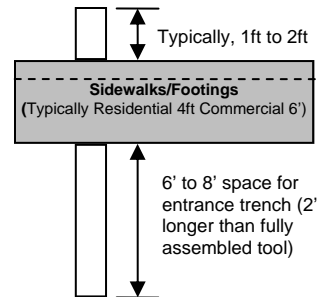
The process of installing pipe with the Bullet Mole[®] is broken down into three stages:

- 1) Preparing the trench
- 2) Making the hole
- 3) Installing the Pipe

Each stage is performed in one or two easy steps. Read on for further information regarding the various applications and the detailed installation process for each.

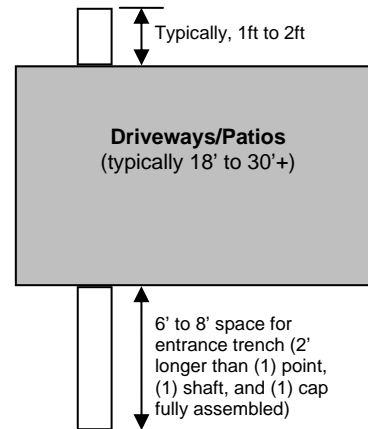
Short Runs

Sidewalks/Footings
(up to 6 ft)



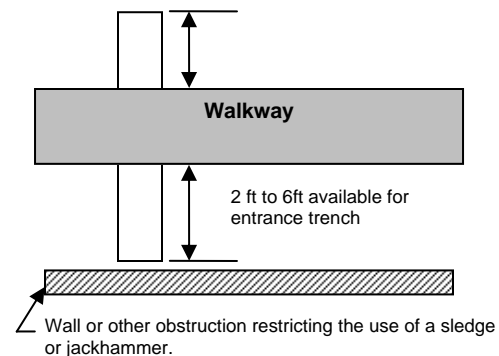
Longer Runs

Driveways/Patios/Paved Areas
(Greater than 6 ft)



Tight Spots

Driveways/Patios/Paved Areas
(Greater than 6 ft)



In this application a 2 ft Extension Shaft and Slide hammer are used to make the installation

Installation Steps Sidewalk/Driveways



Step One – Prepare the Trench:

The first step in any Bullet Mole® installation is to prepare the entrance and exit trenches for driving the first shaft length, which in most cases will be a Quick Shaft®.

- The entrance should be 2 ft to 3 ft longer than the length of: 1) the fully assembled shaft being used, or 2) the longest extension shaft used in the installation.
- The depth of the trench may vary with each application (typically 12" to 18").
- The exit trench shall be sized as needed.

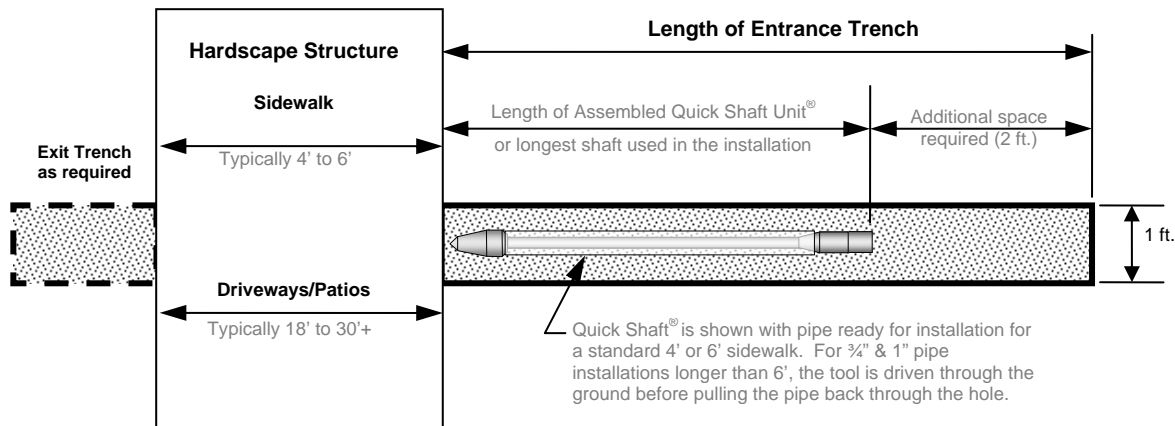


Caution:

Ensure adequate clearance to safely use either a sledgehammer or jackhammer to drive the tool.

Note:

The Quick Shaft® is named for its ability to quickly install pipe under hardscape at the same time you drive the tool through the substrate. For short run applications such as sidewalks two sizes are available 4 ft runs and 6 ft. Longer runs greater than 6' require additional extension shafts.



Step Two – Prepare the Pipe & Tool

(Required only for installation Method #1 - installing pipe while driving the tool)

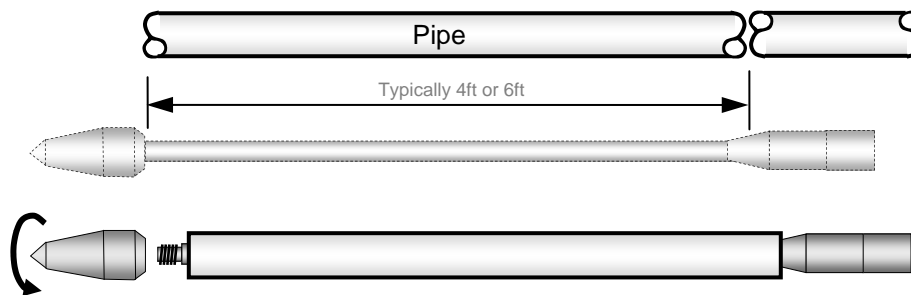
- Cut pipe to desired length, but no greater than the inside dimension of the shaft being used.
- Slide pipe onto the shaft and firmly attach the compression point and the impact cap by hand. The pipe is now ready to install.

Refer to Step Four (alternate method) for additional cutting details on longer runs of 1 1/4" to 2" pipe.

The standard Quick Shaft® is designed for fast and easy installation of pipe 1" & 2" pipe. For longer pipe applications greater than 6 ft, extension shafts are required and the smaller pipe (3/4" & 1") will be inserted after the hole is made.

Note:

1. For 2" pipe installations, use the 2" compression point and the corresponding impact cap.



Caution:

Never use the tool with a loose compression point, impact cap, or extension shafts. Make certain that all male threads are fully engaged and seated properly before using.

Installation Steps Sidewalk/Driveways



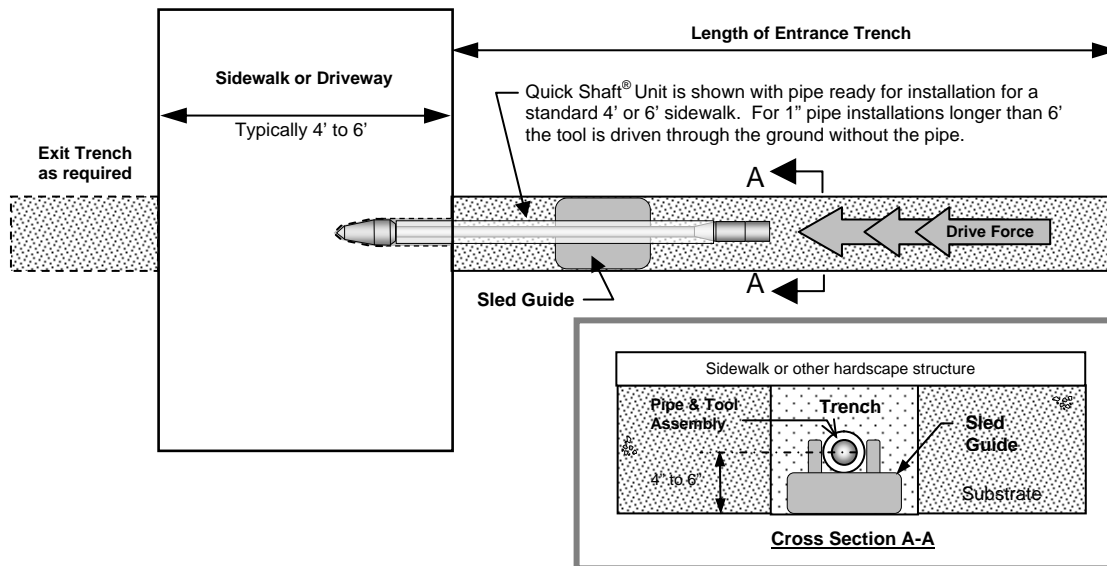
Step Three – Drive Tool

- Place the assembled Quick Shaft[®] Unit at the desired elevation above the bottom of the trench (typically 4" to 6") using an optional sled guide (Part No. SG200) or other support.
- Once in place, drive the tool using a sledgehammer or other driving device (optional jackhammer adaptor is available).



Caution:

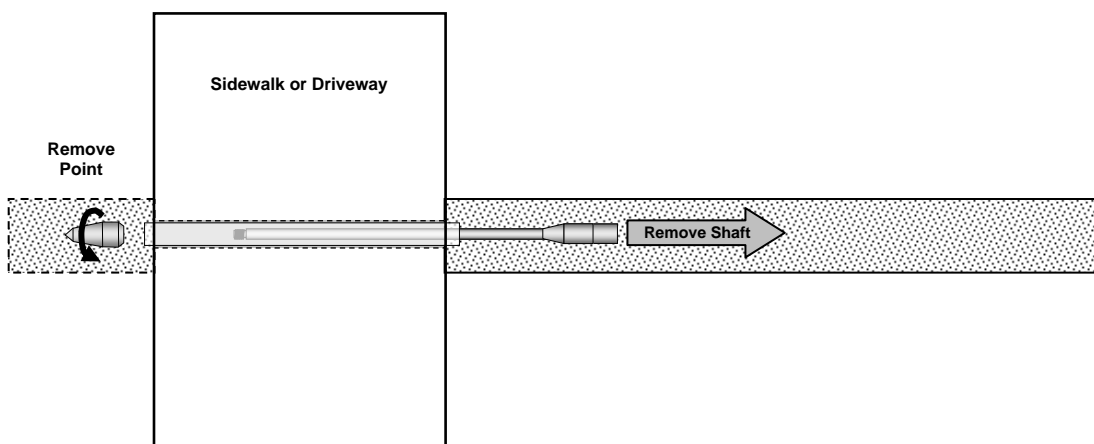
Male threads must be fully engaged and seated properly before driving the tool.



Step Four – (for Short Runs Up to 6 ft.)

Remove Tool from the Pipe:

- Once the tool penetrates into the exit trench, unscrew the point and slide the shaft back through the hole leaving the pipe in place.
- Complete your installation and backfill the trenches.



Additional Steps for Driveways



Step Four – (Longer Runs over 6 ft.)

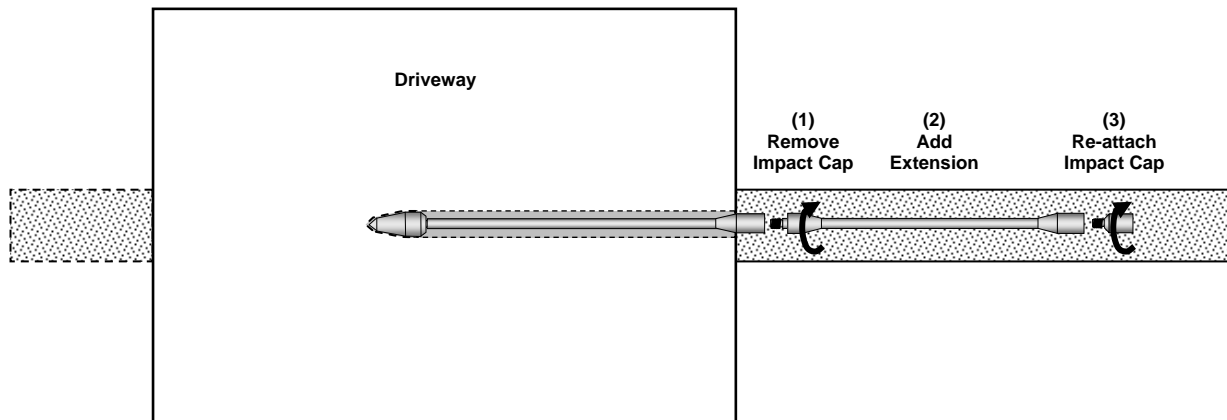
Add extensions:

- Once the full length of the first shaft is driven into the ground, add an extension shaft to continue the installation.
- Continue driving the tool and adding the required extensions to span the required distance.



Caution:

Male threads must be fully engaged and seated properly before driving the tool.

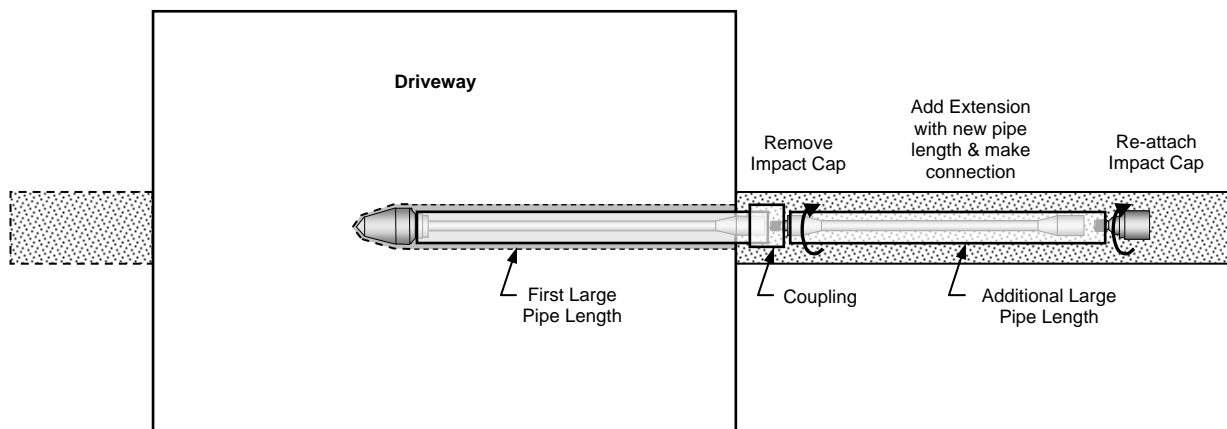


Alternate

Using Method #1 you can install 1 1/4" & 2" pipe up to 60 ft. through difficult soil conditions such as clay, gravel, or through substantial debris with greater ease by reducing the sidewall pressure associated with pulling the pipe back through the hole as shown in Steps Five and Six below. Here's how it's done:

- 1 Using our 1" Plus (for 1 1/4" pipe) or 2" Compression Point and Impact Cap you can install each pipe length as you drive the tool.
- 2 With the pipe firmly secured between the specially designed "pipe rest" on the point and/or cap, drive the first "extension" shaft length with the first pipe length.

- 3 After driving the first pipe the entire length of the first shaft :
 - remove the impact cap,
 - firmly attach an extension shaft with a precut pipe section. Then, with a suitable connector, make the connection to the previous pipe.
 - continue driving the next section of pipe.
 - repeat the steps for as many pipe sections as required.
- 4 **Note:** For 1 1/4" pipe, use a 1" Plus Compression Point and position the Quick Shaft® as the final shaft in the installation as to provide support on the leading edge of the first pipe length.



Additional Steps for Driveways



Step Five – (Smaller Dia. Pipe Runs over 6 ft.)

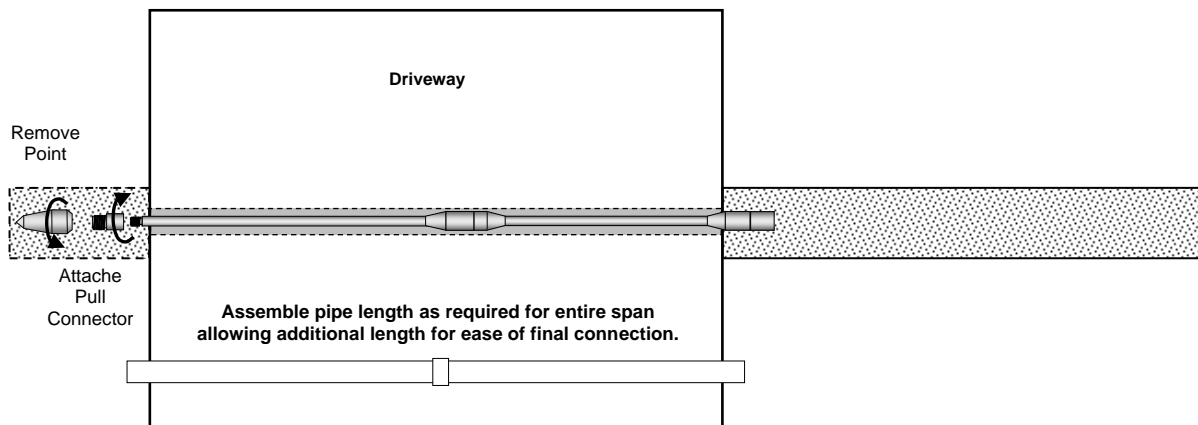
Prepare Pipe and Attach Pull Connector:

Once the tool penetrates into the exit trench, remove the point,

- Assemble the pipe to be installed across the entire distance of span.
- Attach the proper pull connector (see accessories on page 3)

Note:

1. It is best to attach the first section of pipe to the pull connector and then add the sections to complete the final length.
2. This method works well for ¾" and 1" pipe in clean soil conditions. However, because certain soil conditions make pulling pipe back through after the hole is completed more difficult, we recommend increasing the pipe size to 1¼" and making the installation using Method #1. We also recommend Method #1 for 2" pipe.



Step Six – (Smaller Dia. Pipe Runs over 6 ft.)

Attach the Pipe and Pull back:

- Attach the fully assembled pipe to the pull connector and pull the entire length back through the hole.
- Remove each extension one by one as you pull the pipe back.
- Once the pipe is in place, complete the connections on each end before backfilling trenches.

Note:

1. This method works well for ¾" and 1" pipe in clean soil conditions. However, because certain soil conditions make pulling pipe back through after the hole is completed more difficult, we recommend increasing the pipe size to 1¼" and making the installation using Method #1. We also recommend Method #1 for 2" pipe.

