

Pinpoint Tests

**A : DTC P0300, P0351, P0352, P0353, P0354, P0355, P0356, P0357, P0358, P1367, P1368;
RANDOM MISFIRE DETECTED, COIL PRIMARY/SECONDARY CIRCUIT MALFUNCTION,
IGNITION MONITOR MALFUNCTION**

NOTE:

Unless multiple cylinder misfires are apparent, only one circuit will normally need to be tested. The DTC set will indicate which cylinder is misfiring.

A1 : CHECK COIL FUNCTION BY SUBSTITUTION

1. Swap the suspect coil for a known good unit.
2. CLEAR the DTC. TEST the system for normal operation.

• **Does the same DTC reoccur? The DTC will indicate if the same cylinder is misfiring.**

-> **Yes**

INSTALL a new coil. CLEAR the DTC. TEST the system for normal operation.

-> **No**

Goto <<A2>>

A2 : CHECK THE IGNITION COIL SUPPLY VOLTAGE

1. Disconnect the relevant ignition coil electrical connector(s).
2. Turn the ignition switch to the **ON** position.
3. Make sure the ignition coil relay is energised.
4. Measure the voltage between:

- Cyl 1 PI51, pin 4 (PW) and GROUND.
- Cyl 2 PI55, pin 4 (PW) and GROUND.
- Cyl 3 PI52, pin 4 (PW) and GROUND.
- Cyl 4 PI56, pin 4 (PW) and GROUND.
- Cyl 5 PI53, pin 4 (PW) and GROUND.
- Cyl 6 PI57, pin 4 (PW) and GROUND.
- Cyl 7 PI54, pin 4 (PW) and GROUND.
- Cyl 8 PI58, pin 4 (PW) and GROUND.

• **Is the voltage less than 10.5 Volts?**

-> **Yes**

REPAIR the relevant ignition coil supply voltage circuit. This circuit includes the ignition coil relay. For additional information, refer to the wiring diagrams. CLEAR the DTCs. TEST the system for normal operation.

-> **No**

Goto <<A3>>

A3 : CHECK THE IGNITION COIL GROUND CIRCUIT

1. Turn the ignition switch to the **OFF** position.

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2. Disconnect the relevant ignition coil electrical connector(s).

3. Measure the resistance between:

- Cyl 1 PI51, pin 1 (B) and GROUND.
- Cyl 2 PI55, pin 1 (B) and GROUND.
- Cyl 3 PI52, pin 1 (B) and GROUND.
- Cyl 4 PI56, pin 1 (B) and GROUND.
- Cyl 5 PI53, pin 1 (B) and GROUND.
- Cyl 6 PI57, pin 1 (B) and GROUND.
- Cyl 7 PI54, pin 1 (B) and GROUND.
- Cyl 8 PI58, pin 1 (B) and GROUND.

•Is the resistance greater than 5 ohms?

-> **Yes**

REPAIR the high resistance circuit. For additional information, refer to the wiring diagrams. CLEAR the DTCs. TEST the system for normal operation.

-> **No**

Goto <<A4>>

A4 : CHECK THE IGNITION COIL SWITCHING CIRCUITS FOR HIGH RESISTANCE

1. Disconnect the battery negative terminal.

2. Disconnect the ECM electrical connector, EM84.

3. Disconnect the relevant ignition coil electrical connector(s).

4. Measure the resistance between:

- Cyl 1 PI51, pin 1 (GU) and EM84, pin 12 (GU).
- Cyl 2 PI55, pin 3 (GB) and EM84, pin 20 (GB).
- Cyl 3 PI52, pin 3 (GR) and EM84, pin 11 (GR).
- Cyl 4 PI56, pin 3 (GS) and EM84, pin 19 (GS).
- Cyl 5 PI53, pin 3 (GO) and EM84, pin 10 (GO).
- Cyl 6 PI57, pin 3 (GK) and EM84, pin 18 (GK).
- Cyl 7 PI54, pin 3 (GW) and EM84, pin 09 (GW).
- Cyl 8 PI58, pin 3 (GP) and EM84, pin 17 (GP).

•Is the resistance greater than 5 ohms?

-> **Yes**

REPAIR the high resistance circuit. For additional information, refer to the wiring diagrams. CLEAR the DTCs. TEST the system for normal operation.

-> **No**

Goto <<A5>>

A5 : CHECK THE IGNITION COIL (CYLS 1, 4, 6, AND 7) MONITOR CIRCUITS FOR HIGH RESISTANCE

1. Reconnect the ECM electrical connector, EM84.

2. Disconnect the ECM electrical connector, EM83.

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3. Disconnect the relevant ignition coil electrical connector(s).

4. Measure the resistance between:

- Cyl 1 PI51, pin 2 (YG) and EM83, pin 10 (YG).
- Cyl 4 PI56, pin 2 (YG) and EM83, pin 10 (YG).
- Cyl 6 PI57, pin 2 (YG) and EM83, pin 10 (YG).
- Cyl 7 PI54, pin 2 (YG) and EM83, pin 10 (YG).

•Is the resistance greater than 5 ohms?

-> **Yes**

REPAIR the high resistance circuit. This circuit includes the harness splice, PIS11. For additional information, refer to the wiring diagrams. CLEAR the DTCs. TEST the system for normal operation.

-> **No**

Goto <<A6>>

A6 : CHECK THE IGNITION COIL (CYLS 1, 4, 6, AND 7) MONITOR CIRCUITS FOR SHORT TO B+ VOLTAGE

1. Reconnect the battery negative terminal.

2. Disconnect the relevant ignition coil electrical connector(s).

3. Measure the voltage between:

- Cyl 1 PI51, pin 2 (YG) and GROUND.
- Cyl 4 PI56, pin 2 (YG) and GROUND.
- Cyl 6 PI57, pin 2 (YG) and GROUND.
- Cyl 7 PI54, pin 2 (YG) and GROUND.

•Is the voltage greater than 1 volt?

-> **Yes**

REPAIR the short to B+ voltage. For additional information, refer to the wiring diagrams. CLEAR the DTCs. TEST the system for normal operation.

-> **No**

Goto <<A7>>

A7 : CHECK THE IGNITION COIL (CYLS 1, 4, 6, AND 7) MONITOR CIRCUITS FOR SHORT TO GROUND

1. Disconnect the relevant ignition coil electrical connector(s).

2. Measure the resistance between:

- Cyl 1 PI51, pin 2 (YG) and GROUND.
- Cyl 4 PI56, pin 2 (YG) and GROUND.
- Cyl 6 PI57, pin 2 (YG) and GROUND.
- Cyl 7 PI54, pin 2 (YG) and GROUND.

•Is the resistance less than 10,000 ohms?

-> **Yes**

REPAIR the short to GROUND. For additional information, refer to the wiring diagrams. CLEAR the DTCs. TEST the system for normal operation.

-> **No**

Goto <<A8>>

A8 : CHECK THE IGNITION COIL (CYLS 2, 3, 5, AND 8) MONITOR CIRCUITS FOR HIGH RESISTANCE

1. Disconnect the relevant ignition coil electrical connector(s).

2. Measure the resistance between:

- Cyl 2 PI55, pin 2 (YG) and EM83, pin 11 (YG).
- Cyl 3 PI52, pin 2 (YG) and EM83, pin 11 (YG).
- Cyl 5 PI53, pin 2 (YG) and EM83, pin 11 (YG).
- Cyl 8 PI58, pin 2 (YG) and EM83, pin 11 (YG).

•Is the resistance greater than 5 ohms?

-> **Yes**

REPAIR the high resistance circuit. This circuit includes the harness splice, PIS11. For additional information, refer to the wiring diagrams. CLEAR the DTCs. TEST the system for normal operation.

-> **No**

Goto <<A9>>

A9 : CHECK THE IGNITION COIL (CYLS 2, 3, 5, AND 8) MONITOR CIRCUITS FOR SHORT TO B+ VOLTAGE

1. Reconnect the battery negative terminal.

2. Disconnect the relevant ignition coil electrical connector(s).

3. Measure the voltage between:

- Cyl 2 PI55, pin 2 (YG) and GROUND.
- Cyl 3 PI52, pin 2 (YG) and GROUND.
- Cyl 5 PI53, pin 2 (YG) and GROUND.
- Cyl 8 PI58, pin 2 (YG) and GROUND.

•Is the voltage greater than 1 volt?

-> **Yes**

REPAIR the short to B+ voltage. For additional information, refer to the wiring diagrams. CLEAR the DTCs. TEST the system for normal operation.

-> **No**

Goto <<A10>>

A10 : CHECK THE IGNITION COIL (CYLS 2, 3, 5, AND 8) MONITOR CIRCUITS FOR SHORT TO GROUND

1. Disconnect the relevant ignition coil electrical connector(s).

2. Measure the resistance between;

- Cyl 2 PI55, pin 2 (YG) and GROUND.
- Cyl 3 PI52, pin 2 (YG) and GROUND.
- Cyl 5 PI53, pin 2 (YG) and GROUND.
- Cyl 8 PI58, pin 2 (YG) and GROUND.

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•Is the resistance less than 10,000 ohms?

-> **Yes**

REPAIR the short to GROUND. For additional information, refer to the wiring diagrams. CLEAR the DTCs. TEST the system for normal operation.

-> **No**

INSTALL a new ECM. <<303-04>> Before replacing a ECM, contact Dealer technical support.

B : CHECK SPARK PLUG RESISTANCE

B1 : CHECK SPARK PLUG RESISTANCE

1. Remove the suspect spark plug(s).
2. Measure the resistance between the spark plug center electrode tip and the spark plug HT contact.

•Is the resistance between 8,000 and 12,000 ohms? (nominal 10,000 ohms)

-> **Yes**

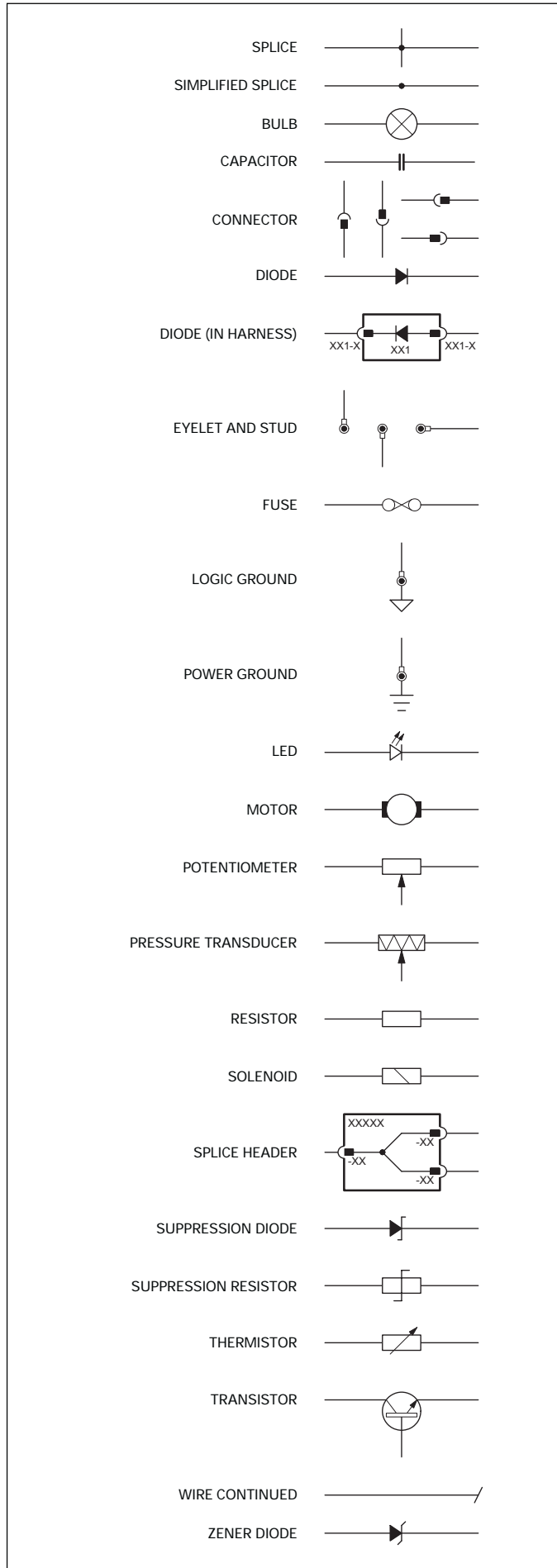
Check ignition coil and circuits. See possible sources list for misfire.

-> **No**

INSTALL a new spark plug. CLEAR the DTC. TEST the system for normal operation.



Wiring Symbols



Wiring Color Codes

N	Brown	O	Orange
B	Black	S	Slate
W	White	L	Light
K	Pink	U	Blue
G	Green	P	Purple
R	Red	BRD	Braid
Y	Yellow		

When a wire has two color code letters, the first letter indicates the main color and the subsequent letter indicates the tracer color.

Wiring Harness Codes

Code	Description
AN	Generator link harness
BB	Rear seat motors and heaters harness
BC	Rear seat center console harness
BL	Bumper harness – LH front
BR	Bumper harness – RH front
BS	Rear seat link harness
BT	Trunk harness
CA	Cabin harness
CC	Center console harness
CF	Radiator cooling fan harness
DD	Driver door harness
EM	Engine management harness
FC	Fascia harness
FL	Axle harness – LH front
FP	Fuel tank pressure sensor link harness
FR	Axle harness – RH front
GB	Transmission harness
HP	Steering wheel horn switch harness
IC	In-car entertainment harness
IJ	Fuel injector harness – supercharged
LA	Axle harness – LH rear
LF	Forward harness
LL	Power steering link harness
PD	Passenger door harness
PI	Engine harness
RA	Axle harness – RH rear
RD	Rear driver door harness
RP	Rear passenger door harness
RT	Radio telephone harness
SC	Steering column switchgear harness
SD	Driver seat harness
SH	Windshield heater link harness
SP	Passenger seat harness
SR	Sliding roof motor link harness
ST	Main power harness
SW	Steering wheel harness

Code Numbering

When numbering connectors, grounds and splices, Jaguar Engineering uses a three-position format: CA001, CA002, etc. Because space is limited in this Electrical Guide, the codes have been shortened. Thus CA001-001 becomes CA1-1, CA002-001 becomes CA2-1, etc.



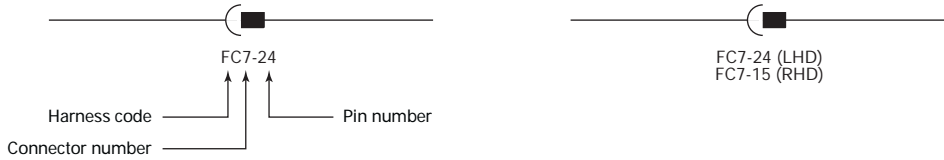
Harness Component Numbers

Connectors

HARNESS CODE + CONNECTOR NUMBER + PIN NUMBER

EXAMPLE: FC7-24 (pin number is separated by a dash)

Where the pin number differs from LHD to RHD, the connector number will be further identified by (LHD) or (RHD).

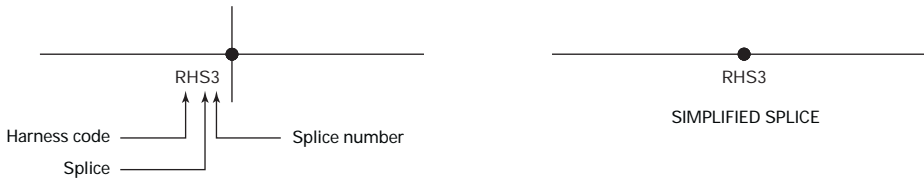


Splices

HARNESS CODE + S (SPLICE) + SPLICE NUMBER

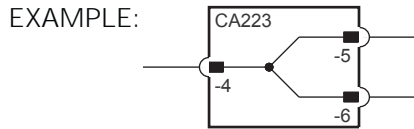
EXAMPLE: RHS3 (no dash is used)

NOTE: In order to avoid unnecessary circuit complication, multiple splices (more than two wires) within components, in wires leading from input components to multiple circuits and in harness 'ground' sides, are simplified so as not to show wires from other circuits.



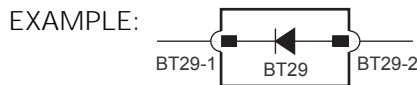
Splice Headers

Three non-serviceable splice headers are used in the system harness. Splice headers are depicted as components and identified by a connector number within the component. The splice header number appears at the upper left hand corner; pin numbers appear adjacent to each pin.



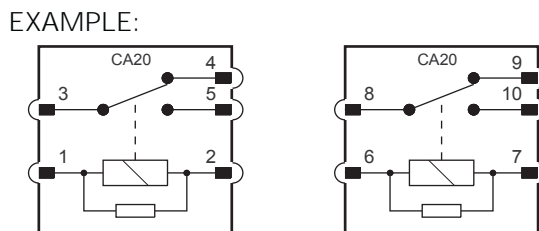
Diodes

Harness diodes occur at connectors and are depicted as components and identified by a connector number.



Relay Connectors

Relay connector numbers are shown within the relay. The connector number is shown in the upper portion of the relay; the pin (terminal) number is shown adjacent to the pin. Certain relays are paired and share a modular connector. In this instance, the connector number remains the same for both relays while the pin numbers of the second relay are identified by numbers 6 - 10.





Grounds

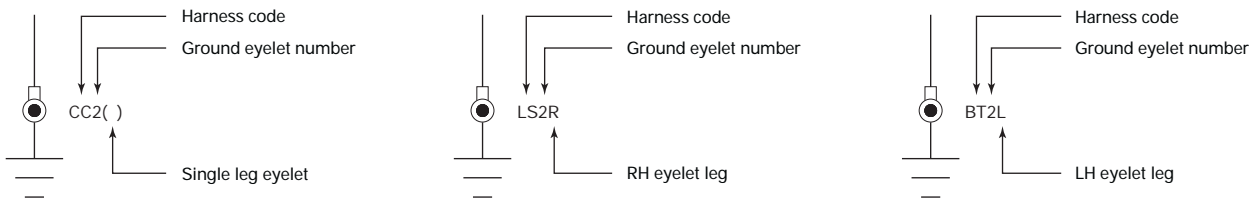
HARNESS CODE + GROUND EYELET NUMBER + EYELET DESIGNATION (L or R where applicable)

Eyelet designation

Two eyelet variations are used: a single eyelet and an eyelet pair. The single eyelet has a single 'leg' and can be identified by the absence of a suffix. The eyelet pair has two 'legs', identified by the suffix L (left) or R (right).



EXAMPLES:



Where the ground designation differs from LHD to RHD, the RHD ground is shown in parentheses. If the ground designation is the same for LHD and RHD, only one ground designation is used.

EXAMPLES:

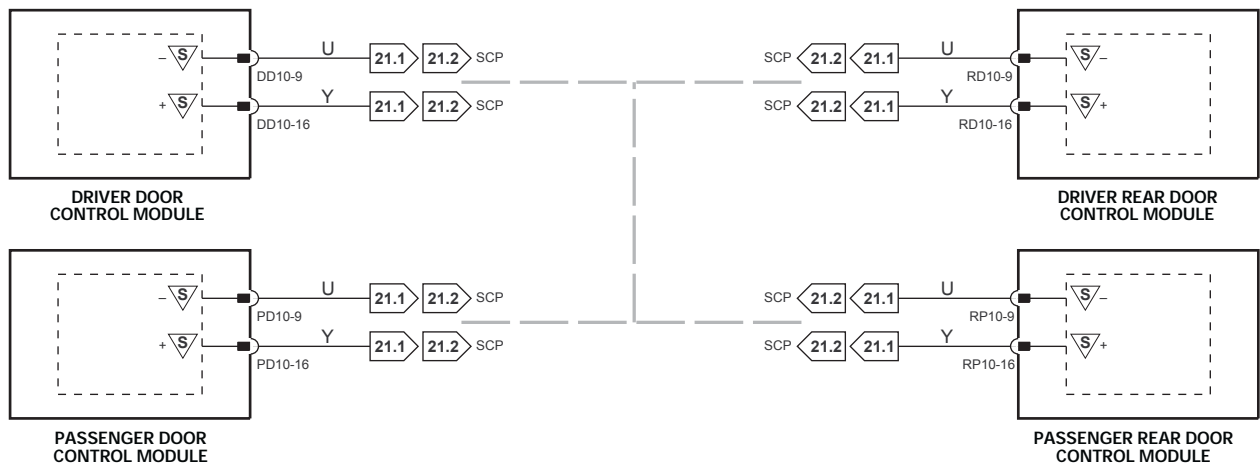


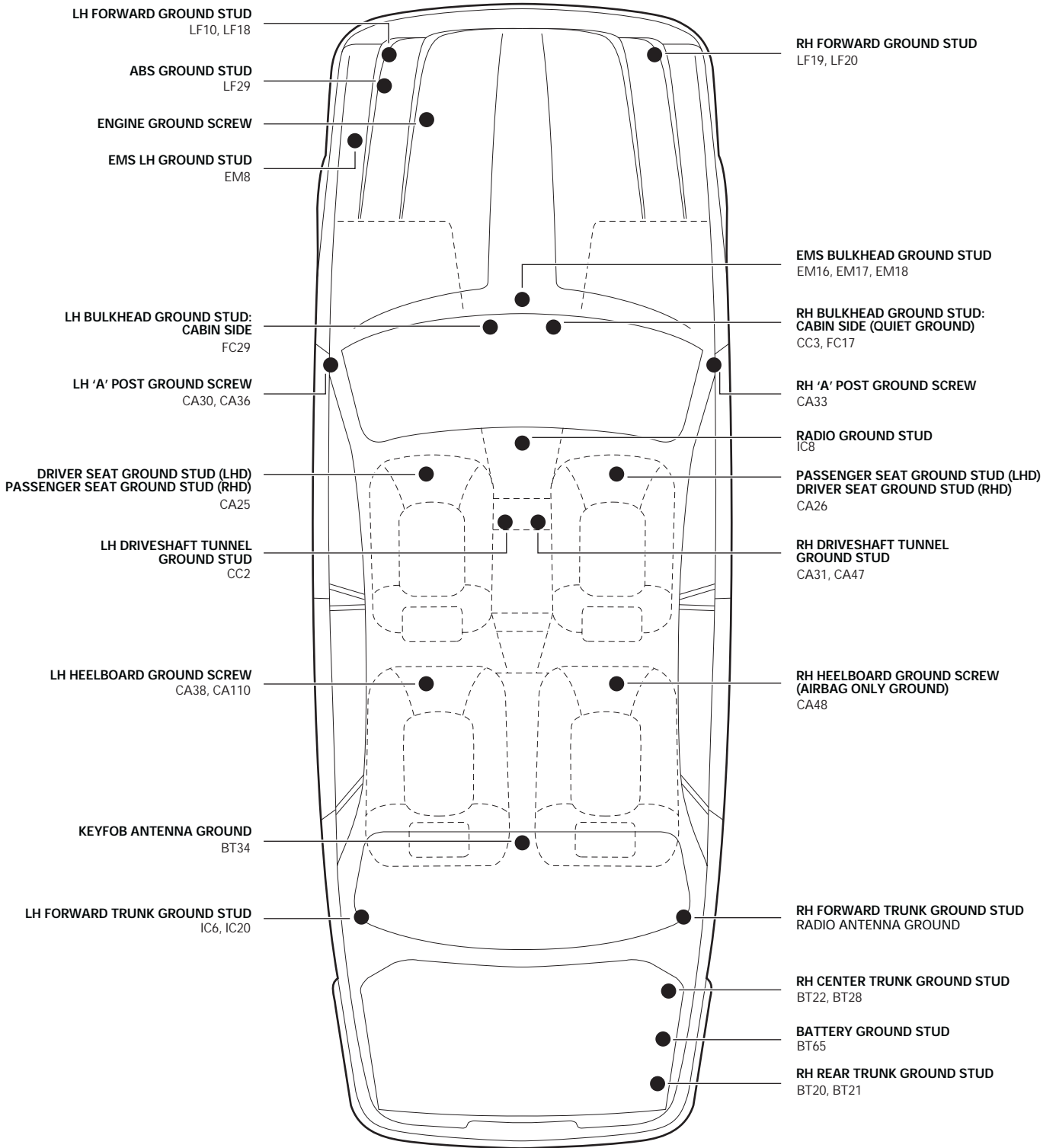
NOTE: The XJ Series ground studs are not identified by code. Therefore, multiple eyelets with different harness codes may be connected to a ground stud.

SCP Network

Due to circuit complexity and because space is limited, the SCP Network is, in most cases, shown as a broken grey line indicating that there is network communication between the depicted control modules. Refer to Fig. 19.1 for circuit details.

EXAMPLE:

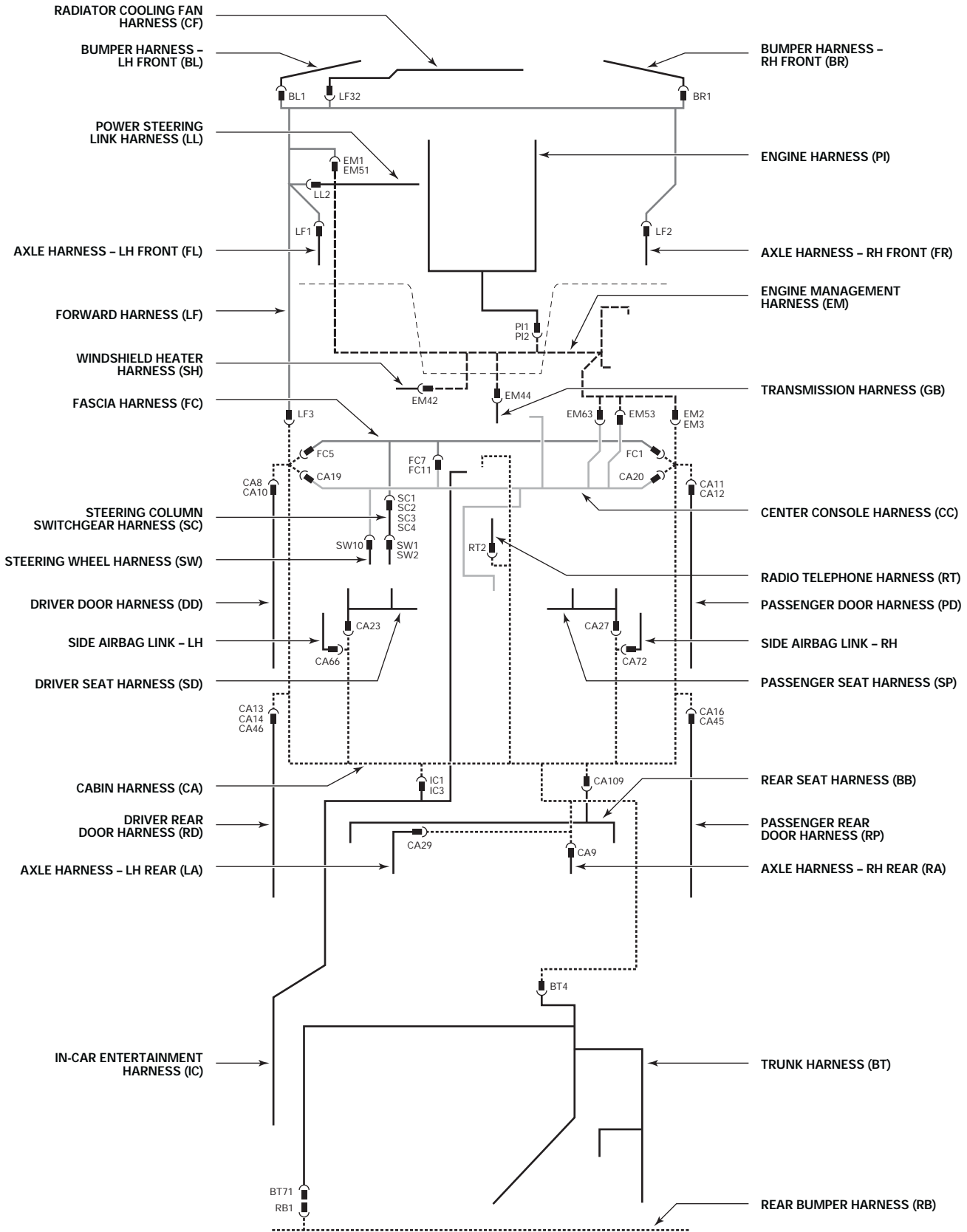






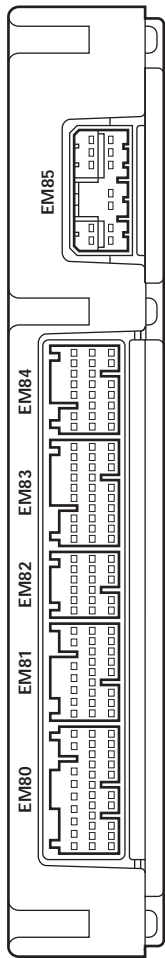
LHD

FRONT OF VEHICLE





ENGINE CONTROL MODULE: AJ27 N/A



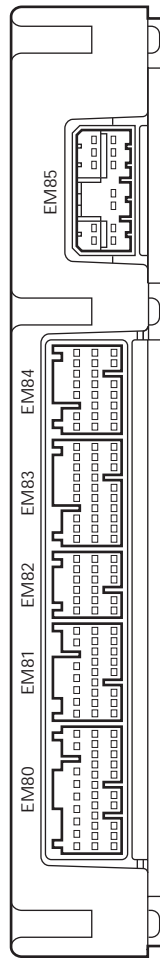
EM80 / 31-WAY / NATURAL			EM81 / 24-WAY / NATURAL			EM82 / 17-WAY / NATURAL			EM83 / 28-WAY / NATURAL			EM84 / 22-WAY / NATURAL			
9	8	7	6	5	4	3	2	1	7	6	5	4	3	2	1
B	GM	R	R	G	G	B	UY	UY	RG	OG	W	WJ	U	RW	OY
21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6
B	U	W	W	O	YU	YG	—	—	RC*	YG	YR	WU	RU	—	—
31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
B	—	—	—	U	—	RW	—	—	OY	BK	—	G	R	WR	—

* Not used – ROW vehicles.

EM85 / 12-WAY / WHITE

5	4	3	2	1
—	—	—	UY	RU
12	11	10	9	—
—	—	—	WG	B
—	—	—	8	7
—	—	—	6	6

ENGINE CONTROL MODULE: AJ27 SC



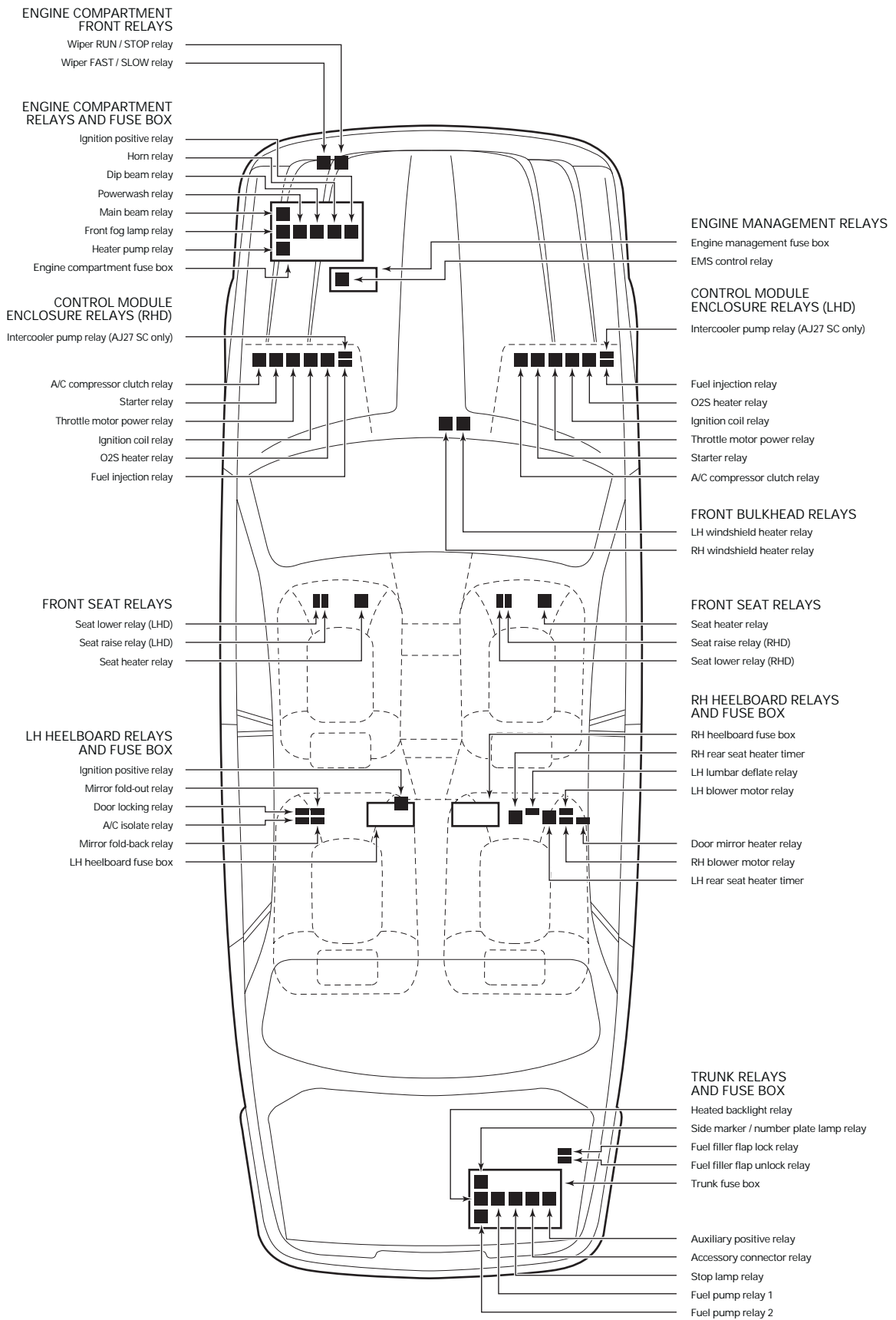
EM80 / 31-WAY / NATURAL			EM81 / 24-WAY / NATURAL			EM82 / 17-WAY / NATURAL			EM83 / 28-WAY / NATURAL			EM84 / 22-WAY / NATURAL			
9	8	7	6	5	4	3	2	1	7	6	5	4	3	2	1
GM	U	R	R	G	G	B	UY	UY	RG*	OG	W	WJ	U	RW	OY
21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6
B	U	W	W	O	YU	YG	—	—	RC*	YG	YR	WU	RU	—	—
31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
B	—	—	—	U	—	RW	—	—	OY	BK	—	G	R	WR	—

* Not used – ROW vehicles.

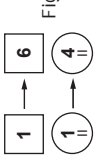
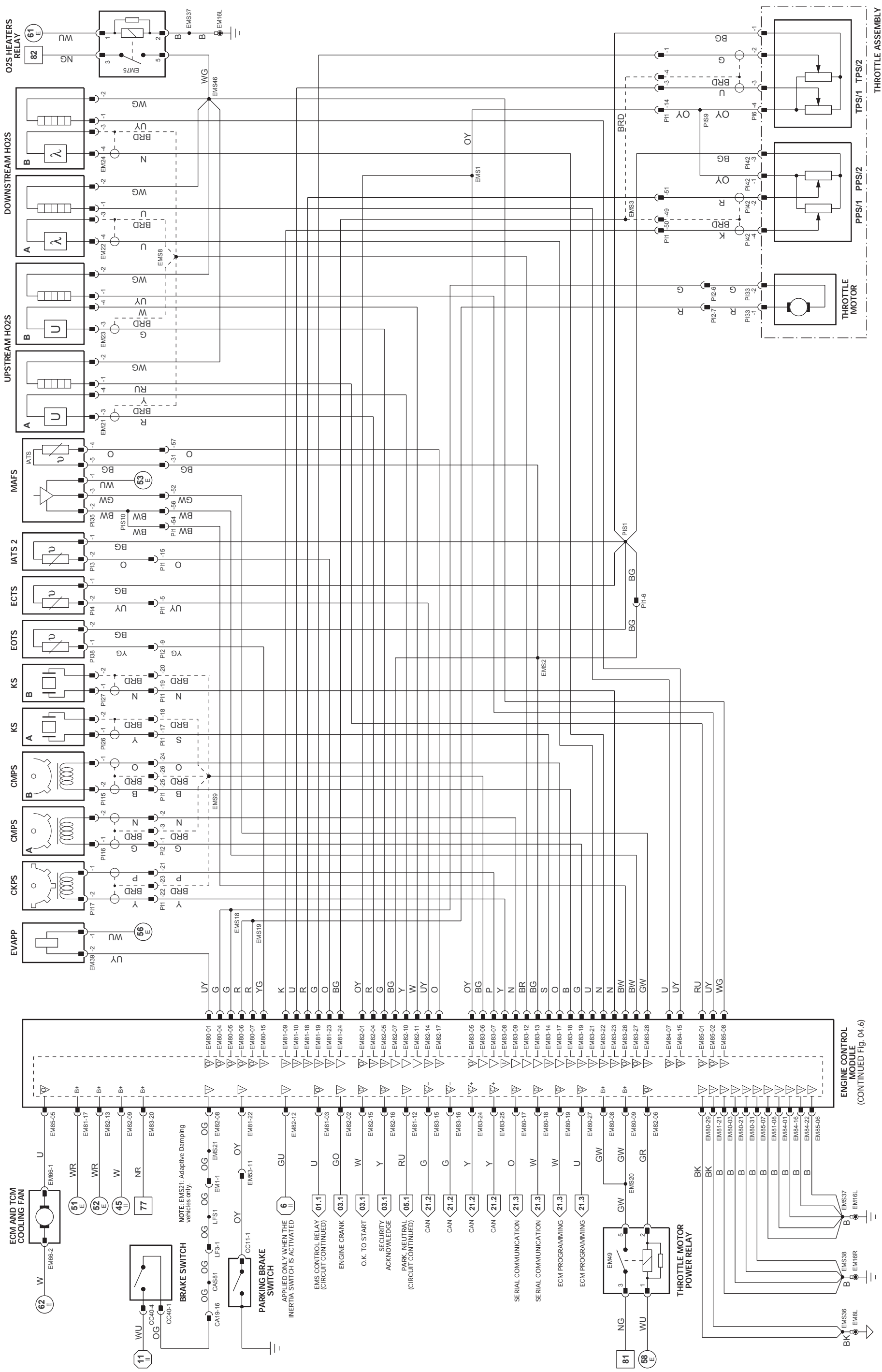
EM85 / 12-WAY / WHITE

5	4	3	2	1
—	—	—	UY	RU
12	11	10	9	—
—	—	—	WG	B
—	—	—	8	7
—	—	—	6	6

* Not used – ROW vehicles.



NOTE: All relays are brown, with the exception of the microrelays, which are black.



VARIANT: AJ27 4.0 SC ROW Vehicles
 VIN RANGE: F00103 →
 DATE OF ISSUE: October 1999

