

# Fitting Intermittent Wipers to a TR

This article is a subset of a much longer article on fitting two speed and intermittent wipers to my TR. This is about only adding an intermittent option to the single-speed TR wipers. The full article is available on the website under “Technical”.

## What you Need

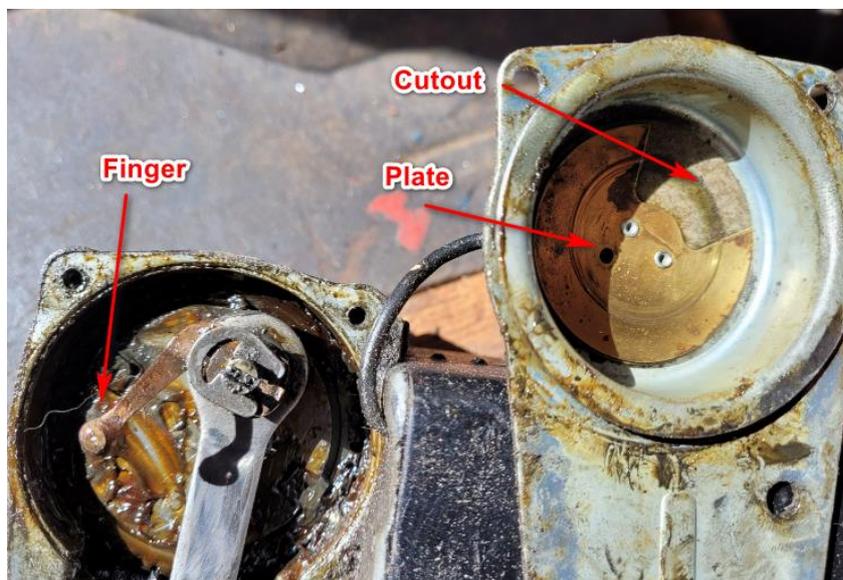
To fit the wipers you will need:

- A switch to turn on intermittent wipers. Any on/off switch will do.
- A 5 spade relay to switch between normal operation and intermittent operation
- An intermittent circuit board
- A knob for the rotary switch on the intermittent board
- A box to hold the board

## The Theory of Wipers

The wipers have a single power supply and are activated when the other end of the circuit is earthed. In other words, there is constant power to the wiper motor.

Within the motor is an armature that has an earth wire. To operate, you earth the armature wire. The knob on your dash for a standard TR single-speed wipers connects the single armature wire to earth.



So how does the wiper park itself when you turn it off? The earth wire is connected to an earth within the motor through a fixed disk. To park the wipers you want the main gear wheel to stop in a particular position. On top of the wiper motor main gear is a copper finger that rotates on a plate. When the wheel rotates so that the finger hits an insulated cutout in the cover, the line to earth is broken and the motor

stops.

## Intermittent Control Box

An intermittent circuit board pulses on for one or two seconds at a given frequency. The frequency is determined by a rotary knob. If when it pulses on, it starts the motor rotating such that the finger is

out of the park insulated area, when the pulse ends, the park will take over and complete a rotation of the main gear.

All that is needed is a circuit board that can provide that pulse on for one or two seconds, and a way to regulate the frequency of the burst.



I found one on the Internet out of the UK. It is not specifically for intermittent wipers but it does the job. It was not expensive. The freight was about as much as the unit. The number was MX041-1. The maker is Maxx Tronic.

There is a Hella unit designed for Intermittent wipers but it is very expensive, and not available in Australia when I checked.

The unit has five connections at the back. They are:

1. +
2. -
3. NO (Normally Open)
4. C (Common)
5. NC (Normally Closed)

Normally open means when no power is applied, or between cycles the link to the common is open. When one of the cycles happens and the board pulses on for a second or two, this connection is closed. Normally closed is the opposite.

The + and – are the power to the circuit. At the front is a rotary switch to adjust the frequency of the pulses. There is also a red light on the board which comes on when the board switches on during the frequency bursts.

All this is housed in a small plastic box courtesy of Jaycar. You will need to drill a hole in the front of the box to fit the rotary switch. You will also need to pick up a knob to push on the rotary switch. All are readily available.

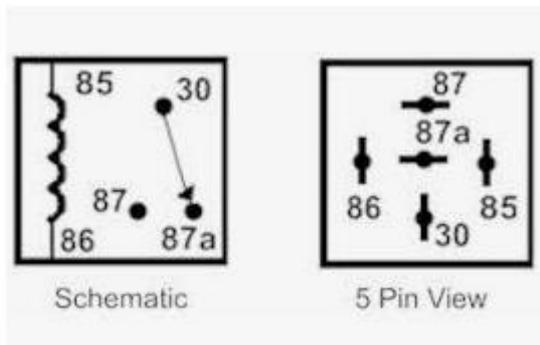


I decided to mount it on the support between the dash and the firewall just near the centre console of the car. If you turn the box upside down, the flanges on each end can be attached to the support. I decided to make a small extension about 12 mm to the flange to make it easier to mount. The shaft of the rotary switch is very close to the flange so it is a tight fit. It also moves the box back just a bit so it is not so likely to catch on to anything. I already have a radio fitted in that area so it slots in beside the radio. You could mount the relay at the back of the box.



## The Circuit

A quick digression to refresh your memory on relay wiring if you have not done it for a while. You will need relays with five spade connectors.

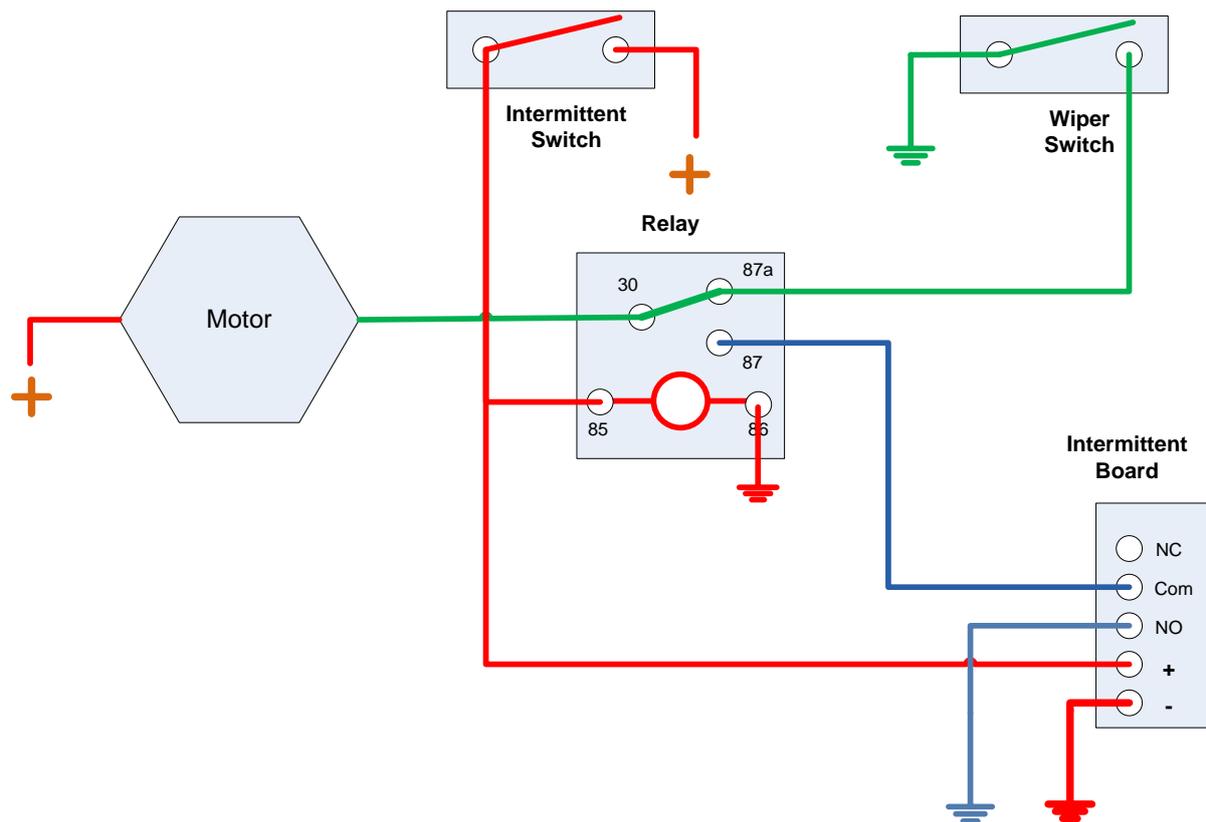


85 and 86 are the power supply that activates the relays. 30 is the common.

When the relay is not activated, 30 is connected to 87a and 87 is open.

When the relay is activated 30 is connected to 87 and 87a is open.

So 87a is NC (Normally Closed) and 87 is NO (Normally Open).



With nothing turned on, there is no path from the motor to earth. When the wiper switch is turned on, the motor is earthed through the wiper switch. When the intermittent switch is turned on, the relay is activated. Terminal 30 is connected to terminal 87 which connects the motor to the common terminal on the intermittent circuit board. Power is also supplied to the intermittent board which causes it to pulse at a certain frequency.

When it pulses, power flows from the common through the NO terminal to earth. The motor starts moving, and the park arrangement completes the cycle after the pulse ends.

## Summary

I did a much more extensive exercise combining two speed and intermittent wipers so have not tested this arrangement. It works perfectly on two-speed so no reason to think it will be any less successful for single-speed. It is not a complex arrangement and parts are readily available. I hope someone can try it out and report back on how useful you find intermittent wipers.