KEYLESS ENTRY

ADDING AN AFTER MARKET KEYLESS ENTRY TO THE 3000gt

By Tom Heany

I thought it might be fun to implement a remote entry system on my 1991 3000gt VR4. I bought this car in the winter of 1992 and I very fond of it. Yep, there are a few things I don't like; the TD04-9b, the lack of keyless entry, the popups, but it's the longest serious relationship I've ever had with a woman. Oops, I mean car.

None of the 91s and very few of the first Gens had remote openers. When I had the interior out of the car to install a backup camera. I discovered it didn't even have a wiring harness that supports a keyless entry. I decided the Keyless entry was a pretty easy modification. Being an engineer, I do drawings and notes for every mod I make to the car. This is my attempt at a do it yourself article based on my drawings and notes. The skills necessary are basic and the cost are very low. I spent less then $10.00.

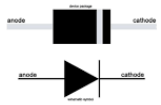
While this article is aimed at the 1st Gens, it is easily adaptable to most of the 3000gt/Stealth's. Especially if you don't have the factory anti-theft / alarm system (ETACS).

In the past few years there has been a flood of cheap electronics coming out of China. The low cost of these is nothing but amazing. The EBAY vendor I bought the remote receiver from included two keychain remotes for a total cost of $7.88. The wireless receiver comes complete and the key fobs are pre-programed to the wireless

The wireless receiver is connected to the car at two points: the Door Lock Relay and the ETACS control unit. I also took the 12 volt DC power from the Door Lock Relay, mostly because I wanted the whole system on the same fuse. The Door Lock Relay is where we connect to lock and unlock the door. The ETACs unit is the security unit for the car. We make two connections here, one to disable the alarm and one to set it off (to help find the car in the parking lot). Because the second button disables the alarm and opens the door, I included a diode on the ETACS connection to avoid feedback. Needless to say, if you don't have the factory alarm, don't do the connections to the ETACS.

Materials:

- 1N4001 ¼ Watt diode. I bought a bunch of these at Radio shack in the '70s. Just about any ¼ Watt diode will work.



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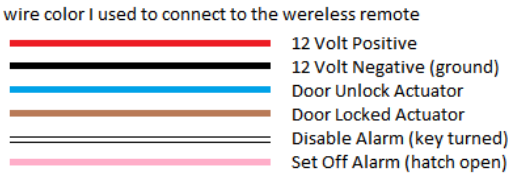
- A dozen or so vampire taps. Personally I soldered and used heat shrink on everything but I'm Retired and have time.

- Six different colors of wire, about three feet each There isn't much current here, so 20 gauge or larger will be fine. I included the colors I used in the wiring diagrams to make things clearer.



Steps:

1. Remove the "Working Mode Selection" jumper from the wireless receiver
2. Remove the driver's side Lower Dash Panel.
3. Locate the interior relay box under the dash and unscrew it from the mount. The left screw can be reached with a 14" phillips screw driver from the side of the dash panel.
4. Make the 4 connections to the relay harness described below.
5. Wire all of the 'B' ports to the negative 12V input.
   If your car has the theft alarm systems installed then complete the next two steps.
6. Remove the top connector form the ETACS unit. Pull in backward and down to expose the wiring
7. Make the 2 connections to the ETACS connector.

Re-assemble in reverse order

12V 4CH Channel 315Mhz Wireless Remote Control Switch

From EBAY

Instructions to add more remotes:

1. Press and release the learning code button. Press any button on the remote. The blue LED will flash twice. The wireless receiver can remember up to 12 remotes.
2. To clear the wireless receivers memory, press and hold the learning code button for 8 seconds.

Configuration:

For the purpose of this project. Take off the jumper labeled “Working Mode Selection”

*There are lots of folks that sell these on eBay and Amazon If you type in the description several will pop up. The eBay vendor I used was “Ynaan”

Key Fob Functions

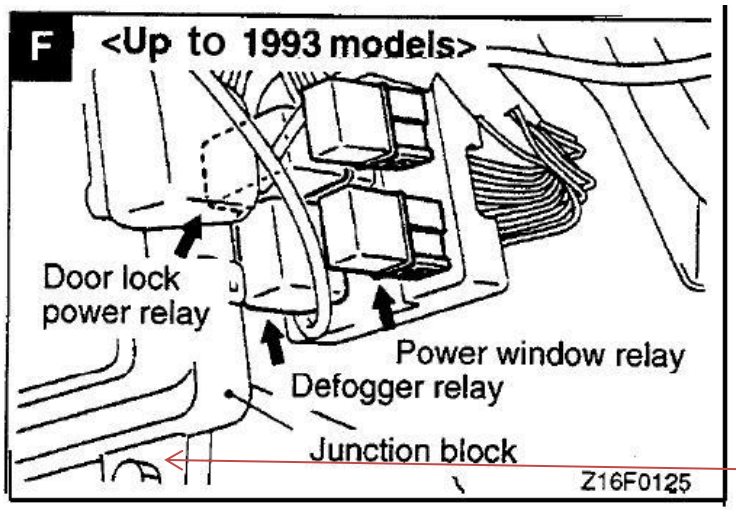
Remove the driver-side lower dash

Remove the two phillips screws in the hood lock release handle. Slide the handle and its bracket to you (toward the back of the car) to slide the mounting tab out of its slot. Take the release cable off the handle. Pry under the edge of the rheostat garnish using a thin, wide, strong-yet-flexible tool. You can use a professional trim removal tool or make one yourself. Slotted screwdrivers are typically too thick to easily slide under the edge of the garnish. Pull the rheostat assembly out a little and disconnect the rheostat connector first. Then disconnect the remote mirror switch connector. Pry under the edge of switch garnish B and then pull the assembly out a little. Disconnect the electrical connectors. Remove the two brass 10-mm bolts that are at the lower two corners of the knee protector. Remove the two black 10-mm bolts that are accessed from the opening where the two switch assemblies were. Pull the knee protector panel off.

1. Remove the bolts behind them.

2. Remove the 2 bolts near the floor on the knee panel.

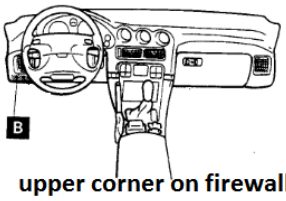
Remove the 2 screws holding the “Interior Relay Box” to the firewall



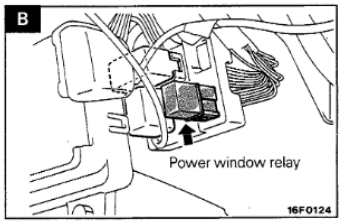
The left screw can be reached with a 14” phillips screw driver from the side of the dash panel. The right hand screw can be reached at an angle from beneath the dash.

When you have the Interior Relay Box loose, work it over toward the center of the foot well where you can reach the wires.

It might help to take the bottom nut off the bottom of the fuse box.



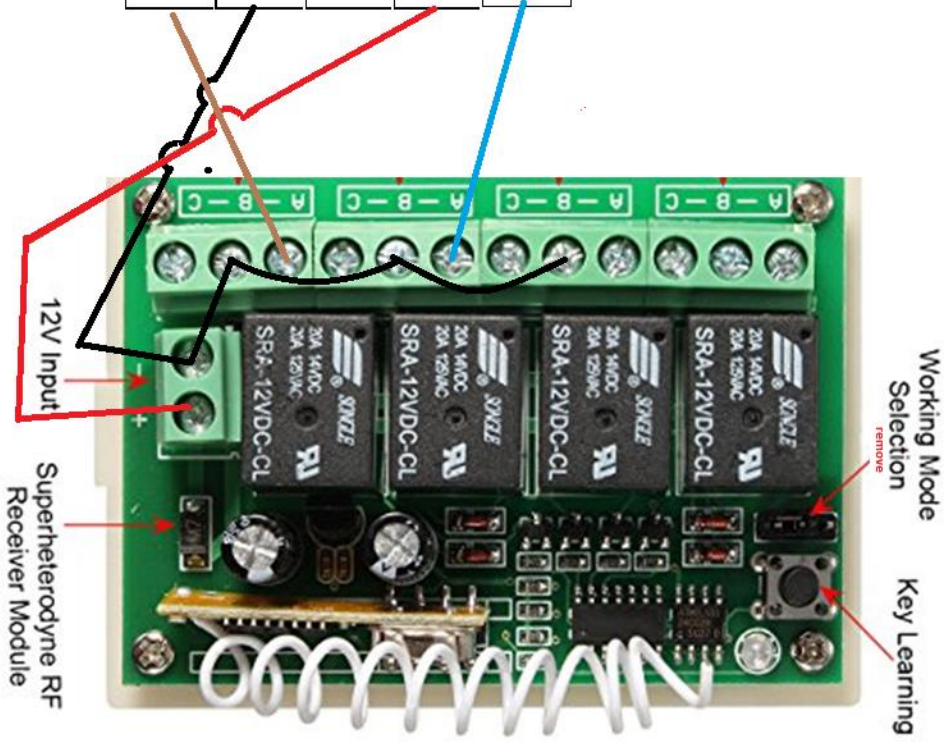
upper corner on firewall



DOOR LOCK RELAY CONNECTIONS

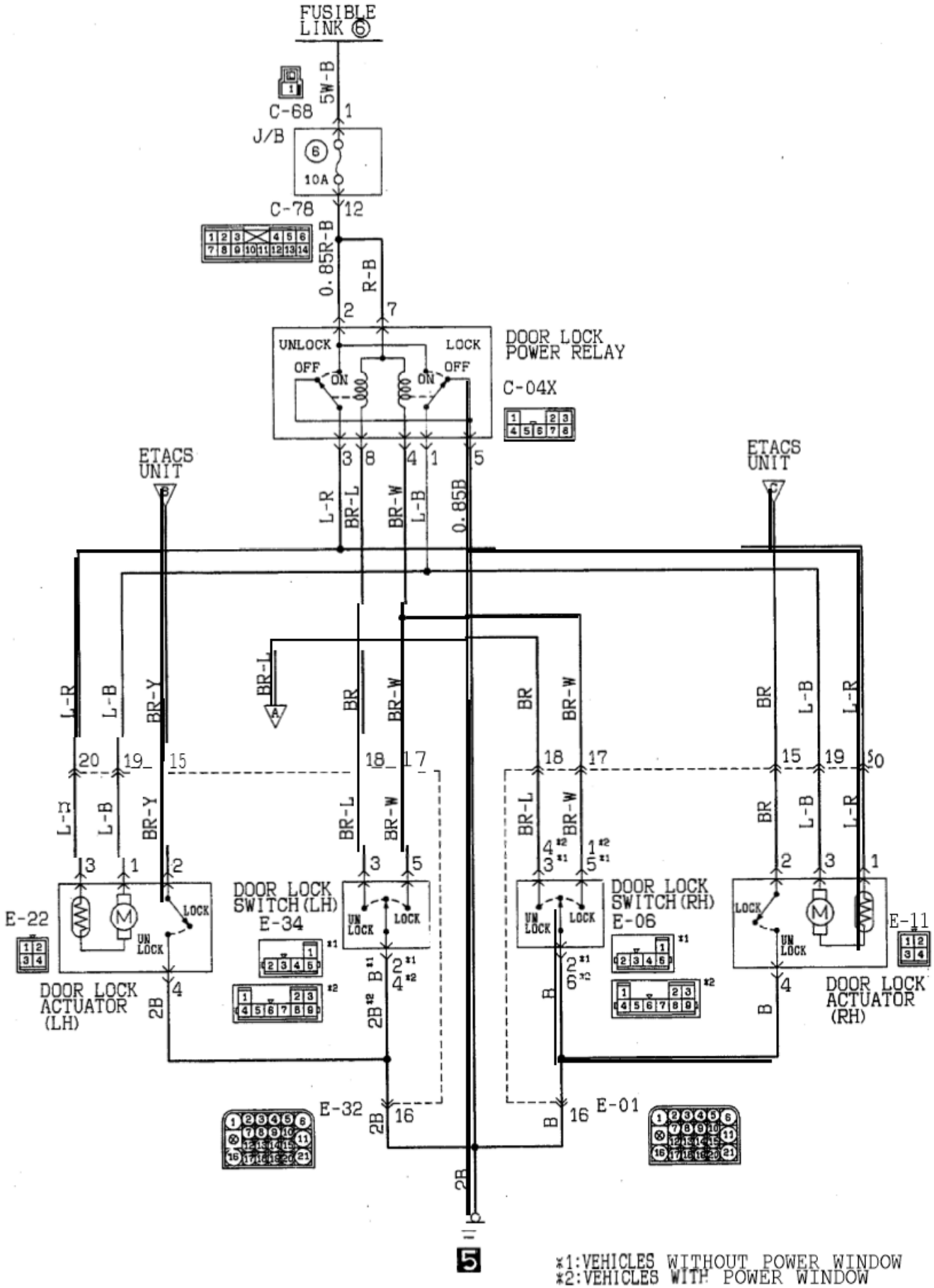
C-04X

1 blue black			2 red black 12V+	3 blue red
4 brown white door lock	5 black 12V- (ground)	6	7 red black 12V+	8 Brown blue door unlock



- Red wire from 12V supply on pins 2 or 7 to 12V positive input in the wireless receiver.
- Brown wire from pin 4 to door lock function on first ‘A’ terminal
- Blue wire on pin 8 to door unlock function on second ‘A’ terminal. The second ‘A’ terminal will also be connected to the White wire coming from the ETACS to disarm the alarm.
- The Black wire from pin 5 is connected to the negative 12V input and jumpered the first three ‘B’ terminals
- *If you don’t have a security system, then you are done. Reassemble the car.*

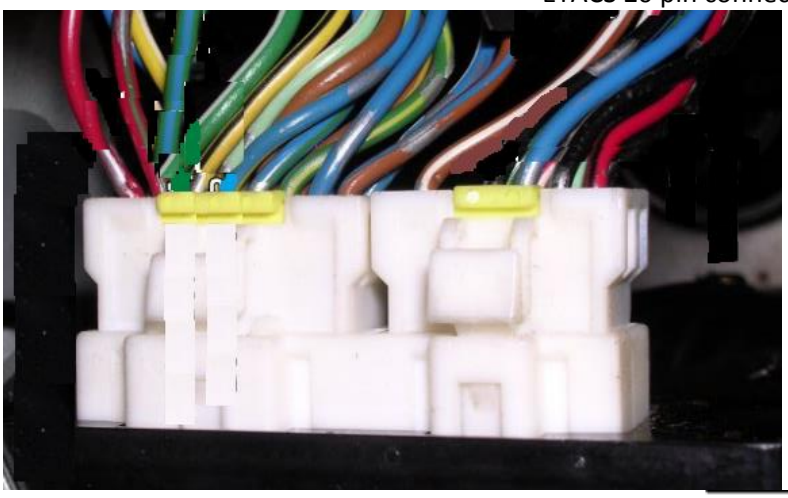
CENTRAL DOOR LOCKING CIRCUIT

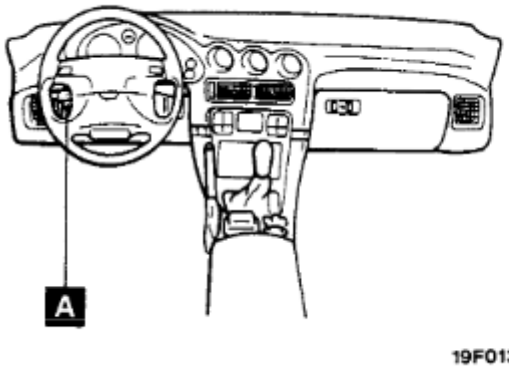


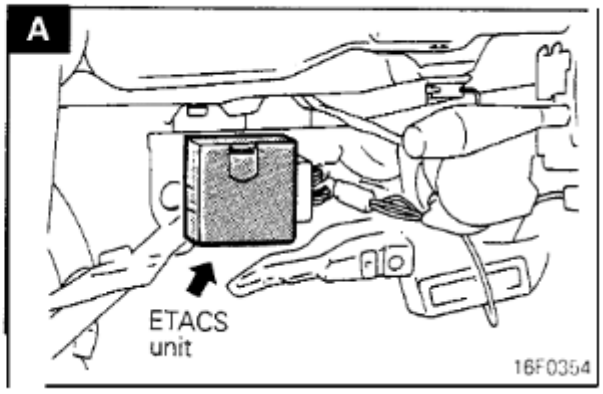
The Security Alarm Systems “ETACS”

1 Light green-black	2 Red-yellow Headlight activation	3 brown-blue Power lock	4	5 gray-yellow defogger	6 black	7 Black-white	8 Yellow black	9 Red-gray Driving lights	10 Red-green Door open
11 Blue-black	12 Blue-red defogger	13 Brown-yellow LH door state (locked)	14 Brown RH door state (locked)	15 Light green	16	17 Blue-white trunk state remote’s pink wire	18 Blue-black Hood state	191 Light green Door key rotation	20 Blue-red trunk key rotation remote’s white wire

ETACS 20 pin connector (C-65)







If you don’t have a security system skip the whole ETACS connection (steps 6 & 7).

When opening the door with the remote you must first disable the alarm. The ETACS unit is the security alarm for the 3000GT. It is located behind the drives side lower dash panel. The ETACS unit has two connectors on the side. The upper one is a 20 pin connector C-65.

We use two lines on the C-65 connector. The pin 17 is the hatch open. Pin 17 is grounded to make the alarm go off, if the alarm is set. Pin 20 detects the key tuning in the hatch lock. We bring this to ground to disable the alarm (if set).

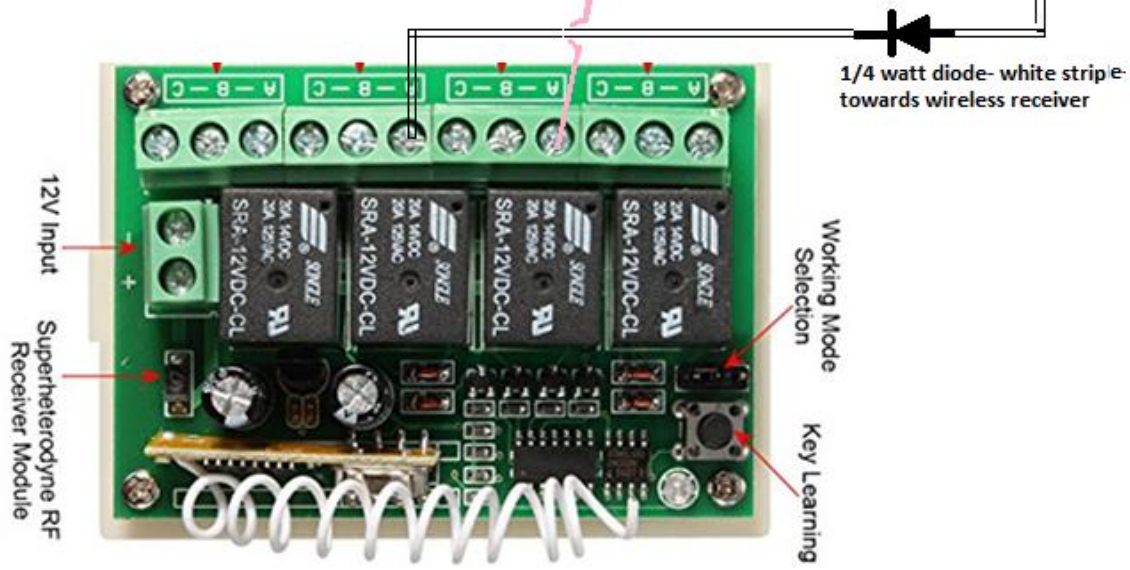
Pin 20 and the unlock function from the lock relay are tied together so the alarm goes off when the entry system opens the door. Because the open and disarm lines are tied together, to keep the signals separate they are separated by a diode.

Diagram showing the connection of the ETACS to the wireless controller.

ETACS connection too wireless receiver

1·Light·green-black¶ ¤	2¶ Red-yellow¶ ¶ Headlight¶ activation¤	3¶ brown-blue¶ ¶ Power·lock¤	4¤	5¶ gray-yellow¶ ¶ defogger¤	6¶ black¤	7¶ Black-white¤	8¶ Yellow·black¤	9¶ Red-gray¶ ¶ Driving·lights¤	10·¶ Red-green¶ ¶ Door·open¶ ¤
11¶ Blue-black¤	12¶ Blue-red¶ ¶ defogger¤	13¶ Brown-yellow¶ ¶ LH·door·state·(locked)¤	14¶ Brown¶ ¶ RH·door·state·(locked)¤	15¶ Light·green¤	16¶ ¤	17¶ Blue-white¶ ¶ trunk·state¶ ¶ remote's¶ pink·wire¤	18¶ Blue-black¶ ¶ Hood·state¤	191·¶ Light·green¶ ¶ Door·key·rotation¤	20¶ Blue-red¶ ¶ trunk·key·rotation¶ ¶ remote's¶ white·wire·¤

ETACS·20·pin·connector·(C-65)¶

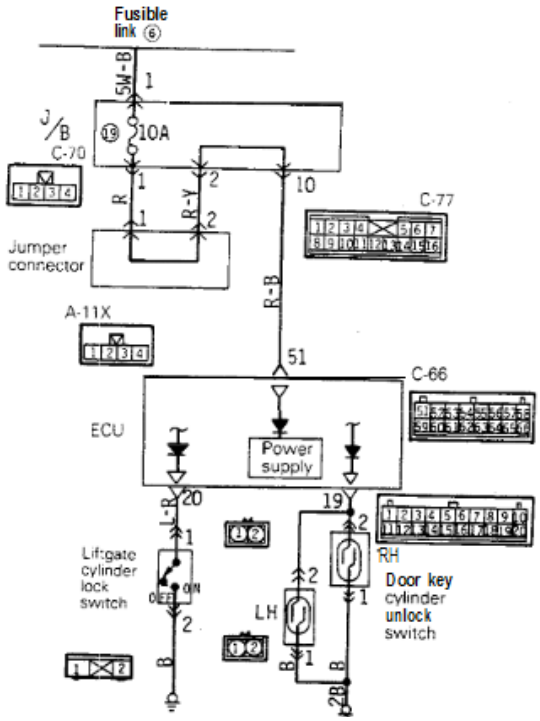


The blue white wire on pin 17 of the ETACS connector is connected the third 'A' terminal on the wireless remote. This enables you to set off the alarm if the alarm is set.

The Blue red wire on pin 20 of the ETACS connect is connected with white wire containing a diode to the second 'A' terminal on the wireless receiver. It shares this connection with the door unlock function (the blue wire rom the relay).

On this diagram the ETACS unit is referred too as the "ECU"

6. DOOR KEY CYLINDER UNLOCK AND LIFTGATE CYLINDER LOCK SWITCH INPUT CIRCUIT



Description of operation

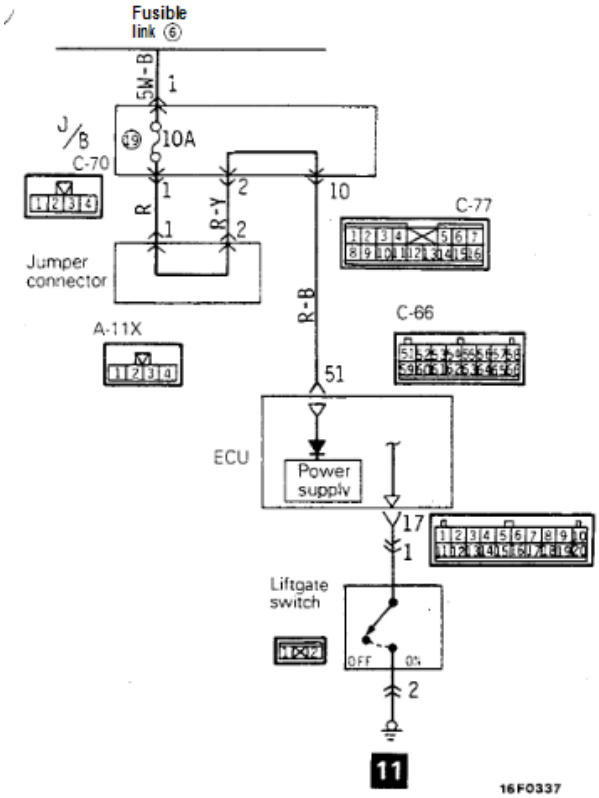
When the door key is rotated or the liftgate key is unlocked, LOW-level signals are sent to the ECU.

ECU terminal voltage (Connection condition of the ECU connector).

ECU terminal No	Signal	Condition		Terminal voltage
19	Door key cylinder unlock switch	Door key cylinder (LH)	Not rotate	5V
			Rotate	0V
		Door key cylinder (RH)	Not rotate	5V
			Rotate	0V
20	Liftgate unlock switch	Liftgate	Lock	5V
			Unlock	0V

Checking the door key cylinder and liftgate unlock switch circuit (Disconnect the connector of the ECU and check at the wiring harness side.)

7. LIFTGATE SWITCH INPUT CIRCUIT



Description of operation

When the liftgate is closed (the liftgate switch is switched OFF), HIGH-level signals are sent to the ECU.
When the liftgate is opened (the liftgate switch is switched ON), LOW-level signals are sent to the ECU.

ECU terminal voltage (Connection condition of the ECU connector).

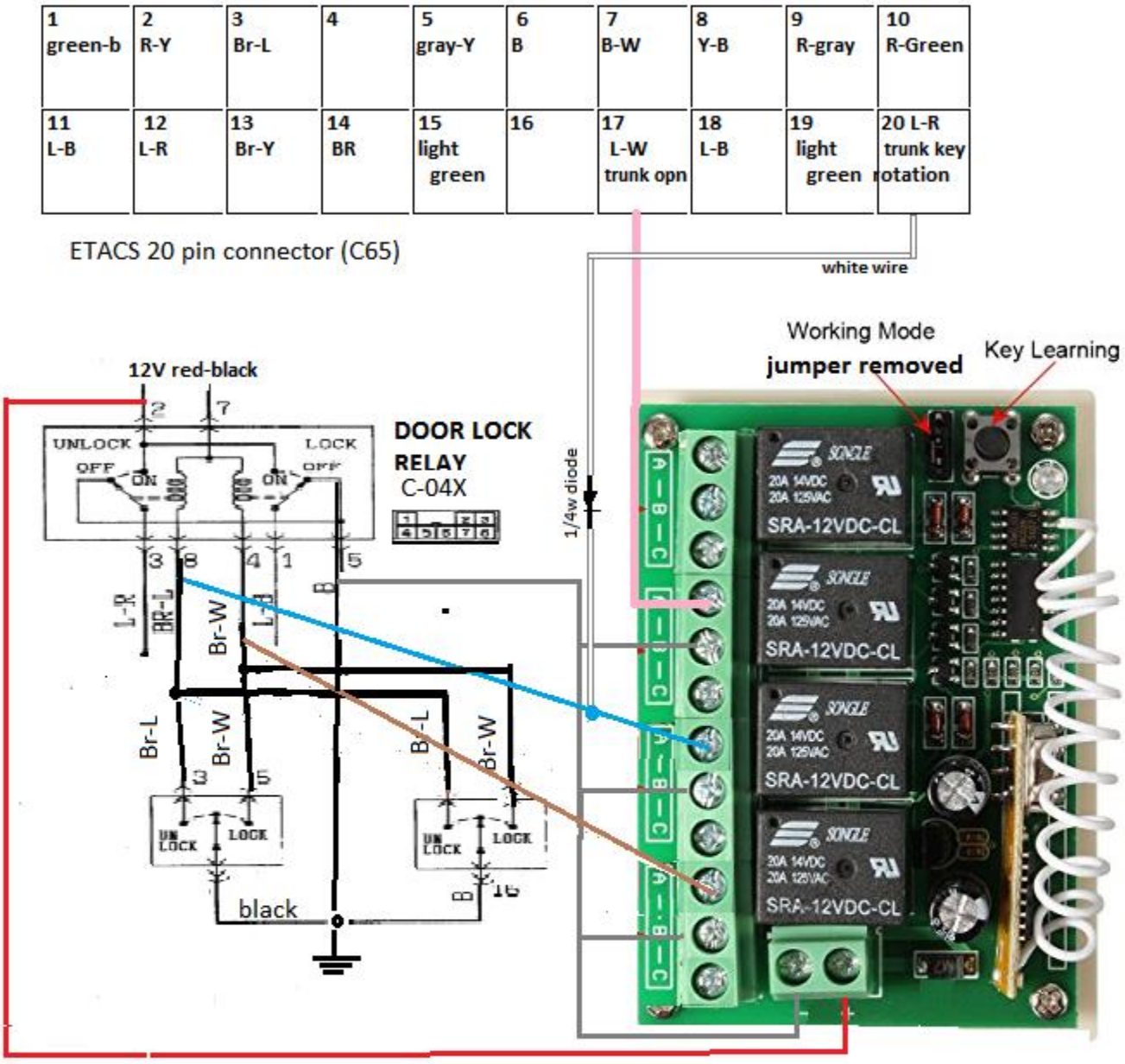
ECU terminal No.	Signal	Condition		Terminal voltage
17	Liftgate switch	Liftgate	Open	0V
			Closed	5V*

* Measurement is not possible by using a voltmeter, but is possible by using an oscilloscope.

Checking the liftgate switch circuit (Disconnect the connector of the ECU and Check at the wiring harness side.)

ECU terminal No.	Connected to/measured part	Measurement	Tester connection	Check conditions		Standard
17	Liftgate switch	Resistance	17 - ground	Liftgate	Closed	No continuity
					Open	Continuity

Combined wiring Diagram showing all connections to the ETACS and the Door Lock Relay



connections to receiver box

...Pin 2 or 7 on door lock relay to + on receiver
...Pin 5 on door lock relay to - and each of the 'B' terminals on the receiver. (black wire)
...Pin 4 on door lock relay to 1st A terminal "lock function" (brown wire)
...Pin 8 on door lock relay(blue wire) and pin 20 on ETACS unit (white wire) to 2nd A terminal (unlock)
...Pin 17 on ETACS unit (pink Wire to 3rd A terminal (sound alarm)

The unlock function unlocks the door using pin 8 on the door relay and disables the alarm with pin 20 on the ETACS unit. To keep the 12V from the door relay from flowing back into the ETACS unit a 1/4 watt diode is placed in the white line. Make sure the line on the diode is toward the receiver board.

References and thanks too:
Mitsubishi Motors Corporation 3000GT Service Manual
Dave Black's 3000GT/Stealth Resource
Jeff Lucius – Stealth 316