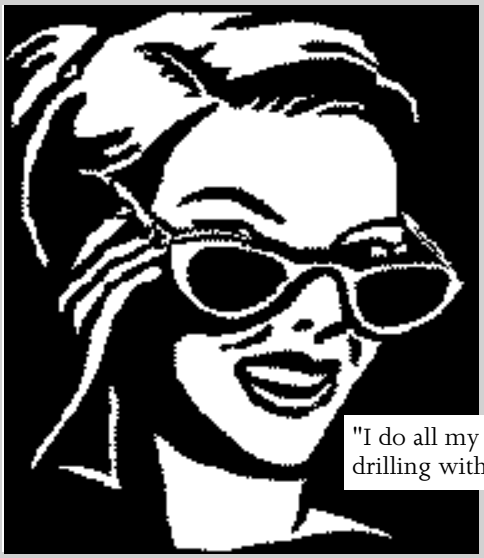
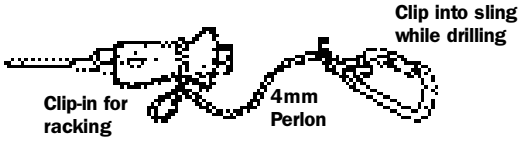
FISH

ROCK DRILL INSTRUCTIONS

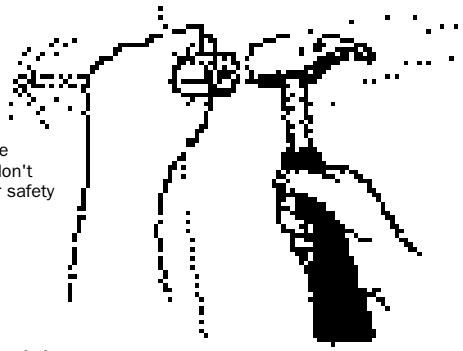


A. Getting ready to climb

1. Tie the drill/handle combo as pictured.



2. Set the drill bit in the holder with about three hits, and don't forget your safety goggles.



B. Drilling a hole.

1. At first, before the hole is started, the drill will bounce around as you hit it. Lean into the rock with the drill and hit carefully, until the hole is begun.

At this point, the rock will fly in all directions faster than your eyes can blink. We recommend that safety glasses are used during all drilling operations.

Notice: Due to the nature of rock drilling, drills will break. Therefore, Fish Products does **not** offer a warranty on rock drills. To avoid any inconvenience, always carry at least two rock drills.

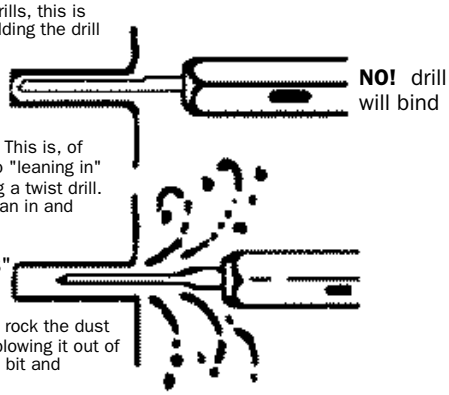
Do you need to re-stock your bolt kit? Does this penetration stuff make you want more and more options? Call us for all the best penetration supplies, including bits for your Bosch, Rivet kits, !/2" SDS drill bits, Sandstone bolt kits, Emergency bolt kits, Bit Sharpening, and more.

2. After the hole is started, the drill should be twisted **every** time before being hit. That is, do not hit in the same spot twice or a V-notch will be created in the end of the hole that will cause binding, and possibly break the carbide tip.

note: if you chip or break the carbide tip, it can sometimes still be used without being reground to finish the hole you are working on.

HIT-TWIST-HIT-TWIST-HIT-TWIST-HIT

3. As the hole gets deeper, the rock dust has an increasing distance to travel to exit. On straight flute drills, this is accomplished easily by holding the drill about 1/3" away from the end of the hole while striking with the hammer. This makes the drill act like a piston and blows the dust out of the hole.* This is, of course, exactly opposite to "leaning in" when starting hole or using a twist drill. When using a twist drill, lean in and always rotate the drill clockwise.



*On extremely low angle rock the dust will have to be cleared by blowing it out of the hole or wetting the drill bit and scooping it out.

4. Different bolts require different depths. Some must be exactly a certain length, while others must merely be long enough. The most common bolt is the Rawl Drive. Always make the hole for Rawl Drives longer than the bolt.

5. Sharpen the drill frequently, by hand, using a "diamond" type stone. If the corners of the drill are dull, the drill will bind. Carbide tips require special sharpening. Do not use a standard grinding wheel or you will ruin your drill. Call us for more info.

Tips on drilling:

1. 5/16" sleeve bolts are not made for anything but the best rock. If the rock quality is dubious or is sandstone, use a larger drill and bolt.

2. Never trust your life to a single bolt. Failures are common. When in doubt, double the bolt(s).

3. Longer bolts are better than short bolts. Short bolts are better than rivets.

4. If the bolt can be hammered into the hole to easily, it is probably a bad placement. The hole is oversize perhaps from rotten rock or sloppy drilling.

5. If the rock breaks away as the bolt is hammered in, that bolt is probably bad, despite being placed in good rock. Drill another hole and round the edges of the hole before placing the bolt.

6. Do not hang on your drill. It is not designed to withstand shear stress or bending moments.

7. Measure the length of your bolt and mark it on the drill. This way you do not need to pull the drill out of the hole to check hole depth.

8. For Rawl 6-Piece bolts, drill the hole longer than the bolt you intend to use. Tap the bolt into the hole until washer and head are seated against the bolt hanger. Tighten with a wrench to around 35 foot-lbs.

9. Practice on a junk boulder in your own backyard before trying your magic on the landscape. **Don't abuse the power of permanent change.**

10. Some rock may require a different angle be ground on the drill tip for maximum efficiency. Your drill is supplied with an angle that will drill in **all** types of rock. If you change this angle without knowing how to grind carbide, you **will** ruin your drill. If you are gutsy, or have a big wallet, feel free to experiment for the best angle for your local rock.

QUESTIONS?

Email us:

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*Please don't be an idiot while using this equipment. Every hole you drill is a lasting monument to your intelligence. Look good for the ages. Drill smart.