

# Pressman's Toolbox: Looking for ways to remove a key from a shaft?

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Frank Bourlon

Have you ever tried to remove a key from a shaft?

In this case, the key I'm referring to is used to prevent slippage of a gear or pulley mounted on a shaft (see Figure 1).

The normal way to remove the key is to use a small cold chisel to impact the edge of the key in order to force it from its slot in the shaft.

The exposed end of the key can be ground with a die grinder so that a "v" groove is formed in the end of the key. This will keep the chisel from slipping and increase the chance you'll be successful in removing the key.

If the key is not stuck in the key slot too tight, a pair of pliers or a vise grip can be clamped to the exposed edge of the key. Pull the key from the slot.

Other options

When all else fails, you can make an extractor (see Figure 2). Drill a hole - to be threaded - in the top of the key. Be careful to drill only as deep as the key is thick. To protect yourself, place a stop collar on the drill bit before you begin.

The size of the hole depends on the size of the bolt you intend to use to remove the key.

In any event, once the hole is drilled, tap the hole with a taper to establish a few threads. Then use a blind hole tap. This will let you etch out the maximum number of threads in the key. The more threads established in the key, the better chance you have to successfully remove it.

The next step is to make a pulling block from a piece of scrap metal. I will normally use a 1-inch thick block of metal.

The block should be three times as wide as the key and half as long.

Downward pressure

Form a slot in the center of the block so it's slightly wider than the key. Then drill a hole in the center of the block that's slightly larger than the bolt used to remove the key. Your pulling block is now complete.

Thread a nut onto a long, high-strength bolt as far as it will go. Insert the bolt into the block. Place the assembly over the key, and then thread the bolt into the shaft as far as it will go.

Spin the nut downward against the block. Then use a wrench to apply enough force on a nut to remove the key from the shaft.

If you apply enough downward movement, the key will be extracted.

Frank Bourlon is the executive and training director for the Newspaper Production & Research Center. He can be reached at 405.524.7774.