SYSTEM OUTLINE

THE ENGINE CONTROL SYSTEM UTILIZES A MICROCOMPUTER AND MAINTAINS OVERALL CONTROL OF THE ENGINE. ETC. AN OUTLINE OF ENGINE CONTROL IS GIVEN HERE.

1. PTIS (INPUT SIGNALS)

(1) WATER TEMP. SIGNAL SYSTEM

THE ECTS (WATER TEMP. SENSOR) DETECTS THE ENGINE COOLANT TEMP. AND HAS A BUILT–IN THERMISTOR WITH A RESISTANCE WHICH VARIES ACCORDING TO THE WATER TEMP. THUS THE WATER TEMP. IS INPUT IN THE FORM OF A CONTROL SIGNAL TO **TERMINAL THW** OF THE PCME (ECU).

(2) INTAKE AIR TEMP. SIGNAL SYSTEM

THE IATS (INTAKE AIR TEMP. SENSOR) IS INSTALLED INSIDE THE AFS (AIR FLOW METER) AND DETECTS THE INTAKE AIR TEMP., WHICH IS INPUT AS A CONTROL SIGNAL TO **TERMINAL THA** OF THE PCME (ECU).

(3) OXYGEN DENSITY SIGNAL SYSTEM

THE OXYGEN DENSITY IN THE EXHAUST EMISSIONS IS DETECTED AND INPUT AS A CONTROL SIGNAL TO **TERMINAL OX** OF THE PCME (ECU). TO MAINTAIN STABLE DETECTION PERFORMANCE BY THE HOZS (OXYGEN SENSOR), A HEATER IS USED FOR WARMING THE SENSOR. THE HEATER IS ALSO CONTROLLED BY THE PCME (ECU) (HT).

(4) CRANKSHAFT POSITION SIGNAL SYSTEM

CRANKSHAFT POSITION AND ENGINE SPEED IS DETECTED BY THE PICK–UP COIL INSTALLED INSIDE THE DISTRIBUTOR. CRANKSHAFT POSITION IS INPUT AS A CONTROL SIGNAL TO **TERMINAL G1** AND **G2** OF THE PCME (ECU), AND ENGINE SPEED SIGNAL IS INPUT TO **TERMINAL NE+**.

(5) THROTTLE POSITION SIGNAL SYSTEM

THE **THROTTLE** POSITION SENSOR DETECTS THE THROTTLE VALVE OPENING ANGLE, WHICH IS INPUT AS A CONTROL SIGNAL TO **TERMINAL VTA** OF THE PCME (ECU), OR WHEN THE VALVE IS FULLY CLOSED, TO **TERMINAL IDL**.

(6) VEHICLE SPEED SIGNAL SYSTEM

THE SPEED METER INSIDE THE COMBINATION METER SENDS A VEHICLE SPEED SIGNAL TO **TERMINAL SPD** OF THE PCME (ECU) AS A CONTROL SIGNAL.

(7) ACS (A/C SW) SIGNAL SYSTEM

THE OPERATING VOLTAGE OF THE A/C MAGNETIC CLUTCH IS DETECTED AND INPUT IN THE FORM OF A CONTROL SIGNAL TO **TERMINAL AC** OF THE PCME (ECU).

(8) BATTERY SIGNAL SYSTEM

VOLTAGE IS CONSTANTLY APPLIED TO **TERMINAL BATT** OF THE PCME (ECU). WHEN THE IGNITION SW IS TURNED TO ON, VOLTAGE FOR PCME (ECU) OPERATION IS APPLIED VIA THE EFI MAIN RELAY TO **TERMINALS +B** AND **+B1** OF THE ECU.

(9) INTAKE AIR VOLUME SIGNAL SYSTEM

INTAKE AIR VOLUME IS DETECTED BY THE POTENTIOMETER INSTALLED INSIDE THE AIR FLOW METER AND IS INPUT AS A CONTROL SIGNAL TO **TERMINAL VS** OF THE PCME (ECU).

(10) STOP LIGHT SW SIGNAL SYSTEM

THE STOP LIGHT SW IS USED TO DETECT WHETHER OR NOT THE VEHICLE IS BRAKING AND THE INFORMATION IS INPUT AS A CONTROL SIGNAL TO **TERMINAL STP** OF THE PCME (ECU).

(11) STA SIGNAL SYSTEM

TO CONFIRM THAT THE ENGINE IS CRANKING, THE VOLTAGE APPLIED TO THE STARTER MOTOR DURING CRANKING IS DETECTED AND IS INPUT AS A CONTROL SIGNAL TO **TERMINAL STA** OF THE PCME (ECU).

(12) ENGINE KNOCK SIGNAL SYSTEM

ENGINE KNOCKING IS DETECTED BY THE KNOCK SENSOR AND INPUT AS A CONTROL SIGNAL TO **TERMINAL KNK** OF THE PCME (ECU).

(13) ELECTRICAL LOAD SIGNAL SYSTEM

THE SIGNAL WHEN SYSTEMS SUCH AS THE REAR WINDOW DEFOGGER, HEADLIGHTS, ECT. WHICH CAUSE A HIGH ELECTRICAL BURDEN ARE ON IS INPUT TO **TERMINAL ELS** AS A CONTROL SIGNAL.

2. CONTROL SYSTEM

* SMPI (EFI, ELECTRONIC FUEL INJECTION) SYSTEM

  THE SMPI (EFI) SYSTEM MONITORS THE ENGINE REVOLUTIONS THROUGH THE SIGNALS EACH SENSOR (INPUT SIGNALS (1) TO (12)) INPUTS TO THE PCME (ECU). BASED ON THIS DATA AND THE PROGRAM MEMORIZED IN THE PCME (ECU), THE MOST APPROPRIATE FUEL INJECTION TIMING IS DECIDED AND CURRENT IS OUTPUT TO **TERMINALS #1, #2, #3** AND **#4** OF THE PCME (ECU), CAUSING THE INJECTORS TO OPERATE IT (TO INJECT FUEL). IT IS THIS SYSTEM WHICH, THROUGH THE WORK OF THE PCME (ECU), FINELY CONTROLS FUEL INJECTION IN RESPONSE TO DRIVING CONDITIONS.

* EI (ESA, ELECTRONIC SPARK ADVANCE) SYSTEM

  THE EI (ESA) SYSTEM MONITORS THE ENGINE REVOLUTIONS USING THE SIGNALS (INPUT SIGNALS (1, 2, 4, 5, 6, 9, 11, 12)) INPUT TO THE PCME (ECU) FROM EACH SENSOR. BASED ON THIS DATA AND THE PROGRAM MEMORIZED IN THE PCME (ECU), THE MOST APPROPRIATE IGNITION TIMING IS DECIDED AND CURRENT IS OUTPUT TO **TERMINAL IGT** OF THE PCME (ECU). THIS OUTPUT CONTROLS THE IGNITER TO PRODUCE THE MOST APPROPRIATE IGNITION TIMING FOR THE DRIVING CONDITIONS.

* FUEL PUMP CONTROL SYSTEM

  THE PCME (ECU) OPERATION OUTPUTS TO **TERMINAL FPR** AND CONTROLS THE FUEL PUMP RELAY AND THUS CONTROLS THE FUEL PUMP DRIVE SPEED IN RESPONSE TO CONDITIONS.

* HOZS (OXYGEN SENSOR) HEATER CONTROL SYSTEM

  THE HOZS (OXYGEN SENSOR) HEATER CONTROL SYSTEM TURNS THE HEATER TO ON WHEN THE INTAKE AIR VOLUME IS LOW (TEMP. OF EXHAUST EMISSIONS LOW), AND WARMS UP THE HOZS (OXYGEN SENSOR) TO IMPROVE DETECTION PERFORMANCE OF THE SENSOR. THE PCME (ECU) EVALUATES THE SIGNALS FROM EACH SENSOR (INPUT SIGNALS (1, 4, 8, 9, 11)), CURRENT IS OUTPUT TO **TERMINAL HT** AND CONTROLS THE HEATER.

* ISC (IDLE SPEED CONTROL) SYSTEM

  THE ISC SYSTEM (ROTARY SOLENOID TYPE) INCREASES ENGINE SPEED AND PROVIDES IDLING STABILITY FOR FAST IDLE–UP WHEN THE ENGINE IS COLD AND WHEN THE IDLE SPEED HAS DROPPED DUE TO ELECTRICAL LOAD, ETC. THE PCME (ECU) EVALUATES THE SIGNALS FROM EACH SENSOR (INPUT SIGNALS 1, 4 TO 9, 13)), OUTPUTS CURRENT TO **TERMINALS RSC** AND **RSO** AND CONTROLS THE IACV (ISC VALVE).

* EGR CONTROL SYSTEM

  WITH THE EGR CONTROL SYSTEM, THE PCME (ECU) EVALUATES THE (INPUT SIGNALS (1, 4, 5, 9)) FROM EACH SENSOR, CURRENT IS OUTPUT TO **TERMINAL EGR** AND OPERATION OF THE VSV (FOR EGR) IS CONTROLLED.

* INTAKE AIR CONTROL SYSTEM

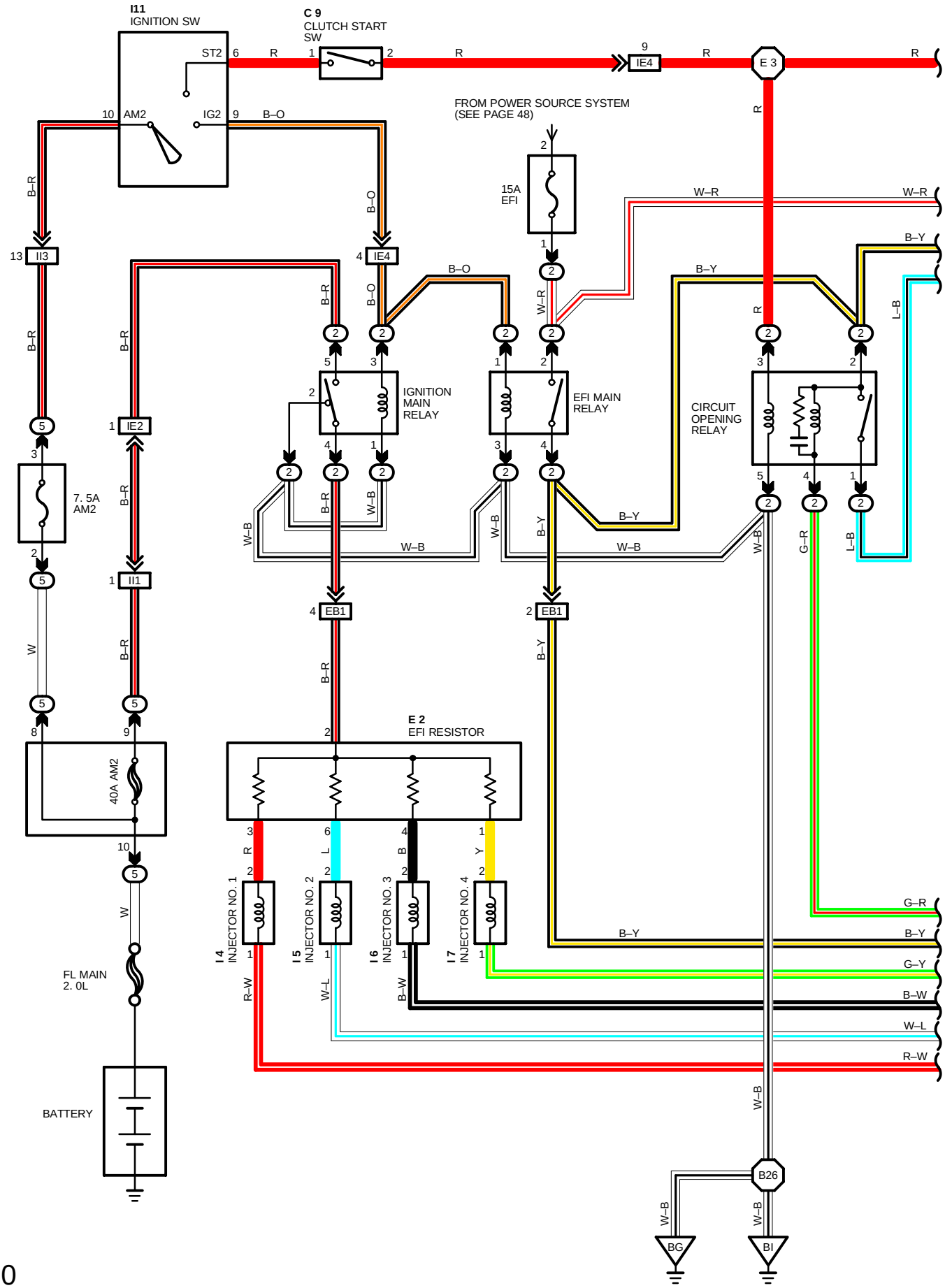
  IN THE INTAKE AIR CONTROL SYSTEM, EACH CYLINDER IN THE INTAKE MANIFOLD IS DIVIDED INTO TWO PARTS, WITH AN INTAKE AIR CONTROL VALVE INSTALLED IN THE PASSAGE ON ONE SIDE. THE OPENING AND CLOSING OF THE VALVE PROVIDES THE MOST APPROPRIATE INTAKE AIR FLOW AND, AS WELL AS PREVENTING PERFORMANCE LOSS AT LOW SPEEDS, ALSO IMPROVES FUEL ECONOMY. THE PCME (ECU) EVALUATES THE SIGNALS FROM EACH SENSOR (INPUT SIGNALS (4, 5, 9, 12)), OUTPUTS CURRENT TO **TERMINAL TVIS** CONTROLS THE VSV (FOR T–VIS) AND, CARRIES OUT OPENING AND CLOSING OF THE VALVE.

3. DIAGNOSIS SYSTEM

WITH THE DIAGNOSIS SYSTEM, WHEN THERE IS A MALFUNCTION IN THE PCME (ECU) SIGNAL SYSTEM, THE MALFUNCTIONING SYSTEM IS RECORDED IN THE MEMORY. THE MALFUNCTIONING SYSTEM CAN THEN BE FOUND BY READING THE DISPLAY (CODE) OF THE CHECK ENGINE WARNING LIGHT.

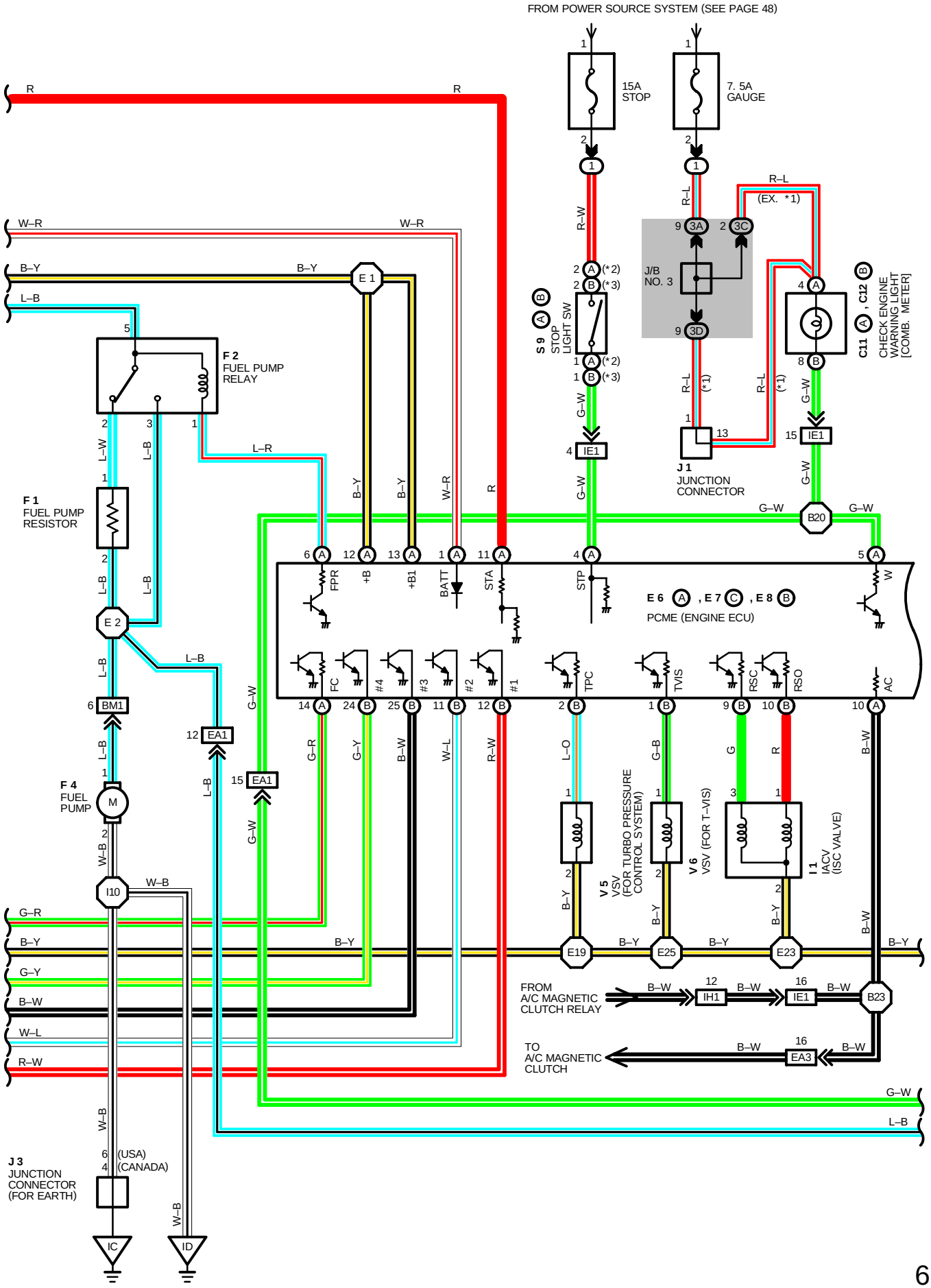
4. FAIL–SAFE SYSTEM

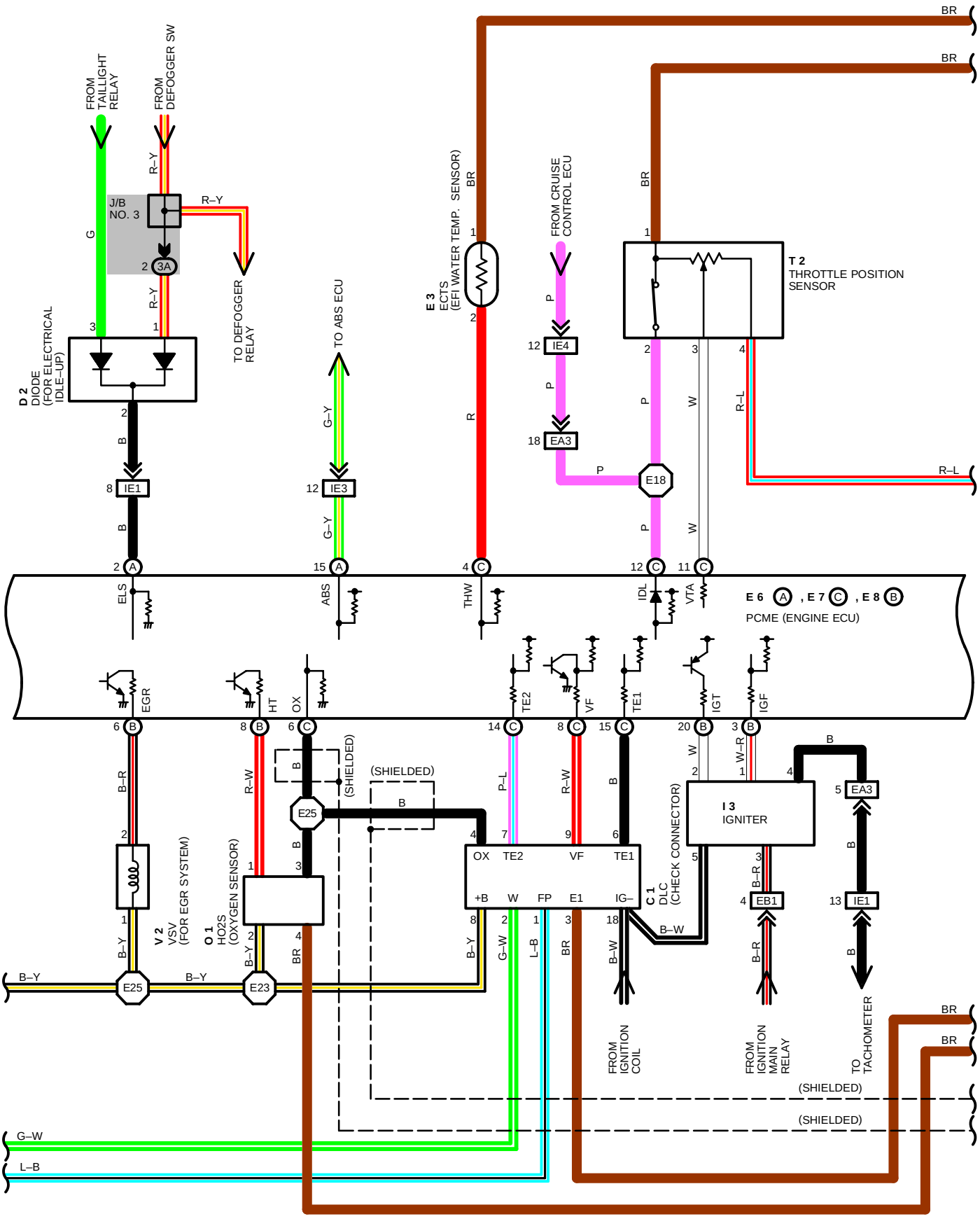
WHEN A MALFUNCTION OCCURS IN ANY SYSTEM, IF THERE IS A POSSIBILITY OF ENGINE TROUBLE BEING CAUSED BY CONTINUED CONTROL BASED ON THE SIGNALS FROM THAT SYSTEM. THE FAIL–SAFE SYSTEM EITHER CONTROLS THE SYSTEM BY USING DATA (STANDARD VALUES) RECORDED IN THE PCME (ECU) MEMORY OR ELSE STOPS THE ENGINE.

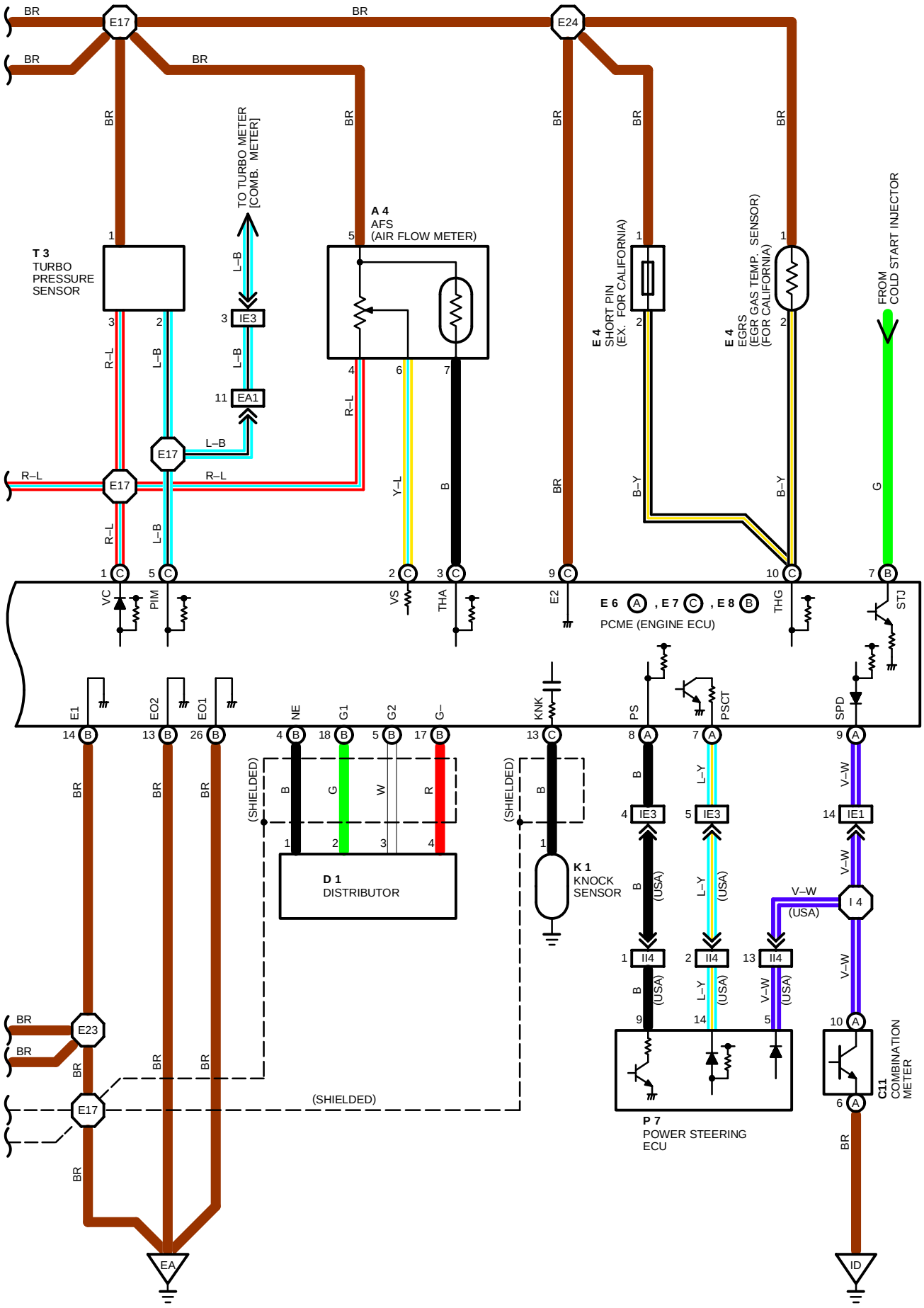

I11
IGNITION SW
ST2
AM2
IG2
B–O
C 9
CLUTCH START SW
R
IE4
E 3
FROM POWER SOURCE SYSTEM (SEE PAGE 48)
15A EFI
W–R
B–Y
L–B
II3
IE2
II1
7. 5A AM2
40A AM2
IGNITION MAIN RELAY
EFI MAIN RELAY
CIRCUIT OPENING RELAY
EB1
E 2
EFI RESISTOR
I 4 INJECTOR NO. 1
I 5 INJECTOR NO. 2
I 6 INJECTOR NO. 3
I 7 INJECTOR NO. 4
G–R
G–Y
B–W
W–L
R–W
W–B
B–R
W
FL MAIN 2. 0L
BATTERY
B26
BG
BI

*1 : (1) CANADA
(2) USA WITH CRUISE CONTROL, ABS.
POWER WINDOW OR WOOFER SPEAKER

*2 : (W/ CRUISE CONTROL)
*3 : (W/O CRUISE CONTROL)




FROM TAILLIGHT RELAY
FROM DEFOGGER SW
J/B NO. 3
TO DEFOGGER RELAY
D 2 DIODE (FOR ELECTRICAL IDLE–UP)
TO ABS ECU
E 3 ECTS (EFI WATER TEMP. SENSOR)
FROM CRUISE CONTROL ECU
T 2 THROTTLE POSITION SENSOR
IE1
IE3
IE4
EA3
E18
ELS
ABS
THW
IDL
VTA
E 6 A , E 7 C , E 8 B
PCME (ENGINE ECU)
EGR
HT
OX
TE2
VF
TE1
IGT
IGF
E25
E23
V 2 VSV (FOR EGR SYSTEM)
O 1 HO2S (OXYGEN SENSOR)
(SHIELDED)
C 1 DLC (CHECK CONNECTOR)
I 3 IGNITER
EB1
FROM IGNITION COIL
FROM IGNITION MAIN RELAY
TO TACHOMETER
OX TE2 VF TE1
+B W FP E1 IG–
BR
B
R
P
W
R–L
R–Y
G
G–Y
B–R
R–W
P–L
B–W
B–Y
G–W
L–B
W–R


BR
E17
E24
TO TURBO METER [COMB. METER]
T 3
TURBO PRESSURE SENSOR
A 4
AFS
(AIR FLOW METER)
E 4
SHORT PIN
(EX. FOR CALIFORNIA)
E 4
EGRS
(EGR GAS TEMP. SENSOR)
(FOR CALIFORNIA)
FROM COLD START INJECTOR
L–B
IE3
EA1
R–L
Y–L
B
B–Y
G
VC
PIM
VS
THA
E2
THG
STJ
E6 A , E7 C , E8 B
PCME (ENGINE ECU)
E1
EO2
EO1
NE
G1
G2
G–
KNK
PS
PSCT
SPD
(SHIELDED)
D 1
DISTRIBUTOR
K 1
KNOCK SENSOR
(USA)
V–W
I 4
II4
P 7
POWER STEERING ECU
C11
COMBINATION METER
E23
EA
ID

SERVICE HINTS

EFI MAIN RELAY
2– 4: CLOSED WITH IGNITION SW AT **ON** OR **ST** POSITION

E 2 EFI RESISTOR
2–1, 3, 4, 6: **4–6** Ω

I 4, I 5, I 6, I 7 INJECTOR
1–2: **2–4** Ω

F10 FUEL PUMP RESISTOR
1–2: APPROX. **0.73** Ω

E 4 EGR GAS TEMP. SENSOR (FOR CALIFORNIA)
1–2: **69.4–88.5** KΩ (**50**˚C, **122**˚F)
11.89–**14.37** KΩ (**100**˚C, **212**˚F)
2.79–**3.59** KΩ (**150**˚C, **302**˚F)

A15 AIR FLOW METER
5–6: **200–600** Ω (MEASURING PLATE CLOSED)
20–1000 Ω (MEASURING PLATE OPEN)
5–4: **200–400** Ω
5–7: **15** KΩ (**–20**˚C, **4**˚F)
4–7 KΩ (**0**˚C, **32**˚F)
2–3 KΩ (**20**˚C, **68**˚F)
0.9–1.3 KΩ (**40**˚C, **104**˚F)
0.4–0.7 KΩ (**60**˚C, **140**˚F)

E 2 EFI WATER TEMP. SENSOR
1–2: **7.22** KΩ (**0**˚C, **32**˚F)
3.04 KΩ (**20**˚C, **68**˚F)
1.41 KΩ (40˚C, **104**˚F)
0.73 KΩ (**60**˚C, **140**˚F)
0.397 KΩ (**80**˚C, **176**˚F)

T 1 THROTTLE POSITION SENSOR
3–4: **3.9–7.25** KΩ WITH CLEARANCE BETWEEN LEVER AND STOP SCREW **0** MM (**0** IN.)
2–4: LESS THAN **5.5** KΩ WITH CLEARANCE BETWEEN LEVER AND STOP SCREW **0.50** MM (**0.020** IN.)
∞ Ω WITH **0.7** MM (**0.028** IN.)
3–4: **0.96–1.79** KΩ WITH THROTTLE VALVE FULLY OPEN
1–4: **4.38–8.13** KΩ (**25**˚C, **77**˚F)

E 4, E 5, E 6 PCME (ENGINE ECU)
VOLTAGE AT PCME (ECU) CONNECTORS

BATT –E1 : **9–14** VOLTS
+B, +B1–E1 : **9–14** VOLTS (IGNITION SW ON)
IDL –E2 : **9–14** VOLTS (IGNITION SW ON AND THROTTLE VALVE OPEN)
VTA –E2 : **0.3–0.8** VOLTS (IGNITION SW ON AND THROTTLE VALVE FULLY CLOSED)
3.2–4.9 VOLTS (IGNITION SW ON AND THROTTLE VALVE OPEN)
VC –E2 : **4.5–5.5** VOLTS (IGNITION SW ON)
VS –E2 : **3.7–4.3** VOLTS (IGNITION SW ON AND MEASURING PLATE FULLY CLOSED)
0.2–0.5 VOLTS OR LESS (IGNITION SW ON AND MEASURING PLATE FULLY OPEN)
2.0–4.0 VOLTS (IDLING)
1.0–2.0 VOLTS (**3000**RPM)
THA –E2 : **0.5–3.4** VOLTS (IGNITION SW ON AND INTAKE AIR TEMP. **20**˚C, (**68**˚F))
THW –E2 : **0.2–1.0** VOLTS (IGNITION SW ON AND COOLANT TEMP. **80**˚C, (**176**˚F))
STA –E1 : **6–14** VOLTS (CRANKING)
#1, #2, #3, #4 – E01, E02 : **10–14** VOLTS (IGNITION SW ON)
IGT –E1 : **0.8–1.2** VOLTS (CRANKING OR IDLING)
TVIS –E1 : APPROX **2.0** VOLTS OR LESS WITH IGNITION SW ON AND THROTTLE VALVE FULLY CLOSED (REGULAR GASOLINE)
9–14 VOLTS WITH IGNITION SW ON AND THROTTLE VALVE OPEN (REGULAR GASOLINE)
APPROX **2.0** VOLTS OR LESS IDLING (PREMIUM GASOLINE)
9–14 VOLTS WITH **4200** MIN–1 (PREMIUM GASOLINE)
TE1 –E1 : **9–14** VOLTS WITH IGNITION SW ON AND DLC (CHECK CONNECTOR) TE1–E1 NO CONNECT
APPROX **1.0** VOLTS OR LESS WITH IGNITION SW ON AND DLC (CHECK CONNECTOR) TE1–E1 CONNECT
AC –E1 : **9–14** VOLTS WITH IGNITION SW ON A/C SWITCH ON
RSO, RSC –E1 : **9–14** VOLTS (IGNITION SW ON)
PIM –E2 : **2.5–4.5** VOLTS (IGNITION SW ON)
W –E1 : **9–14** VOLTS (NO TROUBLE (CHECK ENGINE WARNING LIGHT OFF) AND ENGINE RUNNING)

RESISTANCE AT PCME (ECU) CONNECTORS
(DISCONNECT WIRING CONNECTOR FROM ECU)

IDL –E1 : INFINITY (THROTTLE VALVE OPEN)
LESS THAN **2300** Ω (THROTTLE VALVE FULLY CLOSED)
VTA –E2 : 3500–10000 Ω (THROTTLE VALVE OPEN)
200–800 Ω (THROTTLE VALVE FULLY CLOSED)
VS –E2 : 200–600 Ω (MEASURING PLATE FULLY CLOSED)
20–1200 Ω (MEASURING PLATE FULLY OPEN)
THA –E2 : 2000–3000 Ω (INTAKE AIR TEMP. **20**˚C, **68**˚F)
THW –E2 : 200–400 Ω (COOLANT TEMP. **80**˚C, **176**˚F)
G1,G2 –G– : **140–180** Ω
NE+ –G– : 180–220 Ω
RSC, RSO – +B, +B1:17.7–23.9 Ω

ENGINE CONTROL (3S–GTE)

: PARTS LOCATION

CODE	SEE PAGE	CODE	SEE PAGE	CODE	SEE PAGE
A 4	25 (3S–GTE)	E 8 B	25 (3S–GTE)	J 3	26
C 1	25 (3S–GTE)	F 1	25 (3S–GTE)	K 1	25 (3S–GTE)
C 9	26 (3S–GTE)	F 2	25 (3S–GTE)	O 1	25 (3S–GTE)
C11 A	26	F 4	26	P 7	27
C12 B	26	I 1	25 (3S–GTE)	S 9	26
D 1	25 (3S–GTE)	I 3	25 (3S–GTE)	T 2	25 (3S–GTE)
D 2	26	I 4	25 (3S–GTE)	T 3	25 (3S–GTE)
E 2	25 (3S–GTE)	I 5	25 (3S–GTE)	V 2	25 (3S–GTE)
E 3	25 (3S–GTE)	I 6	25 (3S–GTE)	V 5	25 (3S–GTE)
E 4	25 (3S–GTE)	I 7	25 (3S–GTE)	V 6	25 (3S–GTE)
E 6 A	25 (3S–GTE)	I11	26		
E 7 C	25 (3S–GTE)	J 1	26		

: RELAY BLOCKS

CODE	SEE PAGE	RELAY BLOCKS (RELAY BLOCK LOCATION)
1	20	R/B NO. 1 (LEFT KICK PANEL)
2	21	R/B NO. 2 (ENGINE COMPARTMENT LEFT)
5	21	R/B NO. 5 (FRONT LUGGAGE COMPARTMENT RIGHT)

: JUNCTION BLOCK AND WIRE HARNESS CONNECTOR

CODE	SEE PAGE	JUNCTION BLOCK AND WIRE HARNESS (CONNECTOR LOCATION)
3A	22	COWL WIRE AND J/B NO. 3 (BEHIND COMBINATION METER)
3C		
3D		

: CONNECTOR JOINING WIRE HARNESS AND WIRE HARNESS

CODE	SEE PAGE	JOINING WIRE HARNESS AND WIRE HARNESS (CONNECTOR LOCATION)
EA1	30 (3S–GTE)	ENGINE ROOM MAIN WIRE AND ENGINE WIRE (REAR LUGGAGE COMPARTMENT LEFT)
EA3	30 (3S–GTE)	ENGINE WIRE AND ENGINE ROOM MAIN WIRE (R/B NO. 2 INNER)
EB1	30 (3S–GTE)	ENGINE WIRE AND R/B NO. 2 (R/B NO. 2 INNER)
IE1	32	ENGINE ROOM MAIN WIRE AND COWL WIRE (LEFT KICK PANEL)
IE2		
IE3		
IE4		
IH1	32	COWL WIRE AND A/C SUB WIRE (INSTRUMENT PANEL RIGHT)
II1	34	LUGGAGE ROOM WIRE AND COWL WIRE (RIGHT KICK PANEL)
II3	34	COWL WIRE AND LUGGAGE ROOM WIRE (RIGHT KICK PANEL)
II4		
BM1	36	ENGINE ROOM MAIN WIRE AND COWL WIRE (ROOM PARTITION BOARD LEFT)

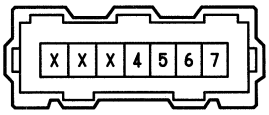
: GROUND POINTS

CODE	SEE PAGE	GROUND POINTS LOCATION
EA	30 (3S–GTE)	INTAKE MANIFOLD
IC	32	INSTRUMENT PANEL BRACE LH
ID	32	RIGHT KICK PANEL
BG	36	UNDER THE LEFT CENTER PILLAR
BI	36	BACK PANEL CENTER

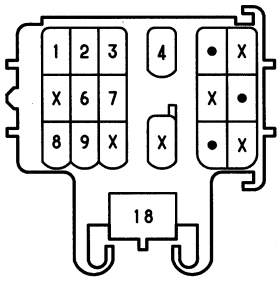
: SPLICE POINTS

CODE	SEE PAGE	WIRE HARNESS WITH SPLICE POINTS	CODE	SEE PAGE	WIRE HARNESS WITH SPLICE POINTS
E 1	30 (3S–GTE)	ENGINE ROOM MAIN WIRE	E24	30 (3S–GTE)	ENGINE WIRE
E 2			E25		
E 3			I 4	34	COWL WIRE
E17	30 (3S–GTE)	ENGINE WIRE	I10		
E18			B20	36	ENGINE ROOM MAIN WIRE
E19			B23		
E23			B26		

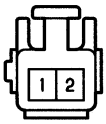
A 4 BLACK



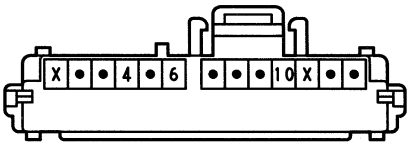
C 1 DARK GRAY



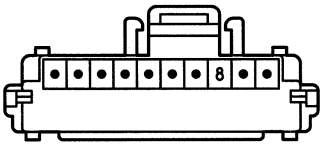
C 9



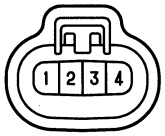
C11 (A) BLUE



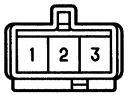
C12 (B) GRAY



D 1 BLACK



D 2 ORANGE

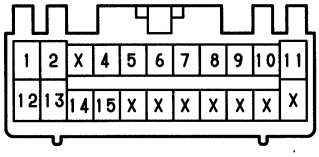


E 2 DARK GRAY

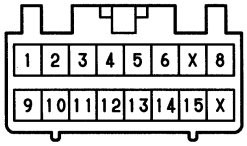
E 3 GREEN

E 4 DARK GRAY

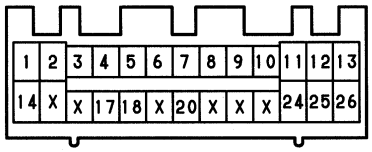
E 6 (A) DARK GRAY



E 7 (C) DARK GRAY

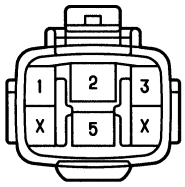


E 8 (B) DARK GRAY

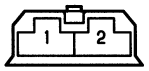


F 1 DARK GRAY

F 2 BLACK

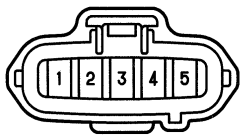


F 4 DARK GRAY



I 1 GRAY

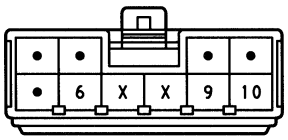
I 3 BLACK



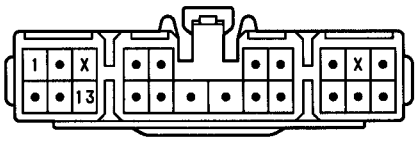
I 4, I 6 BROWN

I 5, I 7 GRAY

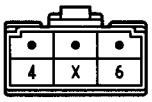
I11 BLACK



J 1



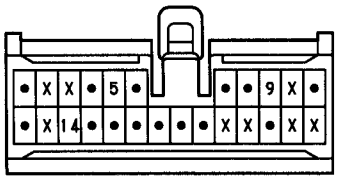
J 3



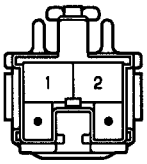
K 1

O 1 DARK GRAY

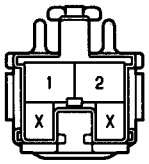
P 7



S 9 (A) BLUE



S 9 (B)



T 2 BLACK

T 3 BLACK

V 2 BROWN

V 5 BLUE

V 6 BROWN