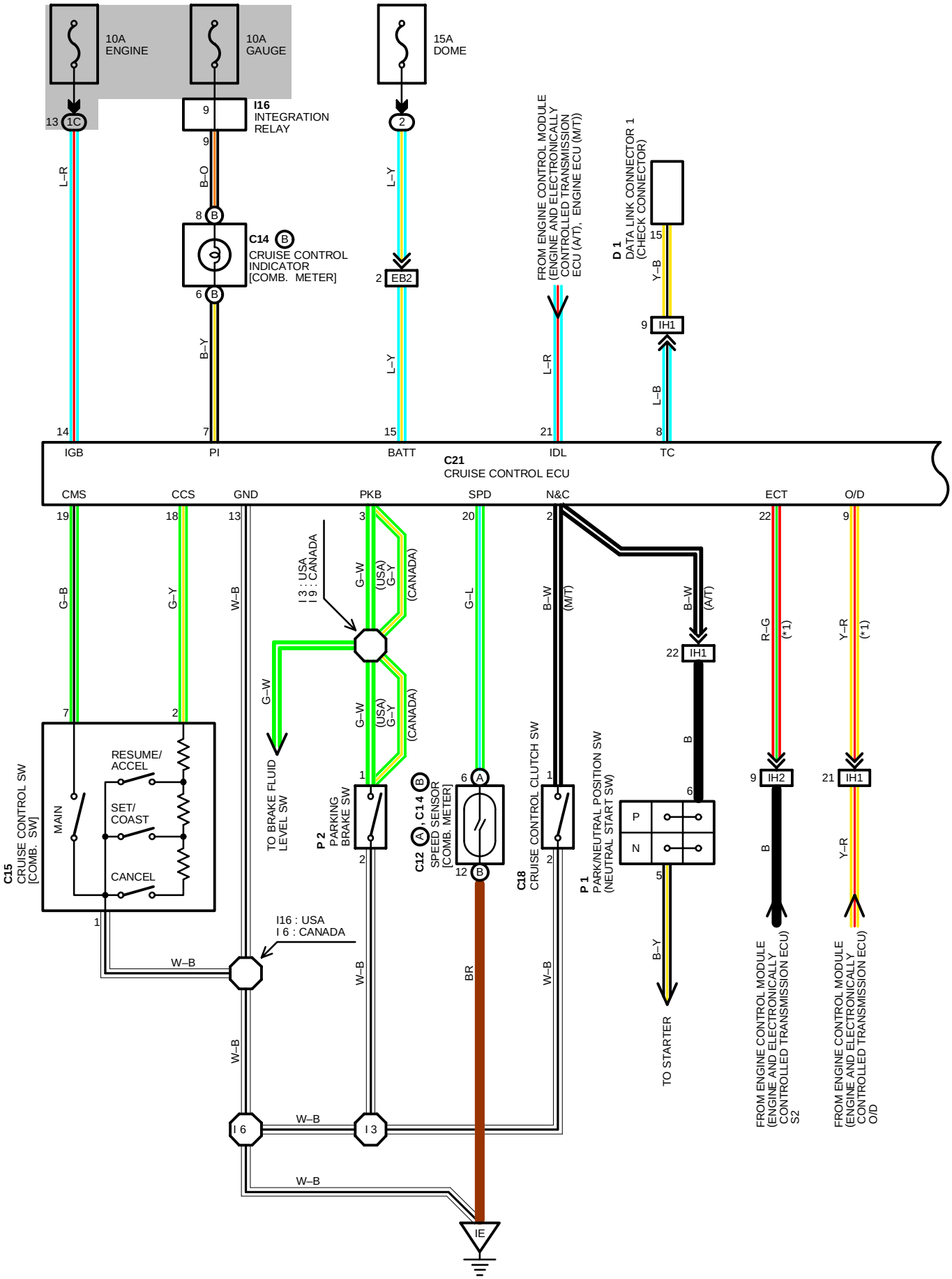
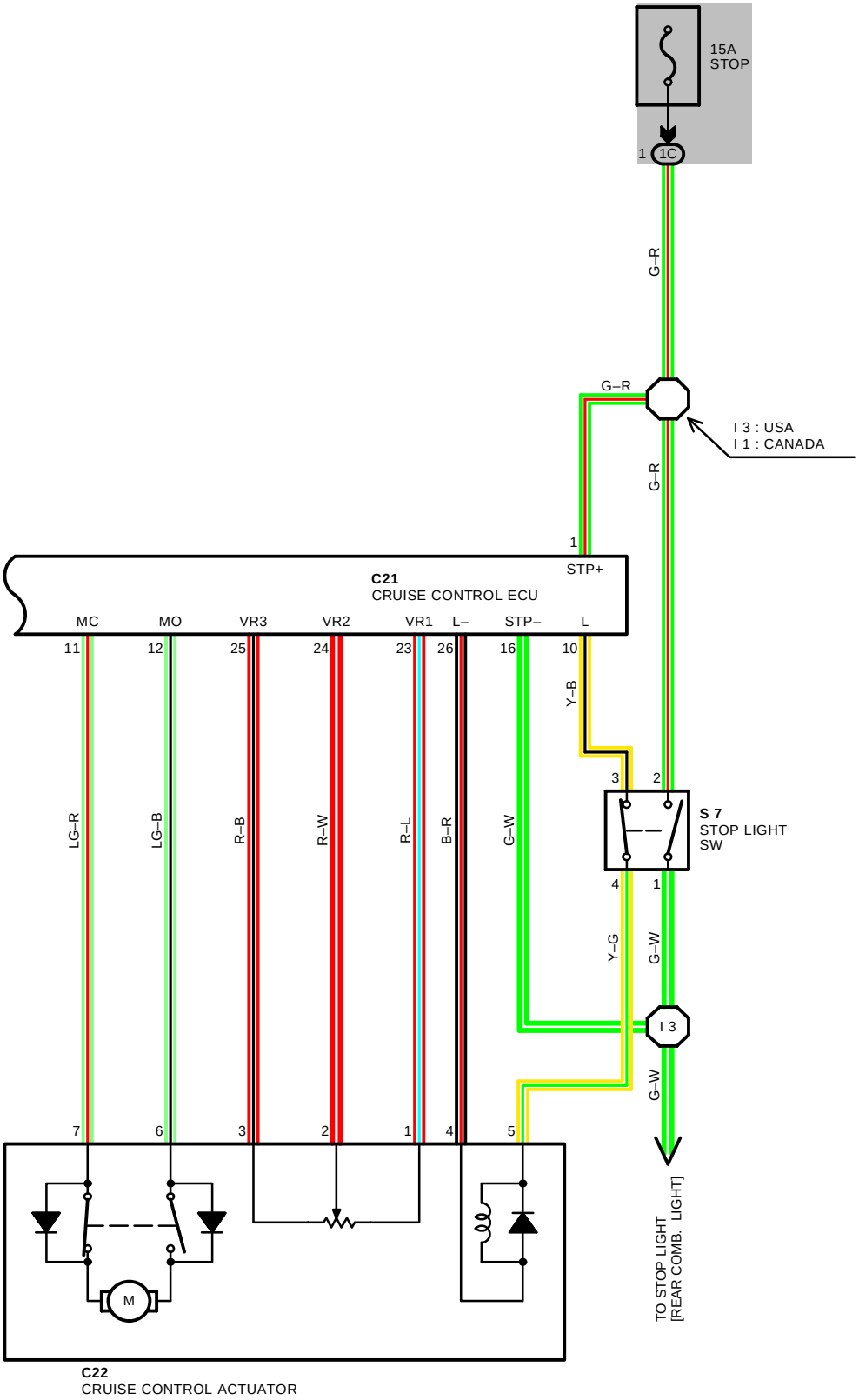
CRUISE CONTROL (MOTOR TYPE)




15A
STOP
1
1C
G–R
G–R
I 3 : USA
I 1 : CANADA
G–R
1
STP+
C21
CRUISE CONTROL ECU
MC
MO
VR3
VR2
VR1
L–
STP–
L
11
12
25
24
23
26
16
10
Y–B
3
2
S 7
STOP LIGHT
SW
4
1
LG–R
LG–B
R–B
R–W
R–L
B–R
G–W
Y–G
G–W
I 3
G–W
7
6
3
2
1
4
5
M
TO STOP LIGHT
[REAR COMB. LIGHT]
C22
CRUISE CONTROL ACTUATOR

CRUISE CONTROL (MOTOR TYPE)

SYSTEM OUTLINE

CURRENT IS APPLIED AT ALL TIMES THROUGH **STOP** FUSE TO **TERMINAL 1** OF THE CRUISE CONTROL ECU AND **TERMINAL 2** OF STOP LIGHT SW.

WITH THE IGNITION SW TURNED TO ON, THE CURRENT FLOWS THROUGH **GAUGE** FUSE TO **TERMINL (B) 8** OF CRUISE CONTROL INDICATOR LIGHT [COMB. METER]. THE CURRENT THROUGH **ENGINE** FUSE FLOWS TO **TERMINAL 14** OF CRUISE CONTROL ECU.

WHEN THE IGNITION SW IS ON AND THE CRUISE CONTROL SW [COMB. SW] IS TURNED ON, A SIGNAL IS INPUT FROM **TERMINAL 7** OF CRUISE CONTROL SW TO **TERMINAL 19** OF CRUISE CONTROL ECU. AS A RESULT, THE CRUISE CONTROL ECU FUNCTIONS AND THE CURRENT TO **TERMINAL 14** OF CRUISE CONTROL ECU TO **TERMINAL 13** OF CRUISE CONTROL ECU → **GROUND**, AND THE CRUISE CONTROL SYSTEM IS IN A CONDITION READY FOR OPERATION.

AT THE SAME TIME, THE CURRENT THROUGH THE **GAUGE** FUSE FLOWS FROM **TERMINAL (B) 8** OF CRUISE CONTROL INDICATOR LIGHT [COMB. METER] → **TERMINAL (B) 6** → **TERMINAL 7** OF CRUISE CONTROL ECU → **TERMINAL 13** → TO **GROUND**, CAUSING THE CRUISE CONTROL INDICATOR LIGHT TO LIGHT UP, INDICATING THAT THE CRUISE CONTROL IS READY FOR OPERATION.

1. SET OPERATION

WHEN THE CRUISE CONTROL SW [COMB. SW] IS TURNED ON AND THE SET SW IS PUSHED WITH THE VEHICLE SPEED WITHIN THE SET LIMIT (APPROX. **40**KM/H, **25**MPH TO **200**KM/H, **124**MPH), A SIGNAL IS INPUT TO **TERMINAL 18** OF THE CRUISE CONTROL ECU AND THE VEHICLE SPEED AT THE TIME THE SET SWITCH IS RELEASED IS MEMORIZED IN THE ECU AS THE SET SPEED.

2. SET SPEED CONTROL

DURING CRUISE CONTROL DRIVING, THE ECU COMPARES THE SET SPEED MEMORIZED IN THE ECU WITH THE ACTUAL VEHICLE SPEED INPUT INTO **TERMINAL 20** OF THE CRUISE CONTROL ECU FROM THE VEHICLE SPEED SENSOR (SPEED SENSOR) [COMB. METER], AND CONTROLS THE CRUISE CONTROL ACTUATOR TO MAINTAIN THE SET SPEED.

WHEN THE ACTUAL SPEED IS LOWER THAN THE SET SPEED, THE ECU CAUSES THE CURRENT TO THE CRUISE CONTROL ACTUATOR TO FLOW FROM **TERMINAL 12** OF ECU → **TERMINAL 6** OF CRUISE CONTROL ACTUATOR → **TERMINAL 7** → **TERMINAL 11** OF CRUISE CONTROL ECU. AS A RESULT, THE MOTOR IN THE CRUISE CONTROL ACTUATOR IS ROTATED TO OPEN THE THROTTLE VALVE AND THE THROTTLE CABLE IS PULLED TO INCREASE THE VEHICLE SPEED. WHEN THE ACTUAL DRIVING SPEED IS HIGHER THAN THE SET SPEED, THE CURRENT TO CRUISE CONTROL ACTUATOR FLOWS FROM **TERMINAL 11** OF ECU → **TERMINAL 7** OF CRUISE CONTROL ACTUATOR → **TERMINAL 6** → **TERMINAL 12** OF CRUISE CONTROL ECU.

THIS CAUSES THE MOTOR IN THE CRUISE CONTROL ACTUATOR TO ROTATE TO CLOSE THE THROTTLE VALVE AND RETURN THE THROTTLE CABLE TO DECREASE THE VEHICLE SPEED.

3. COAST CONTROL

DURING THE CRUISE CONTROL DRIVING, WHILE THE COAST SW IS ON, THE CRUISE CONTROL ACTUATOR RETURNS THE THROTTLE CABLE TO CLOSE THE THROTTLE VALVE AND DECREASE THE DRIVING SPEED. THE VEHICLE SPEED WHEN THE COAST SW IS TURNED OFF AND IS MEMORIZED AND THE VEHICLE CONTINUES AT THE NEW SET SPEED.

4. ACCEL CONTROL

DURING CRUISE CONTROL DRIVING, WHILE THE ACCEL SW IS TURNED ON, THE CRUISE CONTROL ACTUATOR PULLS THE THROTTLE CABLE TO OPEN THE THROTTLE VALVE AND INCREASE THE DRIVING SPEED. THE VEHICLE SPEED WHEN THE ACCEL SW IS TURNED OFF IS MEMORIZED AND THE VEHICLE CONTINUES AT THE NEW SET SPEED.

5. RESUME CONTROL

UNLESS THE VEHICLE SPEED FALLS BELOW THE MINIMUM SPEED LIMIT (APPROX. **40**KM/H, **25**MPH) AFTER CANCELING THE SET SPEED BY THE CANCEL SW, PUSHING THE RESUME SW WILL CAUSE THE VEHICLE TO RESUME THE SPEED SET BEFORE CANCELLATION.

6. MANUAL CANCEL MECHANISM

IF ANY OF THE FOLLOWING OPERATIONS OCCURS DURING CRUISE CONTROL OPERATION, THE SAFETY MAGNETIC CLUTCH OF THE ACTUATOR MOTOR TURNS OFF AND THE MOTOR ROTATES TO CLOSE THE THROTTLE VALVE AND THE CRUISE CONTROL IS RELEASED.

- PLACING THE SHIFT LEVER IN “N” POSITION (PARK/NEUTRAL POSITION SW (NEUTRAL START SW) ON). “SIGNAL INPUT TO **TERMINAL 2** OF ECU”
- DEPRESSING THE BRAKE PEDAL (STOP LIGHT SW ON). “SIGNAL INPUT TO **TERMINAL 16** OF ECU”
- PULL UP THE PARKING BRAKE LEVER (PARKING BRAKE SW ON). “SIGNAL INPUT TO **TERMINAL 3** OF ECU”
- PUSH THE CANCEL SW (CANCEL SW ON). “SIGNAL INPUT TO **TERMINAL 18**”

7. AUTO CANCEL FUNCTION

A) IF ANY OF THE FOLLOWING OPERATE CONDITIONS OCCURS DURING CRUISE CONTROL OPERATION. THE SET SPEED IS ERASED, CURRENT FLOW TO SAFETY MAGNETIC CLUTCH IS STOPPED AND THE CRUISE CONTROL IS RELEASED. (MAIN SW TURNS OFF).

WHEN THIS OCCURS, THE IGNITION SW MUST BE TURNED OFF ONCE BEFORE THE MAIN SW WILL TURN ON.

- OVER CURRENT TO TRANSISTOR DRIVING MOTOR AND/OR SAFETY MAGNETIC CLUTCH.
- CURRENT TO CONTROL THE THROTTLE VALVE IN MOTOR BECOMES ALWAYS “ON”.
- OPEN CIRCUIT IN SAFETY MAGNETIC CLUTCH.
- MOMENTARY INTERRUPTION OF VEHICLE SPEED SIGNAL.
- THE RESUME SW IS ALREADY ON WHEN THE MAIN SW IS TURNED ON.
- SHORT CIRCUIT IN CRUISE CONTROL SW.
- MOTOR DOES NOT OPERATE DESPITE THE MOTOR DRIVE SIGNAL BEING OUTPUT.

B) IF ANY OF THE FOLLOWING CONDITIONS OCCUR DURING CRUISE CONTROL OPERATION, THE SET SPEED IS ERASED AND THE CRUISE CONTROL IS RELEASED. (THE POWER OF SAFETY MAGNETIC CLUTCH IS CUT OFF UNTIL THE SET SW IS “ON” AGAIN.)

- WHEN THE VEHICLE SPEED FALLS BELOW THE MINIMUM SPEED LIMIT, APPROX. **40** KM/H (**25** MPH)
- WHEN THE VEHICLE SPEED FALLS MORE THAN **16** KM/H (**10** MPH) BELOW THE SET SPEED, E.G. ON AN UPWARD SLOPE.
- WHEN POWER TO THE CRUISE CONTROL SYSTEM IS MOMENTARILY CUT OFF.

C) IF ANY OF THE FOLLOWING CONDITIONS OCCURS DURING CRUISE CONTROL OPERATION, THE CRUISE CONTROL IS RELEASED. BUT IN THIS CASE, THE SET SPEED IS NOT ERASED. IF THE VEHICLE SPEED IS MORE THAN THE MINIMUM SPEED LIMIT (APPROX. **40** KM/H **25** MPH), CRUISE CONTROL OPERATION IS POSSIBLE USING “SET” OR “RESUME” ON THE CONTROL SW.

- OPEN CIRCUIT FOR **TERMINAL 3** OF CRUISE CONTROL ECU AND **TERMINAL 3** OF STOP LIGHT SW.

8. AUTOMATIC TRANSMISSION CONTROL FUNCTION

- IN OVERDRIVE. IF THE VEHICLE SPEED BECOMES LOWER THAN THE OVERDRIVE CUT SPEED (SET SPEED MINIMUM **4** KM/H, **2.5** MPH) DURING CRUISE CONTROL OPERATION, SUCH AS DRIVING UP A HILL, THE OVERDRIVE IS RELEASED AND THE POWER INCREASED TO PREVENT A REDUCTION IN VEHICLE SPEED.
- AFTER RELEASING THE OVERDRIVE, THE VEHICLE SPEED BECOMES HIGHER THAN THE OVERDRIVE RETURN SPEED (SET SPEED MINIMUM **2** KM/H, **1.2** MPH) AND THE ECU JUDGES BY THE SIGNALS FROM POTENTIOMETER OF THE ACTUATOR THAT THE UPWARD SLOPE HAS FINISHED, OVERDRIVE IS RESUMED AFTER APPROXIMATELY **6** SECONDS.

SERVICE HINTS

C22 CRUISE CONTROL ACTUATOR

1–3 : APPROX. **2** KΩ
5–4 : APPROX. **38.5** Ω

C15 CRUISE CONTROL SW [COMB. SW]

7–1 : CONTINUOUS WITH MAIN SW ON
2–1 : APPROX. **413** Ω WITH CANCEL SW ON
APPROX. **68** Ω WITH RESUME/ACCEL SW ON
APPROX. **198** Ω WITH SET/COAST SW ON

C21 CRUISE CONTROL ECU

14–GROUND : APPROX. **12** VOLTS WITH IGNITION SW AT **ON** POSITION
1–GROUND : ALWAYS APPROX. **12** VOLTS
3–GROUND : CONTINUOUS WITH PARKING BRAKE LEVER PULLED UP (ONE OF THE CANCEL SW) OR BRAKE LEVEL WARNING SW ON
20–GROUND : **4** PULSE WITH **1** ROTATION OF ROTOR SHAFT
18–GROUND : APPROX. **419** Ω WITH CANCEL SW ON IN CONTROL SW
APPROX. **68** Ω WITH RESUME/ACCEL SW ON IN CONTROL SW
APPROX. **198** Ω WITH SET/COAST SW ON IN CONTROL SW
13–GROUND : ALWAYS CONTINUOUS

CRUISE CONTROL (MOTOR TYPE)

: PARTS LOCATION

CODE		SEE PAGE	CODE	SEE PAGE	CODE	SEE PAGE
C12	A	28	**C21**	28	**P 1**	25 (3VZ–E)
C14	B	28	**C22**	24 (3VZ–E)	**P 2**	28
C15		28	**D 1**	24 (3VZ–E)	**S 7**	28
C18		28	**I16**	28		

: RELAY BLOCKS

CODE	SEE PAGE	RELAY BLOCKS (RELAY BLOCK LOCATION)
2	22	R/B NO.2 (ENGINE COMPARTMENT RIGHT)

: JUNCTION BLOCK AND WIRE HARNESS CONNECTOR

CODE	SEE PAGE	JUNCTION BLOCK AND WIRE HARNESS (CONNECTOR LOCATION)
1C	20	COWL WIRE AND J/B NO.1 (LEFT KICK PANEL)

: CONNECTOR JOINING WIRE HARNESS AND WIRE HARNESS

CODE	SEE PAGE	JOINING WIRE HARNESS AND WIRE HARNESS (CONNECTOR LOCATION)
EB2	30 (3VZ–E)	COWL WIRE AND ENGINE ROOM MAIN WIRE (R/B NO. 2)
IH1	34	ENGINE WIRE AND COWL WIRE (RIGHT KICK PANEL)
IH2		

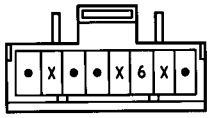
: GROUND POINTS

CODE	SEE PAGE	GROUND POINTS LOCATION
IE	34	LEFT KICK PANEL

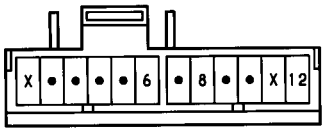
: SPLICE POINTS

CODE	SEE PAGE	WIRE HARNESS WITH SPLICE POINTS	CODE	SEE PAGE	WIRE HARNESS WITH SPLICE POINTS
I 1	34	COWL WIRE	**I 9**	34	COWL WIRE
I 3			**I16**		
I 6					

C12 (A)



C14 (B)



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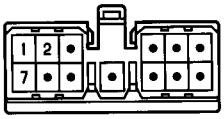

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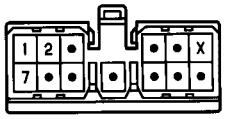
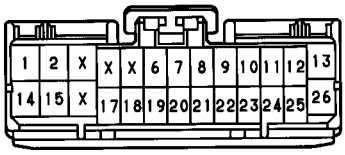
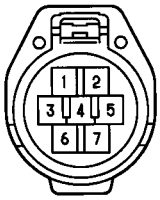


C18

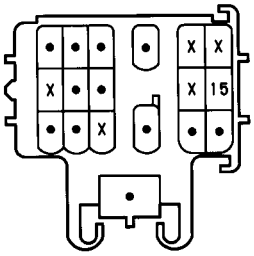
C21 GREEN



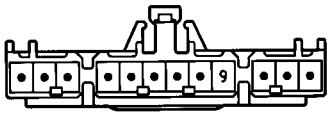
C22 GRAY



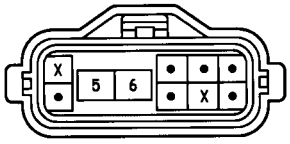
D 1 DARK GRAY



I16



P 1 GRAY



P 2

S 7