

## CONVERTING THE MGAs WIPERS TO 2-SPEED

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Now updated for LHD Cars

After reading about fitting an MGB 2-speed wiper motor in the MGA Guru website and Dominic Clancy's advice in the MGA forums and then prompted by the painfully slow action of my single speed wipers, I finally decided to attempt the conversion.

So I bought a new MGB (Lucas 14W type) 2-speed wiper motor complete with rubber mount, rubber lined hold down strap and a new 90 degree gearwheel (complete with dished washer and circlip) which determines the swept arc of the wipers on the screen. (all available from Stafford Vehicle Components [s-v-c.co.uk](http://s-v-c.co.uk) )

### MOUNTING THE MOTOR.

The motor is cylindrical in shape rather than square like the 1 speed and it is wider, so you have to fabricate a wider mounting plate which fits directly on top of the original motor mounting brackets. The new 2-speed motor rests on a rubber block and is secured by rubber lined metal strap.

I carefully measured the exact position of the threaded ferrule at the end of the old motor to ensure that new motor lined up exactly with the rack tube. The ferrule protruded 34mm from the front of the original mounting plate and was 60mm above it. I allowed a bit of leeway by making the holes in the new mounting plate a bit oversize so that I could add washers to adjust the height and position of the new motor. My new alloy mounting plate is 1.75mm in thickness and it bolts directly on top of the original brackets which, by sheer chance, lifts the new motor into exact alignment with the wiper drive tube.



Removing and re-installing the motor is easier if you leave the flexible rack drive connected. I un-bolted the mounting bracket complete with the motor on it and then uncoupled the electrical connections. Next you just have to disconnect the motor from the wiper tubing (undo the big nut) and then remove both wiper arms from their spindles. Then you can just pull the motor and flexible drive straight out from the tube, you will see the spindles rotating as the flexi-drive pulls through each wheelbox.

On RHD cars, when fitting the 90 degree gearwheel and the rack into the motor (under the top cover), make sure that the white plastic parking switch trigger ramp on the underside of the wheel is situated into the position next to the metal drive peg. If it is at the opposite side of the wheel (the LHD position) the wipers will park upright on the screen instead of lying horizontally along the windscreen frame. It is really easy to prize out and re-position this ramp. Also, when re-fitting the gearwheel, take care to fit the dished washer with its cupped side upwards against the bottom surface of the wheel and don't forget a generous blob of grease inside the gear cover. The flat washer and the circlip fit on the other end of the shaft outside the casing.

The 90 degree gearwheel proved to be spot-on and gives a swept arc of the wiper blades which fitted perfectly within the windscreen frames with no running over the frame. On advice, I first tried a 100 degree wheel but it caused the blades to foul on the windscreen frame and tear the rubber blades. Refit the flexy drive onto the motor and refit the gearwheel cover before re-installing the motor, making sure to grease the crank wheel.

#### WIRING UP.

I used a standard MGA light switch to operate the wipers so that it looked correct on the dashboard and this requires the use of two switchover relays, I used micro relays which can easily cope with the current drawn by the motor. I fixed the relays in micro relay sockets bolted onto the rear of the new mounting plate and I connected them to the motor using spade connectors.

It is virtually impossible to get to or even see the 5 spade connectors on the motor once it is installed in the car. I used a 5 pin plug to connect to this but you can just use individual connectors. To get around this I made up a short wiring loom for the motor and relays to connect to a 6 pin plug (which includes the earth wire) which you can easily hide behind the motor. For simplicity I used self-amalgamating tape to cover this short loom.

Using the 6-pin pug and socket will allow the motor and relays etc to be quickly and easily removed as a complete unit in the future.

The socket part of the connector is wired via a new loom through to the dashboard. I used expandable braided sleeving to cover the wires as it looks "almost" original on an MGA and is both inexpensive and simple to use. You just cut it to length and then either tape the ends or use heat-shrink sleeves on them to prevent fraying.

I fitted slightly thicker wires to connect the motors main power supply and earth but to be honest 1mm sq cable should be more than adequate for the amperage drawn. (modern

thin-wall 1mm sq cable will carry 16.5 amps)

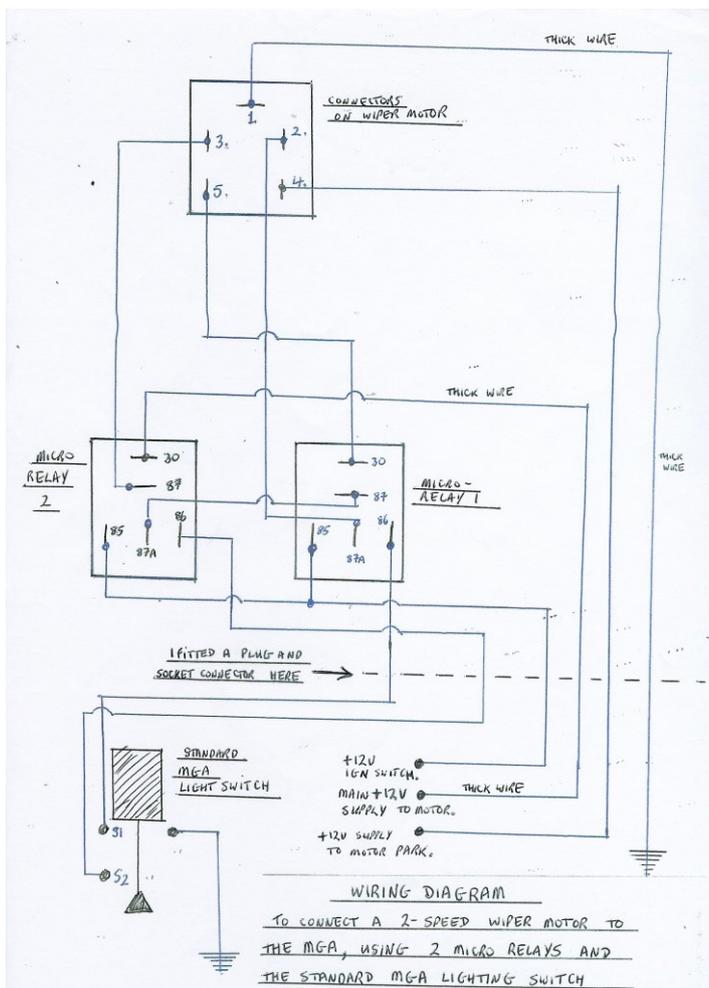
I connected the main +12v supply to the motor via a new fuse at the starter switch and the earth direct to the bodywork next to the motor.

The +12v supply to the park and the relay activating circuits connect to the ignition switch so the motor will only run with the ignition switched on.

The remaining 2 wires go to the new switch on the dash through which they connect to earth.

Barney on Mga Guru has designed and produced a superb CAD circuit diagram which explains exactly how the relay circuit operates the motor but I have drawn my own sketch to show how everything connects to the motor.

(I left the original 3-wire loom in place behind the motor with its ends safely insulated just in case anyone decides to re fit the one speed motor in the future.)



This 2-speed motor was made for the negative earth MGB and so I knew it would work on my MGA which has been converted to this polarity. However, I have run the motor connected in a positive earth format using the MGBs toggle switch to operate it for an extended period and it worked fine. The only difference being that the motor runs in the opposite direction, which doesn't affect the operation of the wipers. Therefore I personally would be happy to use this relay circuit with a positive earth supply but I would always advise that you should test run any electrical modifications off the car before installing them. (If you prefer, you can use an MGB special toggle switch to connect the motor and it is easier to wire up than the relay method, but I personally didn't like the look of it on the MGA dashboard. I can send a copy of the toggle switch wiring diagram to anyone who would like one)

## REFITTING THE MOTOR

Fit the assembled motor-relay assembly with flexy drive already attached. First grease the flexy drive and slide it into the drive tube, you will have to turn each of the wiper spindles to help the rack go past them. Leave all the motor mounting bolts fairly loose on the new mounting plate and mounting brackets until you have secured the big nut on the rack tube to the motor. You can adjust the height of the motor by adding or removing washers but the end of the rack tube will tolerate quite a lot of lateral movement. Finally tighten up all the loose mounting bolts to secure the motor.



## LEFT HAND DRIVE CARS

LHD cars have more specific problems of access for this conversion, the main difficulty being the lack of space between the master cylinder and the shroud to get the motor in and out.

Barney suggests taking out the clevis pins from the brake and clutch pedals and then fasten them down out of the way to make more space.

But Dominic Clancy says that this doesn't help too much, I believe that he had to assemble the motor assembly in situ as he couldn't get the motor on its plate through the small gap available. This meant first pushing the flexy drive rack into the tube before the motor was connected to it. Then you would have to remove the gear wheel cover, assemble the motor onto its new bracket in place and then lastly connect the drive rack to it and replace the cover once the motor was in the car. Not easy.

The other alternative would be to remove the master cylinder first which would make it so much easier, but that creates much more work. I would probably wait until the master cylinder needs some R&R before starting the job.

Dominic suggests that it would have been easier on a LHD car to install the motor at the other

end of the drive tube under the dashboard. Apparently this was first done by MG on the famous Le Mans class winning Le Mans race car, SRX 210 and then on the MGB to make access to the motor so much easier. So the idea does have some provenance. See article- "Wiper Motor Mounting made Easy ET-216"- on Mga Guru, there are some pictures showing how this has been done.

You will still have to fabricate a new larger motor mounting plate and some new brackets to fix this to the bulkhead but this is pretty straightforward. It also means that you will have to shorten the tube at the new motor position and have the shortened end of the tube flared by a brake pipe flaring tool so that the big nut locates on it. (Don't forget to put the nut onto the tube first) It may be possible to use the original left hand end of the tube, suitably shortened and straightened and move it to the right hand end, you will have to shorten the flexy rack so that it doesn't project out of the other end of the tube, an easy task with a hacksaw and file.

I think that on a LHD car, re-locating the new motor to the other end of the tube would probably be easier to do than fitting it into the original position.

(Don't forget to check the position of the parking switch trigger on the 90 degree gearwheel before you install the motor)

## CONCLUSION

So was it worth the effort? For me it most definitely was.

On our way back from our tour of Mont Blanc we were pressing on to reach Zeebrugge in time to catch the cross Channel ferry and it was raining really heavily. The 1<sup>st</sup> speed was just not quick enough to keep the screen clear for high speed driving on the motorway (Freeway), but the 2<sup>nd</sup> speed worked superbly and we could see well enough to cope with 70mph without a problem.

I have also noticed that the 1<sup>st</sup> speed is faster than my old single speed motor was although this may have been due in part to a lack of grease on the old wiper drive rack.

So if you only drive your car on the occasional dry day, then fitting a 2-speed motor is probably not worth the effort. But if, like me, you take the car out for more than a week at a time and there is the possibility of driving in heavy rain, then the 2-speed is the perfect solution.

If you need any more information about this conversion contact me on [colynfirth@msn.com](mailto:colynfirth@msn.com) and I will try my best to help.