

Geek_{of} The ROAD

AutoWin Installation and Use Instructions v1.1a

The AutoWin is designed for the mk2 Toyota MR2 as a driver convenience to intuitively operate both power windows as a matching pair. As standard this adds an automatic opening function to the passenger window; when combined with the well known Auto-Up mod, it provides an automatic closing function too.

Warnings Read Before Installation or Use

The AutoWin is sold for show, track and other off-road use. Its use on a public highway may not meet regulations in your location and it is the consumer's responsibility to check their installation and use of the product complies with any applicable laws.

DO NOT let the operation of this product distract you from safely driving your vehicle.

ALWAYS supervise the operation of this product, especially if children are present.

DO NOT hold a window switch in place for a prolonged period of time once the window has reached the end of its travel – this may damage both the motors and this product.

- *When an electric motor has voltage applied to it but is prevented from moving, the motor draws the highest current it can possibly draw, known as the stall current. If applied for a prolonged time, this current can overheat and damage the motor. This product is designed to withstand this peak current and is tested with equivalent currents for periods in excess of what would be reasonable when used in a car. However Geek of the Road accepts no responsibility for damage resulting from abuse in this manner.*
- *In the unlikely event a window switch malfunctions to permanently drive a window motor, the 30A POWER fuse located in the driver's footwell should immediately be removed to prevent further damage until the switchgear can be fixed or replaced.*

ALWAYS ensure your vehicle's windows are securely closed before leaving your vehicle.

INSTALLATION should be carried out by a qualified professional.

Note on 3D Printed Parts:

The case of this product is 3D printed, the process of which may result in minor aesthetic blemishes which will not affect the part's function. 3D printed parts are naturally stronger in some directions than others and the case is printed in multiple parts to take advantage of this. However, as with an injection moulded part, it can be broken by hand if deliberately abused.

Operation Guide

The AutoWin temporarily latches the passenger window's movement to the driver's window when you press both switches in the same direction. This means the passenger window will then continue moving in the desired direction after the switch is released, for as long as the driver's window is also moving.



The factory auto-down behaviour means the windows can be opened together, automatically. The auto-up mod extends this to allow simultaneous automated closure of both windows.

The AutoWin is designed to feel as intuitive and "OEM" as possible, within the restrictions of the Toyota switchgear, so when not deliberately activating the product your windows will work as normal.

labelling="Section-Header"> labelling="Section-Header">Cancelling Movement:

The passenger window can be uncoupled from the driver's window by briefly pressing the passenger switch on the driver's side controls in the opposite direction.

labelling="Section-Header"> labelling="Section-Header">Slow Passenger Window / Closure Assistance:

It is normal for the MR2's passenger window to travel up more slowly than the driver's window, but this may leave the passenger window slightly open, especially when the car's engine is not running.

To account for this a "closure assistance" function adds a brief, additional upwards movement, which may be desirable when used in conjunction with the auto-up mod. As this may result in unexpected behaviour on unmodified vehicles, closure assistance is disabled prior to shipping but can easily be reinstated.

The auto-up modification and closure assistance function introduce automated closing action to the vehicle's windows which may not meet local regulations. This closing movement also inherently introduces additional risk, however small, of loss or injury and therefore requires supervision when used. The optional instructions below should not be implied as any recommendation of their use in your specific circumstances or location.

By installing and using this product with the auto-up modification and/or closure assistance you acknowledge your responsibility to comply with local regulations and accept liability for any risks associated with the modified behaviour.

Installation Instructions

Geek of the Road Ltd accepts no liability for incidental damage caused by improper or careless application of these instructions.

Video guide and colour instructions available at www.geekoftheroad.co.uk.

Contents:

The AutoWin is shipped pre-assembled and consists of:

- Assembled printed circuit board in 3D printed box
- Wiring loom (RHD or LHD variant as specified) with closure assistance disabled
- Black and white printout of these installation and use instructions

Tools / Components Required:

- Interior pry tool or flathead screwdriver

Additional requirements for auto-up mod:

- Rectifier diode (eg. 1N4001)
- Soldering equipment
- Crosshead screwdriver
- Craft Knife
- Wire cutters

Additional requirements to reinstate closure assistance function:

- Wire cutters

Switch Module Removal:

1. Using a pry tool or flat head screwdriver, carefully pry upwards at the front of the driver's side window control then remove from door card.

Tip: At the best point the pry up from, controls are approx 1cm (3/8") thick.

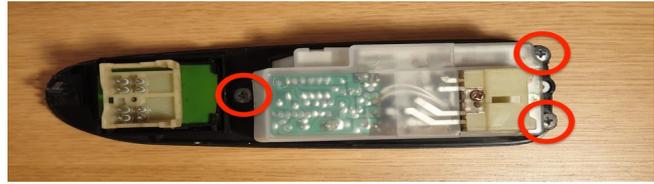
2. Disconnect the wiring plugs from the control unit. The forward plug is pulled down and only needs to be removed to implement the Auto-Up mod.



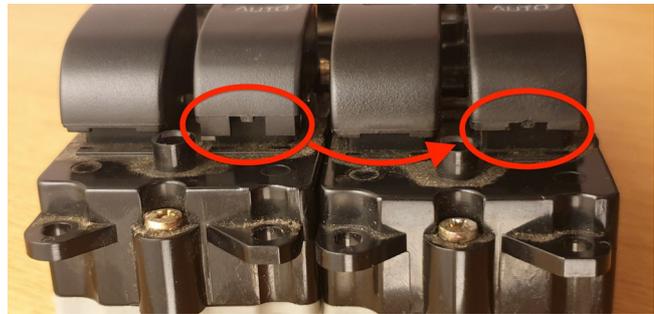
Optional Steps: Auto-Up Mod

The steps in this section are subject to the warnings on page 2.

3. On the underside of the controls, undo the three screws holding the switchgear to the faceplate.

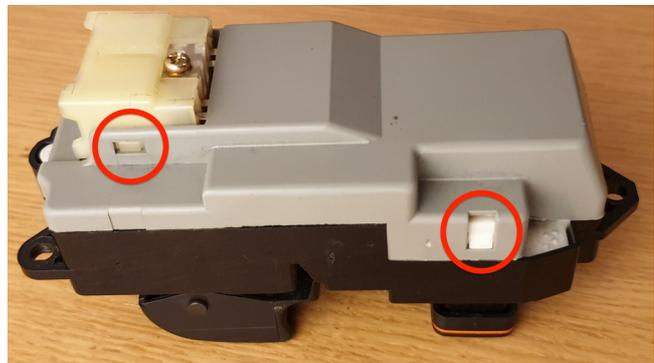


4. Using a utility knife, carefully trim the tab on the driver window's switch which prevents its full movement upwards. Remove ~1.5mm (1/16") to match the passenger window's switch. You should hear a click and feel a two stage operation when pulling the switch all the way up.



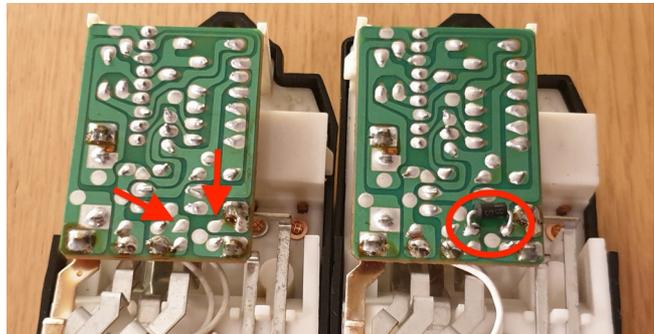
Before and after comparison of RHD modules shown.

5. Remove the plastic covering by gently levering the cover off the retaining four clips revealing an electronic circuit board underneath.



Toyota designed this circuit board to include a second diode which was not included in production. Reinstating this diode allows auto-up on the driver's window.

6. Locate the position of the missing diode (two solder pads each covering holes in the board) and solder a new rectifier diode here. Cut the leads to length and ensure they pass through the holes in the board.



Diodes are polarized (directional) so need to be placed in the correct orientation. The stripe on the diode should be towards the centre of the board - you can check the orientation as it will match the existing diode on the other side of the board.



Although placing the new diode on the correct side of the board is neater, this is hard to access. It is functionally identical to solder it on the board's underside, as shown here, provided clearance is left for the cover and care is taken not to create a short circuit.

RHD model shown. The circuit board in LHD cars appears to be an exact mirror image.

7. Refit the plastic cover and attach the switchgear to the faceplate.

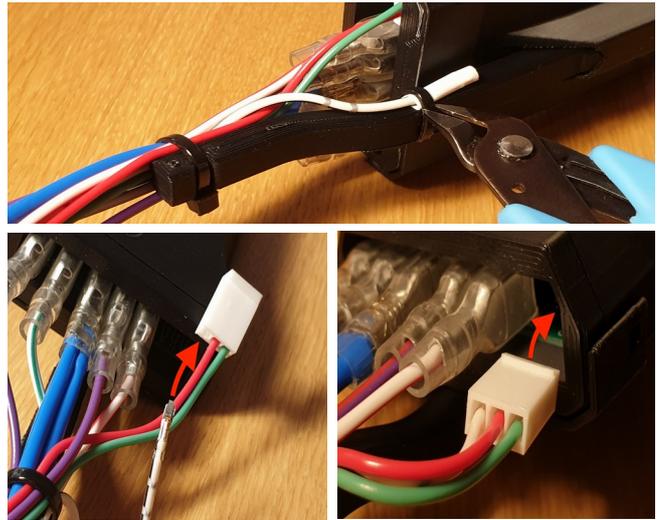
Warning: Do not to overtighten the screws as this will split the holes under the faceplate.

Tip: Temporarily plug in the module to test the auto-up mod before continuing.

Optional Steps: Reinstate Closure Assistance

The steps in this section are subject to the warnings on page 2.

8. Locate the thin, white wire that is disconnected at one end (on some looms this may have a black stripe) and cut the cable tie securing it.
9. Disconnect the small, white connector from the AutoWin circuit board.
10. Remove the insulation from the end of the wire to reveal a crimp terminal. Fit the crimp terminal into the vacant position on the connector.
Tip: If the terminal does not click securely into place, the small metal tab on the terminal may need to be very gently bent up.
11. Reattach the connector to the circuit board with a gentle click. Ensure the plug lines up correctly with all three pins, or damage may occur to the electronics.



Installation:

12. Slide the AutoWin box into the hole in front of the control module.
13. Connect the AutoWin to the window controls and door's wiring loom.
Tip: It is easiest to leave the plug for the mirror controls until last.
14. Slide the connected pair of plugs securely behind the door card so there's space for the control module.
15. Refit the window controls. Place the rear section into the door card first and then secure by pressing firmly down at the front with a click.

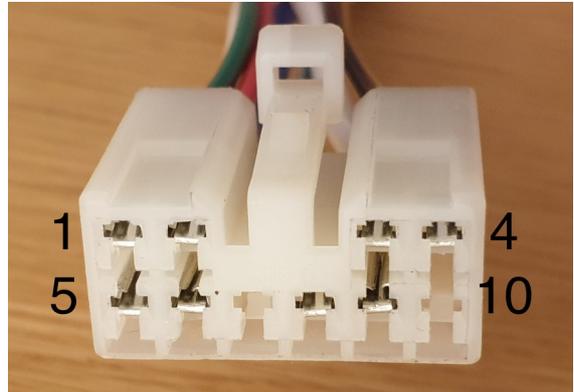


Additional Information

Loom Wiring:

The MR2 wiring is significantly different between right and left hand drive cars. If you need to move the unit to a car of the opposite configuration then the two plugs need to be completely re-pinned to the specification below:

AutoWin Loom	Function	RHD	LHD
Blue	12V Ignition	6	9
White (with Black)	Ground	9	6
Black	Door Locks	3	2
Black with Yellow		4	1
Red*	Driver Up	2	3
Green*	Driver Down	1	4
White with Red	Passenger Up (to Switch)	5	10
Purple with Red	Passenger Up (to Motor)		
White with Green	Passenger Down (to Switch)	8	7
Purple with Green	Passenger Down (to Motor)		



* Wiring colours are intended to broadly match looms found on RHD vehicles. LHD vehicles' wiring colours may not match on the driver's window.

Design and Test Information:

Every effort has been made to ensure the AutoWin is safe and fit for purpose.

Toyota used a 30A fuse to protect the power window circuits so each window can be assumed to consume at most 15A. This assumption is confirmed by measurements of the motors' stall current taken on a test vehicle. Where required the relays, PCB tracks and loom cables are designed to handle or rated at or above in excess of this. (Ratings specified by individual suppliers.)

Crimp connections are used whenever possible, as is often the preference in automotive applications, however a limited number of locations within the wiring loom use solder where crimping alone is not feasible. Strain relief is provided on the main box due to the absence of an accessible mounting location behind the door card.

Each assembled AutoWin is tested by an automated system prior to shipping. Nineteen functional tests are carried out, ensuring the wiring loom is correctly assembled and the circuit board is working as expected, including the cancellation and closure assistance functions. The closure assistance function is disabled after testing.

An additional four load tests prove the AutoWin's construction, subjecting the unit to conditions replicating motor stall on both windows simultaneously. These tests execute consecutively, covering all four possible combinations of up and down. The net result is a significant period of time operating at peak current well in excess of what can reasonably be expected in normal use.

Intellectual Property

The design of the AutoWin, including the PCB layout and functional electronic schematic, is copyright of Geek of the Road Ltd. 2020, all rights reserved.