

# AIR CONDITIONING

## SYSTEM OUTLINE

### 1. HEATER BLOWER MOTOR OPERATION

WITH THE IGNITION SW ON, CURRENT FROM THE **GAUGE** FUSE FLOWS FROM **TERMINAL 3** OF THE FRONT HEATER RELAY → COIL → **TERMINAL 1** → **TERMINAL 5** OF THE HEATER BLOWER SW.

(LOW SPEED OPERATION)

WHEN THE HEATER BLOWER SW IS MOVED TO THE LOW SPEED POSITION, THE CURRENT APPLIED TO **TERMINAL 5** FLOWS FROM **TERMINAL 6** → **GROUND**, CAUSING THE FRONT HEATER RELAY TO COME ON. THEN FROM **HEATER** FUSE THE CURRENT FLOWS FROM **TERMINAL 5** OF THE FRONT HEATER RELAY → **TERMINAL 4** → **TERMINAL 1** OF THE BLOWER MOTOR → **TERMINAL 2** → **TERMINAL 1** OF THE BLOWER RESISTOR → **TERMINAL 4** → **GROUND**, CAUSING THE BLOWER MOTOR TO ROTATE. THIS TIME, THE CURRENT FLOWS AGAINST THE FULL RESISTANCE OF THE BLOWER RESISTOR, SO THE MOTOR TURNS SLOWLY AT LOW SPEED.

(OPERATION AT SPEED M1, M2)

WHEN THE HEATER BLOWER SW IS MOVED TO THE SPEED M1 POSITION, THE CURRENT APPLIED TO **TERMINAL 5** FLOWS FROM **TERMINAL 6** → **GROUND**, TURNING THE FRONT HEATER RELAY TO ON. THEN, THE SAME AS WITH LOW SPEED, CURRENT PASSING THROUGH THE **HEATER** FUSE FROM THE BLOWER MOTOR → **TERMINAL 1** OF THE BLOWER RESISTOR → **TERMINAL 2** → **TERMINAL 1** OF THE BLOWER HEATER SW → **TERMINAL 6** → **GROUND**. THIS TIME, THE RESISTANCE OF THE BLOWER RESISTOR IS LESS THAN IT IS FOR LOW SPEED, SO THE BLOWER MOTOR ROTATES FASTER THAN IT DOES AT LOW SPEED. WITH THE HEATER BLOWER SW IN THE M2 POSITION, CURRENT FLOWING THROUGH THE MOTOR FLOWS FROM **TERMINAL 1** OF THE BLOWER RESISTOR → **TERMINAL 3** → **TERMINAL 2** OF THE HEATER BLOWER SW → **TERMINAL 6** → **GROUND**. THIS TIME, RESISTANCE OF THE BLOWER RESISTOR IS LESS THAN FOR SPEED M1 SO THAT THE BLOWER MOTOR ROTATES EVEN FASTER THAN FOR SPEED M1.

(HIGH SPEED OPERATION)

WITH THE HEATER BLOWER SW IN HIGH SPEED POSITION, UNTIL THE FRONT HEATER RELAY COMES ON AND CURRENT FLOWS TO THE BLOWER MOTOR, OPERATION IS THE SAME AS FOR SPEED M1 AND M2. THE CURRENT PASSING THROUGH THE BLOWER MOTOR FLOWS FROM **TERMINAL 8** OF THE HEATER BLOWER SW → **TERMINAL 6** → **GROUND** WITHOUT FLOWING THROUGH THE BLOWER RESISTOR, SO THAT THE BLOWER MOTOR ROTATES AT THE FASTEST SPEED, HIGH SPEED.

### 2. AIR CONDITIONING OPERATION

WHEN THE HEATER BLOWER SW IS SET TO ON, CURRENT FROM THE **ALT** FUSE FLOWS THROUGH THE **HEATER** FUSE AND **A/C** FUSE → **TERMINAL 2** OF THE A/C DUAL PRESSURE SW → **TERMINAL 6** → **TERMINAL 3** OF THE A/C AMPLIFIER. THE ENGINE SPEED SIGNAL FROM IGNITER AND THE EVAPRETOR TEMP. SIGNAL FROM THE A/C THERMISTOR ARE ALL SUPPLIED TO THE A/C AMPLIFIER. WHEN THE A/C SW IS TURNED ON, THE A/C SW ON SIGNAL IS SENT TO ACTIVATE THE A/C AMPLIFIER. CURRENT FLOWS FROM THE A/C AMPLIFIER TO THE MAGNETIC CLUTCH, TURNING THE COMPRESSOR ON, AT THE SAME TIME, THE CURRENT APPLIED TO THE A/C IDLE-UP VSV FLOWS THROUGH **TERMINAL 9** OF THE AMPLIFIER → **GROUND**, ACTIVATING THE VSV TO PREVENT ENGINE SPEED DROP IN A/C OPERATION. THE A/C OPERATION IS SHUT OFF WHEN A SIGNAL INDICATING LOW EVAPORETOR TEMP., OR ABNOMALLY HIGH OR LOW REFRIGERANT PRESSURE, IS SUPPLIED WHILE THE ENGINE HIGH SPEED SIGNAL EXISTS. WHEN ONE OF THESE SIGNALS IS RECEIVED, THE AMPLIFIER SHUTS OFF THE A/C OPERATION.

### 3. CONDENSER OPERATION

CURRENT ALWAYS FLOWS THROUGH THE **CDS FAN** FUSE, **TERMINAL 2** OF THE A/C CONDENSER FAN MOTOR TO **TERMINAL 2** OF A/C CONDENSER FAN RELAY NO. 1.

WHEN THE AIR CONDITIONING IS OPERATED, CURRENT FLOWS THROUGH THE **A/C** FUSE TO **TERMINAL 2** OF THE A/C DUAL PRESSURE SW → **TERMINAL 6** → **TERMINAL 3** OF A/C AMPLIFIER → **TERMINAL 7** → **TERMINAL 1** OF A/C MAGNETIC CLUTCH → **GROUND**, TURNING THE A/C MAGNETIC CLUTCH ON. AT THE SAME TIME CURRENT FLOWS FROM **TERMINAL 7** OF THE A/C AMPLIFIER TO **TERMINAL 1** OF A/C CONDENSER FAN RELAY NO. 2 → **TERMINAL 2** → **GROUND**, ACTIVATING THE RELAY. THIS CAUSES THE CURRENT TO **TERMINAL 4** OF A/C SINGLE PRESSURE SW TO FLOW TO **TERMINAL 5** OF THE SWITCH → **TERMINAL 1** OF A/C CONDENSER FAN RELAY NO. 1 → **TERMINAL 2** → **GROUND**. SO THE CONTACT OF A/C CONDENSER FAN RELAY NO. 1 BECOMES OPEN AND THE CURRENT FLOWING TO **TERMINAL 4** OF THE CONDENSER FAN MOTOR FLOWS TO **TERMINAL 1** OF MOTOR → **TERMINAL 1** OF RESISTOR → **TERMINAL 2** → **TERMINAL 3** OF A/C CONDENSER FAN RELAY NO. 2 → **TERMINAL 5** → **GROUND**. THE CONDENSER FAN MOTOR ROTATES AT LOW SPEED BECAUSE THE CURRENT HAS PASSED THROUGH THE RESISTOR.

IF AT THIS TIME THE PRESSURE APPLIED TO THE A/C SINGLE PRESSURE SW EXCEEDS 15.5 KG/CM<sup>2</sup> THE A/C SINGLE PRESSURE SW TURNS OFF AND CONTINUITY TO A/C CONDENSER FAN RELAY NO. 1 IS STOPPED. THIS CLOSES THE CONTACT OF NO. 1 RELAY AND THE CURRENT FROM THE CONDENSER FAN MOTOR FLOWS **TERMINAL 1** OF CONDENSER FAN MOTOR → **TERMINAL 3** OF A/C CONDENSER FAN RELAY NO. 1 → **TERMINAL 4** → **TERMINAL 3** OF A/C CONDENSER FAN RELAY NO. 2 → **TERMINAL 5** → **GROUND**. THE CONDENSER FAN MOTOR ROTATES AT HIGH SPEED BECAUSE THE CURRENT HAS NOT FLOWED THROUGH THE RESISTOR.

## SERVICE HINTS

### A14 A/C SW

- 6-GROUND : APPROX. 12 VOLTS WITH IGNITION SW AT **ON** POSITION AND HEATER BLOWER SW ON  
 4-GROUND : ALWAYS CONTINUOUS  
 6-5 : CLOSED WITH A/C SW ON

### A13 A/C THERMISTOR AND A/C TRIPLE PRESSURE SW (A/C DUAL AND SINGLE PRESSURE SW)

- 2-6 : OPEN WITH REFRIGERANT PRESSURE AT LESS THAN APPROX. 2.0 KG/CM<sup>2</sup> (28 PSI, 196 KPA) OR MORE THAN APPROX. 32 KG/CM<sup>2</sup> (454 PSI, 3136 KPA)  
 5-4 : OPEN WITH PRESSURE ABOVE 15.5 KG/CM<sup>2</sup> (220 PSI, 1520 KPA)  
 : CLOSED WITH PRESSURE BELOW 12.5 KG/CM<sup>2</sup> (178 PSI, 1226 KPA)

### FRONT HEATER RELAY

- (3)4-(3)5: CLOSED WITH IGNITION SW ON AND HEATER BLOWER SW ON  
 (3)5-GROUND : ALWAYS APPROX. 12 VOLTS  
 (3)3-GROUND : APPROX. 12 VOLTS WITH IGNITION SW AT **ON** POSITION  
 (3)2-GROUND : ALWAYS CONTINUOUS

### H7 HEATER BLOWER SW

- 6-5 : CLOSED WITH BLOWER SW AT **LOW** POSITION  
 6-1, 5 : CLOSED WITH BLOWER SW AT **M1** POSITION  
 6-2, 5 : CLOSED WITH BLOWER SW AT **M2** POSITION  
 6-8, 5 : CLOSED WITH BLOWER SW AT **HI** POSITION

### A/C CONDENSER FAN RELAY NO. 1

- (4)4-(4)3 : CLOSED WITH CONDENSER FAN MOTOR OFF OR CONDENSER FAN MOTOR AT HIGH SPEED  
 : OPEN WITH CONDENSER FAN MOTOR AT LOW SPEED

### A/C CONDENSER FAN RELAY NO. 2

- (4)3-(4)5 : CLOSED WITH MAGNETIC CLUTCH ON

### A4 A/C MAGNETIC CLUTCH

- 1-GROUND : APPROX. 3.7 Ω

## ○ : PARTS LOCATION

CODE	SEE PAGE	CODE	SEE PAGE	CODE	SEE PAGE
A 1	24 (3VZ-E)	A12	28	H 7	
	26 (22R-E)	A13	28	I 1	A 25 (3VZ-E)
A 3	24 (3VZ-E)	A14	28	I 3	B 27 (22R-E)
	26 (22R-E)	B 3	28	I16	
A 4	24 (3VZ-E)	B 4		28	
	26 (22R-E)	E 6	B	R 2	
A11	28	E 8	A	28	
				W 2	25 (3VZ-E)

## ○ : RELAY BLOCKS

CODE	SEE PAGE	RELAY BLOCKS (RELAY BLOCK LOCATION)
2	22	R/B NO. 2 (ENGINE COMPARTMENT RIGHT)
3	23	R/B NO. 3 (RIGHT KICK PANEL)
4	23	R/B NO. 4 (BESIDE R/B NO. 2)

## □ : CONNECTOR JOINING WIRE HARNESS AND WIRE HARNESS

CODE	SEE PAGE	JOINING WIRE HARNESS AND WIRE HARNESS (CONNECTOR LOCATION)
EA1	30 (3VZ-E)	COWL WIRE AND A/C SUB WIRE (NEAR THE BATTERY)
	32 (22R-E)	
EB1	30 (3VZ-E)	COWL WIRE AND ENGINE ROOM MAIN WIRE (R/B NO. 2)
	32 (22R-E)	
EB2	30 (3VZ-E)	
	32 (22R-E)	
IG1	34	COWL WIRE AND A/C WIRE (BEHIND GLOVE BOX)
IH1	34	ENGINE WIRE AND COWL WIRE (RIGHT KICK PANEL)
IH2		