

DOOR LOCKS - POWER & KEYLESS ENTRY

1998 Mitsubishi Montero

1998 ACCESSORIES & EQUIPMENT
Mitsubishi - Keyless Entry & Power Door Locks
Montero & 3000GT

DESCRIPTION & OPERATION

On 3000GT, power door locks are controlled by driver or passenger switches which send signals to Electronic Timer Alarm Control System (ETACS) ECU. ETACS-ECU sends appropriate signals to individual door lock actuators through individual relays.

The following features are incorporated in power door lock systems that have an ETACS-ECU:

- * Once locked door is closed, system will unlock door if key remains in ignition switch.
- * Continuous switching between lock and unlock of door will disable system for about one minute.

On Montero, power door lock actuator receives signal from individual control relay that is operated by a switch incorporated in actuator. On all models, all door locks are actuated with operation of one lock.

Montero and 3000GT offer optional keyless entry system. Use of a 2-button portable remote control operates door locks within a range of 13 ft. (4 m). Dome light flashes twice when doors are locked and illuminates for 3 seconds when doors are unlocked. If, after 30 seconds, door(s) have not been opened when unlocked with keyless entry system, doors will relock.

COMPONENT LOCATIONS

COMPONENT LOCATIONS TABLE

Component	Location
ETACS-ECU	
3000GT	Behind Left Side Of Dash
Data Link Connector (DLC)	Under Left Side Of Dash, Below Steering Column
Door Lock Actuator	Inside Each Door
Door Lock Relay	
Montero	Behind Left Side Of Dash
3000GT	
No. 1	Under Left Side Of Dash
No. 2	Behind Left Rear Quarter Panel
Power Door Lock Control Unit	
Montero	
W/O RKE	Behind Left Side Of Dash, Behind Speaker
Receiver	
3000GT	Behind Right Rear Quarter Panel
Remote Keyless Entry (RKE)	
Control Unit	
Montero	Behind Right Rear Quarter Panel
3000GT	Behind Left Rear Quarter Panel

TRANSMITTER PROGRAMMING

NOTE: Transmitter programming should be performed only after verifying that door lock operates normally using key.

NOTE: Ensure ignition is off when connecting or disconnecting scan tool.

Using Scan Tool (Montero & 3000GT)

1) Connect scan tool to DLC. Close all doors. Turn ignition switch to ACC position, then to OFF position. Press desired transmitter switches (secret code), then press twice within 10 seconds to register code.

2) Lock and unlock door once. If there are 2 transmitters, program the first, then the second transmitter using the same procedure within one minute. After completing the second programming, lock and unlock door once.

3) Programming mode is finalized when programming of second transmitter secret code is complete, one minute after setting secret code, when scan tool is disconnected, when ignition is turned on or when any door is opened.

Without Scan Tool (Montero)

1) Move code registration switch on RKE control unit to SET I position. Press the LOCK or UNLOCK button on transmitter. Move code registration switch on control unit to FIX position.

2) Confirm that keyless entry system operates normally. If system does not operate normally, repeat step 1). If 2 transmitters are used, register code on SET II position on RKE control unit and set in same manner as the first transmitter.

TROUBLE SHOOTING

POWER DOOR LOCK INOPERATIVE

Operate door lock(s) with ignition switch in OFF position. If door lock(s) do not operate, check for following possible causes:

- * Burned fuse, circuit breaker or fusible link caused by short to body ground.
- * Wire connector, or pin inside connector, disengaged at any connector or component in system.
- * Defective ETACS-ECU (if equipped).
- * Defective door lock switch, relay or actuator.
- * Subfreezing weather conditions, mechanical failure, or corroded or misaligned assemblies.

KEY REMINDER SYSTEM INOPERATIVE (ETACS-ECU CONTROLLED SYSTEM)

With key inserted in ignition switch, lock driver's or passenger's door and close door. If door locks do not unlock, check for following possible causes:

- * Defective key reminder switch or no input signal to ETACS-ECU.
- * Defective front door switch or no input signal to ETACS-ECU.
- * Defective vehicle speed sensor or no input signal to ETACS-ECU.

INPUT SIGNAL

Scan Tool Method (3000GT)

Turn ignition off. Connect scan tool to DLC. Follow scan tool manufacturer's instructions. Turn ignition on. Perform ON/OFF operation of each door lock or power window switch. If scan tool buzzer sounds once, ECU input signal to corresponding switch circuit is normal.

Voltmeter Method (3000GT)

Using Diagnostic Trouble Code Check Harness (MB991529), connect harness to DLC terminals No. 4 and 5. Connect voltmeter to harness. Turn ignition on. Perform ON/OFF operation of each door lock or power window switch. If voltmeter pointer moves once, ECU input signal from corresponding switch circuit is normal.

COMPONENT TESTS

* PLEASE READ THIS FIRST *

NOTE: If after all testing procedures are completed, system is not functioning properly, substitute with a known-good ETACS-ECU and retest.

DOOR LOCK ACTUATOR

Left Front Door (Montero & 3000GT)

1) Access left front door lock actuator. See DOOR LOCK ACTUATOR R & I under REMOVAL & INSTALLATION. Disconnect harness connector. Set actuator in LOCK position. Connect positive lead of 12-volt power source to actuator terminal No. 1 (Blue/Red wire) on Montero or terminal No. 3 (Blue/Red wire) on 3000GT. See WIRING DIAGRAMS. Actuator should move to UNLOCK position when terminal No. 3 (White/Black wire) on Montero or terminal No. 1 (Blue/Black wire) on 3000GT is connected to ground.

2) With actuator set in UNLOCK position, connect positive lead of 12-volt power source to actuator terminal No. 3 (White/Black wire) on Montero or terminal No. 1 (Blue/Black wire) on 3000GT. See WIRING DIAGRAMS. Actuator should move to LOCK position when terminal No. 1 (Blue/Red wire) on Montero or terminal No. 3 (Blue/Red wire) on 3000GT is connected to ground.

3) On 3000GT, check for continuity between actuator terminals No. 2 (Brown/Yellow wire) and No. 4 (Black wire). See WIRING DIAGRAMS. Continuity should be present with actuator set in UNLOCK position. Continuity should not be present with actuator set to LOCK position.

Right Front Door (Montero & 3000GT)

1) Access right front door lock actuator. See DOOR LOCK ACTUATOR R & I under REMOVAL & INSTALLATION. Disconnect harness connector. Set actuator in LOCK position. Connect positive lead of 12-volt power source to actuator terminal No. 3 (Blue/Red wire) on Montero or terminal No. 1 (Blue/Red wire) on 3000GT. See WIRING DIAGRAMS. Actuator should move to UNLOCK position when terminal No. 1 (White/Black wire) on Montero or terminal No. 3 (Blue/Black wire) on 3000GT is connected to ground.

2) With actuator set in UNLOCK position, connect positive lead of 12-volt power source to actuator terminal No. 1 (White/Black wire) on Montero or terminal No. 3 (Blue/Black wire) on 3000GT. See WIRING DIAGRAMS. Actuator should move to LOCK position when terminal No. 3 (Blue/Red wire) on Montero or terminal No. 1 (Blue/Red wire) on 3000GT is connected to ground.

3) On 3000GT, check for continuity between actuator terminals No. 2 (Brown wire) and No. 4 (Black wire). See WIRING DIAGRAMS. Continuity should be present with actuator set in UNLOCK position.

Continuity should not be present with actuator set to LOCK position.

Left Rear Door (Montero)

1) Access and disconnect harness from left rear door lock actuator. See DOOR LOCK ACTUATOR R & I under REMOVAL & INSTALLATION. Set actuator in LOCK position. Connect positive lead of 12-volt power source to actuator terminal No. 3 (Blue/Red wire). See WIRING DIAGRAMS. Actuator should move to UNLOCK position when terminal No. 1 (Blue/Black wire) is connected to ground.

2) With actuator set in UNLOCK position, connect positive lead of 12-volt power source to actuator terminal No. 1 (Blue/Black wire). See WIRING DIAGRAMS. Actuator should move to LOCK position when terminal No. 3 (Blue/Red wire) is connected to ground.

Right Rear Door (Montero)

1) Access and disconnect harness from right rear door lock actuator. See DOOR LOCK ACTUATOR R & I under REMOVAL & INSTALLATION. Set actuator in LOCK position. Connect positive lead of 12-volt power source to actuator terminal No. 1 (Blue/Black wire). See WIRING DIAGRAMS. Actuator should move to UNLOCK position when terminal No. 3 (Blue/Red wire) is connected to ground.

2) With actuator set in UNLOCK position, connect positive lead of 12-volt power source to actuator terminal No. 3 (Blue/Red wire). See WIRING DIAGRAMS. Actuator should move to LOCK position when terminal No. 1 (Blue/Black wire) is connected to ground.

DOOR LOCK POWER RELAY

1) Remove door lock relay. See COMPONENT LOCATIONS. Check for continuity between relay terminals No. 1, 3 and 5, and terminals No. 4, 7 and 8. See RELAY TERMINAL IDENTIFICATION table. Continuity should be present.

2) Apply positive battery voltage to relay terminal No. 7 and ground to terminals No. 4 and 8. Check for continuity between relay terminals No. 1 and 2, and terminals No. 2 and 3. See RELAY TERMINAL IDENTIFICATION table. Continuity should be present. Replace relay if continuity is not as specified.

RELAY TERMINAL IDENTIFICATION TABLE

Application & Terminal No.	Harness Wire Color
Montero	
1	Blue/Green
2	Red/White
3	Blue/Orange
4	Black/Red
5	Black
7	Red/Black
8	Black/Yellow
3000GT (Relays No. 1 & 2)	
1	Blue/Black
2	Red/Black
3	Blue/Red
4	Brown/White
5	Black
7	Red/Black
8	Brown/Blue (No. 1) Or Yellow/Black (No. 2)

DOOR LOCK CYLINDER SWITCH

Montero

1) Disconnect door lock cylinder switch connector. Set door lock switch in UNLOCK position. Continuity should be present between switch terminals No. 1 (Black/Blue wire) and No. 2 (Black wire).

2) Set door lock switch in LOCK position. Continuity should be present between switch terminals No. 2 (Black wire) and No. 3 (Black/Red wire). Continuity should not be present in any of the terminals with switch in OFF position.

3000GT (Left Side)

1) Disconnect door lock cylinder switch connector. Set door lock switch in LOCK position. Continuity should be present between switch terminals No. 2 (Black wire) and No. 3 (Light Green/White wire).

2) Set door lock switch in UNLOCK position. Continuity should be present between switch terminals No. 1 (Green/Blue wire) and No. 2 (Black wire). Continuity should not be present in any of the terminals with switch in OFF position.

3000GT (Right Side)

1) Disconnect door lock cylinder switch connector. Set door lock switch in LOCK position. Continuity should be present between switch terminals No. 1 (Green/White wire) and No. 2 (Black wire).

2) Set door lock switch in UNLOCK position. Continuity should be present between switch terminals No. 2 (Black wire) and No. 3 (Green/White wire). Continuity should not be present in any of the terminals with switch in OFF position.

DOOR LOCK SWITCH

Main Switch (Montero)

1) Remove door lock switch from door. Set door switch in LOCK position. Continuity should be present between switch terminals No. 5 and 12. See Fig. 1.

2) Set door lock switch in UNLOCK position. Continuity should be present between switch terminals No. 10 and 12.

3) Set door lock switch in OFF position. Continuity should not be present in any terminals. Replace main door lock switch if continuity is not as specified.

Main Switch (3000GT W/Power Window)

1) Disconnect door lock switch connector. Set door lock switch in LOCK position. Continuity should be present between switch terminals No. 6 and 7. See Fig. 3.

2) Set door lock switch in UNLOCK position. Continuity should be present between switch terminals No. 5 and 6. Continuity should not be present in any of the terminals with switch in OFF position.

Main Switch (3000GT W/O Power Window)

1) Disconnect door lock switch connector. Set door lock switch in LOCK position. Continuity should be present between switch terminals No. 2 and 3. See Fig. 5.

2) Set door lock switch in UNLOCK position. Continuity should be present between switch terminals No. 2 and 5. Continuity should not be present in any of the terminals with switch in OFF position.

Sub-Switch (Montero)

1) Remove switch from door. Set door switch in LOCK position. Continuity should be present between switch terminals No. 1 and 2. See Fig. 2.

2) Set door lock switch in UNLOCK position. Continuity should be present between switch terminals No. 2 and 3.

3) Set door lock switch in OFF position. Continuity should

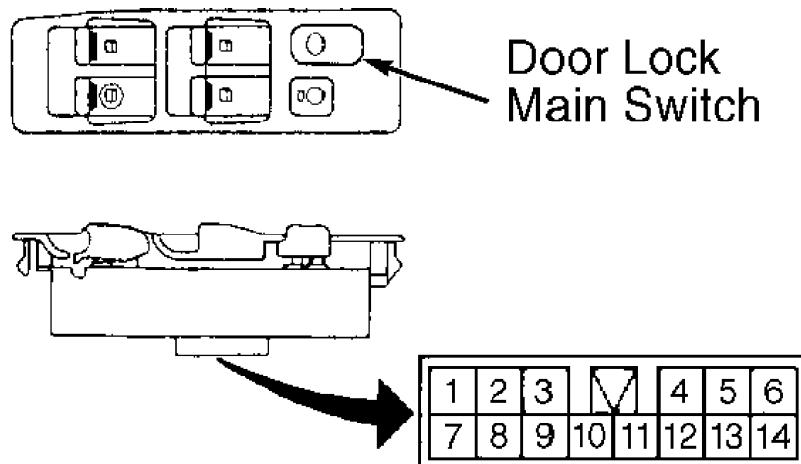
not be present in any terminals. Replace door lock switch if continuity is not as specified.

Sub-Switch (3000GT W/Power Window)

1) Remove switch from door. Set door switch in LOCK position. Continuity should be present between switch terminals No. 4 and 6. See Fig. 4.

2) Set door lock switch in UNLOCK position. Continuity should be present between switch terminals No. 1 and 6.

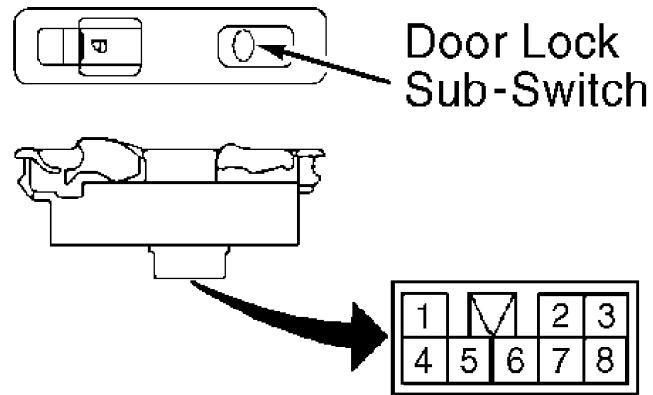
3) Set door lock switch in OFF position. Continuity should not be present in any of the terminals. Replace door lock switch if continuity is not as specified.



Terminal	Switch Position		
	LOCK	OFF	UNLOCK
5			
10			
12			

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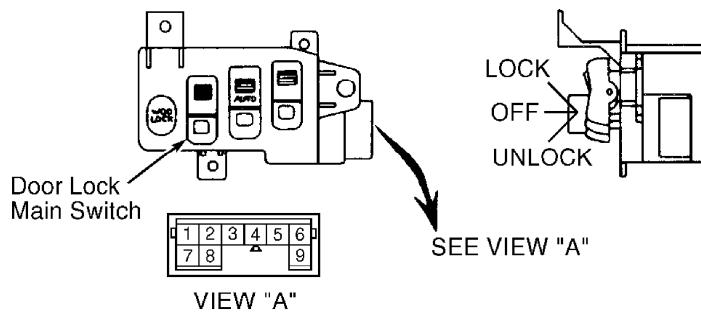
Fig. 1: Inspecting Door Lock Main Switch (Montero)
Courtesy Of Mitsubishi Motor Sales Of America



Terminal	Switch Position		
	LOCK	OFF	UNLOCK
1	○		
2	○		○
3			○

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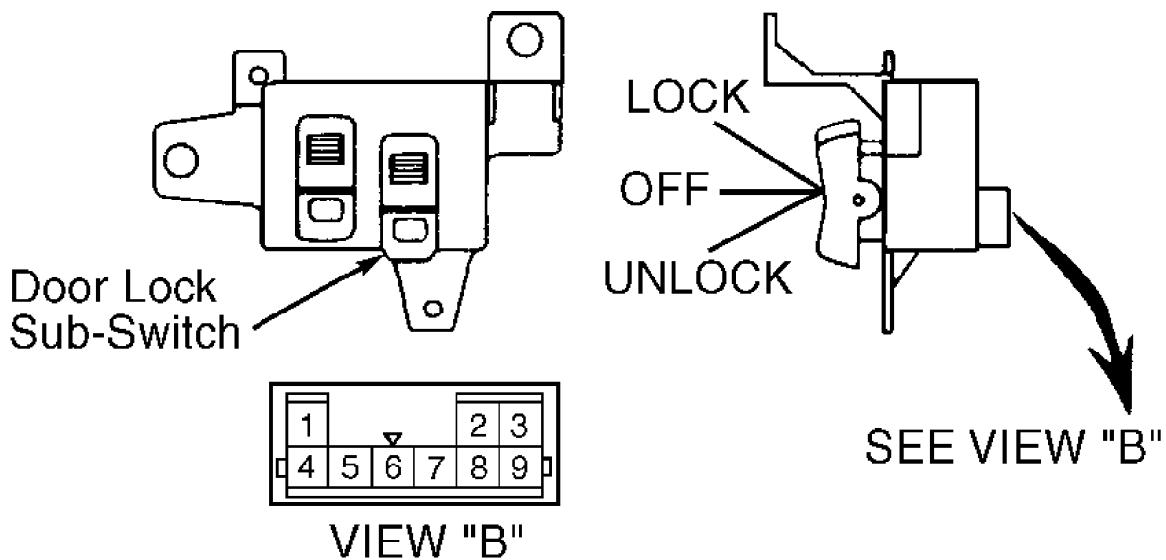
Fig. 2: Inspecting Door Lock Sub-Switch (Montero)
Courtesy Of Mitsubishi Motor Sales Of America



Switch position	Terminal No.		
	7	6	5
LOCK	○	○	
OFF			
UNLOCK		○	○

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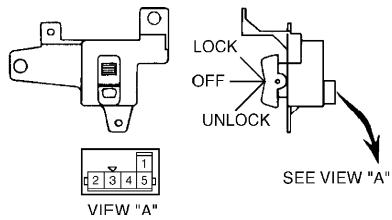
Fig. 3: Inspecting Door Lock Main Switch (3000GT W/Power Window)
Courtesy Of Mitsubishi Motor Sales Of America



Switch position	Terminal No.		
	4	6	1
LOCK	○	○	
OFF			
UNLOCK		○	○

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Fig. 4: Inspecting Door Lock Sub-Switch (3000GT W/Power Window)
Courtesy Of Mitsubishi Motor Sales Of America



Switch position	Terminal No.		
	3	2	5
LOCK	○	○	
OFF			
UNLOCK	○	○	○

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Fig. 5: Inspecting Door Lock Switch (3000GT W/O Power Window)
Courtesy Of Mitsubishi Motor Sales Of America

KEYLESS ENTRY CONTROL UNIT

NOTE: Testing information for RKE control unit is not available from manufacturer at time of publication. See PIN VOLTAGE TESTS.

NOTE: If after all testing procedures are completed, system is not functioning properly, replace unit with a known-good keyless entry control unit and retest.

POWER DOOR LOCK CONTROL UNIT

Montero (W/O Remote Keyless Entry)

1) Remove power door lock control unit. See COMPONENT LOCATIONS. Apply battery voltage to control unit terminal No. 8 (Red/Yellow wire). See WIRING DIAGRAMS.

2) Jumper control unit terminals No. 4 (Black wire), No. 5 (Blue/White wire), and No. 7 (Black/Yellow wire) to battery negative terminal. Connect an analog voltmeter between ground and terminal No. 3 (Blue/Red wire). Set voltmeter to DC volts.

3) Remove jumper from control unit terminal No. 5 or 7. Voltmeter needle should deflect.

4) Jumper control unit terminals No. 4 (Black wire) and No. 5 (Blue/White wire) to ground. Connect voltmeter between ground and terminal No. 3 (Blue/Red wire). Jumper control unit terminal No. 7 (Black/Yellow wire) to ground. Voltmeter needle should deflect.

5) Jumper control unit terminal No. 4 (Black wire) to ground. Connect voltmeter between ground and control unit terminal No. 3 (Blue/Red wire). Jumper control unit terminal No. 7 (Black/Yellow wire) to ground. Voltmeter needle should not deflect.

6) Check if voltage is present between battery ground and control unit terminals No. 2 (Black/Blue wire) and No. 6 (Black/Red wire). Battery voltage should be present. If circuits do not test as specified, replace door lock control unit.

BACK DOOR (LIFTGATE) LOCK ACTUATOR

Montero

Access door lock actuator. See DOOR LOCK ACTUATOR R & I under REMOVAL & INSTALLATION. Disconnect back door actuator harness connector. Remove actuator if needed. Connect positive lead of 12-volt power source to actuator connector. Actuator should operate when negative lead contacts actuator housing. Replace actuator as needed.

PIN VOLTAGE TESTS

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20

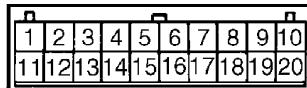
Terminal No.	Signal	Conditions		Terminal Voltage
2	Door switch	Dome light switch: Door	Door open (Door switch: ON)	0V
			Door shut (Door switch: OFF)	12V
6	Door-lock actuator (Driver side)	LOCK		5V (Pulse output*)
		UNLOCK		0V
8	Key reminder switch	ON (Key removed)		0V
		OFF (Key installed)		5V (Pulse output*)
9	Keyless entry control unit power source	Ignition switch (ACC)		Battery positive voltage
10	Keyless entry control unit power source	Always		Battery positive voltage
11	Dome light	All doors closed (Door switch: OFF)	Dome light switch: OFF or ON	0V
			Dome light switch: Door	Battery positive voltage
12	Door lock control unit and door lock relay	LOCK		0V
		UNLOCK		Battery positive voltage
13	Door lock control unit	LOCK		Battery positive voltage
		UNLOCK		0V
14	Door lock relay	LOCK		Battery positive voltage
		UNLOCK		0V
20	Ground	-		0V

NOTE

*: Use an oscilloscope. When using the tester, 0–0.03V is indicated repeatedly.

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Fig. 6: Pin Voltage Chart (Montero)
Courtesy Of Mitsubishi Motor Sales Of America



Terminal No.	Signal	Conditions	Terminal Voltage
1	Key reminder switch (vehicles with theft alarm)	ON (Key removed)	Battery positive voltage
		OFF (Key installed)	0 V
2	Door switch	All doors close (Door switch: OFF)	Battery positive voltage
		One of doors open (Door switch: ON)	0 V
6	Door lock actuator (L.H.)	LOCK	5 V
		UNLOCK	0 V
9	Keyless entry control unit power source	Ignition switch (ACC or ON)	Battery positive voltage
		Ignition switch (OFF)	0 V
10	Keyless entry control unit power source	Always	Battery positive voltage
11	Dome light	All doors close (door switch: OFF)	To operate
			Not to operate
			Battery positive voltage
12	Door lock output	To operate	0 V
		Not to operate	Battery positive voltage
13	Door unlock output	To operate	0 V
		Not to operate	Battery positive voltage
14	Drivers door unlock output	To operate	0 V
		Not to operate	Battery positive voltage
15	ETACS-ECU <Vehicle with theft-alarm system>	Transmitter switch: ON	0 V
		Transmitter switch: OFF	5 V
20	Ground	Always	0 V

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Fig. 7: Pin Voltage Chart (3000GT)
Courtesy Of Mitsubishi Motor Sales Of America

REMOVAL & INSTALLATION

DOOR LOCK ACTUATOR R & I

Removal & Installation (Except Back Door)

Remove inner door panel. Remove delta cover (access to mirror mounting). Remove door light, switch panel and armrest. Remove mounting screws, and slide panel up to remove. Remove waterproof film. Remove actuator. To install, reverse removal procedure.

Removal & Installation (Back Door)

Remove door pull handle. Remove window trim. Remove door release handle trim. Remove tool kit (if equipped). Remove door panel and waterproof film. Remove actuator. To install, reverse removal procedure.

WIRING DIAGRAMS

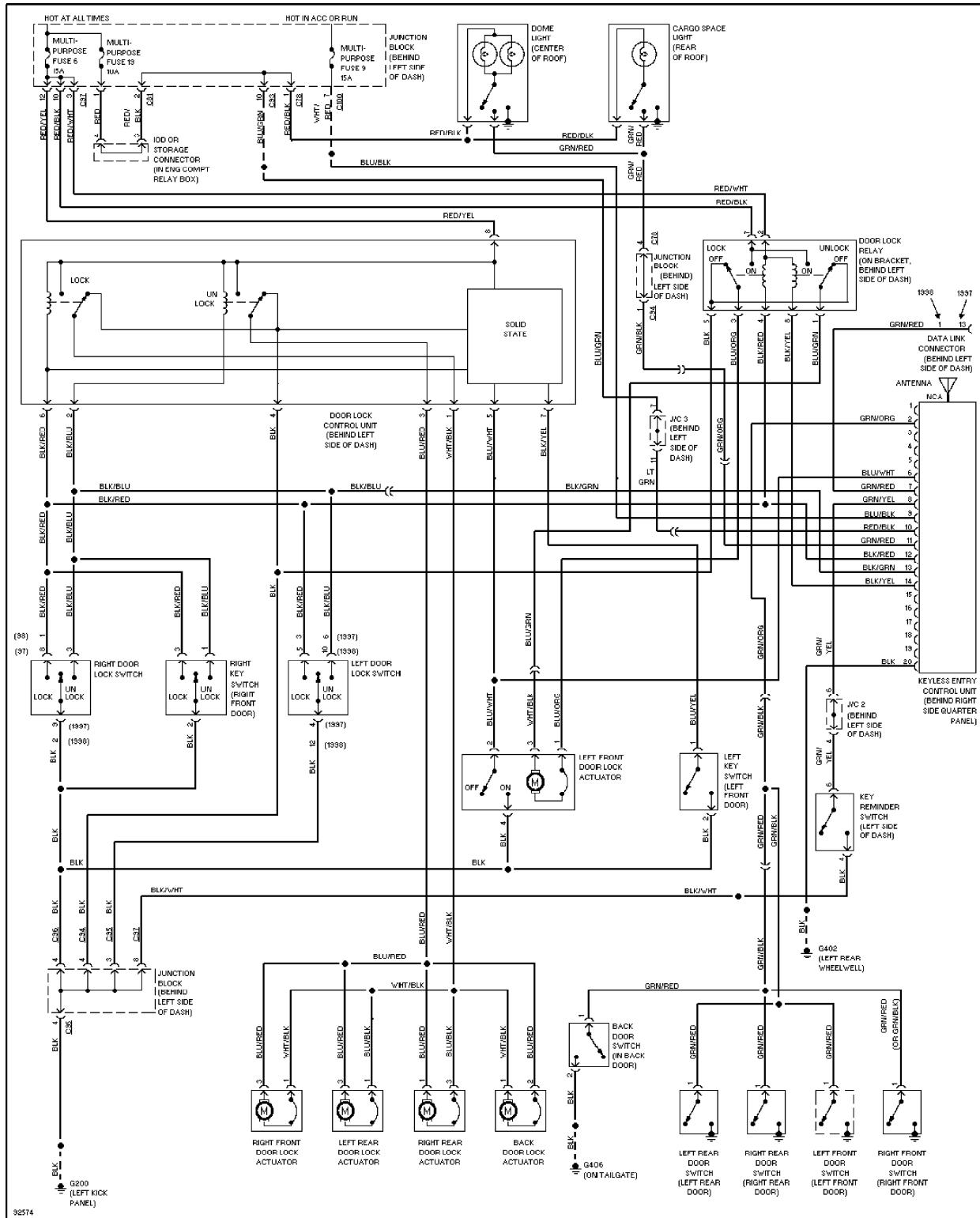


Fig. 8: Keyless Entry Wiring Diagram (Montero)

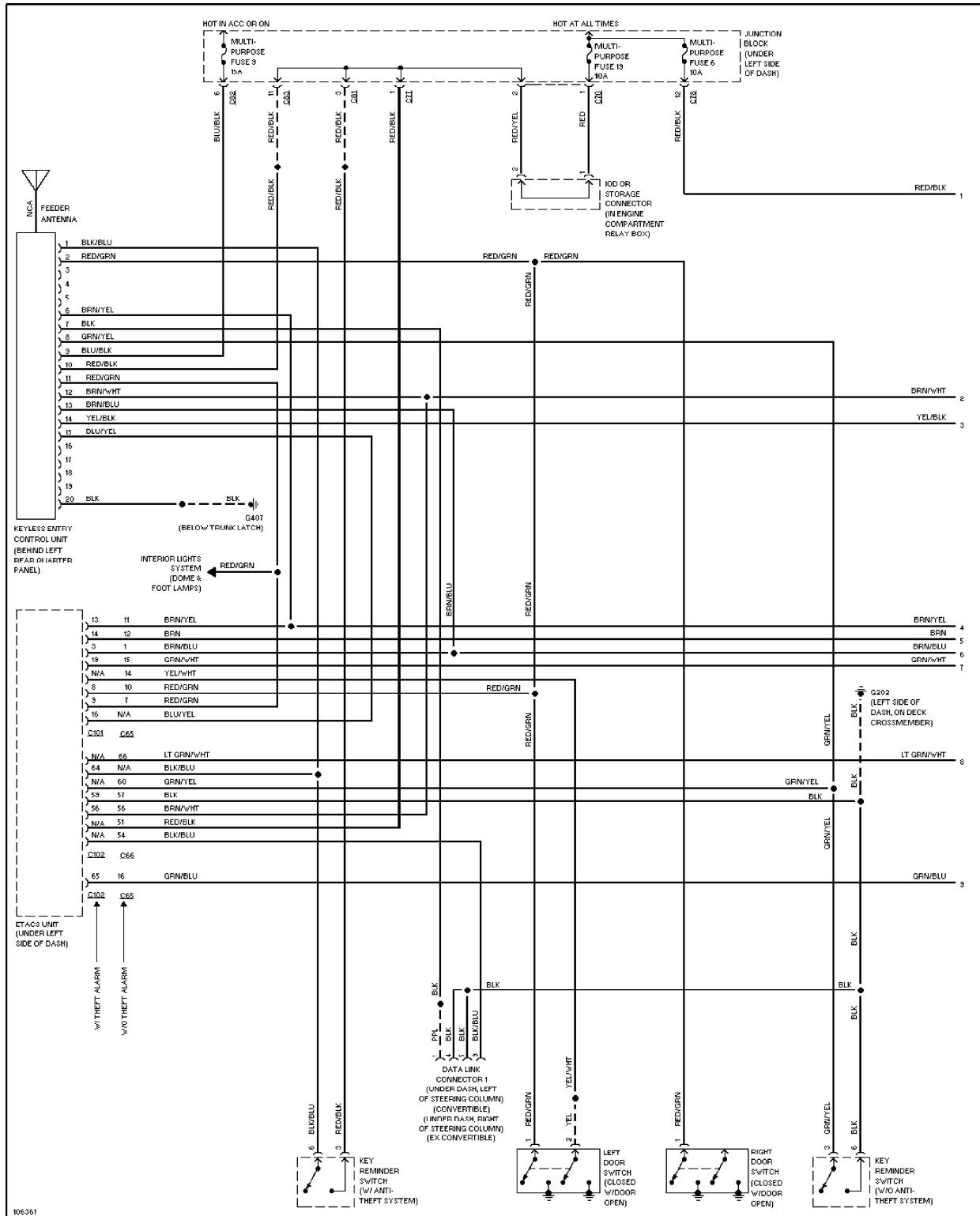


Fig. 9: Keyless Entry Wiring Diagram (3000GT - 1 Of 2)

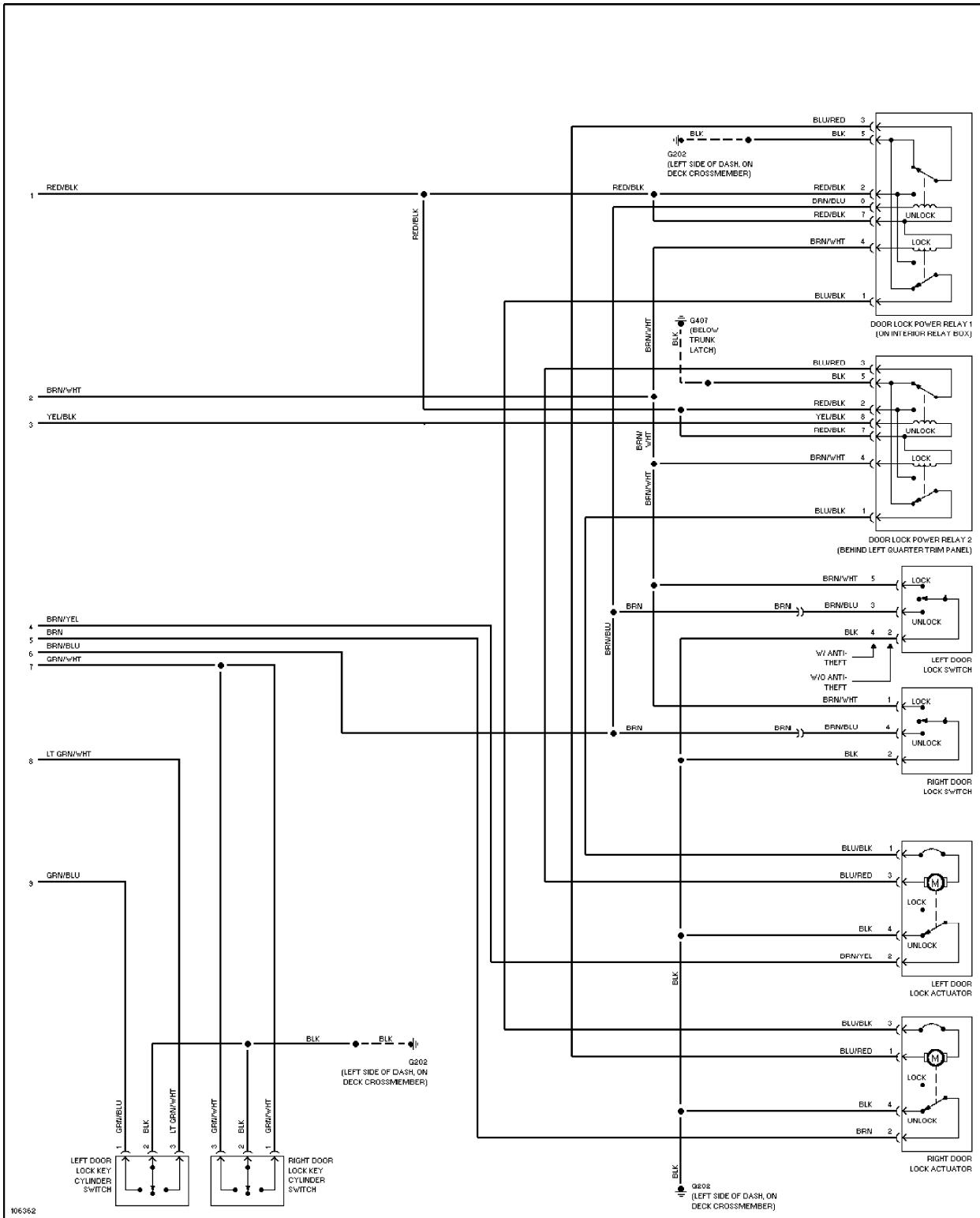


Fig. 10: Keyless Entry Wiring Diagram (3000GT - 2 Of 2)

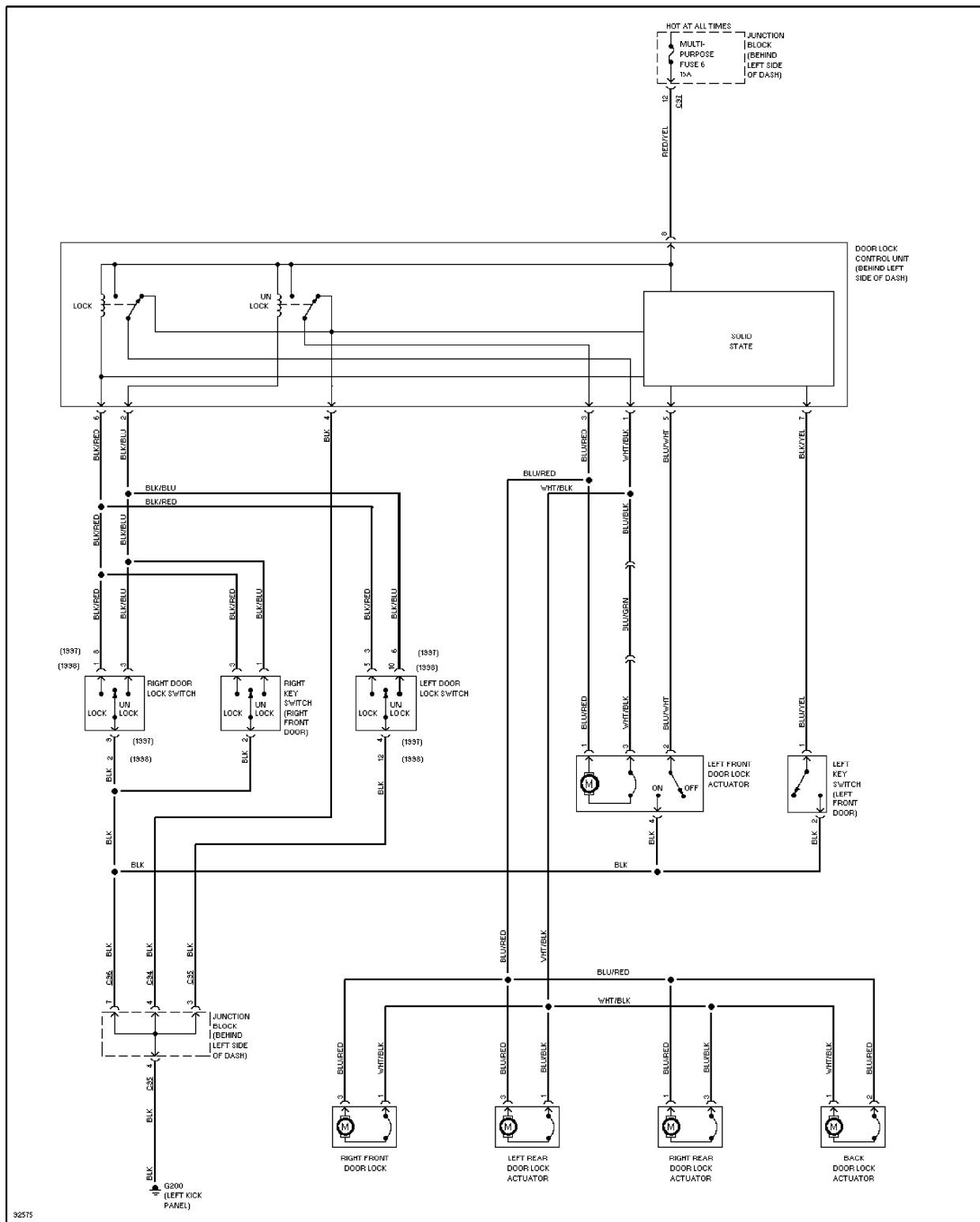


Fig. 11: Power Door Locks Wiring Diagram (Montero)

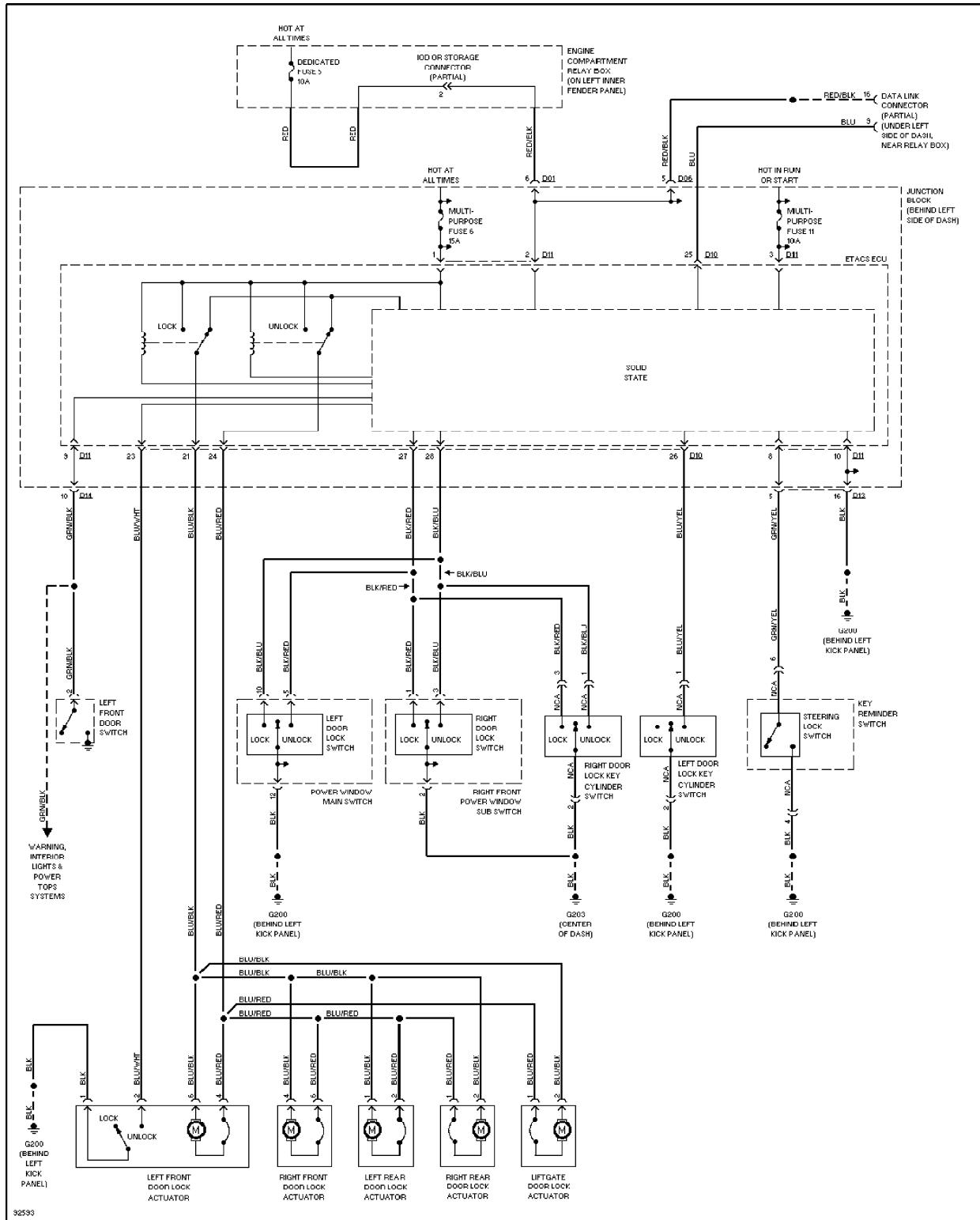


Fig. 12: Power Door Locks Wiring Diagram (Montero Sport)