



# AUTOMATIC AIR CONDITIONING

## SYSTEM OUTLINE

### 1. HEATER BLOWER OPERATION

#### MANUAL BLOWER OPERATION

WHEN THE BLOWER CONTROL SW IS SET TO ANY BLOWER SPEED, THE A/C CONTROL ASSEMBLY OPERATES AND THE CURRENT TO DRIVE THE BLOWER MOTOR FLOWS FROM **TERMIANL BLW** OF THE A/C CONTROL ASSEMBLY TO **TERMINAL SI** OF THE BLOWER MOTOR CONTROL RELAY. THE CURRENT ACTIVATES THE RELAY AND THE VOLTAGE APPLIED TO **TERMINAL +B** OF THE BLOWER MOTOR CONTROL RELAY IS OUTPUT TO **TERMINAL M+** OF THE RELAY AS THE VOLTAGE FOR THE SELECTED BLOWER SPEED. THE CURRENT THEN FLOWS FROM **TERMINAL M+** OF THE BLOWER MOTOR CONTROL RELAY TO **TERMINAL 2** OF THE BLOWER MOTOR → **TERMINAL 1** → **TERMINAL M-** OF THE BLOWER MOTOR CONTROL RELAY → **TERMINAL GND** → **GROUND**, AND THE BLOWER MOTOR OPERATES AT THE BLOWER SPEED SELECTED.

#### AUTO FUNCTION

WHEN THE AUTO SW IS TURNED ON, THE A/C CONTROL ASSEMBLY CALCULATES THE REQUIRED VENT TEMPERATURE BASED ON THE SET TEMPERATURE AND INPUT FROM EACH SENSOR. THEN **TERMINAL BLW** OF THE A/C CONTROL ASSEMBLY INPUTS CURRENT TO **TERMINAL SI** OF THE BLOWER MOTOR CONTROL RELAY IN CONFORMITY WITH THE REQUIRED VENT OUTPUT. THIS CURRENT ACTIVATES THE BLOWER MOTOR CONTROL RELAY SO THAT THE CURRENT FLOWS FROM **TERMINAL M+** OF THE BLOWER MOTOR CONTROL RELAY → **TERMINAL 2** OF THE BLOWER MOTOR → **TERMINAL 1** → **TERMINAL M-** OF THE BLOWER MOTOR CONTROL RELAY → **TERMINAL GND** → **GROUND**, ACTIVATING THE BLOWER MOTOR. THE BLOWER MOTOR THEN OPERATES AT DIFFERENT STEPS IN CONFORMITY WITH VARIABLE CURRENT FLOW OUTPUT FROM **TERMINAL BLW** OF THE A/C CONTROL ASSEMBLY TO **TERMINAL SI** OF THE BLOWER MOTOR CONTROL RELAY.

### 2. OPERATION OF AIR INLET CONTROL SERVO MOTOR

#### (SWITCHING FROM FRESH TO RECIRC)

WITH IGNITION SW TURNED ON THE CURRENT FLOWS FROM **HTR FUSE (10A)** TO **TERMINAL IG** OF THE A/C CONTROL ASSEMBLY → **TERMINAL MREC** → **TERMINAL 6** OF THE AIR INLET CONTROL SERVO MOTOR → **TERMINAL 2** → **TERMINAL MFRS** OF THE A/C CONTROL ASSEMBLY → **TERMINAL GND** → **GROUND**, THE MOTOR ROTATES AND THE DAMPER MOVES TO THE RECIRC SIDE. WHEN THE **DAMPER** OPERATES WITH THE A/C SW AT **RECIRC** POSITION, THE **DAMPER** POSITION SIGNAL IS INPUT FROM **TERMINAL 5** OF THE SERVO MOTOR TO **TERMINAL TPI** OF THE ECU (BUILT INTO THE A/C CONTROL ASSEMBLY). AS A RESULT, THE CURRENT TO THE SERVO MOTOR CIRCUIT IS CUT OFF BY THE ECU, SO THE DAMPER STOPS AT THAT POSITION.

#### (SWITCHING FROM RECIRC TO FRESH)

WITH IGNITION SW TURNED ON, WHEN THE RECIRC/FRESH SW IS SWITCHED TO THE FRESH SIDE, THE CURRENT FLOWS FROM **TERMINAL IG** OF THE A/C CONTROL ASSEMBLY TO **TERMINAL MFRS** → **TERMINAL 2** OF THE AIR INLET CONTROL SERVO MOTOR → **TERMINAL 6** → **TERMINAL MREC** OF THE A/C CONTROL ASSEMBLY → **TERMINAL GND** → **GROUND**, THE MOTOR ROTATES AND THE DAMPER STOPS AT THAT POSITION.

### 3. OPERATION OF AIR VENT MODE CONTROL SERVO MOTOR

WITH IGNITION SW TURNED ON, THE CURRENT FLOWS FROM **HTR FUSE** TO **TERMINAL IG** OF THE A/C CONTROL ASSEMBLY.

#### (SWITCHING FROM DEF TO FACE)

THE CURRENT FLOWS FROM **TERMINAL MFACE** OF THE A/C CONTROL ASSEMBLY TO **TERMINAL 4** OF THE AIR VENT CONTROL SERVO MOTOR → **TERMINAL 5** → **TERMINAL MDEF** OF THE A/C CONTROL ASSEMBLY → **TERMINAL GND** → **GROUND**. THE MOTOR ROTATES AND THE DAMPER MOVES TO THE FACE SIDE. WHEN THE DAMPER OPERATES WITH THE A/C SW AT **FACE** POSITION, THE **DAMPER** POSITION SIGNAL IS INPUT FROM **TERMINAL 1** OF THE SERVO MOTOR TO **TERMINAL TPM** OF THE ECU (BUILT INTO THE A/C CONTROL ASSEMBLY). AS A RESULT, THE CURRENT TO THE SERVO MOTOR CIRCUIT IS CUT OFF BY THE ECU, SO THE DAMPER STOPS AT THAT POSITION.

#### (SWITCHING FROM FACE TO DEF)

THE CURRENT FLOWS FROM **TERMINAL MDEF** OF THE A/C CONTROL ASSEMBLY TO **TERMINAL 5** OF THE AIR VENT CONTROL SERVO MOTOR → **TERMINAL 4** → **TERMINAL MFACE** OF THE A/C CONTROL ASSEMBLY → **TERMINAL GND** → **GROUND**, THE MOTOR ROTATES AND THE DAMPER STOPS AT THAT POSITION.

### 4. OPERATION OF AIR MIX CONTROL SERVO MOTOR

WHEN THE TEMPERATURE SW IS TURNED TO THE "COOL" SIDE, THE CURRENT FLOWS FROM **TERMINAL MC** OF THE A/C CONTROL ASSEMBLY TO **TERMINAL 4** OF THE AIR MIX CONTROL SERVO MOTOR → **TERMINAL 5** → **TERMINAL MH** OF THE A/C CONTROL ASSEMBLY → **TERMINAL GND** → **GROUND** AND THE MOTOR ROTATES. THE DAMPER OPENING ANGLE AT THIS TIME IS INPUT FROM **TERMINAL 1** OF THE SERVO MOTOR TO **TERMINAL TP** OF THE A/C CONTROL ASSEMBLY, THIS IS USED TO DETERMINE THE **DAMPER STOP** POSITION AND MAINTAIN THE SET TEMPERATURE.

WHEN THE TEMPERATURE CONTROL SW IS TURNED TO THE "HOT" SIDE, THE CURRENT FLOWS FROM **TERMINAL MH** OF THE A/C CONTROL ASSEMBLY TO **TERMINAL 5** OF THE AIR MIX CONTROL SERVO MOTOR → **TERMINAL 4** → **TERMINAL MC** OF THE A/C CONTROL ASSEMBLY → **TERMINAL GND** → **GROUND**, ROTATING THE MOTOR IN REVERSE AND SWITCHING THE DAMPER FROM COOL TO HOT SIDE.

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## 5. AIR CONDITIONING OPERATION

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

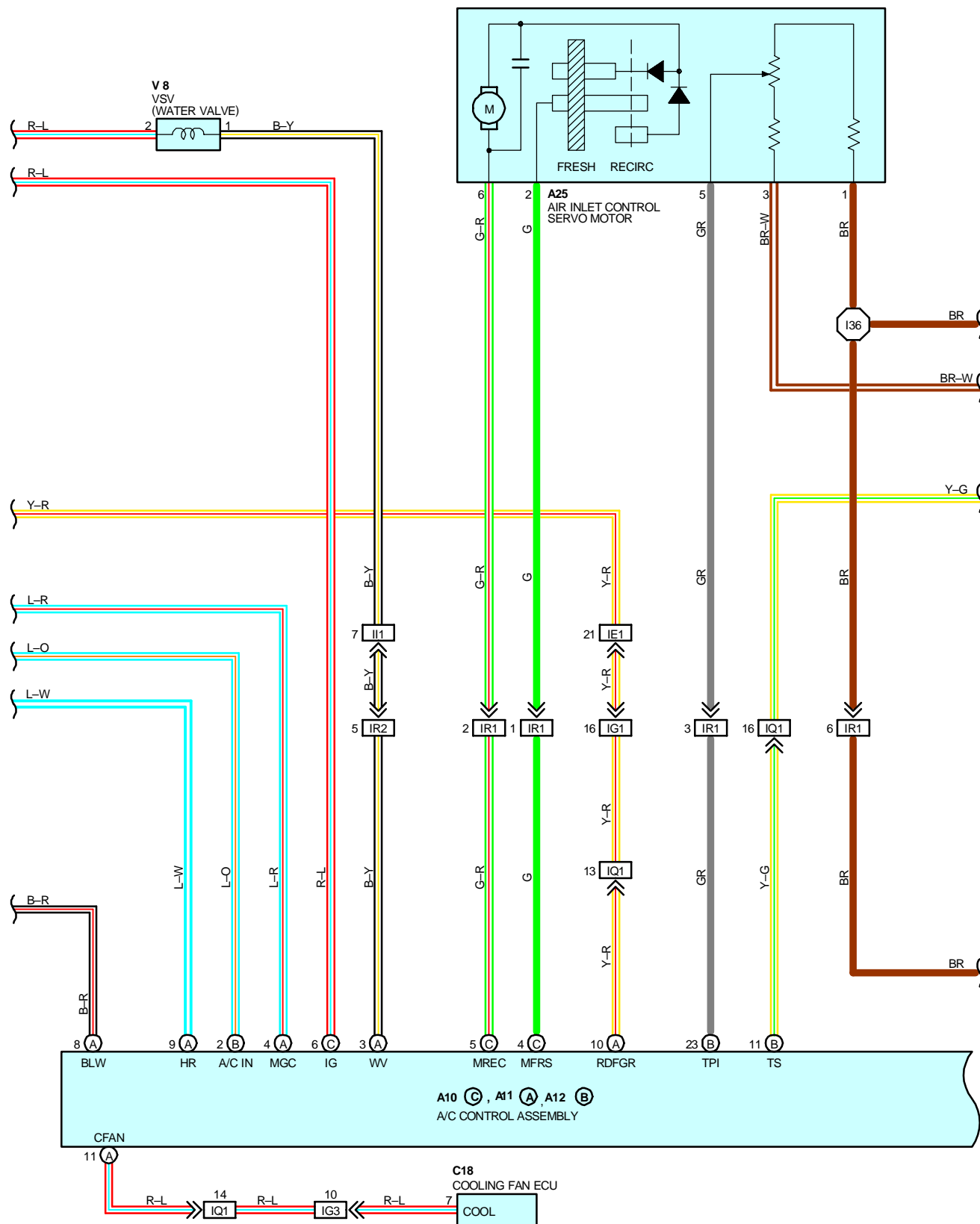
WHEN THE ENGINE IS STARTED AND THE A/C SW IS ON, A SIGNAL IS INPUT TO THE ECU (BUILT IN THE A/C CONTROL ASSEMBLY). AS A RESULT, THE GROUND CIRCUIT IN THE A/C CONTROL ASSEMBLY IS CLOSED AND CURRENT FLOWS FROM **HTR** FUSE (10A) TO **TERMINAL 1** OF THE MG CLT RELAY → **TERMINAL 2** → **TERMINAL ACMG** OF THE ENGINE CONTROL MODULE → **TERMINAL A/C** → **TERMINAL MGC** OF THE A/C CONTROL ASSEMBLY → **TERMINAL GND** → **GROUND**, TURNING THE RELAY ON, SO THAT THE A/C MAGNETIC CLUTCH IS ON AND THE A/C COMPRESSOR OPERATES.

AT THE SAME TIME, THE ENGINE CONTROL MODULE DETECTS THE MAGNETIC CLUTCH IS ON AND THE A/C COMPRESSOR OPERATES. OPEN DIRECTION TO AVOID LOWERING THE ENGINE RPM DURING A/C OPERATING.

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

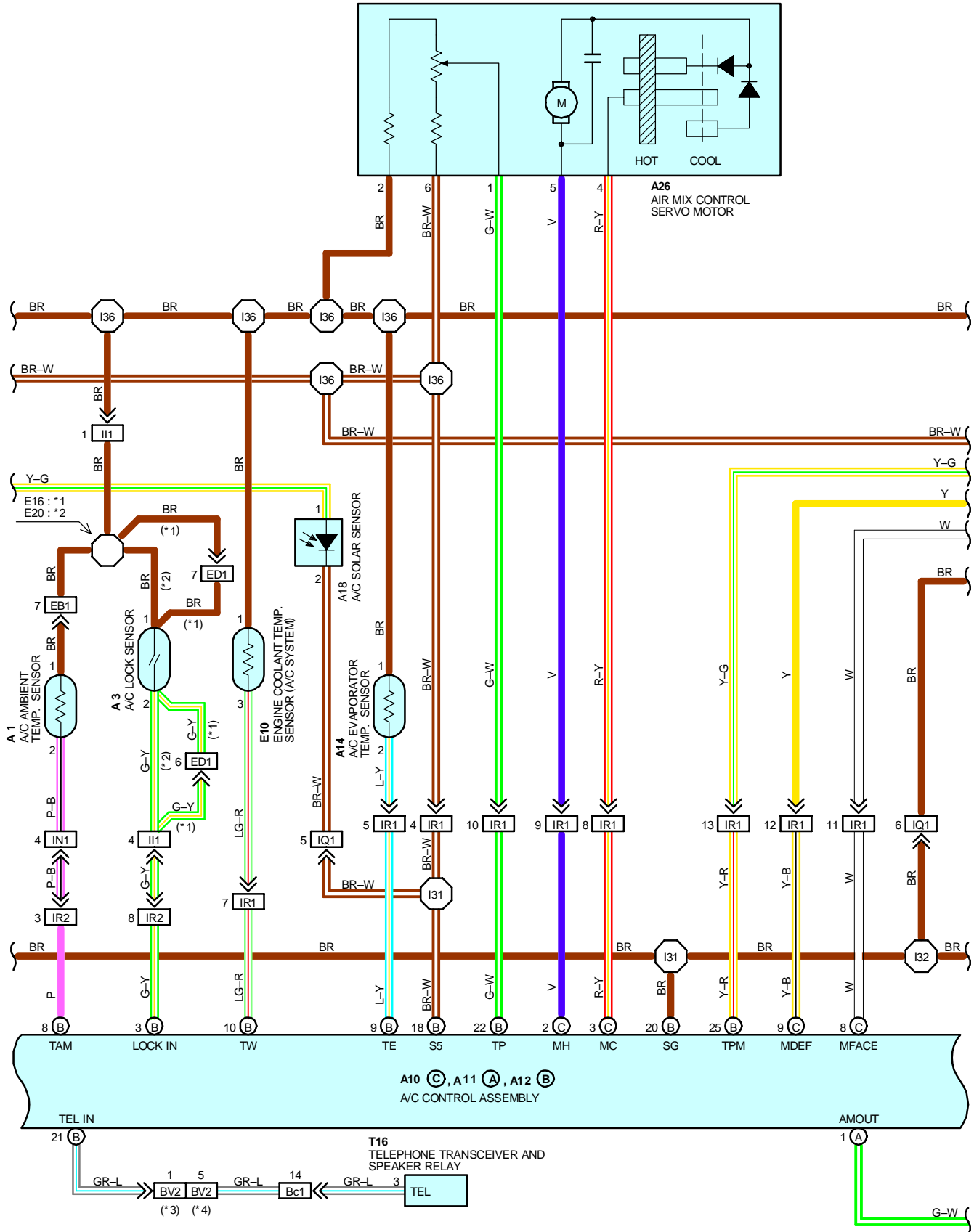
- \* ENGINE RPM. SIGNAL IS HIGH.
- \* COOLANT HIGH TEMP. SIGNAL IS HIGH.
- \* A SIGNAL THAT THE TEMPERATURE AT THE AIR OUTLET IS LOW.
- \* A SIGNAL THAT THERE IS A LARGE DIFFERENCE BETWEEN ENGINE SPEED AND COMPRESSOR SPEED.
- \* A SIGNAL THAT THE REFRIGERANT PRESSURE IS ABNORMALLY HIGH OR LOW.



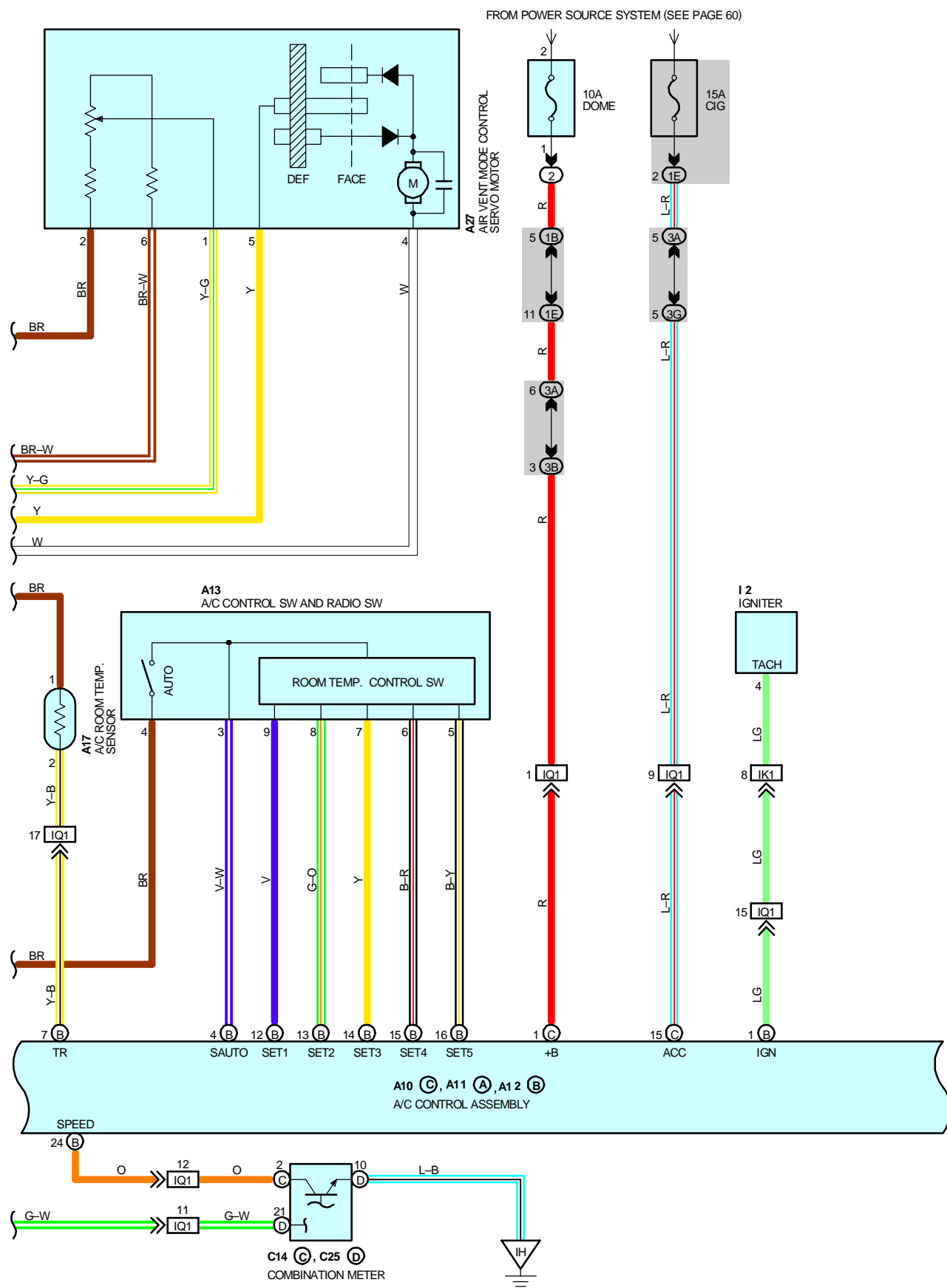




# AUTOMATIC AIR CONDITIONING



- \*1 : 1UZ-FE
- \*2 : 2JZ-GE
- \*3 : W/ CD PLAYER
- \*4 : W/O CD PLAYER

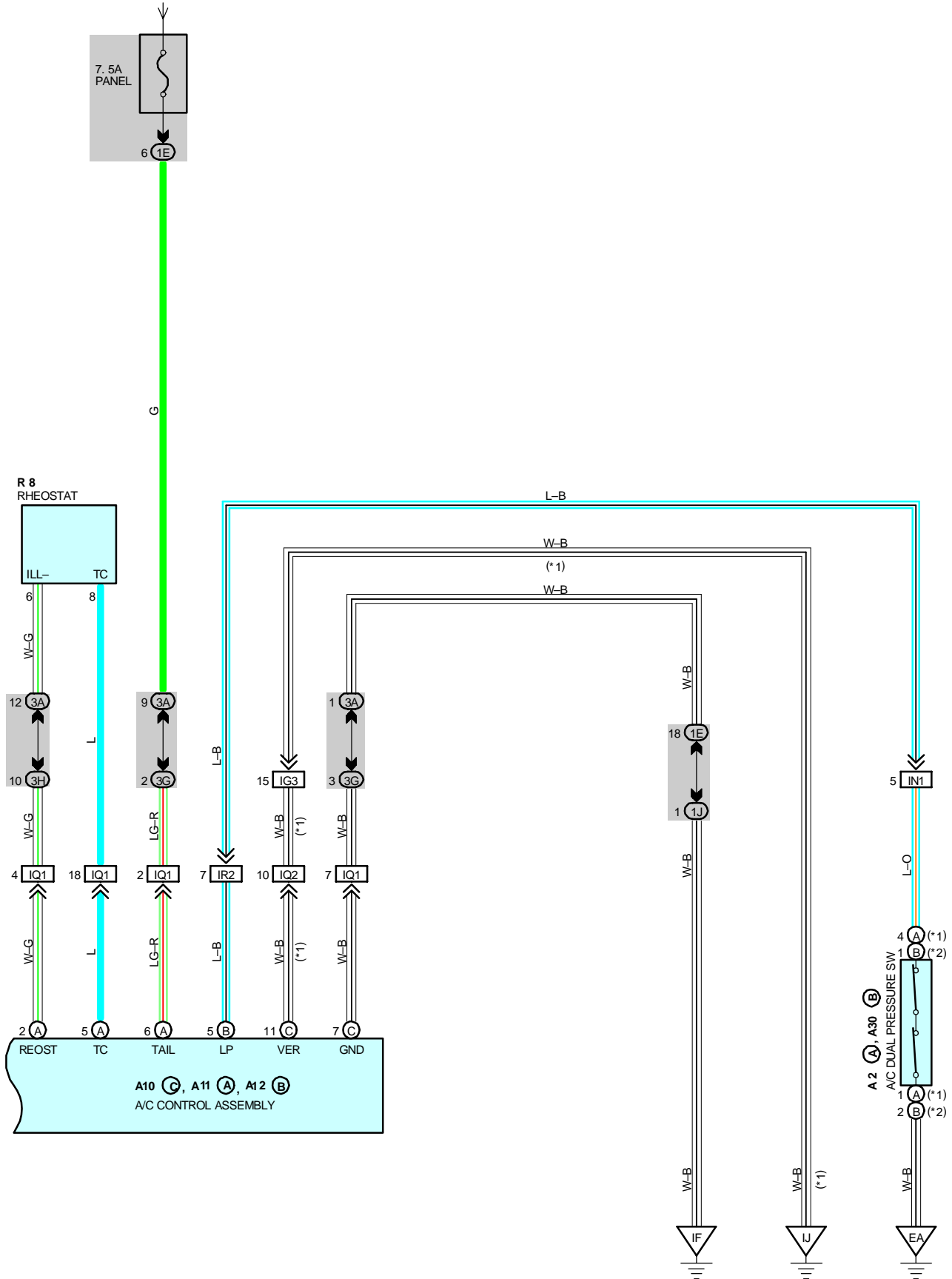




# AUTOMATIC AIR CONDITIONING

\*1 : 1UZ-FE  
\*2 : 2JZ-GE

FROM POWER SOURCE SYSTEM (SEE PAGE 60)







**SERVICE HINTS**

**A3 A/C LOCK SENSOR AND A/C MAGNETIC CLUTCH**

4-GROUND : APPROX. 3.7 Ω

**A2 (A) A/C DUAL PRESSURE SW (1UZ-FE)**

4-1 : OPEN ABOVE APPROX. 206 KPA (30 PSI, 15.5 KG/CM<sup>2</sup>) OR 2648 KPA (384 PSI, 27 KG/CM<sup>2</sup>)

**A30 (B) A/C DUAL PRESSURE SW (2JZ-GE)**

1-2 : OPEN ABOVE APPROX. 206 KPA (30 PSI, 15.5 KG/CM<sup>2</sup>) OR 2648 KPA (384 PSI, 27 KG/CM<sup>2</sup>)

**A10 (C), A11 (A), A12 (B) A/C CONTROL ASSEMBLY**

+B-GROUND : ALWAYS APPROX. 10-14 VOLTS

IG-GROUND : APPROX. 10-14 VOLTS WITH IGNITION SW AT **ON** POSITION

HR-GROUND : APPROX. 10-14 VOLTS WITH IGNITION SW AT **ON** POSITION AND DO NOT TURN THE BLOWER MOTOR

LP-GROUND : BELOW 1 VOLT WITH IGNITION SW AT **ON** POSITION AND TURN THE BLOWER MOTOR  
NO CONTINUITY WITH PRESSURE LESS THAN 206 KPA (30 PSI, 2.1 KG/CM<sup>2</sup>) OR ABOVE 2648 KPA (384 PSI, 27 KG/CM<sup>2</sup>)

ACC-GROUND : APPROX. 10-14 VOLTS WITH IGNITION SW AT **ACC** OR **ON** POSITION

WV-GROUND : 10-14 VOLTS AT START THE ENGINE AND MAX. COLD POSITION OF A/C TEMP. CONTROL SW  
BELOW 1 VOLT AT START THE ENGINE AND MAX. WARM POSITION OF A/C TEMP. CONTROL SW

MGC-GROUND : BELOW 1 VOLT AT START THE ENGINE, PUSH THE A/C AUTO SW AND A/C SW **ON** POSITION  
10-14 VOLTS AT START THE ENGINE, PUSH THE A/C AUTO SW AND A/C SW **OFF** POSITION

BLW-GROUND : BELOW 1.5 VOLTS WITH THE IGNITION SW ON AND TURN THE BLOWER MOTOR

S5-GROUND : 4-6 VOLTS WITH THE IGNITION SW ON

SG-GROUND : ALWAYS CONTINUITY

MH-MC : 13-19 VOLTS WITH IGNITION SW OFF

MFRS-GROUND : APPROX. 12 VOLTS WITH FRESH SW ON

MREC-GROUND : APPROX 12 VOLTS WITH RECIRC SW ON

MFACE-GROUND : APPROX. 12 VOLTS WITH FACE SW ON

MDEF-GROUND : APPROX. 12 VOLTS WITH DEF SW ON

GND-GROUND : ALWAYS CONTINUITY

**○ : PARTS LOCATION**

CODE	SEE PAGE	CODE	SEE PAGE	CODE	SEE PAGE
A1	26 (1UZ-FE), 28 (2JZ-GE)	A25	30	E10	30
A2	A 26 (1UZ-FE)	A26	30	E11	30
A3	26 (1UZ-FE), 28 (2JZ-GE)	A27	30	E13	30
A10	C 30	A30	B 28 (2JZ-GE)	I2	27 (1UZ-FE)
A11	A 30	B3	30		29 (2JZ-GE)
A12	B 30	B7	A 30	R8	31
A13	30	B8	B 30	T16	33
A14	30	C14	C 30	V8	27 (1UZ-FE), 29 (2JZ-GE)
A17	30	C18	30		
A18	30	C25	D 30		

**○ : RELAY BLOCKS**

CODE	SEE PAGE	RELAY BLOCKS (RELAY BLOCK LOCATION)
2	19	R/B NO. 2 (ENGINE COMPARTMENT LEFT)

**○ : JUNCTION BLOCK AND WIRE HARNESS CONNECTOR**

CODE	SEE PAGE	JUNCTION BLOCK AND WIRE HARNESS (CONNECTOR LOCATION)
1A	20	ENGINE ROOM MAIN WIRE AND J/B NO. 1 (LEFT KICK PANEL)
1B		
1E	20	INSTRUMENT PANEL WIRE AND J/B NO. 1 (LEFT KICK PANEL)
1J	20	COWL WIRE AND J/B NO. 1 (LEFT KICK PANEL)
1K		
3A	20	INSTRUMENT PANEL WIRE AND J/B NO. 3 (BEHIND THE INSTRUMENT PANEL CENTER)
3B		
3G		
3H		



## AUTOMATIC AIR CONDITIONING

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**□ : CONNECTOR JOINING WIRE HARNESS AND WIRE HARNESS**

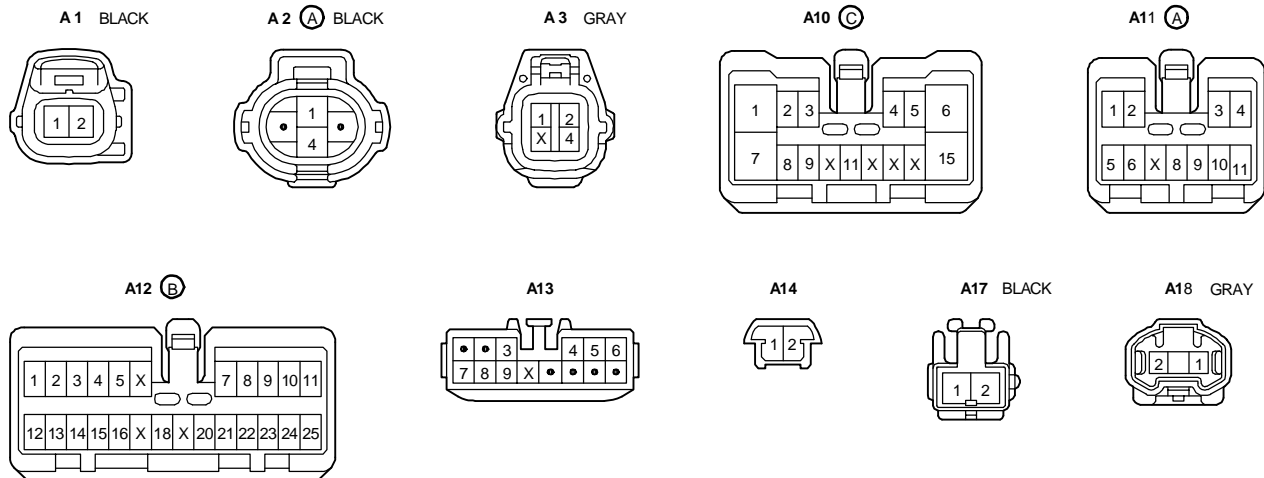
CODE	SEE PAGE	JOINING WIRE HARNESS AND WIRE HARNESS (CONNECTOR LOCATION)
EB1	36 (1UZ-FE)	ENGINE WIRE AND ENGINE ROOM MAIN WIRE (FRONT SIDE OF R/B NO. 2)
	38 (2JZ-GE)	
ED1	36 (1UZ-FE)	ENGINE NO. 2 WIRE AND ENGINE WIRE (REAR SIDE OF AIR INTAKE CHAMBER)
IE1	40	ENGINE ROOM MAIN WIRE AND COWL WIRE (R/B NO. 4)
IE2	40	ENGINE ROOM MAIN WIRE AND COWL WIRE (BEHIND GLOVE BOX)
IG1	40	INSTRUMENT PANEL WIRE AND COWL WIRE (R/B NO. 5)
IG3	40	INSTRUMENT PANEL WIRE AND COWL WIRE (RIGHT KICK PANEL)
II1	40	ENGINE WIRE AND A/C SUBWIRE (BEHIND GLOVE BOX)
IJ1	40	ENGINE WIRE AND COWL WIRE (RIGHT KICK PANEL)
IK1	40	ENGINE WIRE AND INSTRUMENT PANEL WIRE (RIGHT KICK PANEL)
IN1	42	ENGINE ROOM MAIN WIRE AND A/C SUB WIRE (BEHIND GLOVE BOX)
IQ1	42	INSTRUMENT PANEL WIRE AND CONSOLE BOX WIRE (UNDER THE INSTRUMENT CENTER)
IQ2		
IR1	42	CONSOLE BOX WIRE AND A/C SUB WIRE (BEHIND GLOVE BOX)
IR2		
BV2	44	FLOOR NO. 3 WIRE AND CONSOLE BOX WIRE (UNDER THE INSTRUMENT PANEL CENTER)
Bc1	44	FLOOR NO. 3 WIRE AND FLOOR MAIN WIRE (UNDER THE LEFT SIDE OF REAR SEAT CUSHION)

**▽ : GROUND POINTS**

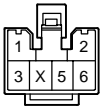
CODE	SEE PAGE	GROUND POINTS LOCATION
EA	36 (1UZ-FE)	FRONT SIDE OF RIGHT FENDER
	38 (2JZ-GE)	
EB	36 (1UZ-FE)	FRONT SIDE OF LEFT FENDER
	38 (2JZ-GE)	
IF	40	LEFT KICK PANEL
IH	40	UNDER THE ASHTRAY LH
IJ	40	RIGHT KICK PANEL

**○ : SPLICE POINTS**

CODE	SEE PAGE	WIRE HARNESS WITH SPLICE POINTS	CODE	SEE PAGE	WIRE HARNESS WITH SPLICE POINTS
E10	36 (1UZ-FE)	ENGINE ROOM MAIN WIRE	I25	42	ENGINE WIRE
	38 (2JZ-GE)		I31	42	CONSOLE BOX WIRE
E16	36 (1UZ-FE)	ENGINE WIRE	I32	42	CONSOLE BOX WIRE
E20	38 (2JZ-GE)		I36	42	A/C SUB WIRE



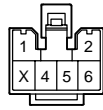
A25 BLACK



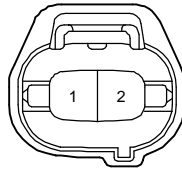
A26



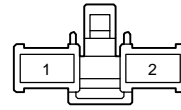
A27



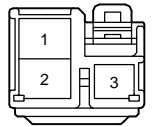
A30 (B) GRAY



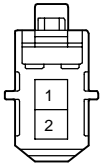
B 3



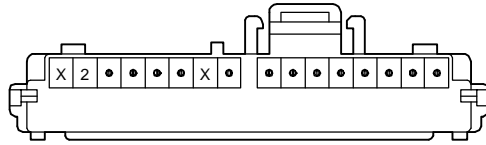
B 7 (A)



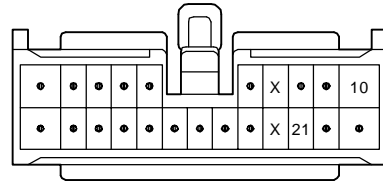
B 8 (B)



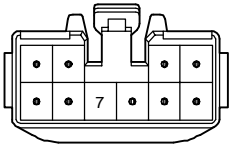
C14 (C)



C25 (D) ORANGE



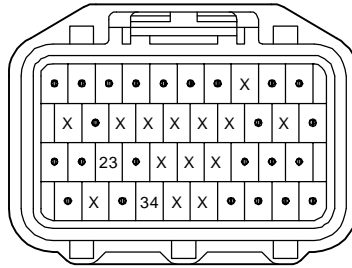
C18 GRAY



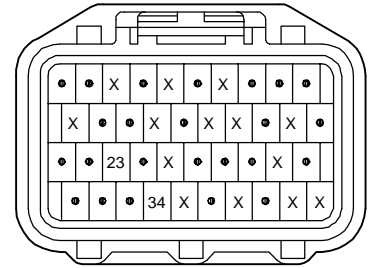
E10



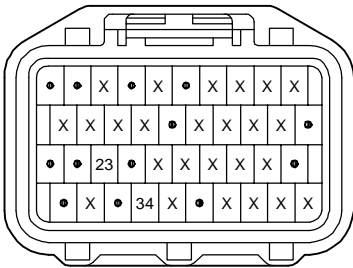
(1UZ-FE) E11 DARK GRAY



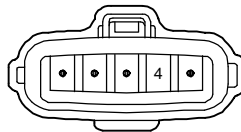
(2JZ-GE A/T) E11 DARK GRAY



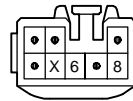
(1UZ-FE M/T) E13 DARK GRAY



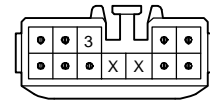
I2 BLACK



R 8



T16



V 8 BLACK

