

1999 AUTOMATIC TRANSMISSIONS**Toyota & Lexus Shift Lock System****DESCRIPTION**

Transmission/transaxle is equipped with a electronically controlled shift lock and key lock system. See **Fig. 1** . Shift lock system prevents shift lever from being moved from Park unless brake pedal is depressed. In case of a malfunction, shift lever can be released by depressing shift lock override button, located near shift lever. Key lock system prevents ignition key from being moved from ACC to LOCK position on ignition switch unless shift lever is in Park.

System consists of brakelight switch, key interlock solenoid, shift lock control switch, shift lock control Electronic Control Unit (ECU), shift lock solenoid and shift lock release button. All models may not be equipped with all components. See **Fig. 1** .

NOTE: **Sienna is equipped with cable operated shift lock system. See CABLE OPERATED SHIFT LOCK SYSTEM CHECK and ADJUSTMENTS .**

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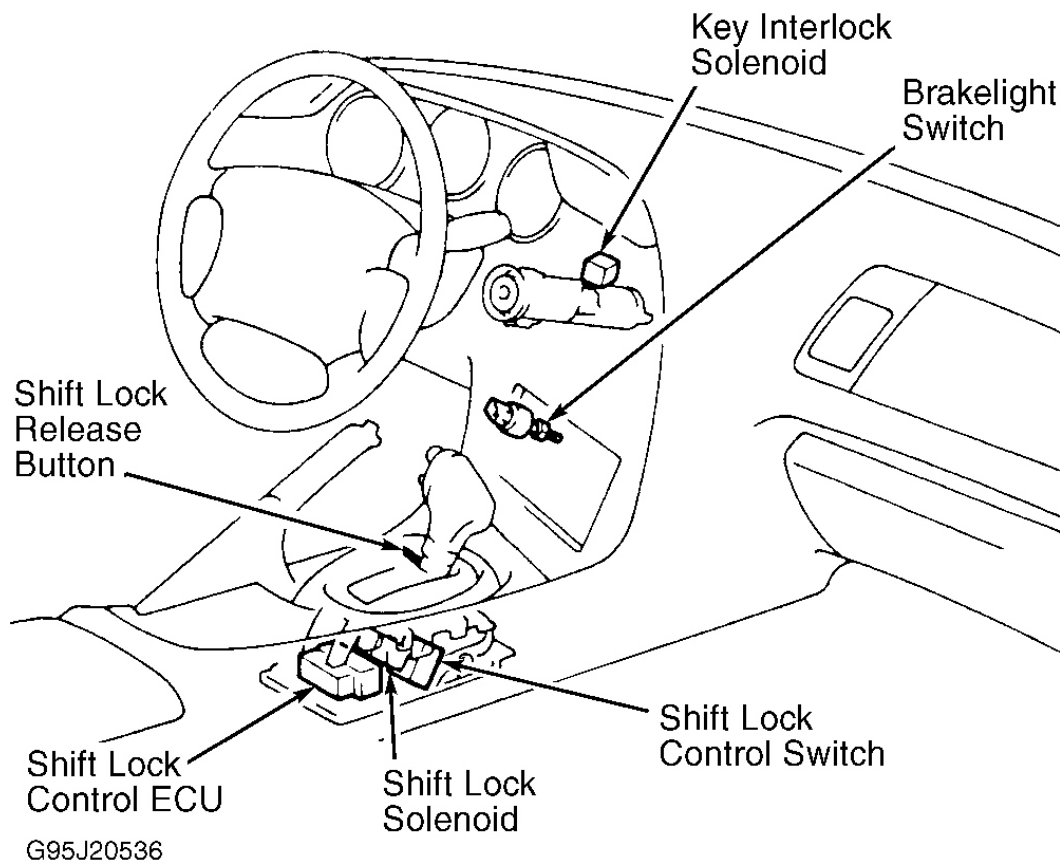


Fig. 1: Shift & Key Lock System Component Locations (Typical)

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OPERATION

SHIFT LOCK SYSTEM

With ignition on, when brake pedal is depressed, an input signal is sent from brakelight switch to ECU. With shift lever in Park, an input signal from shift control switch is input to ECU, indicating shift lever is in Park. ECU then operates shift lock solenoid, so shift lever can be moved from Park.

KEY LOCK SYSTEM

With ignition in ON or ACC position and shift lever in Park, shift lock control switch opens and voltage from ECU to key interlock solenoid is turned off. When key interlock solenoid is turned off, ignition key can be turned from ACC to LOCK position on ignition switch.

COMPONENT TESTS

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NOTE: If ignition is left in ACC or ON position with shift lever in any gear range except Park for about one hour, ECU then operates to release lock mechanism.

ELECTRONIC CONTROL UNIT (ECU)

Access ECU. See **Fig. 1** . ECU is under center console, in front or back of shifter. Turn ignition on. Backprobing ECU harness connector with DVOM, check voltage between designated terminals. Voltage should be as specified. See appropriate SHIFT LOCK SYSTEM PIN VOLTAGES table. For circuit identification, see appropriate wiring diagram in **WIRING DIAGRAMS** .

NOTE: Ground (GND) terminal is also referred to as "E" terminal.

SHIFT LOCK SYSTEM PIN VOLTAGES (AVALON, CAMRY, CAMRY SOLARA, COROLLA, ES300 & RX300)

Application & Terminals	Description	Voltage
ECU		
ACC - GND	Ignition Switch In ACC Position	10-14
IG - GND	Ignition Switch In ON Position	10-14
STP - GND	Depress Brake Pedal	10-14
KLS - GND	Ignition Switch In ACC, Shifter In "P" Position	0
KLS - GND	Ignition Switch In ACC, Shifter Not In "P" Position	7.5-11.5
KLS - GND	⁽¹⁾ Ignition Switch In ACC, Shifter Not In "P" Position	6-9
Shift Lock Solenoid		
SLS+ - GND	Ignition Switch In ACC, Shifter In "P" Position	0
SLS+ - GND	Depress Brake Pedal	8-13.5
SLS+ - GND	Ignition Switch In ACC, Shifter Not In "P" Position	0
Shift Lock Control Switch		
P1 - P	Ignition Switch ON, Shifter In "P" Position, Depress Brake Pedal	0
P1 - P	Ignition Switch In ON, Shifter Not In "P" Position	9-13.5
P2 - P	Ignition Switch In ACC, Shifter In "P" Position	9-13.5
⁽¹⁾ Voltage measurement after one second.		

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NOTE: Ground (GND) terminal is also referred to as "E" terminal.

SHIFT LOCK SYSTEM PIN VOLTAGES (CELICA, LAND CRUISER, LX470 & TACOMA)

Application & Terminals	Description	Voltage
ECU		
ACC - GND	Ignition Switch In ACC Position	10-14
IG - GND	Ignition Switch In ON Position	10-14
STP - GND	Depress Brake Pedal	10-14
KLS - GND	Ignition Switch In ACC, Shifter In "P" Position	0
KLS - GND	Ignition Switch In ACC, Shifter Not In "P" Position	10-14
KLS - GND	⁽¹⁾ Ignition Switch In ACC, Shifter Not In "P" Position	6-9
Shift Lock Solenoid		
SLS+ - SLS-	Ignition Switch In ACC, Shifter In "P" Position	0
SLS+ - SLS-	Depress Brake Pedal	8-13.5
SLS+ - SLS-	Depress Brake Pedal, (After 20 Seconds)	5.5-9.5
SLS+ - SLS-	Ignition Switch In ACC, Shifter Not In "P" Position	0
Shift Lock Control Switch		
P1 - P	Ignition Switch In ON Position, Shifter In "P" Position, Depress Brake Pedal	0
P1 - P	Ignition Switch In ON, Shifter Not In "P" Position	9-13.5
P2 - P	Ignition Switch In ACC, Shifter In "P" Position	9-13.5
P2 - P	Ignition Switch In ACC, Shifter Not In "P" Position	0
⁽¹⁾ Voltage measurement after one second.		

NOTE: Ground (GND) terminal is also referred to as "E" terminal.

SHIFT LOCK SYSTEM PIN VOLTAGES (GS300 & GS400)

Application & Terminals	Description	Voltage
ECU		

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ACC - GND	Ignition Switch In ACC Position	10-14
ACC - GND	Ignition Switch In ON Position	10-14
KLS - GND	Ignition Switch In ACC, Shifter In "P" Position	0
KLS - GND	⁽¹⁾ Ignition Switch In ACC, Shifter Not In "P" Position	6-9
SLS+ - GND	Ignition Switch In ON, Shifter In "P" Position	0
SLS+ - GND	Ignition Switch In ON, Depress Brake Pedal	3-6
SLS+ - GND	Ignition Switch In ON, Release Brake Pedal	0
SLS+ - GND	Ignition Switch In ACC, Shifter Not In "P" Position	3-6
P1 - GND	Shifter In "P" Position	0
P1 - GND	Shifter Not In "P" Position	10-14
(1) Voltage measurement after one second.		

NOTE: Ground (GND) terminal is also referred to as "E" terminal.

SHIFT LOCK SYSTEM PIN VOLTAGES (LS400)

Application & Terminals	Description	Voltage
ECU		
ACC - GND	Ignition Switch In ACC Position	10-14
IG - GND	Ignition Switch In ON Position	10-14
STP - GND	Depress Brake Pedal	10-14
KLS - GND	Ignition Switch In ACC, Shifter In "P" Position	1.5 Or Less
KLS - GND	Ignition Switch In ACC, Shifter Not In "P" Position	8.5-10.5
KLS - GND	⁽¹⁾ Ignition Switch In ACC, Shifter Not In "P" Position	7-8.5
Shift Lock Solenoid		
SLS+ - SLS-	Ignition Switch In ACC, Shifter In "P" Position	0
SLS+ - SLS-	Depress Brake Pedal	8.8-12.5
SLS+ - SLS-	Depress Brake Pedal, (After 20 Seconds)	6.5-9.2

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SLS+ - SLS-	Ignition Switch In ACC, Shifter Not In "P" Position	0
Shift Lock Control Switch		
P1 - P	Ignition Switch In ON Position, Shifter In "P" Position, Depress Brake Pedal	0
P1 - P	Ignition Switch In ON, Shifter Not In "P" Position	10-14
P2 - P	Ignition Switch In ACC, Shifter In "P" Position	10-14
P2 - P	Ignition Switch In ACC, Shifter Not In "P" Position	0
(1) Voltage measurement after one second.		

NOTE: **Ground (GND) terminal is also referred to as "E" terminal.**

SHIFT LOCK SYSTEM PIN VOLTAGES (RAV4)

Application & Terminals	Description	Voltage
ECU		
ACC - GND	Ignition Switch In ACC Position	10-14
IG - GND	Ignition Switch In ON Position	10-14
STP - GND	Depress Brake Pedal	10-14
KLS - GND	Ignition Switch In ACC, Shifter In "P" Position	0
KLS - GND	Ignition Switch In ACC, Shifter Not In "P" Position	8-13.5
KLS - GND	(1) Ignition Switch In ACC, Shifter Not In "P" Position	6-8.5
Shift Lock Solenoid		
SLS+ - GND	Ignition Switch In ACC, Shifter In "P" Position	0
SLS+ - GND	Depress Brake Pedal	8-14
SLS+ - GND	Ignition Switch In ACC, Shifter Not In "P" Position	0
Shift Lock Control Switch		
P1 - P	Ignition Switch In ON Position, Shifter In "P" Position, Depress Brake Pedal	0

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P1 - P	Ignition Switch In ON, Shifter Not In "P" Position	10-14
P2 - P	Ignition Switch In ACC, Shifter In "P" Position	10-14
(1) Voltage measurement after one second.		

NOTE: **Ground (GND) terminal is also referred to as "E" terminal.**

SHIFT LOCK SYSTEM PIN VOLTAGES (SC300 & SC400)

Application & Terminals	Description	Voltage
ECU		
ACC - GND	Ignition Switch In ACC Position	10-14
IG - GND	Ignition Switch In ON Position	10-14
STP - GND	Depress Brake Pedal	10-14
KLS - GND	Ignition Switch In ACC, Shifter In "P" Position	1.5 Or Less
KLS - GND	Ignition Switch In ACC, Shifter Not In "P" Position	8.5-10.5
KLS - GND	(1) Ignition Switch In ACC, Shifter Not In "P" Position	6.5-8.5
Shift Lock Solenoid		
SLS+ - SLS-	Ignition Switch In ACC, Shifter In "P" Position	0
SLS+ - SLS-	Depress Brake Pedal	8.0-12.5
SLS+ - SLS-	Depress Brake Pedal, (After 20 Seconds)	6.5-9.2
SLS+ - SLS-	Ignition Switch In ACC, Shifter Not In "P" Position	0
Shift Lock Control Switch		
P1 - P	Ignition Switch In ON Position, Shifter In "P" Position, Depress Brake Pedal	0
P1 - P	Ignition Switch In ON, Shifter Not In "P" Position	10-14
P2 - P	Ignition Switch In ACC, Shifter In "P" Position	10-14
P2 - P	Ignition Switch In ACC, Shifter Not In "P" Position	0
(1) Voltage measurement after one second.		

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NOTE: Ground (GND) terminal is also referred to as "E" terminal.

SHIFT LOCK SYSTEM PIN VOLTAGES (4RUNNER)

Application & Terminals	Description	Voltage
ECU		
ACC - GND	Ignition Switch In ACC Position	10-14
IG - GND	Ignition Switch In ON Position	10-14
STP - GND	Depress Brake Pedal	10-14
KLS - GND	Ignition Switch In ACC, Shifter In "P" Position	0
KLS - GND	Ignition Switch In ACC, Shifter Not In "P" Position	7.5-11
KLS - GND	(1) Ignition Switch In ACC, Shifter Not In "P" Position	6-9.5
Shift Lock Solenoid		
SLS+ - SLS-	Ignition Switch In ACC, Shifter In "P" Position	0
SLS+ - SLS-	Depress Brake Pedal	8-13.5
SLS+ - SLS-	Depress Brake Pedal (After 20 Seconds)	6-8.5
SLS+ - SLS-	Ignition Switch In ACC, Shifter Not In "P" Position	0
Shift Lock Control Switch		
P1 - P	Ignition Switch In ON Position, Shifter In "P" Position, Depress Brake Pedal	0
P1 - P	Ignition Switch In ON, Shifter Not In "P" Position	9-13.5
P2 - P	Ignition Switch In ACC, Shifter In "P" Position	9-13.5
P2 - P	Ignition Switch In ACC, Shifter Not In "P" Position	0
(1) Voltage measurement after one second.		

SHIFT LOCK SOLENOID

1. Disconnect electrical connector from shift lock solenoid. Using ohmmeter, measure resistance between shift lock solenoid terminals. See **WIRING DIAGRAMS**.
2. Replace shift lock solenoid if resistance is not within specification. See **SHIFT LOCK SOLENOID RESISTANCE SPECIFICATIONS** table. Apply battery voltage between shift lock solenoid terminals.

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Replace shift lock solenoid if operating sound cannot be heard.

SHIFT LOCK SOLENOID RESISTANCE SPECIFICATIONS

Application	Ohms
Avalon, Camry, Camry Solara & Tacoma (A43D)	30-35
Celica, Corolla, GS300, GS400 & 4Runner	21-27
ES300 & RX300	29-36
Land Cruiser, LS400, LX470, SC300, SC400 & Tacoma (A-340E/F)	20-28
RAV4	26-33

KEY INTERLOCK SOLENOID

1. Disconnect electrical connector from key interlock solenoid. Using ohmmeter, measure resistance between key interlock solenoid terminals. See **WIRING DIAGRAMS** .
2. Replace key interlock solenoid if resistance is not 12-17 ohms. Apply battery voltage between of key interlock solenoid terminals. Replace key interlock solenoid if operating sound cannot be heard.

SHIFT LOCK CONTROL SWITCH

Disconnect electrical connector from shift lock control switch. Using ohmmeter, check continuity between specified terminals in relation to shift lever. See **WIRING DIAGRAMS** . See **SHIFT LOCK CONTROL SWITCH CONTINUITY** table. Replace switch if continuity is not as specified.

NOTE: **Continuity must be checked in accordance with position of release button on shift lever and shift lever position.**

SHIFT LOCK CONTROL SWITCH CONTINUITY

Shift Lever Position & Condition	Terminals
Any Other Gear Except Park	P & P2
Park & Release Button Not Pushed	P & P1
Park & Release Button Is Pushed	P & P1 Or P & P2

CABLE OPERATED SHIFT LOCK SYSTEM CHECK

Sienna

Ensure shift lock cable does not interfere with wiring harness. Ensure ignition switch turns to LOCK position when shift lever is in "P" position. Ensure brake pedal returns fully. Ensure shift lock is released when brake pedal is depressed with ignition switch at ACC, ON or START position.

ADJUSTMENTS

PARKING LOCK CABLE

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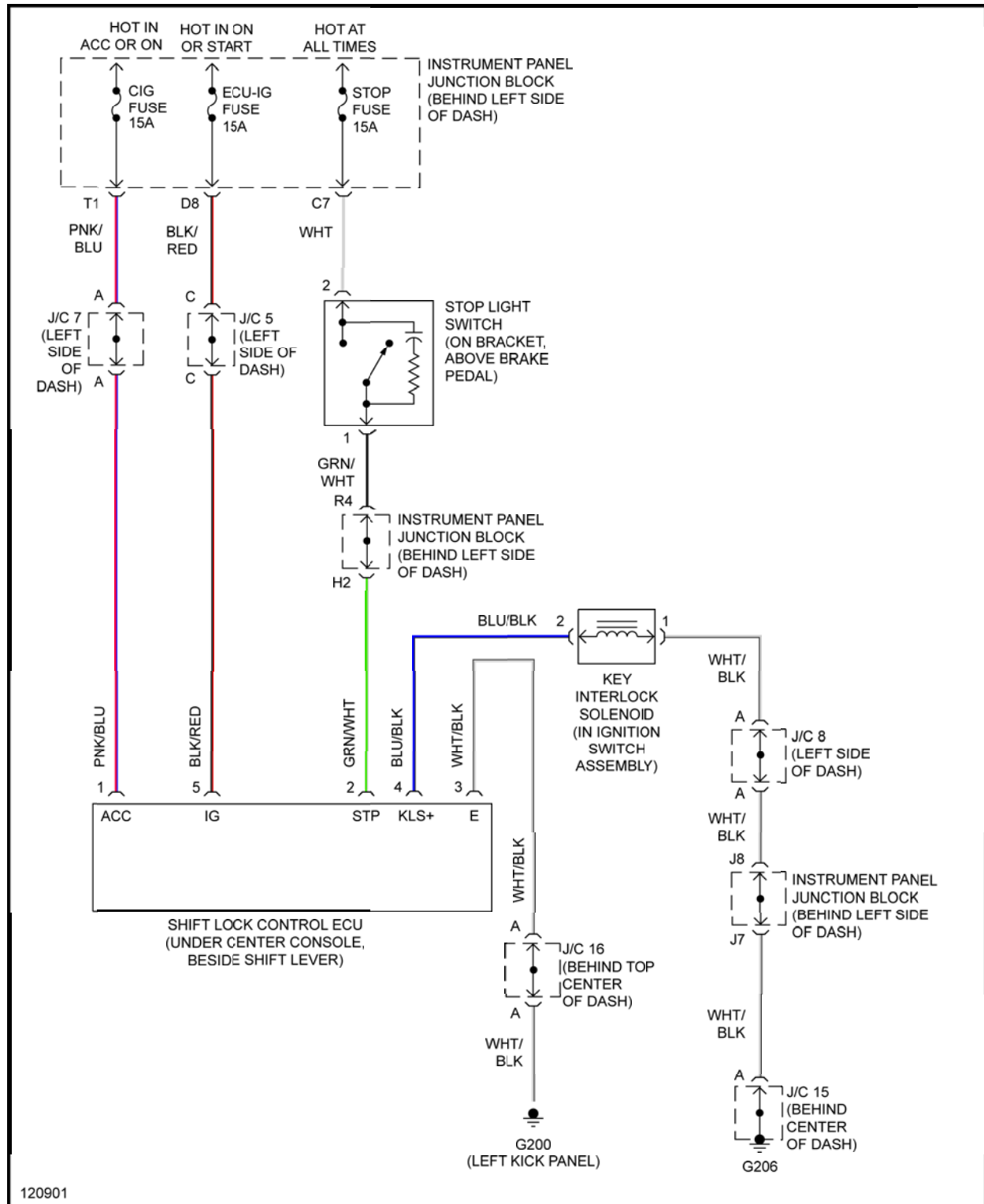
Sienna

Place shift lever in "P" position. Turn ignition switch to LOCK position. Loosen 2 bolts and ensure pedal button touches pedal plate cushion. Tighten 2 bolts to 97 INCH lbs. (11 N.m).

WIRING DIAGRAMS

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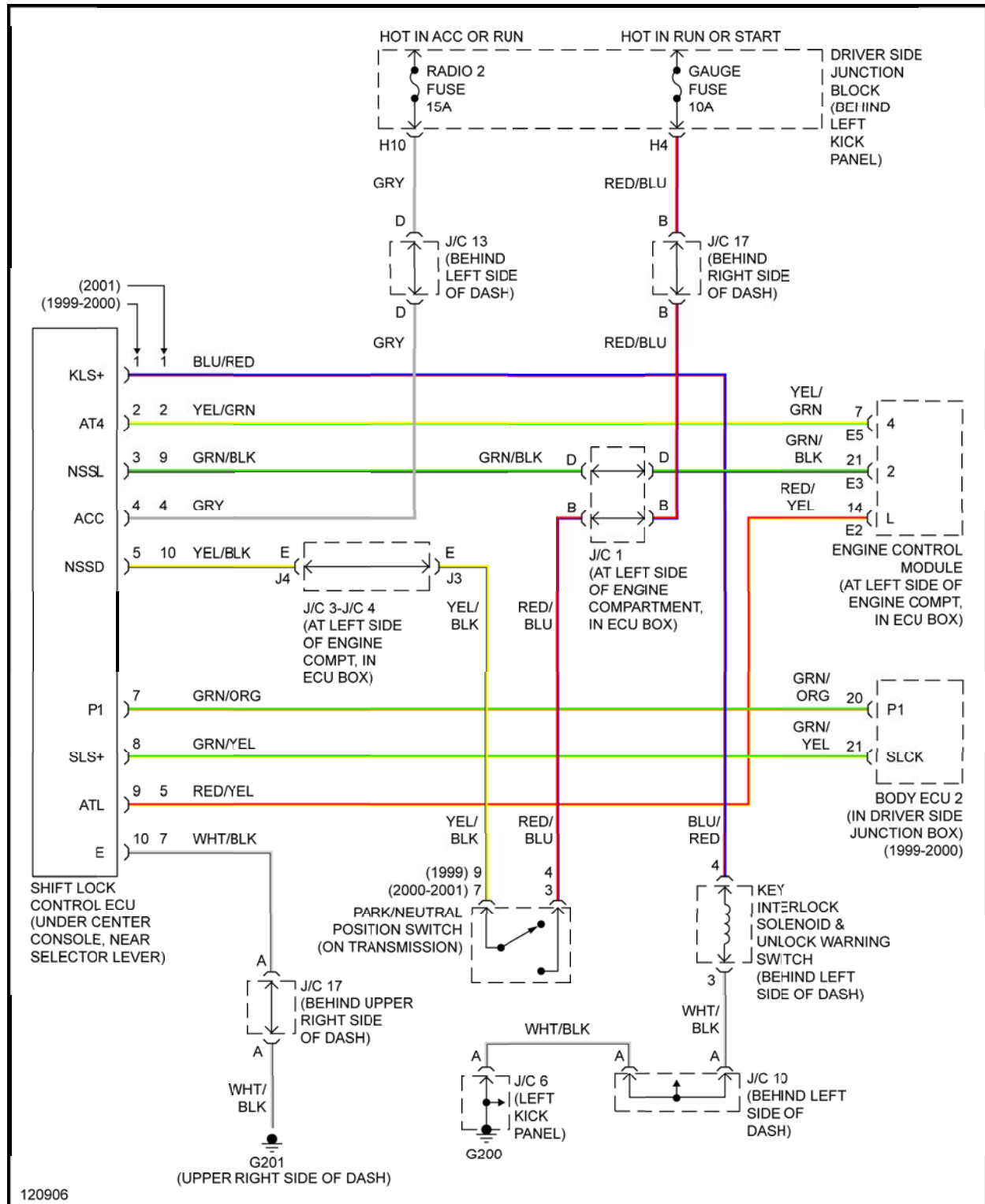


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Fig. 2: Shift Interlock System Wiring Diagram (1999 ES300)

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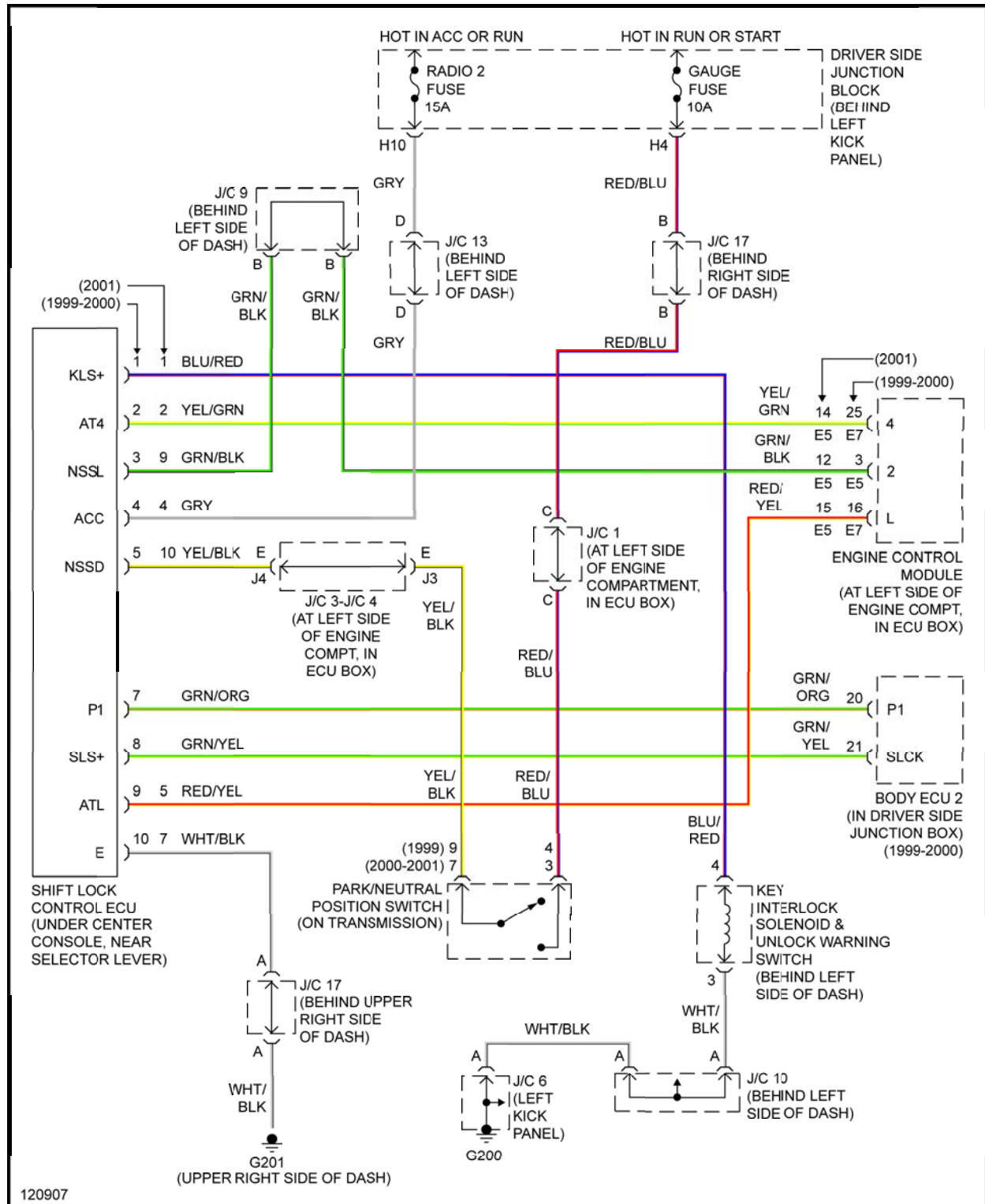


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Fig. 3: Shift Interlock System Wiring Diagram (1999 GS300)

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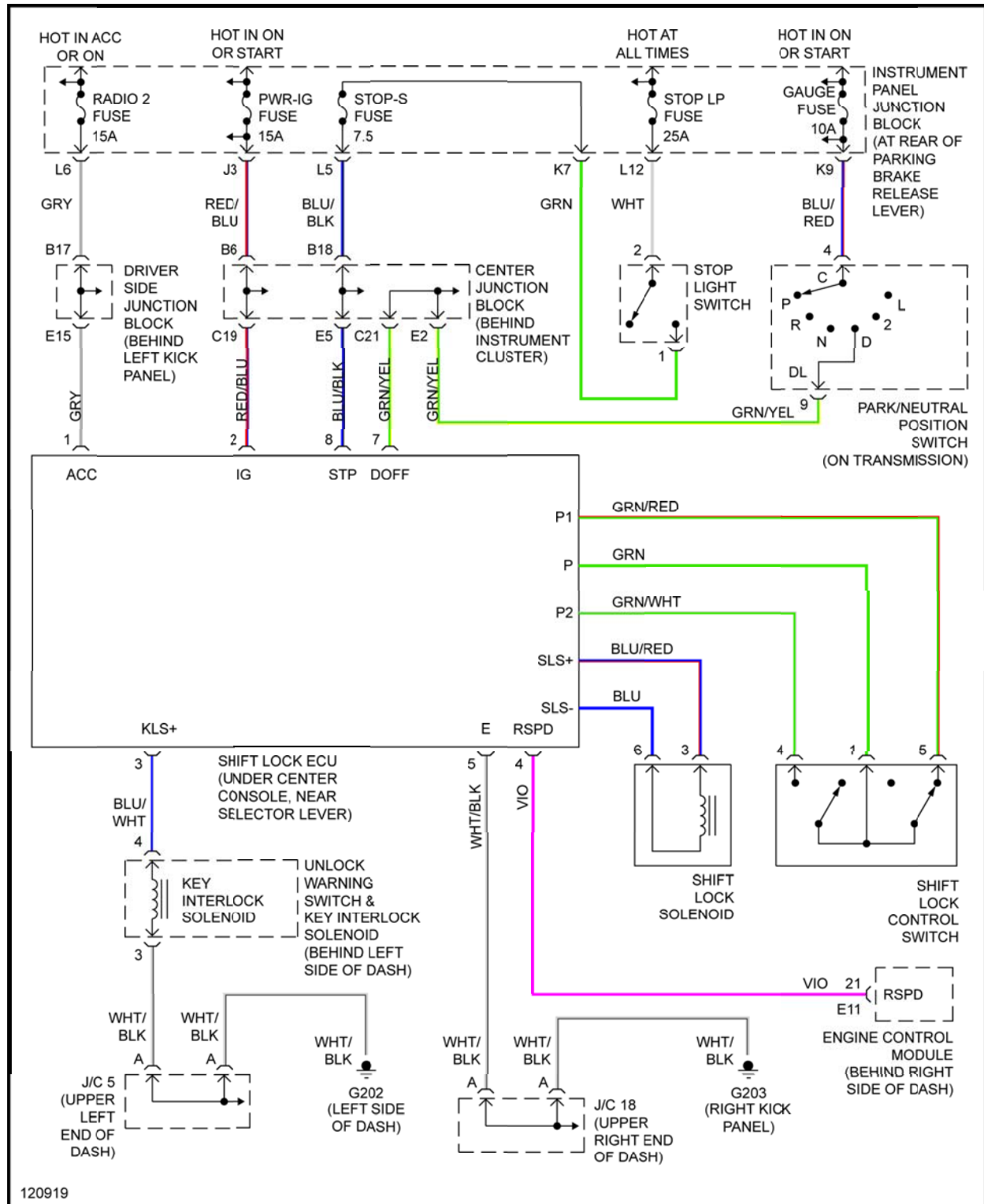


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Fig. 4: Shift Interlock System Wiring Diagram (1999 GS400)

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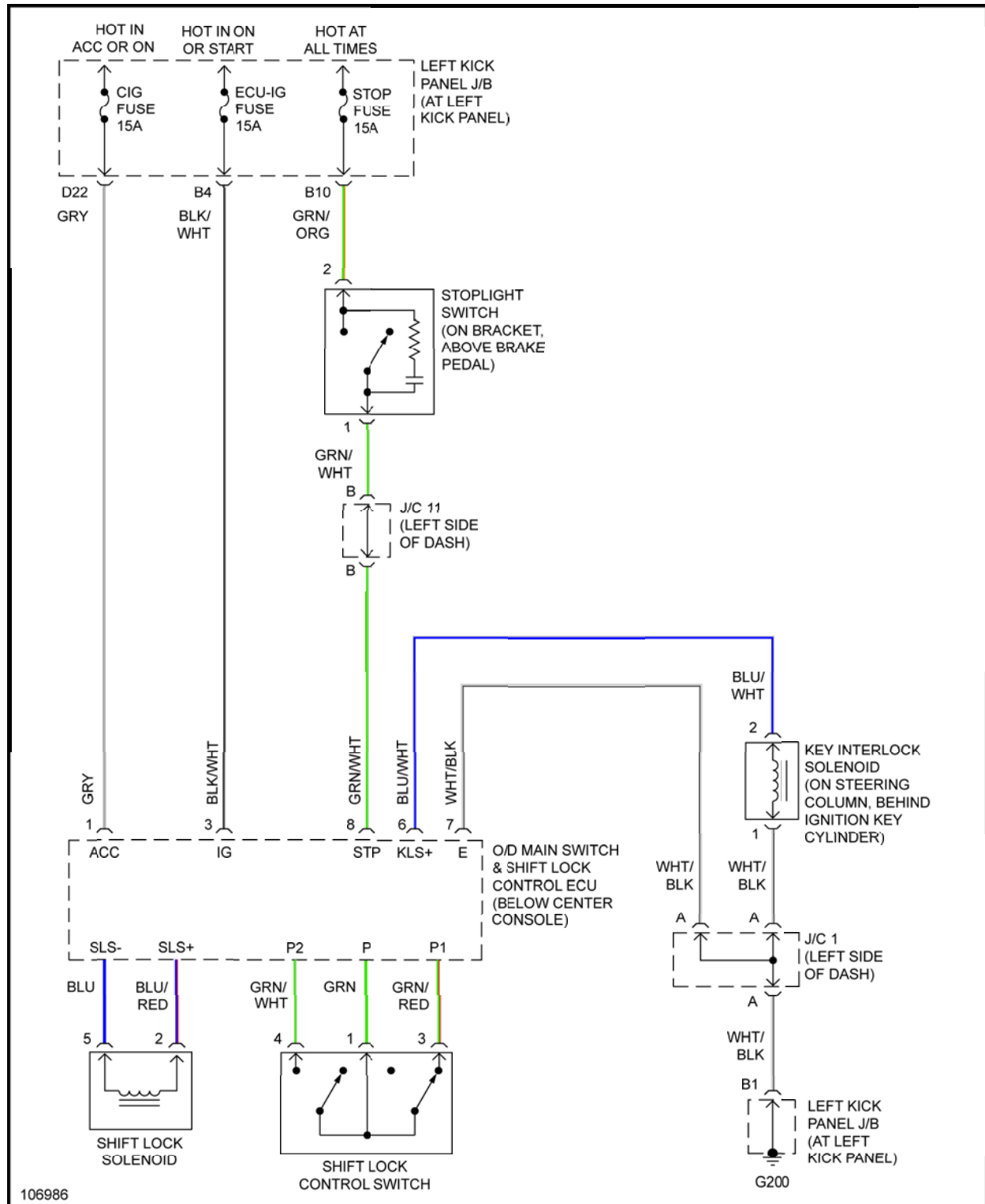


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Fig. 5: Shift Interlock System Wiring Diagram (1999 LS400)

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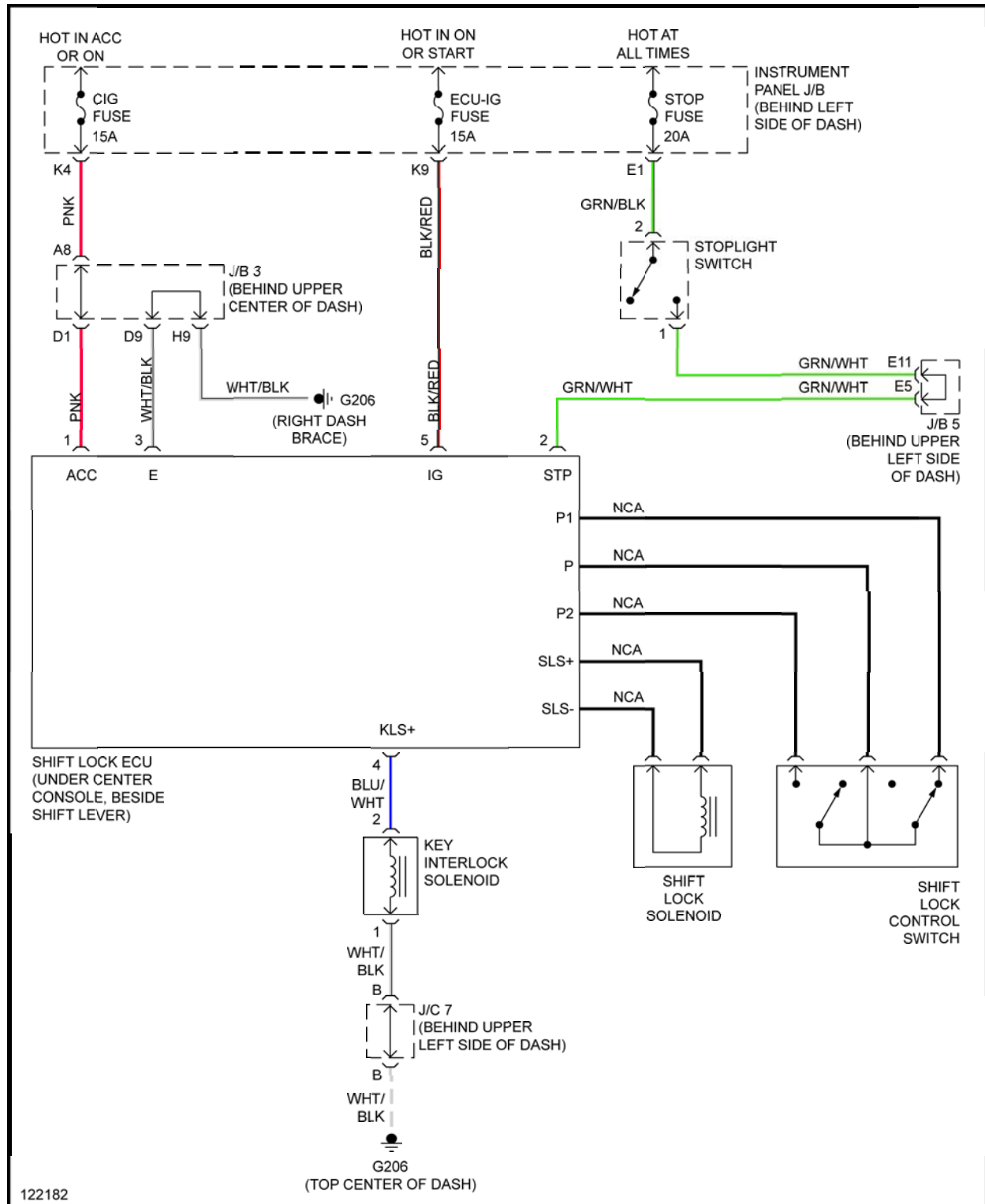


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Fig. 6: Shift Interlock System Wiring Diagram (1999 LX470)

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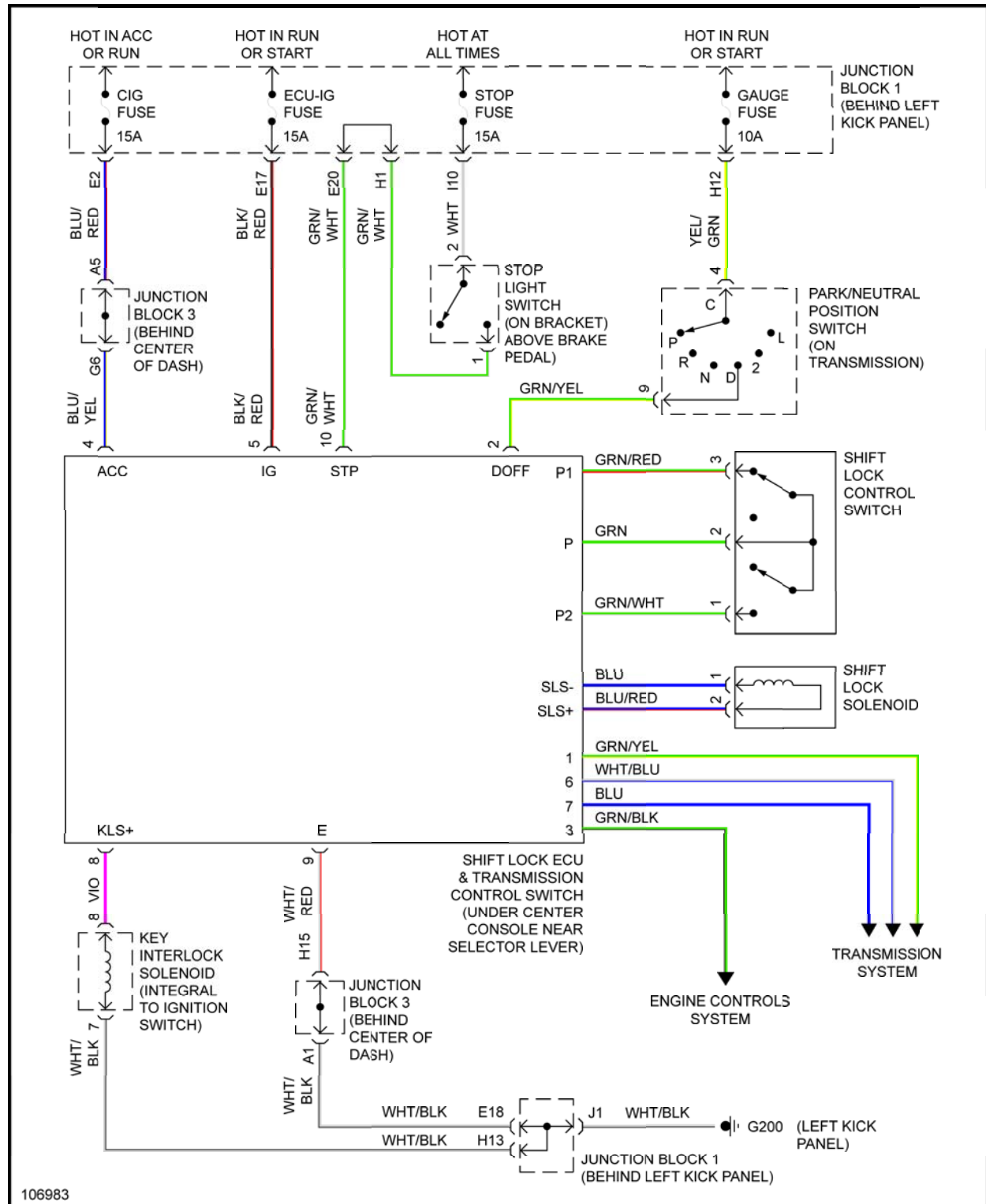


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Fig. 7: Shift Interlock System Wiring Diagram (1999 RX300)

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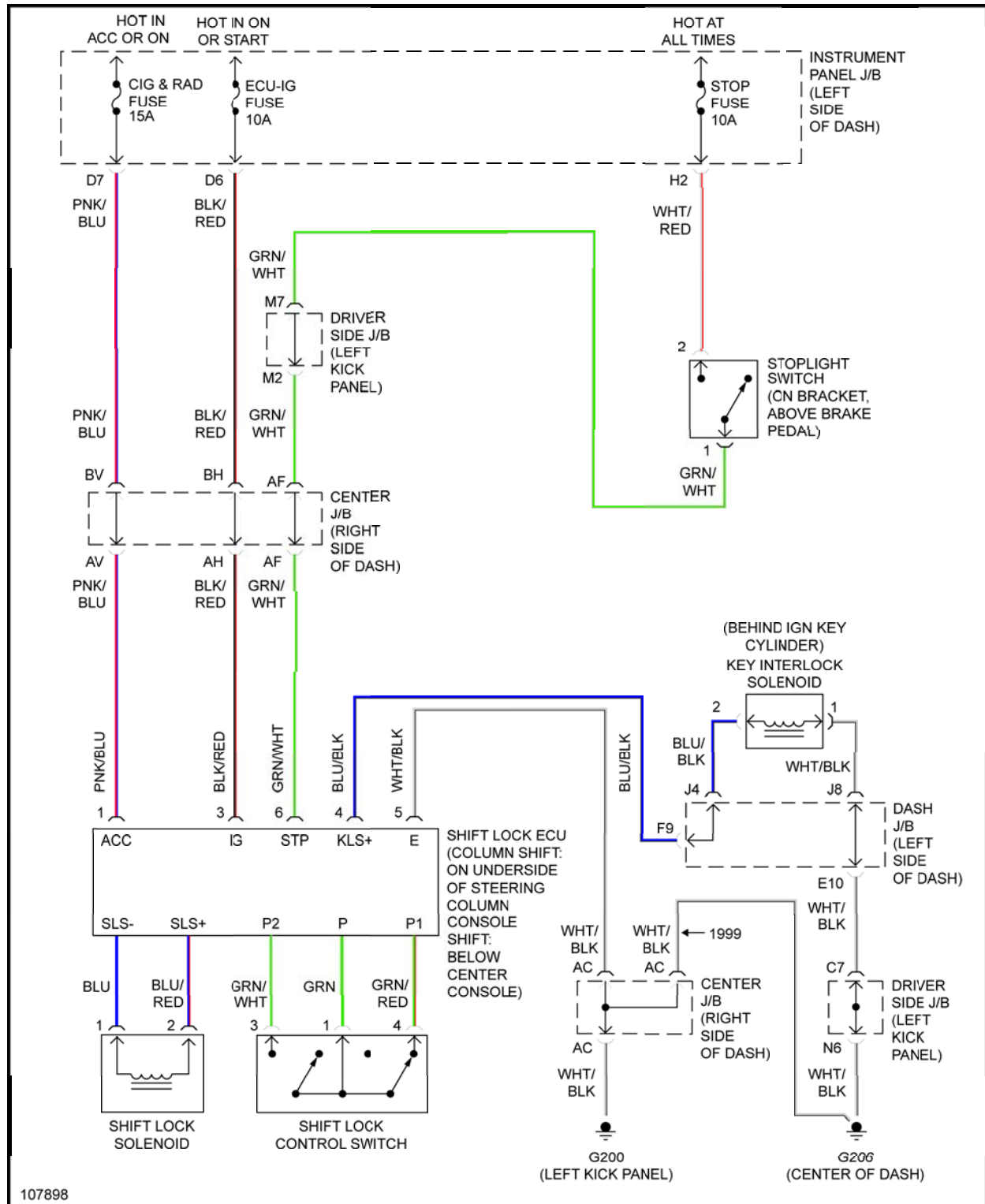


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Fig. 8: Shift Interlock System Wiring Diagram (1999 SC300 & SC400)

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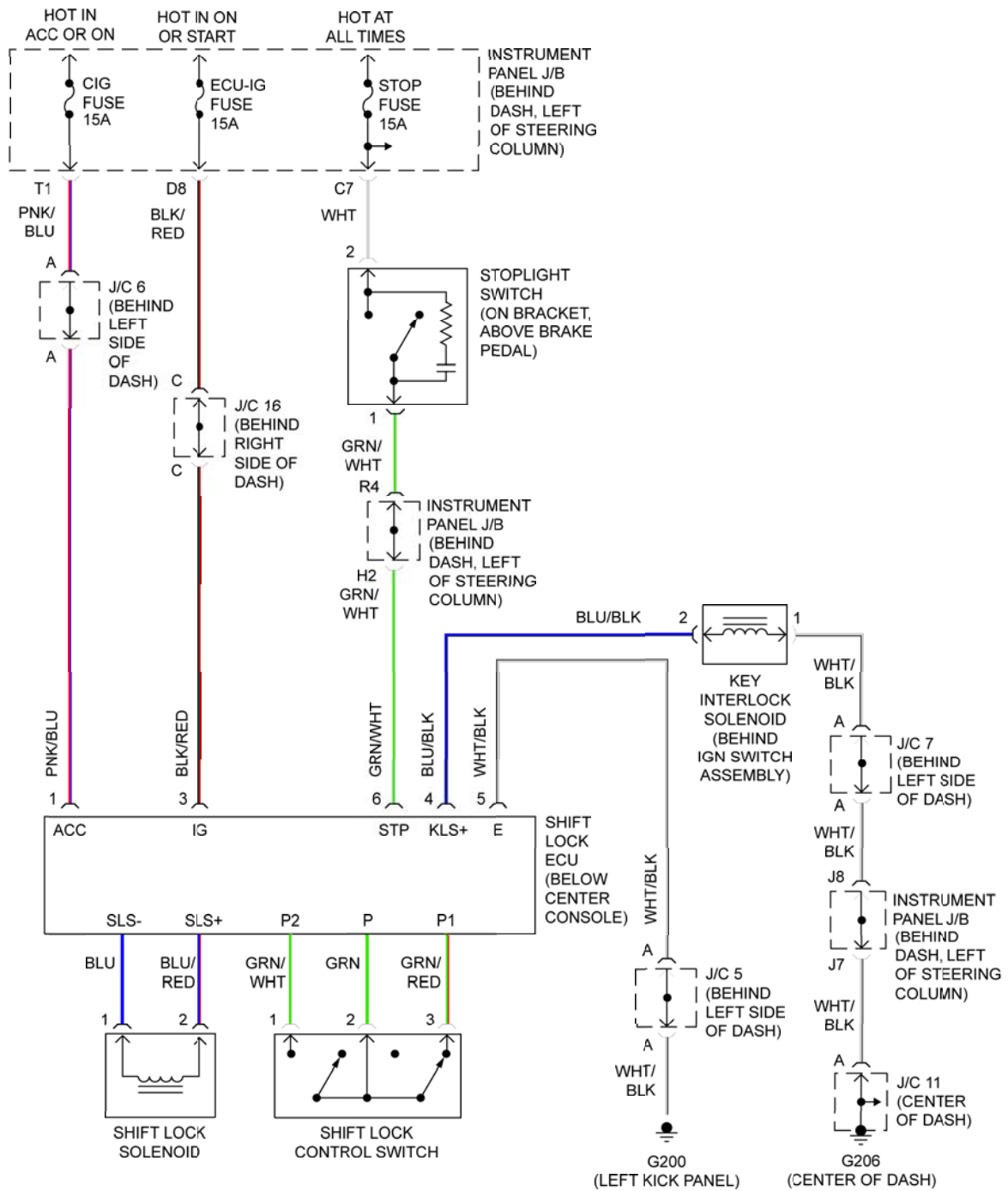


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Fig. 9: Shift Interlock System Wiring Diagram (1999 Avalon)

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Fig. 10: Shift Interlock System Wiring Diagram (1999 Camry)

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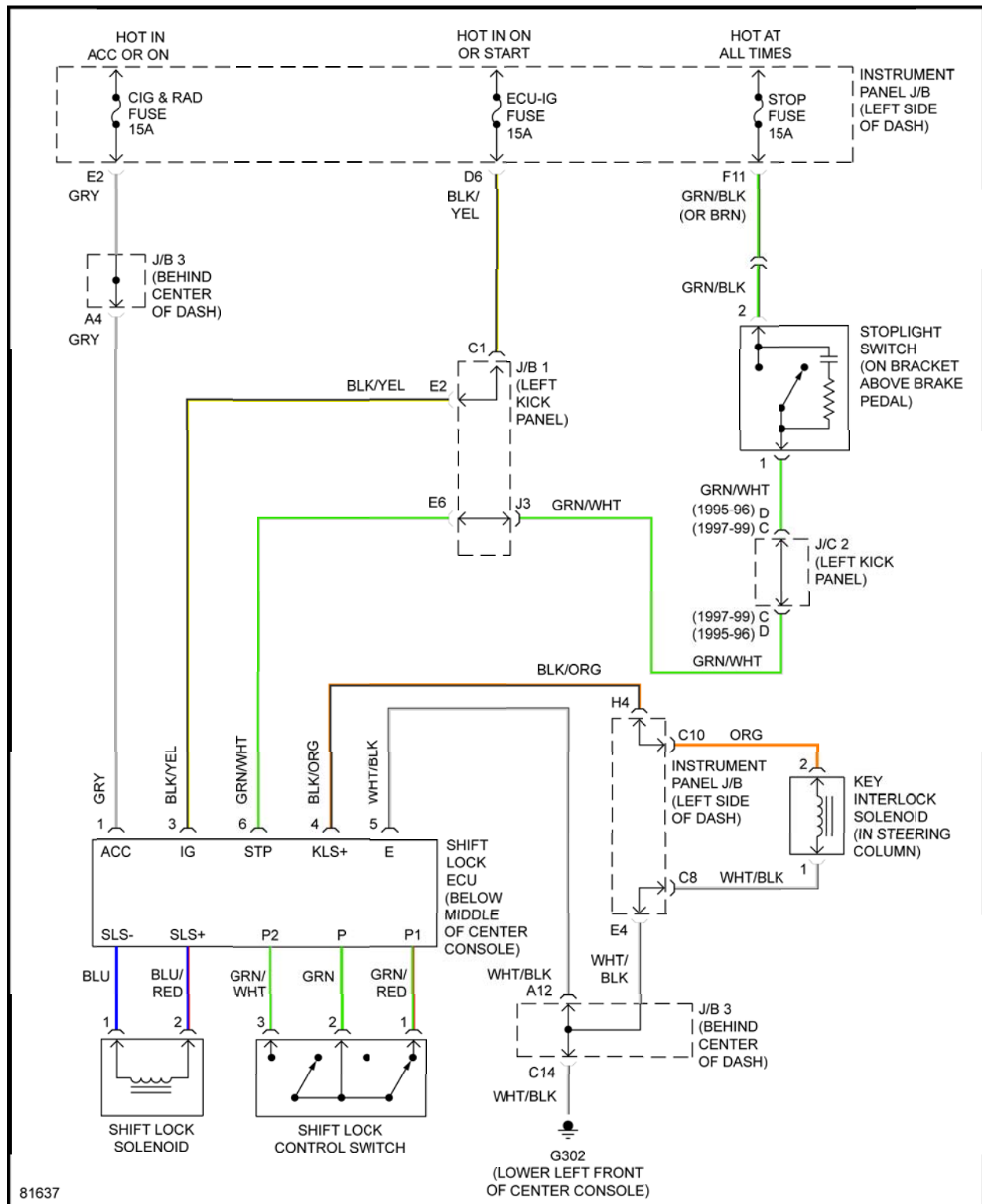


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Fig. 11: Shift Interlock System Wiring Diagram (1999 Camry Solara)

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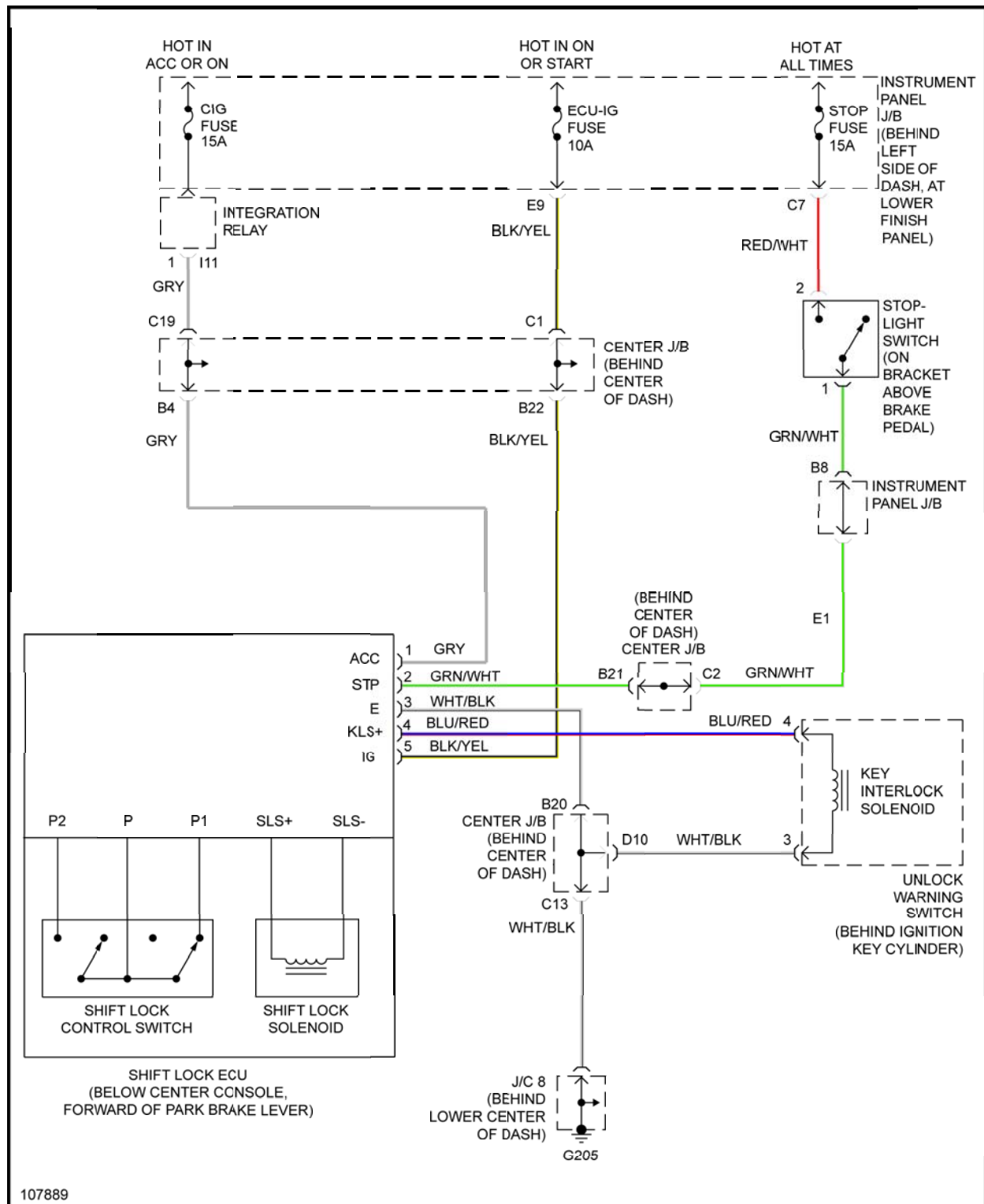


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Fig. 12: Shift Interlock System Wiring Diagram (1999 Celica)

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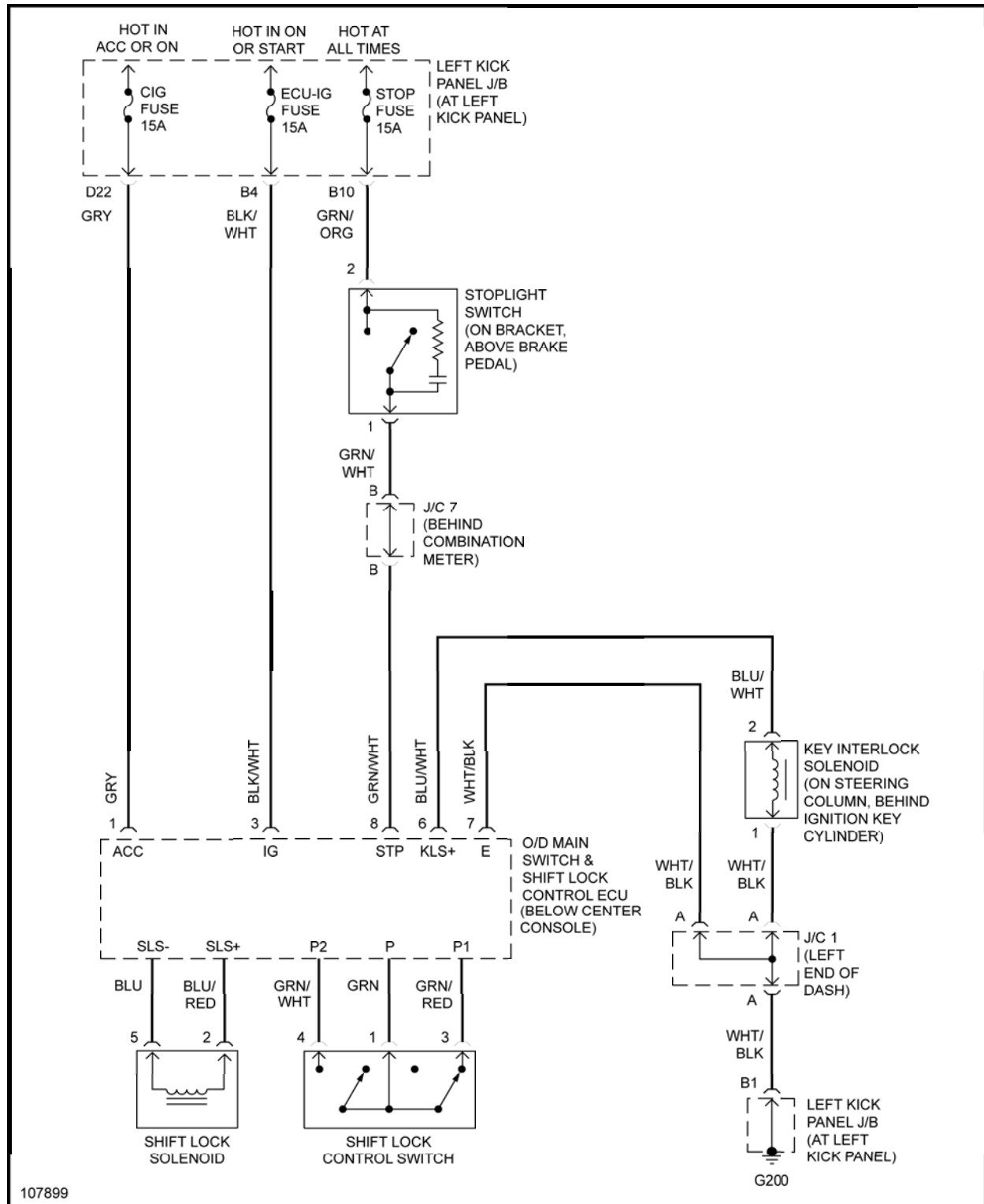


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Fig. 13: Shift Interlock System Wiring Diagram (1999 Corolla)

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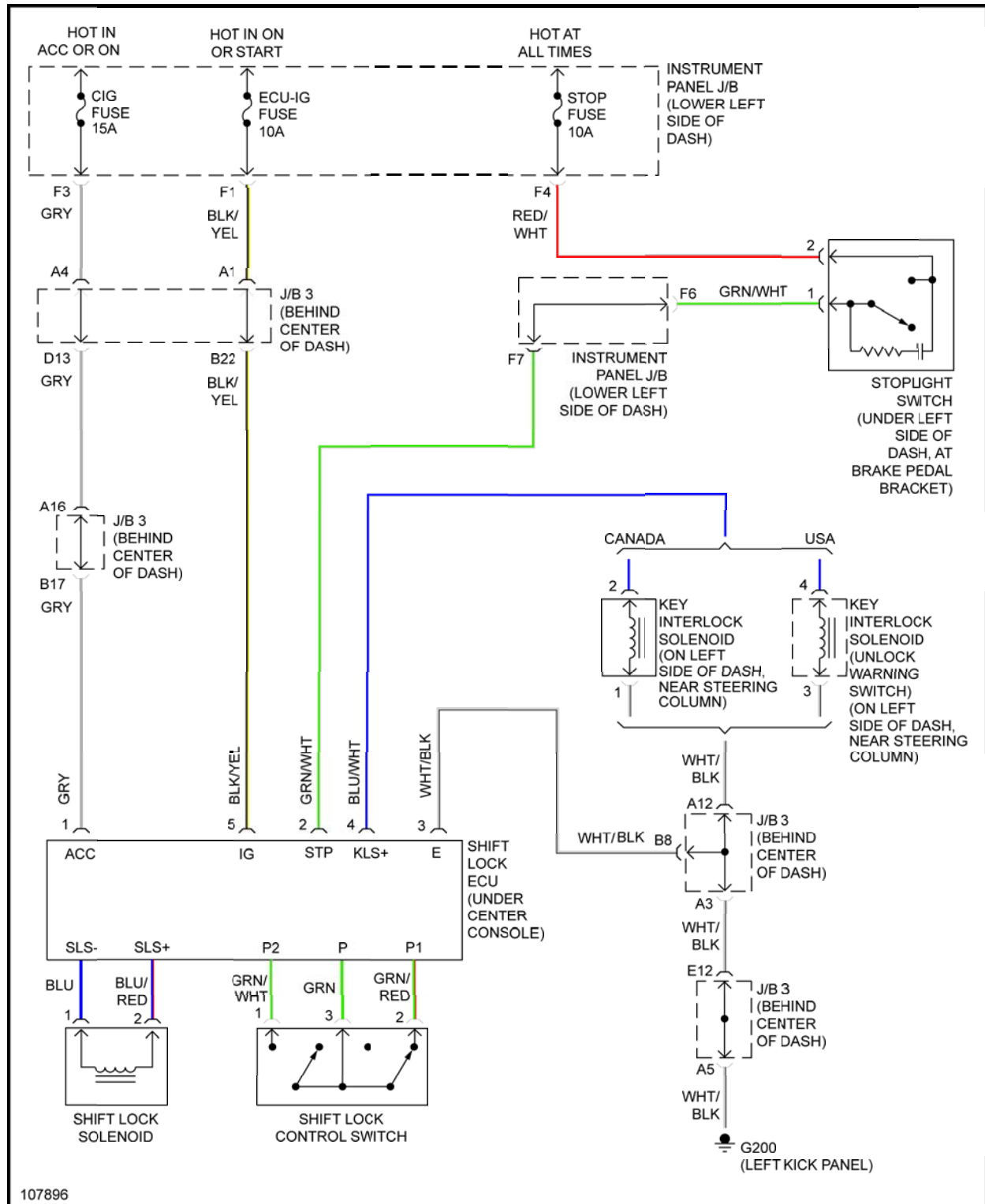


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Fig. 14: Shift Interlock System Wiring Diagram (1999 Land Cruiser)

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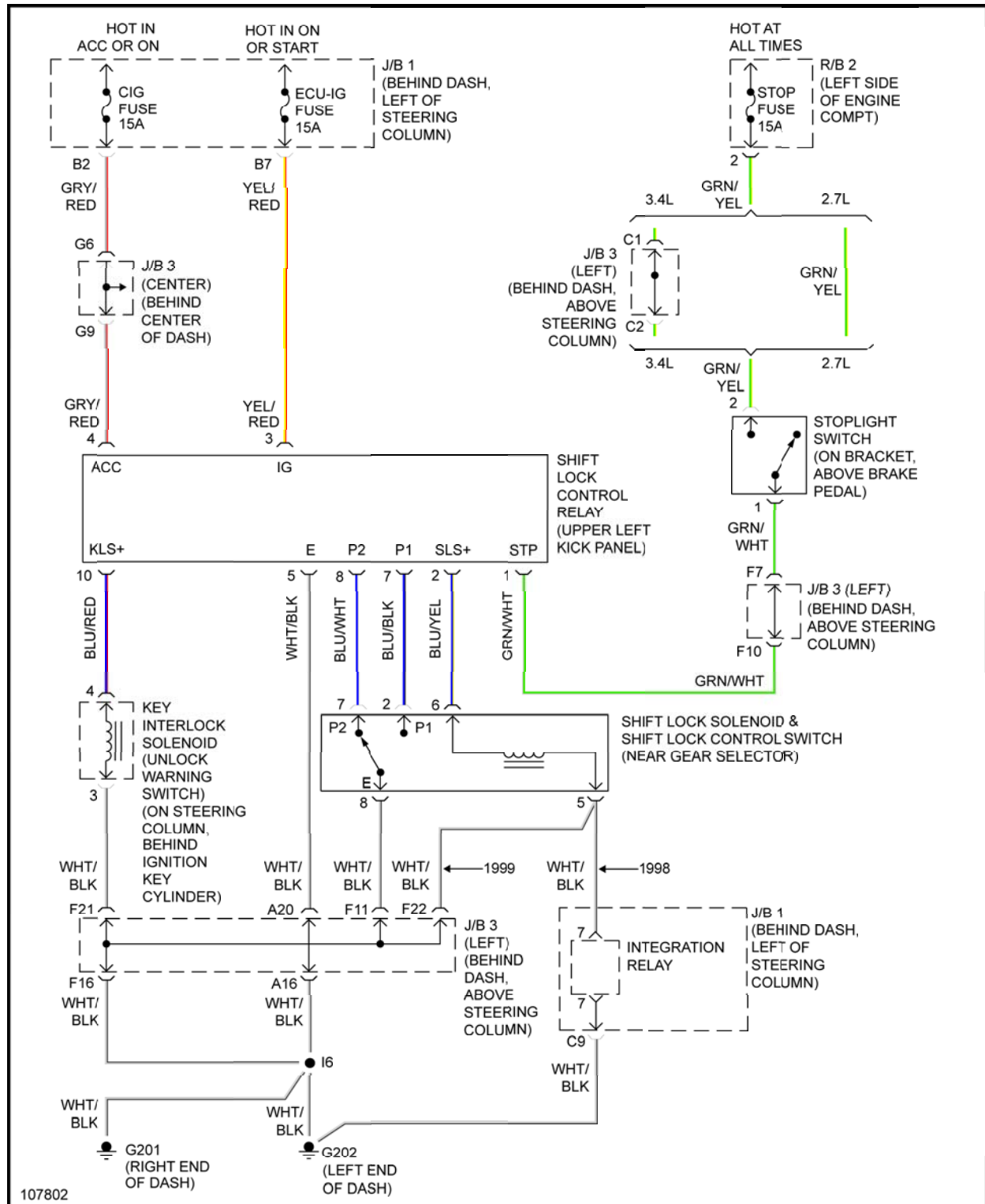


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Fig. 15: Shift Interlock System Wiring Diagram (1999 RAV4)

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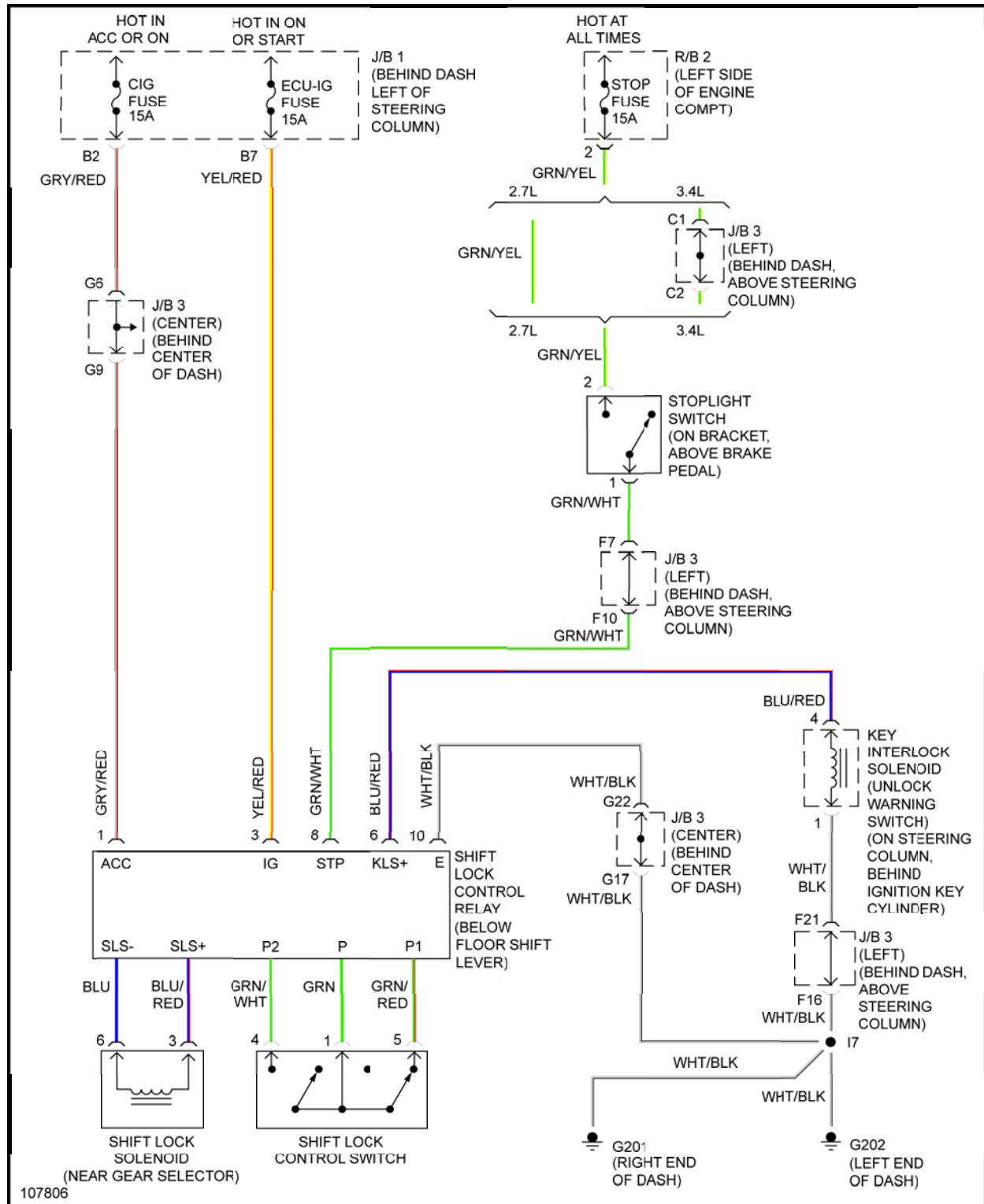


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Fig. 16: Shift Interlock System Wiring Diagram (1999 Tacoma - With Column Shift)

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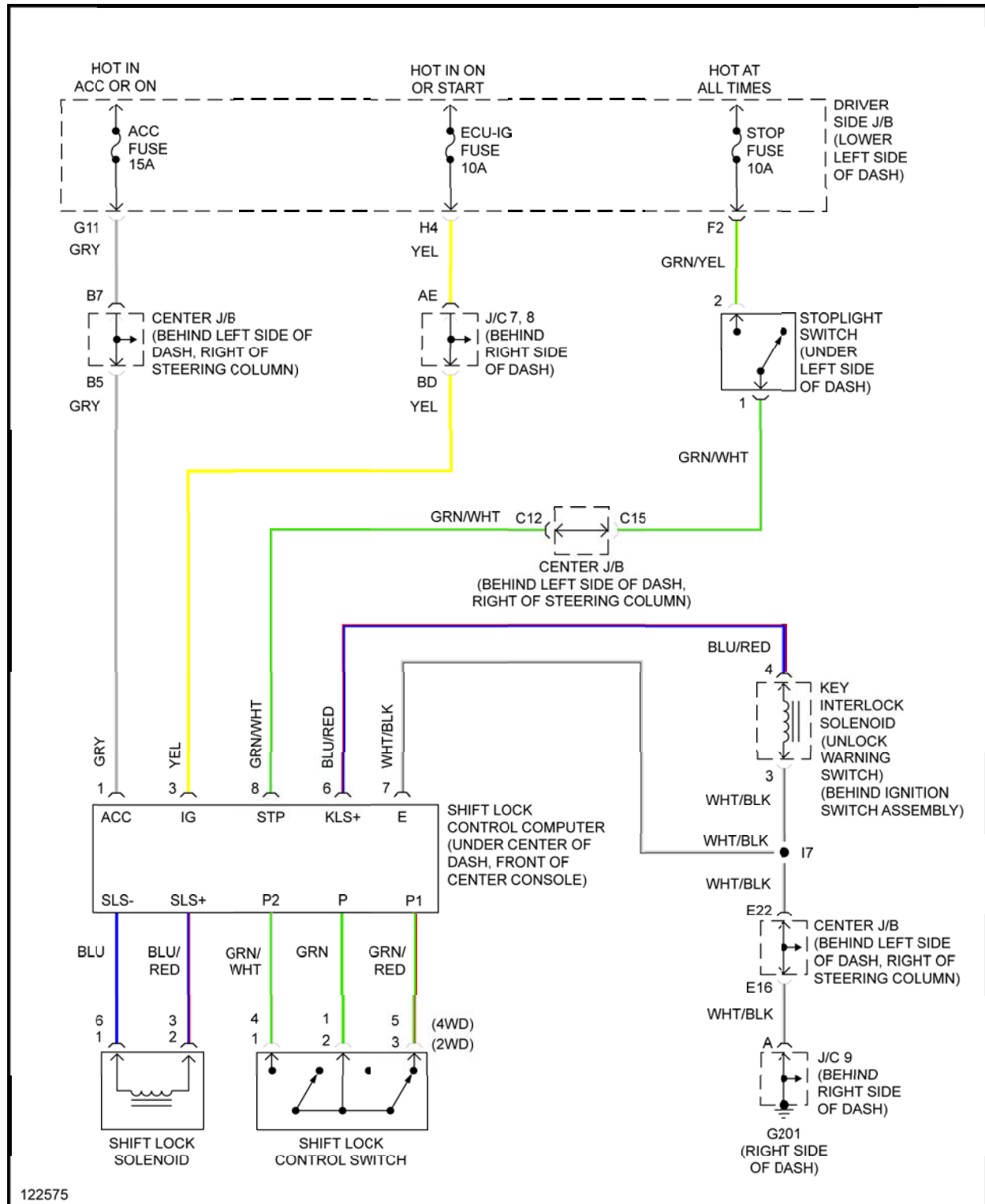


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Fig. 17: Shift Interlock System Wiring Diagram (1999 Tacoma - With Floor Shift)

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Fig. 18: Shift Interlock System Wiring Diagram (1999 4Runner)