











SYSTEM OUTLINE

1. COOLING FAN OPERATION

WHEN THE IGNITION SW IS TURNED ON, THE CURRENT FROM IGN FUSE FLOWS TO **TERMINAL 3** OF COOLING FAN RELAY NO.3 **TERMINAL 1** \rightarrow **TERMINAL 1** OF WATER TEMP. SW (FOR COOLING FAN) \rightarrow **TERMINAL 2** \rightarrow **GROUND**, FROM **TERMINAL 1** OF COOLING FAN RELAY NO.2 \rightarrow **TERMINAL 2** \rightarrow **TERMINAL 1** OF WATER TEMP. SW (FOR COOLING FAN) \rightarrow **TERMINAL 2** \rightarrow **GROUND**, AND ALSO FROM **TERMINAL 1** OF COOLING FAN RELAY NO.1 \rightarrow **TERMINAL 2** \rightarrow **TERMINAL 2** OF A/C PRESSURE SW (HIGH PRESSURE) \rightarrow **TERMINAL 3** \rightarrow **GROUND**, CAUSING COOLING FAN RELAYS NO.1, 2 AND 3 TO TURN ON. AT THAT TIME, THE CURRENT FROM FL RDI FAN FLOWS TO **TERMINAL 3** OF COOLING FAN RELAY NO.2 AND **TERMINAL 1** OF COOLING FAN MOTOR NO.1 \rightarrow **TERMINAL 2** \rightarrow **TERMINAL 4** OF COOLING FAN RELAY NO.3 \rightarrow **TERMINAL 5** \rightarrow **TERMINAL 3** OF COOLING FAN RELAY NO.1.

* OPERATION AT LOW SPEED

DURING A/C OPERATION, WHEN THE PRESSURE OF A/C COMPRESSOR BECOMES HIGHER (MORE THAN 13.5KG/CM², 1323KPA, 192PSI) THAN NORMAL PRESSURE THE A/C HIGH PRESSURE SW TURNS OFF. AS A RESULT, COOLING FAN RELAY NO.1 TURNS OFF AND THE CURRENT FLOWS FROM FL RDI FAN \rightarrow TERMINAL 1 OF COOLING FAN MOTOR NO.1 \rightarrow TERMINAL 2 \rightarrow TERMINAL 4 OF COOLING FAN RELAY NO.3 \rightarrow TERMINAL 5 \rightarrow TERMINAL 3 OF COOLING FAN RELAY NO.1 \rightarrow TERMINAL 4 \rightarrow TERMINAL 1 OF COOLING FAN MOTOR NO.2 \rightarrow TERMINAL 2 \rightarrow GROUND, FLOWING TO THE FAN MOTOR IN SERIES, CAUSING THE COOLING FAN TO ROTATE AT LOW SPEED.

* OPERATION AT HIGH SPEED

WHEN THE ENGINE COOLANT TEMPERATURE BECOMES MORE THAN ABOUT 90°C (194°F), THE WATER TEMP. SW TURNS OFF. AS A RESULT, COOLING FAN RELAYS NO.2 AND NO.3 TURN OFF, AND CURRENT FLOWS FROM FL RDI FAN TO TERMINAL 1 OF COOLING FAN MOTOR NO.1 \rightarrow TERMINAL 2 \rightarrow TERMINAL 4 OF COOLING FAN RELAY NO.3 \rightarrow TERMINAL 2 \rightarrow GROUND. AT THE SAME TIME, CURRENT FLOWS FROM FL RDI FAN TO TERMINAL 3 OF COOLING FAN RELAY NO.2 \rightarrow TERMINAL 4 \rightarrow TERMINAL 1 OF COOLING FAN MOTOR NO.2 \rightarrow TERMINAL 2 \rightarrow GROUND, THE CURRENT FLOWING TO THE FAN MOTOR IN PARALLEL CAUSING THE COOLING FAN TO ROTATE AT HIGH SPEED.

2. HEATER BLOWER MOTOR OPERATION

CURRENT IS APPLIED AT ALL TIMES THROUGH FL HEATER TO **TERMINAL 5** OF HEATER RELAY. WHEN THE IGNITION SW IS TURNED ON, CURRENT FLOWS THROUGH HEATER FUSE TO **TERMINAL 3** OF HEATER RELAY \rightarrow **TERMINAL 1** \rightarrow **TERMINAL HR** OF A/C CONTROL ASSEMBLY. AT THE SAME TIME, CURRENT ALSO FLOWS FROM HEATER FUSE TO **TERMINAL IG+** OF A/C CONTROL ASSEMBLY AND **TERMINAL 3** OF EXTRA HIGH SPEED RELAY \rightarrow **TERMINAL 1** \rightarrow **TERMINAL FR** OF A/C CONTROL ASSEMBLY.

LOW SPEED OPERATION

WHEN THE BLOWER SW (A/C CONTROL ASSEMBLY) IS MOVED TO LOW SPEED POSITION, THE CURRENT TO TERMINAL HR OF A/C CONTROL ASSEMBLY FLOWS TO TERMINAL GND OF A/C CONTROL ASSEMBLY \rightarrow GROUND AND TURNS THE HEATER RELAY ON. AS A RESULT, THE CURRENT TO TERMINAL 5 OF HEATER RELAY FLOWS TO TERMINAL 4 OF RELAY \rightarrow TERMINAL 2 OF BLOWER MOTOR \rightarrow TERMINAL 1 \rightarrow TERMINAL 1 OF BLOWER RESISTOR \rightarrow TERMINAL 2 \rightarrow GROUND AND CAUSES THE BLOWER MOTOR TO ROTATE AT LOW SPEED.

* HIGH SPEED OPERATION

WHEN THE BLOWER SW (A/C CONTROL ASSEMBLY) IS MOVED TO **HIGH SPEED** POSITION, THE CURRENT TO **TERMINAL HR** OF A/C CONTROL ASSEMBLY FLOWS TO **TERMINAL GND** OF A/C CONTROL ASSEMBLY \rightarrow **GROUND** AND TURNS THE HEATER RELAY ON. AT THE SAME TIME, THE CURRENT TO **TERMINAL 3** OF EXTRA HIGH SPEED RELAY ALSO FLOWS TO **TERMINAL 1** OF RELAY \rightarrow **TERMINAL FR** OF A/C CONTROL ASSEMBLY \rightarrow **TERMINAL GND** \rightarrow **GROUND** AND TURNS THE EXTRA HIGH SPEED RELAY ON. AS A RESULT, THE CURRENT TO **TERMINAL 5** OF HEATER RELAY FLOWS TO **TERMINAL 4** \rightarrow **TERMINAL 2** OF BLOWER MOTOR \rightarrow **TERMINAL 1** \rightarrow **TERMINAL 5** OF EXTRA HIGH SPEED RELAY \rightarrow **TERMINAL 4** \rightarrow **GROUND** WITHOUT PASSING THROUGH THE BLOWER RESISTOR, CAUSING THE BLOWER MOTOR TO ROTATE HIGH SPEED.

* MEDIUM SPEED OPERATION

WHEN THE BLOWER SW (A/C CONTROL ASSEMBLY) IS MOVED TO **MED** POSITION, THE CURRENT TO **TERMINAL HR** OF A/C CONTROL ASSEMBLY FLOWS TO **TERMINAL GND** \rightarrow **GROUND** AND TURNS THE HEATER RELAY ON. THEN, THE CURRENT TO **TERMINAL IG+** OF A/C CONTROL ASSEMBLY FLOWS TO **TERMINAL BLW** \rightarrow **TERMINAL (B)** 2 OF POWER TRANSISTOR \rightarrow **TERMINAL (A)** 1 \rightarrow **GROUND**.

AS A RESULT, THE CURRENT TO **TERMINAL 5** OF HEATER RELAY FLOWS TO **TERMINAL 4** \rightarrow **TERMINAL 2** OF BLOWER MOTOR \rightarrow **TERMINAL 1** \rightarrow **TERMINAL (A) 2** OF POWER TRANSISTOR \rightarrow **TERMINAL (A) 1** \rightarrow **GROUND** AND BLOWER MOTOR IS ROTATED AT MEDIUM SPEED BY THE A/C CONTROL ASSEMBLY CONTROLLING THE CURRENT FLOW FROM **TERMINAL (B) 2** OF POWER TRANSISTOR TO **TERMINAL (A) 1**.

* AUTO FUNCTION

WHEN THE AUTO SW IN HEATER CONTROL SW (A/C CONTROL ASSEMBLY) IS SELECTED, THE CURRENT FLOW IS THE SAME FOR **MED** POSITION, BUT THE A/C CONTROL ASSEMBLY DECIDES THE APPROPRIATE AIR FLOW VOLUME ACCORDING TO THE SET TEMPERATURE AND THE INPUT SIGNALS FROM EACH SENSOR. BY CONTROLLING THE CURRENT FLOW FROM **TERMINAL BLW** OF THE A/C CONTROL ASSEMBLY TO **TERMINAL (B) 2** OF POWER TRANSISTOR \rightarrow **TERMINAL (A) 1** \rightarrow **GROUND**, THE A/C CONTROL ASSEMBLY CONTROLS THE BLOWER MOTOR STEPLESSLY.

3. OPERATION OF RECIRC/FRESH CONTROL SERVO MOTOR

(SWITCHING FROM FRESH TO RECIRC)

WITH IGNITION SW TURNED ON, THE CURRENT FLOWS FROM HEATER FUSE TO **TERMINAL IG+** OF A/C CONTROL ASSEMBLY. WHEN THE RECIRC/FRESH SW IS SWITCHED TO THE RECIRC SIDE, THE CURRENT FLOWS FROM **TERMINAL IG+** OF A/C CONTROL ASSEMBLY \rightarrow **TERMINAL MREC** \rightarrow **TERMINAL 5** OF RECIRC/FRESH CONTROL SERVO MOTOR \rightarrow **TERMINAL 4** \rightarrow **TERMINAL MFRS** OF A/C CONTROL ASSEMBLY \rightarrow **TERMINAL GND** \rightarrow **GROUND**, THE MOTOR ROTATES AND THE DAMPER MOVES TO THE RECIRC SIDE. WHEN IT IS IN THE **RECIRC** POSITION, THE CURRENT IS CUT INSIDE THE SERVO MOTOR AND THE DAMPER STOPS AT THAT POSITION.

(SWITCHING FROM RECIRC TO FRESH)

WITH IGNITION SW ON, WHEN THE RECIRC/FRESH SW IS SWITCHED TO THE FRESH SIDE, THE CURRENT FLOWS FROM **TERMINAL IG+** OF A/C CONTROL ASSEMBLY \rightarrow **TERMINAL MFRS** \rightarrow **TERMINAL 4** OF RECIRC/FRESH CONTROL SERVO MOTOR \rightarrow **TERMINAL 5** \rightarrow **TERMINAL MREC** OF A/C CONTROL ASSEMBLY \rightarrow **TERMINAL GND** \rightarrow **GROUND**, THE MOTOR ROTATES AND THE DAMPER MOVES TO THE FRESH SIDE. WHEN IT IS IN THE **FRESH** POSITION, THE CURRENT IS CUT INSIDE THE SERVO MOTOR AND THE DAMPER STOPS AT THAT POSITION.

4. OPERATION OF AIR VENT MODE CONTROL SERVO MOTOR

WITH IGNITION SW TURNED ON, THE CURRENT FLOWS FROM HEATER FUSE TO **TERMINAL 6** OF AIR VENT MODE CONTROL SERVO MOTOR \rightarrow **TERMINAL 7** \rightarrow **GROUND**, AND THE DAMPER MOVES TO THE POSITION OF THE MODE SELECTION SW OF THE CONTROL ASSEMBLY WHICH IS ON.

WHEN THE DEF SW OF A/C CONTROL ASSEMBLY IS TURNED ON WITH THE DAMPER IN THE FACE POSITION, A SIGNAL IS INPUT FROM **TERMINAL 5** OF AIR VENT MODE CONTROL SERVO MOTOR TO **TERMINAL DEF** OF A/C CONTROL ASSEMBLY. AS A RESULT, THE SERVO MOTOR OPERATES UNTIL THE DAMPER REACHES **DEF** POSITION. WHEN THIS OCCURS THE SIGNAL TO THE A/C CONTROL ASSEMBLY IS SHUT OFF AND ROTATION OF THE MOTOR STOPS.

SWITCHING TO OTHER MODES IS CONTROLLED BY THE SERVO MOTOR ACCORDING TO THE FOLLOWING SIGNALS:

- 1. FOOT/DEF POSITION. A SIGNAL INPUT FROM TERMINAL 4 OF SERVO MOTOR TO TERMINAL F/D OF A/C CONTROL ASSEMBLY.
- 2. FOOT POSITION, A SIGNAL INPUT FROM TERMINAL 3 OF SERVO MOTOR TO TERMINAL FOOT OF A/C CONTROL ASSEMBLY.

5. OPERATION OF AIR MIX CONTROL SERVO MOTOR

WHEN THE TEMPERATURE CONTROL SW IS PUSHED TO THE "COOL" SIDE, THE CURRENT FLOWS FROM **TERMINAL MC** OF A/C CONTROL ASSEMBLY \rightarrow **TERMINAL 2** OF AIR MIX CONTROL SERVO MOTOR \rightarrow MOTOR \rightarrow TERMINAL 6 \rightarrow TERMINAL MH OF A/C CONTROL ASSEMBLY \rightarrow GROUND AND THE MOTOR ROTATES. THE DAMPER OPENING ANGLE AT THIS TIME IS INPUT FROM **TERMINAL 4** OF SERVO MOTOR TO **TERMINAL TP** OF A/C CONTROL ASSEMBLY, THIS IS USED TO DETERMINE THE **DAMPER STOP** POSITION AND MAINTAIN THE SET TEMPERATURE.

WHEN THE TEMPERATURE CONTROL SW IS PUSHED TO THE "WARM" SIDE, THE CURRENT FLOWS FROM SERVO MOTOR \rightarrow **TERMINAL MH** OF A/C CONTROL ASSEMBLY \rightarrow **TERMINAL 6** OF AIR MIX CONTROL SERVO MOTOR \rightarrow MOTOR \rightarrow **TERMINAL 2** \rightarrow **TERMINAL MC** OF A/C CONTROL ASSEMBLY, ROTATING THE MOTOR IN REVERSE AND SWITCHING THE DAMPER FROM "COOL" TO "WARM" SIDE.

6. AIR CONDITIONER OPERATION

THE A/C CONTROL ASSEMBLY RECEIVES VARIOUS SIGNALS, I.E., THE ENGINE RPM SIGNAL FROM THE IGNITER, OUTLET TEMPERATURE SIGNAL FROM THE A/C THERMISTOR, COOLANT TEMPERATURE FROM THE WATER TEMP. SENSOR, AND THE LOCK SIGNAL FROM THE A/C COMPRESSOR, ETC.

WHEN THE ENGINE IS STARTED AND THE A/C SW (A/C CONTROL ASSEMBLY) IS TURNED ON, A SIGNAL IS INPUT TO THE ECU INSIDE THE A/C CONTROL ASSEMBLY. AS A RESULT, THE GROUND CIRCUIT IN A/C CONTROL ASSEMBLY IS CLOSED AND CURRENT FLOWS FROM HEATER FUSE TO **TERMINAL 1** OF MAGNET CLUTCH RELAY \rightarrow **TERMINAL 3** \rightarrow **TERMINAL ACMG** OF ENGINE AND ECT ECU \rightarrow **TERMINAL GND** \rightarrow **GROUND**, TURNING THE MAGNET CLUTCH RELAY ON, SO THAT THE MAGNET CLUTCH IS ON AND THE A/C COMPRESSOR OPERATES.

AT A SAME TIME, THE ENGINE AND ECT ECU DETECTS THE MAGNET CLUTCH OPERATING AND ROTATES THE ISC STEP MOTOR IN THE OPEN DIRECTION TO VOID LOWERING THE ENGINE RPM DURING AIR CONDITION OPERATION.

WHEN ANY OF THE FOLLOWING SIGNALS ARE INPUT TO THE A/C CONTROL ASSEMBLY, THE CONTROL ASSEMBLY OPERATES TO TURN OFF THE AIR CONDITIONER.

- * ENGINE HIGH RPM SIGNAL
- * COOLANT HIGH TEMP. SIGNAL IS HIGH.
- * A SIGNAL THAT THE TEMPERATURE AT THE AIR OUTLET IS LOW.
- * A SIGNAL THAT THERE IS A LARGE DIFFERENCE BETWEEN ENGINE RPM AND COMPRESSOR RPM.
- * A SIGNAL THAT THE REFRIGERANT PRESSURE IS ABNORMALLY HIGH OR LOW.

SERVICE HINTS

A10 A/C MAGNET CLUTCH

1–GROUND : APPROX. **3.7** Ω

A12 A/C PRESSURE SW (HIGH PRESSURE)

2-3 : OPEN ABOVE APPROX. 13.5KG/CM² (192PSI, 1323KPA) CLOSED BELOW APPROX. 10KG/CM² (142PSI, 980KPA)

A12 A/C PRESSURE SW

4-1: OPEN WITH PRESSURE LESS THAN 2.1KG/CM2 (30PSI. 206KPA) OR ABOVE 27KG/CM2 (384PSI, 2648KPA)

A21 (A) A22 (C), A23 (B) A/C CONTROL ASSEMBLY

(B) 1-GROUND : ALWAYS APPROX. 12 VOLTS

(B) 2-GROUND: APPROX. 12 VOLTS WITH IGNITION SW AT ON POSITION

(A) 9-GROUND: APPROX. 12 VOLTS WITH IGNITION SW AT ON POSITION

(C) 6-GROUND: NO CONTINUITY WITH PRESSURE LESS THAN 2.1KG/CM² (30PSI, 206KPA) OR ABOVE 2.7KG/CM² (384PSI, 2648KPA)

(B) 10-GROUND: APPROX. 12 VOLTS WITH IGNITION SW AT ACC OR ON POSITION

(C) 1-GROUND: APPROX. 5 VOLTS WITH IGNITION SW ON

(B) 6-GROUND: APPROX. 12 VOLTS WITH RECIRC SW ON

(B) 5-GROUND: APPROX. 12 VOLTS WITH FRESH SW ON

(B) 3-GROUND: APPROX. 12 VOLTS WITH TEMP. SW AT HOT POSITION

(B) 4-GROUND: APPROX. 12 VOLTS WITH TEMP. SW AT COOL POSITION

(B) 9-GROUND: ALWAYS CONTINUITY

B3 BLOWER RESISTOR (FOR LOW SPEED)

1–2 : APPROX. 1.75 Ω

W 2 WATER TEMP. SW (FOR COOLING FAN)

1-2: OPEN ABOVE APPROX. 90°C (194°F) CLOSED BELOW APPROX. 83°C (181.4°F)

: PARTS LOCATION

CODE		SEE PAGE	CODE	SEE PAGE	CODE	SEE PAGE	
Α	8	24	A26 B	26	E11	26	
A 9		24	A27	26	E12	E12 26	
A10		24	A28	26	I 2	25	
A11		24	A30	26	J 2	27	
A12		24	A31	26	M 1	27	
A21	Α	26	B 2	26	N 3	27	
A22	С	26	В 3	26	R 1	27	
A23	В	26	C 3	24	T 8	27	
A24		26	C 6	24	W 2	25	
A25	Α	26	C 7	24	W 6	27	

: RELAY BLOCKS

CODE	CODE SEE PAGE RELAY BLOCKS (RELAY BLOCK LOCATION)	
5	20	R/B NO.5 (NEAR THE J/B NO.2)
6	17	R/B NO.6 (UNDER THE HEADLIGHT LH)

: JUNCTION BLOCK AND WIRE HARNESS CONNECTOR

CODE	SEE PAGE	JUNCTION BLOCK AND WIRE HARNESS (CONNECTOR LOCATION)		
1A	18	COWL WIRE AND J/B NO.1 (LEFT SIDE OF STEERING COLUMN TUBE)		
1B	18	INSTRUMENT PANEL WIRE AND J/B NO.1 (LEFT SIDE OF STEERING COLUMN TUBE)		
1G	18	COWL WIRE AND J/B NO.1 (LEFT SIDE OF STEERING COLUMN TUBE)		
2A	20	ENGINE ROOM MAIN WIRE AND J/B NO.2 (ENGINE COMPARTMENT LEFT)		
2B	20	COWL WIRE AND J/B NO.2 (ENGINE COMPARTMENT LEFT)		
3A				
3B	20	INICTOLIMENT DANIEL WIDE AND 1/0 NO 2 /DELIND THE INICTOLIMENT DANIEL CENTED)		
3C		INSTRUMENT PANEL WIRE AND J/B NO.3 (BEHIND THE INSTRUMENT PANEL CENTER)		
3D	_			

: CONNECTOR JOINING WIRE HARNESS AND WIRE HARNESS

CODE	SEE PAGE	JOINING WIRE HARNESS AND WIRE HARNESS (CONNECTOR LOCATION)		
EA1	32	COWL WIRE AND ENGINE ROOM MAIN WIRE (FRONT SIDE OF RIGHT FENDER)		
EA2		OWE WINE AND ENGINE ROOM WARE (FROM SIDE OF RIGHT ENDER)		
EA3	32	COWL WIRE AND ENGINE ROOM MAIN WIRE (INSIDE OF J/B NO.2)		
EB1	32	ENGINE NO.2 WIRE AND ENGINE ROOM MAIN WIRE (RIGHT SIDE OF J/B NO.2)		
IH1	34	INSTRUMENT PANEL WIRE AND COWL WIRE (J/B NO.1)		
IH2	34	INSTRUMENT PANEL WIRE AND COWL WIRE (BEHIND GLOVE BOX)		
IH3		INSTRUMENT AND COME WIRE (BETTING GLOVE BOX)		
IJ1	36	INSTRUMENT PANEL WIRE AND A/C NO.1 WIRE (BEHIND GLOVE BOX)		
IK1	36	INSTRUMENT PANEL WIRE AND A/C NO.2 WIRE (BEHIND GLOVE BOX)		
IL1	36	ENGINE WIRE AND COWL WIRE (UNDER THE GLOVE BOX)		
IL2	30	ENGINE WINE AND COME WINE (CINDER THE GEOVE BOX)		
IP1	36	COWL WIRE AND A/C NO.2 WIRE (BEHIND GLOVE BOX)		

: GROUND POINTS

CODE	SEE PAGE	GROUND POINTS LOCATION
EA	32	FRONT SIDE OF RIGHT FENDER
EB	32	FRONT SIDE OF LEFT FENDER
EC	32	REAR SIDE OF CYLINDER HEAD RH
IE	34	LEFT KICK PANEL
IH	34	RIGHT KICK PANEL

: SPLICE POINTS

<u> </u>					
CODE	SEE PAGE	WIRE HARNESS WITH SPLICE POINTS	CODE	SEE PAGE	WIRE HARNESS WITH SPLICE POINTS
E 1		ENGINE ROOM MAIN WIRE	I143	36	INSTRUMENT PANEL WIRE
E 8			I145		
E 15	32		I148		
E 20			I149		
E 32			I150		
E 44	32	ENGINE WIRE	l177	36	ENGINE WIRE
E 95	32		I179	36	A/C NO.1 WIRE
E 96	- 32		I180		
I 41	- 36	COWL WIRE	I181		
I 63			I182	36	A/C NO.2 WIRE
I 75	- 30		I183		
l124			I184		



