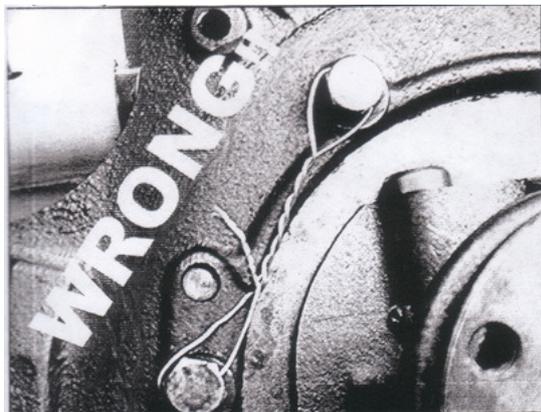




# From the Garage

by Paul

## How to Safety Wire the Bolts on the Model A Ford



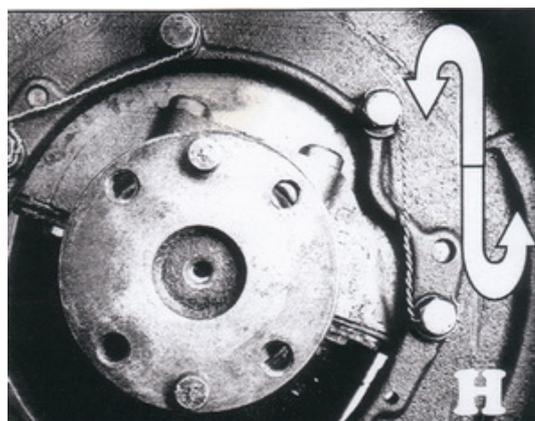
Safety wiring has been used to secure anything that you do not wish to come loose and this technique has been around for decades. It might seem like "old school" technology, but safety wiring is still today used extensively in the aircraft, motor racing and motorcycling industry.

There are various methods of ensuring that nuts and bolts on Model A Fords do not come loose. The most widely used methods are safety wire, cotter pins, lock washers, snap rings and special nuts, such as self-locking nuts.

Bolts can be cross drilled to be safety wired for any situation. The Model A has several areas where the use of safety wire is critical. The flywheel housing to block bolts, the flywheel to the crankshaft, rear motor mount bolts, the torque tube, transmission retainer, pinion ring gear carrier and the rear axle gear case all use special cross-drilled bolts intended for the use of safety wire.

It's clear that safety wiring the correct way is not fully understood. There must be a belief that as long as wire is run through the holes in the bolt head and fastened to something, the bolt will stay in place and even if comes loose at least it can't go far. The picture above serves to demonstrate that notion and, while it may be a little better than nothing, it's not what the use of safety wiring was designed to do.

The real intent of safety wiring cross-drilled bolts is to provide constant tension on a bolt or set of bolts so that the chance of one coming loose is nearly impossible. In other words, the use of the wire serves to "tie" the bolt securely so that as long as the wire is in place the bolt can't turn in a loosening direction because of the constant tension of the safety wire. If you look at the photo you'll notice that the safety wiring pattern is a backwards "S" which provides constant tightening tension on two of the bolts used to fasten the flywheel housing to the engine block.



### Wire and Tools

Safety wire is available in different gauges depending on the torque and size of the bolts. For bolts and torque used on the Model A, the most common size is between 0.32 and 0.40 diameter. The most important characteristics are that it is stainless steel wire to prevent it from rusting away, that it be annealed for strength and that it is easily bent. Don't use bailing wire! Safety wire can be purchased through most of the Model A parts catalogs and also from your local parts store.

Special tools are available to make the wire-twisting easier and faster, but a pair of needle-nose pliers or electricians wire pliers work just as well.

The picture shows the wire twister tool, stainless wire and pliers that can be used. I learned watching Duncan Fox work on Formula 5000 race cars and I can assure you that practice makes perfect. The lengths of wire needed for each situation will vary but be sure to start with enough so you have excess when you finish rather than being short that last inch. After the bolt has been torqued to the correct specification, the main thing to remember is that the direction of the safety wire is wound so that it "pulls" the bolt head as if it is tightening the bolt even tighter.



### Nuts, Bolts, and Screws

Nuts, bolts, and screws are safety wired by the single wire or double twist method. The double twist method is the most common method of safety wiring. The single wire method may be used on small screws in a closely spaced closed geometrical pattern and in places that are extremely difficult to reach.

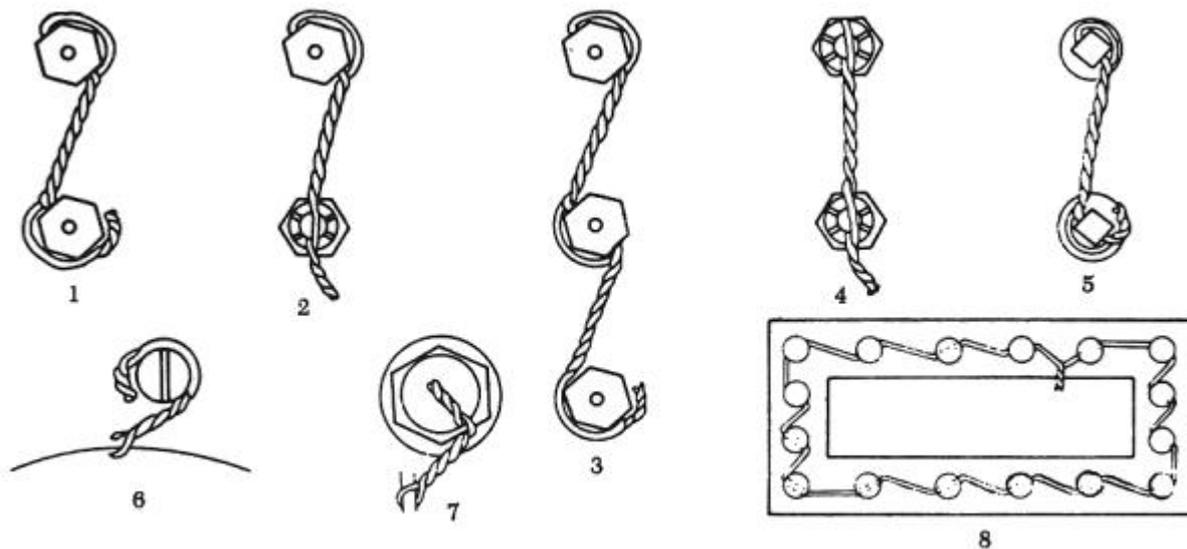


FIGURE 6-25. Safety wiring methods.

Figure 6-25 is an illustration of various methods which are commonly used in safety wiring nuts, bolts, and screws. Careful study of figure 6-25 shows that:

Examples 1, 2, and 5 illustrate the proper method of safety wiring bolts, screws, square head plugs, and similar parts when wired in pairs.

Example 3 illustrates several components wired in series.

Example 4 illustrates the proper method of wiring castellated nuts and studs. (Note that there is no loop around the nut.)

Examples 6 and 7 illustrate a single threaded component wired to a housing or lug.

Example 8 illustrates several components in a closely spaced closed geometrical pattern, using a single wire method.

Give it a go, practice till it feels and looks correct remembering to ensure that wire must be applied so that all pull exerted by the wire tends to tighten the nut. The article was originally published by Derry Suther, Olympia Washington and I have updated with additional data and images

There's a reason it's called "safety wire"...BE SAFE