2009 CHERY Tiggo Service Manual

FOREWORD

This manual contains on-vehicle service and diagnosis procedures for the Chery Tiggo.

A thorough familiarization with this manual is important for proper repair and maintenance. It should always be kept in a handy place for quick and easy reference.

The contents of this manual, including drawings and specifications, are the latest available at the time of printing. As modifications affecting repair or maintenance occur, relevant information supplementary to this volume will be made available at Chery dealers. This manual should be kept up-to-date.

Chery Automobile Company, Ltd. reserves the right to alter the specifications and contents of this manual without obligation or advance notice.

NOTE:

This Tiggo service manual only applies to the following engines and transaxles:

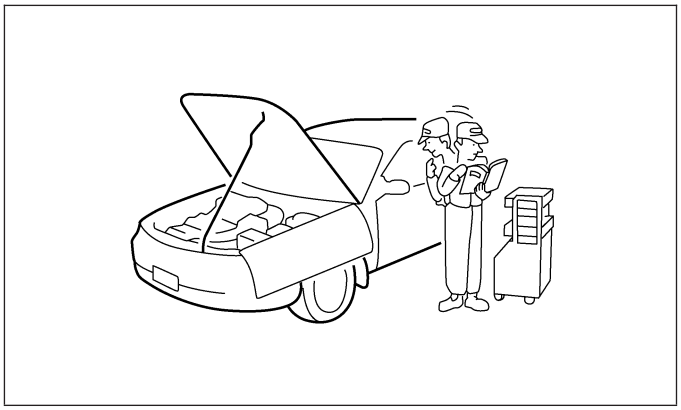
- **1.6L with M/T**
- **1.8L with M/T**
- **2.0L with A/T**
- **2.4L with A/T**

CONTENTS

PROPER SERVICE PRACTICES

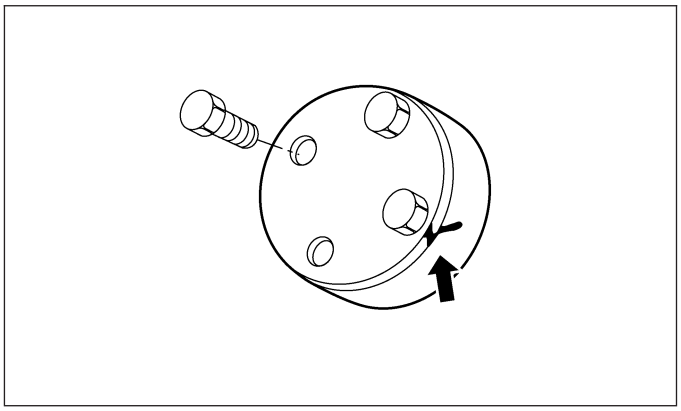
Removal of Parts

- While correcting a problem, also try to determine its cause. Begin work only after first determining which parts and subassemblies must be removed and disassembled for replacement or repair. After removing the part, plug all holes and ports to prevent foreign material from entering.



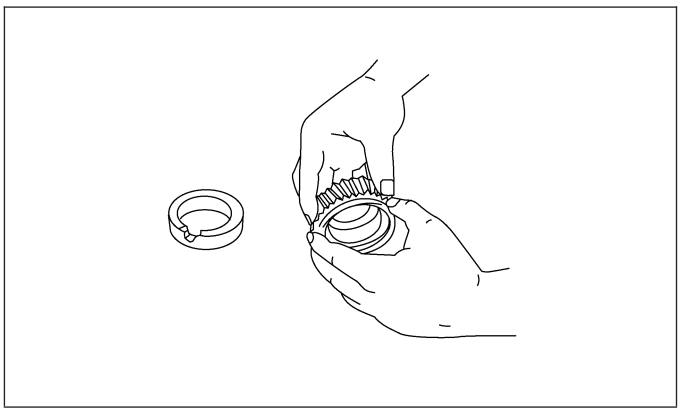
Component Disassembly

- If the disassembly procedure is complex requiring many parts to be disassembled, make sure that all parts are disassembled in a way that will not affect their performance or external appearance. Identify each part so reassembly can be performed easily and efficiently.



Inspection of Parts

- When removed, inspect each part for possible malfunction, deformation, damage or other problems.



CONDITION	POSSIBLE CAUSE	CORRECTION
Engine Miss On Acceleration	1. Dirty or incorrectly gapped spark plugs. 2. Contamination in fuel system. 7. Burned, warped, excessive clearance, or pitted valves. 4. Faulty ignition coil(s).	1. Clean spark plugs and set gap. 2. Clean fuel system and replace fuel filter. 3. Replace valves. 4. Test and replace if necessary. (Refer to Appropriate Diagnostic Information)
Engine Miss At High Speed	1. Dirty or incorrect spark plug gap. 2. Faulty ignition coil(s). 3. Dirty fuel injector(s). 4. Contamination in fuel system.	1. Clean spark plugs and set gap. 2. Test and replace if necessary. (Refer to Appropriate Diagnostic Information) 3. Test and replace if necessary. (Refer to Appropriate Diagnostic Information) 4. Clean system and replace fuel filter.

Engine Mechanical Diagnostics

CONDITION	POSSIBLE CAUSE	CORRECTION
Valve Train Noise	1. High or low oil level in crankcase. 2. Thin or diluted oil. 3. Thick oil. 4. Low oil pressure. 5. Worn cam lobe. 6. Worn valve guides. 7. Excessive runout of valve seats on valve faces.	1. Check and correct engine oil level. 2. Change oil to correct viscosity. 3. Change engine oil and filter. 4. Check and correct engine oil level. 5. Install new camshaft. 6. Replace cylinder head. 7. Grind valve seats and replace valves.
Connecting Rod Noise	1. Insufficient oil supply. 2. Low oil pressure. 3. Thin or diluted oil. 4. Excessive bearing clearance. 5. Connecting rod journal out-of-round. 6. Connecting rod out-of-round. 7. Misaligned connecting rods. 8. Connecting rod nuts loose.	1. Check engine oil level. 2. Check engine oil level. Inspect oil pump relief valve and spring. 3. Change oil to correct viscosity. 4. Measure bearings for correct clearance. Repair if necessary. 5. Replace crankshaft or grind surface. 6. Replace connecting rod. 7. Replace bent connecting rods. 8. Tighten the connecting rod nuts.
Main Bearing Noise	1. Insufficient oil supply. 2. Low oil pressure. 3. Thin or diluted oil. 4. Excessive bearing clearance. 5. Excessive end play. 6. Crankshaft journal out-of-round or worn. 7. Loose flywheel or torque converter.	1. Check engine oil level. 2. Check engine oil level. Inspect oil pump. 3. Change oil to correct viscosity. 4. Measure bearings for correct clearance. Repair if necessary. 5. Check thrust bearing for wear on flanges. 6. Replace crankshaft or grind journals. 7. Tighten to correct torque.

CYLINDER HEAD UNIT REPAIR

Cylinder Head

Specifications

Torque Specifications

DESCRIPTION	TORQUE (N·m)
Cylinder Head Bolts	1st Step: Tighten the bolt to 78 N·m 2nd Step: Completely loosen the bolt 3rd Step: Retighten the bolt to 20 N·m 4th Step: Tighten the bolt an additional 90° 5th Step: Finish tightening the bolt an additional 90°
Cylinder Head Cover Bolts	11 N·m

Clearance Specifications

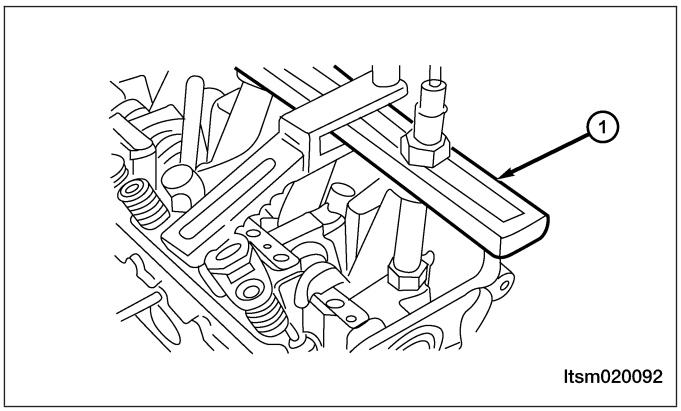
DESCRIPTION	SPECIFICATION (mm)
Cylinder Head Flatness	0.03
Intake Valve Deflection	0.02
Exhaust Valve Deflection	0.04
Spring Height	51

Disassembly

NOTE :
The following special tools are required to perform the repair procedure:
- MD-998772 - Valve Spring Compressor
- MD-998774 - Valve Oil Seal Installer

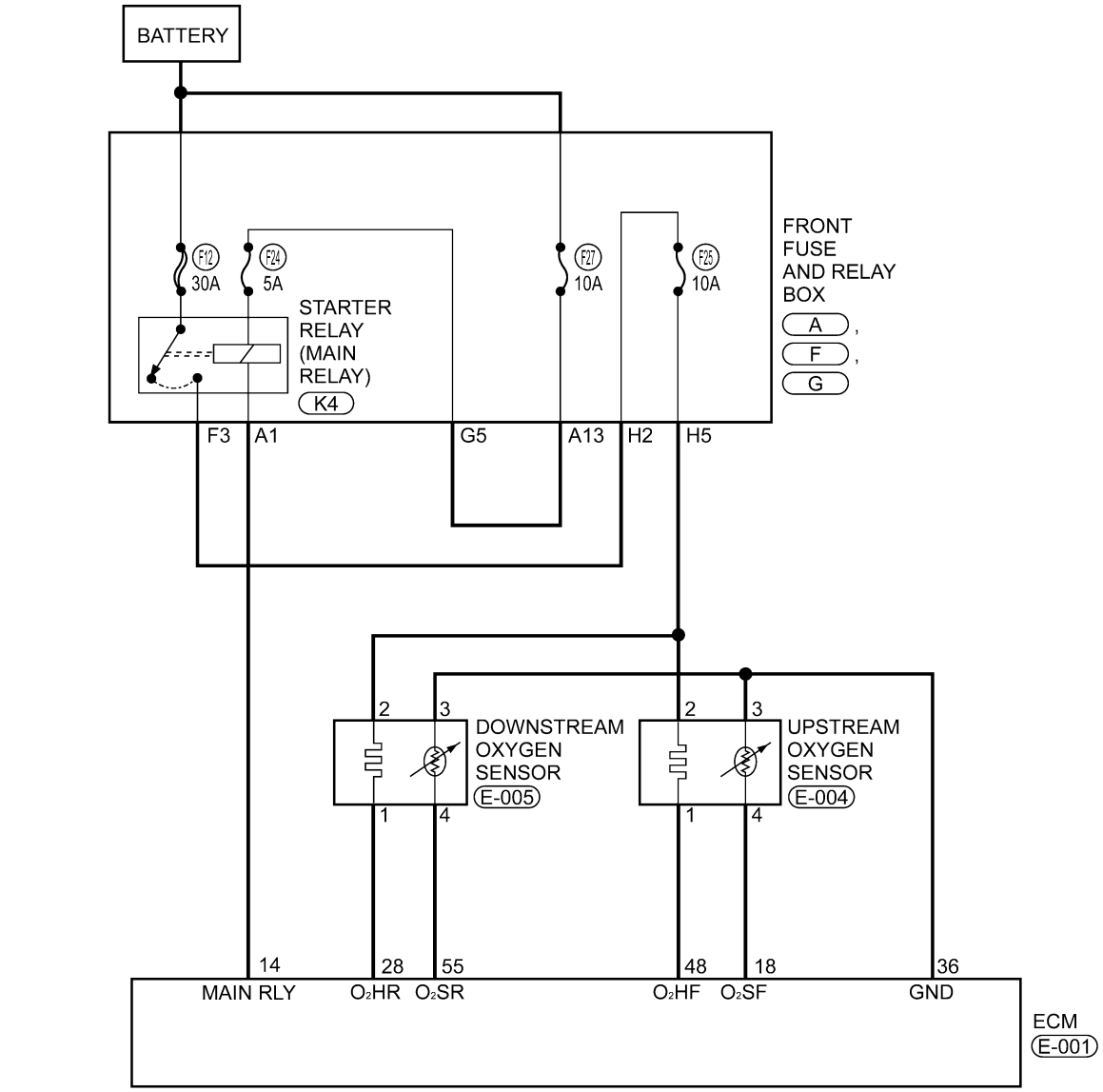
NOTE :
Replacement cylinder head comes complete with valves, seals, springs, retainers, keepers, tappets, and camshafts.

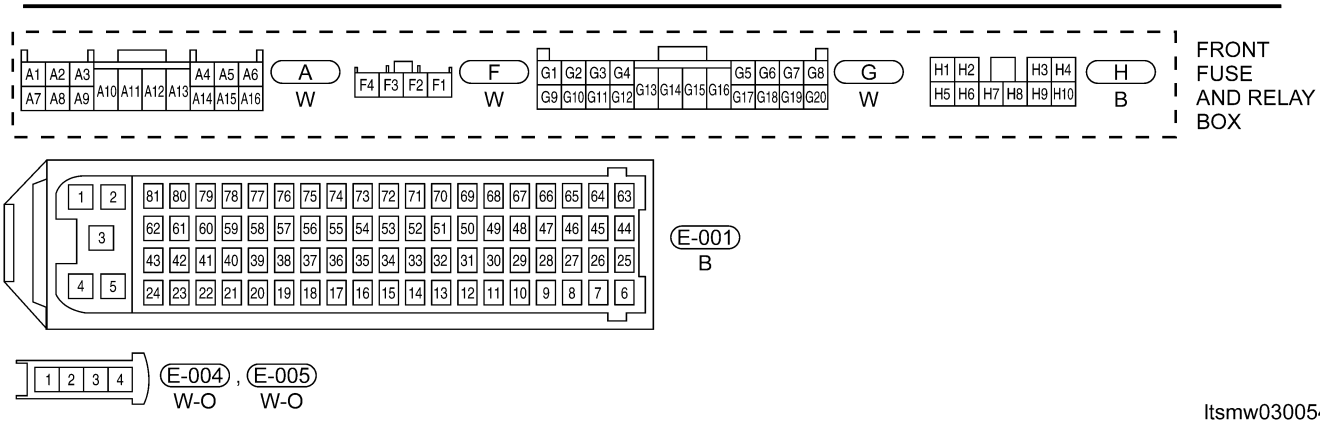
1. Remove camshaft.
2. Using the special tool MD-998772 (1), compress the valve spring.
3. Remove the valve keeper, valve spring retainer and valve spring.
4. Push the valve stem from the cylinder head and remove the valve.



P0032 - O_2 Sensor 1 Heater Control Circuit High

EEC - 1.6L - 1.8L - O_2S - 01 - WITH EOBD





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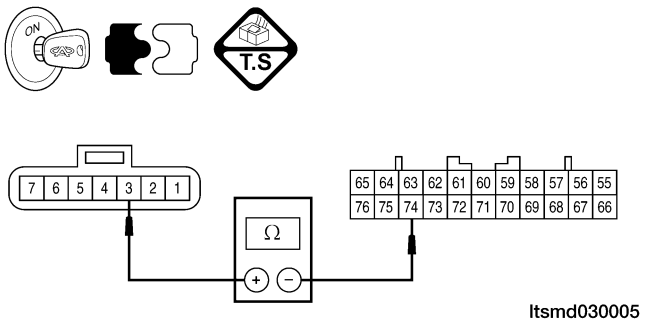
6. CHECK MAF SENSOR REFERENCE CIRCUIT FOR AN OPEN OR SHORT

- Turn ignition switch off.
- Disconnect ECM harness connector.
- Check harness continuity between following terminals.

AIR FLOW SENSOR TERMINAL	ECM TERMINAL	
3	74	

- Continuity should exist.
- Check harness for short to power or short to ground.

Is the check result normal?

Yes >> Go to the next step.

No >> Repair or replace the circuit for an open or short to power or short to ground in harness or connectors.

7. CHECK MAF SENSOR

- Connect air flow sensor connector.
- Connect ECM connector.
- With digital multimeter and the X-431, check sensor signal output data and data stream value.

CAUTION:

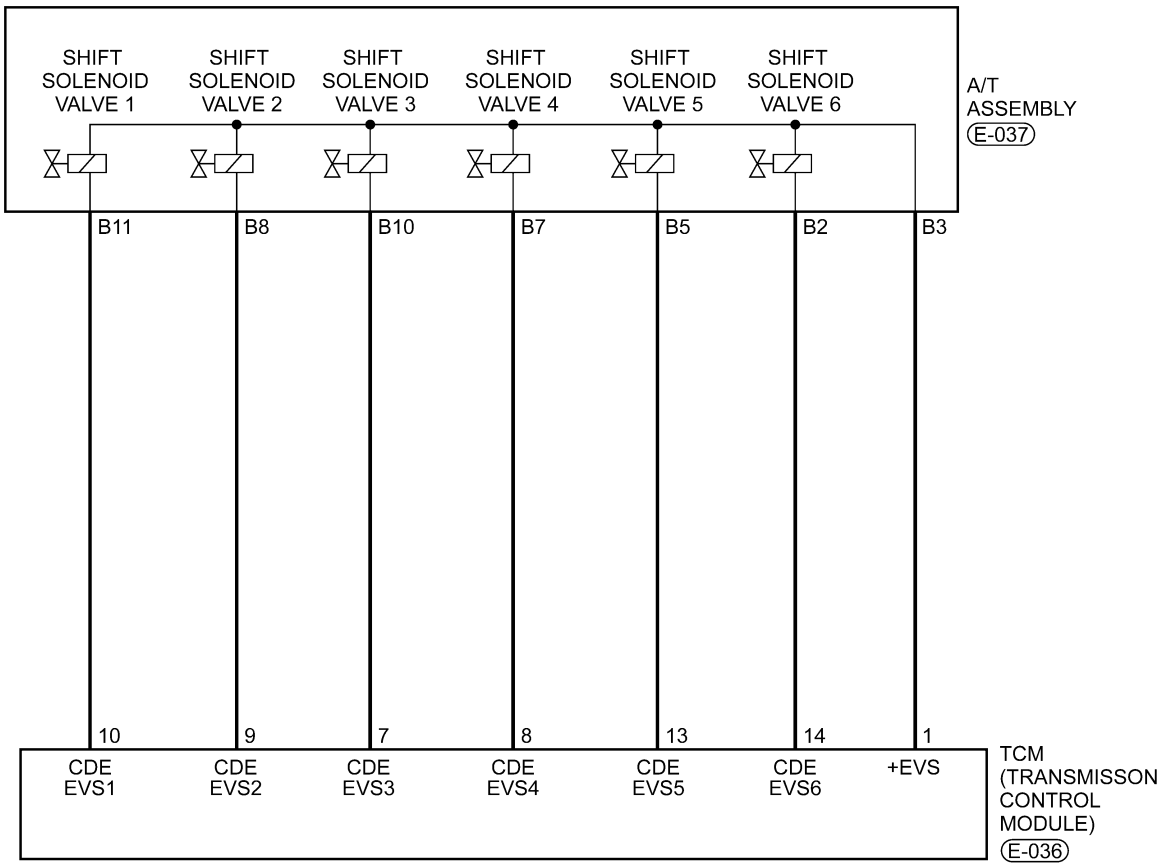
To new vehicle (less than 500 km mileage), the sensor output frequency is 10 % higher than standard value.

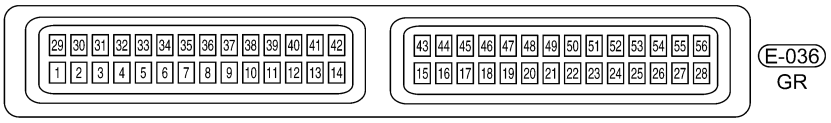
CHECK ITEM	CHECK CONTENT		NORMAL VALUE
Air flow sensor	• Engine coolant temperature: 80 - 95°C • Lamp and all other condition: OFF • Transaxle: Neutral	• Engine is running • Warm-up running • Idle	19 - 45 HZ
		• Engine is running: 2,500 RPM	72 - 112 HZ
		• Engine is accelerating	Frequency direct proportion with speed

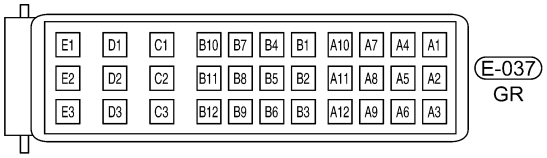
P0657 - Solenoid Power Supply Circuit Open

Electronic Valve Solenoid

TM - DP0 - EVS - 01







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Specifications

Related Operating Components

GEARSHIFT LEVER POSITION		GEAR RATIO	ENGINE START	PARKING MECHANISM	DRIVE			LOCK		
					LOW SPEED CLUTCH (UD)	REVERSE GEAR CLUTCH (REV)	OVERSPEED CLUTCH (OD)	LOW GEAR/ REVERSE GEAR BRAKE (LR)	GEAR BRAKE (2ND)	ONE-WAY CLUTCH (OWC)
P	Parking	-	Enabled	X	-	-	-	X	-	-
R	Reverse Gear	2.480	-	-	-	X	-	X	-	-
N	Neutral Gear	-	Enabled	-	-	-	-	X	-	-
D	Gear 1	2.842	-	-	X	-	-	X*	-	X
	Gear 2	1.529	-	-	X	-	-	-	X	-
	Gear 3	1.000	-	-	X	-	X	-	-	-
	Gear 4	0.712	-	-	-	-	X	-	X	-
3	Gear 1	2.842	-	-	X	-	-	X*	-	X
	Gear 2	1.529	-	-	X	-	-	-	X	-
	Gear 3	1.000	-	-	X	-	X	-	-	-
2	Gear 1	2.842	-	-	X	-	-	X*	-	X
	Gear 2	1.529	-	-	X	-	-	-	X	-
L	Gear 1	2.842	-	-	X	-	-	X	-	-

*Low gear/reverse gear is applied when vehicle speed is lower than 10 km/h. X = Operating Components

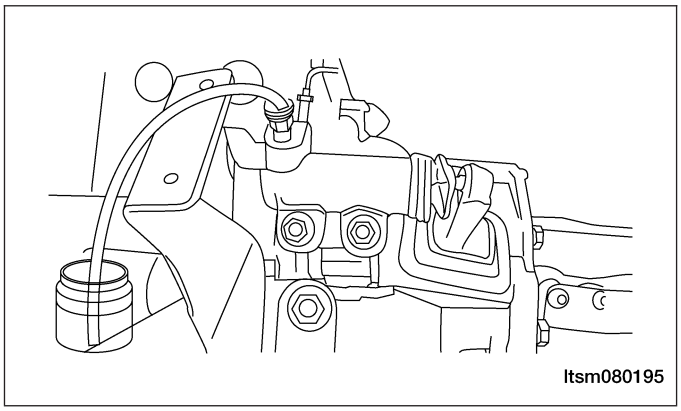
Lubrication Specifications

DESCRIPTION	ITEM
Transaxle Fluid Quantity	6.5L
Fluid Type	DEXTRON III
Fluid Change Cycle	40000 Km or 3 years

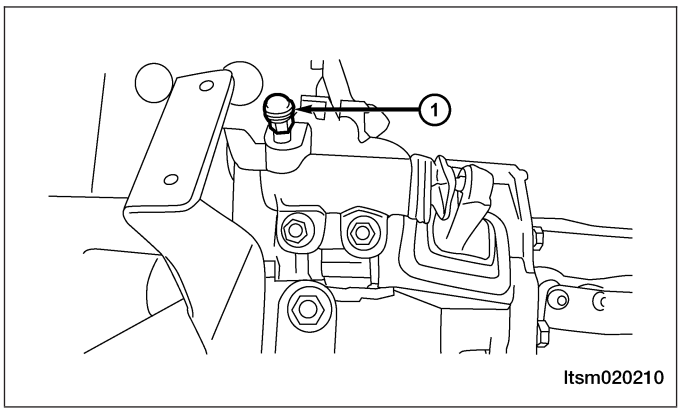
Bleeding Hydraulic Clutch

Operation

1. Verify fluid level in brake master cylinder. Top off with DOT 4 brake fluid as necessary. Leave cap off.



2. Raise the vehicle on hoist.
3. Remove the bleed port protective cap and install a suitable size and length of clear hose to monitor and divert fluid into a suitable container.
4. Loosen the bleed port (1).



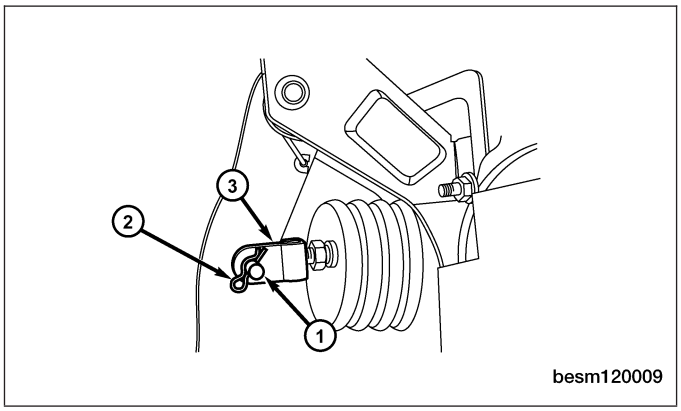
5. Actuate the clutch pedal until the brake master cylinder fluid drains from the bleed port.
6. Depress the clutch pedal, tighten the bleed port.
7. From driver's seat, actuate the clutch pedal until the hydraulic clutch system has pressure.
8. Depress the clutch pedal, loosen the bleed port and bleed the brake master cylinder fluid.
9. Repeat steps 6 to 8 several times until there is no air in the hydraulic clutch system.

NOTE :
Do not allow clutch master cylinder to run dry while fluid exits bleed port.

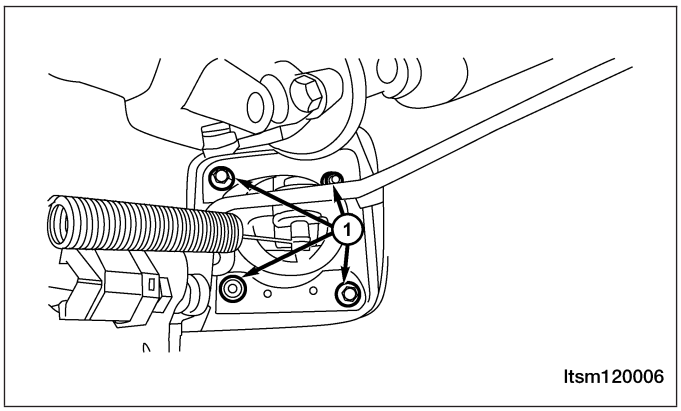
10. Close the hydraulic bleed port, remove the drain hose and replace the dust cap on the bleed port.
11. Top off the brake master cylinder fluid level with DOT 4 brake fluid as necessary.

CAUTION:
During the bleeding process, make sure the brake master cylinder fluid is always full.

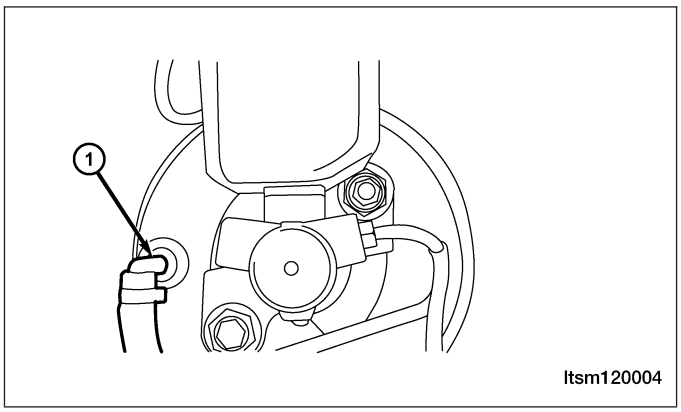
2. Remove the spring-type cotter pin (2) and clevis pin (1) from the brake booster rod (3).



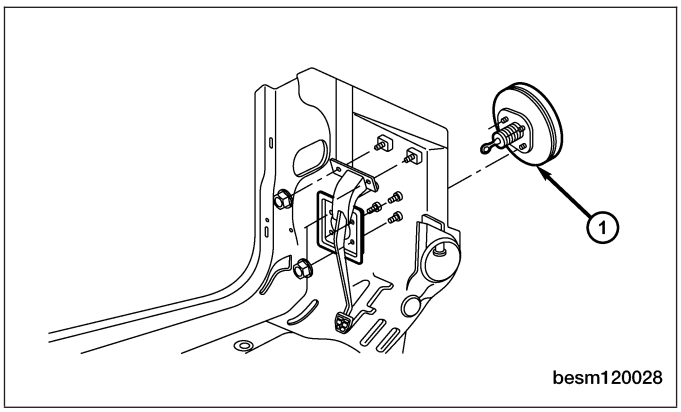
3. Remove the nuts and bolts (1) attaching the power brake booster to the brake pedal bracket.
   (Tighten: Brake pedal/Power brake booster mounting nuts and bolts to 25 N·m)
4. Remove the brake pedal bracket.



5. Disconnect the vacuum hose (1) from the check valve on the power brake booster.



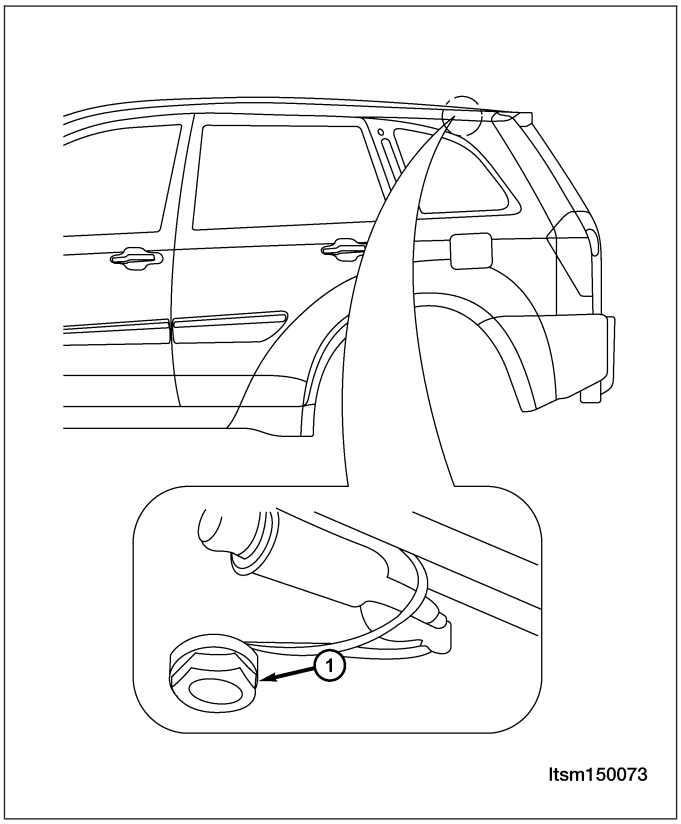
6. Slide the power brake booster (1) forward until its mounting studs clear the dash panel, then remove it through the engine compartment.
7. Installation is in the reverse order of removal.



Antenna

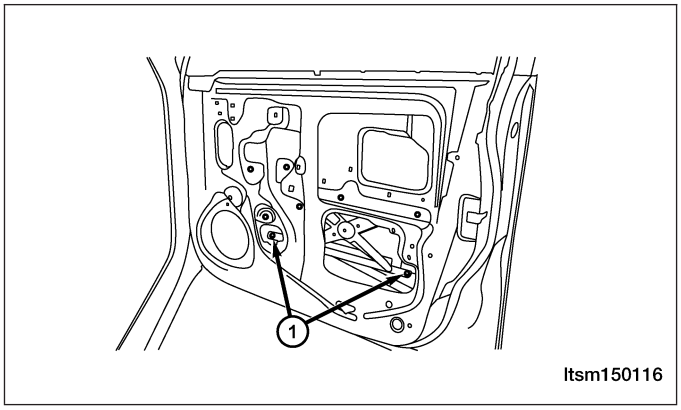
Removal & Installation

1. Disconnect the negative battery cable.
2. Pull the rear edge of the headliner down.
3. Disconnect the antenna electrical connector.
4. Remove the antenna mounting nut (1).

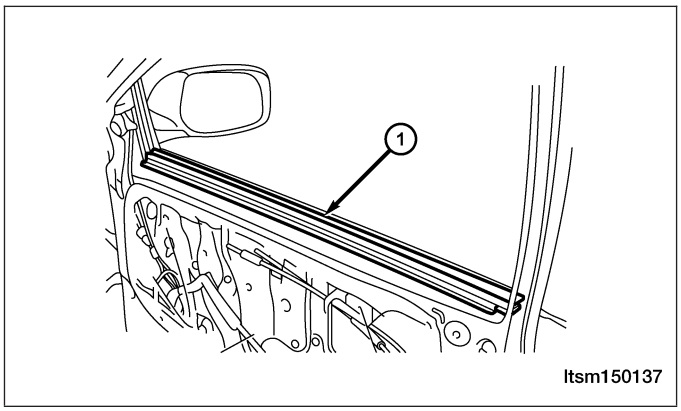


5. Installation in the reverse order of removal.

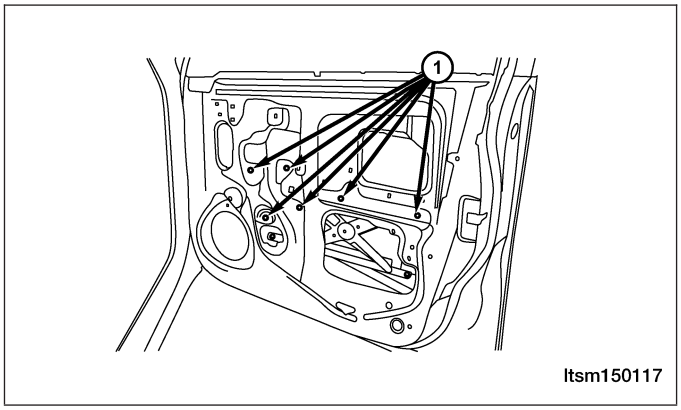
13. Temporarily connect the power window switch.
14. Turn the ignition switch on and use the power window switch to move the front door glass to a position so the door glass bolts can be removed.
15. Turn the ignition switch off and disconnect the power window switch.
16. Remove the two door glass mounting bolts (1).
    (Tighten: Door glass mounting bolts to 11 N·m)
    NOTE: Properly support the door glass when removing the mounting bolts. The door glass may drop and be damaged.



17. Remove the door glass weatherstrip (1).
18. Lift the door glass and remove the door glass from the door.
    NOTE: Take care not to damage the door glass.



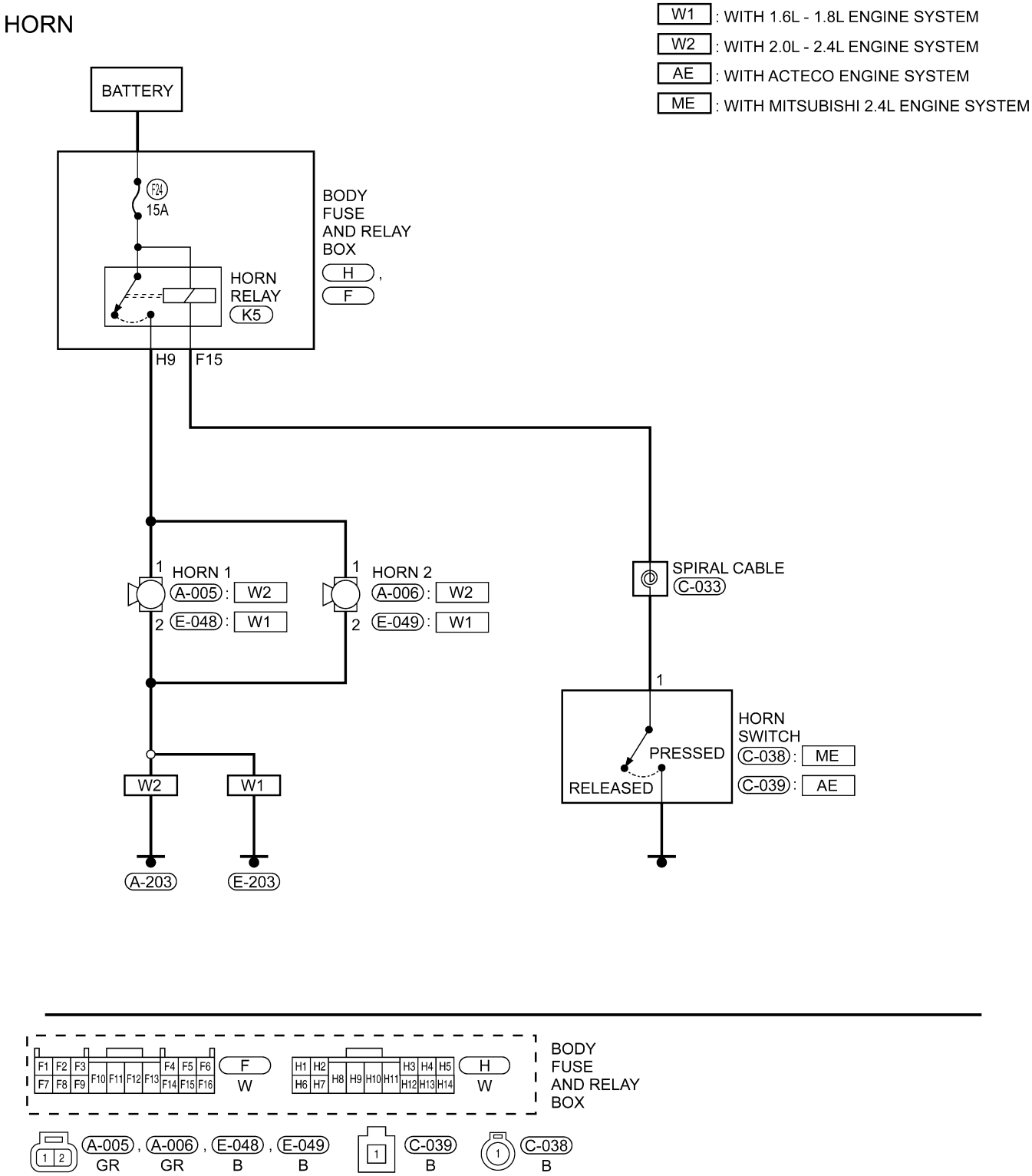
19. Disconnect the power window motor electrical connector.
20. Remove the six power window regulator mounting bolts (1).
    (Tighten: Power window regulator mounting bolts to 11 N·m)



21. Carefully remove the power window regulator.
22. Remove the power window motor from the regulator.
23. Installation is in the reverse order of removal.

Electrical Schematics

Horn (Page 1 of 1)



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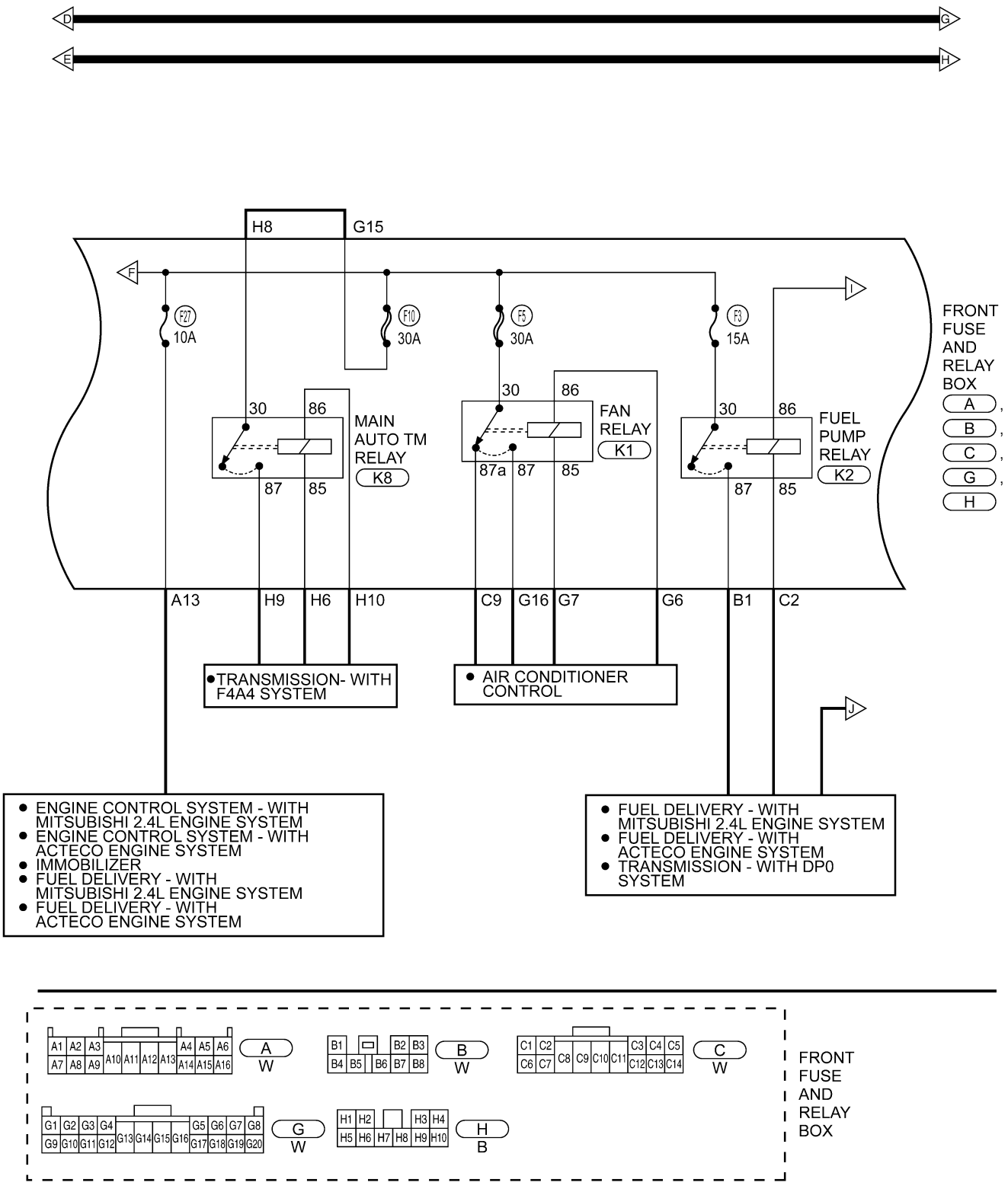
Power Distribution (Page 3 of 13)



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