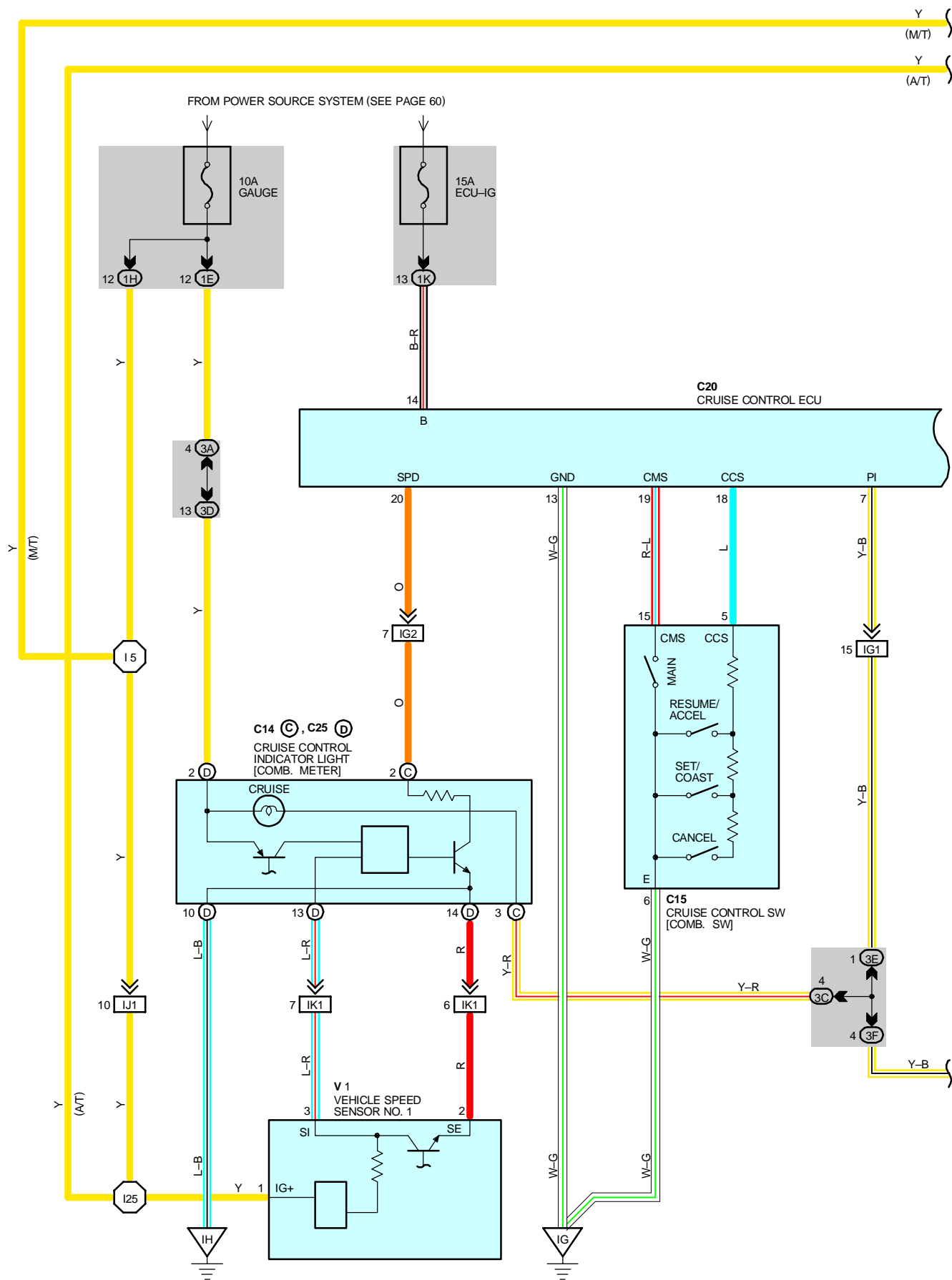
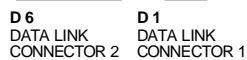




CRUISE CONTROL







CRUISE CONTROL

SYSTEM OUTLINE

CURRENT IS APPLIED AT ALL TIMES THROUGH THE **STOP** FUSE TO **TERMINAL 2** OF THE STOP LIGHT SW, AND ALSO THROUGH THE **DOVE** FUSE TO **TERMINAL 15** OF THE CRUISE CONTROL ECU.

WITH THE IGNITION SW TURNED TO ON, THE CURRENT FLOWS THROUGH THE **GAUGE** FUSE TO **TERMINAL (D)2** OF THE COMBINATION METER AND THE CURRENT THROUGH THE **ECU-IG** FUSE FLOWS TO **TERMINAL 14** OF THE CRUISE CONTROL ECU.

WHEN THE IGNITION SW IS ON AND THE CRUISE CONTROL MAIN SWITCH IS TURNED ON, A SIGNAL IS INPUT FROM **TERMINAL 15** OF THE CRUISE CONTROL MAIN SW TO **TERMINAL 19** OF THE CRUISE CONTROL ECU. AS A RESULT, THE CRUISE CONTROL ECU FUNCTIONS AND THE CURRENT TO **TERMINAL 14** OF THE CRUISE CONTROL ECU TO **TERMINAL 13** OF THE CRUISE CONTROL ECU → **GROUND**, AND THE CRUISE CONTROL SYSTEM IS IN A CONDITION READY FOR OPERATION.

AT THE SAME TIME, THE THROUGH THE **GAUGE** FUSE FLOWS FROM **TERMINAL (D) 2** OF THE CRUISE CONTROL INDICATOR LIGHT TO **TERMINAL (C) 3** → **TERMINAL 7** OF THE CRUISE CONTROL ECU → **TERMINAL 13** → **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 MAIN 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 SW 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 SPEED SENSOR, 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 THE CRUISE CONTROL ECU → **TERMINAL 1** OF THE CRUISE CONTROL ACTUATOR → **TERMINAL 2** → **TERMINAL 11** OF THE 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 THE ECU → **TERMINAL 2** OF THE CRUISE CONTROL ACTUATOR → **TERMINAL 1** → **TERMINAL 12** OF THE 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 SWITCH IS TURNED OFF 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 MAGNETIC CLUTCH OF THE ACTUATOR TURNS OFF AND THE MOTOR ROTATES TO CLOSE THE THROTTLE VALVE AND THE CRUISE CONTROL IS RELEASED.

- * PLACING THE SHIFT LEVER EXCEPT "D" POSITION. "SIGNAL INPUT TO **TERMINAL 2** OF THE ECU" (A/T)
- * DEPRESSING THE CLUTCH PEDAL (CLUTCH SW ON). "SIGNAL INPUT TO **TERMINAL 2** OF THE ECU" (M/T)
- * DEPRESSING THE BRAKE PEDAL (STOP LIGHT SW ON). "SIGNAL INPUT TO **TERMINAL 16** OF THE ECU"
- * PUSHING THE CANCEL SWITCH (CANCEL SW ON). "SIGNAL INPUT TO **TERMINAL 18** OF THE ECU."

7. AUTO CANCEL FUNCTION

A) IF ANY OF THE FOLLOWING OPERATING CONDITIONS OCCURS DURING CRUISE CONTROL OPERATION, THE SET SPEED IS ERASED. CURRENT FLOW TO 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 MAGNETIC CLUTCH.
- * WHEN CURRENT CONTINUED TO FLOW TO THE MOTOR INSIDE THE ACTUATOR IN THE THROTTLE VALVE "OPEN" DIRECTION.
- * OPEN CIRCUIT IN MAGNETIC CLUTCH.
- * MOMENTARY INTERRUPTION OF VEHICLE SPEED SIGNAL.
- * SHORT CIRCUIT IN CRUISE CONTROL SW.
- * MOTOR DOES NOT OPERATE DESPITE THE MOTOR DRIVE SIGNAL BEING OUTPUT.

B) IF ANY OF THE FOLLOWING CONDITIONS OCCURS 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.

8. AUTOMATIC TRANSMISSION CONTROL FUNCTION

- * IN OVERDRIVE, IF THE VEHICLE SPEED BECOMES LOWER THAN THE OVERDRIVE CUT SPEED (SET SPEED MINUS APPROX. **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, VEHICLE SPEED BECOMES HIGHER THAN THE OVERDRIVE RETURN SPEED (SET SPEED MINUS APPROX. **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**.
- * DURING CRUISE CONTROL DRIVING, THE CRUISE CONTROL OPERATION SIGNAL IS OUTPUT FROM THE CRUISE CONTROL ECU TO THE ENGINE CONTROL MODULE. UPON RECEIVING THIS SIGNAL, THE ENGINE CONTROL MODULE CHANGES THE SHIFT PATTERN TO NORMAL. (1UZ-FE)

TO MAINTAIN SMOOTH CRUISE CONTROL OPERATION (ON A DOWNWARD SLOPE ETC.), LOCK-UP RELEASE OF THE TRANSMISSION WHEN THE IDLING POINT OF THE THROTTLE POSITION IS "ON" IS FORBIDDEN. (1UZ-FE)

SERVICE HINTS

C 7 CRUISE CONTROL ACTUATOR

5-4: APPROX. **38.5 Ω**

C15 CRUISE CONTROL SW (COMB. SW)

- 15-6 : CONTINUITY WITH MAIN SW ON
- 5-6 : APPROX. **420 Ω** WITH CANCEL SW ON
- APPROX. **70 Ω** WITH RESUME/ACCEL SW ON
- APPROX. **200 Ω** WITH SET/COAST SW ON

C20 CRUISE CONTROL ECU

- 14-GROUND: APPROX. **12 VOLTS** WITH IGNITION SW AT **ON** POSITION
- 15-GROUND: ALWAYS APPROX. **12 VOLTS**
- 20-GROUND: **4 PULSE** WITH **1 ROTATION** OF ROTOR SHAFT
- 18-GROUND: APPROX. **420 Ω** WITH CANCEL SW ON IN CRUISE CONTROL SW
- APPROX. **200 Ω** WITH SET/COAST SW ON IN CRUISE CONTROL SW
- APPROX. **70 Ω** WITH RESUME/ACCEL SW ON IN CRUISE CONTROL SW
- 13-GROUND: ALWAYS CONTINUITY



CRUISE CONTROL

○ : PARTS LOCATION

CODE		SEE PAGE		CODE		SEE PAGE		CODE		SEE PAGE	
C7		26 (1UZ-FE), 28 (2JZ-GE)		C25	D	30		E14	B	30	
C14	C	30		D 1		26 (1UZ-FE), 28 (2JZ-GE)		P 1		27 (1UZ-FE), 29 (2JZ-GE)	
C15		30		D 6		30		S13		31	
C19		30		E11	A	30		V 1		27 (1UZ-FE), 29 (2JZ-GE)	
C20		30		E12	B	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)
1B	20	ENGINE ROOM MAIN WIRE AND J/B NO. 1 (LEFT KICK PANEL)
1E	20	INSTRUMENT PANEL WIRE AND J/B NO. 1 (LEFT KICK PANEL)
1H	20	COWL WIRE AND J/B NO. 1 (LEFT KICK PANEL)
1I		
1K		
3A	22	INSTRUMENT PANEL WIRE AND J/B NO. 3 (BEHIND THE INSTRUMENT PANEL CENTER)
3C		
3D		
3E		
3F		
3H		

□ : CONNECTOR JOINING WIRE HARNESS AND WIRE HARNESS

CODE	SEE PAGE	JOINING WIRE HARNESS AND WIRE HARNESS (CONNECTOR LOCATION)
IE2	40	ENGINE ROOM MAIN WIRE AND COWL WIRE (BEHIND GLOVE BOX)
IG1	40	INSTRUMENT PANEL WIRE AND COWL WIRE (R/B NO.5)
IG2		
IJ1	40	ENGINE WIRE AND COWL WIRE (RIGHT KICK PANEL)
IJ2		
IK1	40	ENGINE WIRE AND INSTRUMENT PANEL WIRE (RIGHT KICK PANEL)

▽ : GROUND POINTS

CODE	SEE PAGE	GROUND POINTS LOCATION
IG	40	INSTRUMENT PANEL BRACE LH
IH	40	UNDER THE ASHTRAY LH

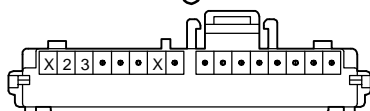
○ : SPLICE POINTS

CODE	SEE PAGE	WIRE HARNESS WITH SPLICE POINTS	CODE	SEE PAGE	WIRE HARNESS WITH SPLICE POINTS
I 5	42	COWL WIRE	I28	42	ENGINE WIRE
125	42	ENGINE WIRE			

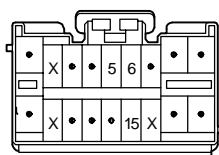
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C14 ③



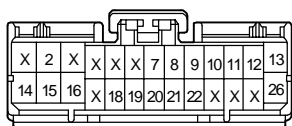
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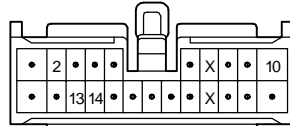
C19



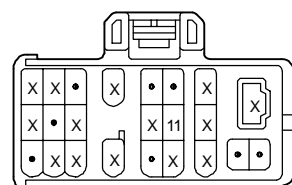
C20 GREEN



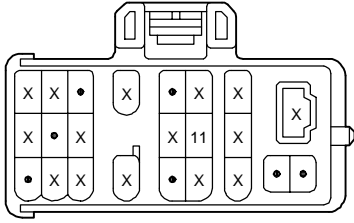
C25 ④ ORANGE



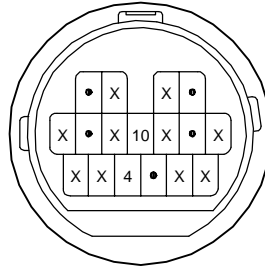
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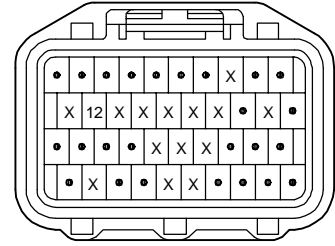
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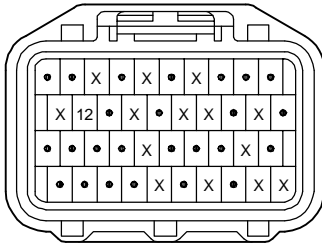
D 6 DARK GRAY



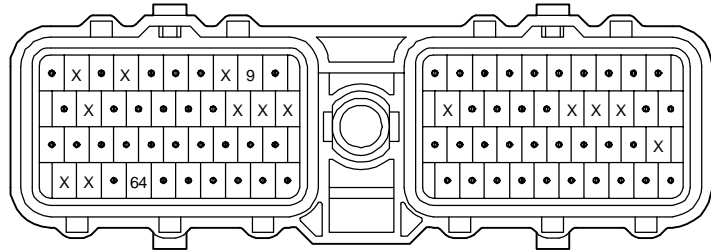
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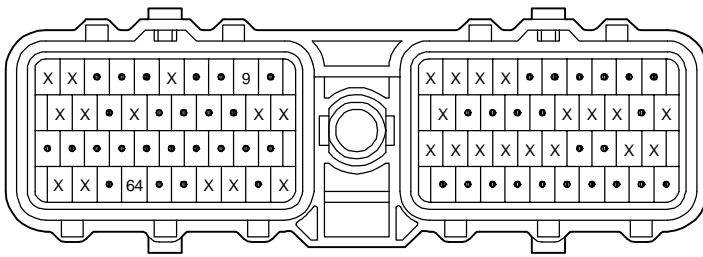
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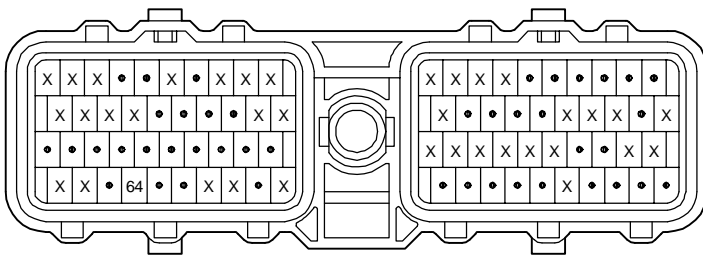
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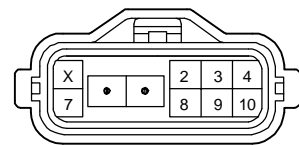
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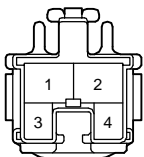
(2JZ-GE M/T) E14 (B) DARK GRAY



P 1 GRAY



S13



V 1 GRAY

