

# The History and Repair of TRICO Wiper Motors

When a bicyclist and a National Roadster collided on a Buffalo, NY, street late one rainy night in 1917, it was an impact felt around the world. Although the cyclist was not seriously injured, the accident was enough to profoundly shake the driver of the car, Buffalo theatre owner J.R. Oishei. Vowing that such an accident should never happen again, Oishei was determined to improve the ability of drivers to see during bad weather. He said that hitting the bicyclist was "a harrowing experience which imprinted on my mind the definite need for maintaining vision while driving in the rain."

The company Oishei formed, the Tri-Continental Corporation, introduced the first windshield wiper, Rain Rubber, for the slotted, two-piece windshields found on many of the popular automobiles of the time. Today Trico Products is one of the world's leading manufacturers of windshield wiping systems, windshield wiper blades, and refills, with wiper plants on five continents.

Trico's commitment to clear driving vision has included the introduction or refinement of nearly every significant development in the windshield wiper industry.

The popular Rain Rubber was made obsolete in the late nineteen-teens, when car manufacturers weatherproofed the slot in the windshield. This led to the invention of the hand-operated



"Crescent Cleaner", mounted in a hole above the windshield. It swung its spring-loaded wiper arm in an arcuate, or bow-shaped, pattern across the windshield and was standard equipment on virtually all automobiles in the early 1920s.

Significant Trico innovations/milestones (through the 1930s) include:

- 1917: Rain Rubber. The first mass produced, commercially available wiper blade.
- 1921: Automatic Vacuum Wiper motor.
- 1923: Crescent Cleaner.
- 1927: Visionall Wiper System. Two blade wiper system (a four blade system was also offered) where the blades wiped directly sideways.
- 1928: Sleet Wand. Early attempts to fight windshield icing included this use of a rock salt-type product encased in fabric and mounted on a wiper arm.
- 1928: "Five Ply" Blades. Who says multi-edge blades are a new idea? Trico's patented design was comprised of a series of independently flexible edges between which the water was squeezed from the windshield and removed from the line of vision. At one point, this blade was used as Original Equipment on nearly every motor vehicle manufactured.
- 1928: Trico UK Established. Trico's UK manufacturing plant in Brentford, England opens.
- 1929: Dual Wipers. This innovation marked the period when wiper blades began working in unison to improve visibility.

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## TRICO WIPER MOTOR REPAIR PARTS

Many of the repair (soft) parts for Trico Wiper motors can be obtained through major dealers in Model 'A' Ford parts or Obsolete Ford parts. Contact them for details of their inventory.

We can also offer several names for repair of many models of Trico wiper motors. I suggest that you telephone or e-mail first for prices and turn-around times. Clean Sweep, 1550 Majestic Rock Dr., Terrebonne, OR 97760 (541) 420-9098. Rome Truck Parts, 241 Dempsey Rd, Rome, GA 30161 (800) 284-4345, info@rometruckparts.com. Ficken Wiper Service, in Babylon, NY. For chrome wiper motors, contact Kent Jaqwith at 541-923-4319 or dejacque04@endbroadband.com

# How to Repair a Vacuum Windshield Wiper Motor



*These instructions are for a Trico Vacuum Wiper Motor (upper left), but are generally applicable to similar types and makes.*

## Easy Way:

Pack it up and send it to Clean Sweep Wiper Motor Repair, Rome Truck Parts, or to Ficken Wiper Service (see info on page 37)

## Tough Way:

Do it yourself. The subject wiper motor is a Trico Vacuum Wiper Motor. Other than bad gaskets, there were no broken parts.

When I began the project, the motor was so encrusted with dirt, grease, and crud that I couldn't even read the manufacturer's name on the top. Since I planned on disassembling the entire motor, I wasn't too concerned about getting moisture inside. To start, I connected a length of tubing to the vacuum hose terminal and plugged the line. Then I sprayed the entire motor with Oil Eater<sup>®</sup>, scrubbed with a stiff nail brush and toothbrush, rinsed in hot water, and repeated. Most of the grease was gone, but it was still a mess. I took the motor over to the media blaster and thoroughly cleaned the outside. I would never do this if I hadn't planned on taking the motor completely apart. Just a bit of abrasive material in the motor could permanently ruin it. I blew the motor off with compressed air and was now ready to begin tinkering with something that I knew nothing about.



Trico didn't use normal screw-head or hex-head fasteners; they used a raised rectangle. The easiest tool, I found, to use was a tiny crescent wrench and a pair of needle nosed pliers. On this particular model, three different sized screws were used. The eight screws that retain the top plate are one size; the two screws that hold the slide on/off switch are the small ones, and the two that hold the round cover on the back side are sheet metal screws.



The very first thing that I did was to photograph the motor from all angles, and as I went along, I photographed every step. In that way I'd have photos to refer to in re-assembling the motor, and I needed them.

I removed the two screws holding the slide-switch on the top, and removed the two pieces of the slide mechanism. Removed parts were put into an empty tuna fish can so they didn't jump off the work bench and run away.



*Remove the two screws holding the slide-switch on the top.*

Next, off came the round cover on the back of the motor that covers the reversing mechanism. The thin paper gasket came off in several pieces, indicating that I'd have to make or obtain at least one new gasket. Under the cover is a spring loaded slide. Photograph the assembly just so you can see how the spring is connected. It's not difficult, but unless you make special note of how the spring is connected, it can mean some experimentation.



*Remove the round cover on the back of the motor.*

The top cover is the next step. Remove the eight screws and put them in the parts can. Gently lift off the top cover. You will see a vacuum flapper assembly within the motor housing. Lift it out. More than likely the flapper will be coated with hard, crusty grease. Same thing for the inside of

the motor housing. DO NOT clean either the flapper assembly or the housing well in the media blaster. The abrasive can score the surfaces preventing a vacuum in the future.



The 'flapper' fits into the well in the main housing.

Wash the housing out with Oil Eater<sup>®</sup> and a rag. Get all the bits of hard grease off the walls of the well, and rinse thoroughly. Dry the housing.

The flapper will require additional cleaning work. Use a paper towel to wipe off any 'soft' grease. Next use a plastic or wooden scraper to clean off the hardened grease. When you have removed as much as you think that you can, soak the part in an Oil Eater<sup>®</sup> solution. After a few minutes, clean it with a stiff brush and the old toothbrush and rinse. A lot more hard grease will be visible. Scrap it off, wash again and continue until the part is grease and crud free.



Lift out the 'flapper' assembly and carefully remove all traces of grease, both soft and crusty.

Examine the top cover gasket. If it is broken, it is going to take a lot of patience to make a new one, but the gasket is very important. It has to be an air-tight seal. It is a thin gasket; a piece of typing paper is about the right thickness. Replacement gaskets are generally available from Model 'A' Ford parts houses. Use a Q-Tip to clean out all crevices in the motor, cover, and bleeder holes.

Clean the round cover, clean the parts of the reversing mechanism, and blow through the vacuum tube to make sure that it is clear. When you are satisfied that the parts will pass a white-glove inspection, it is time to re-assemble. Make or buy your gaskets before you do anything else. Trace the old gasket if possible, and use small, sharp scissors and an Exacto knife to cut out the gasket. For the round cover, a piece of postcard weight stock is fine.

Liberaly coat the well - sides and bottom - with Vaseline<sup>®</sup>. Be liberal but you don't want it too thick. The layer of Vaseline<sup>®</sup> will lubricate and provide a seal. Move the flapper back and forth by hand. Remove excess Vaseline<sup>®</sup>. If the cam falls off the end, be sure that the little 'ears' point up and out when you re-install it. With the flapper in place, install the gasket and the top cover. Put the screws in, but don't tighten them yet.

Re-assemble the parts that go under the round cover, install the gasket and the round cover and the two screws. Again, do not tighten yet.

Now the slide mechanism. Install the heavy slide first. Be sure that the pin on the end of the on-off lever fits into the square hole at one end of the slide. The spring plate is next. You will notice that one end of the spring is a semi-circle and the other end is just rounded off. The semi-circle end goes toward the round cover, and a washer fits under the retainer screw on that end. Look the motor over to be sure that everything is installed properly. Gently try the swing arm to make sure that everything moves properly. If you are satisfied, tighten all the screws using a pair of needle-nosed pliers. Make sure that the screws are all tight.

Before you re-install the motor, test it by connecting it to a vacuum fitting on the engine. Put your finger over the vacuum fitting to be sure that there is, indeed, vacuum with the engine running. A length of rubber hose connected to the engine and to the wiper motor should do the job. Move the on-off slide. The swing arm should begin to move on its own and at a decent rate. As you move the slide, the speed of the swing arm should slow down, and when turned off, it should park itself.

The same basic procedure can be used on a variety of vacuum wiper motors. You will find that parts or descriptions will vary, but essentially the technique is the same: disassemble, clean, make new gaskets, lubricate and re-assemble, being sure that the system does not leak air.

And remember, if all else fails, there are a couple of wiper-motor services that can put everything back together the way it is supposed to be.

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