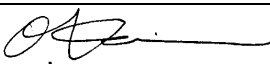




SERVICE BULLETIN

SERVICE GROUP, WARRANTY & SERVICE DEP.
MITSUBISHI MOTOR SALES EUROPE BV

SERVICE BULLETIN		No.: ESB-96E11-502	
		Date: 1997-03-31	<Model> <M/Y>
Subject:	OMISSION OF TIGHTENING TORQUE OF A/C COMPRESSOR TENSION PULLEY FIXING BOLT	CARISMA	96-10
Group:	ENGINE		
Correction	 O. Kai - E.V.P. After Sales Service		

1. Description:

This Service Bulletin informs you that omission has been rectified of the tightening torque of A/C compressor tension pulley fixing bolt under Service DRIVE BELT TENSION CHECK AND ADJUSTMENT in Group 11A of the Workshop Manual.

2. Applicable Manual:

Manual	Pub. No.	Language	Page(s)
'96 CARISMA Workshop Manual Chassis	PWDE9502	(English)	11A-7
	PWDS9503	(Spanish)	
	PWDF9504	(French)	
	PWDG9505	(German)	
	PWDD9506	(Dutch)	
	PWDW9507	(Swedish)	
	PWDI96E1	(Italian)	

3. Details:

Please refer to the attached page(s).

4. Tighten the lock bolt.

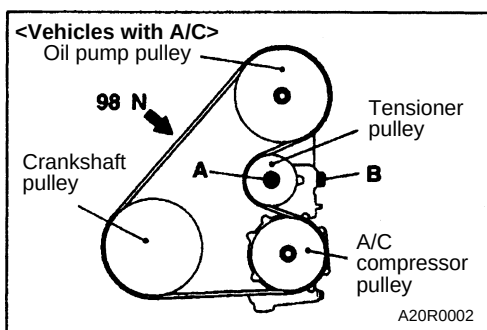
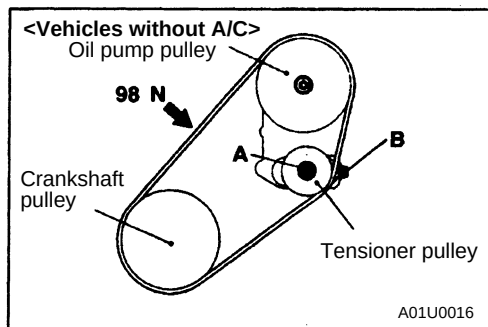
Tightening torque: 23 Nm

5. Tighten the nut of the alternator pivot bolt.

Tightening torque: 44 Nm

6. Tighten the adjusting bolt.

Tightening torque: 6 Nm



POWER STEERING OIL PUMP AND AIR CONDITIONER COMPRESSOR DRIVE BELT TENSION CHECK AND ADJUSTMENT

11100130035

1. Use a belt tension gauge to check that the belt tension is at the standard value at a point half-way between the two pulleys (indicated by an arrow in the illustration). In addition, press this section with a force of 98 N and check that the amount of belt deflection is at the standard value.

Standard value:

Items	When checked	When a used belt is installed	When a new belt is installed
Tension N	392 - 588	441 - 539	637 - 833
Deflection mm	10.0 - 12.0	10.0 - 11.0	7.0 - 9.0

2. If the tension or deflection is outside the standard value, adjust by the following procedure.

- (1) Loosen tension pulley fixing bolt A.
- (2) Adjust the amount of belt deflection using adjusting bolt B.
- (3) Tighten fixing bolt A.
- (4) Check the belt deflection amount and tension, and readjust if necessary.

Caution

- Check after turning the crankshaft once or more clockwise (right turn).

<Added>

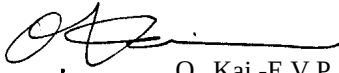
Tightening torque: 25Nm



www.WorkshopManuals.co.uk

SERVICE BULLETIN

SERVICE GROUP, WARRANTY & SERVICE DEP.
MITSUBISHI MOTOR SALES EUROPE BV

SERVICE BULLETIN	NO.: ESB-96E13-501	
	DATE: 1996-05-15	<MODEL> <M/Y> (EC,EXP)CARISMA 96-00
SUBJECT: CORRECTION OF FUEL GAUGE UNIT INSTALLATION PROCEDURE		
GROUP: FUEL		
INFORMATION:	 O. Kai -E.V.P. After Sales Service	

1. Description

This Service Bulletin informs you that the installation procedure for the fuel gauge Unit & pump assembly or the fuel gauge unit & pipe assembly has been corrected.

2. Effective Date:

3. Applicable Manual:

Manual	Pub. No.	Page(s)
'96 CARISMA Workshop Manual	PWDE9502 (English)	13F-3, 13F-5
	PWDS9503 (Spanish)	
	PWDF9504 (French)	
	PWDG9505 (German)	
	PWDD9506 (Dutch)	
	PWDW9507 (Swedish)	
	PWDI96E1 (Italian)	

4. Details:

Please refer to the attached pages.

FUEL TANK

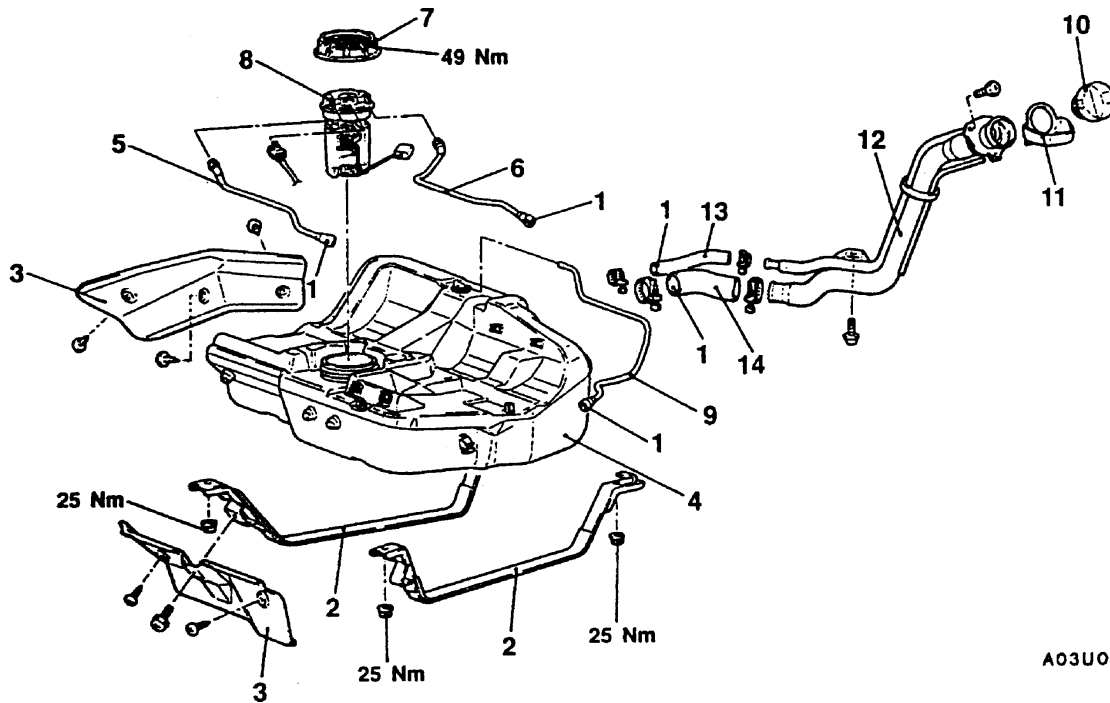
REMOVAL AND INSTALLATION

Pre-removal Operation

- (1) Draining the Fuel
- (2) Reduce the Inner Pressure of Fuel Line and Hose (Refer to GROUP 13A - On-vehicle Service.)
- (3) Removal of the Centre Exhaust Pipe (Refer to GROUP 15.)

Post-Installation Operation

- (1) Installation of Exhaust Pipe (Refer to GROUP 15.)
- (2) Refilling the Fuel
- (3) Checking for Fuel Leaks

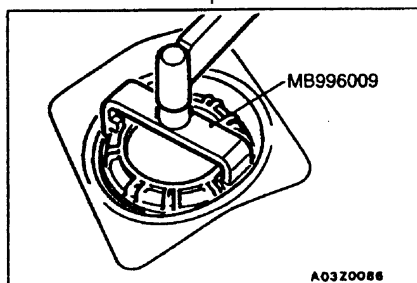


A03U0015

Removal steps

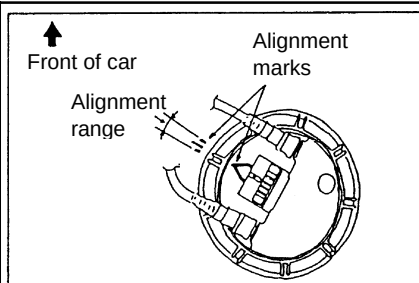
1. Hoses Connection
2. Band
3. Protector
4. Fuel tank assembly
5. Fuel main hose
6. Fuel return hose
7. Cap

8. Fuel pump module
9. Fuel vapor hose
10. Fuel Filler cap
11. Fuel rubber drain
12. Filler neck assembly
13. Leveling hose
14. Filler hose



A03Z0086

<Added>

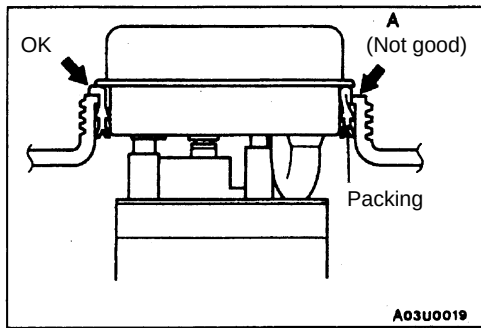


INSTALLATION SERVICE POINT

▶ A ◀ CAP INSTALLATION

Using a special tool tighten the cap to the specified torque so that the alignment mark of the fuel tank and that of the fuel pump module are in alignment. Caution

- When the cap is tightened, use care to prevent the fuel pump module from turning with the cap. If alignment marks are out of alignment, the float will be positioned incorrectly, resulting in improper operation of the fuel remainder warning lamp.



- (5) Check to be sure that the fuel tank packing is not damaged or deformed, and then securely install the packing.

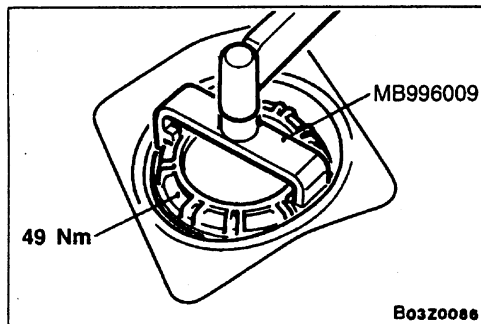
NOTE

If the packing is damaged or deformed, replace with new packing.

- (6) Apply soapy water to the inside of the packing, and then install the fuel pump module.

Caution

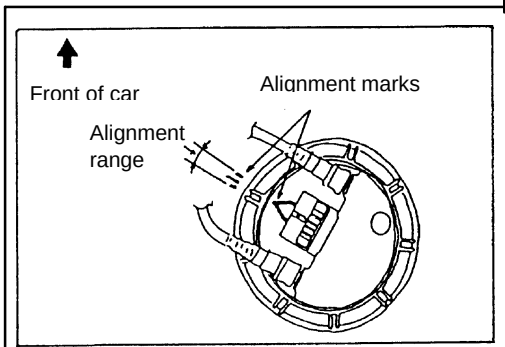
- Do not tilt the fuel pump module when installing.
- The packing should not be folded over as shown by (A) in the illustration



- (7) Using a special tool, tighten the cap to the specified torque so that the alignment mark of the fuel tank and that of the fuel pump module are in alignment.

Caution

- When the cap is tightened, use care to prevent the fuel pump module from turning with the cap. If alignment marks are out of alignment, the float will be positioned incorrectly, resulting in improper operation of the fuel remainder warning lamp.



- (8) Check for leaks from the installation section of the fuel pump module by the following procedure.

1. Apply soapy water to the circumference of the cap.
2. Choke the vapor hose and main hose, apply an internal pressure of 10 kPa or less from the return hose and check to be sure that no bubbles form in the soapy water.

FUEL GAUGE CHECK

Refer to GROUP 54 - Combination Meter.

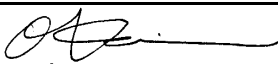
13500310039

<Changed>



SERVICE BULLETIN

SERVICE GROUP, WARRANTY & SERVICE DEP.
MITSUBISHI MOTOR SALES EUROPE BV

SERVICE BULLETIN		No.: ESB-96E13-506	
		Date: 1997-02-28	<Model> CARISMA <M/Y> 97-10
Subject:	CORRECTION TO PROCEDURE FOR EVACUATION OF WATER FROM THE FUEL FILTER		
Group:	FUEL		
Correction	 O. Kai - E.V.P. After Sales Service		

1. Description:

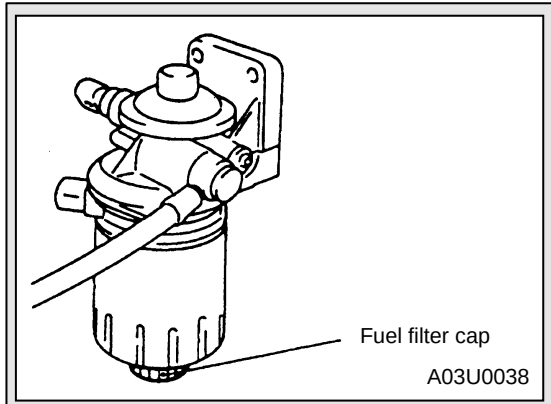
This Service Bulletin informs you that the procedure has been corrected for evacuation of water from the fuel filter.

2. Applicable Manual:

Manual	Pub. No.	Language	Page(s)
'97 CARISMA Workshop Manual chassis SUPPLEMENT	PWDE9502-A	(English)	13E-61
	PWDS9503-A	(Spanish)	
	PWDF9504-A	(French)	
	PWDG9505-A	(German)	
	PWDD9506-A	(Dutch)	
	PWDW9507-A	(Swedish)	
	PWDI96E1-A	(Italian)	

3. Details:

Please refer to the attached page(s).

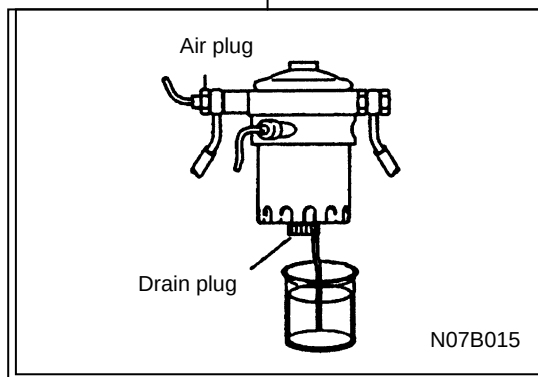


EVACUATION OF WATER FROM FUEL FILTER

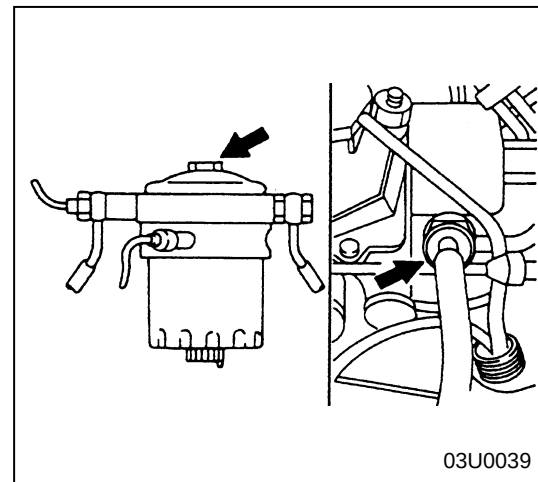
Evacuate water by the following procedures.

1. Remove the air cleaner assembly
2. Remove the fuel filter cap.
3. Use a manual pump to remove any water, and then attach the fuel filter cap.

<Correct>



2. Place a drainage tray under the filter.
3. Connect a hose to the drain plug and let it hang down into the tray.
4. Open the fuel pump air plug.
5. Loosen the drain plug a few turns and tighten the drain plug when clean fuel comes through.
6. Bleed the air.



EVACUATION OF AIR FROM FUEL LINE

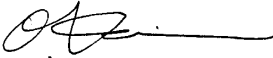
Bleed the air from the fuel line after refilling the fuel:

- When the fuel is drained for service.
 - When fuel filter is replaced.
 - When main fuel line is removed.
1. Connect a long piece of tubing to the bleedscrew of the fuel injection pump with its open end in a drip tray.
 2. Open the bleedscrew and operate the pump on the fuel filter until clear fuel flows out of the bleedscrew.
 3. Close the bleedscrew and remove the tubing.
 4. Turn the ignition switch to the "ON" position.
 5. Now pump a few more times until resistance is felt; then pump five more strokes to pressurise the system.
 6. Start the engine and check for leakage.



SERVICE BULLETIN

SERVICE GROUP, WARRANTY & SERVICE DEP.
MITSUBISHI MOTOR SALES EUROPE BV

SERVICE BULLETIN		No.: ESB-96E35-001	
		Date: 1997-02-28	
Subject: FRONT BRAKE DISASSEMBLY AND REASSEMBLY PROCEDURES		<Model> CARISMA	<M/Y> 96-10
Group: SERVICE BRAKE			
Correction			
		 O. Kai - E.V.P. After Sales Service	

1. Description:

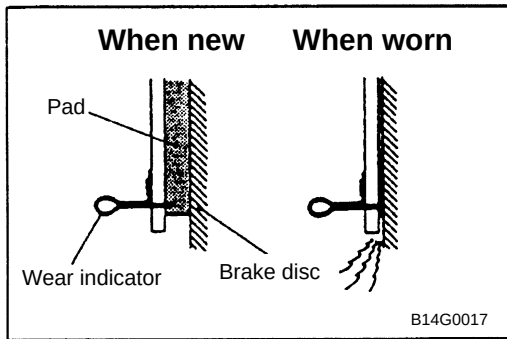
Procedures for disassembling and reassembling the front disc brake caliper assemblies
Have been established as shown in this Service Bulletin.

2. Applicable Manual:

Manual	Pub. No.	Language	Page(s)
'96 CARISMA Workshop Manual	PWDE9502	(English)	35A-11, 35A-21
	PWDS9503	(Spanish)	
	PWDF9504	(French)	
	PWDG9505	(German)	
	PWDD9506	(Dutch)	
	PWDW9507	(Swedish)	
	PWDI96E1	(Italian)	

3. Details:

Please refer to the attached page(s).

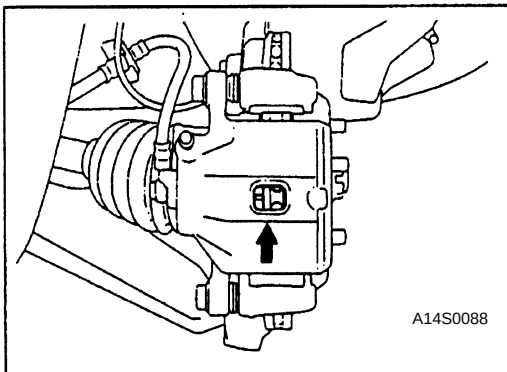


FRONT DISC BRAKE PAD CHECK AND REPLACEMENT

35100150044

NOTE

The brake pads have wear indicators that contact the brake disc when the brake pad thickness becomes 2 mm and emit a squealing sound to warn the driver.



1. Check brake pad thickness through caliper body check port.

Standard value: 10 mm

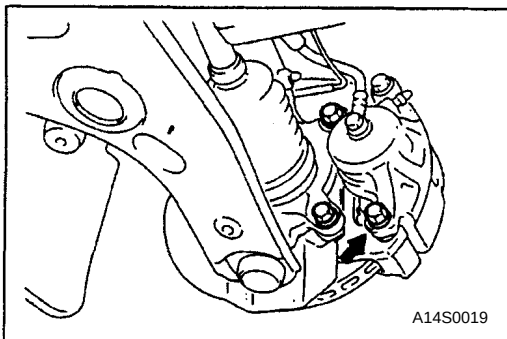
Limit: 2.0 mm

Caution

1. When the limit is exceeded, replace the pads at both sides, and also the brake pads for the wheels on the opposite side at the same time.
2. If there is a significant difference in the thickness of the pads on the left and right sides, check the sliding condition of the piston, lock pin and guide pin

<Changed>

guide pins



2. Remove lock pin. Lift caliper assembly and retain with wires.

<Changed>

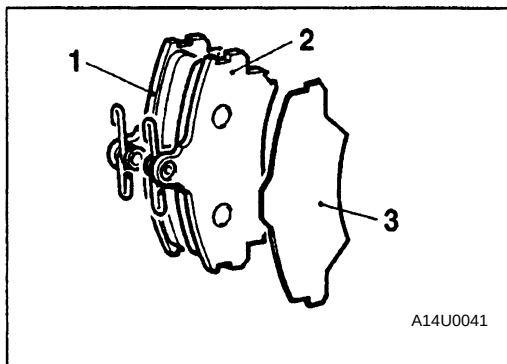
Remove the bolt indicated by arrow.

body

<Changed>

Caution <Deleted>

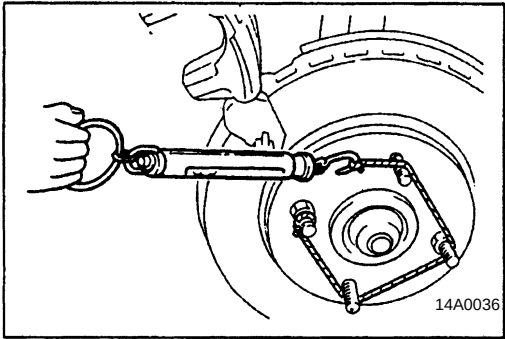
~~do not wipe off the special grease that is on the lock pin or allow it to contaminate the lock pin.~~



3. Remove the following parts from caliper support

1. Pad & wear indicator assembly
2. Pad assembly
3. Outer shim

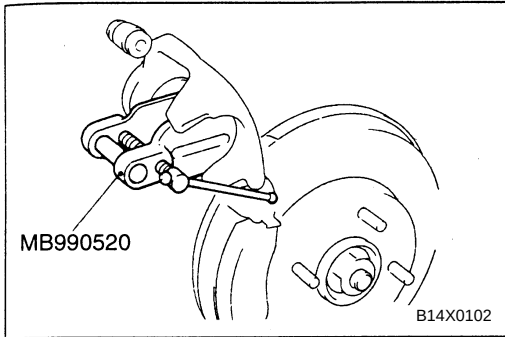
4. In order to measure the brake drag torque after pad installation, measure the rotary-sliding resistance of the hub (A) with the pads removed. (Refer to P.35A-20.)
5. Install the pads and the caliper assembly, and then check the brake drag torque. (Refer to P.35A-20.)



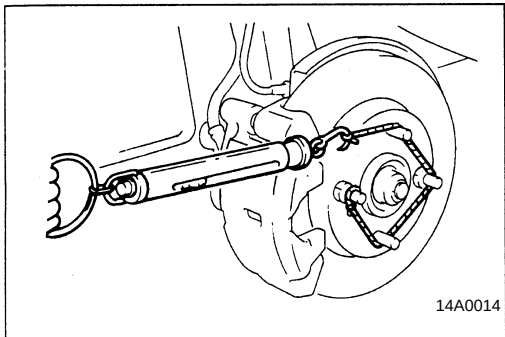
2. After installing the caliper support to the knuckle, install the pad clips and the pads to the caliper support.

Caution

- Do not let any oil, grease or other contamination get onto the friction surfaces of the pads and brake disc.



3. Clean piston and insert into cylinder with special tool.
4. Be careful that the piston boot does not become caught, when lowering the caliper assembly and install the lock pin. **guide pins** <Changed>
5. Check brake drag torque as follows.
 - (1) Start the engine and then depress the brake pedal 2-3 times
 - (2) Stop engine.
 - (3) Turn brake disc forward 10 times.

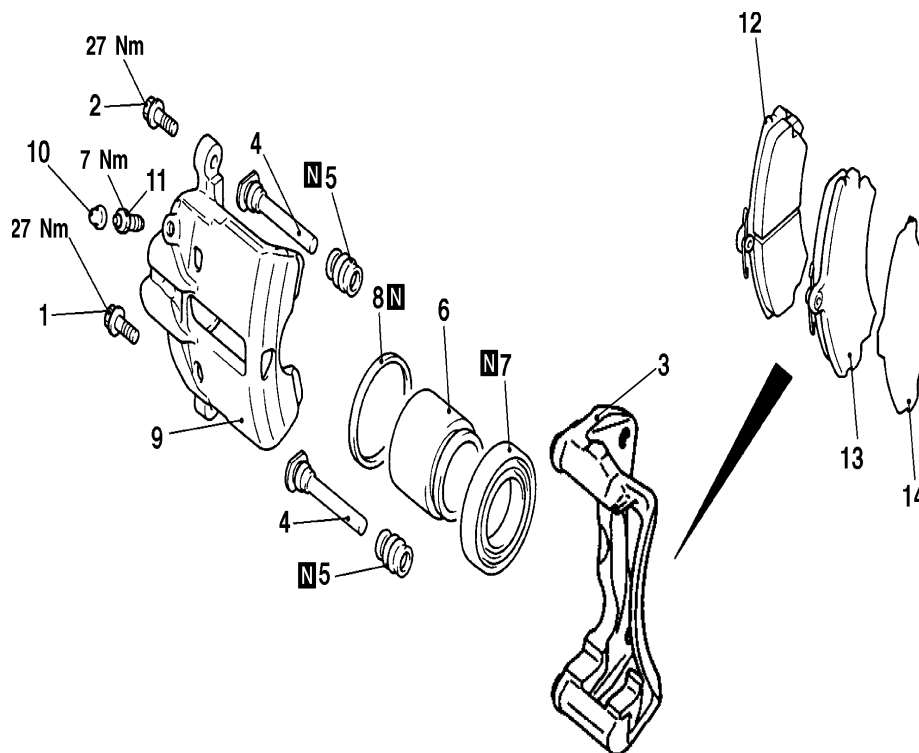


6. Check hub torque (B) with spring balance.
7. Calculate the drag torque of the disc brake [difference between hub torque (B) and hub torque (A)].

Standard value: 40 N or less

8. If the difference between brake drag torque and hub torque exceeds the standard value, replace the disc brake assembly.

DISASSEMBLY AND REASSEMBLY



14U0109

Brake caliper kit	Brake pad kit	Brake caliper piston seal kit
14U0108	14U0110	Grease 14U0111

Caliper assembly disassembly steps

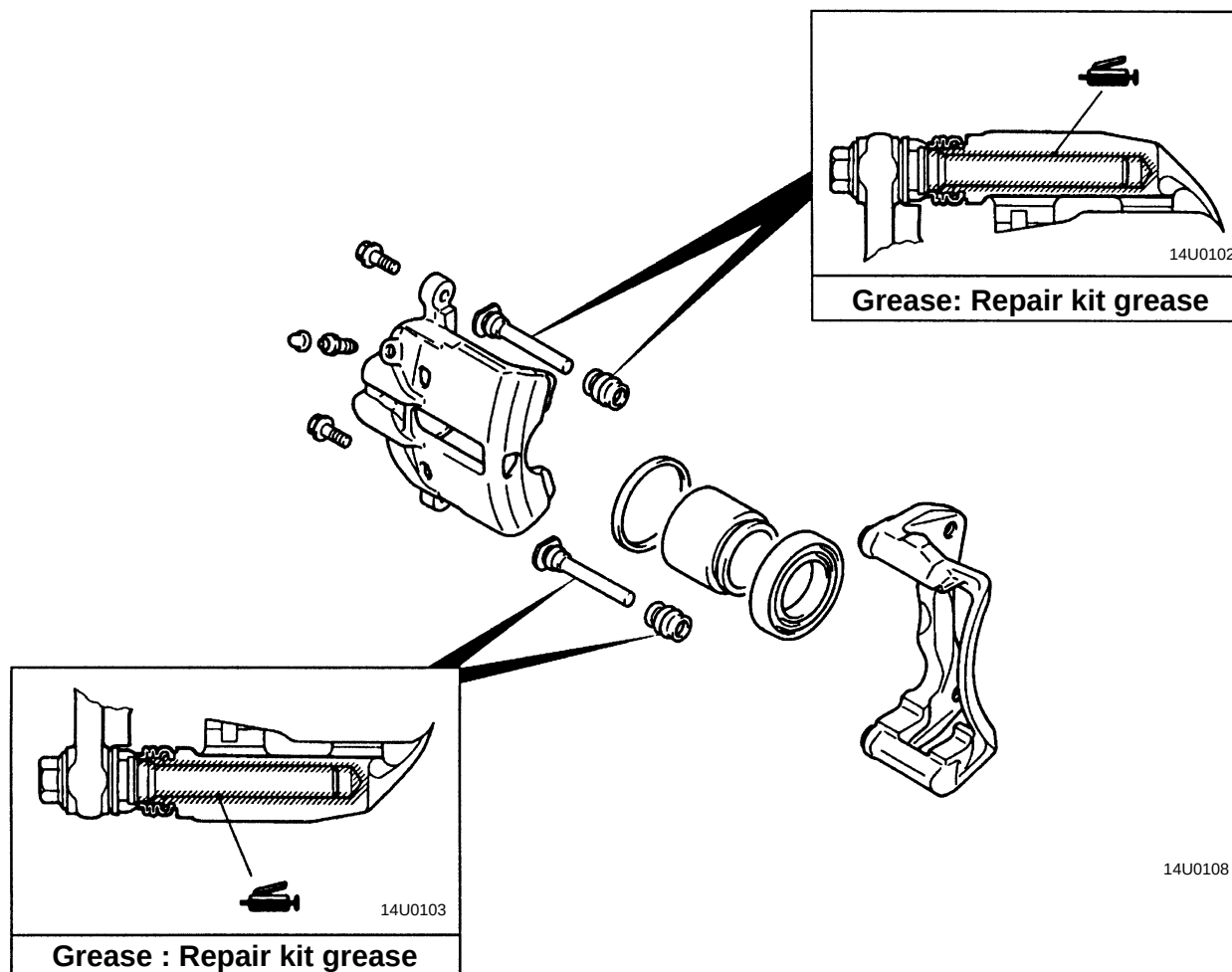
1. Bolt
2. Bolt
3. Caliper support
4. Guide pin
5. Boot
6. Piston
7. Piston boot
8. Piston seal
9. Caliper body
10. Caliper bleeder cap
11. Caliper bleeder

◀ A ▶
◀ A ▶
◀ B ▶

Pad assembly disassembly steps

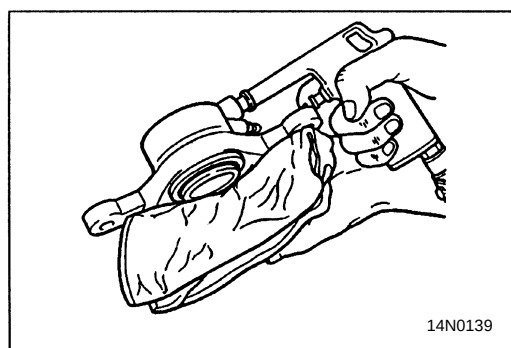
1. Bolt
12. Pad and wear indicator assembly
13. Pad assembly
14. Outer shim

LUBRICATION POINTS



DISASSEMBLY SERVICE POINTS

When disassembling the front disc brakes, disassemble both sides (left and right) as a set.



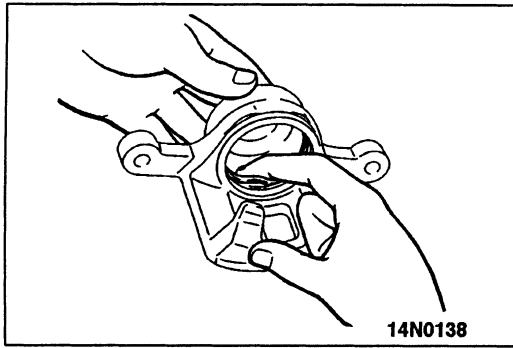
◀ A ▶ PISTON /PISTON BOOT REMOVAL

Protect caliper body with cloth. Blow compressed air through brake hose to remove piston and piston boot.

Caution

Blow compressed air gently

<Added>

**◀ B ▶ PISTON SEAL REMOVAL**

- (1) Remove piston seal with finger tip.

Caution

Do not use a flat-tipped screwdriver or other tool to prevent damage to inner cylinder.

- (2) Clean piston surface and inner cylinder with trichloroethylene, alcohol or specified brake fluid.

Specified brake fluid: DOT3 or DOT4

INSPECTION

35100630081

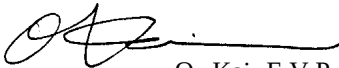
- Check cylinder for wear, damage or rust.
- Check piston surface for wear, damage or rust.
- Check caliper body or sleeve for wear.
- Check pad for damage or adhesion of grease, check backing metal for damage.

<Added>



SERVICE BULLETIN

SERVICE GROUP, WARRANTY & SERVICE DEP.
MITSUBISHI MOTOR SALES EUROPE BV

SERVICE BULLETIN	NO.: ESB-96E37-002	
	DATE: 1996-07-30	<MODEL> CARISMA <M/Y> 96-10
SUBJECT: CHANGE OF POWER STEERING RETURN HOSE AND BOLT TIGHTENING TORQUES		
GROUP: STEERING		
INFORMATION:	 O. Kai -E.V.P. After Sales Service	

1. Description

The power steering return hose has been changed on left-hand drive models. In Addition, the tightening torque specifications for pressure hose attaching bolts and Eye bolts have been changed.

2. Effective Date:

Return hose: From September 21, 1995

Pressure hose attaching bolt and eye bolt torques: From July 12, 1995

3. Applicable Manual:

Manual	Pub. No.	Page(s)
'96 CARISMA Workshop Manual	PWDE9502 (English)	37A-20
	PWDS9503 (Spanish)	
	PWDF9504 (French)	
	PWDG9505 (German)	
	PWDD9506 (Dutch)	
	PWDW9507 (Swedish)	
	PWDI95E1 (Italian)	

4. Details:

Please refer to the attached page.

POWER STEERING HOSES

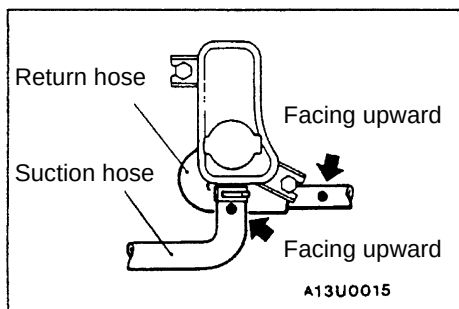
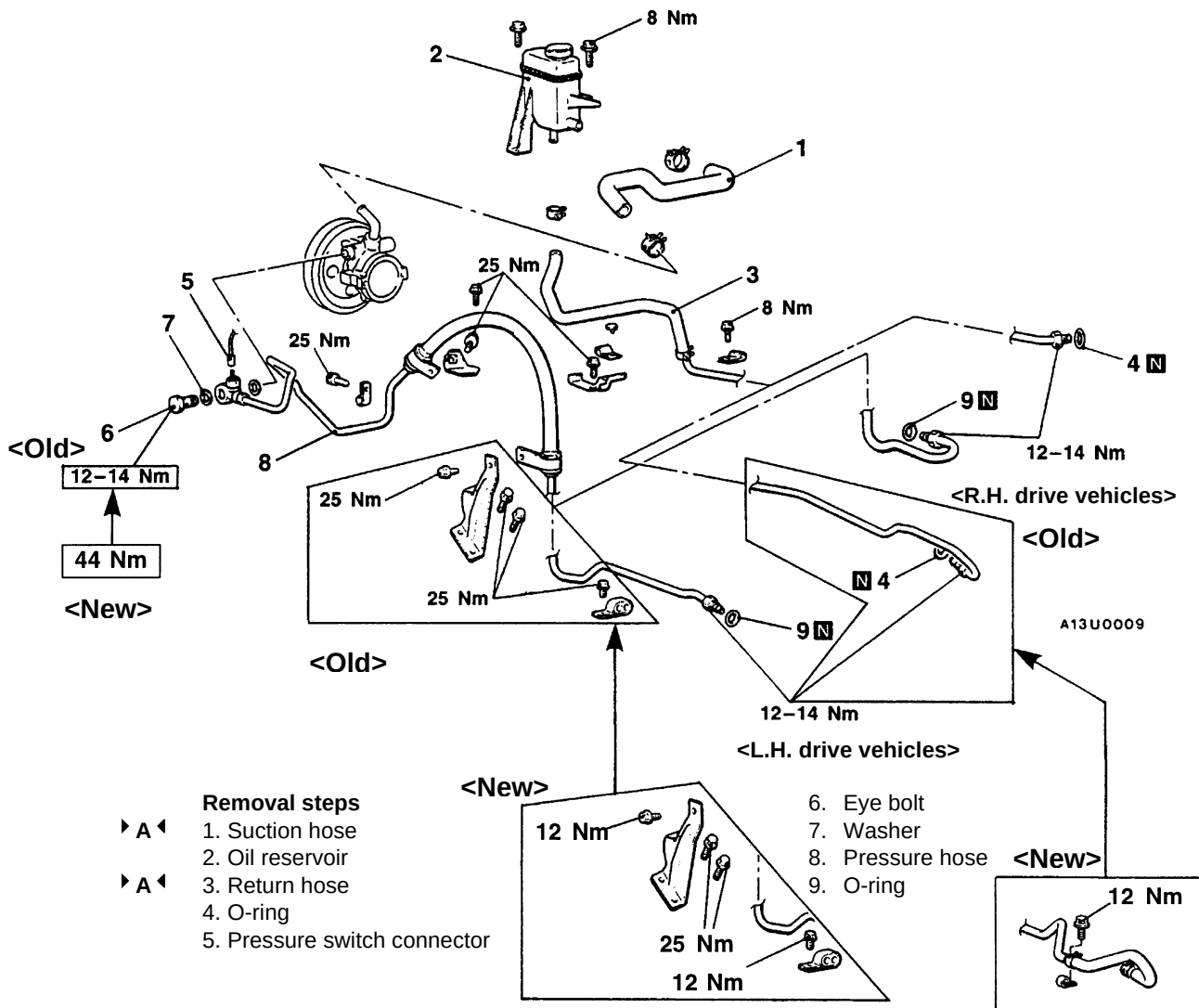
REMOVAL AND INSTALLATION

Pre-removal Operation

- Power Steering Fluid Draining (Refer to P.37A-8.)

Post-installation Operation

- Power Steering Fluid Supplying (Refer to P.37A-8.)
- Power Steering Fluid Line Bleeding (Refer to P.37A-8.)



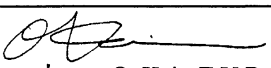
INSTALLATION SERVICE POINT

▶ A ◀ RETURN HOSE/SUCTION HOSE INSTALLATION

Connect the hose so that the marking is facing upwards.

SERVICE BULLETIN

**SERVICE GROUP, WARRANTY & SERVICE DEP.
MITSUBISHI MOTOR SALES EUROPE BV**

SERVICE BULLETIN		No.: ESB-96E42-503	
		Date: 1997-02-28	<Model> CARISMA
Subject: PROCEDURE FOR RESETTNG KEYLESS ENTRY RECEIVER ECU			<M/Y> 96-10
Group: BODY			
Correction	 O. Kai - E.V.P. After Sales Service		

1. Description:

Supplementary information needs to be added to the door and keyless entry system troubleshooting section of the manual indicated below, concerning the procedure for Resetting harness circuit error signals that may occur in the keyless entry receiver ECU.

2. Applicable Manual:

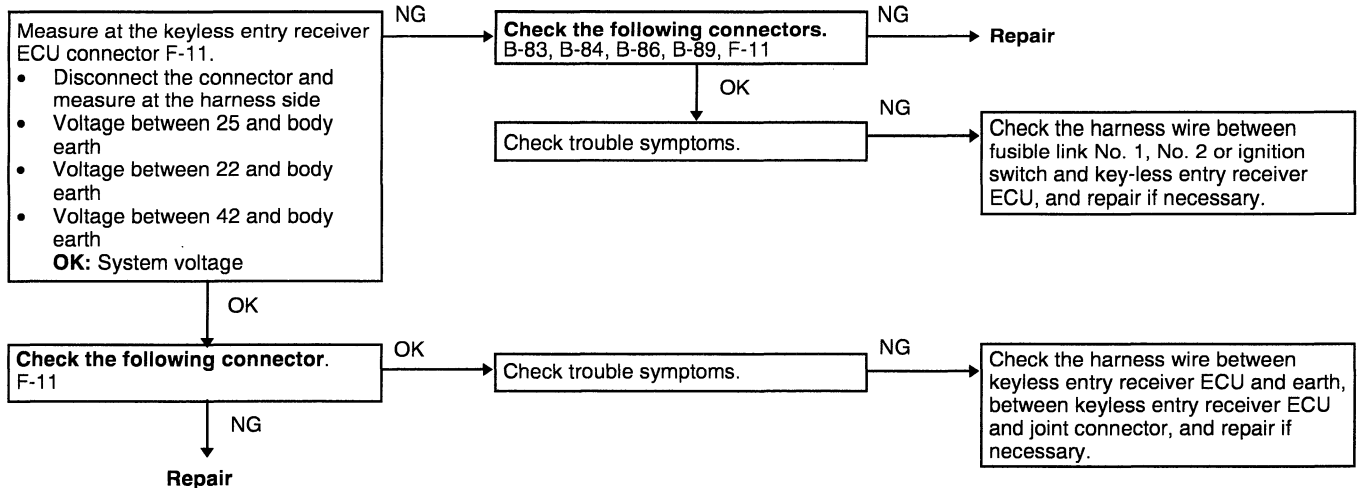
Manual	Pub. No.	Language	Page(s)
'96 CARISMA Workshop Manual Chassis	PWDE9502	(English)	42-24, 42-45
	PWDS9503	(Spanish)	
	PWDF9504	(French)	
	PWDG9505	(German)	
	PWDD9506	(Dutch)	
	PWDW9507	(Swedish)	
	PWDI96E1	(Italian)	

3. Details:

Please refer to the attached page(s).

Inspection Procedure 14

None of the door lock functions operate. (The keyless entry system does not operate, either.)	Probable cause
Power circuit system or earth circuit system of the keyless entry receiver ECU may be defective	- Malfunction of keyless entry receiver ECU - Malfunction or wiring harness or connector



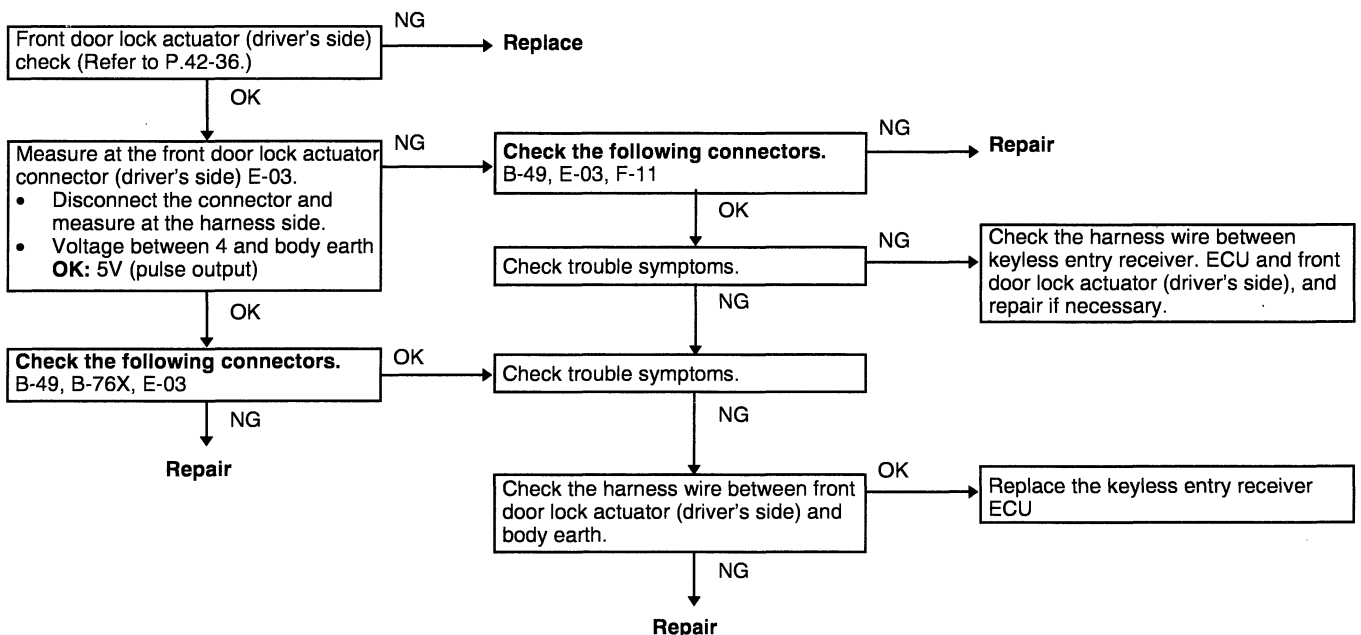
<Added>

Note

If the keyless entry or central door lock system is operated with the No. 2 fuse in the junction block blown or not in place, the keyless entry receiver ECU recognize the condition as a harness circuit problem and set an error status. Once the error status has been set, the keyless entry and central door lock systems will not operate even if No. 2 fuse is replaced of correctly installed. You can reset the harness circuit error signal occurring in the keyless entry receiver ECU and restore normal operation of the keyless entry and central door lock systems by removing the No. 3 fuse in the engine compartment relay box and then replacing it in position.

Inspection Procedure 15

The doors do not lock or unlock when the driver's door inside lock knob is operated	Probable cause
The front door lock actuator (driver's side) or the keyless entry receiver ECU may be defective	- Malfunction of the front door lock actuator (driver's side) - Malfunction of the keyless entry receiver ECU - Malfunction of harness or connector



Trouble symptoms		Inspection Procedure	Reference page
Theft-alarm system	The horn does not sound after the hood switch, door switch or Tailgate switch turns on, even though the theft-alarm system has been armed.	6	42-48
	The hazard lamp does not flash after the hood switch, door switch or tailgat switch turns on, even though the theft-alarm system has been armed. (However, the hazard lamp flashes normally when the hazard lamp switch is used.)	7	42-49

<Added>

Note

If the keyless entry or central door lock system is operated with the No. 2 fuse in the junction block blown or not in place, the keyless entry receiver ECU recognize the condition as a harness circuit problem and set an error status. Once the error status has been set, the keyless entry and central door lock systems will not operate even if No. 2 fuse is replaced of correctly installed. You can reset the harness circuit error signal occurring in the keyless entry receiver ECU and restore normal operation of the keyless entry and central door lock systems by removing the No. 3 fuse in the engine compartment relay box and then replacing it in position.

INSPECTION PROCEDURE FOR TROUBLE SYMPTOMS

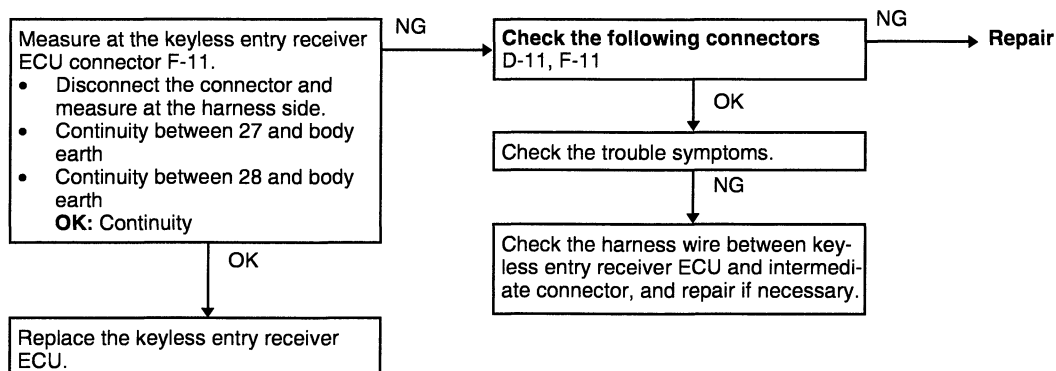
Inspection Procedure 1

None of the doors, including the tailgate, can be locked or unlocked. (However, the central door locking system is functioning normally.)	Probable cause
The transmitter battery may be spent, the secret code may not have been registered correctly, or there may be a malfunction of the transmitter. If the transmitter is normal, the cause is probably a malfunction of the keyless entry receiver-ECU.	- Malfunction of the battery - Malfunction of - Malfunction of the keyless entry receiver ECU

Replace the transmitter battery (refer to P.42-51.) and then press the transmitter LOCK or UNLOCK switch. OK : Indicator lamp illuminates	OK → Re-register the secret code. (Refer to P.42-52.)
↓ NG	↓ OK
Replace the transmitter	Check trouble symptoms.
	↓ NG
	Replace the keyless entry receiver ECU.

Inspection Procedure 2

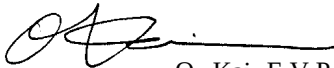
All of the doors, including the tailgate, can be locked and unlocked, but the hazard lamp does not illuminate or does not flash. (However, the hazard lamp flashes normally when the hazard lamp switch is used.)	Probable cause
The keyless entry receiver ECU or the harness between hazard lamp and keyless entry receiver ECU may be defective.	- Malfunction of the keyless entry receiver ECU - Malfunction of harness or connector





SERVICE BULLETIN

SERVICE GROUP, WARRANTY & SERVICE DEP.
MITSUBISHI MOTOR SALES EUROPE BV

SERVICE BULLETIN	NO.: ESB-96E52-001	
	DATE: 1996-05-15	<MODEL> <M/Y> (EC,EXP)CARISMA 96-00
SUBJECT: ESTABLISHMENT OF REAR SEATBACK COVER REPLACEMENT PROCEDURE		
GROUP: INTERIOR		
INFORMATION:	 O. Kai -E.V.P. After Sales Service	

1. Description

This Service Bulletin informs you that the rear seatback cover replacement procedure Has been established.

2. Effective Date:

3. Applicable Manual:

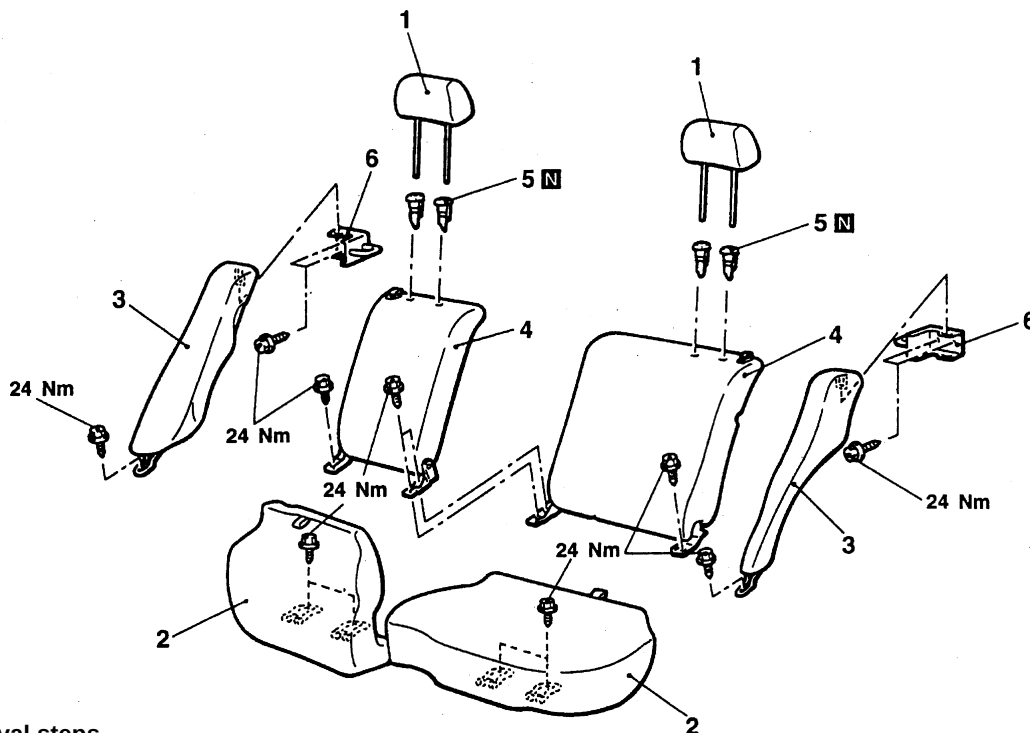
Manual	Pub. No.	Page(s)
'96 CARISMA Workshop Manual	PWDE9502 (English)	52A-13
	PWDS9503 (Spanish)	
	PWDF9504 (French)	
	PWDG9505 (German)	
	PWDD9506 (Dutch)	
	PWDW9507 (Swedish)	
	PWDI96E1 (Italian)	

4. Details:

Please refer to the attached pages.

REAR SEAT REMOVAL AND INSTALLATION

52200180036

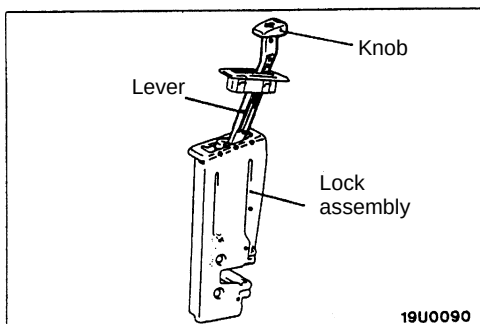
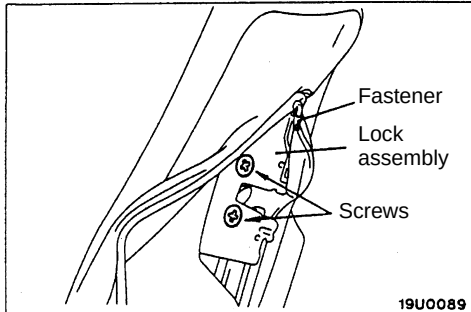


Removal steps

1. Headrest
2. Seat cushion
3. Side seatback assembly

4. Rear seatback assembly
5. Headrest guide
6. Rear seat striker

A19U0066



• REMOVAL SERVICE POINTS REAR SEATBACK COVER REMOVAL

- (1) Remove the trim clips from the back (7 places) and both sides (4 places) of the rear seatback cover.
- (2) Unfasten the fastener to remove the lock assembly mounting screws.

- (3) Remove the lock assembly from the rear seatback.

Caution

- Never remove the knob from the lever.

- (4) Remove the hog ring to remove the rear seatback cover.

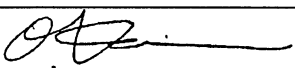
• INSTALLATION SERVICE POINTS REAR SEATBACK COVER INSTALLATION

- (1) While laying the rear seatback cover over the rear seatback frame pad assembly, install the hog ring on the front of the rear seatback. Use hog ring pliers to install the hog ring.
- (2) Install the lock assembly.
- (3) Install the trim clips.
- (4) Using hog ring pliers, install the hog ring on the back of the rear seatback.



SERVICE BULLETIN

SERVICE GROUP, WARRANTY & SERVICE DEP.
MITSUBISHI MOTOR SALES EUROPE BV

SERVICE BULLETIN		No.: ESB-96E52-002	
		Date: 1997-04-15	<Model> <M/Y> ECLIPSE(D30) 96-10 CARISMA 96-10
Subject: ADDITION OF SRS AIR BAG MAINTENANCE PROCEDURE			
Group: INTERIOR			
INFORMATION		 O. Kai - E.V.P. & G.M. After Sales Service Dept.	
1. Description: In the SRS air bag troubleshooting, items of cause of trouble in the inspection procedure for each diagnostic trouble code, have been added.			
2. Applicable Manuals:			
Manual	Pub. No.	Language	Page(s)
'96 ECLIPSE Workshop Manual chassis	PWUE96E1	(English)	52B-9
	PWUS95E1	(Spanish)	
	PWUF95E1	(French)	
	PWUG95E1	(German)	
	PWUD95E1	(Dutch)	
	PWUI95E1	(Italian)	
'96 CARISMA Workshop Manual chassis	PWUE9502	(English)	52B-7
	PWUS9503	(Spanish)	
	PWUF9504	(French)	
	PWUG9505	(German)	
	PWUD9506	(Dutch)	
	PWUW9507	(Swedish)	
	PWUI96E1	(Italian)	
3. Details: '96 ECLIPSE Workshop Manual chassis Page 52B-9 '96 CARISMA Workshop Manual chassis Page 52B-7			

Code No.	Diagnosis item	Reference page
45	SRS-ECU non-volatile memory (EEPROM) and A/D converter system	52B-13
51,52	Driver's side air bag module (squib ignition drive circuit) system	52B-14
54,55	Passenger's side air bag module (squib ignition drive circuit) system	52B-14
56,57	Driver's side pre-tensioner (squib ignition drive circuit) system	52B-14
58,59	Passenger's side pre-tensioner (squib ignition drive circuit) system	52B-14

NOTE

- (1) *1: Vehicles with front passenger's air bag.
- (2) *2: This diagnosis code will be automatically cleared from memory and the SRS warning lamp will switch off when the system returns to normal.
- (3) If the vehicle has a discharged battery it will store the fault codes 41 or 42. When these diagnosis codes are displayed, check the battery.

INSPECTION PROCEDURE CLASSIFIED BY DIAGNOSIS CODES

Code No. 14 Analog G sensor system	Probable cause
The SRS-ECU monitors the analog G sensor output and outputs this code when it detects a sensor failure, abnormal sensor characteristics or abnormal sensor output.	Malfunction of SRS-ECU

Replace the SRS-ECU

Code No. 15 Safing G sensor system	Probable cause
This code is output when there is a short-circuit between the terminals of the safing G sensor. The cause of the problem is probably a short-circuit in the safing G sensor.	Malfunction of SRS-ECU

Replace the SRS-ECU

Code No. 21 or 22 Driver's side air bag module (squib) system	Probable cause
These diagnosis codes are output if there is abnormal resistance between the terminals of the safing G sensor. The cause of the problem is probably a short-circuit in the safing G sensor.	- Malfunction of clock spring <Added> - Open-circuit in clock spring due to inappropriate neutral position. - Malfunction of harness or connectors - Malfunction of driver's side air bag module (squib) - Malfunction of SRS-ECU

Chart 1

Code No.	Trouble symptom
21	- Short in driver's side air bag module (squib) or harness short - Short in clock spring
22	- Open circuit in driver's side air bag module (squib) or open harness - Open circuit in clock spring - Disconnected connector in the driver's side air bag module (squib) - Open circuit in clock spring due to inappropriate neutral position <Added> - Malfunction of connector contact

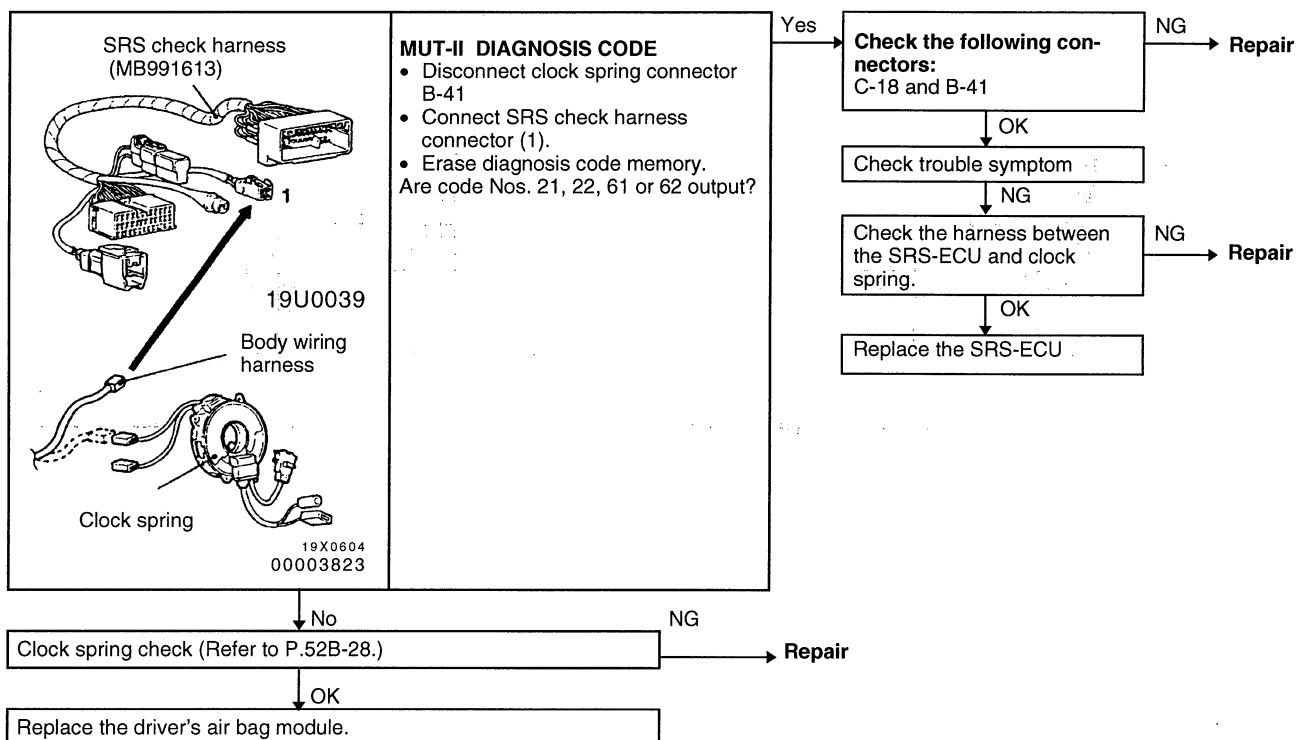
Code No. 21, 22, 61 or 62 Driver's air bag module (squib) system	probable cause
These diagnosis codes are output if there is abnormal resistance between the input terminals of the driver's air bag module (squib). Refer to the following table 1 for the trouble causes of each code No.	• Malfunction of clock spring • Open-circuit in clock spring due to inappropriate neutral position • Malfunction of harness of connectors • Malfunction of driver's air bag module (squib) • Malfunction of SRS-ECU

<Added>

Chart 1

Code No.	Trouble symptom
21	• Short in driver's side air bag module (squib) or harness short • Short in clock spring
22	• Open circuit in driver's side air bag module (squib) or open harness • Open circuit in clock spring • Disconnected connector in the driver's side air bag module (squib) • Open circuit in clock spring due to inappropriate neutral position • Malfunction of connector contact
61	The harness wire of the driver's air bag module (squib) is grounded to the power supply.
62	The harness wire of the driver's air bag module (squib) is grounded.

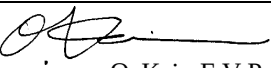
<Added>





SERVICE BULLETIN

SERVICE GROUP, WARRANTY & SERVICE DEP.
 MITSUBISHI MOTOR SALES EUROPE BV

SERVICE BULLETIN		No.: ESB-96E54-502	
		Date: 1997-03-31	<Model> CARISMA
Subject: ADDITION OF CONTINUITY CHECKING PROCEDURE FOR SPEEDOMETER REED SWITCH			<M/Y> 96-10
Group: CHASSIS ELECTRICAL			
Correction		 O. Kai - E.V.P. After Sales Service	

1. Description:

There is an omission in the manual indicated below concerning speedometer reed switch Continuity checking. It is requested that the manual is complemented by adding the Instruction shown in this Service Bulletin to the appropriate location in the manual.

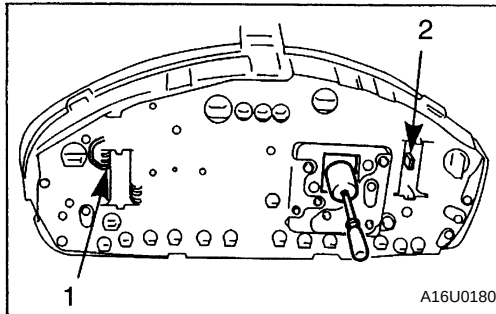
2. Applicable Manual:

Manual	Pub. No.	Language	Page(s)
'96 CARISMA Workshop Manual Chassis	PWDE9502	(English)	54-25
	PWDS9503	(Spanish)	
	PWDF9504	(French)	
	PWDG9505	(German)	
	PWDD9506	(Dutch)	
	PWDW9507	(Swedish)	
	PWDI96E1	(Italian)	

3. Details:

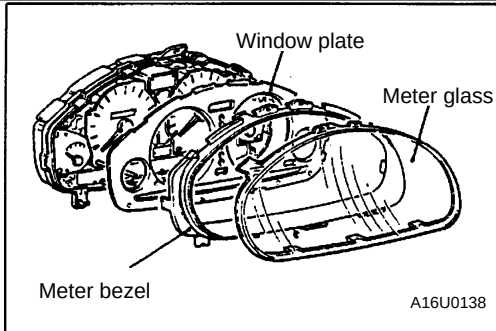
Please refer to the attached page(s).

<Added>



REED SWITCH CONTINUITY CHECK

Using a circuit tester, check that continuity and discontinuity alternates between terminals 1 and 2 four times at every rotation of the shaft of the speedometer cable connection.

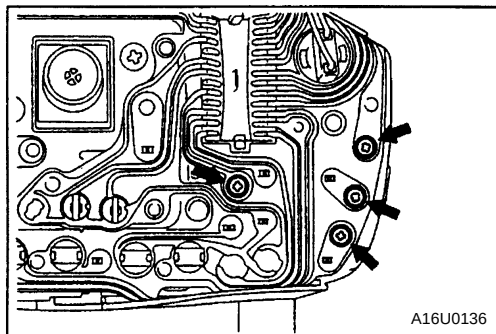


INSPECTION

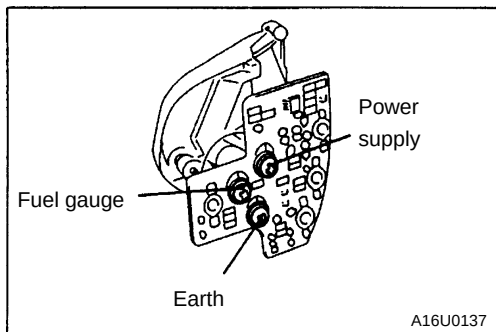
54300300019

FUEL GAUGE RESISTANCE CHECK

- (1) Remove the meter glass, meter bezel and window plate.



- (2) Remove the fuel gauge mounting screws, and then remove the fuel gauge from the meter case.



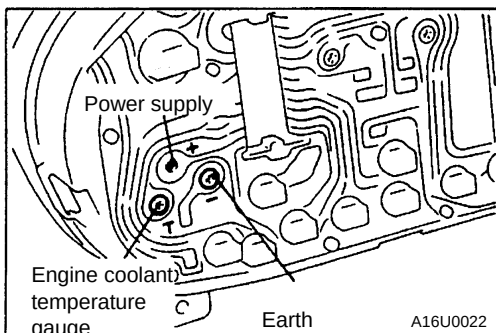
- (3) Use a circuit tester to measure the resistance value between the terminals.

Standard value:

Power supply - Earth: 122 - 153 Ω

Power supply - Fuel gauge: 27 - 35 Ω

Fuel gauge - Earth: 95 - 119 Ω



ENGINE COOLANT TEMPERATURE GAUGE RESISTANCE CHECK

1. Remove the power supply tightening screw.
2. Use a circuit tester to measure the resistance value between the terminals.

NOTE

The terminal positions are indicated by T, (-) and (+).

Standard value:

Power supply (+) - Earth (-): 185 - 227 Ω

Power supply (+) - Engine coolant temperature gauge (T): 54 - 58 Ω

Engine coolant temperature gauge (T) - Earth (-): 239 - 285 Ω

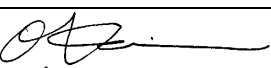
Caution

When inserting the testing probe into the power supply terminal, be careful not to touch the printed board.



SERVICE BULLETIN

SERVICE GROUP, WARRANTY & SERVICE DEP.
MITSUBISHI MOTOR SALES EUROPE BV

SERVICE BULLETIN		No.: ESB- 96E55-502	
		Date: 1997-02-28	
Subject:	ADDITION TO AIR PURIFIER TROUBLE-SHOOTING SECTION	<Model>	<M/Y>
Group:	HEATER, A/C & VENTILATION	CARISMA	96-10
Correction	 O. Kai - E.V.P. After Sales Service		

1. Description:

Supplementary information needs to be added to the air purifier troubleshooting section in accordance with this Service Bulletin.

2. Applicable Manual:

Manual	Pub. No.	Language	Page(s)
'96 CARISMA Workshop Manual Chassis	PWDE9502	(English)	55-49, 55-59, 55-60
	PWDS9503	(Spanish)	
	PWDF9504	(French)	
	PWDG9505	(German)	
	PWDD9506	(Dutch)	
	PWDW9507	(Swedish)	
	PWDI96E1	(Italian)	

4. Details:

Please refer to the attached page(s).

INSPECTION CHART FOR TROUBLE SYMPTOMS

Troubles Symptom		Inspection procedure No.	Reference Page
Communication with the MUT-II is not possible	Communication with all systems is not possible	1	55-50
	Communication with A/C system only is not possible	2	55-50
Blowing of air does not stop even if blower switch is OFF.		3	55-50
No air is blown out from the air outlet even if blower switch is ON.		4	55-51
Inside/outside air changeover is not possible.		5	55-52
Air outlet is not changed over even if air outlet changeover switch is pressed.		6	55-52
When ignition switch and fan switch are ON, A/C does not operate even if A/C switch is turned to ON.		7	55-53
A/C is operated but inside air temperature is not lowered		8	55-54
Setting display temperature returns to 25°C when ignition switch is turned ON or OFF.		9	55-55
Setting temperature is increased but inside air temperature does not rise.		10	55-55
Window glass becomes cloudy although operation is in AUTO mode.		11	55-56
Outside air temperature display does not change from 20°C.		12	55-57
Condenser fan does not operate.		13	55-57
Air purifier does not operate.		14	55-59
Air purifier indicator lamp (A/P) does not illuminate.		15	55-59
Air purifier indicator lamp (A/P) flashes. <Added>	Output voltages at collector and ionizer sections are not correct.	16	55-59-1
	Output voltages at collector and ionizer sections are correct.	17	55-59-1
Sparkling sounds are generated intermittently or continuously.		18	55-59-2
A/C compressor (magnetic clutch) circuit inspection		16 → 19	55-60

<Changed>

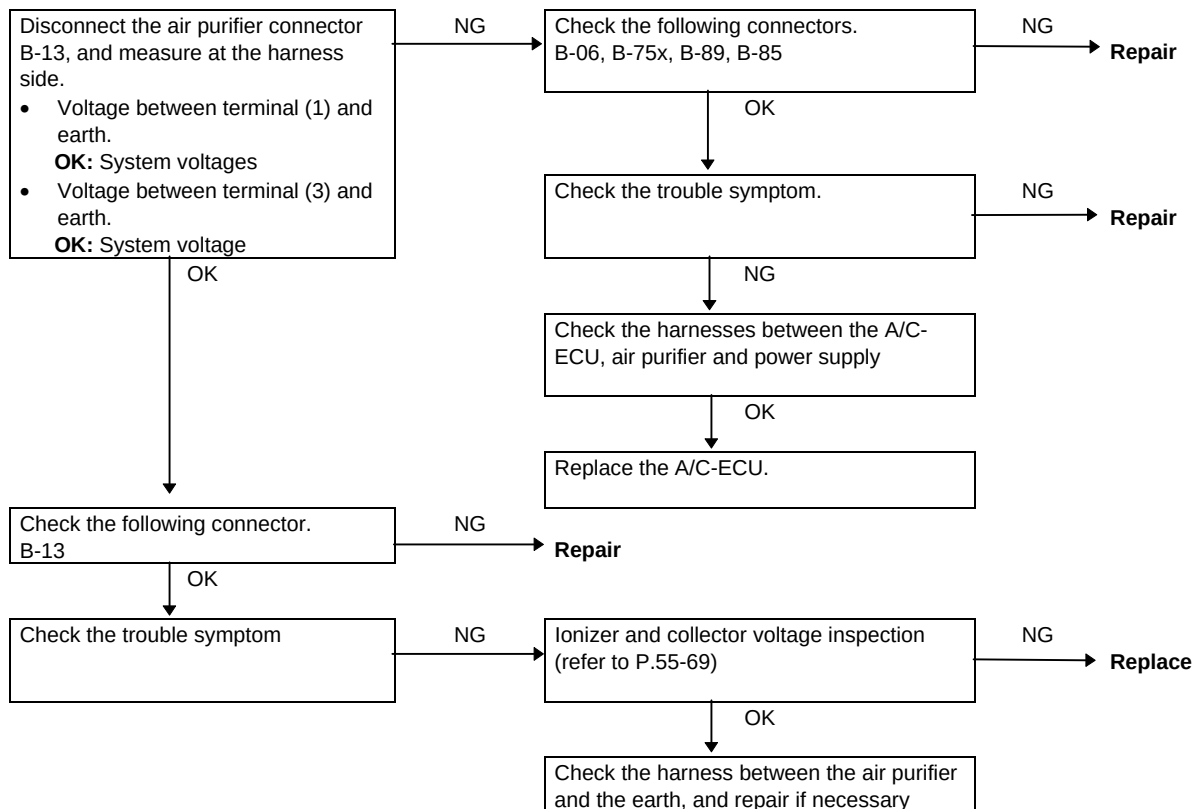
NOTE

<Added>

The air purifier indicator lamp (A/P) is located in the air conditioner control panel/ECU display panel. The lamp illuminates continuously while the air purifier is in operation (blower switch ON), but if an electric fault occurs in the air purifier, the lamp flashes to warn the abnormal condition.

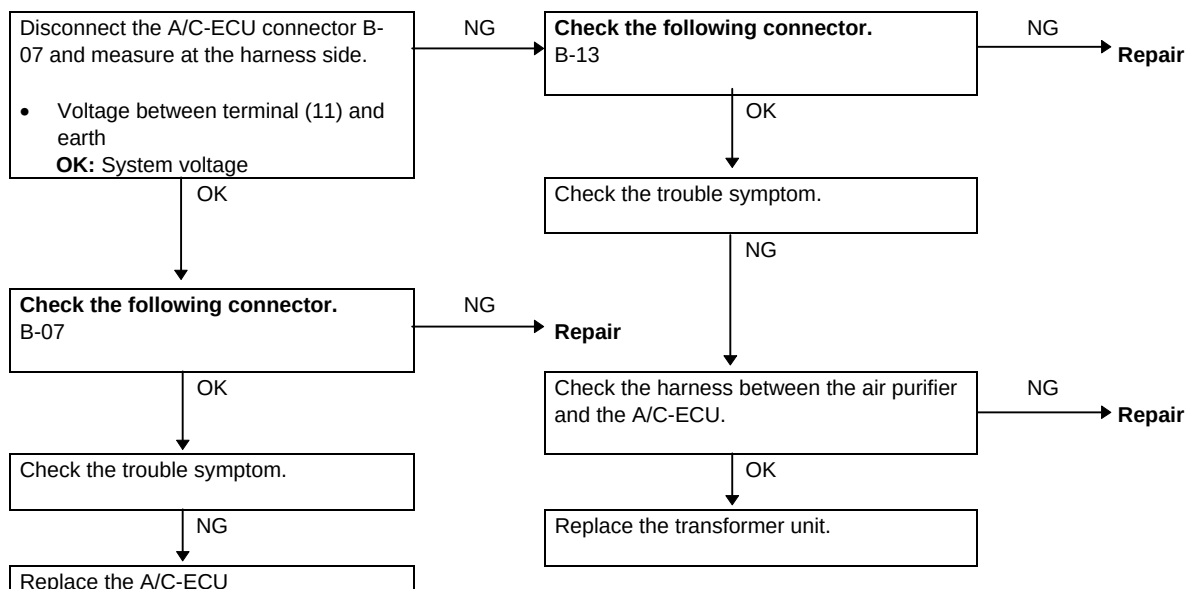
Inspection procedure 14

Air purifier does not operate	Probable cause
The air purifier operates when the ignition switch is at the ON position and the blower switch is turned to ON. Accordingly, if only the blower fan operates, the cause is probably a defective air purifier power supply circuit.	• Malfunction of ionizer • Malfunction of collector • Malfunction of transformer unit • Malfunction of connector • Malfunction of harness • Malfunction of A/C-ECU



Inspection procedure 15

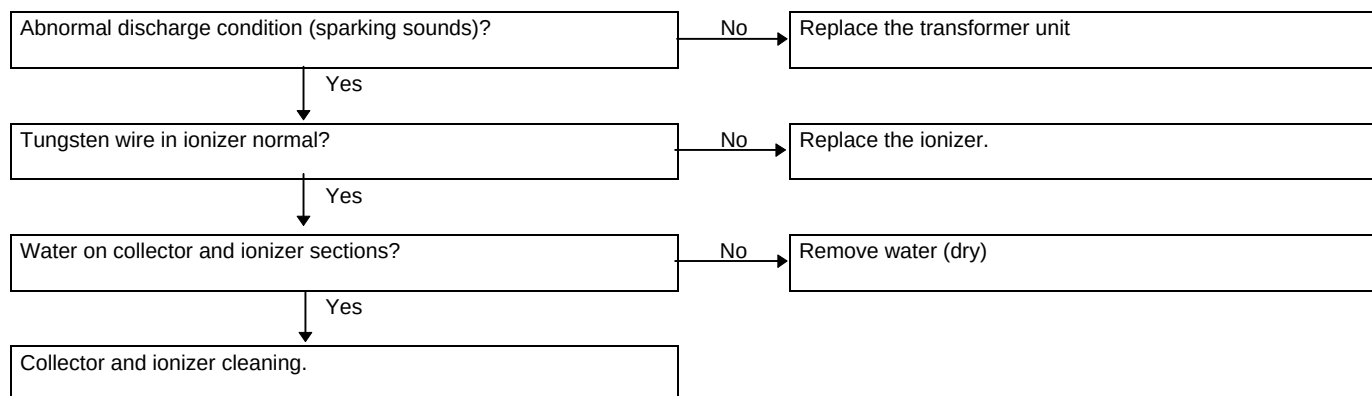
Air purifier indicator lamp (A/P) does not illuminate (however, air purifier is operating)	Probable cause
The cause is probably an open circuit in the harness between the air purifier and the A/C-ECU, or a defective air purifier or A/C-ECU.	• Malfunction of connector • Malfunction of harness • Malfunction of transformer unit • Malfunction of A/C-ECU



<Add the following two pages.>

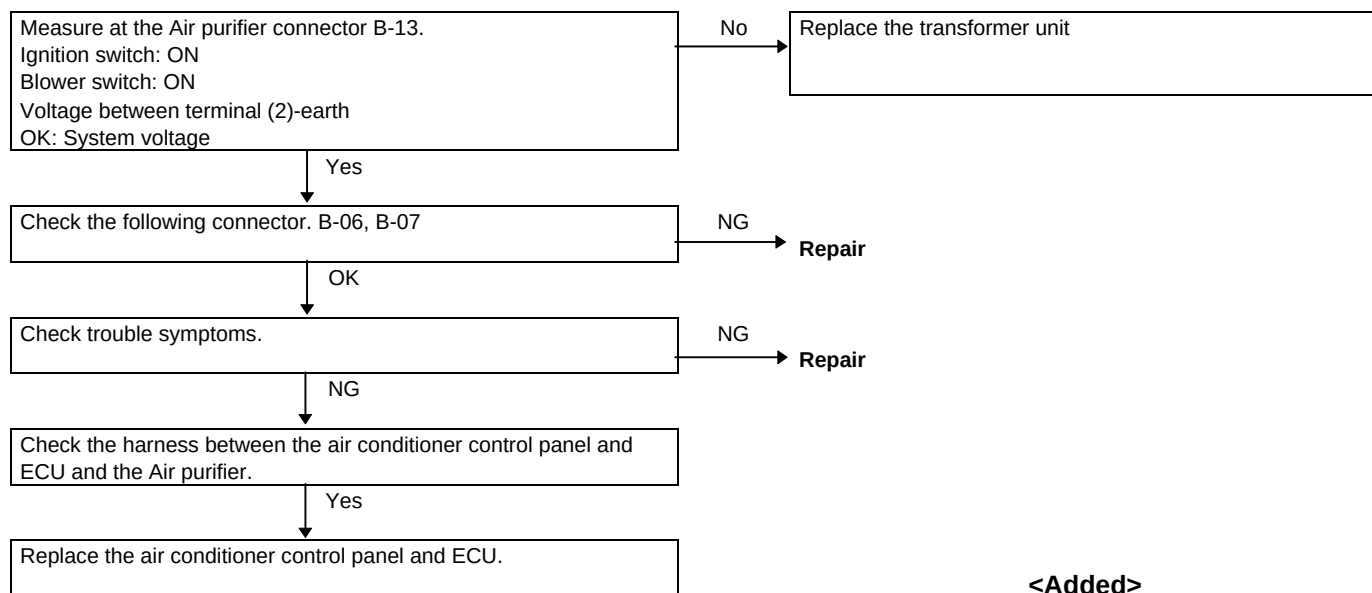
Inspection procedure 16

Air purifier indicator lamp (A/P) flashes. (Incorrect output voltages at collector and ionizer sections)	Probable cause
The air purifier indicator lamp (A/P) flashes if the air purifier's collector and ionizer are excessively contaminated or an abnormal current flows to the air purifier. The lamp may flash under certain weather conditions (such as very humid weather) where an abnormal current is liable to flow to the air purifier.	- Abnormal discharge condition is prevailing due to water on the collector and ionizer sections. - Contaminated collector sections. - Contaminated ionizer section - Open tungsten wire in ionizer - Malfunction of transformer unit



Inspection procedure 17

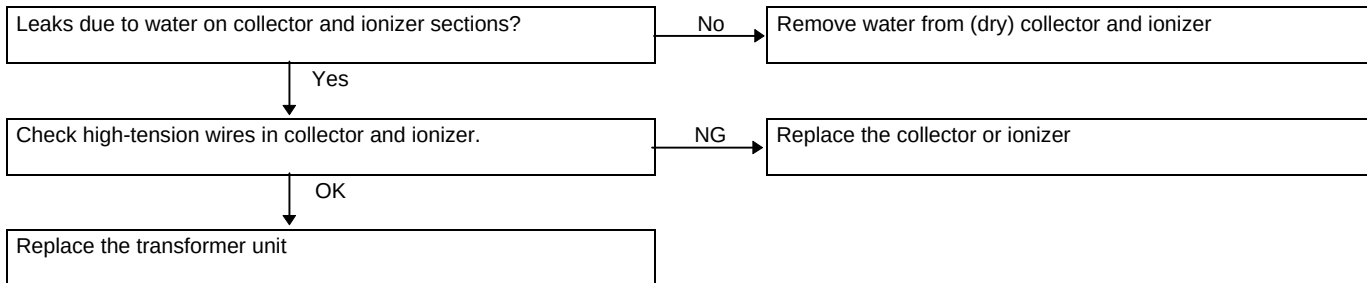
Air purifier indicator lamp (A/P) flashes. (Collect output voltages at collector and ionizer sections)	Probable cause
Correct output voltages show that the purifier is operating. Faulty air purifier indicator lamp (A/P) related circuit is probable.	- Malfunction of transformer unit - Malfunction of air conditioner control panel and ECU - Malfunction of wiring harness - Malfunction of connector



<Added>

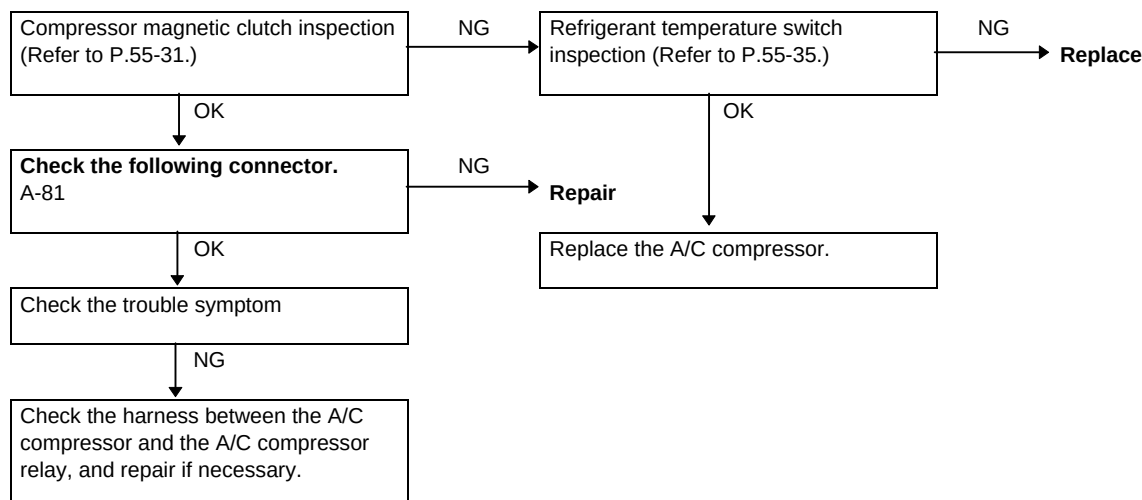
Inspection procedure 18

Intermittent or continuous sparking sounds	Probable cause
Leaks due to water on the collector and ionizer sections or faulty transformer unit are probable.	• Water on collector and ionizer sections • Malfunction of ionizer • Malfunction of connector • Malfunction of transformer



<Added>

Inspection procedure 16 ← **19** <CHANGED>

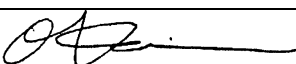
A/C compressor (magnetic clutch) circuit inspection

SERVICE DATA REFERENCE TABLE

Item No.	Check Item	Check Condition		Normal Condition
11	Inside air temperature sensor	Ignition switch: ON		Inside air temperature and temperature displayed on the MUT-II are identical.
12	Outside air temperature sensor	Ignition switch: ON		Outside air temperature and temperature displayed on the MUT-II are identical
15	Heater water temperature switch	Ignition switch: ON		ON when heater core wall temperature is 30°C or higher
21	Air thermo sensor	Ignition switch: ON		Temperature of blow air from evaporator and temperature displayed on the MUT-II are identical.
25	Photo sensor	Ignition switch: ON		Amount of incident light is proportional to voltage displayed on the MUT-II.
31	Potentiometer of air mix damper motor	Ignition switch: ON	Damper position	Opening degree (%)
			MAX. HOT	Approx. 100
			MAX. COOL	Approx. 0
32	Potentiometer of air outlet changeover damper motor	Ignition switch: ON	Damper position	Opening degree (%)
			FACE	Approx. 0
			FOOT	Approx. 50
			FOOT/DEF.	Approx. 75
			DEF.	Approx. 100



SERVICE BULLETIN

SERVICE GROUP, WARRANTY & SERVICE DEP.
MITSUBISHI MOTOR SALES EUROPE BV

SERVICE BULLETIN		No.: ESB-97E11-503	
		Date: 1997-11-24	<Model> (EC,EXP) CARISMA
Subject: CORRECTING VALVE CLEARANCE & INJECTION TIMING INSPECTION & ADJUSTMENT PROCEDURE		<M/Y> 97-10	
Group: ENGINE			
CORRECTION		 O. Kai - E.V.P. & G.M. After Sales Service Dept.	

1. Description:

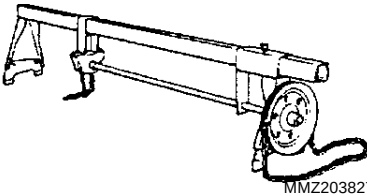
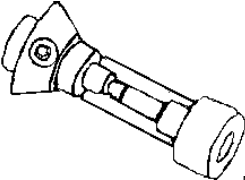
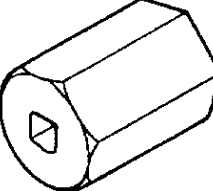
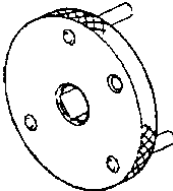
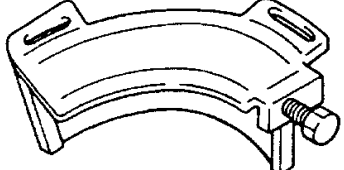
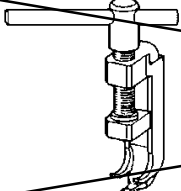
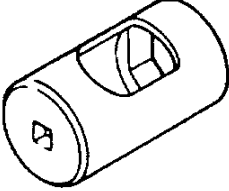
This Service Bulletin informs you of correction to the inspection and adjustment procedure for valve clearance and injection timing.

2. Applicable Manuals:

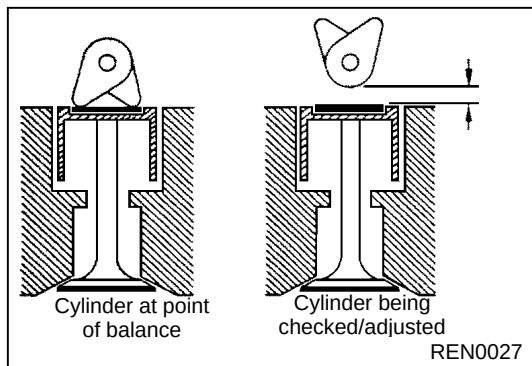
Manual	Pub. No.	Language	Page(s)
'97 CARISMA Workshop Manual chassis (SUPPLEMENT)	PWDE9502-A	(English)	11B-6,
	PWDS9503-A	(Spanish)	11B-8~11B-9,
	PWDF9504-A	(French)	11B-10~11B-12
	PWDG9505-A	(German)	
	PWDD9506-A	(Dutch)	
	PWDW9507-A	(Swedish)	
	PWDI96E1-A	(Italian)	
ENGINE F8QT Workshop Manual	PWEE9602	(English)	11A-19-3,
	PWES9603	(Spanish)	11A-19-5,
	PWEF9604	(French)	11A-19-6
	PWEG9605	(German)	
	PWED9606	(Dutch)	
	PWEW9607	(Swedish)	
	PWEI9602	(Italian)	

3. Details:

Please refer to the attached pages.

Tool	Number	Name	Use
 MMZ203827Z	GENERAL SERVICE TOOL MZ203827	Engine lifter	Supporting the engine assembly during removal and installation of the transmission
 MB996030	MB996030	Measuring device adapter	Adjustment of injection timing
 MB996036	MB996036	Hexagon socket	
 MB996037	MB996037	Sprocket adapter	
 MB996043	MB996043	Sprocket stopper	
 MB996035	MB996035	Valve lifter	Adjustment of valve clearance
 MB996041	MB996041	Special socket	Removal of fuel injector
 MB996045	MB996045	Tension gauge	Checking of drive belt tension

<Deleted>



VALVE CLEARANCE CHECK AND ADJUSTMENT

- The valve clearances have to be checked/adjusted in the following sequence:

Cylinder at point of balance	Cylinder being checked/adjusted
1	4
2	3
3	2
4	1

- Measure the valve clearance.

Standard value (cold engine):

Intake valve: 0.15 - 0.25 mm

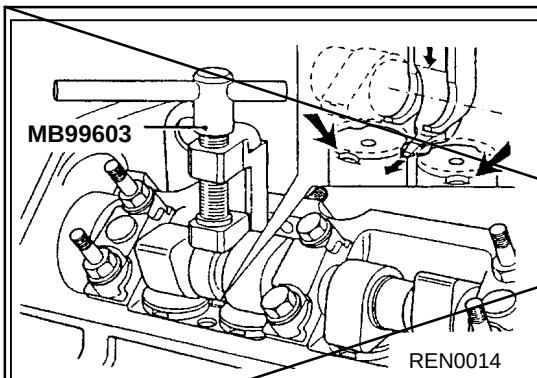
<Incorrect>

Exhaust valve: 0.35 - 0.45 mm

<Correct>

Cold engine	Checking	Adjusting
Intake valve mm	0.15 - 0.20	0.20
Exhaust valve mm	0.35 - 0.45	0.40

- if the valve clearance is outside the standard value, adjust by replacing the tappet pads using the following procedure.



- Unscrew the base of special tool a distance of 6 mm.
- Turn the slots in the tappet to the correct position; see the illustration.
- Position special tool with the base in the slots of the tappets and then push the tool forwards as far as possible.
- Depress the tappets.

Caution

When changing tappet pads the piston must not be at TDC. The crankshaft must be turned on to bring it just past TDC, otherwise the valves may strike the piston when the tappets are depressed.

<Incorrect>

<Correct>

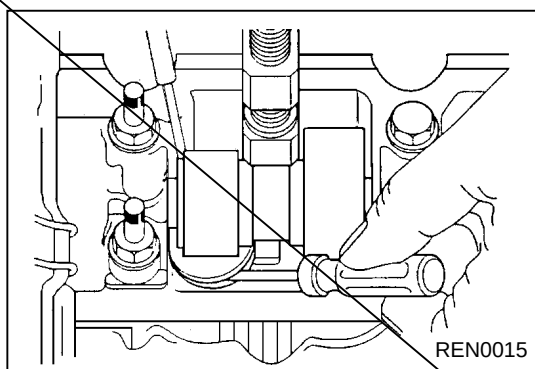
- If out of the standard value, measure the valve clearance again and record the measurements.
- Based on the measurements, select a tappet pad that will bring the valve clearance within the standard value.

Thickness of adjusting tappet pad =

Thickness of tappet pad installed at inspection + (Measured value - Standard value)

NOTE

- Measure the thickness of the tappet pad with a micrometer.
- Always use new tappet pads.
- Tappet pads are available in thickness from 3.25 mm to 4.25 mm. Increasing by increments of 0.05 mm; and in thickness from 4.30 mm to 4.50 mm. Increasing by increments of 0.10 mm.
- Remove the camshaft and install a selected tappet pad.
- Reinstall the camshaft.
- Give the crankshaft one turn, and check that the valve clearance is within the standard value.



8. Use a small screwdriver to remove the tappet pad.
9. Select tappet pads which will bring the valve clearance to the standard value.

Standard value (cold engine):

Intake valve: 0.20 mm

Exhaust valve: 0.40 mm

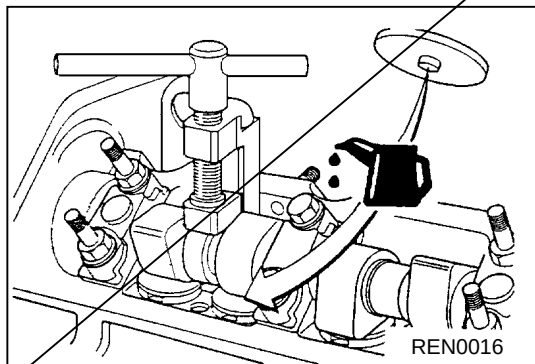
Example

If the measured valve clearance is 0.25 mm and the required valve clearance is 0.40 mm, then the old tappet pad must be replaced by a new pad which is 0.15 mm thinner.

NOTE

1. Measure the thickness of the tappet pad with a micrometer.
2. Always use new tappet pads.
3. Tappet pads are available in thicknesses from 3.25 mm to 4.25 mm, increasing by increments of 0.05 mm; and in thicknesses from 4.30 to 4.50 mm, increasing by increments of 0.10 mm.

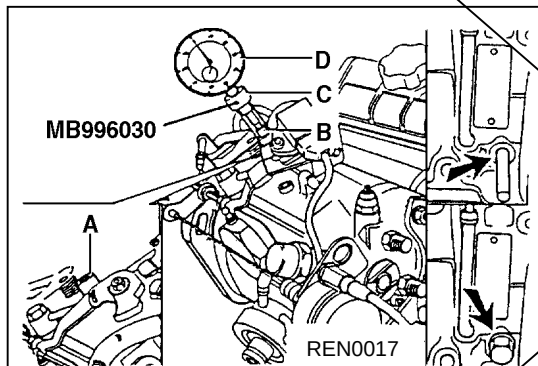
10. The tappet pad must be lubricated with oil and installed with the projection facing towards the tappet.



<Incorrect>

INJECTION TIMING CHECK AND ADJUSTMENT

1. Turn the crankshaft clockwise to set the No.1 cylinder to top dead compression centre.
2. Turn the crankshaft $1 \frac{3}{4}$ revolutions in its normal direction of rotation
3. Remove the plug (A).

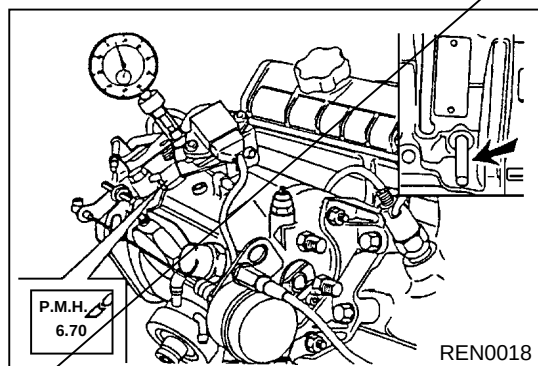


4. Fit special tool:

- Locate the guide bush in the pump.
- Slide the measuring pin (B), which is part of the special tool, into the guideway of the pump.
- Locate and secure the holder (C).
- Position the clock gauge (D) and make sure that the plunger is pressed in at least 0.2 mm. Secure the clock gauge and set it at zero.

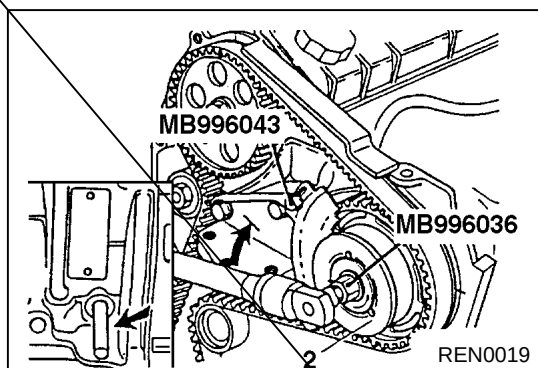
NOTE

The measuring pin and guide bush can only be supplied and used as a set.



5. Turn the crankshaft in its normal direction of rotation until the clock gauge indicates approximately 5.00 mm.
6. Apply pressure on the locking pin and turn the crankshaft in its normal direction of rotation until the locking pin engages the recess in the crankshaft web.
7. Read off the value on the clock gauge.
8. The reference value for checking purposes is approximately 0.02 mm; this is shown on the pump control arm.
9. If the reference value is not obtained, the pump will have to be adjusted.

<Incorrect>

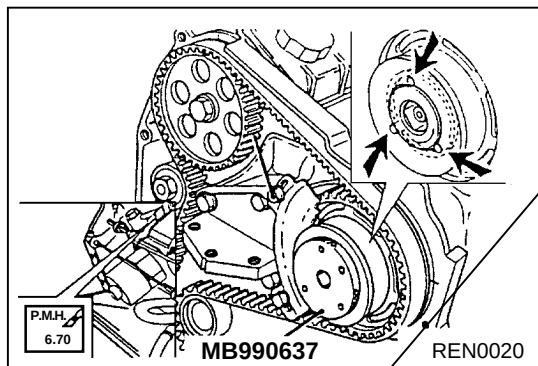


10. Locate special tool (sprocket stopper) between the pump bracket and the sprocket. Secure the tool with the bolt supplied with the set.
11. Insert special tool (hexagon socket) in the screwed sleeve and nut assembly. Back off (turning clockwise) the screwed sleeve and nut assembly one eighth of a turn. It should now be possible to move the flange (2)
12. Remove special tool (sprocket stopper), the locking pin and the clock gauge.

Caution

The plunger is not spring-mounted! When turning over the engine it is possible to break the clock gauge.

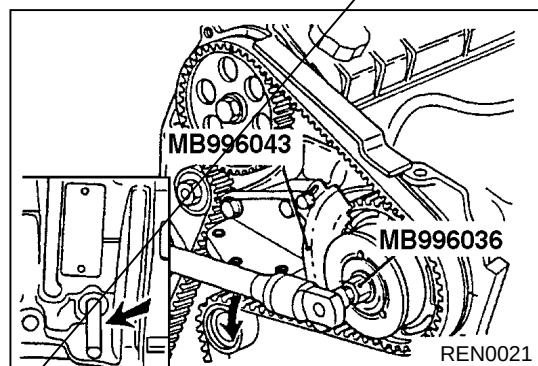
13. Turn the crankshaft $1 \frac{3}{4}$ revolutions further, locate the clock gauge and make sure that the plunger is pressed in at least 0.2 mm. Check and adjust the injection timing.



14. Fit special tool in the three holes of the flange.
15. turn the tool with the flange until the jaws of the tool engage the three internal recesses of the sprocket.
16. Turn the tool with the flange clockwise until the backlash in the pump is eliminated and then turn it to 0.5 mm below the adjustment reference value.
17. Now turn the tool with the flange counter-clockwise until the adjustment reference value is obtained as shown on the pump ± 0.02 mm.
18. Locate special tool (sprocket stopper) and secure it with the bolt supplied with the set.
19. Turn the bracket with the bolt (F) so that the bracket is free from play.

Caution

The pump sprocket must not be displaced (the pointer of the micrometer must not move).



20. Insert special tool (hexagon socket) in the screwed sleeve and nut assembly and tighten the assembly steadily (turning counter-clockwise) to the specified torque.
21. Remove special tool (sprocket stopper), the locking pin and the clock gauge.

<Incorrect>

22. Turn the crankshaft $1\frac{3}{4}$ revolutions further, locate the clock gauge and make sure that the plunger is pressed in at least 0.2 mm.
23. Check the injection timing.
24. Remove special tool together with the clock gauge and measuring pin. Fit the plug with a new O-ring.
25. Tighten the plug to the specified torque.

Specified torque: 10 Nm

26. remove the locking pin and fit the plug with a new sealing washer.
27. Tighten the plug to the specified torque.

Specified torque: 20 Nm

<Incorrect>

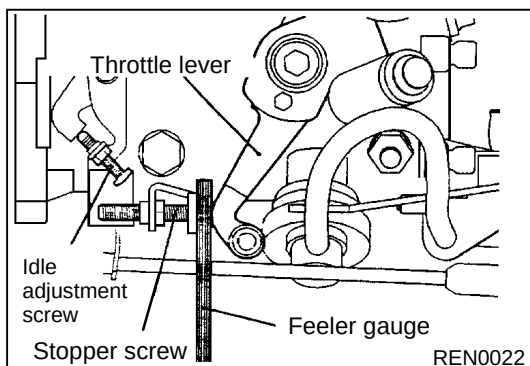
<Pages 5 through 7 (upper half) should be replaced by pages 7 (lower half) through 11.>

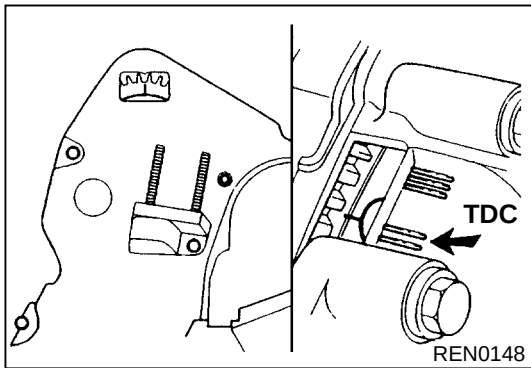
IDLE SPEED CHECK AND ADJUSTMENT

1. Before inspection, set the vehicle to the pre-inspection condition.
2. Connect the MUT-II to the diagnosis connector.
3. Check the idle speed.

Standard value: 825 $\pm$ 25 r/min

4. If the idle speed is outside the standard value range, adjust by the following procedure.
5. Loosen the lock nut, and then turn the idle adjustment screw to adjust the idle speed to the standard value.
6. Tighten the lock nut to secure the idle adjustment screw.
7. Insert a feeler gauge with a thickness of 4 mm between the throttle lever and the stopper screw.
8. Check that the idle speed is at 1,250 $\pm$ 100 r/min. If the idle speed is outside this range, adjust by turning the stopper screw.
9. Tighten the lock nut to secure the stopper screw.
10. Remove the feeler gauge.
11. Check that the idle speed is within the standard value range. If the idle speed is outside the standard value range, repeat the adjustment procedure from step 5.
12. Disconnect the MUT-II.

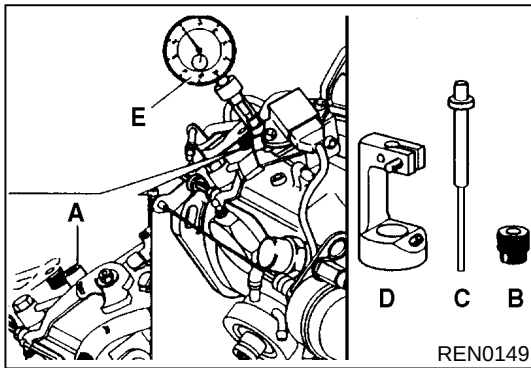




INJECTION TIMING CHECK AND AJUSTMENT

INJECTION TIMING CHECK

1. Turn the crankschaft clockwise so that the piston of No.1 cylinder (flywheel end) is at TDC, with the following marks in line with each other:
 - flywheel/clutch housing
 - timing belt cover/camshaft sprocket
2. Turn the crankshaft (clockwise) $1\frac{3}{4}$ revolutions.
3. Remove the plug **A**.

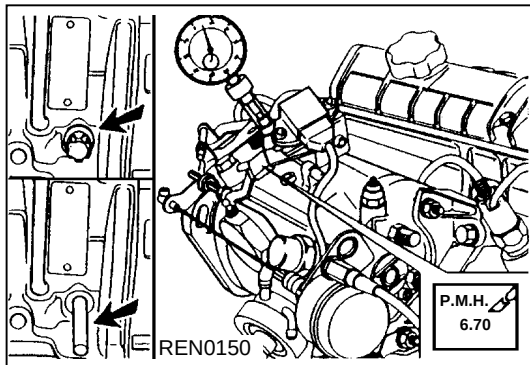


4. Fit measuring device adaptor MB996030:
 - Locate the guide bush **B** in the pump.
 - Slide the measuring pin **C**, which is part of the measuring tool, into the guideway of the pump.
 - Locate and secure the holder **D**.
5. Position the clock gauge **E** and make sure that the plunger is pressed in at least 0.2 mm. Secure the clock gauge and set it at zero.

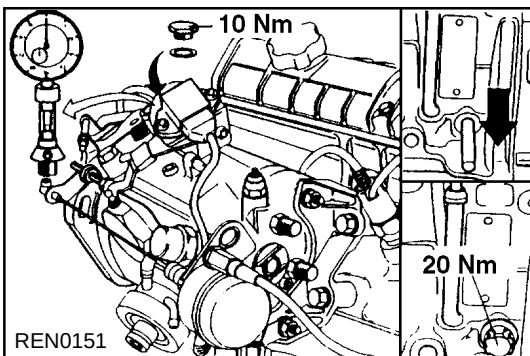
NOTE

If the engine is turned above stroke limit of the clock gauge, it may damage the clock gauge.

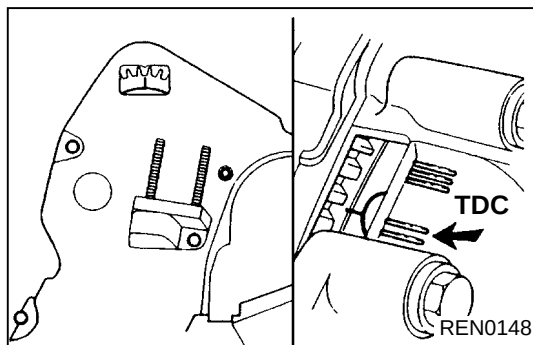
The measuring pin and guide bush can only be supplied and used as a set.



6. Turn the crankshaft **exactly** to TDC (clockwise). To achieve this:
 - Insert an 8 mm diameter locking pin in the hole of torxbolt.
 - Apply pressure just before TDC on this pin until it engages the recess in the crankshaft.
7. Read off the value on the clock gauge. This value should not differ more the 0.02 mm as the set value shown on the pump control arm. If the calue is not obtained, the pump has to be adjusted.

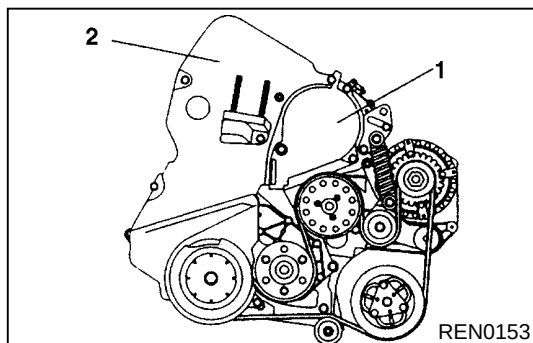


8. Remove measuring divice adaptor MB996030 with the clock gauge. Fit the plug with a new O-ring.
9. Tighten the plug to the specified torque.
Specified torque: 10 Nm
10. Remove the locking pin and fit the plug with a new sealing washer.
11. Tighten the plug to the specified torque.
Specified torque: 20 Nm

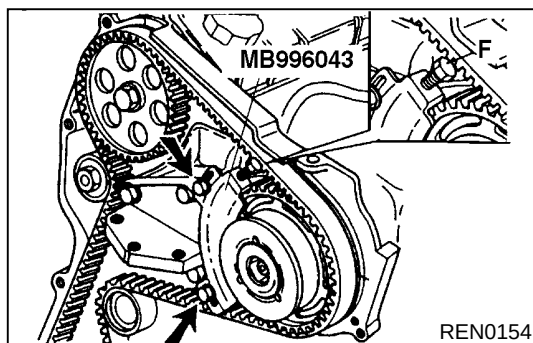


INJECTION TIMING ADJUSTMENT

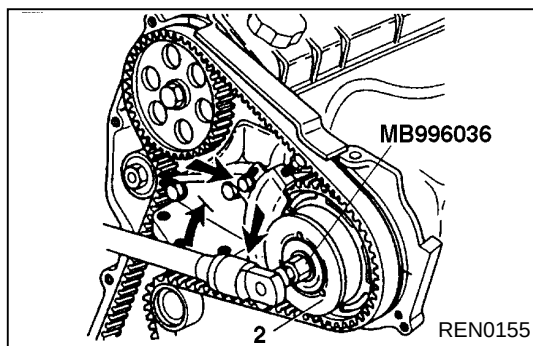
1. Turn the crankshaft clockwise so that the piston of No. 1 cylinder (flywheel end) is at TDC, with the following marks in line with each other:
 - flywheel/clutch housing
 - timing belt cover/camshaft sprocket



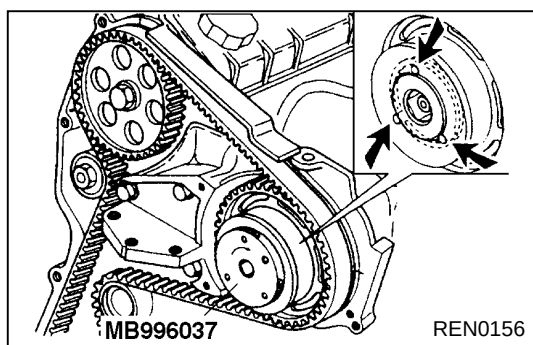
2. Remove cover 1 and the bolts of cover 2.



3. Locate sprocket stopper MB996043 between the pump bracket and the sprocket. Secure the tool with the two bolts supplied with the set. Bolt F is not needed now.

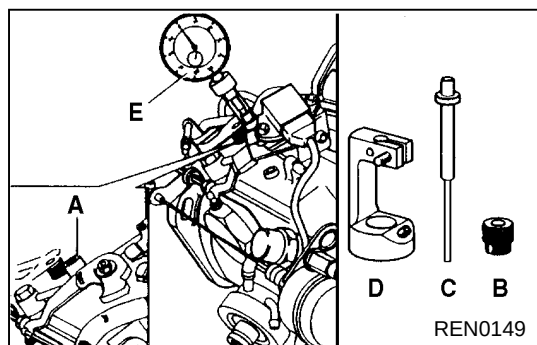


4. Insert Hexagon socket spanner MB996036 in the nut assembly. Loosen nut assembly (approx. 1/4 of turn **clock-wise**) until it is possible to move the flange 2.
5. Remove sprocket stopper MB996043.



6. Fit sprocket adaptor MB996037 in the three holes of the flange. Turn the tool with the flange until the jaws of the tool engage the three internal recesses of the sprocket.
7. Turn the tool by hand with the flange clockwise until the stop. Remove sprocket adaptor MB996037.

8. Turn the crankshaft (clockwise) $1\frac{3}{4}$ revolutions.
9. Remove the plug **A**.
10. Fit measuring device adaptor MB996030:
 - Locate the guide bush **B** in the pump.
 - Slide the measuring pin **C**, which is part of the measuring tool, into the guideway of the pump.
 - Locate and secure the holder **D**.



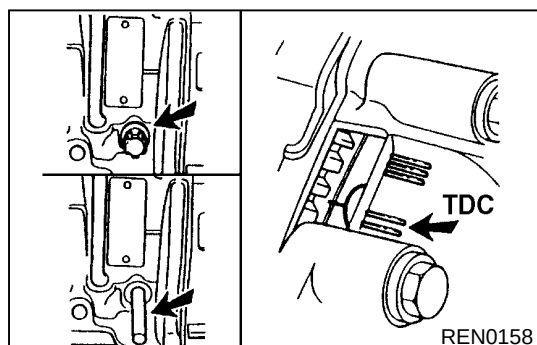
11. Position the clock gauge **E** and make sure that the plunger is pressed in at least 0.2 mm. Secure the clock gauge and set it at zero.

Caution

- If the engine is turned above stroke limit of the clock gauge, it may damage the clock gauge.

NOTE

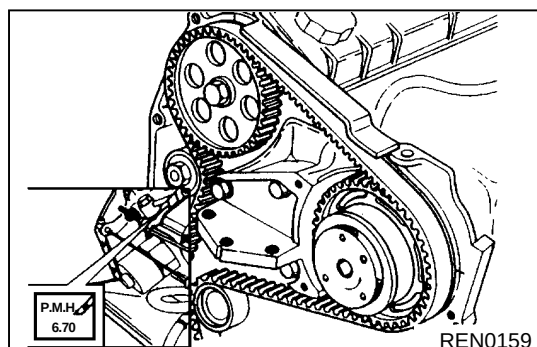
The measuring pin and guide bush can only be supplied and used as a set.



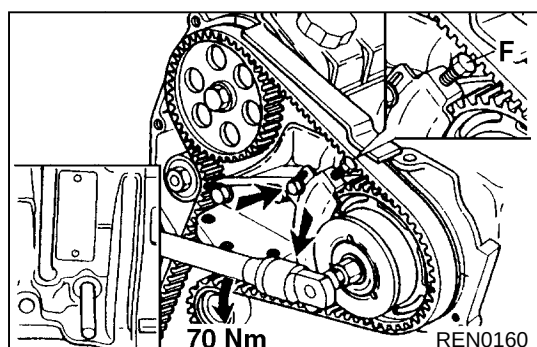
12. Turn the crankshaft **exactly** to TDC (clockwise).

To achieve this:

- Insert an 8 mm diameter locking pin in the hole of torxbolt.
- Apply pressure just before TDC on this pin until it engages the recess in the crankshaft.



13. Now turn the flange with sprocket adaptor MB996037 counterclockwise until the adjustment value is obtained as shown on the pump ± 0.02 mm.



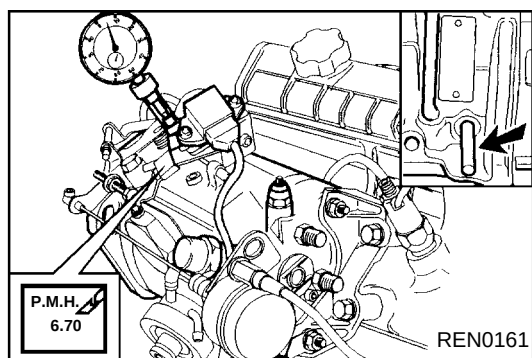
14. Locate sprocket stopper MB996043.

Fix the bracket with the two bolts supplied with the set. Secure the bracket with bolt **F** so that it is free from play

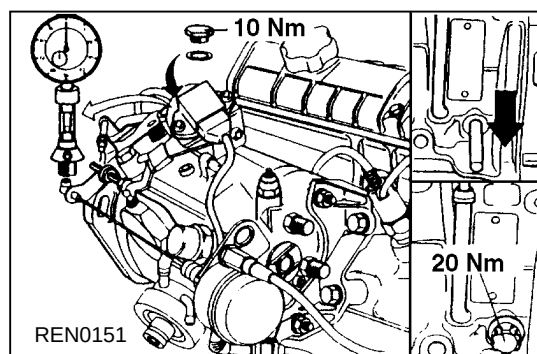
Caution

The pump sprocket must not be displaced (the pointer of the micrometer must not move).

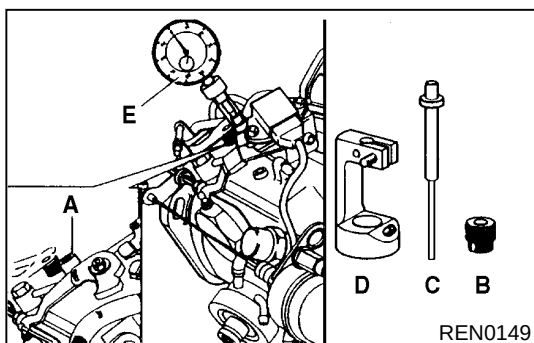
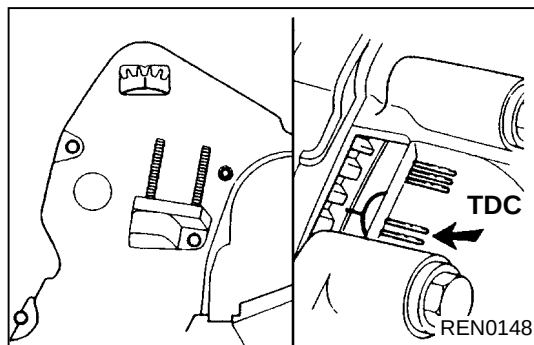
15. Insert Hexagon socket spanner MB996036 in the nut assembly and tighten the assembly steadily (turning counterclockwise) to 70 Nm. Remove sprocket stopper MB996043, the locking pin and clock gauge. Check the injection timing.



17. Turn the crankshaft $1\frac{3}{4}$ revolutions clockwise.
18. Position the clock gauge and make sure that the plunger is pressed in at least 0.2 mm.
Secure the clock gauge and set it at zero.
19. Turn the crankshaft exactly to TDC (clockwise).
to achieve this:
 - Insert an 8 mm diameter locking pin in the hole of torxbolt.
 - Apply pressure just before TDC on this pin until it engages the recess in the crankshaft.
20. Read off the value on the clock gauge.
This value should not differ more the 0.02 mm as the set value shown on the pump control arm.
If the value is not obtained, the pump has to be adjusted



21. Remove measuring device adaptor MB996030 with the clock gauge. Fit the plug with a new O-ring.
22. Tighten the plug to the specified torque.
Specified torque: 10 Nm
23. Remove the locking pin and fit the plug with a new sealing washer.
24. Tighten the plug to the specified torque.
Specified torque: 20 Nm



FUEL INJECTION TIMING CHECK

MEASURING TOOL INSTALLATION

- (1) Turn the crankshaft clockwise so that the piston of No. 1 cylinder (flywheel end) is at TDC, with the following marks in line with each other:
 - flywheel/clutch housing
 - timing belt cover/camshaft sprocket.
- (2) Turn the crankshaft (clockwise) 1 $\frac{3}{4}$ revolutions.
- (3) Remove the plug A.
- (4) Fit measuring device adaptor MB996030:
 - Locate the guide bush B in the pump.
 - Slide the measuring pin C, which is part of the measuring tool, into the guideway of the pump.
 - Locate and secure the holder D.
- (5) Position the clock gauge E and make sure that the plunger is pressed in at least 0.2 mm. Secure the clock gauge and set it at zero.

<Incorrect>

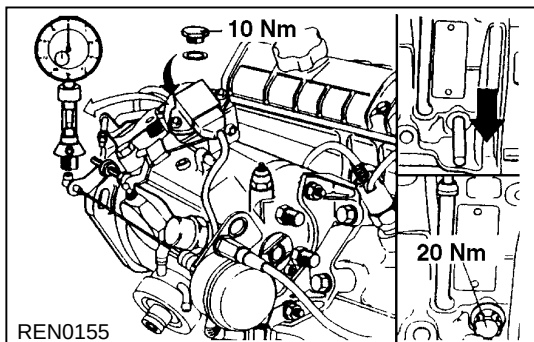
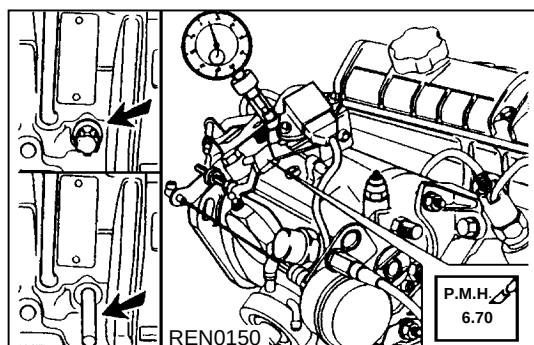
NOTE

~~When turning the engine with the gauge installed you might damage the clock gauge.~~

The measuring pin and guide bush can only be supplied and used as a set.

<Correct>

If the engine is turned above stroke limit of the clock gauge, it may damage the clock gauge.



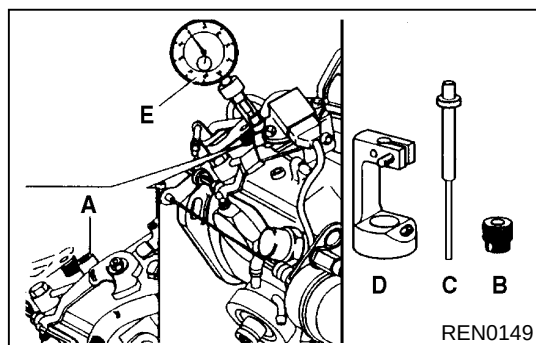
CHECKING THE INJECTION TIMING

- (1) Turn the crankshaft **exactly** to TDC (clockwise).
To achieve this:
 - Insert an 8 mm diameter locking pin in the hole of torxbolt.
 - Apply pressure just before TDC on this pin until it engages the recess in the crankshaft.
- (2) Read off the value on the clock gauge.
This value should not differ more the 0.02 mm as the set value shown on the pump control arm.
If the value is not obtained, the pump has to be adjusted

MEASURING TOOL REMOVAL

- (1) Remove measuring device adaptor MB996030 with the clock gauge. Fit the plug with a new O-ring. Tighten the plug to the 10 Nm.
Remove the locking pin and fit the torxbolt with a new sealing washer.
Tighten the plug to 20 Nm.

- (5) Turn the crankshaft (clockwise) $1\frac{3}{4}$ revolutions
- (6) Remove the plug **A**.
- (7) Fit the measuring device adaptor MB996030.
 - Locate the guide bush **B** in the pump.
 - Slide the measuring pin **C**, which is part of the measuring tool, into the guideway of the pump.
 - Locate and secure the holder **D**.



- (8) Position the clock gauge **E** and make sure that the plunger is pressed in at least 0.2 mm. Secure the clock gauge and set it at zero.

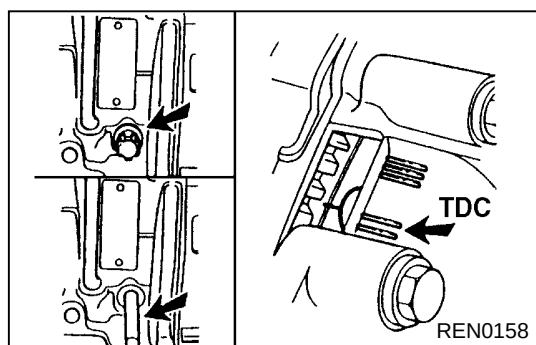
Caution

<Incorrect>

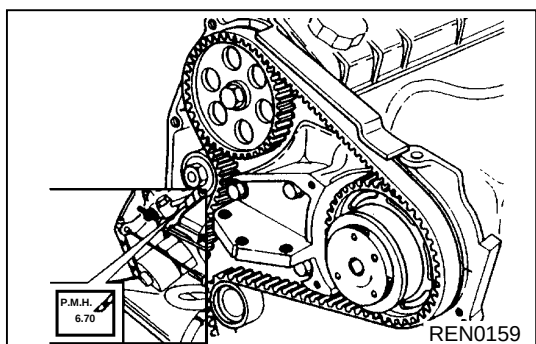
- ~~When turning the engine with the gauge installed you might damage the clock gauge.~~

NOTE

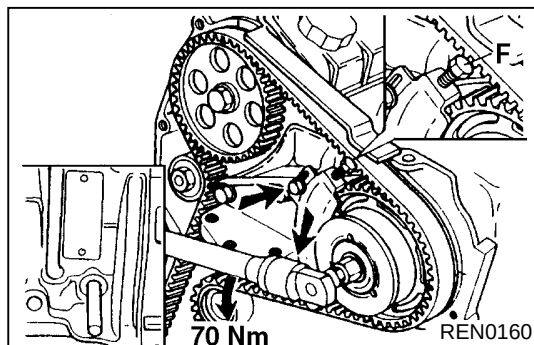
The measuring pin and guide bush can only be supplied and used as a set



- (9) Turn the crankshaft exactly to TDC (clockwise). To achieve this:
 - Insert an 8 mm diameter locking pin in the hole of torxbolt.
 - Apply pressure just before TDC on this pin until it engages the recess in the crankshaft.



- (10) Now turn the flange with sprocket adaptor MB996037 counterclockwise until the adjustment value is obtained as shown on the pump ± 0.02 mm.



- (11) Locate sprocket stopper MB996043
Fix the bracket with the two bolts supplied with the set.
Secure the bracket with bolt F so that it is free from play.

Caution

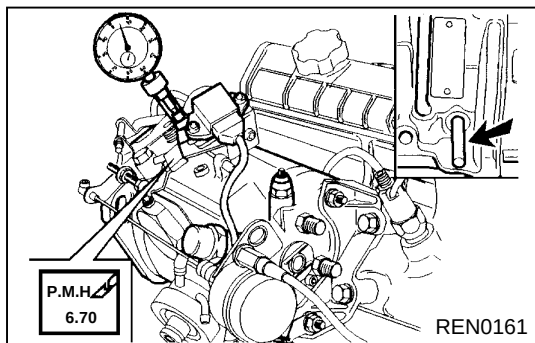
The Pump sprocket must not be displaced (the pointer of the micrometer must not move).

- (12) Insert Hexagon socket spanner MB996036 in the nut assembly and tighten the assembly steadily (turning counter-clockwise) to 70 Nm.
Remove sprocket stopper MB996043, the locking pin and clock gauge.
Check the injection timing.

<Added>

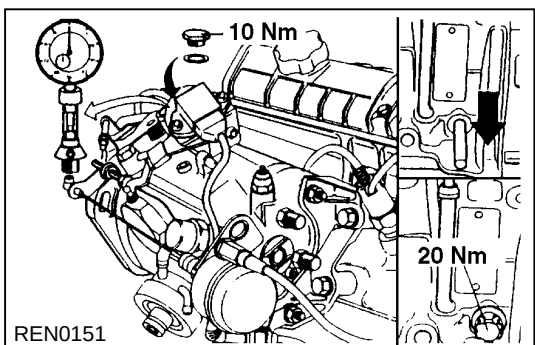
NOTE

If the engine is turned above stroke limit of the clock gauge, it may damage the clock gauge



CHECKING THE INJECTION TIMING

- (1) Turn the crankshaft $1\frac{3}{4}$ revolutions clockwise.
- (2) Position the clock gauge and make sure that the plunger is pressed in at least 0.2 mm.
Secure the clock gauge and set it at zero.
- (3) Turn the crankshaft **exactly** to TDC (clockwise).
To achieve this:
 - Insert an 8 mm diameter locking pin in the hole of torxbolt.
 - Apply pressure just before TDC on this pin until it engages the recess in the crankshaft.
- (4) Read off the value on the clock gauge.
This value should not differ more the 0.02 mm as the set value shown on the pump control arm.
If the value is not obtained, the pump has to be adjusted



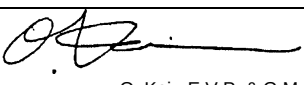
MEASURING TOOL REMOVAL

- (1) Remove measuring device adaptor MB996030 with the clock gauge. Fit the plug with a new O-ring.
Tighten the plug to the 10 Nm.
Remove the locking pin and fit the torxbolt with a new sealing washer.
Tighten the plug to 20 Nm.



SERVICE BULLETIN

PUBLICATION GROUP, AFTER SALES SERVICE DEP.
MITSUBISHI MOTOR SALES EUROPE BV

SERVICE BULLETIN		No.: ESB-97E13-002	
		Date: 1998-02-28	<Model> (EC,EXP) CARISMA
Subject: CORRECTION TO ENGINE CONTROL SYSTEM DESCRIPTIONS		<M/Y> 97-10	
Group: FUEL			
INFORMATION		 O. Kai - E.V.P. & G.M. After Sales Service Dept.	

1. Description:

This Service Bulletin informs you of correction to the CARISMA GDI engine control system descriptions.

2. Applicable Manuals:

Manual	Pub. No.	Language	Page(s)
'98 CARISMA Workshop Manual chassis	PWDE9502-C	(English)	13J-3, 13J-5,
	PWDS9503-C	(Spanish)	13J-9, 13J-11,
	PWDF9504- C	(French)	13J-28, 13J-37,
	PWDG9505-C	(German)	13J-41, 13J-60
	PWDD9506-C	(Dutch)	13J-63, 13J-69,
	PWDW9507-C	(Swedish)	13J-86
	PWDI96E1-C	(Italian)	

3. Details:

OTHER CONTROL FUNCTIONS

1. Fuel Pump Control
Turn the fuel pump relay ON so that current is supplied to the fuel pump while the engine is cranking or running.
2. A/C Relay Control
Turns the compressor clutch of the A/C ON and OFF.
3. Fan Relay Control
The revolutions of the radiator fan and condenser fan are controlled in response to the engine coolant temperature and vehicle speed.
4. Purge Control Solenoid Valve Control Refer to GROUP 17.
5. EGR Control Servo Control
Refer to GROUP 17.

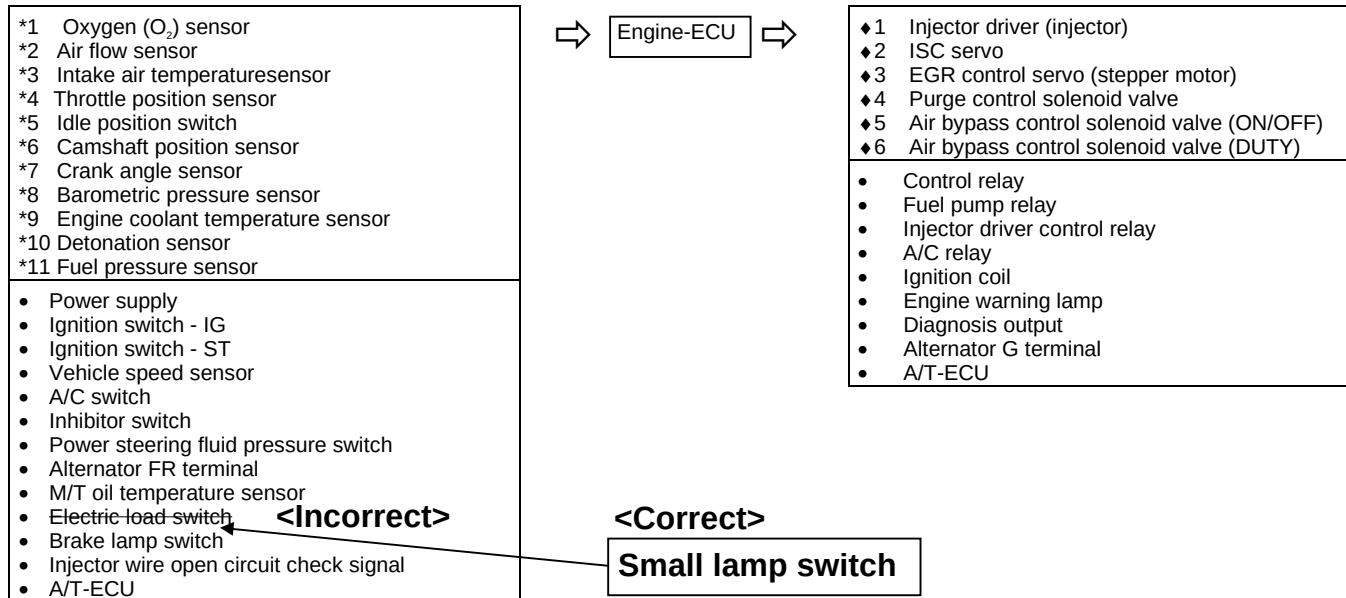
GENERAL SPECIFICATIONS

Items		Specifications
Throttle body	Throttle bore mm	54
	Throttle position sensor	Variable resistor type
	Idle speed control servo	Stepper motor type (Stepper motor type by-pass air control system)
	Idle position switch	Rotary contact type, within throttle position sensor
<Incorrect>		
Engine-ECU	Identification model No.	E2T68374
Sensors	Air flow sensor	Kaman vortex type
	Barometric pressure sensor	Semiconductor type
	Intake air temperature sensor	Thermistor type
	Engine coolant temperature sensor	Thermistor type
	Oxygen sensor	Zirconia type
	Vehicle speed sensor	Magnetic resistive element type
	Inhibitor switch	Contact switch type
	Camshaft position sensor	Hall element type
	Crank angle sensor	Hall element type
	Detonation sensor	Piezoelectric type
	Fuel pressure sensor	Metallic membrane type
	Power steering fluid pressure switch	Contact switch type

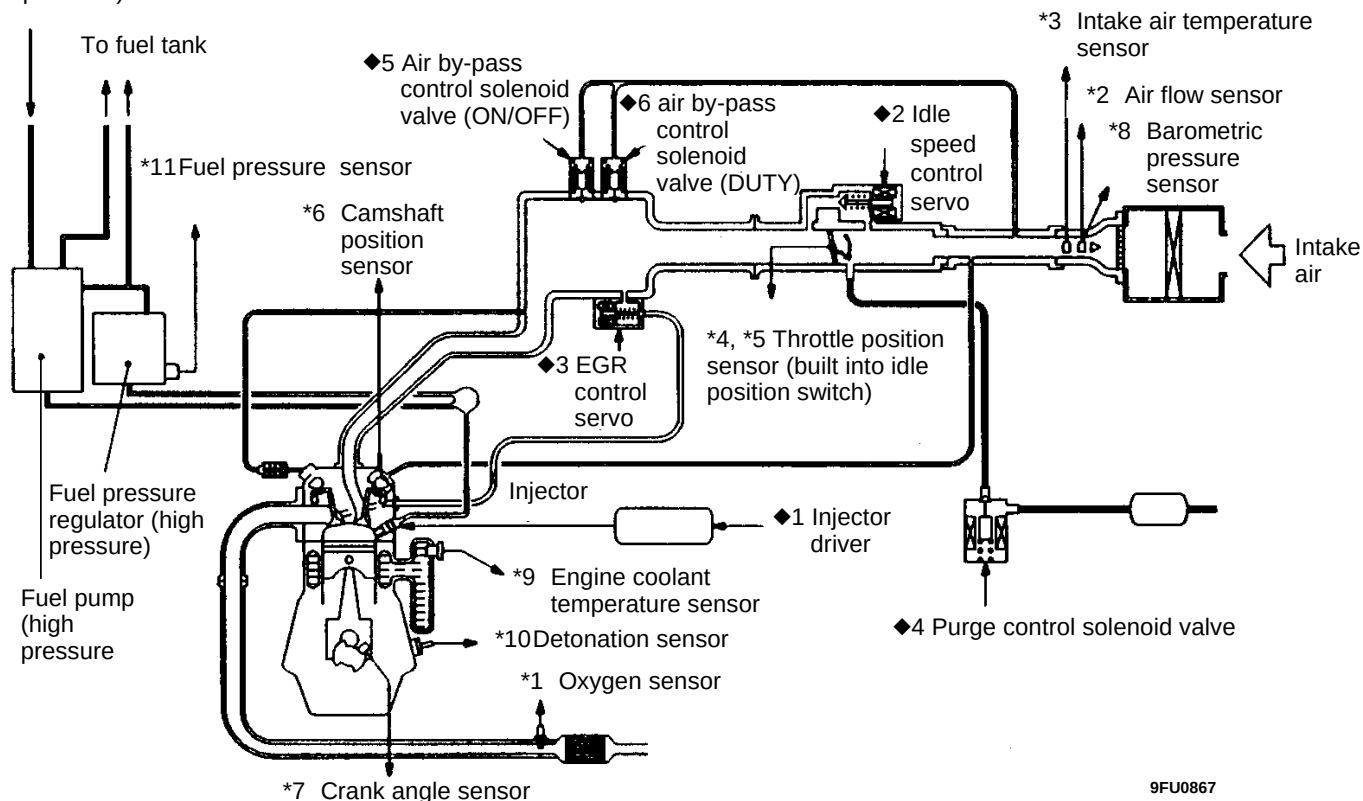
<Correct>

Engine-ECU	Identification model No.	Except cars for Germany	E2T68374 <M/T> E2T68376 <A/T>
		Cars for Germany	E2T68375 <M/T> E2T68377 <A/T>

GASOLINE DIRECT INJECTION SYSTEM DIAGRAM



From fuel pump
(low pressure)



Engine warning lamp Inspection Items

	Engine-ECU
	Oxygen sensor
	Air flow sensor
	Intake air temperature sensor
	Throttle position sensor
	Engine coolant temperature sensor
	Crank angle sensor
	Camshaft position sensor
	barometric pressure sensor
	Detonation sensor
	Injector
	Abnormal combustion
	Immobilizer system
	fuel pressure sensor
	Excessive intake air amount
	Brake vacuum sensor
<Added>	Abnormal fuel system

METHOD OF READING AND ERASING DIAGNOSIS CODES

Refer to GROUP 00 - How to Use Troubleshooting/Inspection Service Points.

INSPECTION USING MUT-II DATA LIST AND ACTUATOR TESTING

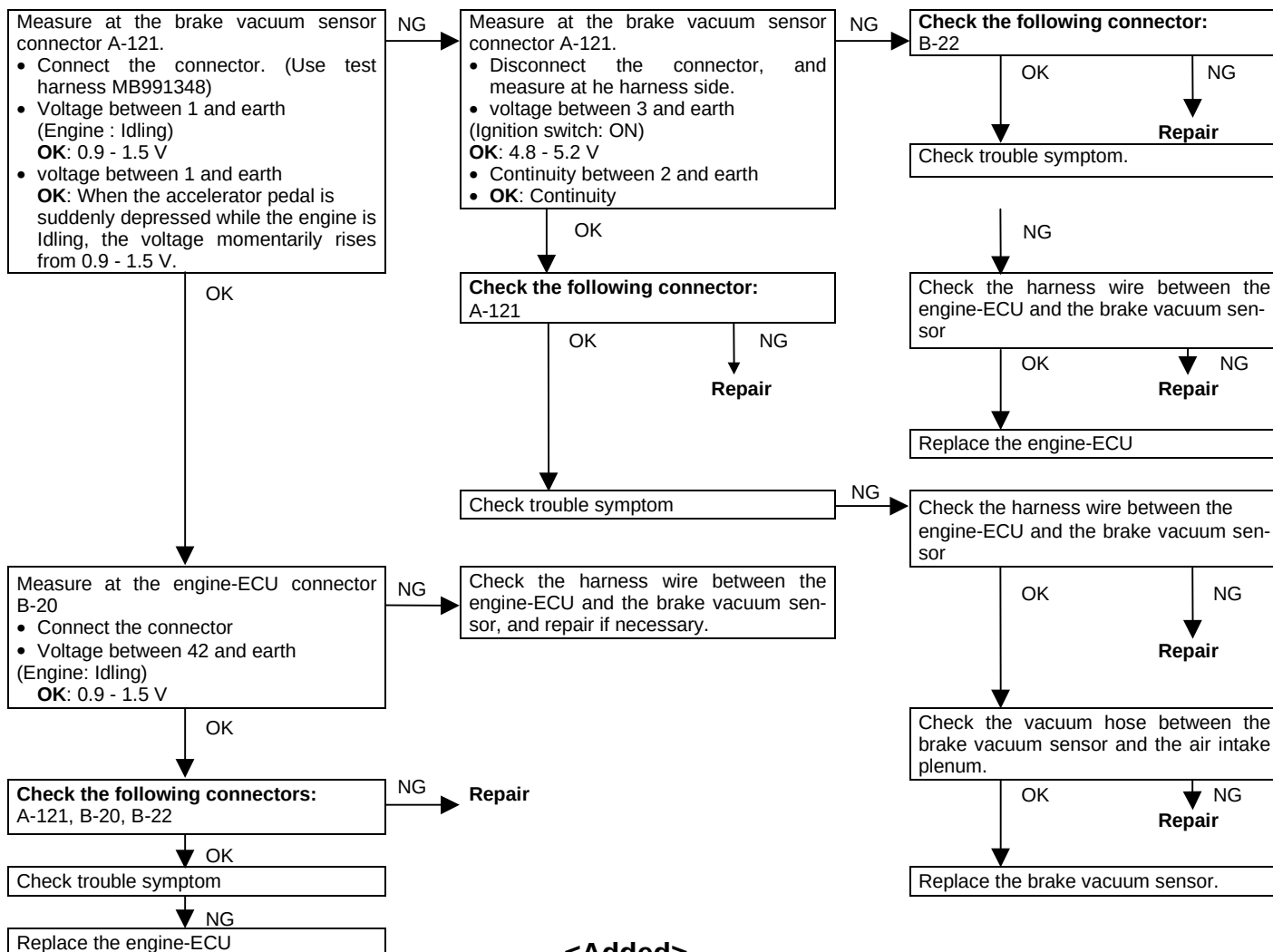
1. Carry out inspection by means of the data list and the actuator test function.
If there is an abnormality, check and repair the chassis harnesses and components.
2. After repairing, re-check using the MUT-II and check that the abnormal input and output have returned to normal as a result of the repairs.
3. Erase the diagnosis code memory.
4. Remove the MUT-II
5. Start the engine again and carry out a road test to confirm that the problem has disappeared.

INSPECTION CHART FOR DIAGNOSIS CODES

Code No.	Diagnosis item	Reference page
11	Oxygen sensor system	13J - 12
12	Air flow sensor system	13J - 13
13	Intake air temperature sensor system	13J - 14
14	Throttle position sensor system	13J - 15
21	Engine coolant temperature sensor system	13J - 16
22	Crank angle sensor system	13J - 17
23	Camshaft position sensor system	13J - 18
24	Vehicle speed sensor system	13J - 19
25	Barometric pressure sensor system	13J - 20
31	Detonation sensor system	13J - 21
41	Injector system	13J - 22
44	abnormal combustion	13J - 23
54	Immobilizer system	13J - 24
56	Fuel pressure sensor system	13J - 25
58	Excessive intake air amount	13J - 26
61	communication wire A/T-ECU system	13J - 26
64	Alternator FR terminal system	13J - 27
66	Brake vacuum sensor system	13J - 28
89	Abnormal fuel system	13J - 28

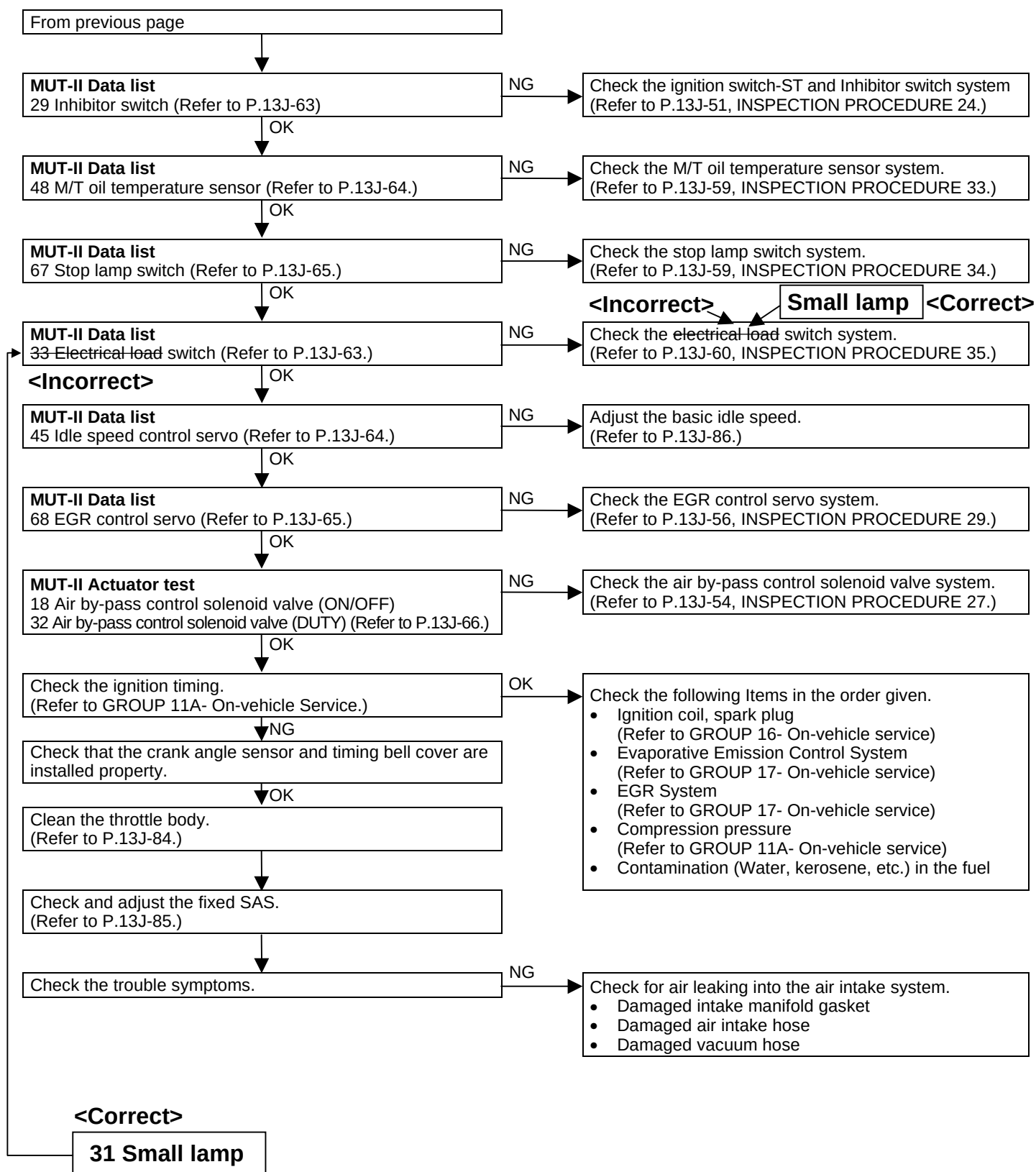
↑
<Added>

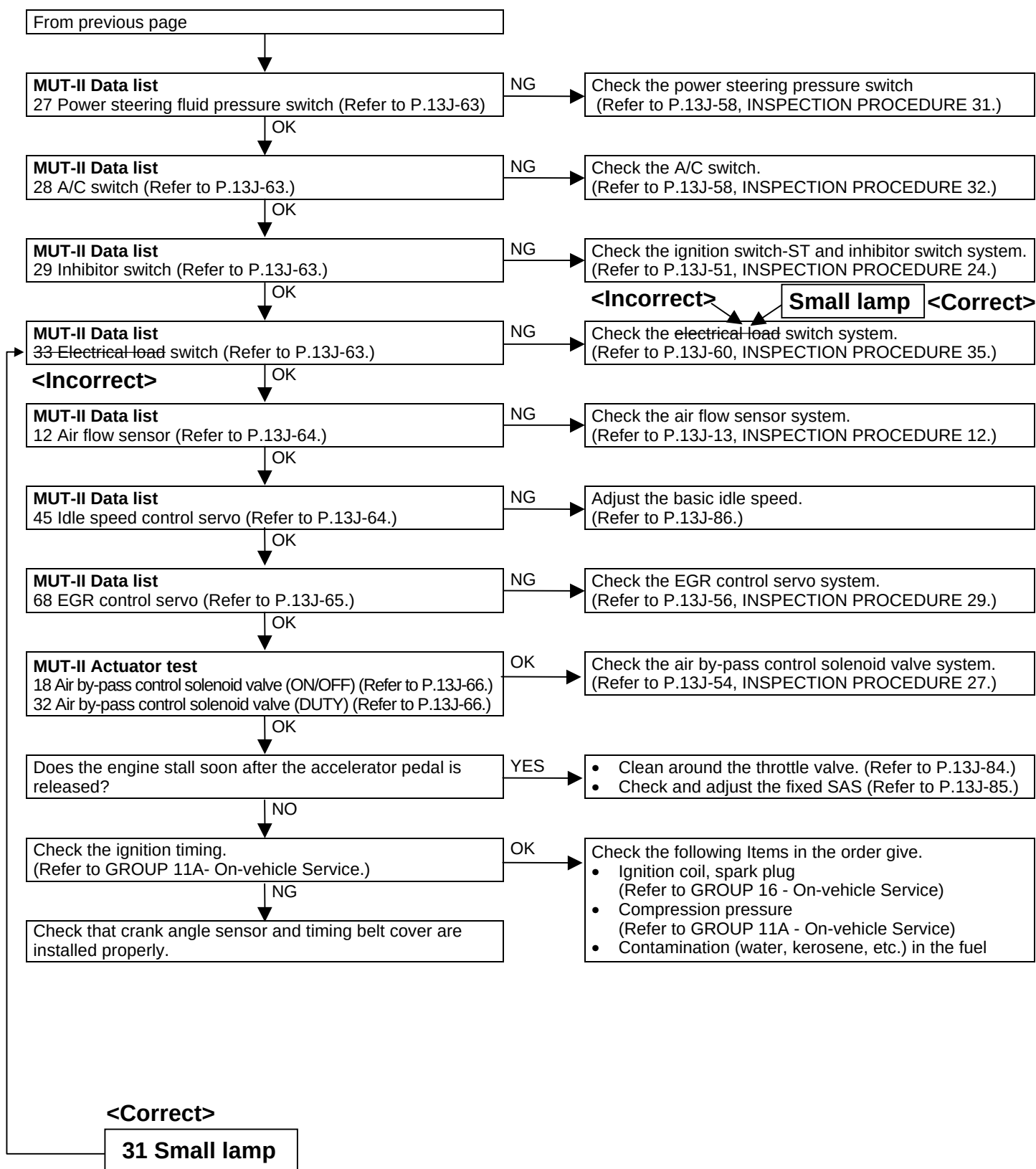
Code No.66 Brake vacuum sensor system	Probable cause
Range of check • Ignition switch: ON Set conditions • Sensor output voltage is 4.8 V or more. or • Sensor output voltage is 0.2 V or less	• Malfunction of the brake vacuum sensor • Improper connector contact, open circuit or short-circuited harness wire of the brake vacuum sensor • Malfunction of the engine-ECU



<Added>

Code No. 89 Abnormal fuel system	Probable cause
Range of check • Engine: When at idle (during stoichiometric feedback operation) Set conditions • 10 seconds or more passed with fuel injection amount correction values in an abnormally low condition. or • 10 Seconds or more passed with fuel injection amount correction values in an abnormally high condition	• Improper fuel pump (high pressure) • Malfunction of the intake air temperature sensor • Malfunction of the barometric pressure sensor • Malfunction of the air flow sensor • Malfunction of the engine-ECU
MUT-II Data list 13 intake air temperature sensor (Refer to P.13J-62.)	NG → Check the intake air temperature sensor system. (Refer to P.13J-14, Code No.13)
MUT-II Data list 25 Barometric pressure sensor (Refer to P.13J-63)	NG → Check the barometric pressure sensor system. (Refer to P.13J-20, Code No.25)
MUT-II Data list 12 Air flow sensor (Refer to P.13J-61.)	NG → Check the air flow sensor system. (Refer to P.13J-13, code No. 12)
Replace fuel pump (high pressure)	





INSPECTION PROCEDURE 35

Small lamp <Correct>

<Incorrect>

Electrical load switch**Probable cause**

During idling, the ON/OFF condition of switches in equipment which have a large electrical load is input to the engine ECU.
The engine ECU controls the idle speed control servo based on this input

- Improper connector contract, open circuit or short-circuited harness wire in the taillamp relay circuit.
- Malfunction of the engine-ECU

<Incorrect>

Measure at the engine-ECU connector B-20

- Disconnect the connector, and measure at the harness side.

- Voltage between 52 and earth

(Lighting switch: ON)

OK: System voltage

NG

Check the taillamp relay circuit. (Refer to ELECTRICAL WIRING.)

OK

Check the following connector: B-20

NG

Repair

OK

Check the trouble symptoms.

NG

Replace the engine-ECU

The ON/OFF condition of the small lamp switch is input to the engine ECU.

The engine ECU controls power generation at time of drive-away based on this input.

<Correct>

Item No.	Inspection item	Inspection contents		Normal condition	Inspection procedure No.	Reference page
22	Crank angle sensor	- Engine: Cranking - Tachometer: Connected	Compare the engine speed readings on the tachometer and the MUT-II	Accord	Code No. 22	13J-17
		- Engine: Idling - Idle position switch: ON	When engine coolant temperature is -20°C	1,300 - 1,500 rpm		
			When engine coolant temperature is 0°C	1,150 - 1,250 rpm		
			When engine coolant temperature is 20°C	1,000 - 1,200 rpm		
			When engine coolant temperature is 40°C	750 - 950 rpm		
			When engine coolant temperature is 80°C	550 - 850 rpm		
25	Barometric pressure sensor	Ignition switch: ON	At altitude of 0 m	101 kPa	Code No. 25	13J-20
			At altitude of 600 m	95 kPa		
			At altitude of 1,200 m	88 kPa		
			At altitude of 1,800 m	81 kPa		
26	Idle position switch	Ignition switch: ON check by operating accelerator pedal repeatedly	Throttle valve: Set to idle position	ON	Procedure No.25	13J-52
			Throttle valve: Slightly open	OFF* ²		
27	Power steering fluid pressure switch	Engine: Idling	Steering wheel stationary	OFF	Procedure No.31	13J-58
			Steering wheel turning	ON		
28	A/C switch	Engine: Idling (when A/C switch is ON, A/C compressor should be operating.)	A/C switch: OFF	OFF	Procedure No.32	13J-58
			A/C switch: ON	ON		
29	Inhibitor switch <A/T>	Ignition switch: ON	P or N	P or N	Procedure No. 24	13J-51
			D, 2, L or R	D, 2, L or R		
33	Electrical load switch	All accessories : OFF	Lighting switch only: OFF → ON	OFF → ON	Procedure No.35	13J-60

<Incorrect>

31 <Correct>

Small lamp

<Correct>

Item No.	Inspection item	Inspection contents		Normal condition	Inspection procedure No.	Reference page
34	Air flow sensor reset signal	Engine: After having warmed up	engine is idling	ON	Code No. 12	13J-13
			3,000 r/min	OFF		
37	Volumetric efficiency	- Engine coolant temperature: 80-95°C - Lights, electric cooling fan and accessories: OFF - Transmission: Neutral (A/T: P range)	Engine is idling	15 - 35%	-	-
			2,500 r/min	15 - 35%		
			Engine is suddenly raced	volumetric efficiency increases in response to racing		
38	Crank angle sensor	- Engine: Cranking [reading is possible at 2,000 r/min or less] - Tachometer: Connected	Engine speeds displayed on the MUT-II and tachometer are identical.		-	-

<Added>

Terminal No.	Check item	Check condition (Engine condition)		Normal condition
36	Engine warning lamp	Ignition switch: OFF → ON		0 - 0.1 V → System voltage (after several seconds have passed)
37	Power steering fluid pressure switch	Steering wheel: Neutral position		System voltage
		Steering wheel: Turned		0 - 0.1 V
38	Control relay	Ignition switch: ON		0 - 1 V
		Ignition switch: OFF		System voltage
42	Brake vacuum sensor	Engine: Accelerator pedal is suddenly depressed while the engine is idling after having warmed up.		Voltage drops slightly
45	A/C switch	Engine: Idling	A/C switch: OFF	0 - 0.1 V
			A/C switch: ON	System voltage
51	Injector open circuit check	Engine Idling		0 ↔ 5 V (changes repeatedly)
52	Electric load switch <Incorrect> ↑ <Correct> Small lamp	Engine Idling	Turn off the lighting switch	0 - 3 V
			Turn on the lighting switch	System voltage
54	Fan motor relay (HI)	Radiator fan is not operating (Engine coolant temperature is 90°C or less)		system voltage
		Radiator fan is operating (Engine coolant temperature is 105°C or more)		0 - 3 V
56	Diagnosis control terminal	-		-
62	Diagnosis output terminal	Ignition switch: ON At normal condition (no diagnosis output)		4 - 5 V
57	Purge control solenoid valve	Ignition switch: ON	Engine: Stopped	System voltage
			Engine: Running at 2,500 r/min after having warmed up	0 - 3 V
58	Tachometer	Engine: Cranking		0 ↔ 5 V (changes repeatedly)
60	Oxygen sensor heater control	Ignition switch: ON	Engine: Stopped	System voltage
			Engine : After starting	0 - 0.5 V
76	Oxygen sensor	Engine: Running at 2,500 r/min after having warmed up		0 ↔ 1 V (changes repeatedly)

BASIC IDLE SPEED ADJUSTMENT

NOTE

- (1) The standard idling speed has been adjusted by the speed adjusting screw (SAS) by the manufacturer, and there should usually be no need for readjustment.
- (2) If the adjustment has been changed by mistake, the idle speed may become too high or the idle speed may drop too low when loads from components such as the A/C are placed on the engine. If this occurs, adjust by the following procedure.
- (3) The adjustment, if made, should be made after first confirming that the spark plugs, the injectors, the idle speed control servo, the compression pressure, etc., are all normal.

1. Before inspection and adjustment, set the vehicle to the pre-inspection condition.
2. Connect the MUT-II to the diagnosis connector (16-pin).

NOTE

When the MUT-II is connected, the diagnosis control terminal should be earthed.

3. Start the engine and run at idle.
4. Select the item No.30 of the MUT-II Actuator test.

NOTE

This holds the ISC servo at the basic step to adjust the basic idle speed.

5. Check the idle speed.

Standard value:

750 ± 50 r/min

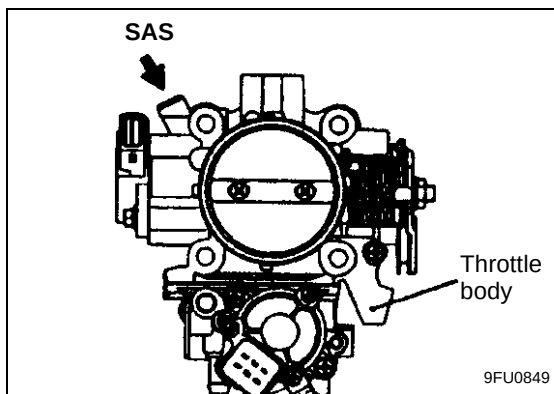
NOTE

- (1) The engine speed may be 20 to 100 r/min lower than indicated above for a new vehicle [driven approximately 500 km or less], but no adjustment is necessary.
- (2) If the engine stalls or the engine speed is low even though the vehicle has been driven approximately 500 km or more, it is probable that deposits are adhered to the throttle valve, so clean it. (Refer to P.13J-84.)

6. If not within the standard value range, turn the speed adjusting screw (SAS) to make the necessary adjustment.

NOTE <Incorrect>

If the idling speed is higher than the standard value range even when the SAS is fully closed, check whether or not there is any indication that the fixed SAS has been moved. If there is an indication that it has been moved, adjust the fixed SAS.



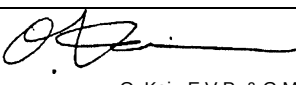
<Correct>

- (1) When the SAS is turned for adjustment, use a screwdriver 30 mm or less in overall height.
- (2) If the idling speed is higher than the standard value range even when the SAS is fully closed, check whether or not there is any indication that the fixed SAS has been moved. If there is an indication that it has been moved, adjust the fixed SAS.



SERVICE BULLETIN

SERVICE GROUP, WARRANTY & SERVICE DEP.
MITSUBISHI MOTOR SALES EUROPE BV

SERVICE BULLETIN		No.: ESB-97E13-501	
		Date: 1997-XX-XX	<Model> (EC, EXP) CARISMA
Subject: CHANGES IN VEHICLE SPEED SENSOR AND IN ENGINE-ECU TERMINAL VOLTAGE		<M/Y> 97-10	
Group: FUEL			
CORRECTION		 O. Kai - E.V.P. & G.M. After Sales Service Dept.	

1. Description:

The interface circuit for the vehicle speed detection reed switch (vehicle speed sensor) in the engine-ECU has been changed. Accordingly, the vehicle speed sensor normal condition has been changed in inspection of the engine-ECU terminal voltage.

NOTE:

With the above change, the part number of the engine-ECU has been changed from MD341682 to MD345712.

2. Effective Period:

From the end of September 1996

3. Interchangeability:

The new engine-ECU is used for both the old and new cars.

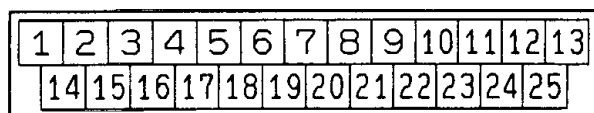
4. Applicable Manuals:

Manual	Pub. No.	Language	Page(s)	Engine Model
'97 CARISMA Workshop Manual chassis (SUPPLEMENT)	PWDE9502-A	(English)	13E-51	F8QT
	PWDS9503-A	(Spanish)		
	PWDF9504-A	(French)		
	PWDG9505-A	(German)		
	PWDD9506-A	(Dutch)		
	PWDW9507-A	(Swedish)		
	PWDI96E1-A	(Italian)		

5. Details:

Please refer to the attached page

Engine-ECU Connector Terminal Arrangement



RFU0003

Caution

Do not measure the terminal voltages of the needle lift sensor and crank angle sensor, as this may cause damage to the engine-ECU.

NOTE

*¹: Varies depending on the engine coolant temperature and altitude when the engine is started.

Terminal No.	Check item	Check condition (Engine condition)		Normal condition
2	Vehicle speed sensor	- Ignition switch: ON - Move the vehicle slowly forward		0 ↔ Approx 12 V (Change repeatedly)
3	A/C switch	Engine: idle speed	Turn the A/C switch: OFF	0 - 3 V
			Turn the A/C switch: ON (A/C compressor is operating)	System voltage
5	Glow indicator lamp	- Engine coolant temperature: 60 °C or less - Ignition switch: OFF → ON		0 - 3 V → System voltage (after 2 - 20 seconds have passed) * ¹
8	Timing control solenoid valve	Ignition switch: ON		System voltage
		Engine: Idle speed		8 - 12
9	EGR solenoid valve	Ignition switch: ON		System voltage
		Engine: Started, idle speed		From system voltage, drops after approx. 3 seconds have passed
10	Lever position sensor power supply	Ignition switch: ON		4.5 - 5.5 V
13	Power supply	Ignition switch: ON		System voltage
14	Engine coolant temperature sensor	Ignition switch: ON	Engine coolant temperature: 20 °C or less	3.6 - 4.2 V
			Engine coolant temperature: 80 °C or less	0.9 - 1.5 V
15	Intake air temperature sensor	Ignition switch: ON	Intake air temperature: 20 °C	3.6 - 4.2 V
			Intake air temperature: 80 °C	0.9 - 1.5 V

<New>

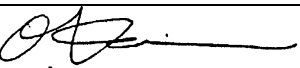
From the end of September 1996

0 ↔ 4-8 V
(Change repeatedly)



SERVICE BULLETIN

PUBLICATION GROUP, AFTER SALES SERVICE DEP.
MITSUBISHI MOTOR SALES EUROPE BV

SERVICE BULLETIN		No.: ESB-97E13-506		
		Date: 1998-03-31	<Model>	<M/Y>
Subject:	CORRECTION TO TIGHTENING TORQUES OF FUEL TANK BAND NUTS		(EC,EXP) CARISMA	97-10
Group:	FUEL			
CORRECTION		 O. Kai - E.V.P. & G.M. After Sales Service Dept.		

1. Description:

This Service Bulletin informs you of correction to tightening torques of the fuel tank band nuts.

2. Applicable Manuals:

Manual	Pub. No.	Language	Page(s)
'96 CARISMA Workshop Manual chassis	PWDE9502	(English)	13F-2, 3
	PWDS9503	(Spanish)	
	PWDF9504	(French)	
	PWDG9505	(German)	
	PWDD9506	(Dutch)	
	PWDW9507	(Swedish)	
	PWDI96E1	(Italian)	
'97 CARISMA Workshop Manual chassis	PWDE9502-A	(English)	13F-1, 2
	PWDS9503-A	(Spanish)	
	PWDF9504-A	(French)	
	PWDG9505-A	(German)	
	PWDD9506-A	(Dutch)	
	PWDW9507A-	(Swedish)	
	PWDI96E1-A	(Italian)	
'98 CARISMA GDI Workshop Manual chassis	PWDE9502-C	(English)	13F-1
	PWDS9503-C	(Spanish)	
	PWDF9504-C	(French)	
	PWDG9505-C	(German)	
	PWDD9506-C	(Dutch)	
	PWDW9507-C	(Swedish)	
	PWDI96E1-C	(Italian)	

3. Details:

EUR '96 CARISMA Workshop Manual Chassis, page 2, 3
EUR '97 CARISMA Workshop Manual Chassis, page 4, 5
EUR '98 CARISMA Workshop Manual Chassis, page 6

FUEL TANK

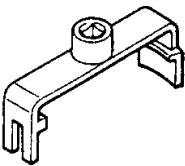
13500010038

GENERAL INFORMATION

- (1) The fuel tank is located under the floor of the rear seats to provide increased safety and a wider luggage space.
- (2) A fuel cut-off valve has been adopted to prevent fuel from leaking out in the event of a collision.
- (3) A plastic fuel tank has been adopted to reduce weight, and improve anti-corrosion effectiveness.

SPECIAL TOOL

13500060026

Tool	Number	Name	Use
	MB996009	Tank cap wrench	Installation of tank cap

<Added>

SEALANTS

Items	Specified sealant	Remarks
Fuel tank	Loctite 222 or 242 or equivalent	—

FUEL TANK

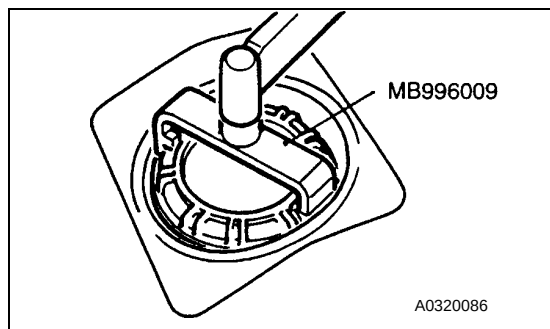
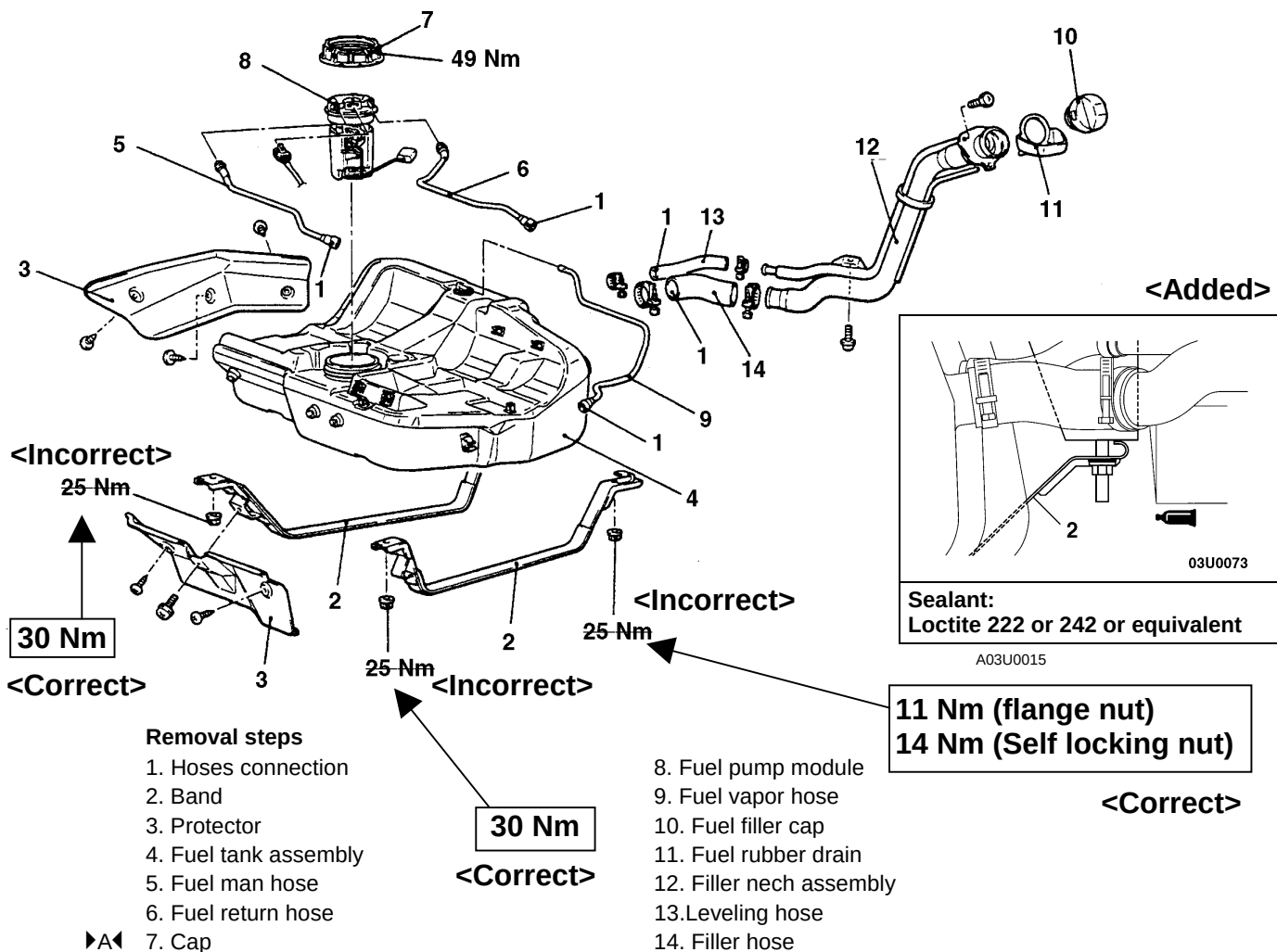
REMOVAL AND INSTALLATION

Pre-removal Operation

- (1) Draining the Fuel
- (2) Reduce the Inner Pressure of Fuel Line and Hose
(Refer to GROUP 13A - On-vehicle Service.)
- (3) Removal of the Center Exhaust Pipe
(Refer to GROUP 15.)

Post-installation Operation

- (1) Installation of Exhaust Pipe (Refer to GROUP 15.)
- (2) Refilling the Fuel
- (3) Checking for Fuel Leaks



INSTALLATION SERVICE POINT

▶ A ◀ CAP INSTALLATION

GROUP 13F

FUEL SUPPLY

GENERAL

OUTLINE OF CHANGES

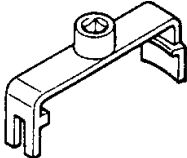
- The following service procedures have been added to the addition of the diesel-powered vehicle.

Applicable models: 1900D

- Removal and installation of the fuel tank
- Removal and installation of the fuel filter

FUEL TANK

SPECIAL TOOL

Tool	Number	Name	Use
	MB996009	Tank cap wrench	Installation of tank cap

<Added>

SEALANTS

Items	Specified sealant	Remarks
Fuel tank	Loctite 222 or 242 or equivalent	—

FUEL TANK

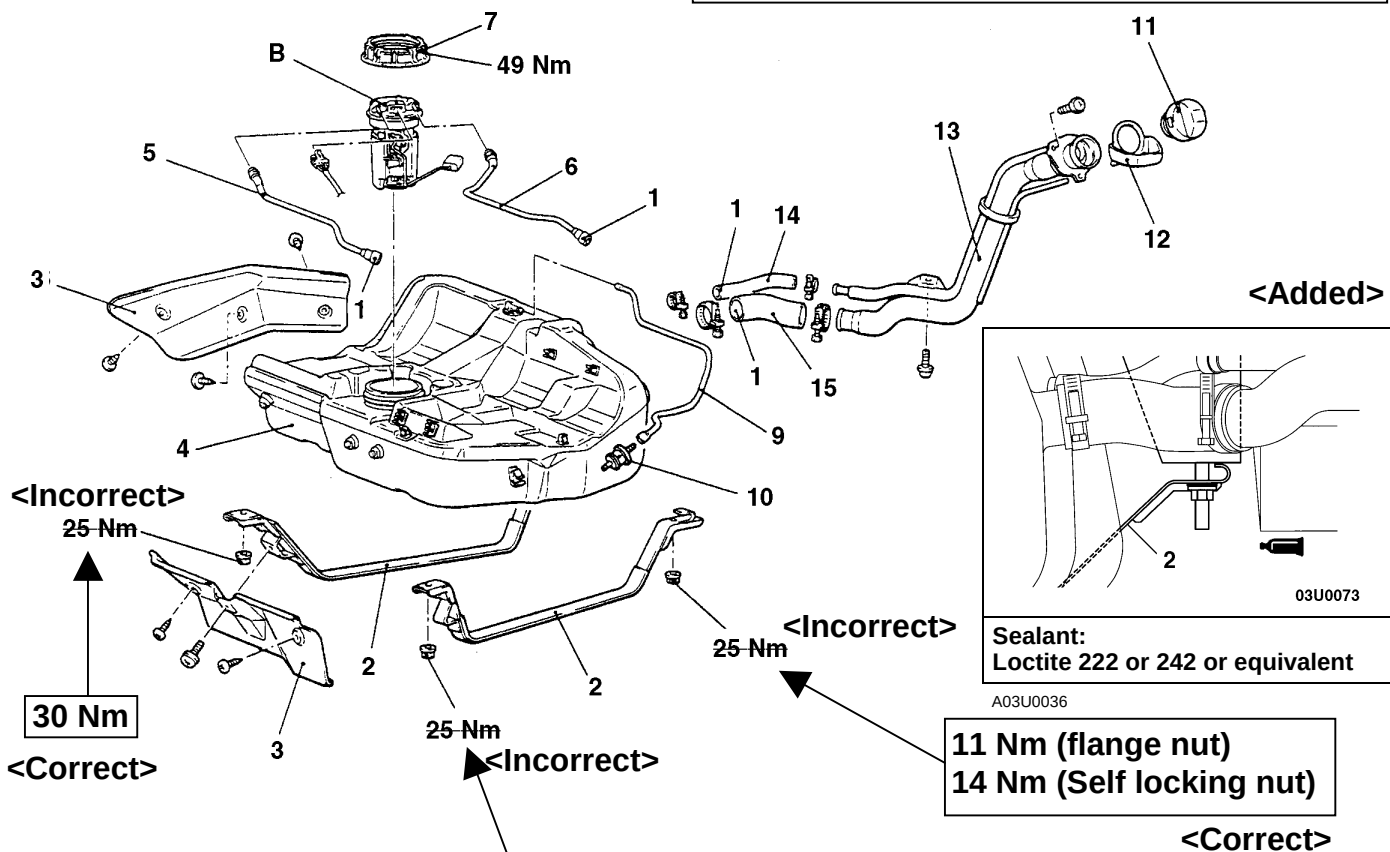
REMOVAL AND INSTALLATION

Pre-removal Operation

- (1) Draining the Fuel
- (2) Removal of the Centre Exhaust Pipe

Post-installation Operation

- (1) Installation of Exhaust Pipe
- (2) Refilling the Fuel
- (3) Checking for Fuel Leaks



Removal steps

1. Hoses connection
2. Band
3. Protector
4. Fuel tank assembly
5. Fuel man hose
6. Fuel return hose
7. Cap

8. Fuel pipe and guage assembly
9. Fuel vapor hose
10. 2 way valve
11. Fuel filler cap
12. Fuel rubber drain
13. Filler neck assembly
14. Filler hose

GROUP 13F FUEL SUPPLY

GENERAL

OUTLINE OF CHANGES

- Maintenance service procedures have been established for items which are different from before to correspond to the following changes.

- Removal and installation of the fuel tank
- Removal and installation of the fuel filler

FUEL TANK

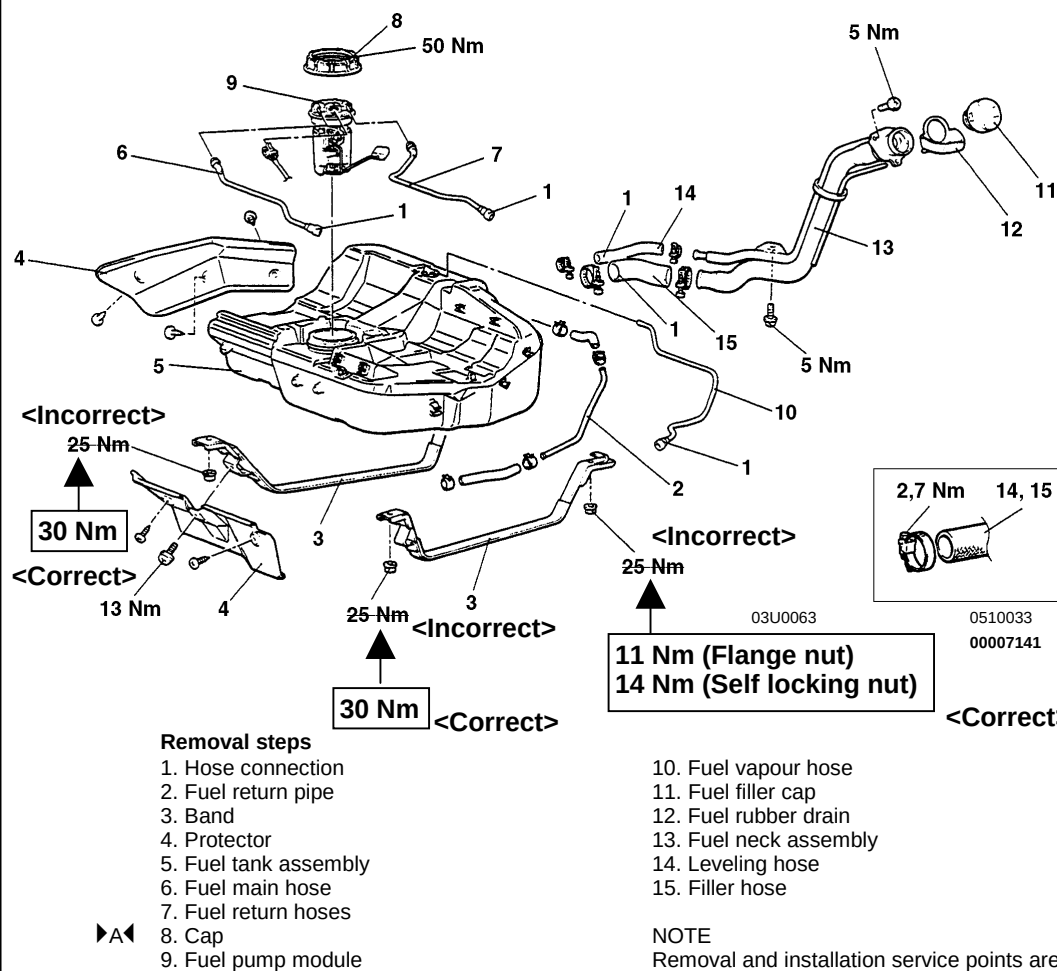
REMOVAL AND INSTALLATION

Pre-removal Operation

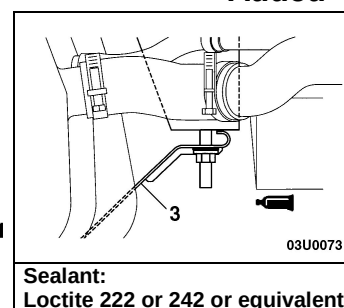
- Draining the Fuel
- Reduce the Inner Pressure of Fuel Line and Hose (Refer to GROUP 13A - On-vehicle Service.)
- Removal of the Center Exhaust Pipe (Refer to GROUP 15.)

Post-installation Operation

- Installation of Exhaust Pipe (Refer to GROUP 15.)
- Refilling the Fuel
- Checking for Fuel Leaks



<Added>



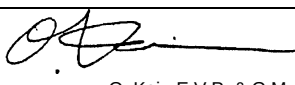
SEALANTS

Items	Specified sealant	Remarks
Fuel tank	Loctite 222 or 242 or equivalent	—



SERVICE BULLETIN

PUBLICATION GROUP, AFTER SALES SERVICE DEP.
MITSUBISHI MOTOR SALES EUROPE BV

SERVICE BULLETIN		No.: ESB-97E17-001	
		Date: 1997-09-26	<Model> (EC,EXP) CARISMA
Subject: CHANGE IN ERASURE OF CRUISE CONTROL SYSTEM DIAGNOSTIC TROUBLE CODES			<M/Y> 96-10
Group: ENGINE AND EMISSION CONTROL			
CORRECTION		 O. Kai - E.V.P. & G.M. After Sales Service Dept.	

1. Description:

Due to change of the cruise control ECU, the battery back-up circuit inside the ECU has been eliminated and the EEP ROM adopted. This resulted in change of the erasing method for diagnostic trouble codes.

2. Applicable Manuals:

Manual	Pub. No.	Language	Page(s)
'96 CARISMA Technical Information Manual	PYGE95E1	(English)	1-36, 1-39
'96 CARISMA Workshop Manual chassis	PWDE9502	(English)	17-6, 17-11,
	PWDS9503	(Spanish)	17-16, 17-17,
	PWDF9504	(French)	17-21
	PWDG9505	(German)	
	PWDD9506	(Dutch)	
	PWDW9507	(Swedish)	
	PWDI96E1	(Italian)	
'96, '97 CARISMA Workshop Manual electrical wiring	PHDE9501-A	(English)	4-180
	PHDS9502-A	(Spanish)	4-178
	PHDF9503-A	(French)	
	PHDG9504-A	(German)	
	PHDD9505-A	(Dutch)	
	PHDW9506-A	(Swedish)	
'96 CARISMA Workshop Manual electrical wiring	PHDI96E1	(Italian)	4-180

3. Interchangeability:

	New ECU	Old ECU
New car	○	▲
Old car	○	○

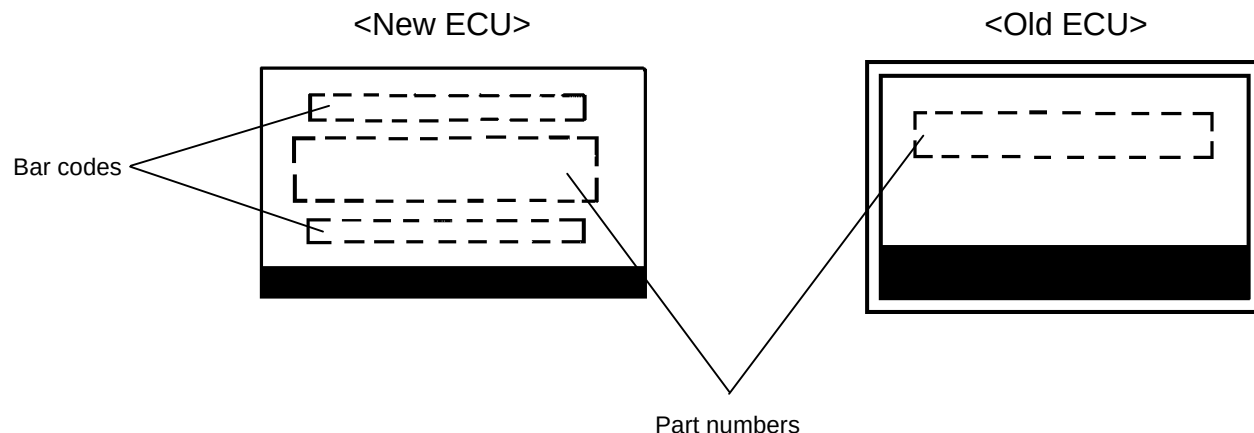
○: Can be installed.

▲: Can be installed if car has a battery back-up wire added on the chassis side harness.

- Differentiation between old and new ECU's

The part numbers of the cruise control ECU's are the same for the old and new ECU's.

Differentiation between the old and new ECU's should be made by reading the label affixed to an ECU.



4. Effective Date:

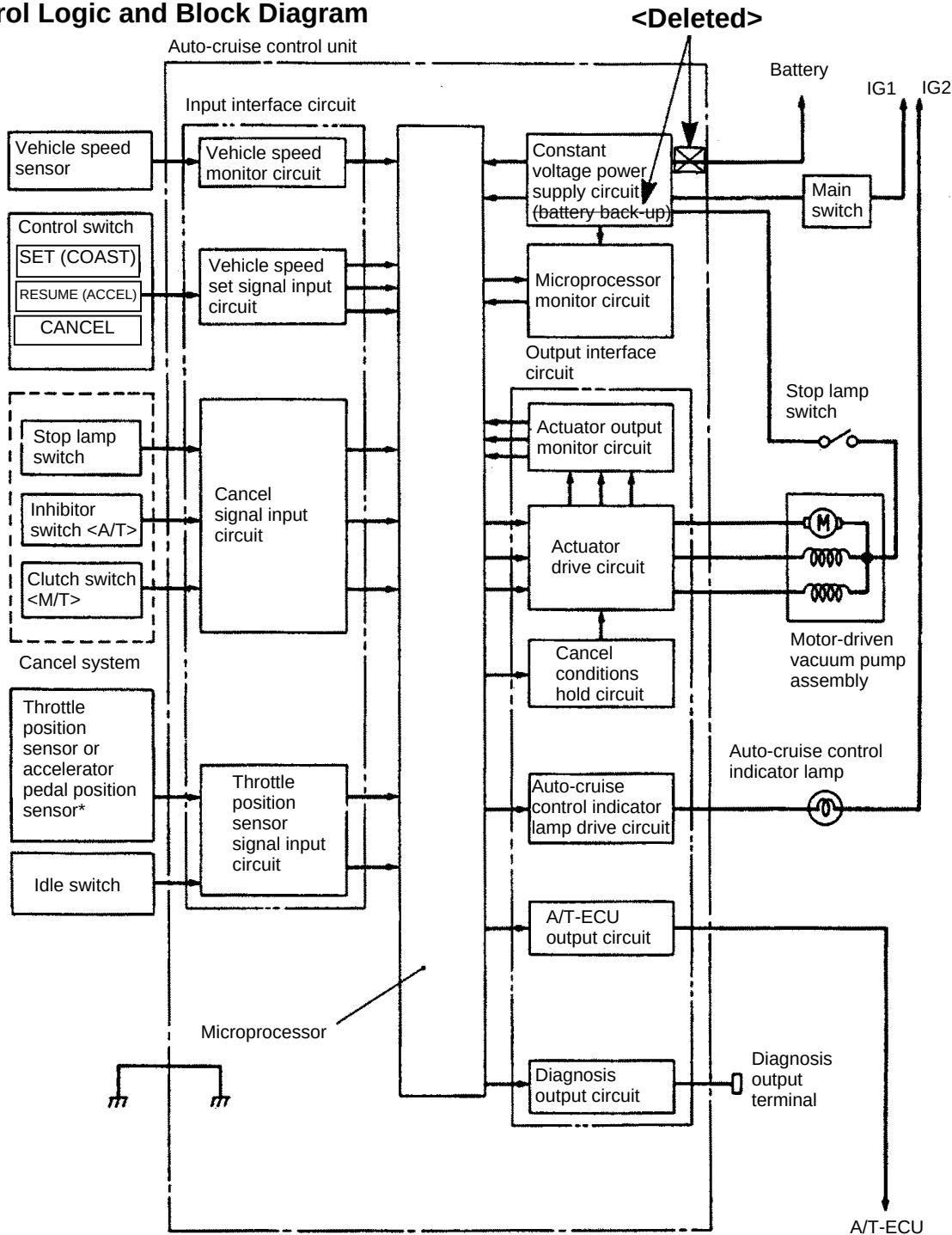
From the middle of March, 1997

AUTO-CRUISE CONTROL UNIT

The control unit consists of the input interface circuit, microprocessor, constant voltage power supply circuit, microprocessor monitor circuit and output interface circuit. Signals from the vehicle speed sensor, TPS (APS*) and each switch are input into the control unit.

It processes them according to the program in the microprocessor memory and outputs control signals to the actuator. It also outputs system self-diagnosis results and conditions of input signals to the diagnosis output terminal.

Control Logic and Block Diagram



NOTE

*: Vehicles with TCL

03U0001

How to erase displayed diagnosis code

The diagnosis code is held until the battery power is shut off. However, it can also be erased with simple operation of the control switch, even without disconnecting the battery.

<Changed>

The diagnostic trouble codes can be erased by a simple operation of the auto cruise control switch. The diagnostic trouble codes are stored in a nonvolatile memory (EEPROM*). Storage of the codes will not be lost even if the battery negative (-) cable is disconnected.

NOTE

*: Electrical Erasable Programmable ROM

Input Check Function

The input check function checks if the input signal is normal when a cruise control failure occurs, including the situation where the cruise control cannot be set.

Output code	Action	Checking contents
21	Turn on the SET switch	SET switch circuit
22	Turn on the RESUME switch	RESUME switch circuit
23	Turn on the stop lamp switch	Stop lamp switch circuit
24	Drive at 40 km/h or more	Vehicle speed sensor circuit is normal if code No.24 is present
25	Drive at under 40 km/h	Vehicle speed sensor circuit is normal if code No.25 is present
26	Turn on the inhibitor switch <A/T> or clutch switch <M/T>	inhibitor switch circuit
27	Turn on the CANCEL switch	CANCEL switch circuit
28	Operate TPS (APS*)	TPS (APS*) circuit
29	Turn off the idle position switch	idle position circuit

NOTE

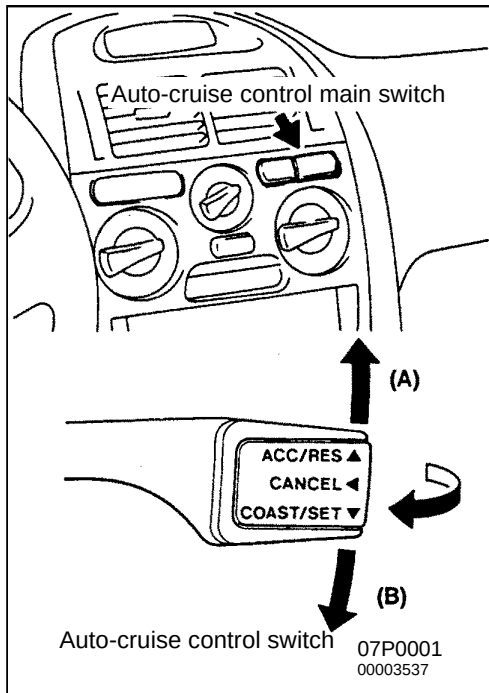
- If two more actions are taken at the same time, codes are output in ascending order of code number.
- *: Vehicles with TCL

TROUBLESHOOTING

17200070042

STANDARD FLOW OF DIAGNOSIS TROUBLESHOOTING

Refer to GROUP 00 - How to Use Troubleshooting/Inspection Service Points.



DIAGNOSIS FUNCTION

METHOD OF READING THE DIAGNOSIS CODES

1. Connect the MUT-II to the diagnosis connector (16-pin) under the instrument under cover. (Refer to GROUP 00 - How to Use Troubleshooting/Inspection Service Points.)
2. With the ignition switch in the ON position, turn the auto-cruise control main switch to ON and take a reading of the diagnosis codes.

METHOD OF ERASING THE DIAGNOSIS CODES

The diagnosis codes can be erased by disconnecting the (-) cable from the battery for 10 seconds or more and then reconnecting it, or by the following procedure.

1. Turn the ignition switch to ON.
2. After pushing the auto-cruise control switch in the direction of arrow (B) in the illustration, press the cruise control main switch to the ON position, and within 1 second after doing this, push the cruise control switch back in the direction of arrow (A).
3. After pushing the auto-cruise control switch once more in the direction of arrow (A) in the illustration and keeping it in this position, press the stop lamp switch to the ON position for 5 seconds or more.

INPUT SWITCH CODE CHECK METHOD

1. Connect the MUT-II to the diagnosis connector (16-pin) under the instrument under cover.
2. Turn the ignition switch to ON.
3. After pushing the auto-cruise control switch in the direction of arrow (B) in the illustration, press the cruise control main switch to the ON position, and within 1 second after doing this, push the cruise control switch back in the direction of arrow (A).
4. Operate each switch listed in the input check table and take a reading of the input switch codes with the MUT-II.

<Changed>

Erase the diagnostic trouble codes by using the following procedure.

NOTE

The diagnostic trouble codes will not be erased even if the battery negative (-) cable is disconnected.

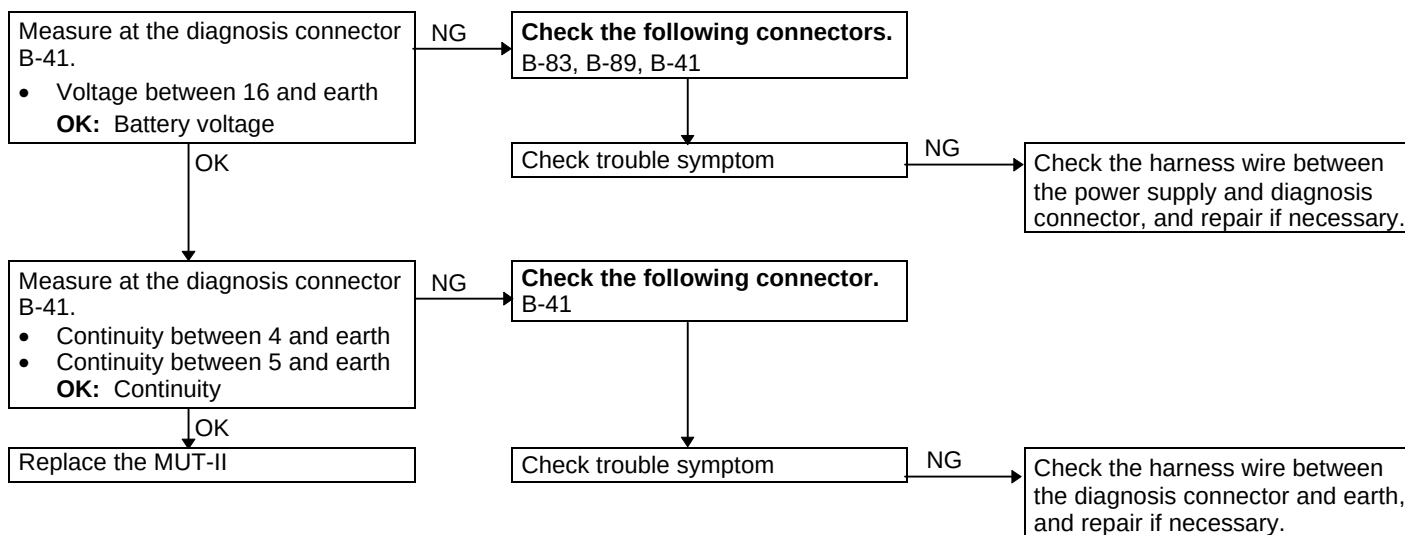
Trouble symptom		Inspection procedure No.	Reference page
Auto-cruise control is not cancelled	Even if brake pedal is depressed	4	17-14
	Even if clutch pedal is depressed	5	17-15
	Even if select lever is set to N range <A/T>	6	17-15
	Even if CANCEL switch is set to ON	7	17-16
The diagnosis result displayed on the MUT-II is normal even though auto-cruise control cannot be set.		8	17-16
Auto-cruise control cannot be set		9	17-17
Hunting (repeated acceleration and deceleration) occurs at the set vehicle speed.		10	17-18
Even though auto-cruise control main switch is ON, switch indicator lamp does not illuminate. (However, auto-cruise control is normal.)		11	17-18
Auto-cruise control main switch illumination lamp does not illuminate.		12	17-19
Auto-cruise control indicator lamp inside combination meter does not illuminate. (However, auto-cruise control is normal.)		13	17-19

<Deleted>

INSPECTION PROCEDURE FOR TROUBLE SYMPTOMS

Inspection Procedure 1

Communication with MUT-I is not possible. (Communication with all system is not possible.)	Probable cause
The reason is probably a defect in the power supply system (including earth) for the diagnosis line.	• Malfunction of the connector • Malfunction of the harness



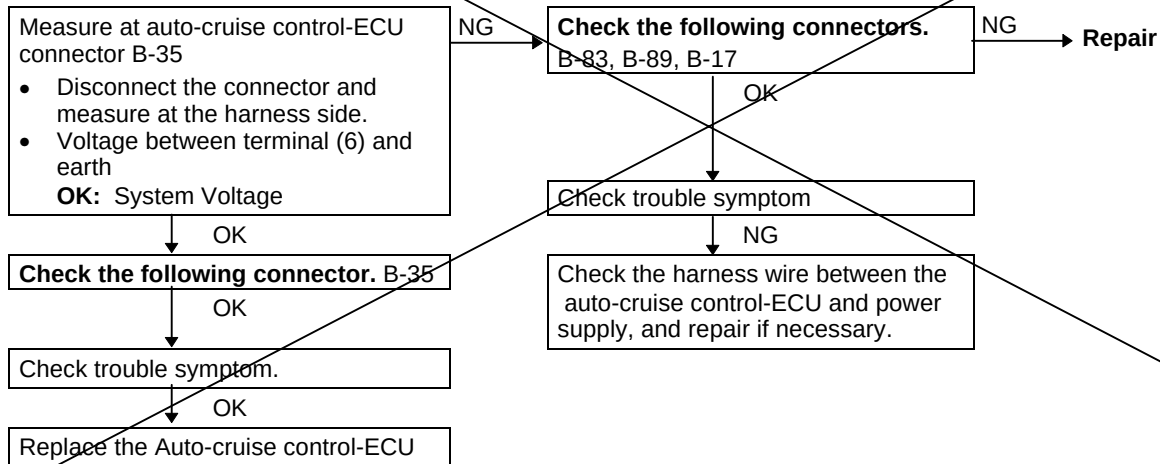
Inspection Procedure 7

Even if auto-cruise control CANCEL switch is set to ON, auto-cruise control is not cancelled.	Probable cause
The cause is probably an open-circuit in the circuit inside the CANCEL switch.	• Malfunction of the auto-cruise control-ECU

Replace the auto-cruise control switch

Inspection Procedure 8

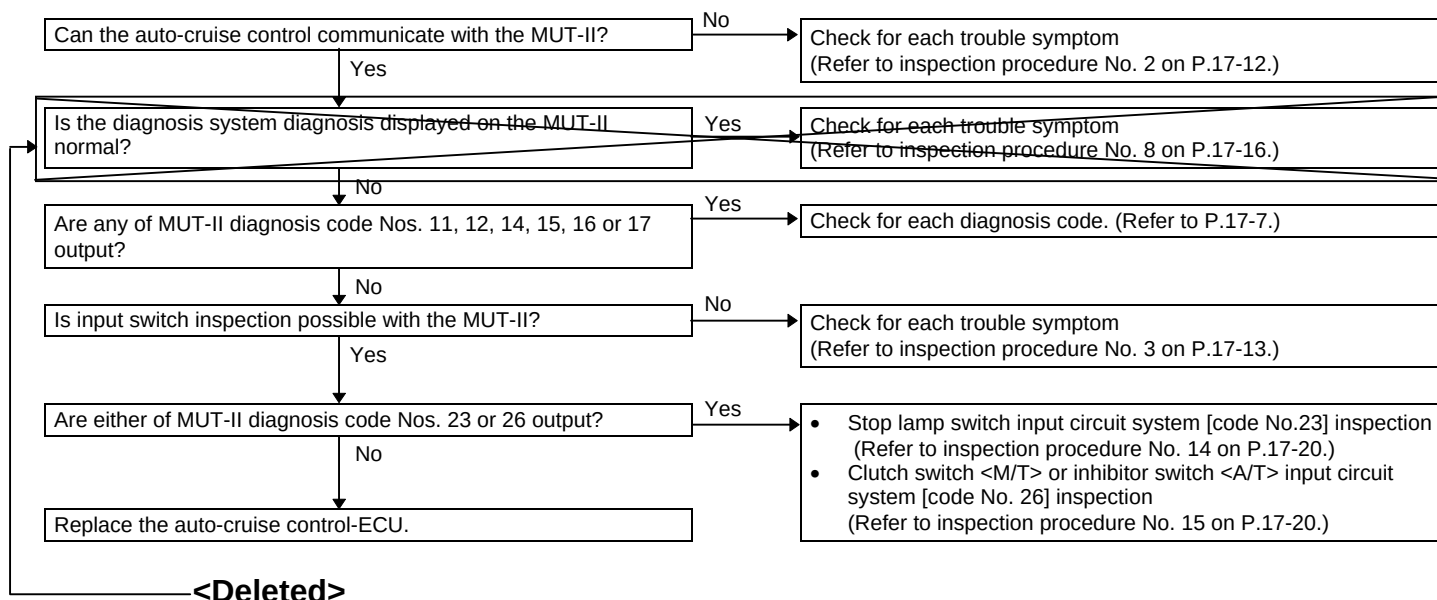
The diagnosis result displayed on the MUT-II is normal even though auto-cruise control cannot be set	Probable cause
Because of an open-circuit in the battery backup circuit system, the fail-safe function prevents diagnosis codes from being memorised and displayed even though auto-cruise control is cancelled	• Malfunction of the connector • Malfunction of the harness • Malfunction of the auto-cruise control-ECU



<Deleted>

Inspection Procedure 9

Auto-cruise control cannot be set	Probable cause
The cause is probably that the fail-safe function is cancelling auto-cruise control. In this case, the MUT-II can be used to check the trouble symptoms in each system by inspecting the diagnosis codes. The MUT-II can also be used to check if the circuits of each input switch are normal or not by inspecting the input switch codes	• Malfunction of the auto-cruise control main switch • Malfunction of the auto-cruise control switch • Malfunction of the slip ring <Vehicles without SRS> • Malfunction of clock spring <Vehicles with SRS> • Malfunction of harnesses or connectors • Malfunction of the clutch switch <M/T> • Malfunction of the auto-cruise control-ECU



CHECK AT THE ECU TERMINALS

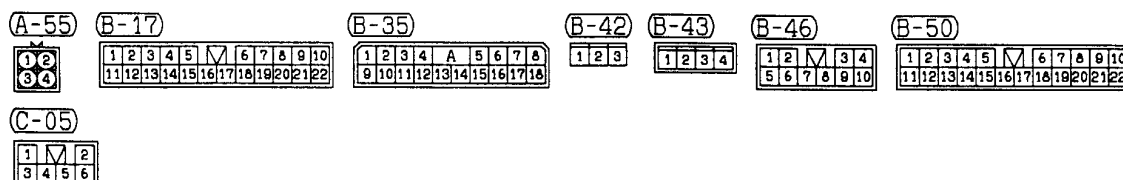
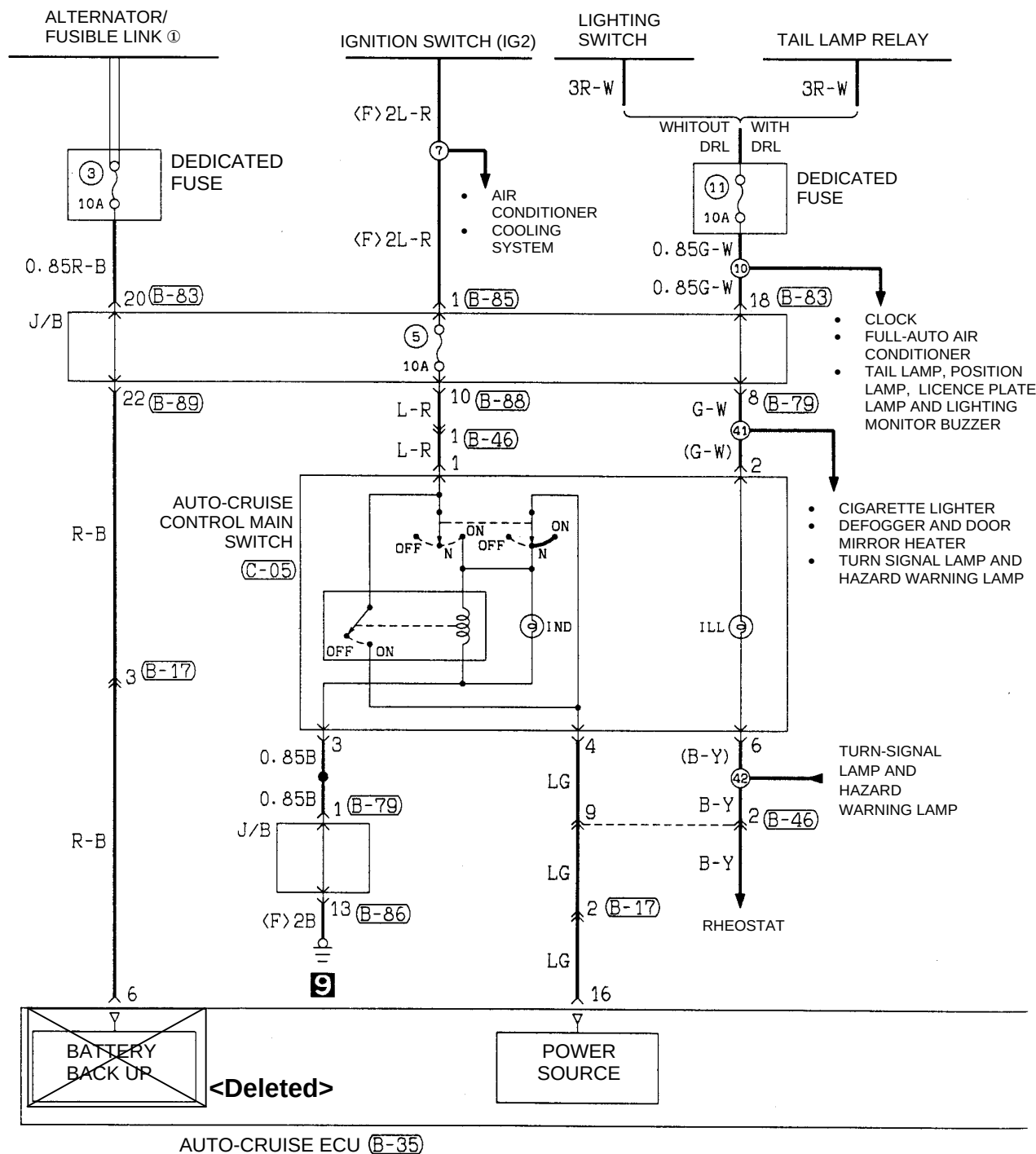
1	2	3	4			5	6	7	8
9	10	11	12	13	14	15	16	17	18

03U0031

Terminal No.	Check item	Check conditions		Normal condition
1	Throttle position sensor input	When accelerator pedal is fully depressed		4.5-5.5V
		when accelerator pedal is released		0.3-1.0V
2	Idle switch output	When accelerator pedal is depressed	When idle switch is OFF	4.5-5.5V
		When accelerator pedal is not depressed	When idle switch is ON	0V
3	Acc power supply	When ignition switch is in ACC position		System voltage
4	Stop lamp switch input	When brake pedal is depressed	When stop lamp switch is ON	System voltage
		When brake pedal is not depressed	When stop lamp switch is OFF	0V
5	diagnosis control input	When ignition switch is ON		4V or more
6	ECU backup power supply	At any time		System voltage
7	Motor-driven vacuum pump release valve and control valve input	When decelerating with the SET switch while driving at constant speed	Release valve closed	0V
8			Control valve open	System voltage
7		When cancelling constant speed driving with the CANCEL switch	Release valve open	System voltage
8			Control valve open	System voltage
9	Earth	At any time		Continuity
10	A/T control output	No OD-OFF request		System voltage
		OD-OFF request		0V

<Deleted>

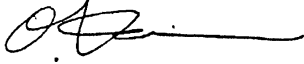
AUTO-CRUISE CONTROL SYSTEM





SERVICE BULLETIN

PUBLICATION GROUP, AFTER SALES SERVICE DEP.
MITSUBISHI MOTOR SALES EUROPE BV

SERVICE BULLETIN		No.: ESB-97E22-502	
		Date: 1999-07-15	<Model> (EC, EXP) CARISMA
Subject: CORRECTION TO TRANSMISSION GEAR RATIOS AND TO TIGHTENING TORQUES		<M/Y> 96-10	
Group: MANUAL TRANSAXLE			
CORRECTION		 O. Kai - E.V.P. & G.M. After Sales Service Dept.	

1. Description:

This Service Bulletin informs you of correction to the transmission gear ratios and to tightening torques of the drain plug and the filler / level plug.

2. Applicable Manuals:

Manual	Pub. No.	Language	Page(s)
TRANSMISSION Workshop Manual	PWEE9508	(English)	22A-1-1,
	PWES9509	(Spanish)	22A-3-1,
	PWEF9510	(French)	22A-3-2a
	PWEG9511	(German)	
	PWED9512	(Dutch)	
	PWEW9513	(Swedish)	
	PWEI9508-b	(Italian)	

3. Details:

1. SPECIFICATIONS

GENERAL SPECIFICATIONS

Items		Specifications	
Model		F5MR1, F5MR2	F5MR3
Type		Manual, 5-speed, front wheel drive	Manual, 5-speed, front wheel drive
Gear ratio	1st	3.363	<Correct>
	2nd	<Incorrect> 2.074 ← 2.047	2.047
	3rd	1.321	<Correct>
	4th	<Incorrect> 0.967 ← 0.966	0.971
	5th	0.795 ← 0.794	0.756
	Reverse	3.550 ← 3.545	<Correct> 3.550 ← 3.545
Final reduction ratio		4.067 ← 4.066	<Incorrect> 3.294 ← 3.437

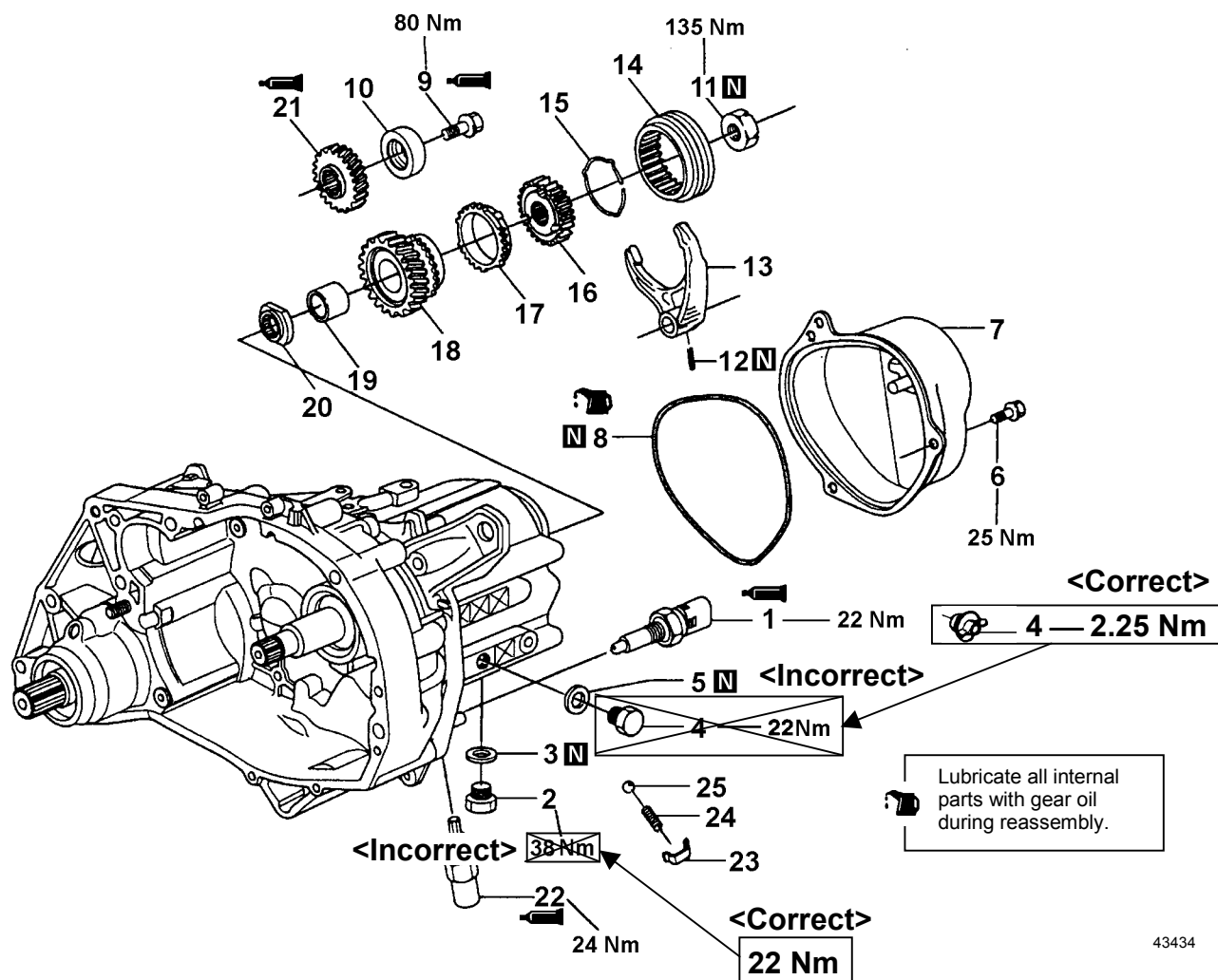
TORQUE SPECIFICATIONS

Items	Specifications (Nm)
Bearing housing bolts	25
Input shaft lock nut	135
Output shaft bolt	80
Cover bolts	25
Locating pin	24
Back-up lamp switch	22 <Correct>
Drain plug	22 ← 22
Filler/level plug	<Incorrect> 22 ← 2.25
Sealing plugs	25
Guide bushing bolts <F5MR3>	25
Differential nut <F5MR3>	130

3. TRANSMISSION

xxx

DISASSEMBLY AND REASSEMBLY <F5MR1, F5MR2>



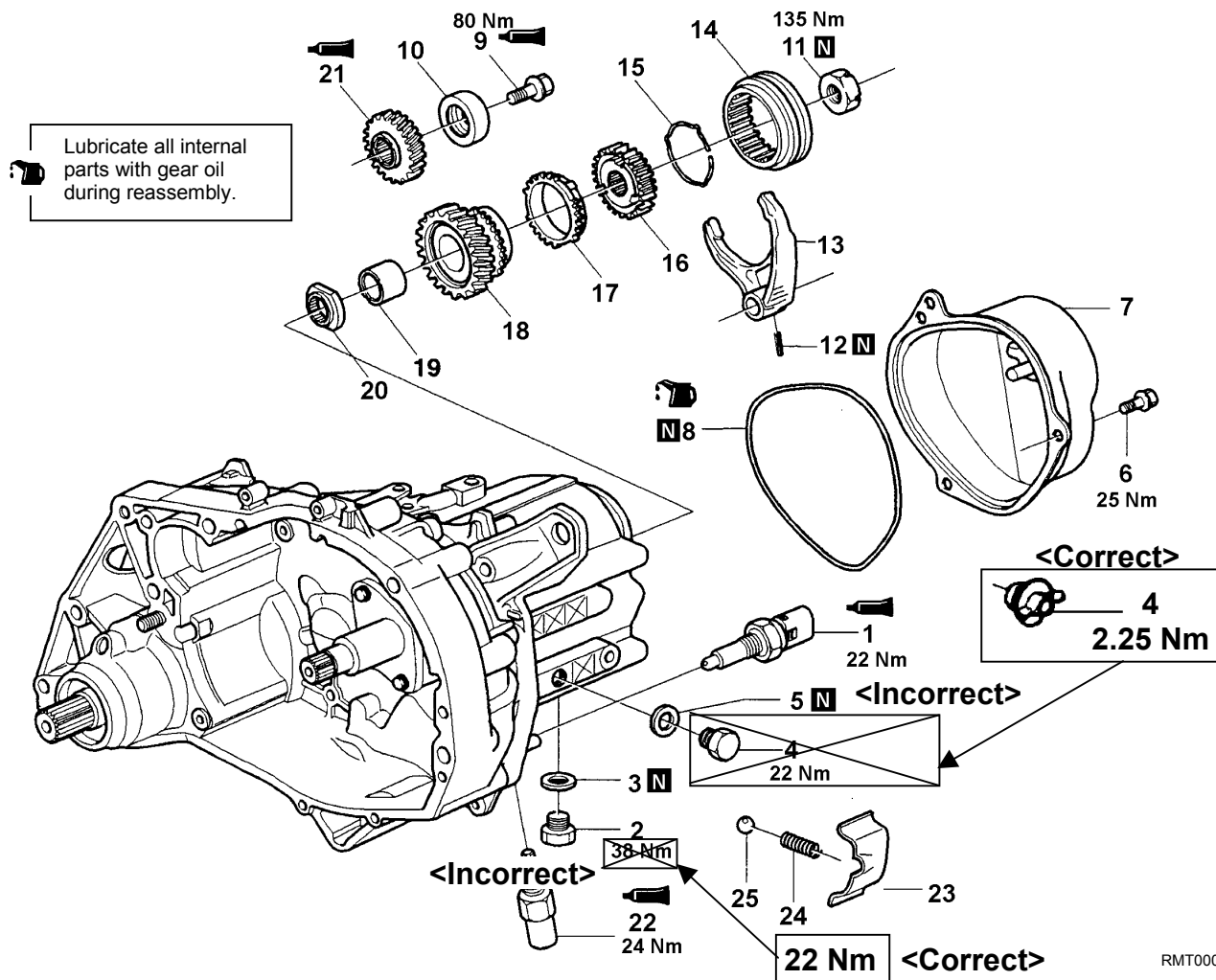
43434

Disassembly steps

- ▶Z◀ 1. Back-up lamp switch
- ▶Z◀ 2. Drain plug
- ▶Z◀ 3. Gasket
- ▶Z◀ 4. Filler plug
- ▶Z◀ 5. Gasket
- ◀A▶ ▶Y◀ 6. Bolt
- ◀A▶ ▶Y◀ 7. Rear cover
- ◀A▶ ▶Y◀ 8. O-ring
- ◀B▶ ▶W◀ 9. Bolt
- ◀B▶ ▶W◀ 10. Shim
- ◀B▶ ▶W◀ 11. Lock nut
- ◀C▶ ▶X◀ 12. Spring pin
- ◀C▶ ▶V◀ 13. 5th speed shift fork

- ◀C▶ ▶V◀ 14. Synchronizer sleeve
- ◀D▶ ▶V◀ 15. Synchronizer spring
- ◀D▶ ▶V◀ 16. Synchronizer hub
- ◀D▶ ▶T◀ 17. Synchronizer ring
- ◀D▶ ▶T◀ 18. 5th speed gear
- ◀D▶ ▶T◀ 19. Bearing sleeve
- ◀D▶ ▶T◀ 20. Retaining ring
- ◀E▶ ▶U◀ 21. 5th gear wheel
- ◀F▶ ▶S◀ 22. Locating pin
- ◀G▶ ▶R◀ 23. Cover plate
- ◀G▶ ▶R◀ 24. Poppet spring
- ◀G▶ ▶R◀ 25. Poppet ball

DISASSEMBLY AND REASSEMBLY <F5MR3>



RMT0002

Disassembly steps

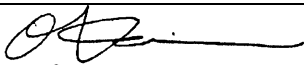
- ▶Z◀ 1. Back-up lamp switch
 2. Drain plug
 3. Gasket
 4. Filler plug
 5. Gasket
 ◀A▶ ▶Y◀ 6. Bolt
 ◀A▶ ▶Y◀ 7. Rear cover
 ◀A▶ ▶Y◀ 8. O-ring
 ◀B▶ ▶W◀ 9. Bolt
 ◀B▶ ▶W◀ 10. Shim
 ◀B▶ ▶W◀ 11. Lock nut
 ◀C▶ ▶X◀ 12. Spring pin
 ◀C▶ ▶V◀ 13. 5th speed shift fork

- ◀C▶ ▶V◀ 14. Synchronizer sleeve
 ◀D▶ ▶V◀ 15. Synchronizer spring
 ◀D▶ ▶V◀ 16. Synchronizer hub
 ◀D▶ ▶T◀ 17. Synchronizer ring
 ◀D▶ ▶T◀ 18. 5th speed gear
 ◀D▶ ▶T◀ 19. Bearing sleeve
 ◀D▶ ▶T◀ 20. Retaining ring
 ◀E▶ ▶U◀ 21. 5th gear wheel
 ◀F▶ ▶S◀ 22. Locating pin
 ◀G▶ ▶R◀ 23. Cover plate
 ◀G▶ ▶R◀ 24. Poppet spring
 ◀G▶ ▶R◀ 25. Poppet ball



SERVICE BULLETIN

PUBLICATION GROUP, AFTER SALES SERVICE DEP.
MITSUBISHI MOTOR SALES EUROPE BV

SERVICE BULLETIN		No.: ESB-97E22-503	
		Date: 1997-12-05	<Model> (EC,EXP) CARISMA
Subject: CORRECTION TO GEAR RATIO AND FINAL REDUCTION RATIO FOR MANUAL TRANSMISSION		<M/Y> 96-10	
Group: MANUAL TRANSMISSION			
CORRECTION		 O. Kai - E.V.P. & G.M. After Sales Service Dept.	

1. Description:

This Service Bulletin informs you of correction to gear ratio and final reduction ratio for the manual transmission

2. Applicable Manuals:

Manual	Pub. No.	Language	Page(s)
'96 CARISMA Workshop Manual chassis	PWDE9502	(English)	22-2
	PWDS9503	(Spanish)	
	PWDF9504	(French)	
	PWDG9505	(German)	
	PWDD9506	(Dutch)	
	PWDW9507	(Swedish)	
	PWDI96E1	(Italian)	
'98 CARISMA (except GDI) Workshop Manual chassis	PWDE9502-B	(English)	<Newly added*>
	PWDS9503-B	(Spanish)	
	PWDF9504-B	(French)	
	PWDG9505-B	(German)	
	PWDD9506-B	(Dutch)	
	PWDW9507-B	(Swedish)	
	PWDI96E1-B	(Italian)	

3. Details:

NOTE

*: to be added between Group 17 (17-4) and Group 23 (23-1).

GENERAL INFORMATION

22100010038

The F5MR1 and F5MR2 manual transmissions are designed.

Items		Specifications
Model		F5MR1, F5MR2
Type		Manual, 5-speed, Front wheel drive
Gear ratio	1st	3.363
	2nd <Incorrect>	2.074 ← 2.047 <Correct>
	3rd	1.321
	4th <Incorrect>	0.967 ← 0.966 <Correct>
	5th <Incorrect>	0.705 ← 0.794 <Correct>
	Reverse <Incorrect>	3.550 ← 3.545 <Correct>
Final reduction ratio <Incorrect>		4.067 ← 4.066 <Correct>

LUBRICANTS

22100040037

Item	Specified lubricant	Quantity ℓ
Transmission oil	Elf Tranself TRX 75W-80W (XT3556)	3.4

GROUP 22

MANUAL TRANSMISSION

GENERAL

OUTLINE OF CHANGES

The 4G92 engine equipped cars that have engine output of 73 kW (100 PS) have been added. Accordingly, the F5MR1 manual transmission has been changed from the conventional one in 2nd speed gear ratio and final reduction ratio.

Maintenance procedure for the transmission is the same as for the conventional F5MR1 manual transmission.

GENERAL INFORMATION

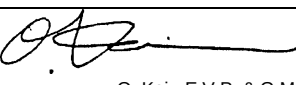
specifications for the F5MR1 manual transmission installed on the 4G92 engine equipped car that has engine output of 73 kW (100 PS), are as listed below.

Items		Specifications
Model		F5MR1
Type		Manual, 5-speed, Front wheel drive
Gear ratio	1st	3.363
	2nd	1.864
	3rd	1.321
	4th	0.966
	5th	0.794
	Reverse	3.545
Final reduction ratio		3.867



SERVICE BULLETIN

PUBLICATION GROUP, AFTER SALES SERVICE DEP.
MITSUBISHI MOTOR SALES EUROPE BV

SERVICE BULLETIN		No.: ESB-97E22-504	
		Date: 1997-12-05	<Model> (EC,EXP) CARISMA
Subject: CORRECTION TO TIGHTENING TORQUES FOR FILLER AND DRAIN PLUGS		<M/Y> 96-10	
Group: MANUAL TRANSMISSION			
CORRECTION		 O. Kai - E.V.P. & G.M. After Sales Service Dept.	

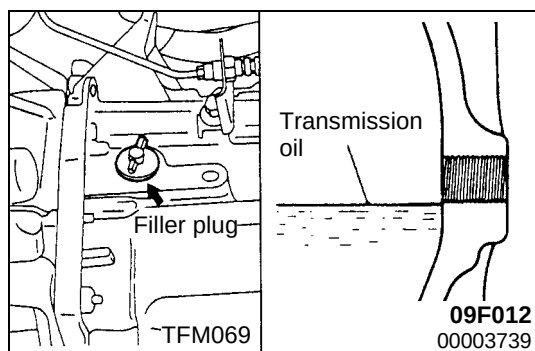
1. Description:

This Service Bulletin informs you of correction to the tightening torques for the manual transmission filler and drain plugs.

2. Applicable Manuals:

Manual	Pub. No.	Language	Page(s)
'96 CARISMA Workshop Manual chassis	PWDE9502	(English)	22-4
	PWDS9503	(Spanish)	
	PWDF9504	(French)	
	PWDG9505	(German)	
	PWDD9506	(Dutch)	
	PWDW9507	(Swedish)	
	PWDI96E1	(Italian)	

3. Details:



ON VEHICLE SERVICE

TRANSMISSION OIL LEVEL CHECK

Inspect each component for evidence of leakage, and check the oil level by remaining the filler plug. If the oil is contaminated, it is necessary to replace it with new oil.

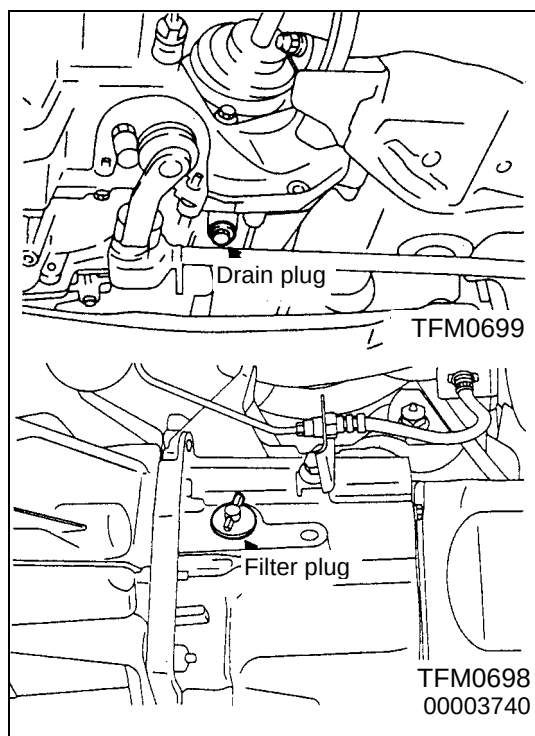
1. Oil level should be at the lower portion of the filler plug hole.
2. Check that the transmission oil is not noticeably dirty, and that it has a suitable viscosity.

3. ~~Tighten filler plug to specified torque.~~ **<Incorrect>**

~~Specified torque: 22 Nm~~

Tighten filler plug firmly by hand.
(reference tighten torque: 2.25 Nm)

<Correct>



TRANSMISSION OIL REPLACEMENT

1. Remove transmission drain plug.
2. Drain oil.
3. Tighten drain plug to specified torque

Specified torque: 38 Nm

4. Remove filler plug and fill with specified oil till the level comes to the lower portion of filler plug hole.

Specified oil: Elf Tranself TRX 75W-80W (XT3556)

Quantity: 3.4 ℓ

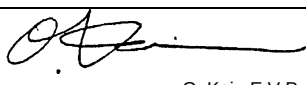
5. Tighten filler plug to specified torque.

Specified torque: 22 Nm

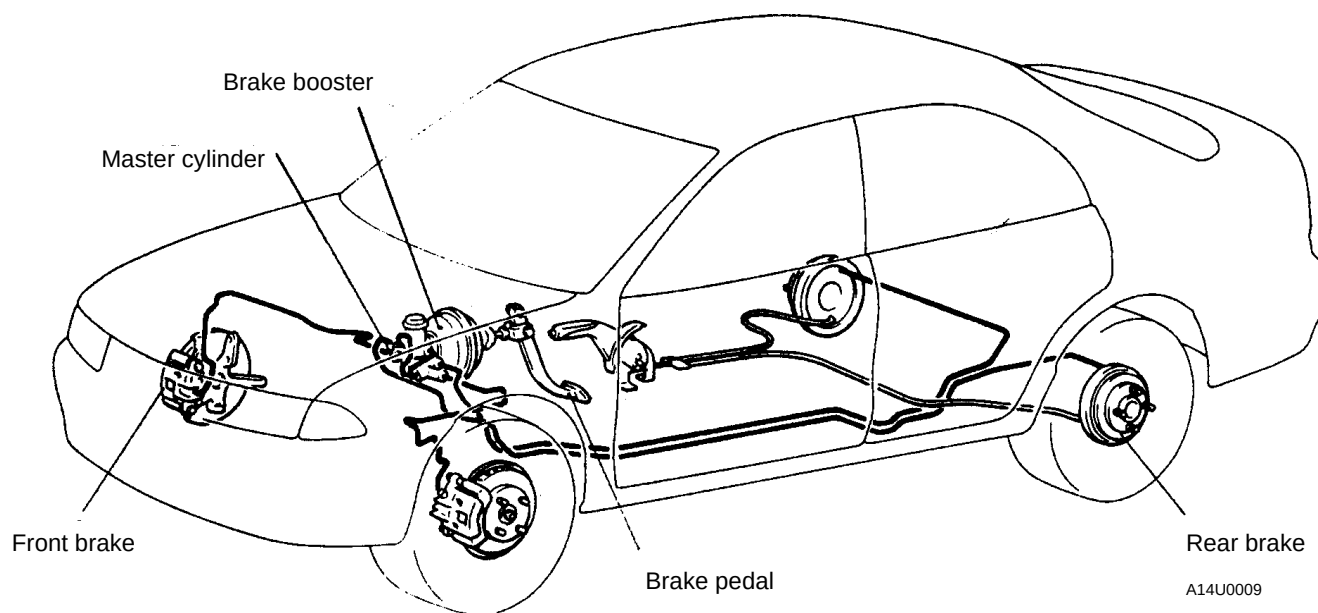


SERVICE BULLETIN

PUBLICATION GROUP, AFTER SALES SERVICE DEP.
MITSUBISHI MOTOR SALES EUROPE BV

SERVICE BULLETIN		No.: ESB-97E35-006	
		Date: 1998-03-15	<Model> (EC,EXP)CARISMA <M/Y> 96-10
Subject: CHANGE IN LIMIT VALUE FOR FRONT BRAKE DISC RUN-OUT			
Group: SERVICE BRAKE			
INFORMATION		 O. Kai - E.V.P. & G.M. After Sales Service Dept.	
1. Description: The Service Bulletin informs you of change in the limit value for the front brake disc run-out.			
2. Applicable Manuals:			
Manual	Pub. No.	Language	Page(s)
'96 CARISMA Workshop Manual	PWDE9502	(English)	35A-4, 35A-12
	PWDS9503	(Spanish)	
	PWDF9504	(French)	
	PWDG9505	(German)	
	PWDD9506	(Dutch)	
	PWDW9507	(Swedish)	
	PWDI96E1	(Italian)	
3. Effective Date:			
Applicable vehicle	Limit value		Effective date
	New	Old	
CARISMA	0.06 mm or less	0.07 mm or less	From July 1997
4. Details: '96 CARISMA Workshop Manual, page 2,3			

Construction diagram



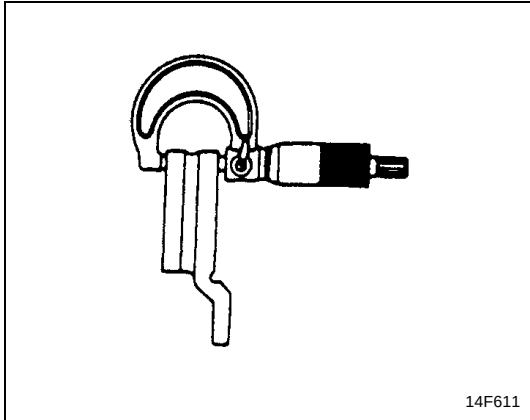
SERVICE SPECIFICATIONS

35100030058

Items			Standard value	Limit
Brake pedal height mm		L.H. drive vehicles	163.5-166.5	-
		R.H. drive vehicles	162.5-165.5	-
Brake pedal free play mm			3-8	-
Brake pedal to floor board clearance mm			80	-
Proportioning valve	Split point MPa	1600	3.43 ± 0.25	-
		1800	3.92 ± 0.25	-
	Output fluid pressure (Input fluid pressure) MPa	1600	5.03 ± 0.4 (9.81)	-
		1800	5.93 ± 0.4 (9.81)	-
	Output pressure difference between left and right MPa		-	0.8
Brake booster push rod to master cylinder piston clearance mm			0.6-0.8	-
Front disc brake	Pad thickness mm		10.0	2.0
	Disc thickness mm	1600	18.0	16.4
		1800	24.0	22.4
	Disc runout mm		-	0.07 <Old>
Drag force (tangential force of wheel mounting bolts) N		40 or less	-	

<New>

0.07 or less <Up to June 1997>
0.06 or less <From July 1997>

**BRAKE DISC THICKNESS CHECK**

35100160047

1. Using a micrometer, measure disc thickness at eight positions, approximately 45° apart and mm in from the outer edge of the disc.

Brake disc thickness**Standard value:**

<1600> 18.0 mm

<1800> 24.0 mm

Limit:

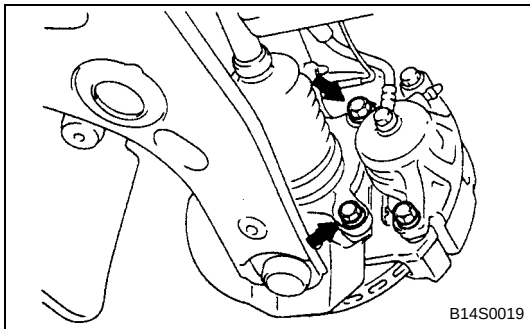
<1600> 16.4 mm

<1800> 22.4 mm

Thickness variation (at least 8 positions)

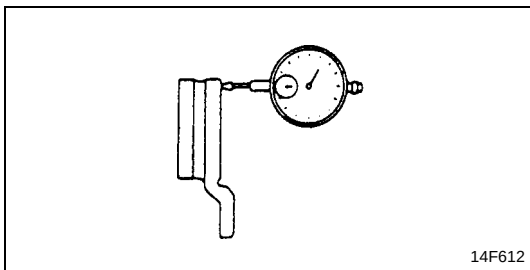
The difference between any thickness measurements should not be more than 0.015 mm.

2. If the disc is beyond the limits for thickness, remove it and install a new one. If thickness variation exceeds the specification, replace the brake disc or turn rotor with on the car type brake lathe ("MAD, DL-8700PF" or equivalent).

**BRAKE DISC RUN-OUT CHECK**

35100170040

1. Remove the calliper support; then raise the calliper assembly upward and secure by using wire.
2. Inspect the disc surface for grooves, cracks and rust. Clean the disc thoroughly and remove all rust.



3. Place a dial gauge approximately 5 mm from the outer circumference of the brake disc, and measure the run-out of the disc.

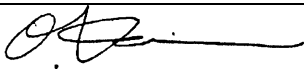
Limit: 0.07 mm or less <Old>**NOTE**

Tighten the nuts in order to secure the disc to the hub.

<New>**0.07 mm or less <Up to June 1997>****0.06 mm or less <From July 1997>**

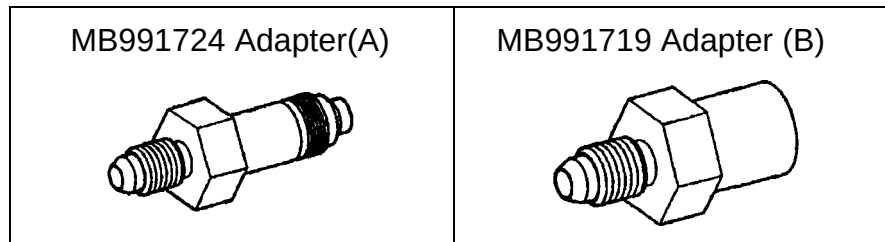
SERVICE BULLETIN

PUBLICATION GROUP, AFTER SALES SERVICE DEP.
MITSUBISHI MOTOR SALES EUROPE BV

SERVICE BULLETIN		No.: ESB-97E37-501	
		Date: 1997-09-26	<Model> (EC,EXP) CARISMA
Subject: POWER STEERING OIL PUMP PRESSURE TEST NEEDED BY AVAILABILITY OF SPECIAL TOOLS		<M/Y> 97-10	
Group: STEERING			
CORRECTION		 O. Kai - E.V.P. & G.M. After Sales Service Dept.	

1. Description:

Whit availability of the special tools for measurement of oil pressure of the power steering oil pump on the F8QT engine equipped car, descriptions of the power steering oil pump pressure test have been added.



2. Applicable Manuals:

Manual	Pub. No.	Language	Page(s)
'97 CARISMA Workshop Manual Chassis SUPPLEMENT	PWDE9502-A	(English)	37A-1
	PWDS9503-A	(Spanish)	
	PWDF9504-A	(French)	
	PWDG9505-A	(German)	
	PWDD9506-A	(Dutch)	
	PWDW9507-A	(Swedish)	
	PWDI96E1-A	(Italian)	

3. Details:

GROUP 37A

STEERING

GENERAL

OUTLINE OF CHANGES

- The following service procedures have been added to the addition of the diesel-powered vehicle.
Applicable models: 1900D
 - Removal and installation of the power steering oil pump
 - Removal and installation of the power steering hoses

POWER STEERING OIL PUMP REMOVAL AND INSTALLATION

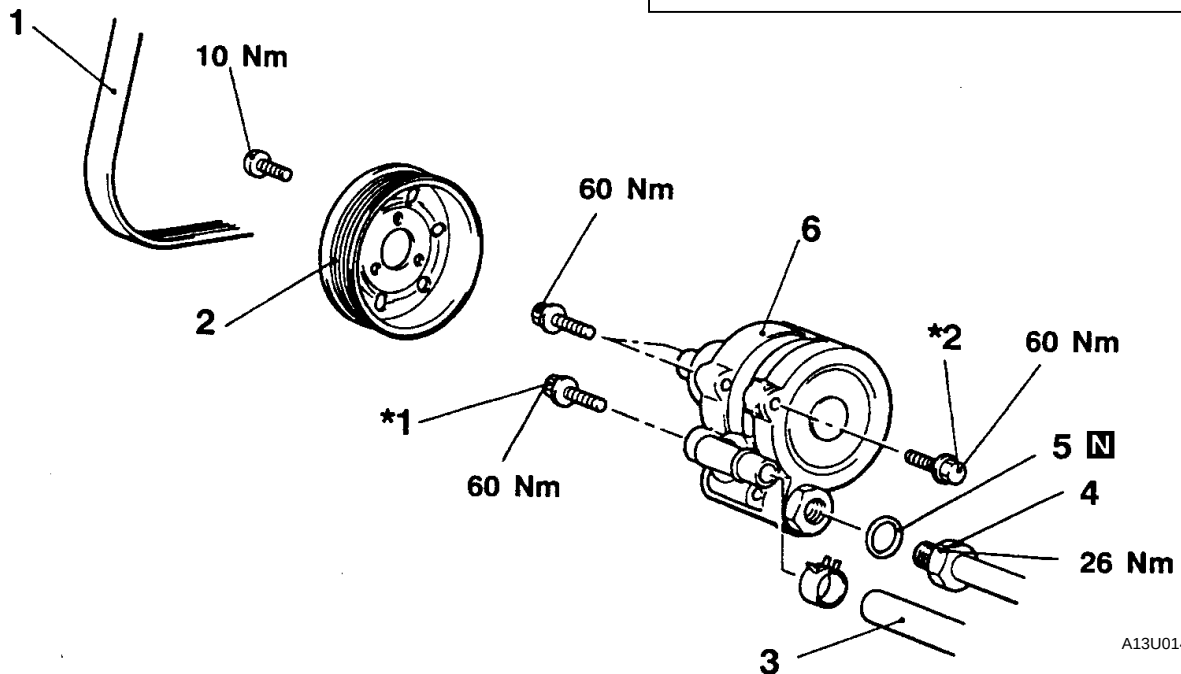
<Next page comes here.>

Pre-removal Operation

- Power Steering Fluid Draining
- Timing Belt Lower Cover Removal (Refer to GROUP 11 - Crankshaft Pulley.)

Post-installation Operation

- Power Steering Fluid Supplying
- Drive-Belt Tension Adjusting
- Power Steering Fluid Line Bleeding
- Oil Pump Pressure Check
- Timing Belt Lower Cover Installation (Refer to GROUP11 - Crankshaft Pulley.)



A13U0146

Removal steps

- Drive belt
- Power steering pump pulley
- Suction hose connection
- Pressure hose connection
- O-ring

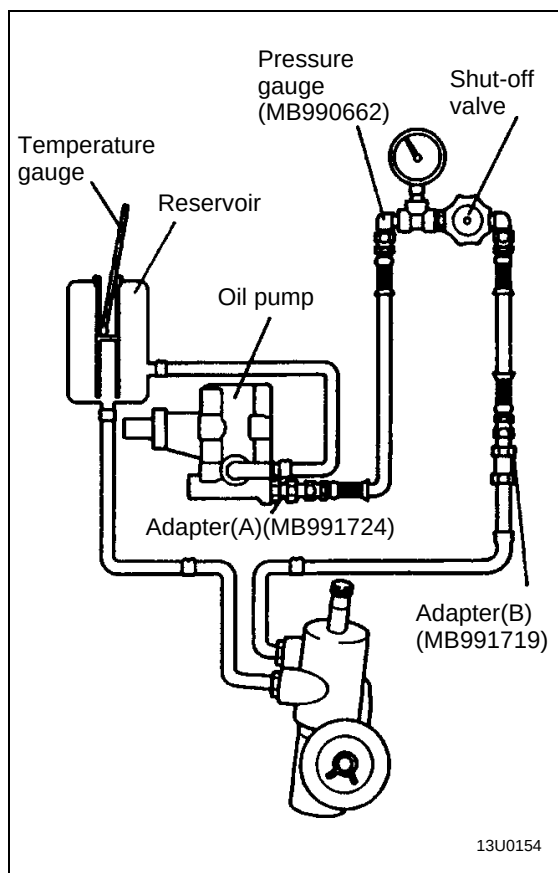
6. Oil pump

NOTE

- *1: Vehicles with A/C
*2: Vehicles without A/C

INSPECTION

Check the drive-belt for cracks.
Check the pulley assembly for uneven rotation.



OIL PUMP PRESSURE TEST

1. Put a piece of paper over the alternator to protect it against the power steering fluid.
2. Disconnect the pressure hose from the oil pump, and then connect the special tools.
3. Bleed the air, and then turn the steering wheel several times while the vehicle is not moving so that the temperature of the fluid rises to approximately 50-60 °C.
4. Start the engine and idle it at 1,000±100 r/min.
5. Fully close the shut-off valve of the pressure gauge and measure the oil pump relief pressure to confirm that it is within the standard value range.

Standard value: 9.8 Mpa

Caution

Pressure gauge shut off valve must not remain closed for more than 10 seconds.

6. If it is not within the standard value, replace the oil pump.
7. Check whether or not the hydraulic pressure is the standard value when no-load conditions are created by fully opening the shut-off valve of the pressure gauge.

Standard value: 0.2-0.5 Mpa

8. If it is not within the standard value, the probable cause is a malfunction of the oil line or steering gear box.
9. Fully open the shut-off valve of the pressure gauge.
10. Turn the steering wheel all the way to the left or right; then check whether or not the retention hydraulic pressure is the standard value.

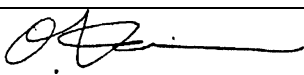
Standard value: 9.8 Mpa

11. When not within the standard value, replace the power steering gear box.
12. Remove the special tools and reinstall the pressure hose.
13. Bleed the system and top up the fluid if necessary.
14. Remove the paper from the alternator.



SERVICE BULLETIN

PUBLICATION GROUP, AFTER SALES SERVICE DEP.
MITSUBISHI MOTOR SALES EUROPE BV

SERVICE BULLETIN		No.: ESB-97E51-501	
		Date: 1998-03-15	<Model> (EC,EXP) CARISMA
Subject: CENTER CONSOLE PANEL AND CUP HOLDER REMOVAL		<M/Y> 96-10	
Group: INTERIOR			
CORRECTION		 O. Kai - E.V.P. & G.M. After Sales Service Dept.	

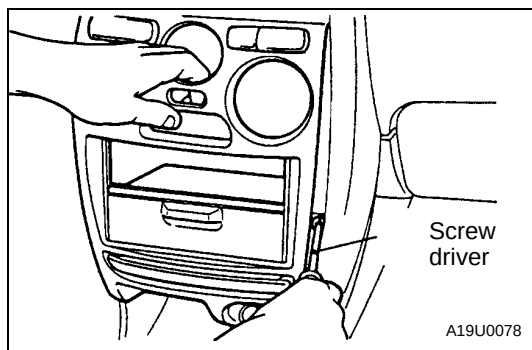
1. Description:

This Service Bulletin informs you of addition of a removal procedure for the center console panel and cup holder assembly

2. Applicable Manuals:

Manual	Pub. No.	Language	Page(s)
'96 CARISMA Workshop Manual chassis	PWDE9502	(English)	52A-7
	PWDS9503	(Spanish)	
	PWDF9504	(French)	
	PWDG9505	(German)	
	PWDD9506	(Dutch)	
	PWDW9507	(Swedish)	
	PWDI96E1	(Italian)	

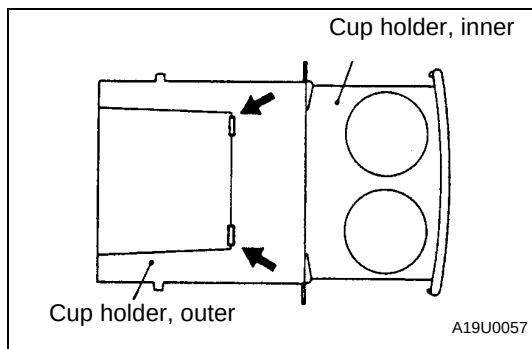
3. Details:



REMOVAL SERVICE POINTS

◀ A ▶ CENTER CONSOLE PANEL AND CUP HOLDER ASSEMBLY REMOVAL

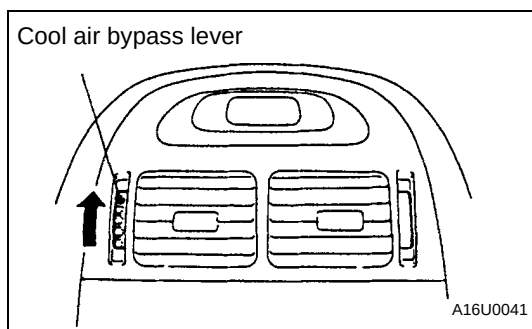
1. After removing the center console mounting screws, pull the center console panel towards you to remove it together with the cup holder, inner
2. Insert a screwdriver into the space as shown in the illustration to remove the center console panel and cup holder assembly



◀ B ▶ CUP HOLDER, INNER REMOVAL

Push the cup holder, outer in the places shown in the illustration to remove the cup holder, inner.

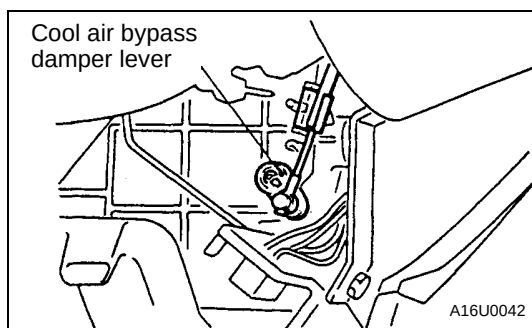
- 3
- 2 <Changed>



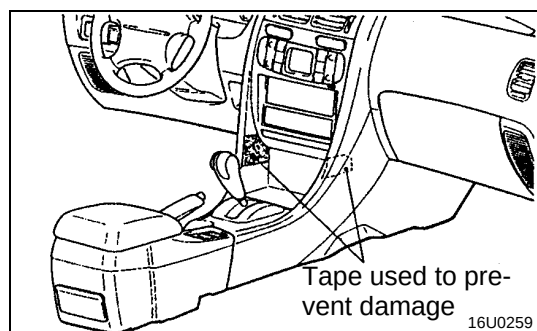
INSTALLATION SERVICE POINT

▶ A ◀ CENTER AIR OUTLET ASSEMBLY INSTALLATION

1. Turn the cool air bypass lever of the center air outlet assembly fully upward.
2. Turn the cool air bypass damper at the heater unit side fully downward, and install the cool air bypass lever cable.



<Added>

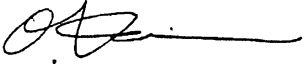


1. Affix a tape to the front floor console assembly to prevent it from being damaged.



SERVICE BULLETIN

SERVICE GROUP, WARRANTY & SERVICE DEP.
MITSUBISHI MOTOR SALES EUROPE BV

SERVICE BULLETIN		No.: ESB-96E52-002					
		Date: 1997-04-15	<table border="1"> <tr> <td><Model></td> <td><M/Y></td> </tr> <tr> <td>ECLIPSE(D30)</td> <td>96-10</td> </tr> <tr> <td>CARISMA</td> <td>96-10</td> </tr> </table>	<Model>	<M/Y>	ECLIPSE(D30)	96-10
<Model>	<M/Y>						
ECLIPSE(D30)	96-10						
CARISMA	96-10						
Subject: ADDITION OF SRS AIR BAG MAINTENANCE PROCEDURE							
Group: INTERIOR							
INFORMATION		 O. Kai - E.V.P. & G.M. After Sales Service Dept.					

1. Description:

In the SRS air bag troubleshooting, items of cause of trouble in the inspection procedure for each diagnostic trouble code, have been added.

2. Applicable Manuals:

Manual	Pub. No.	Language	Page(s)
'96 ECLIPSE Workshop Manual chassis	PWUE96E1	(English)	52B-9
	PWUS95E1	(Spanish)	
	PWUF95E1	(French)	
	PWUG95E1	(German)	
	PWUD95E1	(Dutch)	
	PWUI95E1	(Italian)	
'96 CARISMA Workshop Manual chassis	PWUE9502	(English)	52B-7
	PWUS9503	(Spanish)	
	PWUF9504	(French)	
	PWUG9505	(German)	
	PWUD9506	(Dutch)	
	PWUW9507	(Swedish)	
	PWUI96E1	(Italian)	

3. Details:

'96 ECLIPSE Workshop Manual chassis

Page 52B-9

'96 CARISMA Workshop Manual chassis

Page 52B-7

Code No.	Diagnosis item	Reference page
45	SRS-ECU non-volatile memory (EEPROM) and A/D converter system	52B-13
51,52	Driver's side air bag module (squib ignition drive circuit) system	52B-14
54,55	Passenger's side air bag module (squib ignition drive circuit) system	52B-14
56,57	Driver's side pre-tensioner (squib ignition drive circuit) system	52B-14
58,59	Passenger's side pre-tensioner (squib ignition drive circuit) system	52B-14

NOTE

- (1) *1: Vehicles with front passenger's air bag.
- (2) *2: This diagnosis code will be automatically cleared from memory and the SRS warning lamp will switch off when the system returns to normal.
- (3) If the vehicle has a discharged battery it will store the fault codes 41 or 42. When these diagnosis codes are displayed, check the battery.

INSPECTION PROCEDURE CLASSIFIED BY DIAGNOSIS CODES

Code No. 14 Analog G sensor system	Probable cause
The SRS-ECU monitors the analog G sensor output and outputs this code when it detects a sensor failure, abnormal sensor characteristics or abnormal sensor output.	Malfunction of SRS-ECU

Replace the SRS-ECU

Code No. 15 Safing G sensor system	Probable cause
This code is output when there is a short-circuit between the terminals of the safing G sensor. The cause of the problem is probably a short-circuit in the safing G sensor.	Malfunction of SRS-ECU

Replace the SRS-ECU

Code No. 21 or 22 Driver's side air bag module (squib) system	Probable cause
These diagnosis codes are output if there is abnormal resistance between the terminals of the safing G sensor. The cause of the problem is probably a short-circuit in the safing G sensor.	- Malfunction of clock spring <Added> - Open-circuit in clock spring due to inappropriate neutral position. - Malfunction of harness or connectors - Malfunction of driver's side air bag module (squib) - Malfunction of SRS-ECU

Chart 1

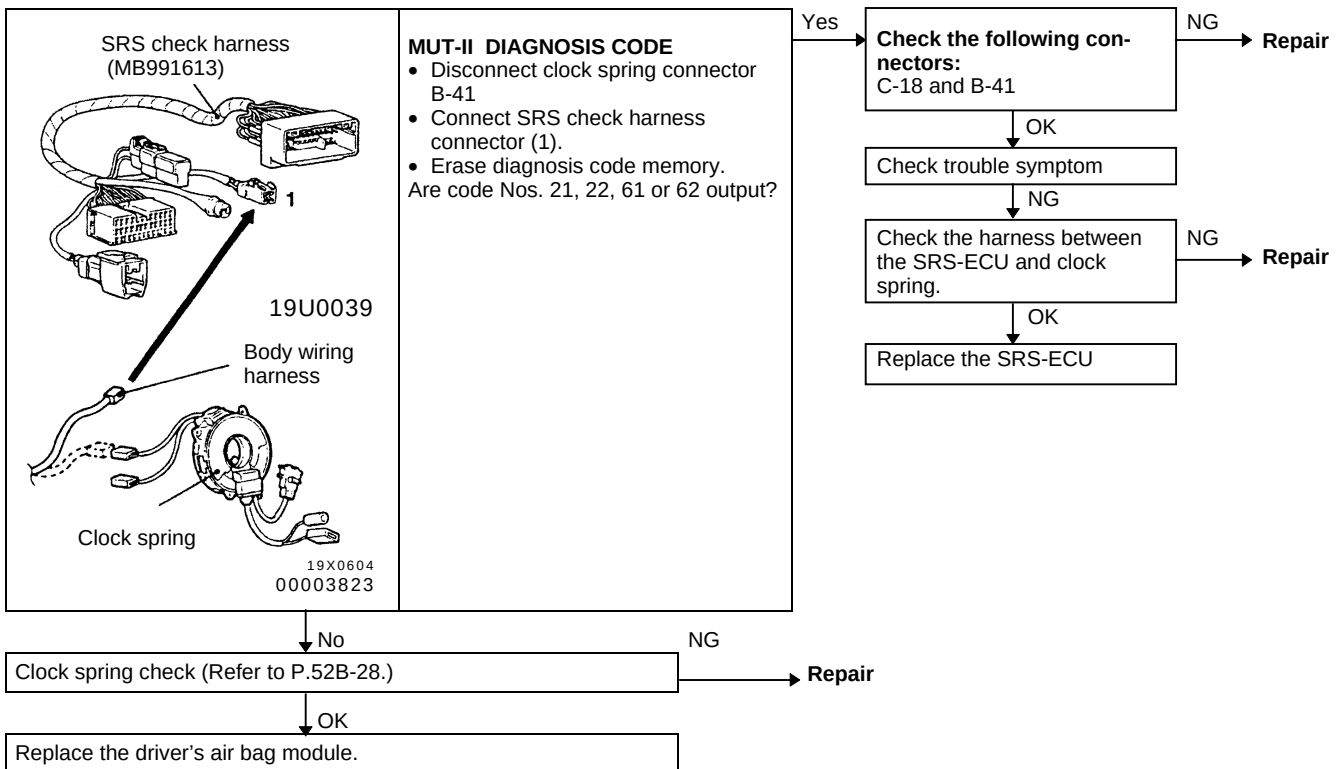
Code No.	Trouble symptom
21	- Short in driver's side air bag module (squib) or harness short - Short in clock spring
22	- Open circuit in driver's side air bag module (squib) or open harness - Open circuit in clock spring - Disconnected connector in the driver's side air bag module (squib) - Open circuit in clock spring due to inappropriate neutral position <Added> - Malfunction of connector contact

Code No. 21, 22, 61 or 62 Driver's air bag module (squib) system	probable cause
These diagnosis codes are output if there is abnormal resistance between the input terminals of the driver's air bag module (squib). Refer to the following table 1 for the trouble causes of each code No.	• Malfunction of clock spring • Open-circuit in clock spring due to inappropriate neutral position • Malfunction of harness of connectors • Malfunction of driver's air bag module (squib) • Malfunction of SRS-ECU

<Added>

Chart 1

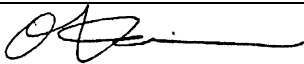
Code No.	Trouble symptom
21	• Short in driver's side air bag module (squib) or harness short • Short in clock spring
22	• Open circuit in driver's side air bag module (squib) or open harness • Open circuit in clock spring • Disconnected connector in the driver's side air bag module (squib) • Open circuit in clock spring due to inappropriate neutral position • Malfunction of connector contact
61	The harness wire of the driver's air bag module (squib) is grounded to the power supply.
62	The harness wire of the driver's air bag module (squib) is grounded.





SERVICE BULLETIN

PRODUCTION GROUP, AFTER SALES SERVICE DEP.
MITSUBISHI MOTOR SALES EUROPE BV

SERVICE BULLETIN		No.: ESB-97E52-502	
		Date: 1997-09-26	
		<Model>	<M/Y>
Subject: CORRECTION TO CAUTION ON AIR BAG MODULE AND CLOCK SPRING		(EC,EXP) ECLIPSE (D30)	96-10
Group: SUPPLEMENTAL RESTRAIN		(EC,EXP) L2000 (K60, K70)	96-10
CORRECTION		(EC,EXP) CARISMA	96-10
		 O. Kai - E.V.P. & G.M. After Sales Service Dept.	

1. Description:

This Service Bulletin informs you that caution on air bag module and clock spring has been corrected.

2. Applicable Manuals:

Manual	Pub. No.	Language	Page(s)
'96 CARISMA Workshop Manual chassis	PWDE9502	(English)	52B-22
	PWDS9503	(Spanish)	
	PWDF9504	(French)	
	PWDG9505	(German)	
	PWDD9506	(Dutch)	
	PWDW9507	(Swedish)	
	PWDI96E1	(Italian)	
'96 ECLIPSE Workshop Manual chassis	PWUE95E1	(English)	52B-24
	PWUS95E1	(Spanish)	
	PWUF95E1	(French)	
	PWUG95E1	(German)	52B-25
	PWUD95E1	(Dutch)	
	PWUI95E1	(Italian)	
'97 L200 Workshop Manual chassis	PWTE96E1	(English)	52B-28
	PWTS96E1	(Spanish)	
	PWTF96E1	(French)	
	PWTG96E1	(German)	

3. Details:

'96 CARISMA Workshop Manual chassis, Page 52B-22
'96 ECLIPSE Workshop Manual chassis, Page 52B-24
'97 L200 Workshop Manual, Page 52B-28

INSPECTION

- Check the SRS-ECU and brackets for dents, cracks or deformation.
- Check connectors and lock lever for damage, and terminals for deformation

Caution

If a dent, crack, deformation or rust is discovered, replace the SRS-ECU with a new one.

NOTE

For checking of the SRS-ECU other than described above, refer to the section concerning troubleshooting. (Refer to P.52B-5.)

AIR BAG MODULES AND CLOCK SPRING

52400240044

Caution

1. Disconnect the battery (-) terminal and wait for 60 seconds or more before starting work. Furthermore, the disconnected battery terminal should be covered with tape to insulate it. (Refer to P.52B-3)
2. Never attempt to disassemble or repair the air bag modules or clock spring. If faulty, replace it.
3. do not drop the air bag modules or clock spring or allow contact with water, grease or oil. Replace it if a dent, crack, deformation or rust is detected.

4. The air bag modules should be stored on a flat surface and placed so that the pad surface is facing upward. Do not place anything on top of it.

5. Do not expose the air bag modules to temperatures over 93° C.

6. ~~After deployment of an air bag, replace the clock spring with a new one.~~

7. Wear gloves and safety glasses when handling air bags that have already deployed.

8. An undeployed air bag module should only be disposed of in accordance with the procedures (Refer to P.52B-31.)

<Correct>

After deployment of an air bag, replace the air bag modules. Check the clock spring, and if faulty, replace it with a new part.

AIR BAG MODULES AND CLOCK SPRING

52400230010

Caution

1. Disconnect the negative battery cable from the battery and tape the terminal

Caution

Wait at least 60 seconds after disconnecting the battery cable before doing any further work. (Refer to P.52B-4.)

2. Never attempt to disassemble or repair the air bag module or clock spring. If faulty, replace it.
3. Do not drop the air bag module or clock spring or allow contact with water, grease or oil. Replace it if a dent, cracks deformation or rust are detected.

REMOVAL AND INSTALLATION

<Air bag module (Driver's side), Clock spring>

Pre-removal Operation

Set the steering wheel and the front wheels to the straight ahead position, and then remove the ignition key.

4. The air bag modules should be stored on a flat surface and placed so that the pad surface is facing upward.

Do not place anything on top of the air bag modules.

5. Do not expose the air bag module to temperature over 93° C. **<Incorrect>**

6. **After deployment of an air bag, replace the clock spring.**

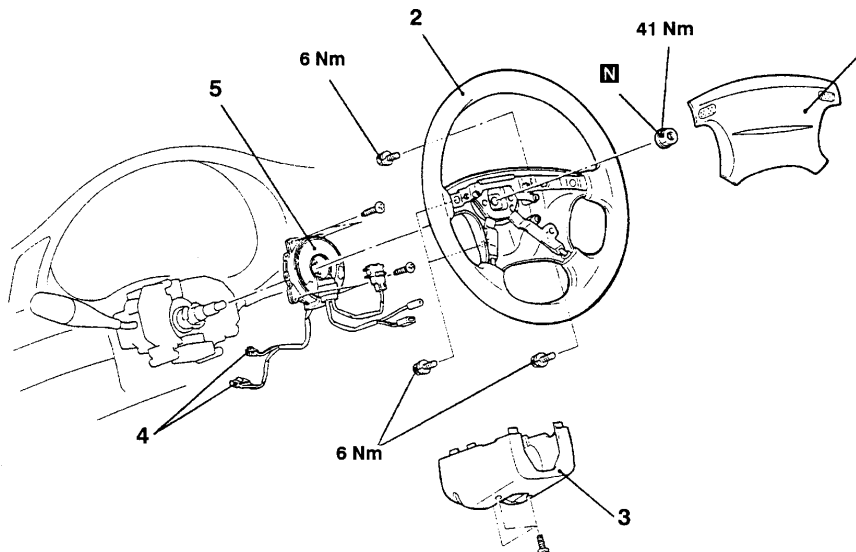
7. Wear gloves and safety goggles when handling an air bag that has deployed.

8. An undeployed air bag module should only be disposed of in accordance with the specified procedures. (Refer to P.52B-30)

52400240105

After deployment of an air bag, replace the air bag modules. Check the clock spring, and if faulty, replace it with a new part.

<Correct>



S19X0566

Clock spring removal steps

- | | |
|-----|--|
| ▶E◀ | • Post-installation inspection |
| ▶D◀ | • Negative (-) battery cable connection |
| ▶C◀ | 1. Air bag module (Driver's side) |
| ▶B◀ | 2. Steering wheel |
| ▶A◀ | 3. Column cover lower |
| ▶E◀ | 4. Clock spring and body wiring harness connection |
| ▶D◀ | 5. Clock spring |
| ▶A◀ | • Pre-installation inspection |

Air bag module (Driver's side) removal steps

- | | |
|-----|---|
| ▶E◀ | • Post-installation inspection |
| ▶D◀ | • Negative (-) battery cable connection |
| ▶C◀ | 2. Air bag module (Driver's side) |
| ▶A◀ | • Pre-installation inspection |

INSPECTION

- Check the SDU and brackets for dents, cracks or deformation.
- Check connector for damage, and terminals for deformation

Caution

If a dent, crack, deformation or rust is discovered, replace the SDU with a new one.

NOTE

For checking of the SDU other than described above, refer to the section concerning troubleshooting. (Refer to P.52B-6.)

AIR BAG MODULES AND CLOCK SPRING

52400240143

Caution

1. Disconnect the battery (-) terminal and wait for 60 seconds or more before starting work. Furthermore, the disconnected battery terminal should be covered with tape to insulate it. (Refer to P.52B-3)
2. Never attempt to disassemble or repair the air bag modules or clock spring. If faulty, replace it.
3. do not drop the air bag modules or clock spring or allow contact with water, grease or oil.
4. Replace it if a dent, crack, deformation or rust is detected.

4. The air bag modules should be stored on a flat surface and placed so that the pad surface is facing upward.
Do not place anything on top of it.
5. Do not expose the air bag modules to temperatures over 93° C. **<Incorrect>**
6. ~~After deployment of an air bag, replace the clock spring with a new one.~~
7. Wear gloves and safety glasses when handling air bags that have already deployed.
8. An undeployed air bag module should only be disposed of in accordance with the procedures (Refer to P.52B-31.)

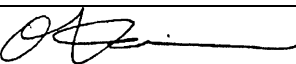
After deployment of an air bag, replace the air bag modules. Check the clock spring, and if faulty, replace it with a new part.

<Correct>



SERVICE BULLETIN

PUBLICATION GROUP, AFTER SALES SERVICE DEP.
MITSUBISHI MOTOR SALES EUROPE BV

SERVICE BULLETIN		No.: ESB-97E54-503	
		Date: 1997-09-26	<Model> (EC,EXP) CARISMA <M/Y> 97-10
Subject: CLOCK REMOVAL AND INSTALLATION			
Group: CHASSIS ELECTRICAL			
CORRECTION	 O. Kai - E.V.P. & G.M. After Sales Service Dept.		

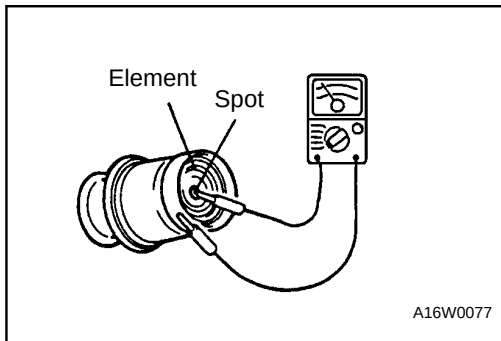
1. Description:

This Service Bulletin informs you of addition of "TROUBLESHOOTING" under CLOCK and of "2 Bulb" under Removal steps, in the Workshop Manual.

2. Applicable Manuals:

Manual	Pub. No.	Language	Page(s)
'96 CARISMA Workshop Manual Chassis	PWDE9502	(English)	54-46
	PWDS9503	(Spanish)	
	PWDF9504	(French)	
	PWDG9505	(German)	
	PWDD9506	(Dutch)	
	PWDW9507	(Swedish)	
	PWDI96E1	(Italian)	

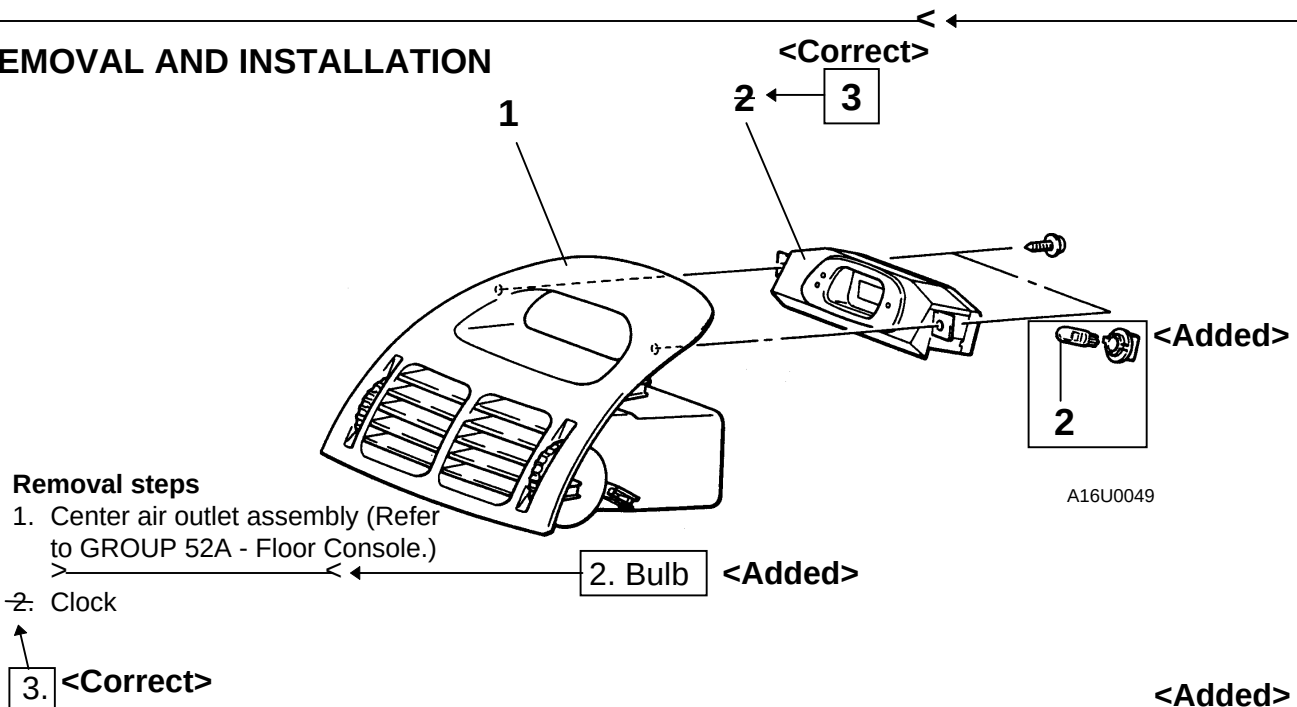
3. Details:

**INSPECTION**

- Take out the plug, and check for a worn edge on the element spot connection, and for shreds of tobacco or other material on the element.
- Using a circuit tester, check the continuity of the element.

CAUTIONS FOR USE OF THE CIGARETTE LIGHTER SOCKET AS AUXILIARY POWER SOURCE

1. When using a "plug-in" type of accessory, do not use anything with a load of more than 120W.
2. It is recommended that only the lighter be inserted in the receptacle.
Use of "plug-in" type accessories may damage the receptacle and result in poor retention of the lighter.
3. The specified load should be strictly observed, because overloaded cord burns the ignition switch and harness.

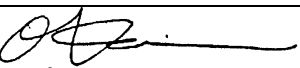
CLOCK**REMOVAL AND INSTALLATION****TROUBLESHOOTING**

Symptom	Probable cause	Remedy
Does not indicate time	Connector improperly connected	Repair
	Harness broken	Repair or replace
	Bulb burnt	Replace
	Malfunction of clock	Replace



SERVICE BULLETIN

PUBLICATION GROUP, AFTER SALES SERVICE DEP.
MITSUBISHI MOTOR SALES EUROPE BV

SERVICE BULLETIN		No.: ESB-97E55-002		
		Date: 1998-03-15	<Model>	<M/Y>
Subject:	CHANGE IN AIR GAP FOR A/C COMPRESSOR	(EC,EXP) ECLIPSE (D30)	96-10 96-10	
Group:	HEATER, A/C & VENTILATION	(EC,EXP) CARISMA		
INFORMATION		 O. Kai - E.V.P. & G.M. After Sales Service Dept.		

1. Description:

This Service Bulletin informs you of change in air gap of the clutch for the A/C compressor.

2. Applicable Manuals:

Manual	Pub. No.	Language	Page(s)
'96 CARISMA Workshop Manual	PWDE9502	(English)	55-4, 34
	PWDS9503	(Spanish)	
	PWDF9504	(French)	
	PWDG9505	(German)	
	PWDD9506	(Dutch)	
	PWDW9507	(Swedish)	
	PWDI96E1	(Italian)	
'96 ECLIPSE Workshop Manual	PWDE95E1	(English)	55-4, 34
	PWDS95E1	(Spanish)	
	PWDF95E1	(French)	
	PWDG95E1	(German)	
	PWDD95E1	(Dutch)	
	PWDI95E1	(Italian)	

3. Effective Date:

CARISMA From April 17, 1997
ECLIPSE From May 2, 1997

4. Details:

'96 CARISMA Workshop Manual, Page 2, 3
'96 ECLIPSE Workshop Manual, Page 4, 5

Caution**Do not heat R-134a above 40°C**

In most instances, moderate heat is required to bring the pressure of the refrigerant in its container above the pressure of the system when charging or adding refrigerant.

A bucket or large pan of hot water not over 40°C is all the heat required for this purpose. Do not heat the refrigerant container with a blow torch or any other means that would raise temperature and pressure above this temperature. Do not weld or steam clean on or near the system components or refrigerant lines.

Caution**Keep R-134a containers upright when charging the system.**

When metering R-134a into the refrigeration system keep the supply tank or cans in an upright position. If the refrigerant containers on its side or upside down, liquid refrigerant will enter the system and damage the compressor.

Caution

- 1. The leak detector for R-134a should be used to check for refrigerant gas leaks.**
- 2. Do not allow liquid refrigerant to touch bright metal.**

Refrigerant will tarnish bright metal and chrome surfaces, and in combination with moisture can severely corrode all metal surfaces.

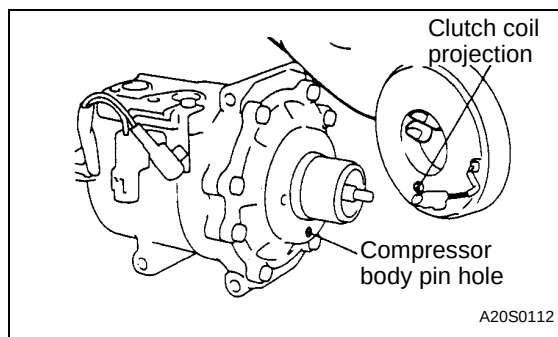
SERVICE SPECIFICATIONS

55200030042

Items		Standard value
Idle speed r/min	4G92	750 ± 50
	4G93	800 ± 50
Idle speed r/min		850 ± 50
Resistor (for blower motor) Ω	LO	2.30
	ML	1.10
	MH	0.40
Refrigerant temperature switch	ON (continuity) temperature	Approx. 155°C or less
	OFF (no continuity) temperature	Approx. 155°C or more (until the temperature drops to approx. 125°C when OFF)
Air gap (Magnetic clutch) mm		0.4 - 0.65 <Old>

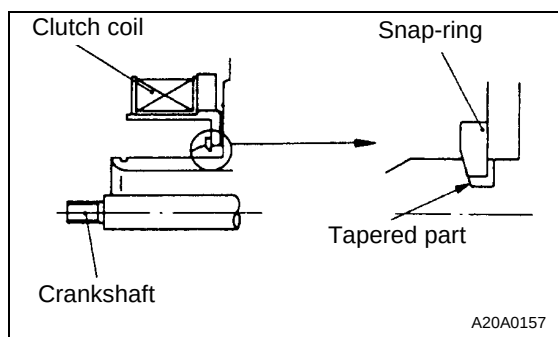
0.3 - 0.5

<New>



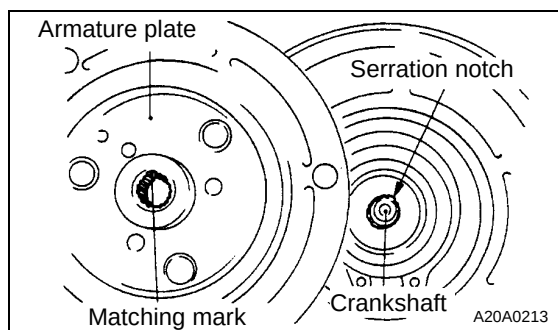
►C◄ CLUTCH COIL INSTALLATION

When installing the clutch coil to the A/C compressor body, install so that the pin hole of the A/C compressor body and the clutch coil projection are aligned.



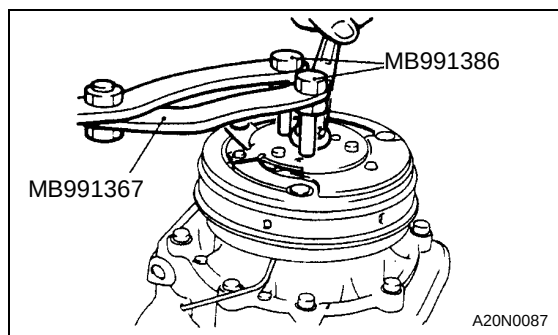
►D◄ SNAP RING INSTALLATION

Install the snap ring so that the tapered surface is at the outer side.

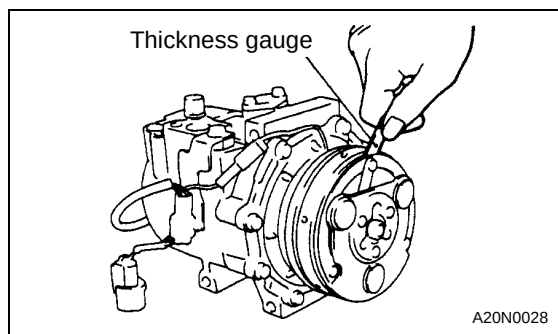


►E◄ ARMATURE PLATE INSTALLATION

Align the mating mark of the crankshaft spline and the mating mark of the armature plate, and then fit them together.



►F◄ NUT INSTALLATION



►G◄ AIR GAP ADJUSTMENT

Check whether or not the air gap of the clutch is within the standard value. <Old>

Standard value: $0.4 \sim 0.65$ mm

<New>

$0.3 - 0.5$

NOTE

If there is a deviation of the air gap from the standard value, make the necessary adjustment by adjusting the number of shims.

SERVICE SPECIFICATIONS

55200030103

Items		Standard value
Idle speed r/min		850 ± 50
Idle-up speed r/min		850 in Neutral
Resistor (for blower motor) Ω	LO	1.83
	ML	0.87
	MH	0.31
Refrigerant temperature switch	ON (continuity) temperature	Approx. 160°C or less
	OFF (no continuity) temperature	Approx. 160°C or more (until the temperature drops to approx. 125°C when OFF)
Air gap (Magnetic clutch) mm		0.4 - 0.65 <Old>



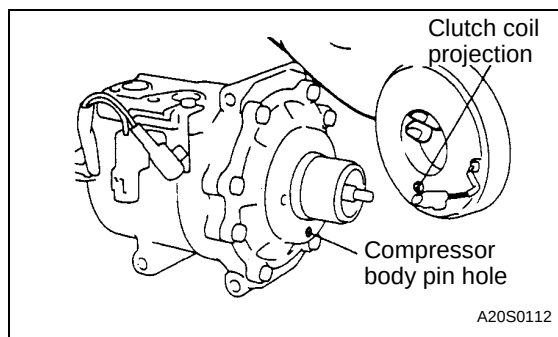
LUBRICANTS

0.3 - 0.5

 <New>

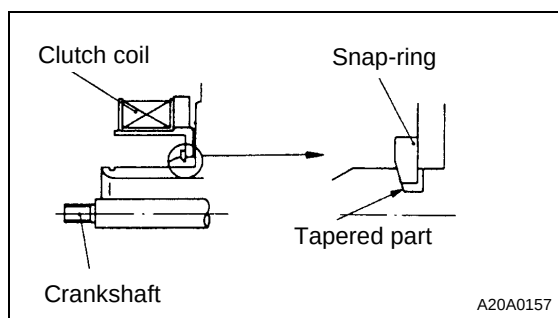
55200040106

Items	Specified lubricants	Quantity
Each connection of refrigerant line Lip seal of the compressor	SUN PAG 56	As required
Compressor refrigerant unit lubricant lubricant mℓ	SUN PAG 56	170 - 190



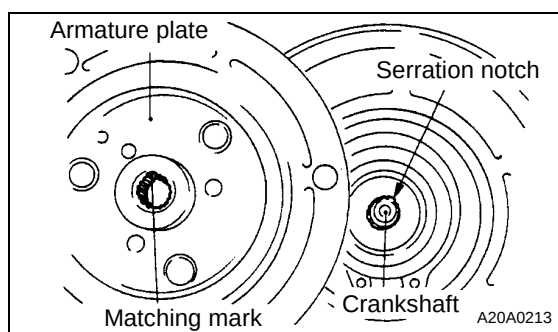
►C◄ CLUTCH COIL INSTALLATION

When installing the clutch coil to the A/C compressor body, install so that the pin hole of the A/C compressor body and the clutch coil projection are aligned.



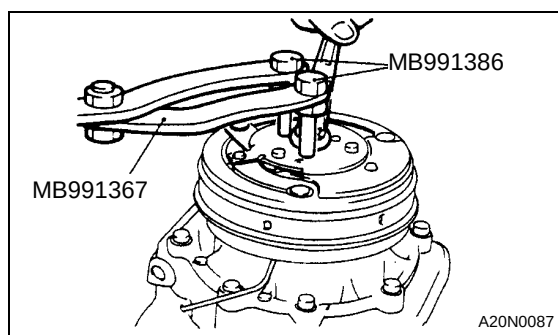
►D◄ SNAP RING INSTALLATION

Install the snap ring so that the tapered surface is at the outer side.

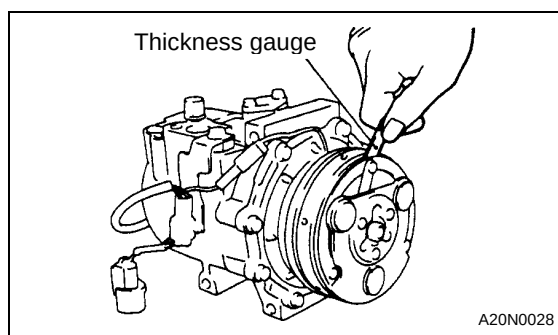


►E◄ ARMATURE PLATE INSTALLATION

Align the mating mark of the crankshaft spline and the mating mark of the armature plate, and then fit them together.



►F◄ NUT INSTALLATION



►G◄ AIR GAP ADJUSTMENT

Check whether or not the air gap of the clutch is within the standard value.

Standard value:

<Old> 0.4 - 0.65 mm	<New> 0.3 - 0.5
------------------------	--------------------

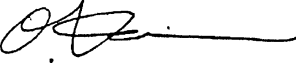
NOTE

If there is a deviation of the air gap from the standard value, make the necessary adjustment by adjusting the number of shims.



SERVICE BULLETIN

PUBLICATION GROUP, AFTER SALES SERVICE DEP.
MITSUBISHI MOTOR SALES EUROPE BV

SERVICE BULLETIN		No.: ESB-97E55-003	
		Date: 1998-XX-XX	<Model> (EC,EXP) CARISMA
Subject: CORRECTION TO AIR CONDITIONER PERFORMANCE TEST PROCEDURE		<M/Y> 96-10	
Group: HEATER, A/C & VENTILATION			
INFORMATION		 O. Kai - E.V.P. & G.M. After Sales Service Dept.	

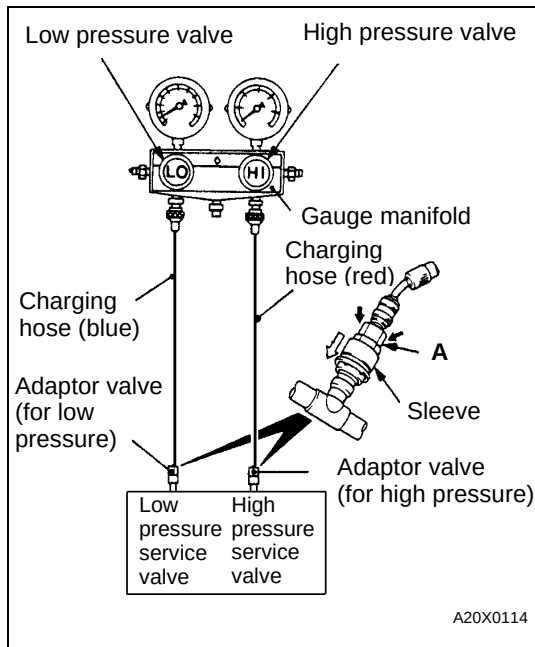
1. Description:

This Service Bulletin informs you of correction to the air conditioner performance test procedure.

2. Applicable Manuals:

Manual	Pub. No.	Language	Page(s)
'96 CARISMA Workshop Manual chassis	PWDE9502	(English)	55-16, 17
	PWDS9503	(Spanish)	
	PWDF9504	(French)	
	PWDG9505	(German)	
	PWDD9506	(Dutch)	
	PWDW9507	(Swedish)	
	PWDI96E1	(Italian)	

3. Details:

**PERFORMANCE TEST**

1. The vehicles to be tested should be in a place that is not in direct sunlight.
2. Close the high and low pressure valve of the gauge manifold.
3. Connected the charging hose (blue) to the low pressure valve and connect the charging hose (red) to the high pressure valve of the gauge manifold.
4. Install the quick joint (for low pressure) to the charging hose (blue), and connect the quick joint (for high pressure) to the charging hose (red).
5. Connect the quick joint (for low pressure) to the low-pressure service valve and connect the quick joint (for high pressure) to the high-pressure service valve.

NOTE

The high pressure service valve is on discharge pipe A and the low-pressure service valve is on the suction hose.

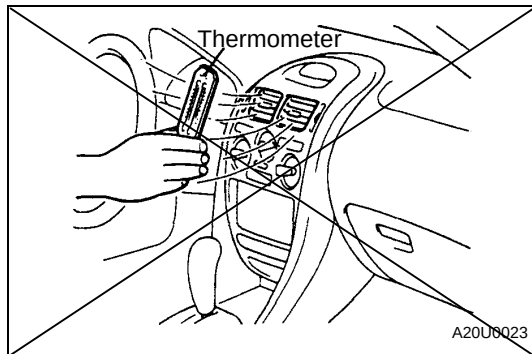
Caution

to connect the quick joint, press section "A" firmly against the service valve until a click is heard. When connecting, run your hand along the hose while pressing to ensure that there are no bends in the hose.

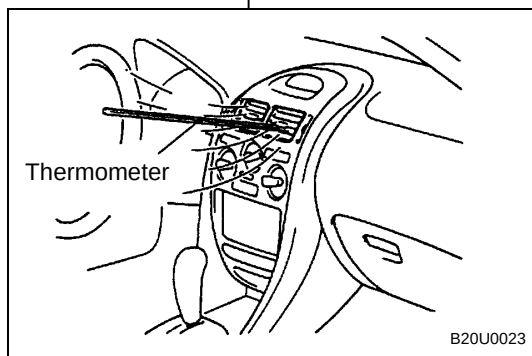
6. Start the engine.
7. Set the controls to the A/C as follows:
AC switch: A/C -ON position
Mode selection: Face position
Temperature control: Max. cooling position
Air selection: Recirculation position
Blower switch: HI (Fast) position
8. Adjust engine speed to 1,000 r/min with A/C clutch engaged.
9. Engine should be warmed up with doors and windows closed.
10. Insert a thermometer in the left center A/C outlet and operate the engine for 20 minutes.
11. Note the discharge air temperature.

NOTE

If the clutch cycles, take the reading before the clutch disengages.



<Incorrect>



<Correct>

Performance Temperature Chart

<Incorrect>

Garage ambient temperature °C	20	25	35	40
Discharge air temperature °C	2.5 - 4.5	2.5 - 4.5	4.0 - 6.5	6.5 - 9.0
Compressor high pressure kPa	765 - 960	765 - 960	1,325 - 1,420	1,570 - 1,765
Compressor low pressure kPa	40 - 135	40 - 135	80 - 175	155 - 255

REFRIGERANT LEAK REPAIR

55200150045

LOST CHARGE

If the system has lost all charge due to a leak:

1. Evacuate the system. (See procedure.)
2. Charge the system with approximately one pound of refrigerant.
3. Check for leaks.
4. Discharge the system.
5. Repair leaks.
6. Replace receiver drier.

Caution

Replacement filter-drier units must be sealed while in storage. The drier used in these units will saturate water quickly upon exposure to the atmosphere. When installing a drier, have all tools and supplies ready for quick reassembly to avoid keeping the system open any longer than necessary.

7. Evacuate and charge system.

LOW CHARGE

If the system has not lost all of its refrigerant charge; locate and repair all leaks. If it is necessary to increase the system pressure to find the leak (because of an especially low charge) add refrigerant. If it is possible to repair the leak without discharging the refrigerant system, use the procedure for correcting low refrigerant level.

HANDLING TUBING AND FITTINGS

Kinks in the refrigerant tubing or sharp bends in the refrigerant hose lines will greatly reduce the capacity of the entire system. High pressures are produced in the system when it is operating. Extreme care must be exercised to make sure that all connections are pressure tight. Dirt and moisture can enter the system when it is opened for repair replacement of lines or components. The following precautions must be observed. The system must be completely discharged before opening any fitting of connection in the refrigeration system. Open fittings with caution even after the system has been discharged. If any pressure is noticed as a fitting is loosened, allow trapped pressure to bleed off very slowly.

Never attempt to rebend formed lines to fit. Use the correct line for the installation you are servicing. A good rule for the flexible hose lines is keep the radius of all bends at least 10 times the diameter of the hose.

Sharper bends will reduce the flow of refrigerant. The flexible hose lines should be routed so that they are at least 80 mm from the exhaust manifold. It is good practice to inspect all flexible hose lines at least once a year to make sure they are in good condition and properly routed.

Unified plumbing connections with O-rings, these O-rings are not reusable.

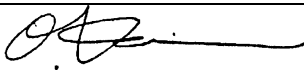
6.0 - 9.0	6.0 - 9.0	7.0 - 11.5	9.0 - 12.5
870 - 1,100	970 - 1,100	1,580 - 1,780	1,630 - 1,780
110 - 190	110 - 190	160 - 240	170 - 250

<Correct>



SERVICE BULLETIN

SERVICE GROUP, WARRANTY & SERVICE DEP.
MITSUBISHI MOTOR SALES EUROPE BV

SERVICE BULLETIN		No.: ESB-97E00-502	
		Date: 1997-01-15	
Subject:	CORRECTION TO TIGHTENING TORQUE INDICATION	<Model>	<M/Y>
Group:	GENERAL	ECLIPSE (D30)	96-10
		CARISMA	96-10
Information	 O. Kai - E.V.P. After Sales Service		

1. Description:

This Service Bulletin informs you that typographical errors have been corrected under the heading of TIGHTENING TORQUE INDICATION under Section "GENERAL - How to Use This Manual" of the Service Manual.

2. Applicable Manuals:

Manual	Pub. No.	Language	Page(s)
'96 CARISMA Workshop Manual chassis	PWDE9502	(English)	00-2
	PWDF9504	(French)	
	PWDG9505	(German)	
	PWDD9506	(Dutch)	
	PWDW9507	(Swedish)	
	PWDI96E1	(Italian)	
ECLIPSE Workshop Manual chassis	PWUE95E1	(English)	00-2
	PWUS95E1	(Spanish)	
	PWUF95E1	(French)	
	PWUG95E1	(German)	
	PWUD95E1	(Dutch)	
	PWUI95E1	(Italian)	

3. Details:

Please refer to the attached page(s)
'96 CARISMA Workshop Manual Chassis (page 2)
ECLIPSE Workshop Manual Chassis (page 3)

HOW TO USE THIS MANUAL

00100010081

SCOPE OF MAINTENANCE, REPAIR AND SERVICING EXPLANATIONS

This manual provides explanations, etc. concerning procedures for the inspection, maintenance, repair and servicing of the subject model. Note, however that for engine and transmission-related component parts, this manual covers only on-vehicle inspections, adjustments, and the removal and installation procedures for major components.

For detailed information concerning the inspection, checking, adjustment, disassembly and reassembly of the engine, transmission and major components after they have been removed from the vehicle, please refer to the separate manuals covering the engine and the transmission.

ON-VEHICLE SERVICE

"On-vehicle Service" is procedures for performing inspections and adjustments of particularly important locations with regard to the construction and for maintenance and servicing, but other inspection (for looseness, play, cracking, damage, etc.) must also be performed.

INSPECTION

Under this title are presented inspection and checking procedures to be performed by using special tools and measuring instruments and by feeling, but, for actual maintenance and servicing procedures, visual inspections should always be performed as well.

DEFINITION OF TERMS

STANDARD VALUE

Indicates the value used as the standard for judging the quality of a part or assembly on inspection or the

value to which the part or assembly is corrected and adjusted. It is given by tolerance.

LIMIT

Shows the standard for judging the quality of a part or assembly on inspection and means the maximum or minimum value within which the part or assembly must be kept functionally or in strength. It is a value established outside the range of standard value.

REFERENCE VALUE

Indicates the adjustment value prior to starting the work (presented in order to facilitate assembly and adjustment procedures, and so they can be completed in a shorter time).

CAUTION

Indicates the presentation of information particularly vital to the worker during the performance of maintenance and servicing procedures in order to avoid the possibility of injury to the worker, or damage to component parts, or a reduction of component or vehicle function or performance, etc.

INDICATION OF TIGHTENING TORQUE

The tightening torque shown in this manual is a basic value with a tolerance of $\pm 10\%$ except the following cases when the upper and lower limits of tightening torque are given. **<Incorrect>**

- (1) The tolerance of the basic value is within $\pm 10\%$.
- (2) Special bolts or the like are in use.
- (3) Special tightening methods are used.

<Incorrect>

<Correct> $\pm$

HOW TO USE THIS MANUAL

00100010159

SCOPE OF MAINTENANCE, REPAIR AND SERVICING EXPLANATIONS

This manual provides explanations, etc. concerning procedures for the inspection, maintenance, repair and servicing of the subject model. Note, however that for engine and transmission-related component parts, this manual covers only on-vehicle inspections, adjustments, and the removal and installation procedures for major components.

For detailed information concerning the inspection, checking, adjustment, disassembly and reassembly of the engine, transmission and major components after they have been removed from the vehicle, please refer to the separate manuals covering the engine and the transmission.

ON-VEHICLE SERVICE

"On-vehicle Service" is procedures for performing inspections and adjustments of particularly important locations with regard to the construction and for maintenance and servicing, but other inspection (for looseness, play, cracking, damage, etc.) must also be performed.

INSPECTION

Under this title are presented inspection and checking procedures to be performed by using special tools and measuring instruments and by feeling, but, for actual maintenance and servicing procedures, visual inspections should always be performed as well.

DEFINITION OF TERMS

STANDARD VALUE

Indicates the value used as the standard for judging the quality of a part or assembly on inspection or the

value to which the part or assembly is corrected and adjusted. It is given by tolerance.

LIMIT

Shows the standard for judging the quality of a part or assembly on inspection and means the maximum or minimum value within which the part or assembly must be kept functionally or in strength. It is a value established outside the range of standard value.

REFERENCE VALUE

Indicates the adjustment value prior to starting the work (presented in order to facilitate assembly and adjustment procedures, and so they can be completed in a shorter time).

CAUTION

Indicates the presentation of information particularly vital to the worker during the performance of maintenance and servicing procedures in order to avoid the possibility of injury to the worker, or damage to component parts, or a reduction of component or vehicle function or performance, etc.

INDICATION OF TIGHTENING TORQUE

The tightening torque shown in this manual is a basic value with a tolerance of $\pm 10\%$ except the following cases when the upper and lower limits of tightening torque are given. **<Incorrect>**

- (1) The tolerance of the basic value is within $\pm 10\%$.
- (2) Special bolts or the like are in use.
- (3) Special tightening methods are used.

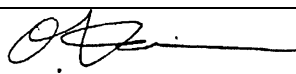
<Incorrect>

<Correct> $\pm$



SERVICE BULLETIN

PUBLICATION GROUP, AFTER SALES SERVICE DEP.
MITSUBISHI MOTOR SALES EUROPE BV

SERVICE BULLETIN		No.: ESB-98E13-001	
		Date: 1998-05-31	<Model> (EC,EXP) CARISMA
Subject: CORRECTION OF '98 CARISMA GDI WORKSHOP MANUAL GROUP 13J		<M/Y> 98-10	
Group: FUEL			
INFORMATION		 O. Kai - E.V.P. & G.M. After Sales Service Dept.	
1. Description: In the Group 13J of the '98 CARISMA GDI Workshop Manual, additions have been made to the GDI - Troubleshooting and to the GDI - Fuel Pump (High Pressure) Removal/Installation procedures.			
2. Applicable Manuals:			
Manual	Pub. No.	Language	Page(s)
'98 CARISMA GDI Workshop Manual	PWDE9502-C	(English)	13J-11, 25, 99, 102
	PWDS9503-C	(Spanish)	
	PWDF9504-C	(French)	
	PWDG9505-C	(German)	
	PWDD9506-C	(Dutch)	
	PWDW9507-C	(Swedish)	
	PWDI9508-C	(Italian)	
3. Details:			

INSPECTION CHART FOR DIAGNOSIS CODES

Code No.	Diagnosis item	Reference page
11	Oxygen sensor system	13J-12
12	Air flow sensor system	13J-13
13	Intake air temperature sensor system	13J-14
14	Throttle position sensor system	13J-15
21	Engine coolant temperature sensor system	13J-16
22	Crank angle sensor system	13J-17
23	Camshaft position sensor system	13J-18
24	Vehicle speed sensor system	13J-19
25	Barometric pressure sensor system	13J-20
31	Detonation sensor system	13J-21
41	Injector system	13J-22
44	Abnormal combustion	13J-23
54	Immobilizer system	13J-24
56	Fuel pressure sensor system	13J-25
58	Excessive intake air amount	13J-26
61	Communication wire with A/T-ECU system	13J-26
64	alternator FR terminal system	13J-27
66	Brake vacuum sensor system	13J-28

NOTE

Code No.56 may be output when air enters the high pressure fuel passage due to fuel shortage, etc.

<Added>

Code No. 56 Fuel pressure sensor system**Probable cause**

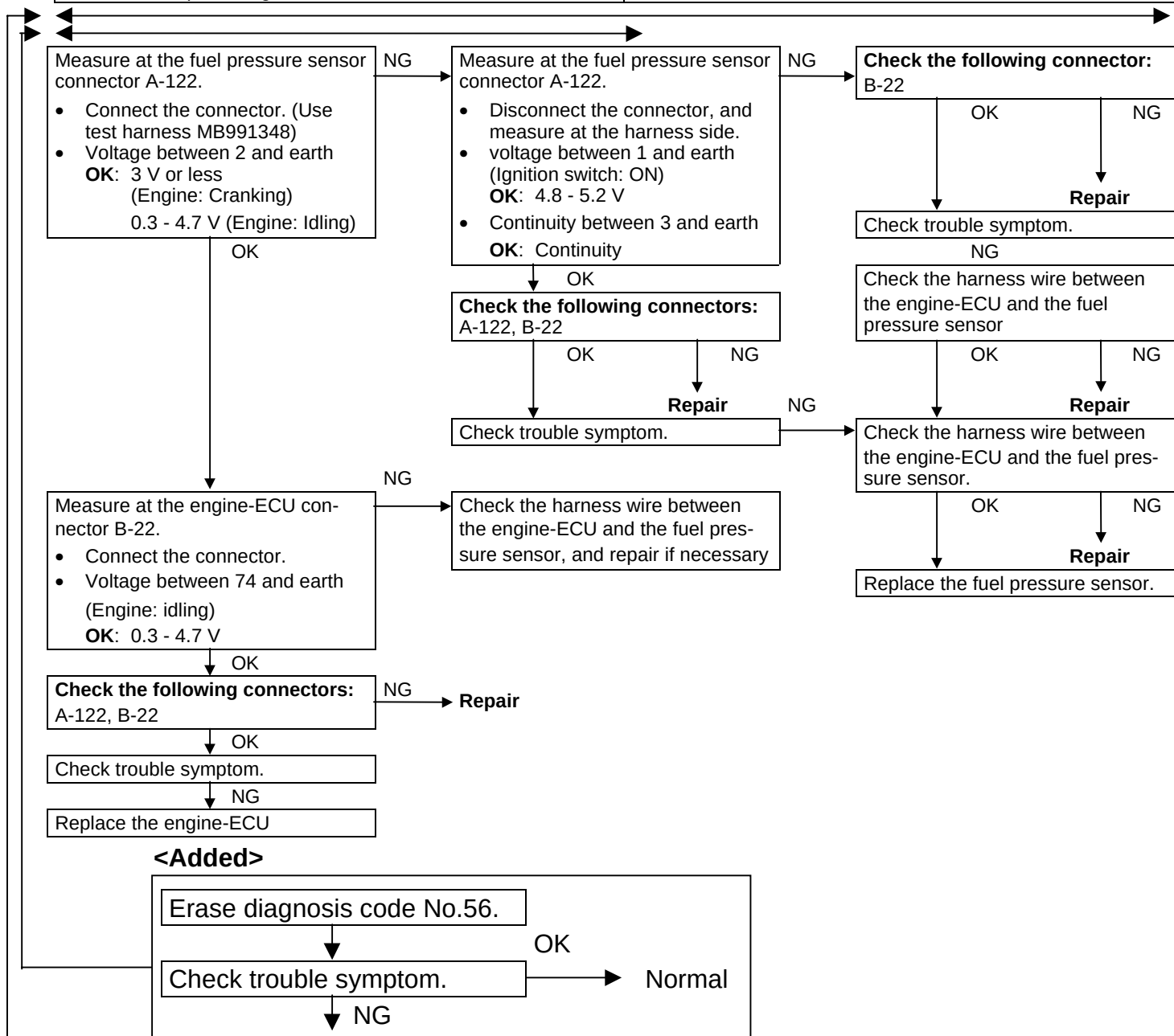
Range of check

- Ignition switch: ON

Set conditions

- Sensor output voltage is 4.7 V or more
- or
- Sensor output voltage is 0.3 V or less

- Malfunction of the fuel pressure sensor
- Open circuit or short-circuited harness wire of the fuel pressure sensor
- Malfunction of the engine-ECU

**<Added>**

This code is also generated when air enters the high pressure fuel passage due to fuel shortage, etc. In such a case, air can be removed by running the engine at 2000 rpm for more than 15 seconds. The diagnosis code, which is left generated, should be erased by the MUT-II

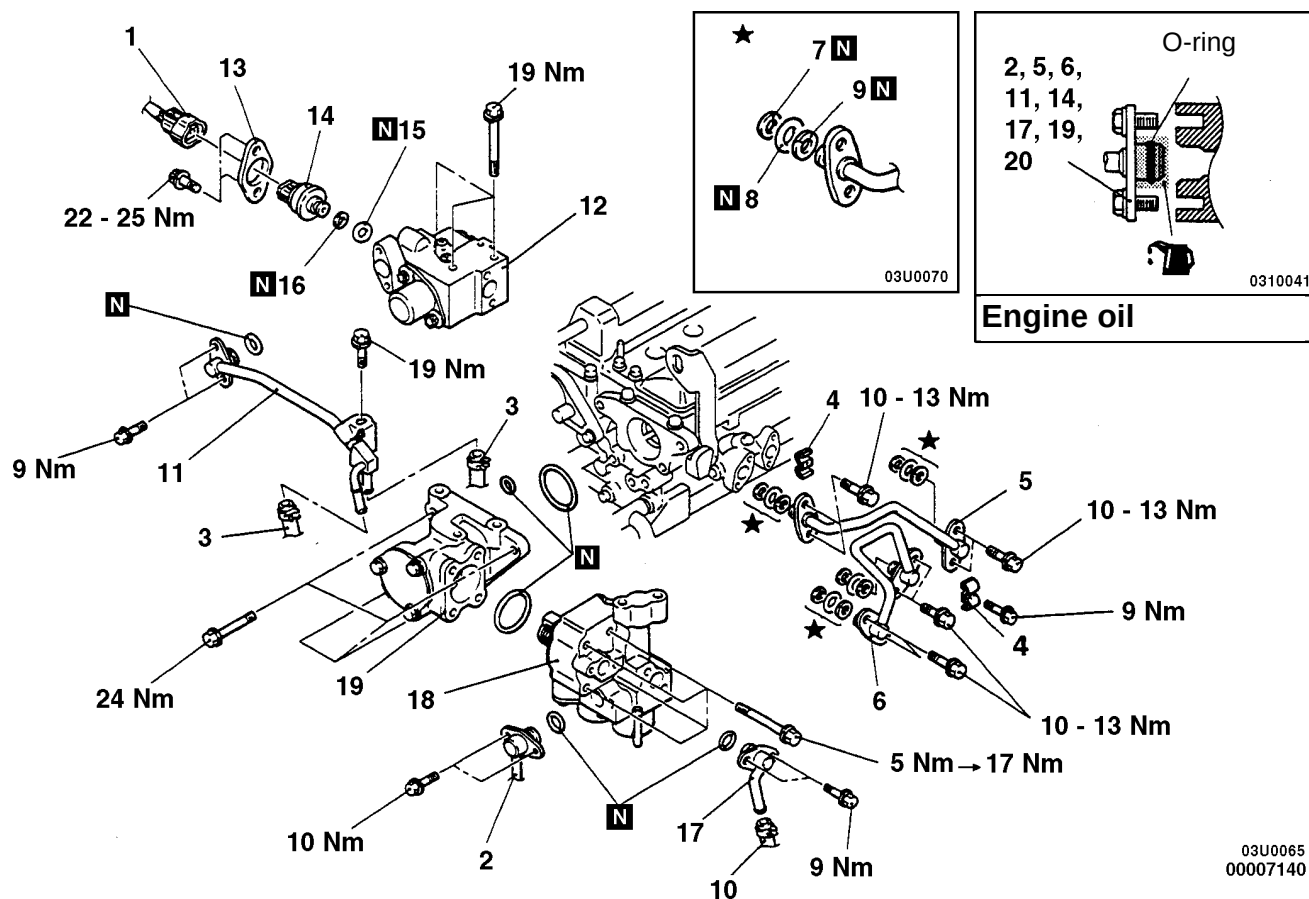
- entry of air due to fuel shortage, etc.

FUEL PUMP (HIGH PRESSURE)

REMOVAL AND INSTALLATION

Pre-removal and Post-Installation Operation

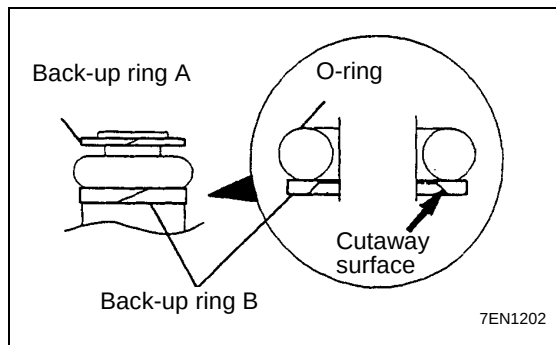
- Engine Coolant Draining and Supplying
- Prevention of fuel discharge <before removal only>
- Air Intake Hose Assembly Removal and Installation
- Engine Cover Removal and Installation
- Ignition Coil Removal and Installation
- Throttle Body Removal and Installation (Refer to 13J-105.)
- Accelerator Cable Adjustment <after installation only>
- Fuel Leak Check <after installation only>



► J ◀ • Air bleeding of high pressure fuel pump

Removal steps

- | | | | |
|-----|---------------------------------------|-----|--|
| ► K | 1. Fuel pressure sensor connector | ► F | 11. Fuel return lower pipe assembly |
| ► H | 2. High-pressure fuel hose connection | ► E | 12. Fuel pressure regulator (high pressure) assembly |
| ► G | 3. Fuel return hose connection | ► D | 13. Flange |
| ► F | 4. Clamp | ► C | 14. Fuel pressure sensor |
| ► E | 5. Fuel return pipe assembly | ► B | 15. O-ring |
| ► D | 6. Fuel feed pipe assembly | ► A | 16. Back-up ring |
| ► C | 7. Back-up ring A | ► A | 17. Fuel nipple assembly |
| ► B | 8. O-ring | ► A | 18. Fuel pump (high pressure) |
| ► A | 9. Back-up ring B | ► A | 19. Pump camshaft case assembly |
| ► A | 10. Fuel hose connection | | |



►J◄ BACK-UP RING B/O-RING/BACK-UP RING A INSTALLATION

Install the back-up rings and the O-ring as shown in the illustration.

Caution

1. Install the back-up ring B facing its cutaway surface toward the opposite side of the O-ring as shown in the illustration.
2. Confirm the outer diameter of the back-up ring A. Take care not to install the back-up ring for the fuel pressure sensor by mistake. (Outer diameter of the back-up ring A: 14.8 mm)

►H◄ FUEL FEED PIPE ASSEMBLY/FUEL RETURN PIPE ASSEMBLY INSTALLATION

Apply a small amount of fresh engine oil to the O-ring.

Caution

Take care not to let any of the engine oil get inside the fuel pump (high pressure) or the delivery pipe assembly.

►I◄ HIGH-PRESSURE FUEL HOSE INSTALLATION

1. Apply a small amount of fresh engine oil to the O-ring.

Caution

Take care not to let any of the engine oil get inside the fuel pump (high pressure).

2. While being careful not to damage the O-ring, turn the high-pressure fuel hose to the left and right and connect it to the fuel pump (high pressure). After connecting, check that the hose turns smoothly.
3. If the hose does not turn smoothly, the cause may be that the O-ring is getting caught. Disconnect the hose, check the O-ring for damage and re-connect the hose to the fuel pump (high pressure) and then re-check.

<Added>

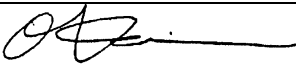
►J◄ HIGH PRESSURE FUEL PUMP AIR BLEEDING

1. Run the engine at 2000 rpm for more than 15 seconds to remove air from inside the pump.
2. NOTE
3. When the high pressure fuel pump is removed, air may enter the pump. At this time, abnormal fuel pressure causes the diagnosis code No.56 to be output.
4. After that, check the diagnosis code using MUT-II. If the code No.56 is output for the fuel pressure sensor system, erase it.



SERVICE BULLETIN

PUBLICATION GROUP, AFTER SALES SERVICE DEP.
MITSUBISHI MOTOR SALES EUROPE BV

SERVICE BULLETIN		No.: ESB-98E13-001REV	
		Date: 1998-12-15	<Model> (EC,EXP)CARISMA <M/Y> 98-10
Subject: CORRECTION OF '98 CARISMA GDI WORKSHOP MANUAL GROUP 13J			
Group: FUEL			
INFORMATION		 O. Kai - E.V.P. & G.M. After Sales Service Dept.	

This Service Bulletin is a revision to the previously issued MSB-98E13-001 (dated January 31, 1998 which contains errors in the " '98 CARISMA GDI troubleshooting" section. The previous S/B MSB-98E13-001 should be discarded.

1. Description:

In the group 13J of the '98 CARISMA GDI Workshop Manual, additions have been made to the GDI - Troubleshooting and the GDI-Fuel Pump (High Pressure) Removal Installation procedures.

2. Applicable Manuals:

Manual	Pub. No.	Language	Page(s)
'98 CARISMA Workshop Manual Chassis SUPPLEMENT GDI	PWDE9502-C	(English)	13J-9, 10, 11, 25, 35, 99, 102
	PWDS9503-C	(Spanish)	
	PWDF9504-C	(French)	
	PWDG9505-C	(German)	
	PWDD9506-C	(Dutch)	
	PWDW9507-C	(Swedish)	
	PWDI96E1-C	(Italian)	

3. Details:

Engine warning lamp inspection items

<Correct>

Abnormal fuel pressure



Engine-ECU
Oxygen sensor
Air flow sensor
Intake air temperature sensor
Throttle position sensor
Engine coolant temperature sensor
Crank angle sensor
Camshaft position sensor
Barometric pressure sensor
Detonation sensor
Injector
Abnormal combustion
Immobilizer system
Fuel pressure sensor
Excessive intake air amount
Brake vacuum sensor

<Incorrect>

METHOD OF READING AND ERASING DIAGNOSIS CODES

Refer to GROUP 00 - How to Use
Troubleshooting/Inspection Service Points.

INSPECTION USING MUT-II DATA LIST AND ACTUATOR TESTING

1. Carry out inspection by means of the data list and the actuator test function. If there is an abnormality, check and repair the chassis harnesses and components.
2. After repairing, re-check using the MUT-II and check that the abnormal input and output have returned to normal as a result of the repairs.
3. Erase the diagnosis code memory.
4. Remove the MUT-II.
5. Start the engine again and carry out a road test to confirm that the problem has disappeared.

FAIL-SAFE FUNCTION REFERENCE TABLE

When the main sensor malfunctions are detected by the diagnosis function, the vehicle is controlled by means of the pre-set control logic to maintain safe conditions for driving.

Malfunctioning item	Control contents during malfunction
Air flow sensor	(1) Lean fuel combustion driving and feedback control driving are prevented (2) Basic injection drive timing and basic ignition timing are set by means of the mapping values from the throttle position signal and the crank angle sensor signal.
Intake air temperature sensor	Control is carried out as if the intake air temperature is 25°C.
Throttle position sensor	(1) Lean fuel combustion driving is prevented. (2) Dashpot compensation for the idle speed control is prevented.
Engine coolant temperature sensor	Control is carried out as if the engine coolant temperature is 80°C. Furthermore, this control will continue until the ignition switch is turned to OFF, even if the sensor signal returns to normal.
Camshaft position sensor	Control is carried out as if the conditions before the failure judgement occurred are continuing.
Vehicle speed sensor	(1) Lean fuel combustion driving is prevented. However, this condition is cleared if the engine speed is continuously at 1,500 r/min or more for a certain length of time. (2) Lean fuel combustion during idle is prevented.
Barometric pressure sensor	Control is carried out as if the barometric pressure is 101 kPa (760 mmHg).
Detonation sensor	Ignition timing is fixed to the timing for standard petrol.
Injector	(1) Lean fuel combustion driving is prevented. (2) EGR operation is cut.
Abnormal combustion	Lean fuel combustion driving prevented.
Excessive intake air amount	When the air flow sensor output is compared with the throttle position sensor output and the air amount is judged to be excessive, compression stroke fuel injection and lean fuel combustion driving are set.
Communication line with A/T-ECU	Ignition timing retarding control (engine and transmission total control) during transmission gear shifting is prevented.
Alternator FR terminal	Alternator output suppression control under high electrical loads is prevented. (Alternator works as a normal alternator.)
Fuel pressure sensor	Control is carried out as if the fuel pressure is 5 Mpa. <Incorrect>

<Correct>

- (1) Control is carried out as if the fuel pressure is 5 Mpa. (Open circuit/short circuit)
- (2) Fuel pump relay is turned OFF. (Abnormally high pressure)
- (3) Fuel injection is shut off. (Engine speed exceeds 3,00 r/min with abnormally low pressure detected.)

INSPECTION CHART FOR DIAGNOSIS CODES

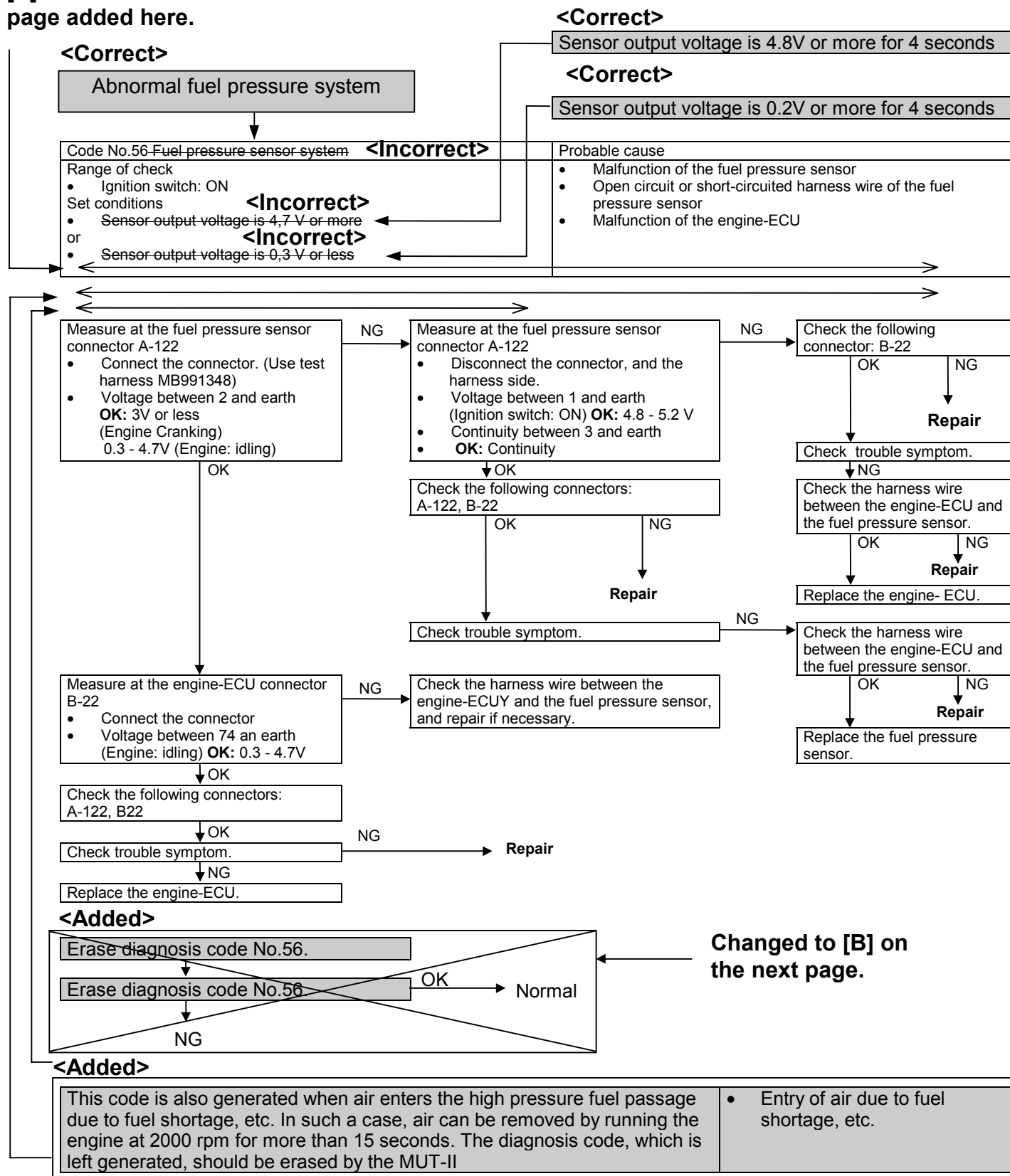
Code no.	Diagnosis item	Reference page
11	Oxygen sensor system	13J-12
12	Air flow sensor system	13J-13
13	Intake air temperature sensor system	13J-14
14	Throttle position sensor system	13J-15
21	Engine coolant temperature sensor system	13J-16
22	Crank angle sensor system	13J-17
23	Camshaft position sensor system	13J-18
24	Vehicle speed sensor system	13J-19
25	Barometric pressure sensor system	13J-20
31	Detonation sensor system	13J-21
41	Injector system	13J-22
44	Abnormal combustion	13J-23
54	Immobilizer system <Incorrect> <Correct>	13J-24
56	Fuel pressure sensor system ← Abnormal fuel pressure system	13J-25
58	Excessive intake air mount	13J-26
61	Communication wire with A/T-ECU system	13J-26
64	Alternator FR terminal system	13J-27
66	Brake vacuum sensor system	13J-28

NOTE

Code No.56 may be output when air enters the high pressure fuel passage due to fuel shortage, etc.

<Added>

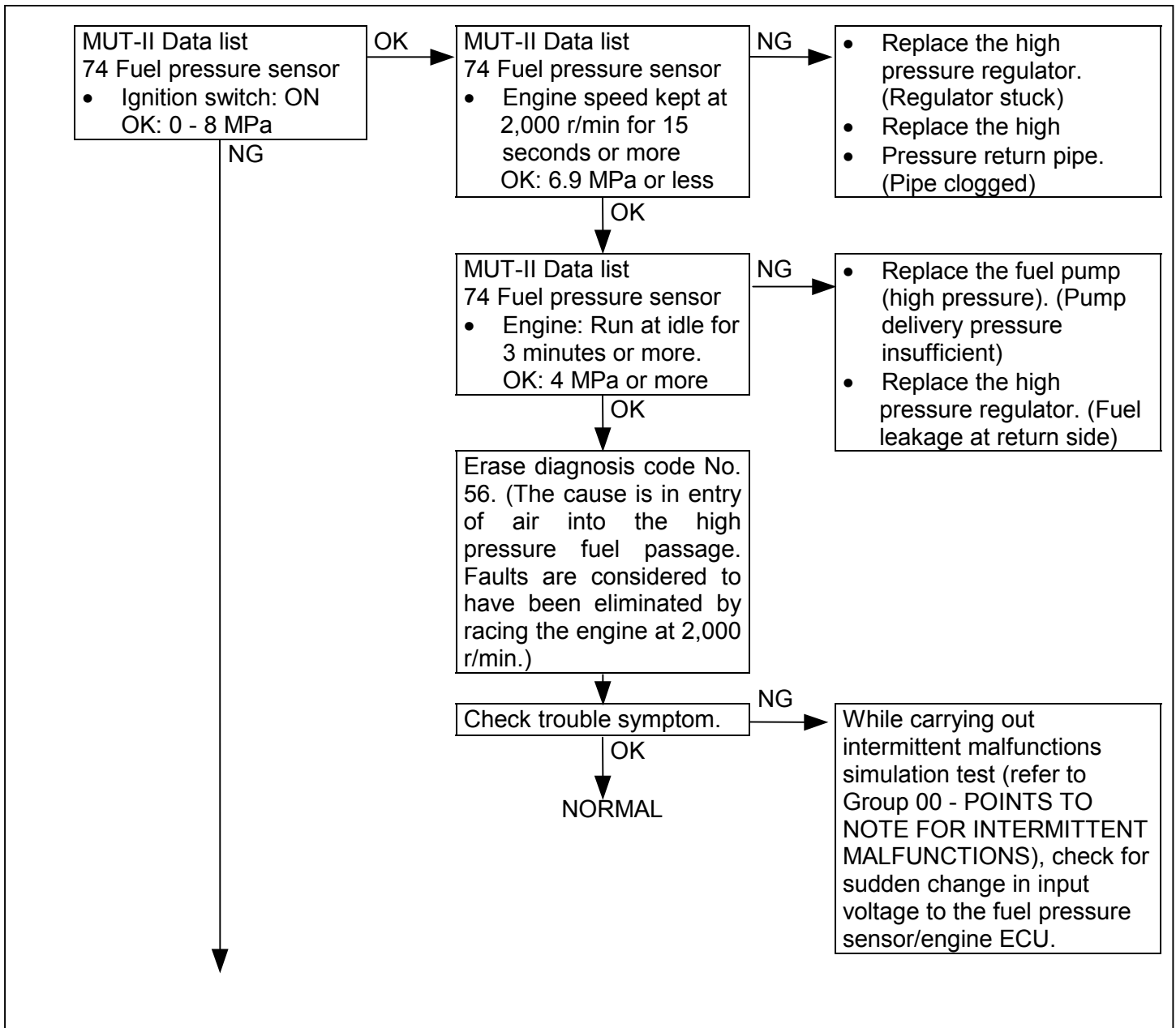
[A] on the next
page added here.



[A]

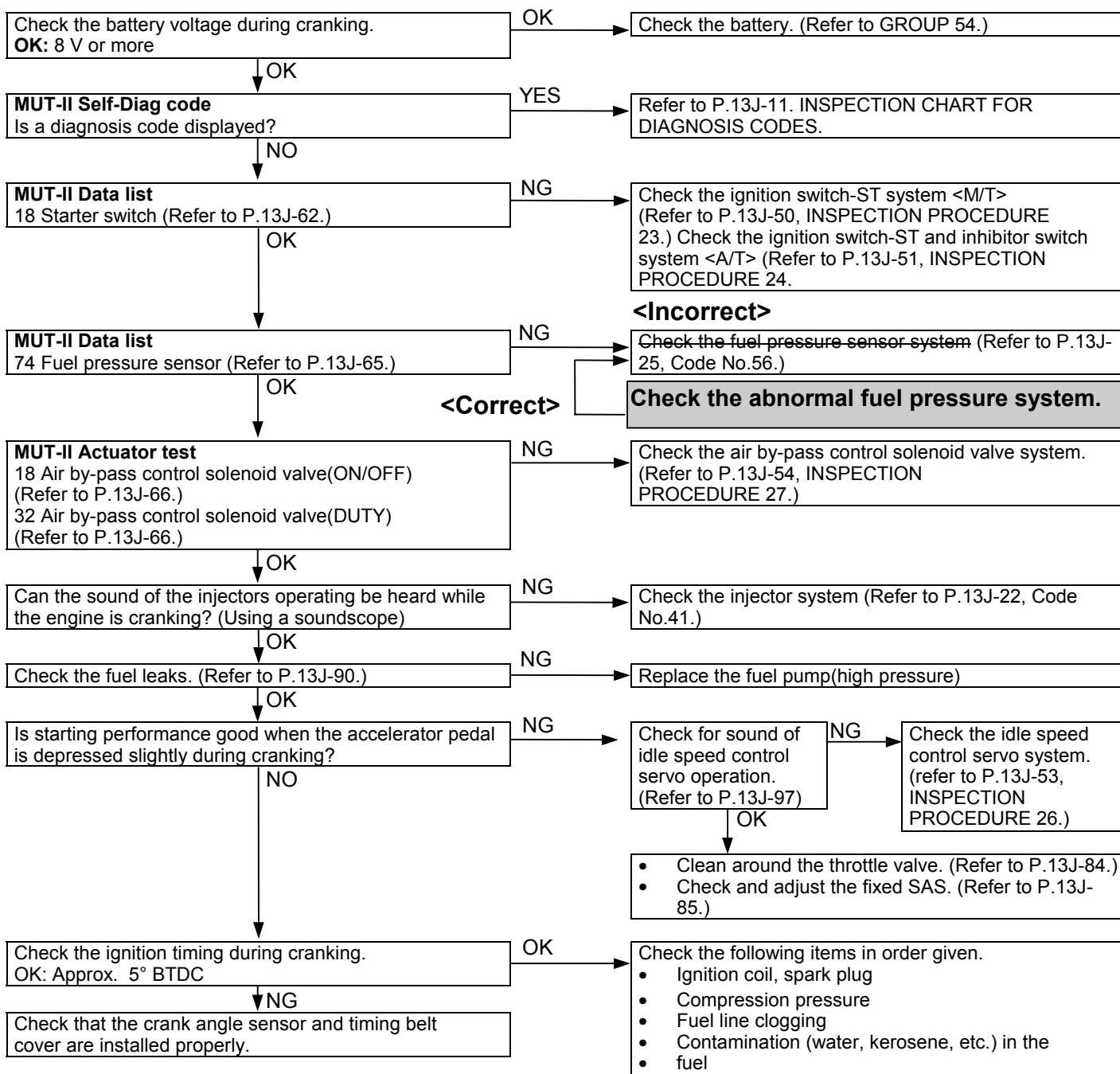
Range of check - Following conditions once detected after engine is started. (1) Engine speed: 1,000 r/min or more (2) Fuel pressure: 2 MPa or more - Engine in operation Set conditions - Fuel pressure is 6.9 MPa or more for 4 seconds. - or - Fuel pressure is 2 MPa or less for 4 seconds.	- Malfunction of the fuel pump (high pressure) - Malfunction of the fuel pressure regulation (high pressure) - Clogged high pressure fuel lines
--	---

[B]



INSPECTION PROCEDURE 6

Initial combustion but no complete combustion (starting impossible) Long time to start (Improper starting)	Probable cause
The cause is probably poor ignition due to a malfunction spark plug (weak spark), an incorrect air/fuel ratio when starting or incorrect fuel pressure switching.	• Malfunction of the fuel supply system • Malfunction of the fuel pressure sensor • Malfunction of the ignition system • Malfunction of idle speed control system • Malfunction of the air by-pass control system • Malfunction of the engine-ECU

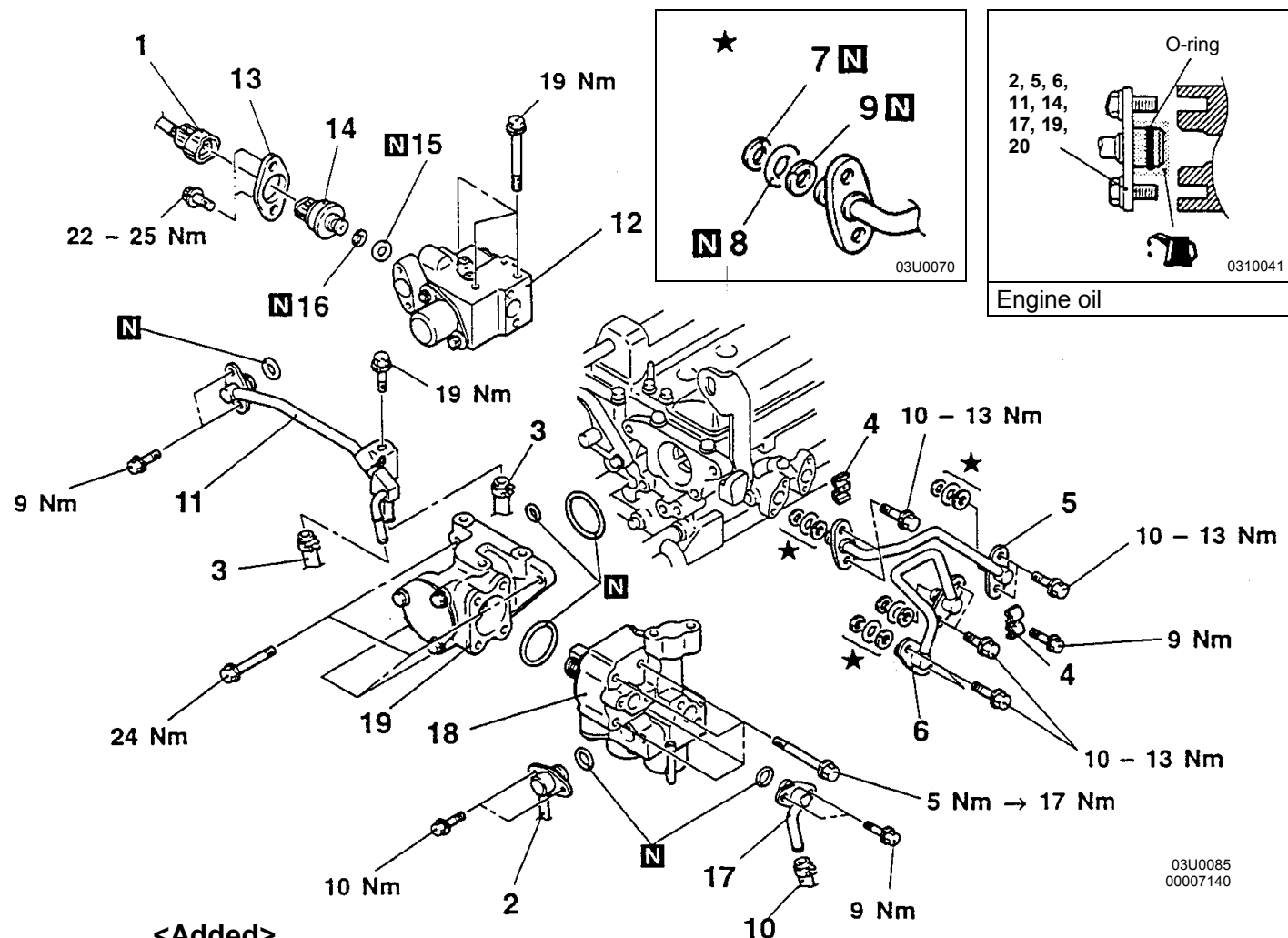


FUEL PUMP (HIGH PRESSURE)

REMOVAL AND INSTALLATION

Pre-removal and Post-installation Operation

- Engine Coolant Draining and Supplying
- Prevention of fuel discharge <before removal only>
- Air Intake Hose Assembly Removal and Installation
- Engine Cover Removal and Installation
- Ignition Coil Removal and Installation
- Throttle Body removal and Installation (Refer to 13J-106.)
- Accelerator Cable Adjustment <after installation only>
- Fuel Leak Check <after installation only>

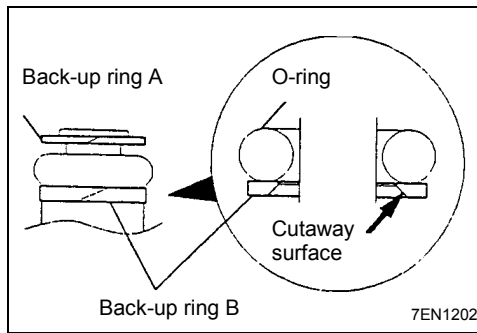


<Added>

- ▶ J ◀ • Air bleeding of high pressure fuel pump

Removal steps

- | | | | |
|-------|---------------------------------------|-------|--|
| ▶ I ◀ | 1. Fuel pressure sensor connector | ▶ F ◀ | 11. Fuel return lower pipe assembly |
| ▶ H ◀ | 2. High-pressure fuel hose connection | ▶ E ◀ | 12. Fuel pressure regulator (high pressure) assembly |
| ▶ H ◀ | 3. Fuel return hose connection | ▶ E ◀ | 13. Flange |
| ▶ G ◀ | 4. Clamp | ▶ D ◀ | 14. Fuel pressure sensor |
| ▶ G ◀ | 5. Fuel return pipe assembly | ▶ D ◀ | 15. O-ring |
| ▶ G ◀ | 6. Fuel feed pipe assembly | ▶ D ◀ | 16. Back-up ring |
| | 7. Back-up ring A | ▶ C ◀ | 17. Fuel nipple ring |
| | 8. O-ring | ▶ B ◀ | 18. Fuel pump (high pressure) |
| | 9. Back-up ring B | ▶ A ◀ | 19. Pump camshaft case assembly |
| | 10. Fuel hose connection | | |



► G ◀ BACK-UP RING B/O-RING/BACK-UP RING A INSTALLATION

Install the back-up rings and the O-ring as shown in the illustration.

Caution

1. Install the back-up ring B facing its cutaway surface toward the opposite side of the O-ring as shown in the illustration
2. Confirm the outer diameter of the back-up ring A. Take care not to install the back-up ring for the fuel pressure sensor by mistake. (Outer diameter of the back-up ring A: 14,8 mm)

► H ◀ FUEL FEED PIPE ASSEMBLY/FUEL RETURN PIPE ASSEMBLY INSTALLATION

Apply a small amount of fresh engine oil to the O-ring.

Caution

Take care not to let any of the engine oil get inside the fuel pump (high pressure) or the delivery pipe assembly.

► I ◀ HIGH-PRESSURE FUEL HOSE INSTALLATION

1. Apply a small amount of fresh engine oil to the O-ring.

Caution

Take care not to let any of the engine oil get inside the fuel pump (high pressure) or the delivery pipe assembly.

2. While being careful not to damage the O-ring, turn the high-pressure fuel hose to the left and right and connect it to the fuel pump (high pressure). After connecting, check that the hose turns smoothly.
3. If the hose does not turn smoothly, the cause may be that the O-ring is getting caught. Disconnect the hose, check the O-ring for damage and re-connect the hose to the fuel pump (high pressure) and then re-check.

<Added>

► J ◀ HIGH-PRESSURE FUEL PUMP AIR BLEEDING

1. Run the engine at 2,000 r/min for more than 15 seconds to remove air from inside the pump.

NOTE

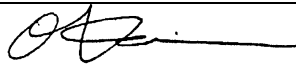
When the high pressure fuel pump is removed, air may enter the pump. At this time, abnormal fuel pressure causes the diagnosis code No.56 to be output.

2. After that, check the diagnosis code using MUT-II. If the code No.56 is output for the fuel pressure sensor system, erase it.



SERVICE BULLETIN

PUBLICATION GROUP, AFTER SALES SERVICE DEP.
MITSUBISHI MOTOR SALES EUROPE BV

SERVICE BULLETIN		No.: ESB-98E13-002	
		Date: 1998-12-15	<Model> (EC,EXP) CARISMA
Subject: CHANGES IN TROUBLESHOOTING		<M/Y> 98-10	
Group: FUEL			
CORRECTION		 O. Kai - E.V.P. & G.M. After Sales Service Dept.	

1. Description:

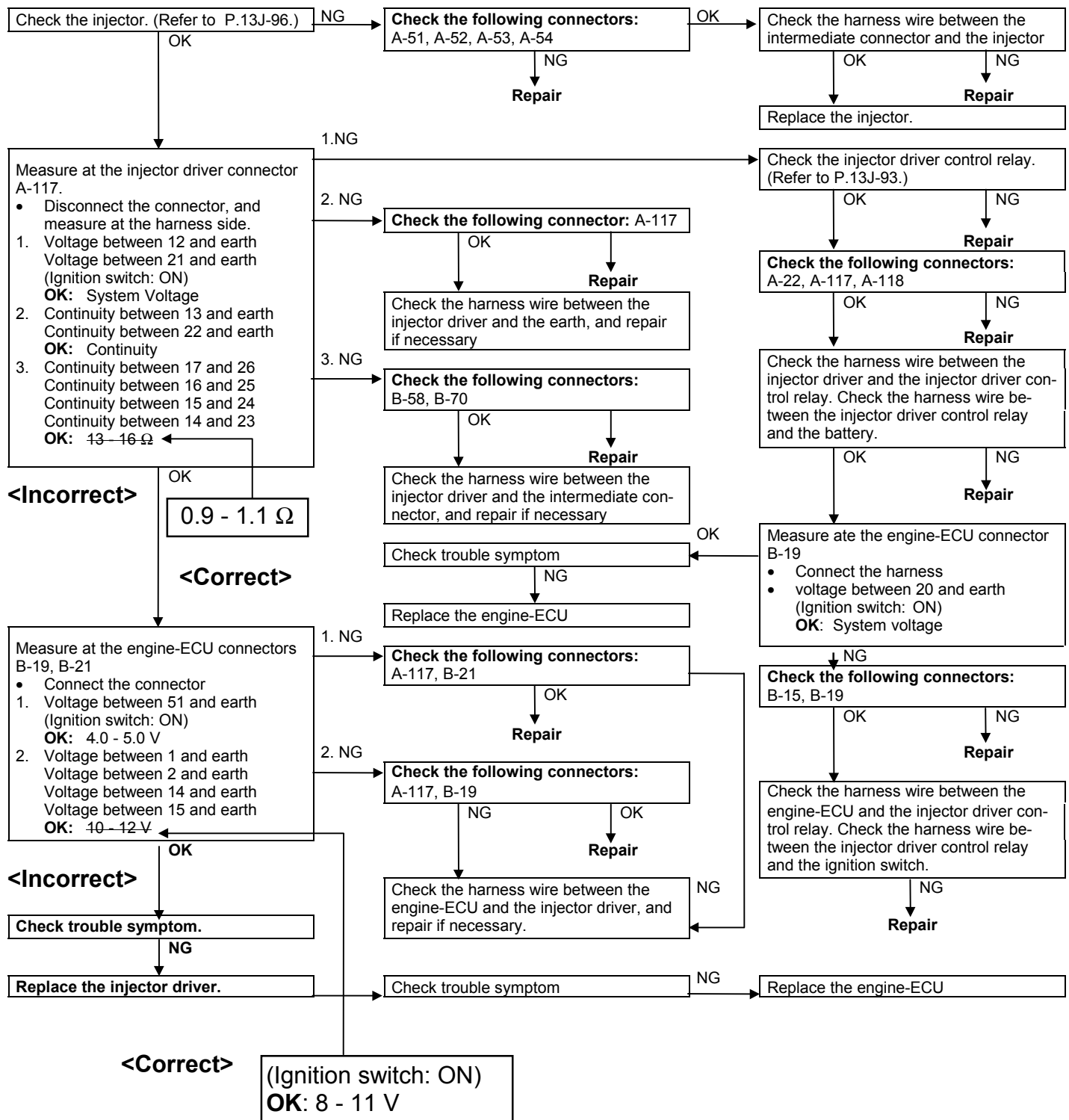
This Service Bulletin informs you of changes in GDI-Troubleshooting described in each of the following Workshop Manuals.

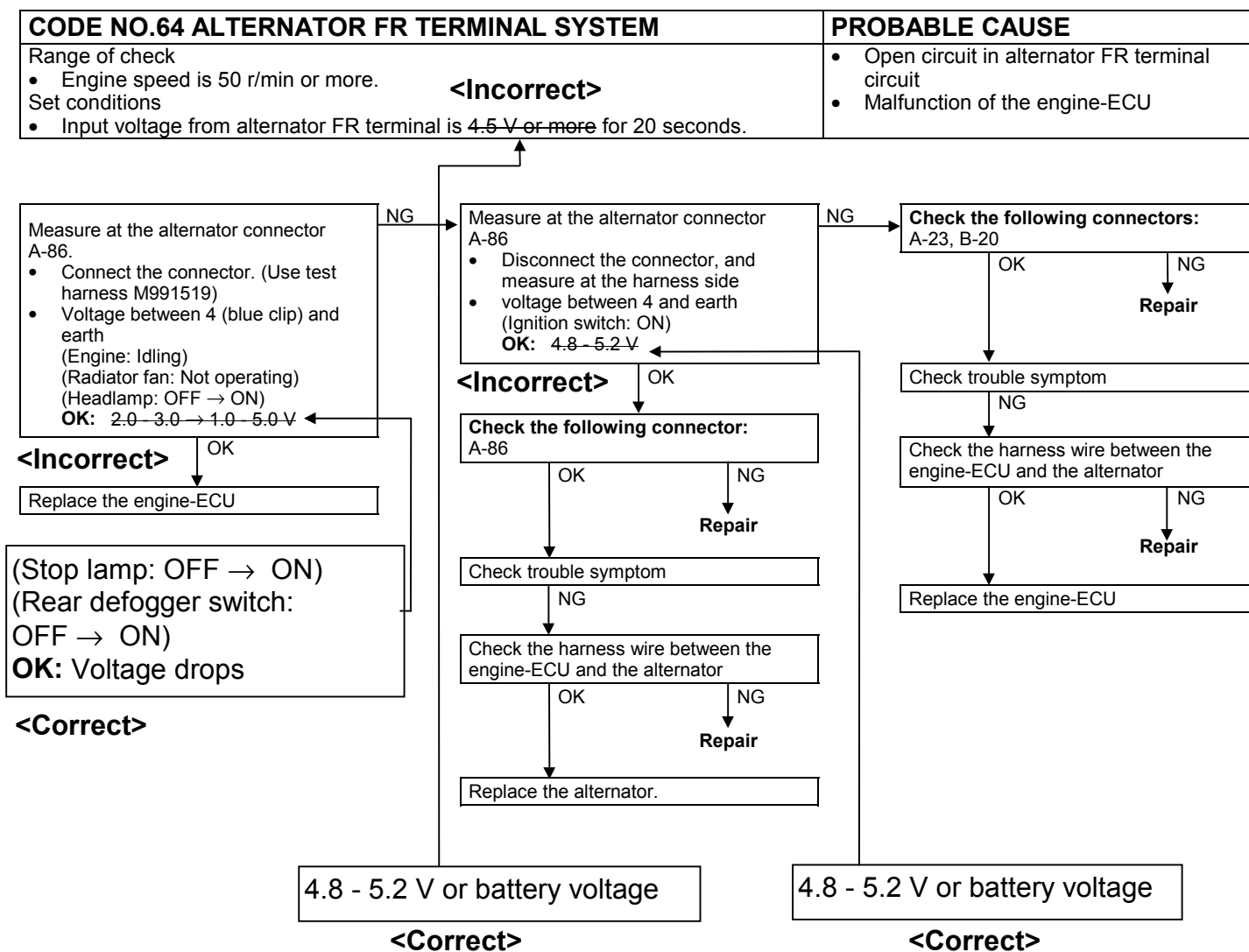
2. Applicable Manuals:

Manual	Pub. No.	Language	Page(s)
'98 CARISMA Workshop Manual Chassis SUPPLEMENT GDI	PWDE9502-C	(English)	13J-22, 27, 28, 47, 65, 67, 68, 69
	PWDS9503-C	(Spanish)	
	PWDF9504-C	(French)	
	PWDG9505-C	(German)	
	PWDD9506-C	(Dutch)	
	PWDW9507-C	(Swedish)	
	PWDI96E1-C	(Italian)	

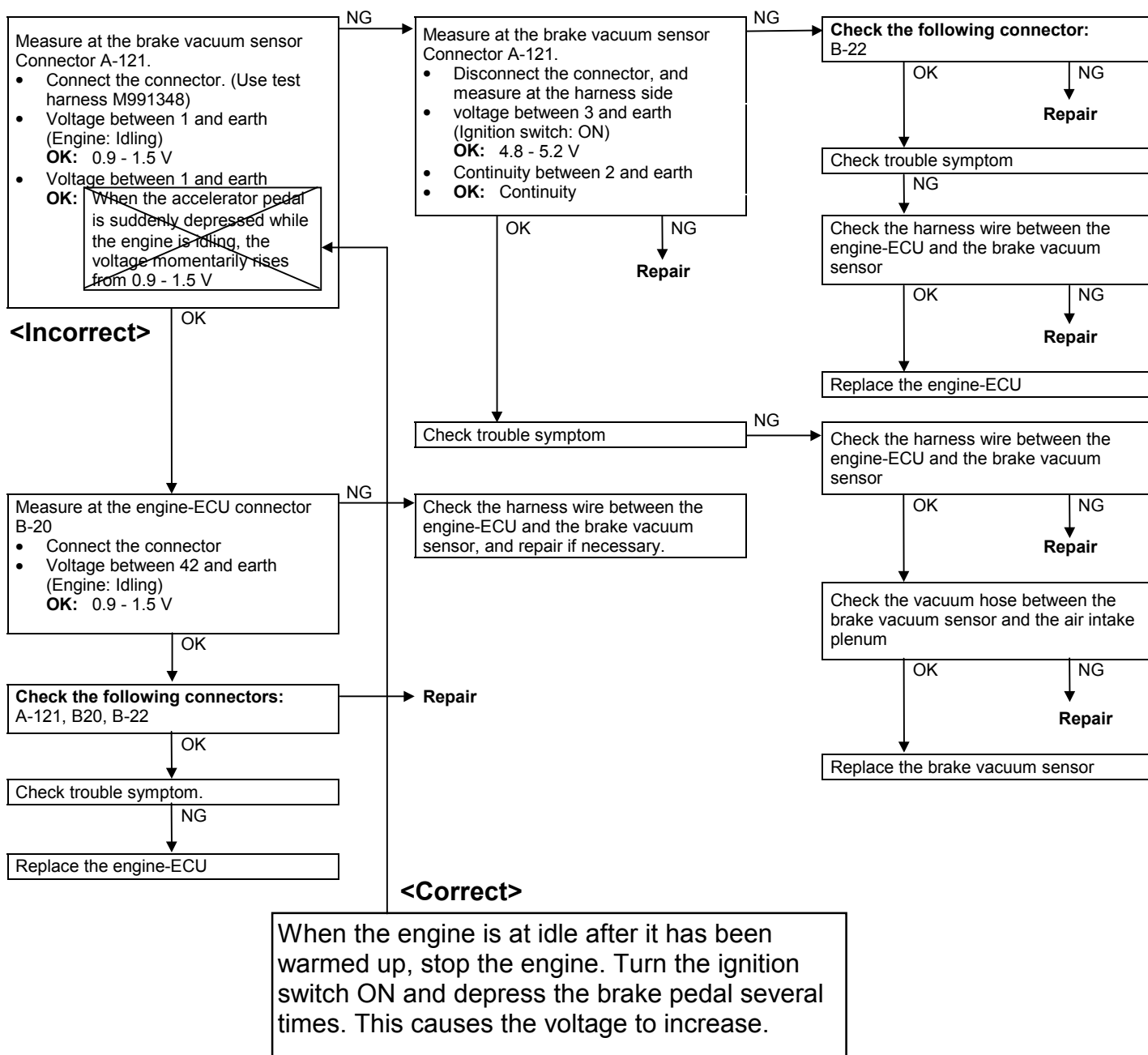
3. Details:

CODE NO.41 INJECTOR SYSTEM	PROBABLE CAUSE
Range of check • While engine is cranking or running • Engine speed is 4,000 r/min or less • System voltage is 10 V or more • While fuel cut and injector forced drive (actuator test) are not being carried out Set conditions • Injector open circuit check signal is not output by the injector driver for a set number of times	• Malfunction of the injector • Malfunction of the injector driver control relay • Malfunction of the injector driver • Open circuit or short-circuited harness wire of the injector drive circuit • Malfunction of the engine-ECU

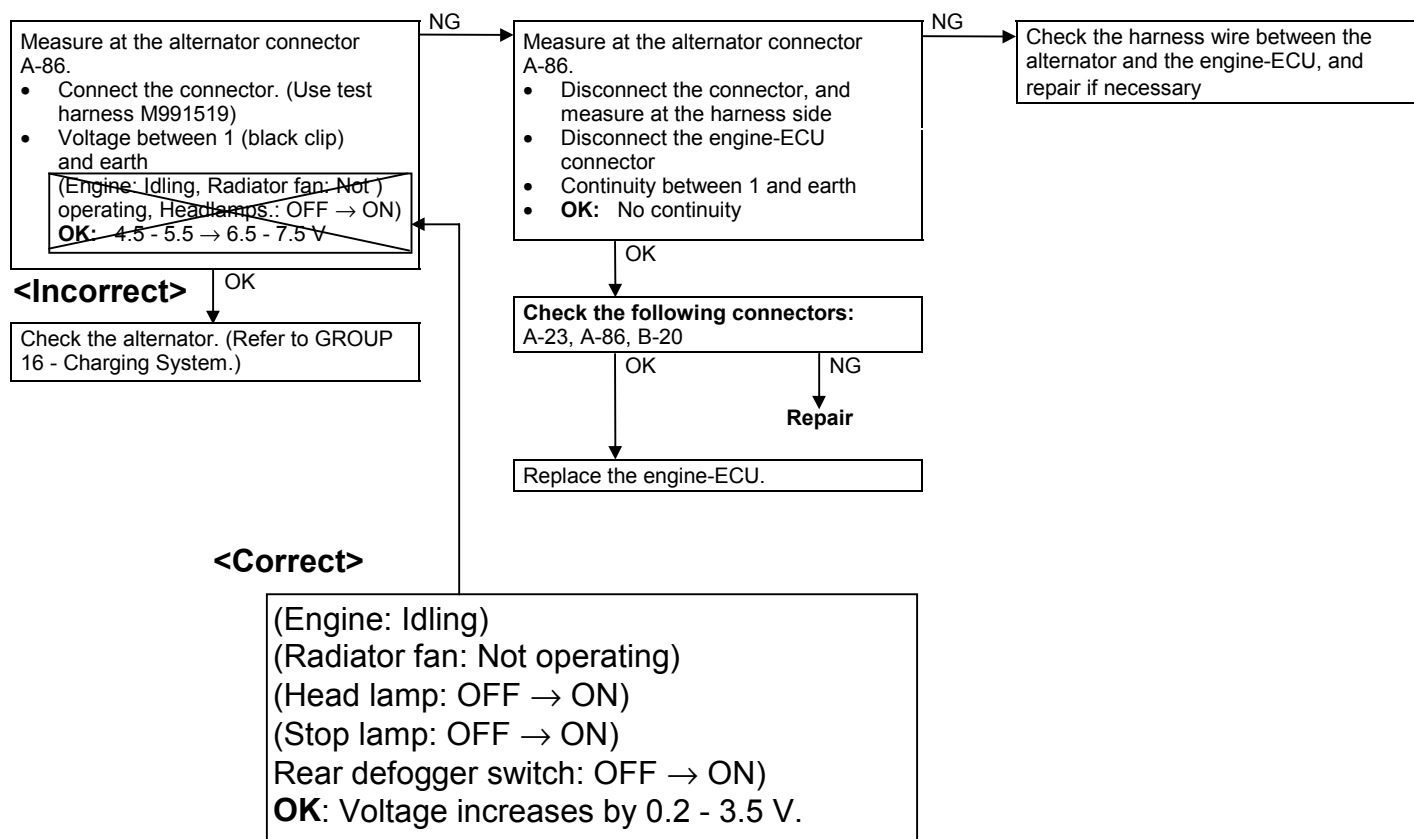


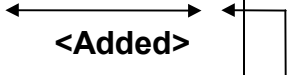


CODE NO.66 BRAKE VACUUM SENSOR SYSTEM	PROBABLE CAUSE
Range of check • Ignition switch: ON. Set conditions • Sensor output voltage is 4.8 V or more. or • Sensor output voltage is 0.2 V or less.	• Malfunction of the brake vacuum sensor • Improper connector contact, open circuit or short-circuited harness wire of the brake vacuum sensor • Malfunction of the engine-ECU

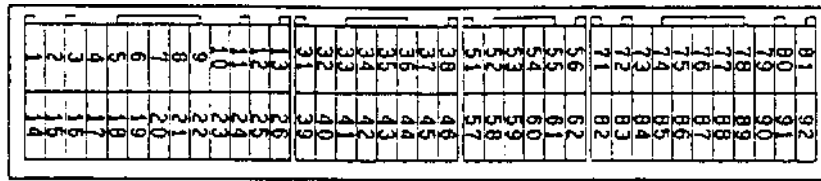


LOW ALTERNATOR OUTPUT VOLTAGE (APPROX. 12.3 V)	PROBABLE CAUSE
The cause is probably a malfunction of the alternator or one of the problems listed at right.	- Malfunction of the charging system - Open circuit between the alternator G terminal and the engine-ECU - Malfunction of the engine-ECU



Item No.	Inspection item	Inspection contents		Normal condition	Inspection procedure No.	Reference page
49	A/C relay	Engine: After having warmed up/ Engine is idling	A/C switch: OFF	OFF (Compressor clutch is not operating)	Procedure No.32	13J-58
			A/C switch: ON	ON (Compressor clutch is operating)		
66	Brake vacuum sensor	- Engine coolant temperature 80 - 95°C - Lamps, Electric cooling fan and all accessories: OFF - Transmission: Neutral (A/T: P range)	When the engine is running at idle, stop the engine, and then turn the ignition switch to ON and depress the brake pedal several times.	Negative pressure drops  (Indicated pressure increases) 	Code No. 66	13J-28
67	Stop lamp switch	Ignition switch: ON	Brake pedal: Depressed  Brake pedal: Released 	ON ← OFF OFF ← ON	Procedure No.34	13J-59
68	EGR control servo	- Engine coolant temperature 80 - 95°C - Lamps, Electric cooling fan and all accessories: OFF - Transmission: Neutral (A/T: P range)	Engine is idling 2,500 r/min When engine is suddenly raced	5 - 15 STEP 0 - 5 STEP 0 - 5 STEP	Procedure No.29	13J-56
74	Fuel pressure sensor	- Engine coolant temperature 80 - 95°C - Lamps, Electric cooling fan and all accessories: OFF - Transmission: Neutral (A/T: P range)	Engine; Idling	4 - 7 MPa	Code No.56	13J-25
99	Fuel injection mode	Engine: After warmed-up	Engine: Idling (several minutes after engine starts) 2,500 r/min When engine is idling and the suddenly raced	Lean compression Stoichiometric feedback Open-loop	-	-

CHECK AT THE ENGINE-ECU TERMINALS TERMINAL VOLTAGE CHECK CHART ENGINE-ECU CONNECTOR TERMINAL ARRANGEMENT



9FU0393

Terminal No.	Check item	Check condition (Engine condition)		Normal condition
1	No.1 injector	Engine: Idling after having warmed up ←		10 - 12 V ← <Correct> Momentarily decreases slightly from 9 - 13 V.
14	No.2 injector			
2	No.3 injector			
15	No.4 injector			
3	Air by-pass control solenoid valve (ON/OFF)	Engine: Idling after having warmed up		System voltage
		Engine: 2,500 r/min		System voltage
16	Air by-pass control solenoid valve (DUTY)	Engine: Idling after having warmed up		System voltage
		Engine: 2,500 r/min		System voltage
4	Idle speed control servo (A)	Engine: Immediately after the warm engine has been started		System voltage ↔ 0 - 0,5 V (changes repeatedly)
17	Idle speed control servo (B)			
5	Idle speed control servo (C)			
18	Idle speed control servo (D)			
7	A/T-ECU communication output	Engine: Idling Selector lever position: D range		Other than 0 V
59	A/T-ECU communication input			
8	A/C relay	Engine: Idling	A/C switch: OFF	0 - 0.1 V
			A/C switch: ON	Momentarily system voltage or momentarily 6 V or more
10	No.1 ignition coil	Engine: 2,500 r/min		0.1 - 0.3 V
11	No.2 ignition coil			
23	No.3 ignition coil			
24	No.4 ignition coil			

<Correct>

When the engine is at idle after it has been warmed up, suddenly depress the accelerator pedal.

Terminal No.	Check item	Check condition (Engine condition)	Normal condition
12	Power supply	Ignition switch: ON	System voltage
25	Power supply		
13	Earth	At all times	0 V
28	Earth		
19	Air flow sensor reset signal	Engine: Idling	0 - 0.1 V
		Engine: 4,000 r/min	6 - 9 V
90	Air flow sensor	Engine: Idling	2.2 - 3.2 V
		Engine: 2,500 r/min	
20	Injector driver control relay	Ignition switch: OFF	0 - 0.1 V
		Ignition switch: ON	0.5 - 1 V
21	Fan motor relay (LO)	Radiator fan and condenser fan are not operating (Engine coolant temperature is 90 °C or less)	System voltage
		Radiator fan and condenser fan are operating (Engine coolant temperature is 90 - 105 °C)	0 - 3 V
22	Fuel pump relay	Ignition switch: ON	Engine: Stopped
			Engine: Idling
39	EGR control servo (A)	Engine: Immediately after the warm engine has been started	System voltage ↔ 0 - 0.5 V (changes repeatedly)
40	EGR control servo (B)		
31	EGR control servo (C)		
32	EGR control servo (D)		
33	Alternator G terminal	Engine: Idling after having warmed up Radiator fan: Not operating Headlamp: OFF → ON Stop lamp: OFF → ON Rear defogger switch: OFF → ON	4.5 - 5.5 V → 6.5 - 7.5 V ← Voltage increases by 0.2 - 3.5 V <Correct>
41		Engine: Idling after having warmed up Radiator fan: Not operating Headlamp: OFF → ON Stop lamp: OFF → ON Rear defogger switch: OFF → ON	2.0 - 3.0 V → 1.0 - 2.0 V ← <Incorrect> <Correct> Voltage decreases
35	Stop lamp switch	Brake pedal: Depressed	System voltage
		Brake pedal: Released	0 - 0.1 V

Terminal No.	Check item	Check condition (Engine condition)		Normal condition
36	Engine warning lamp	Ignition switch: OFF → ON		0 - 0.1 V → System voltage (after several seconds have passed)
37	Power steering fluid pressure switch	Steering wheel: Neutral position		System voltage
		Steering wheel: Turned		0 - 0.1 V
38	Control relay	Ignition switch: ON <Incorrect>		0 - 1 V
42	Brake vacuum sensor	Engine: Accelerator pedal is suddenly depressed while the engine is idling after having warmed up Voltage drops slightly ← Voltage increases.		
45	Brake vacuum sensor	Engine: Idling	A/C switch: OFF	0 - 0.1 V <Correct>
			A/C switch: ON	System voltage
51	Injector open circuit check signal	Engine: Idling		0 ↔ 5 V
52	Electrical load switch	Engine: Idling	Turn off the lighting switch	0 - 3 V
			Turn on the lighting switch	System voltage
54	Fan motor relay (HI)	Radiator fan and condenser fan are not operating (Engine coolant temperature is 90 °C or less)		System voltage
		Radiator fan and is operating (Engine coolant temperature is 105°C or more)		0 - 3 V
56	Diagnosis control terminal	-		-
62	Diagnosis output terminal	Ignition switch: ON At normal condition (no diagnosis output)		4 - 5 V
57	Purge control solenoid valve	Ignition switch: ON	Engine: Stopped	System voltage
			Engine: Running at 2,500 r/min after having warmed up	0 - 3 V
58	Tachometer	Engine: Cranking		0 ↔ 5 V (changes repeatedly)
60	Oxygen sensor heater control	Ignition switch: ON	Engine: Stopped	System voltage
			Engine: After starting	0 - 0.5 V
76	Oxygen sensor	Engine: Running at 2,500 r/min after having warmed up		0 ↔ 1 V (changes repeatedly)

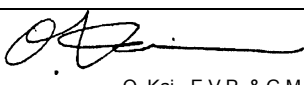
When the engine is running at idle, stop the engine, and then turn the ignition switch to ON and depress the brake pedal several times.

<Correct>



SERVICE BULLETIN

PUBLICATION GROUP, AFTER SALES SERVICE DEP.
MITSUBISHI MOTOR SALES EUROPE BV

SERVICE BULLETIN		No.: ESB-98E16-001	
		Date: 1998-10-15	<Model> (EC,EXP) CARISMA
Subject: CHANGE OF SPARK PLUG FROM PLATINUM TO IRIIDIUM PLUG		<M/Y> 98-10	
Group: ENGINE ELECTRICAL			
INFORMATION		 O. Kai - E.V.P. & G.M. After Sales Service Dept.	

1. Description:

With change of the spark plug from the platinum to iridium plug, applicable description in the Workshop Manual have been changed.

2. Applicable Manuals:

Manual	Pub. No.	Language	Page(s)
'98 CARISMA GDI Workshop Manual chassis	PWDE9502-C	(English)	16-19, 20
	PWDS9503-C	(Spanish)	
	PWDF9504-C	(French)	
	PWDG9505-C	(German)	
	PWDD9506-C	(Dutch)	
	PWDW9507-C	(Swedish)	
	PWDI96E1-C	(Italian)	

3. Effective Date:

From December 3, 1997

4. Interchangeability:

Not interchangeable except that the new plug can be used in old cars.

5. Details

<Reference>

	Old	New
Part No.	MD336367	MD360019
Model	PZFR6B	IZFR6B

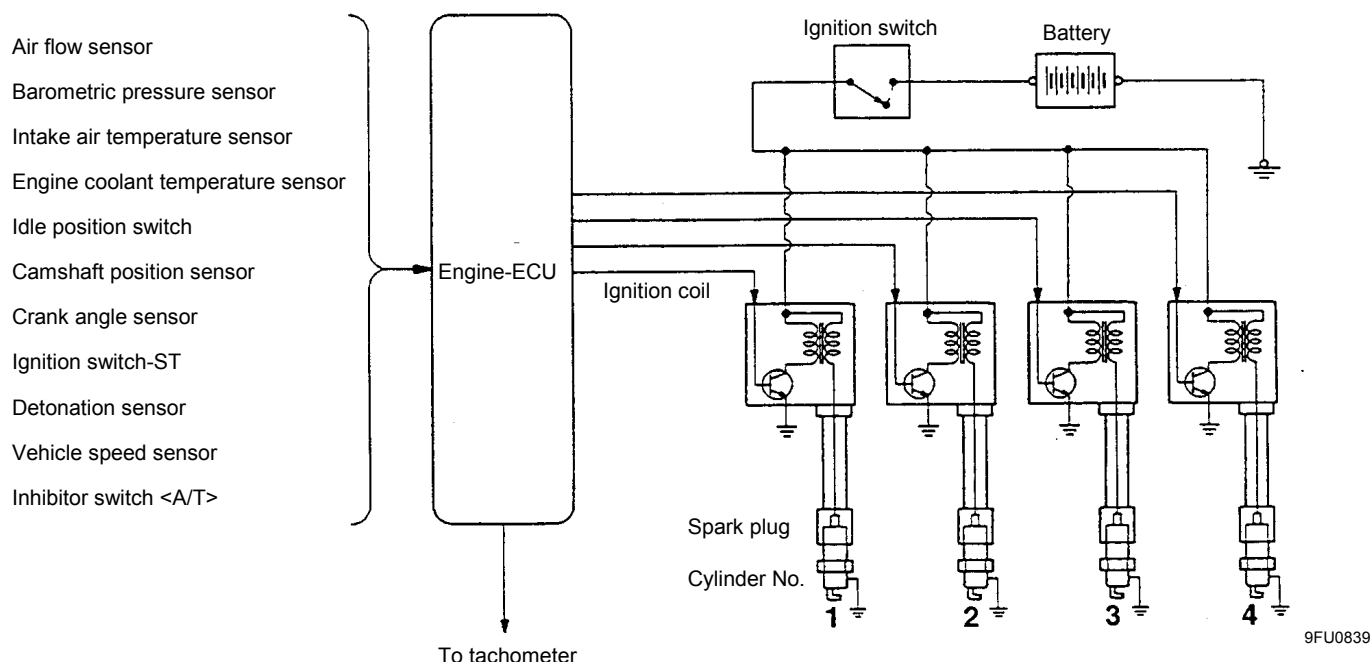
IGNITION SYSTEM

GENERAL INFORMATION

This system is equipped with four ignition coils with built-in power transistors for each of the cylinders. Interruption of the primary current flowing in the primary side of an ignition coil generates a high voltage in the secondary side of the ignition coil. The high voltage thus generated is applied to the spark plugs to generate sparks. The Engine-ECU turns the power transistors inside the ignition coils alternately on and off. This causes the primary currents in the ignition coils to be alternately interrupted and allowed to flow to fire the cylinders in the order 1 - 3 - 4 - 2.

The Engine -ECU determines which ignition coil should be controlled by means of the signals from the camshaft position sensor and the crank angle sensor . It also detects the crankshaft position, in order to provide ignition at the most appropriate timing in response to the engine operation conditions. When the engine is cold or running at high altitudes, the ignition timing is slightly advanced to provide optimum performance. Furthermore, if knocking occurs, the ignition timing is gradually retarded until knocking ceases

SYSTEM DIAGRAM



IGNITION COIL SPECIFICATION

Items	Specification
Type	Molded 4-coil

SPARK PLUG SPECIFICATION

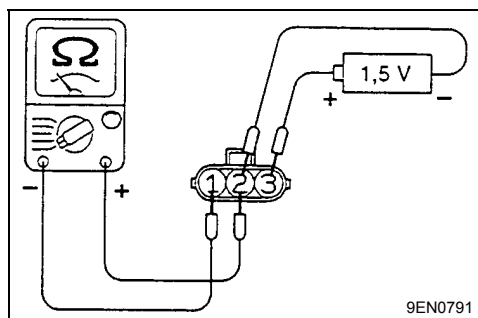
Items	Specification
NGK	PZFR6B <Old>

IZFR6B <New>

SERVICE SPECIFICATIONS

SPARK PLUG

Items	Specification	Limit
Spark plug gap mm	0.5 - 0.6	0.75
Spark plug insulation resistance MΩ	-	1



ON-VEHICLE SERVICE

POWER TRANSISTOR CONTINUITY CHECK

NOTE

1. An analogue-type circuit tester should be used.
2. Connect the negative (-) probe of the circuit tester to terminal 1.

CAUTION

This test must be performed quickly (in less than 10 seconds) to prevent coil from burning and power transistor from breakage

Voltage: 1.5V	Terminal No.		
	1	2	3
When current is flowing			
When current is not flowing			

<New>
iridium

SPARK PLUG CHECK AND CLEANING

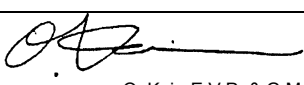
Caution

1. The spark plug gap for ~~platinum~~ **iridium** plugs should not be adjusted. <Old>
2. Cleaning ~~platinum~~ **iridium** plugs may result in damage to the ~~platinum~~ **iridium** tip. Therefore, if cleaning is necessary because the plug is sooty, use a plug cleaner, and do not clean the plug for more than 20 seconds in order to preserve the electrodes. A wire brush should never be used. <Old>
3. The spark plugs in GDI engines are special ~~platinum~~ **iridium** plugs in which the electrodes can become black even when the plugs are working normally. Carbon which may become deposited on these plugs burns off more readily than with conventional plugs, and so should not cause any problems with spark plug performance. Judgement of whether a spark plug is operating normally or not should be made by checking the insulation resistance.



SERVICE BULLETIN

PUBLICATION GROUP, AFTER SALES SERVICE DEP.
MITSUBISHI MOTOR SALES EUROPE BV

SERVICE BULLETIN		No.: ESB-98E16-501	
		Date: 1999-06-15	<Model> (EC,EXP) CARISMA <M/Y> 98-10
Subject: CORRECTION TO DESCRIPTIONS OF IGNITION COIL (SECONDARY COIL)			
Group: ENGINE ELECTRICAL			
CORRECTION		 O. Kai - E.V.P. & G.M. After Sales Service Dept.	
1. Description: This Service Bulletin informs you of correction to descriptions of the ignition coil (secondary coil) given in each of the following Workshop Manuals.			
2. Applicable Manuals:			
Manual	Pub. No.	Language	Page(s)
'98 CARISMA GDI Workshop Manual chassis	PWDE9502-C	(English)	16-1, 19, 20
	PWDS9503-C	(Spanish)	
	PWDF9504-C	(French)	
	PWDG9505-C	(German)	
	PWDD9506-C	(Dutch)	
	PWDW9507-C	(Swedish)	
	PWDW9601-C	(Italian)	

ENGINE ELECTRICAL

CONTENTS

CHARGING SYSTEM.....	2	IGNITION SYSTEM	19
GENERAL INFORMATION	2	GENERAL INFORMATION	19
SERVICE SPECIFICATIONS	3	SERVICE SPECIFICATIONS.....	20
SPECIAL TOOLS	3	ON-VEHICLE SERVICE	20
ON-VEHICLE SERVICE	4	Power Transistor Continuity Check	20
Alternator Output Line Voltage Drop Test.....	4	Spark Plug Check and Cleaning	20
Output Current Test	5	Camshaft Position Sensor Check	21
Regulated Voltage Test.....	7	Crank Angle Sensor Check	21
Waveform Check Using An Analyzer	9	Detonation Sensor Check	21
Alternator Relay Continuity Check	10	IGNITION COIL	22
STARTING SYSTEM	11	CAMSHAFT POSITION SENSOR	22
GENERAL INFORMATION	11		
SERVICE SPECIFICATIONS	11		
STARTER MOTOR	12		

<Incorrect>

Ignition Coil (With Built-in Power Transistor) Check

<Correct>

IGNITION SYSTEM

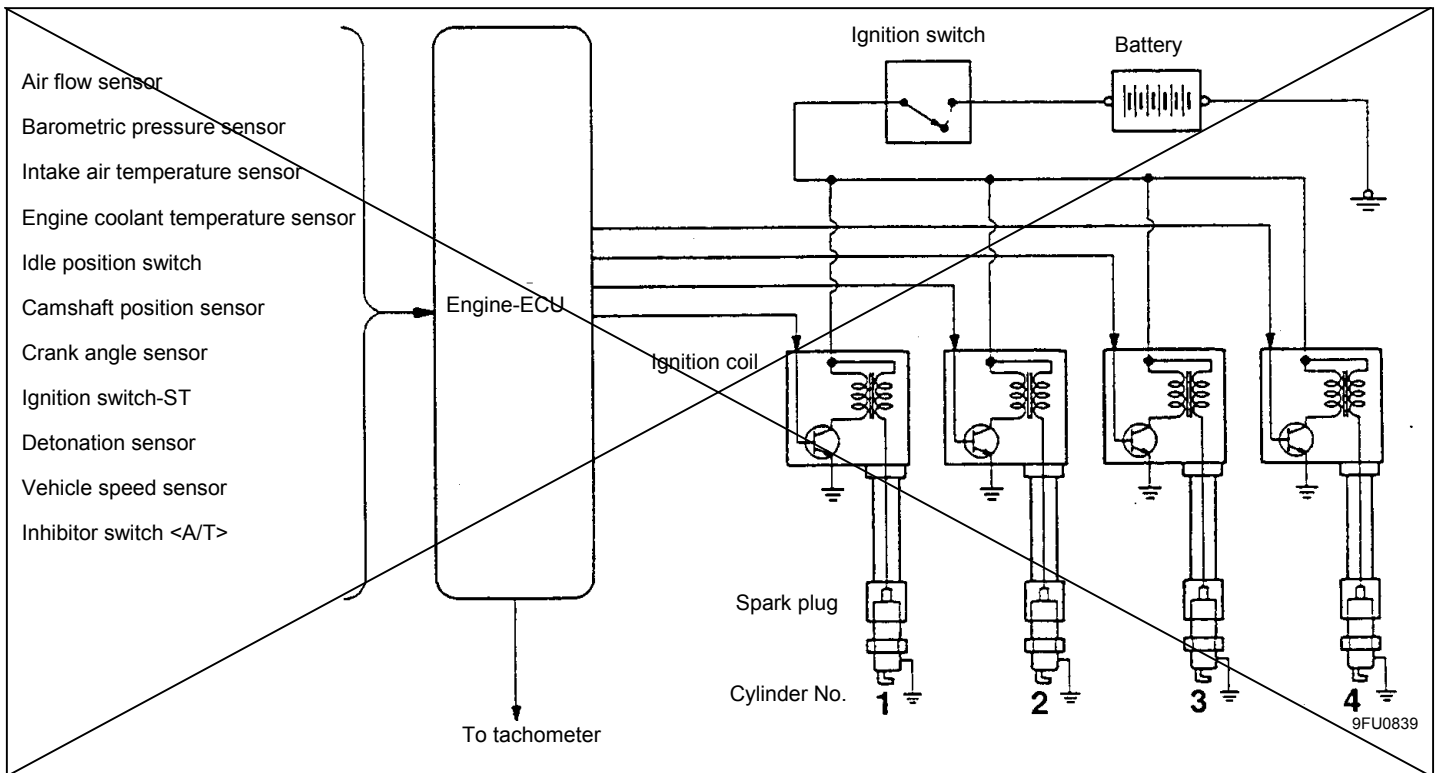
GENERAL INFORMATION

This system is equipped with four ignition coils with built-in power transistors for each of the cylinders. Interruption of the primary current flowing in the primary side of an ignition coil generates a high voltage in the secondary side of the ignition coil. The high voltage thus generated is applied to the spark plugs to generate sparks. The Engine-ECU turns the power transistors inside the ignition coils alternately on and off. This causes the primary currents in the ignition coils to be alternately interrupted and allowed to flow to fire the cylinders in the order 1 - 3 - 4 - 2.

The Engine -ECU determines which ignition coil should be controlled by means of the signals from the camshaft position sensor and the crank angle sensor. It also detects the crankshaft position, in order to provide ignition at the most appropriate timing in response to the engine operation conditions. When the engine is cold or running at high altitudes, the ignition timing is slightly advanced to provide optimum performance. Furthermore, if knocking occurs, the ignition timing is gradually retarded until knocking ceases.

SYSTEM DIAGRAM

<Incorrect>



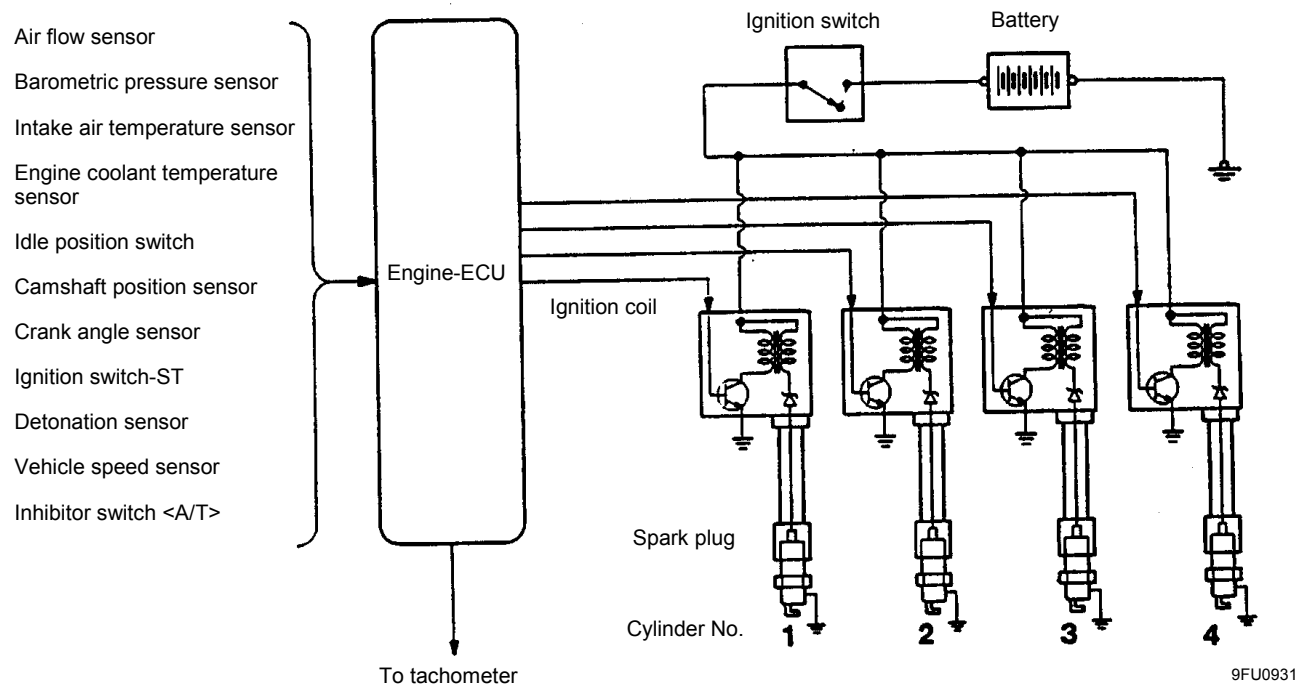
IGNITION COIL SPECIFICATION

<Corrected to the following page>

Items	Specification
Type	Molded 4-coil

SPARK PLUG SPECIFICATION

Items	Specification
NGK	PZFR6B

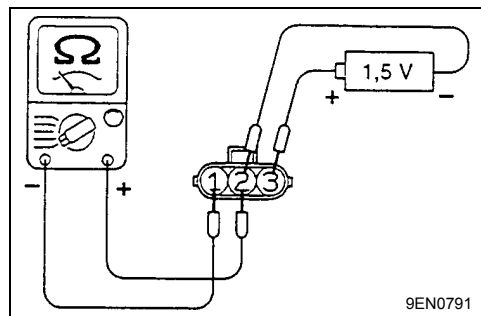


SERVICE SPECIFICATIONS

SPARK PLUG

Items	Specification	Limit
Spark plug gap mm	0.5 - 0.6	0.75
Spark plug insulation resistance MΩ	-	1

<Corrected to ① on the following page>



ON-VEHICLE SERVICE

POWER TRANSISTOR CONTINUITY CHECK

NOTE

1. An analogue-type circuit tester should be used.
2. Connect the negative (-) probe of the circuit tester to terminal 1.

CAUTION

This test must be performed quickly (in less than 10 seconds) to prevent coil from burning and power transistor from breakage

<Incorrect>

Voltage: 1.5V	Terminal No.		
	1	2	3
When current is flowing	○	○	⊕
When current is not flowing			

SPARK PLUG CHECK AND CLEANING

Caution

< ② on the following page added >

1. The spark plug gap for iridium plugs should not be adjusted.
2. Cleaning iridium plugs may result in damage to the iridium tip. Therefore, if cleaning is necessary because the plug is sooty, use a plug cleaner, and do not clean the plug for more than 20 seconds in order to preserve the electrodes. A wire brush should never be used.
3. The spark plugs in GDI engines are special iridium plugs in which the electrodes can become black even when the plugs are working normally. Carbon which may become deposited on these plugs burns off more readily than with conventional plugs, and so should not cause any problems with spark plug performance. Judgement of whether a spark plug is operating normally or not should be made by checking the insulation resistance.

① <Correct>

IGNITION COIL (WITH BUILT-IN POWER TRANSISTOR) CHECK
PRIMARY COIL AND POWER TRANSISTOR CONTINUITY CHECK

② <Added>

SECONDARY COIL CHECK

NOTE

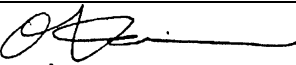
The ignition coil (secondary coil) circuit has a built-in diode. This makes it difficult to tell whether the secondary coil is good or bad through resistance inspection. Therefore, the secondary coil inspection should be performed using the following procedures.

1. Remove the ignition coil and the spark plug. Connect the spark plug followed by the ignition coil connector to the ignition coil.
2. Ground the spark plug outer electrode (body), and crank the engine.
3. Check to ensure that the spark plug creates a spark.
4. If the spark plug creates no spark, a defective secondary coil is suspected. In this event, use a new ignition coil and a new spark plug to check whether a spark is created or not. When the new ignition coil and the new spark plug are used, if a spark is created, the original ignition coil is defective and should be replaced. Even when the new ignition coil and the new spark plug are used, if no spark is created, a defective ignition circuit is suspected. Check the circuit to be sure if it is operating properly.



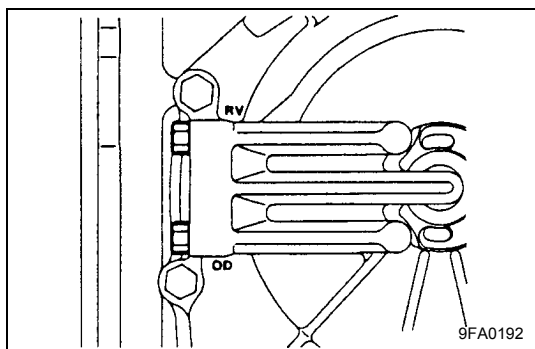
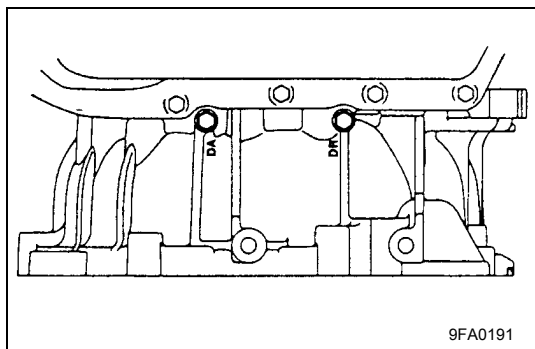
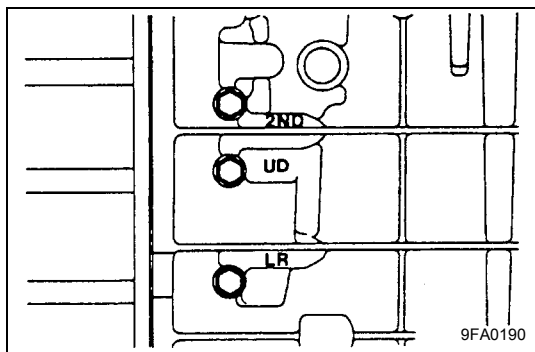
SERVICE BULLETIN

PUBLICATION GROUP, AFTER SALES SERVICE DEP.
MITSUBISHI MOTOR SALES EUROPE BV

SERVICE BULLETIN		No.: ESB-98E23-501	
		Date: 1999-06-15	<Model> <M/Y> (EUR) CARISMA (DX) 96-10
Subject: ADDITION / CORRECTION OF HYDRAULIC PRESSURE TEST OF AUTOMATIC TRANSMISSION			
Group: AUTOMATIC TRANSMISSION			
INFORMATION		 O. Kai - E.V.P. & G.M. After Sales Service Dept.	
1. Description: This service bulletin informs you concerning addition and correction of the hydraulic pressure test of the automatic transmission.			
2. Applicable Manuals:			
Manual	Pub. No.	Language	Page(s)
'96 CARISMA Workshop Manual chassis	PWDE9502	(English)	23-56, 23-57
	PWDS9503	(Spanish)	
	PWDF9504	(French)	
	PWDG9505	(German)	
	PWDD9506	(Dutch)	
	PWDW9507	(Swedish)	
	PWDI96E1	(Italian)	
3. Details:			

TORQUE CONVERTER STALL TEST JUDGEMENT RESULTS

- a. Stall speed is too high in both D and R ranges
 - Low line pressure
 - Low & reverse brake slippage
- b. Stall speed is too high in D range only
 - Underdrive clutch slippage
- c. Stall speed is too high in R range only
 - Reverse clutch slippage
- d. Stall speed too low in both D and R ranges
 - Malfunction of torque converter
 - Insufficient engine output.

**HYDRAULIC PRESSURE TEST**

23100550032

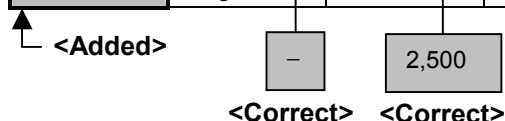
- (1) Warm up the engine until the automatic transmission fluid temperature is 80 – 100°C.
- (2) Jack up the vehicle so that the wheels are free to turn.
- (3) Connect the special tools (2,942-kPa oil pressure gauge [MD998330] and joints [MD998332, MD998900]) to each pressure discharge port.
- (4) Measure the hydraulic pressure at each port under the conditions given in the standard hydraulic pressure table, and check that the measured values are within the standard value ranges.
- (5) If a value is outside the standard range, correct the problem while referring to the hydraulic pressure test diagnosis table.

<Added>**NOTE**

- 2ND : Second brake pressure port
 UD : Under drive clutch pressure port
 LR : Low & reverse brake pressure port
 DR : Torque converter pressure port
 DA : Damper clutch apply pressure port
 RV : Reverse clutch pressure port
 OD : Overdrive clutch pressure port

STANDARD HYDRAULIC PRESSURE TEST

Measurement condition			Standard hydraulic pressure kPa					
Selector lever position	Shift position	Engine speed (rpm)	Under drive clutch pressure [UD] <Added>	Reverse clutch pressure [RV] <Added>	Overdrive clutch pressure [OD] <Added>	Low and reverse brake pressure [LR]<Added>	Second brake pressure [2ND] <Added>	Torque converter pressure [DR] <Added>
P	-	2,500	-	-	-	310-390	-	250-390
R	Reverse <Incorrect>	2,500 <Incorrect>	-	1,270-1,770	-	1,270-1,770	-	500-700
N			-	-	-	310-390	-	250-390
D	1st gear	2,500	1,010-1,050	-	-	1,010-1,050	-	500-700
2	2nd gear	2,500	1,010-1,050	-	-	-	1,010-1,050	500-700
3	3rd gear	2,500	590-690	-	590-690	-	-	450-650
D	4th gear	2,500	-	-	590-690	-	590-690	450-650



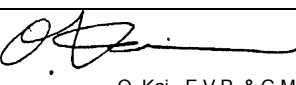
HYDRAULIC PRESSURE TEST DIAGNOSIS TABLE

Trouble symptom	Probable cause
All hydraulic pressures are high.	Incorrect transmission control cable adjustment
	Malfunction of the regulator valve
All hydraulic pressures are low.	Incorrect transmission control cable adjustment
	Malfunction of the oil pump
	Clogged internal oil filter
	Clogged external oil filter
	Clogged oil cooler
	Malfunction of the regulator valve
	Malfunction of the relief valve
	Incorrect valve body installation



SERVICE BULLETIN

PUBLICATION GROUP, AFTER SALES SERVICE DEP.
MITSUBISHI MOTOR SALES EUROPE BV

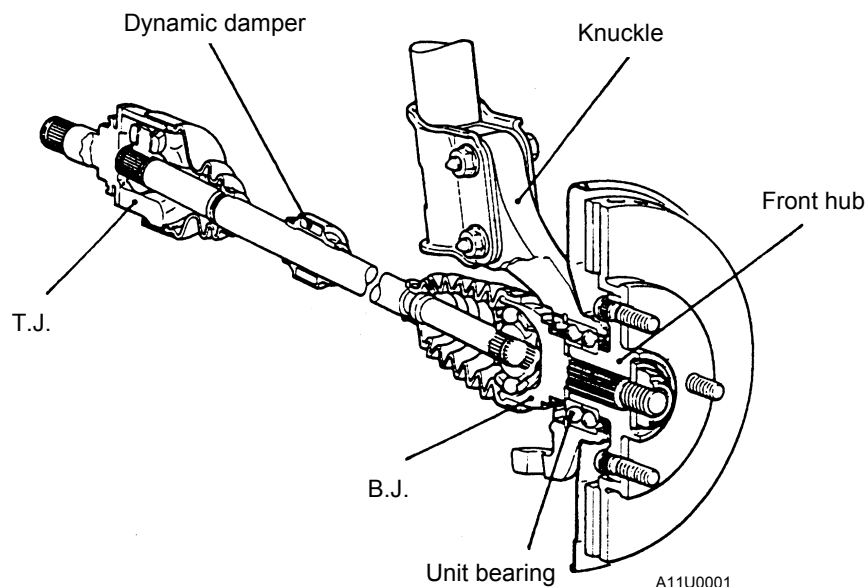
SERVICE BULLETIN		No.: ESB-98E26-001																																					
		Date: 1998-02-15	<Model> (EC,EXP) CARISMA <M/Y> 96-10																																				
Subject: ADDITION OF DRIVE SHAFT DISASSEMBLY/REASSEMBLY PROCEDURES																																							
Group: FRONT AXLE																																							
INFORMATION		 O. Kai - E.V.P. & G.M. After Sales Service Dept.																																					
1. Description: The drive shaft disassembly/reassembly procedures have been added do be included in the GROUP 26 FRONT AXLE of the Carisma Workshop Manual.																																							
2. Applicable Manuals: <table border="1"> <thead> <tr> <th>Manual</th> <th>Pub. No.</th> <th>Language</th> <th>Page(s)</th> </tr> </thead> <tbody> <tr> <td rowspan="7">'96 CARISMA Workshop Manual Chassis Basic</td> <td>PWDE9502</td> <td>(English)</td> <td rowspan="7">26-2, 4, 13</td> </tr> <tr> <td>PWDS9503</td> <td>(Spanish)</td> </tr> <tr> <td>PWDF9504</td> <td>(French)</td> </tr> <tr> <td>PWDG9505</td> <td>(German)</td> </tr> <tr> <td>PWDD9506</td> <td>(Dutch)</td> </tr> <tr> <td>PWDW9507</td> <td>(Swedish)</td> </tr> <tr> <td>PWDI96E1</td> <td>(Italian)</td> </tr> <tr> <td rowspan="7">'96 CARISMA GDI Workshop Manual Chassis SUPPLEMENT</td> <td>PWDE9502-C</td> <td>(English)</td> <td rowspan="7">23-7</td> </tr> <tr> <td>PWDS9503-C</td> <td>(Spanish)</td> </tr> <tr> <td>PWDF9504-C</td> <td>(French)</td> </tr> <tr> <td>PWDG9505-C</td> <td>(German)</td> </tr> <tr> <td>PWDD9506-C</td> <td>(Dutch)</td> </tr> <tr> <td>PWDW9507-C</td> <td>(Swedish)</td> </tr> <tr> <td>PWDI96E1-C</td> <td>(Italian)</td> </tr> </tbody> </table>				Manual	Pub. No.	Language	Page(s)	'96 CARISMA Workshop Manual Chassis Basic	PWDE9502	(English)	26-2, 4, 13	PWDS9503	(Spanish)	PWDF9504	(French)	PWDG9505	(German)	PWDD9506	(Dutch)	PWDW9507	(Swedish)	PWDI96E1	(Italian)	'96 CARISMA GDI Workshop Manual Chassis SUPPLEMENT	PWDE9502-C	(English)	23-7	PWDS9503-C	(Spanish)	PWDF9504-C	(French)	PWDG9505-C	(German)	PWDD9506-C	(Dutch)	PWDW9507-C	(Swedish)	PWDI96E1-C	(Italian)
Manual	Pub. No.	Language	Page(s)																																				
'96 CARISMA Workshop Manual Chassis Basic	PWDE9502	(English)	26-2, 4, 13																																				
	PWDS9503	(Spanish)																																					
	PWDF9504	(French)																																					
	PWDG9505	(German)																																					
	PWDD9506	(Dutch)																																					
	PWDW9507	(Swedish)																																					
	PWDI96E1	(Italian)																																					
'96 CARISMA GDI Workshop Manual Chassis SUPPLEMENT	PWDE9502-C	(English)	23-7																																				
	PWDS9503-C	(Spanish)																																					
	PWDF9504-C	(French)																																					
	PWDG9505-C	(German)																																					
	PWDD9506-C	(Dutch)																																					
	PWDW9507-C	(Swedish)																																					
	PWDI96E1-C	(Italian)																																					
3. Details:																																							

GENERAL INFORMATION

26100010036

The wheel bearing and front hub are press-fitted in the axle housing portion of the knuckle to support the drive shaft. In addition, the drive shaft uses

B.J.-T.J.-type constant velocity joints to improve power transmission efficiency and to reduce vibration or noise.



SERVICE SPECIFICATIONS

26100030032

Items	Standard value	Limit
Hub axial play mm	-	0.05
Wheel bearing starting torque Nm	-	1.8 or less

SEALANT

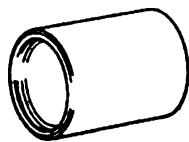
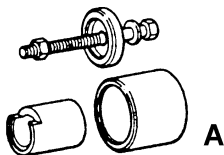
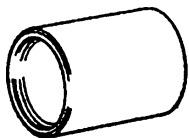
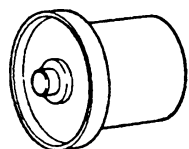
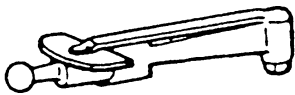
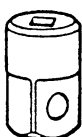
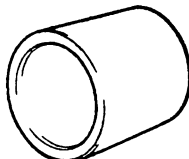
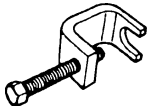
26100050014

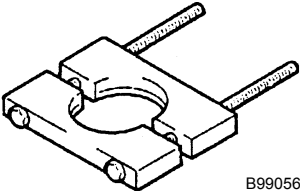
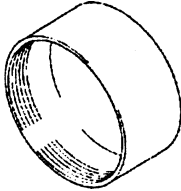
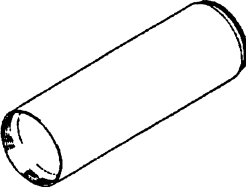
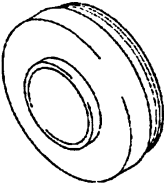
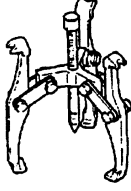
Items	Specified sealant	Remarks
Drive shaft lock pin	MITSUBISHI GENUINE PART MD997110 or equivalent	Semi drying sealant

LUBRICANTS

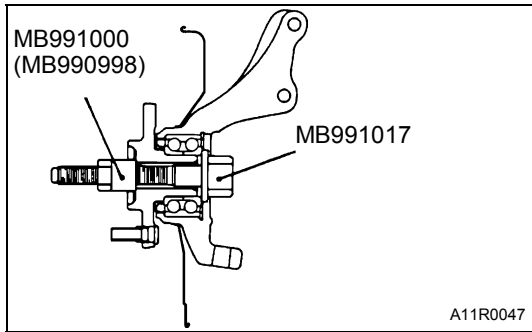
Items	Specified lubricant	Quantity g
T.J. boot grease	Repair kit grease	200
B.J. boot grease	Repair kit grease	200

<Added>

Tool	Number	Name	Use
	MB990890	Rear suspension bushing base	Press-fitting of wheel bearing Use together with MB990883 <1800>
	MB991045 A: MB991050	Bushing remover and installer	Press-fitting of wheel bearing Use together with MB990883 <1600>
	MB990847	Rear suspension bushing remover and installer base	Press-fitting of the outer oil seal <1800>
	MB990947	Lower arm bushing arbor	
	MB991387	Bushing remover and installer	Press-fitting of the outer oil seal <1600>
	MB990685	Torque wrench	Measurement of the wheel bearing starting torque
	MB990326	Preload socket	Measurement of the wheel bearing starting torque
	MB991389	Bushing remover base	Press-fitting of the inner oil seal <1600>
 11H0072	MB991618	Hub bolt remover	Removal of the hub bolt
<Followed by next page.>			

Tool	Number	Name	Use
 B990560	MB990560	Rear axle shaft bearing remover	- Removal of the TJ boot - Removal of the dynamic damper
	MD998812	Installer cap	Press-fitting the TJ boot
	MD998814	Installer 200	
	MD998817	Installer adapter	
	MH062469	Gear puller	Removal of the spider assembly

<Added>

**Caution**

Do not apply the vehicle weight to the wheel bearing while loosening the drive shaft nut. If, however, the vehicle weight must be applied to the bearing (because of moving the vehicle), temporarily secure the wheel bearing by using the special tool.

INSTALLATION SERVICE POINTS**▶A◀ DRIVE SHAFT R.H./SPRING PIN INSTALLATION**

- (1) Install the drive shaft to the hub and the transmission.
When installing the drive shaft to the transmission, apply multipurpose grease to the transmission-side spline and make sure that the spring pin hole at the end of the drive shaft is aligned with the spring pin hole at the end of the shaft at the transmission side. If the spring pin hole is slightly off-line, turn the drive shaft 180° and then install it again.

NOTE

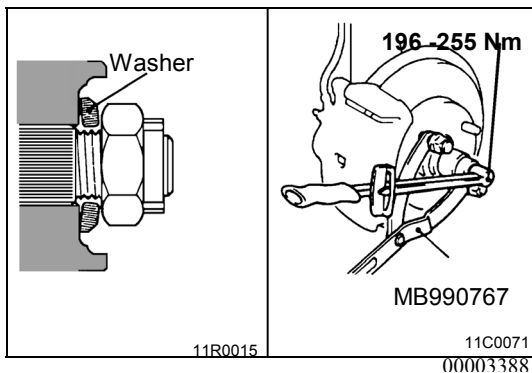
Because there are an odd number of splines on the drive shaft, the pin hole will be off line by half the width of the hole if the drive shaft is turned 180°.

- (2) Apply specified sealant to the spring pin and then insert it into the drive shaft. After inserting the pin, apply sealant to both ends of the pin hole to fully seal the hole.

Specified sealant:

MITSUBISHI GENUINE PART

MD970389 or equivalent

**▶B◀ DRIVE SHAFT R.H./SPRING PIN INSTALLATION**

- (1) Be sure to install the drive shaft washer in the specified direction.
- (2) Using the special tool, tighten the drive shaft nut.

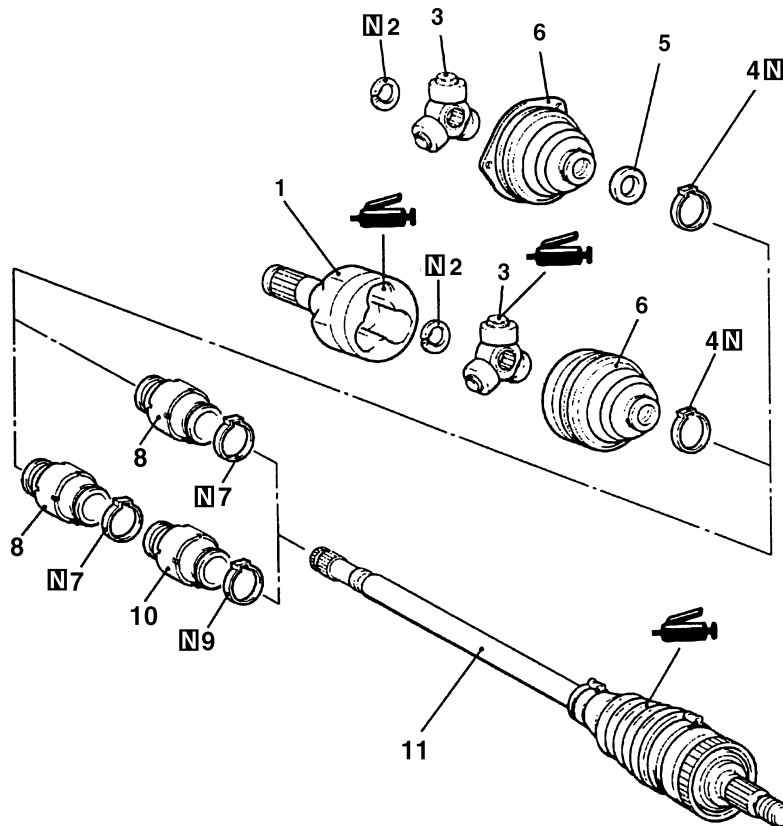
Caution

Before securely tightening the drive shaft nuts, make sure there is no load on the wheel bearings.

<The following four pages added.>

DISASSEMBLY AND REASSEMBLY

26100370134



A11U0093

T.J. boot repair kit <L.H.>	T.J. boot repair kit <R.H.>	B.J. boot repair kit

Disassembly steps

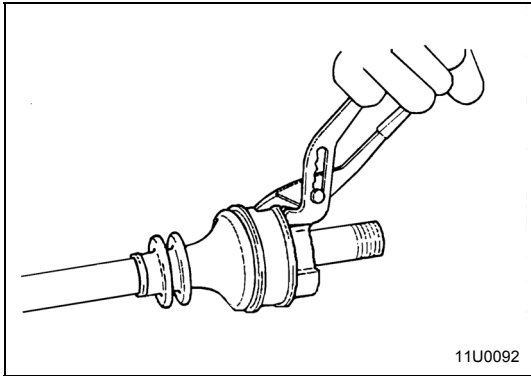
- ◀A▶ ▶E◀ 1. T.J. case
 ▶A▶ ▶D◀ 2. Snap ring
 ▶A▶ ▶D◀ 3. Spider assembly
 ▶C▶ ▶C◀ 4. T.J. boot band
 ▶B▶ ▶B◀ 5. Dust cover
 ▶A▶ ▶A◀ 6. T.J. boot
 ▶C▶ ▶A◀ 7. Damper band
 ▶A▶ ▶A◀ 8. Dynamic damper
 ▶C▶ ▶A◀ 9. Damper band
 ▶A▶ ▶A◀ 10. Dynamic damper

11. B.J. assembly
 12. B.J. boot band (small)
 13. B.J. boot band (large)
 14. B.J. boot

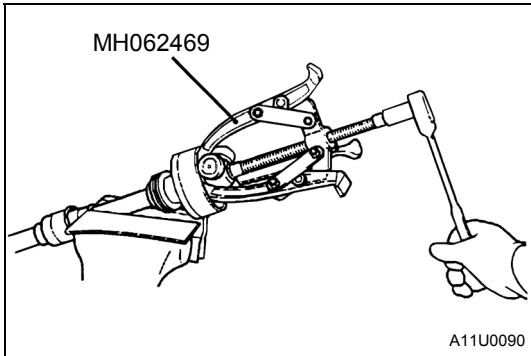
Caution

1. Never disassemble the B.J. assembly except when replacing the B.J. boot.
2. On vehicle with ABS, be sure not to damage the rotor attached to the B.J. outer race.

<Added>

**DISASSEMBLY SERVICE POINTS****◀A▶T.J. CASE/SPIDER ASSEMBLY REMOVAL**

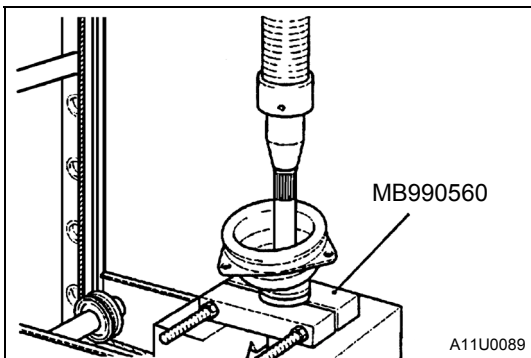
- (1) Using the water pump pliers, etc., unstake the flange area of T.J. case and T.J. boot (at 3 places).
- (2) Remove the T.J. case.



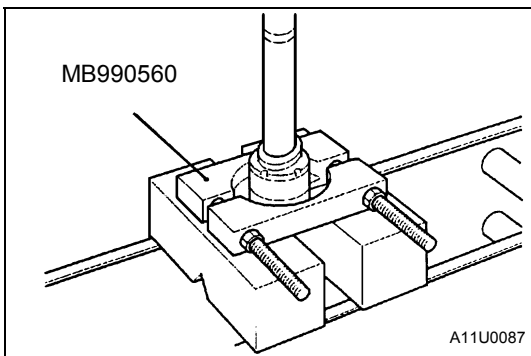
- (3) Using the special tool, remove the spider assembly.
- (4) Wipe off grease from the spider assembly and the inside of the T.J. case.
- (5) Always clean the spider assembly when the grease contains water or foreign material.

Caution

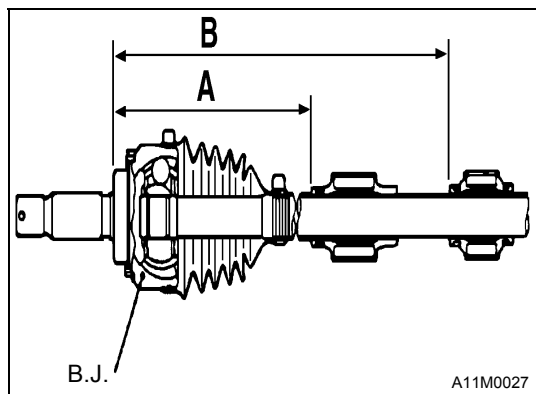
1. Do not disassemble the spider assembly.
2. Use care in handling so as not to damage the drive shaft.

**◀B▶T.J. BOOT REMOVAL**

- (1) Wipe off grease from the shaft spline.
- (2) When reusing the T.J. boot, wrap plastic tape around the shaft spline to avoid damaging the boot.
- (3) Using the special tool, remove the T.J. boot.

**◀C▶DYNAMIC DAMPER REMOVAL**

<Added>



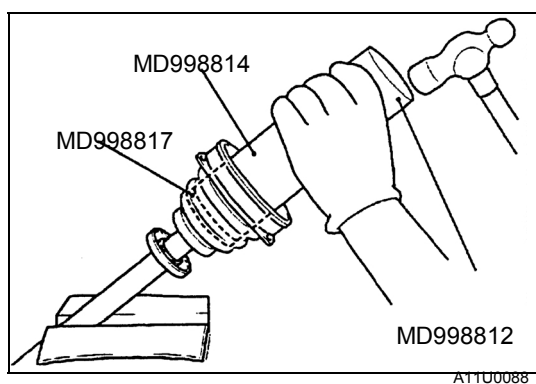
REASSEMBLY SERVICE POINTS

►A DYNAMIC DAMPER/DAMPER BAND INSTALLATION

(1) Install the dynamic damper in the position shown in the illustration.

Items	A	B
1600-A/T (L.H.), 1800-A/T (L.H.)	240±3 mm	-
1600 (R.H.), 1800-A/T (R.H.)	369±3 mm	-
1800-M/T (L.H.)	264±3 mm	-
1800-M/T (R.H.)	264±3 mm	369±3 mm

(2) Using the end pliers, tighten the boot band.



►B T.J. BOOT <L.H.> INSTALLATION

Using the special tool, install the T.J. boot <L.H.>.

►C T.J. BOOT BAND INSTALLATION

Using the end pliers, tighten the boot band.

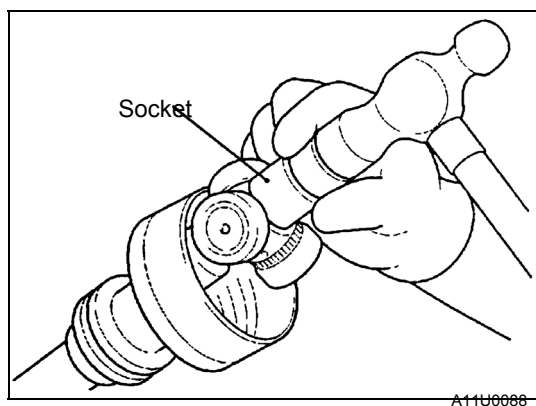
►D SPIDER ASSEMBLY INSTALLATION

(1) Apply the specified grease furnished in the repair kit to the spider assembly between the spider axle and the roller.

Specified grease: Repair kit grease

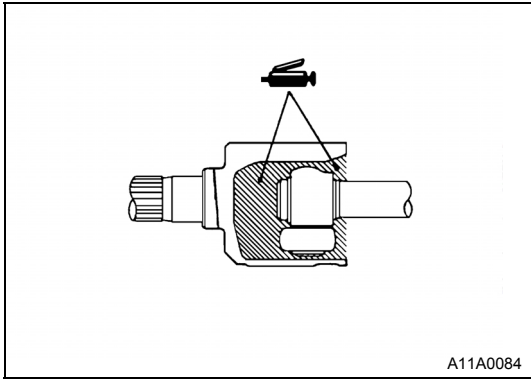
Caution

1. The drive shaft joint uses special grease. Do not mix old and new or different types of grease.
2. If the spider assembly has been cleaned, take special care to apply the specified grease.



(2) Using the socket of 24 mm width across flats, install the spider assembly.

<Added>



►E◄ T.J. CASE INSTALLATION

- (1) After applying the specified grease to the T.J. case, insert the drive shaft and apply grease one more time.

Specified grease: Repair kit grease

NOTE

The grease in the repair kit should be divided in half for use, respectively, at the joint and inside the boot.

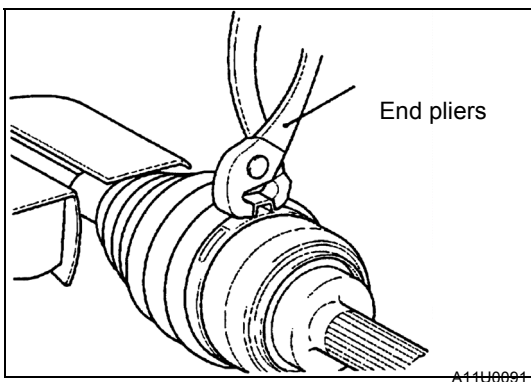
Caution

The drive shaft joint uses special grease. Do not mix old and new or different types of grease.

- (2) Using a punch or water pump pliers, stake the flange area of T.J. case and T.J. boot (at 3 places).

INSPECTION

- Check the drive shaft for damage, bending or corrosion.
- Check the drive shaft spline part for wear or damage.
- Check the spider assembly for roller rotation, wear or corrosion.
- Check the groove inside T.J. case for wear or corrosion.
- Check the dynamic damper for damage or cracking.
- Check the boots for deterioration, damage or cracking.



B.J. BOOT REPLACEMENT

- (1) Cut the B.J. boot bands (large and small).
- (2) Replace the B.J. boot.
- (3) Using the end pliers, tighten the boot band.

<Added>

SERVICE DATA REFERENCE TABLE

The following items have been added to correspond to the addition of vehicles with 4G93-GDI engine. Moreover, item No.57 (engine volumetric efficiency) is not included for vehicles with 4G93-GDI engine.

Item No.	Check item	Check requirement	Normal value
73	Target engine effective pressure	N range with accelerator pedal fully closed → depressed	Data changes

CHECK AT THE A/T-ECU TERMINALS

Inspection procedures are basically the same as those for '97 and prior vehicle models, except that the input terminal No. for the vehicle speed sensor has been changed from terminal No.46 to terminal No.69.

Terminal No.	Check item	Check requirement	Normal value
69	Vehicle speed sensor	When stopped	0 V
		Move forward slowly	0 → 5 V alternating

<The following seven pages added.>

GROUP 26

FRONT AXLE

GENERAL

OUTLINE OF CHANGES

With adoption of the drive shaft of Mitsubishi make as a drive shaft on the manual transmission car, the service procedures have been established as follows:

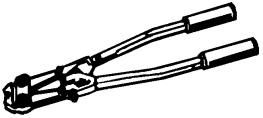
SERVICE SPECIFICATIONS

Items		Standard value
Setting of T.J. boot length mm		82
Opening dimension of the special tool (MB991561) mm	When the B.J. boot band (small) is crimped	2.9
	When the B.J. boot band (large) is crimped	3.2
Crimped width of the B.J. boot band mm		2.4 - 2.8
Clearance between the B.J. boot (large diameter side) and the stepped phase of the B.J. housing mm		0.1 - 1.5

LUBRICANTS

Items	Specified lubricant	Quantity g
T.J.	Repair kit grease	120
B.J.	Repair kit grease	120

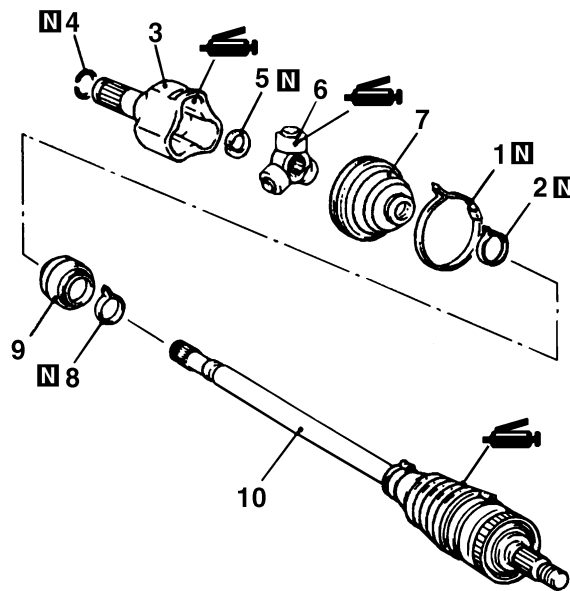
SPECIAL TOOLS

Tool	Number	Name	Use
	MB991561	Boot band crimping tool	B.J. boot band installation

<Added>

DRIVE SHAFT

DISASSEMBLY AND REASSEMBLY

1110094
00005700

1110100	1110101	1110070
T.J. repair kit <L.H.>	T.J. boot repair kit	B.J. boot repair kit

Disassembly steps

- ▶C◀ 1. T.J. boot band (large)
- ▶C◀ 2. T.J. boot band (small)
- ◀A▶ ▶B◀ 3. T.J. case
- 4. Circlip
- 5. Snap ring
- ◀A▶ ▶B◀ 6. Spider assembly
- ◀B▶ ▶A◀ 7. T.J. boot
- ▶A◀ 8. Damper band
- ▶A◀ 9. Dynamic damper

- 10. B.J. assembly
- 11. B.J. boot band (small)
- 12. B.J. boot band (large)
- 13. B.J. boot

Caution

- 1. Never disassemble the B.J. assembly except when replacing the B.J. boot.
- 2. On vehicle with ABS, be sure not to damage the rotor attached to the B.J. outer race.

<Added>

DISASSEMBLY SERVICE POINTS**◀A▶ T.J. CASE/SPIDER ASSEMBLY REMOVAL**

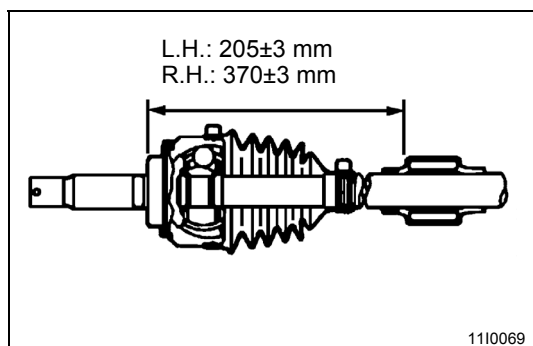
- (1) Wipe off grease from the spider assembly and the inside of the T.J. case.
- (2) Always clean the spider assembly when the grease contains water or foreign material.

Caution

1. Do not disassemble the spider assembly.
2. Use care in handling so as not to damage the drive shaft.

◀B▶ T.J. BOOT REMOVAL

- (1) Wipe off grease from the shaft spline.
- (2) When reusing the T.J. boot, wrap plastic tape around the shaft spline to avoid damaging the boot.

**REASSEMBLY SERVICE POINTS****▶A▶ DYNAMIC DAMPER/DAMPER BAND/T.J. BOOT INSTALLATION**

- (1) Straighten the B.J. assembly, and secure the dynamic damper with the damper band as shown in the figure

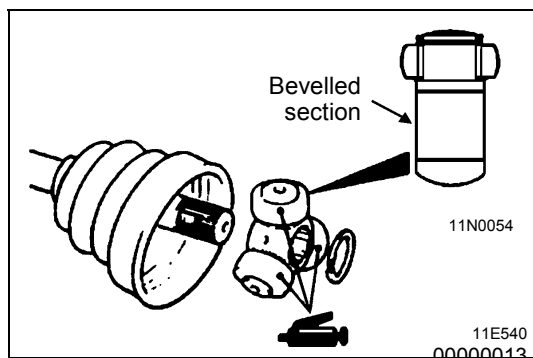
Caution

There should be no grease adhered to the rubber part of the dynamic damper.

NOTE

The damper band and the T.J. boot band (small) are the same parts.

- (2) Wrap plastic tape around the shaft spline, and then install the T.J. boot band (small) and T.J. boot.

**▶B▶ SPIDER ASSEMBLY/T.J. CASE INSTALLATION**

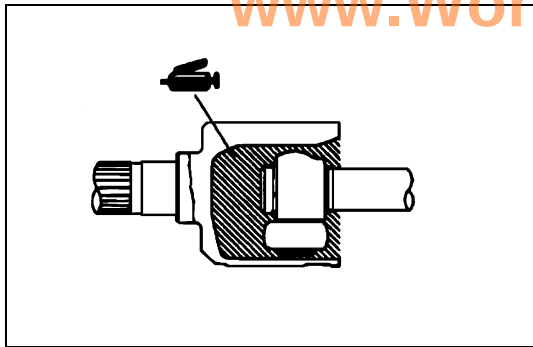
- (1) Apply the specified grease furnished in the repair kit to the spider assembly between the spider axle and the roller.

Specified grease: Repair kit grease

Caution

1. The drive shaft joint uses special grease. Do not mix old and new or different types of grease.
2. If the spider assembly has been cleaned, take special care to apply the specified grease.

<Added>



A1120004

- (2) Install the spider assembly to the shaft from the direction of the spline bevelled section.
- (3) After applying the specified grease to the T.J. case, insert the drive shaft and apply grease one more time.

Specified grease: Repair kit grease

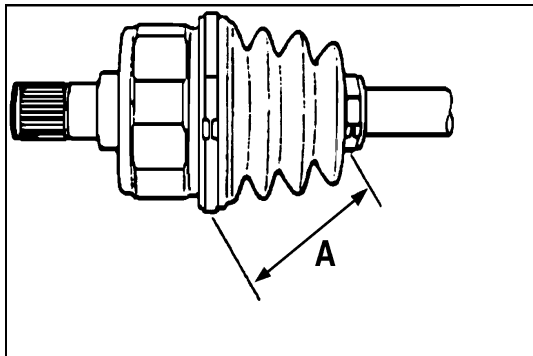
Amount to use: 120 g

NOTE

The grease in the repair kit should be divided in half for use, respectively, at the joint and inside the boot.

Caution

The drive shaft joint uses special grease. Do not mix old and new or different types of grease.



A11P0124

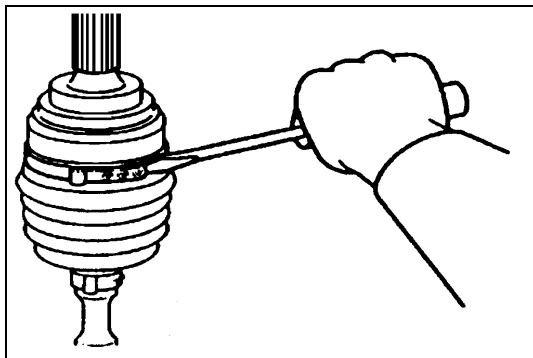
▶◀ T.J. BOOT BAND (SMALL)/T.J. BOOT BAND (LARGE) INSTALLATION

Set the T.J. boot bands at the specified distance in order to adjust the amount of air inside the T.J. boot, and then tighten the T.J. boot bands securely.

Standard value (A): 82 mm

INSPECTION

- Check the drive shaft for damage, bending or corrosion.
- Check the drive shaft spline part for wear or damage.
- Check the spider assembly for roller rotation, wear or corrosion.
- Check the groove inside T.J. case for wear or corrosion.
- Check the dynamic damper for damage or cracking.
- Check the boots for deterioration, damage or cracking.



11X0132

B.J. BOOT (RESIN BOOT) REPLACEMENT

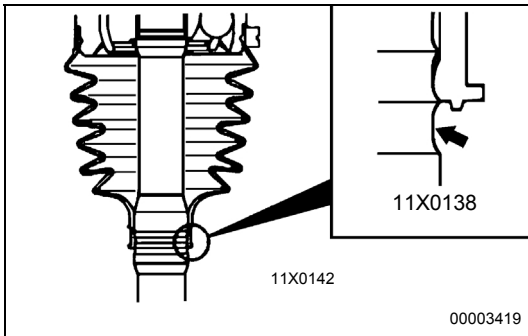
- (1) Remove the B.J. boot bands (large and small).

NOTE

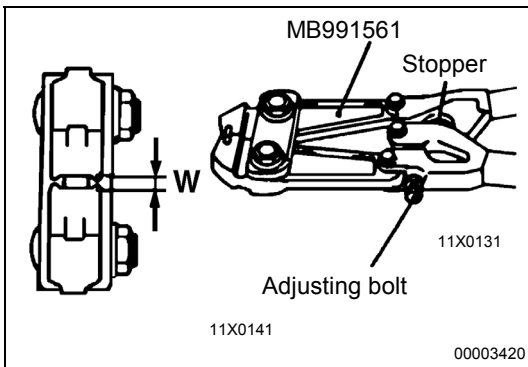
The B.J. boot bands cannot be re-used.

- (2) Remove the B.J. boot.
- (3) Wrap a plastic tape around the shaft spline, and assemble the B.J. boot band and B.J. boot.

<Added>



- (4) Install the B.J. boot with the part with the smallest diameter in a position such that the shaft groove can be seen.



- (5) Turn the adjusting bolt on the special tool so that the size of the opening (W) is at the standard value.

Standard value (W): 2.9 mm

<If it is larger than 2.9 mm>

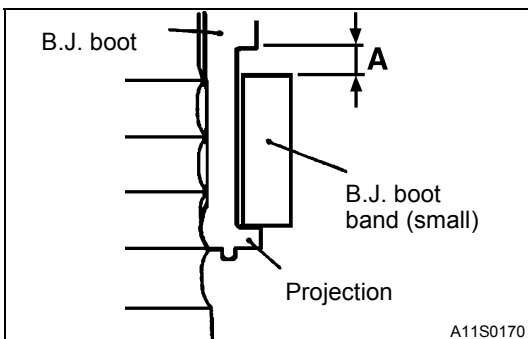
Tighten the adjusting bolt.

<If it is smaller than 2.9 mm>

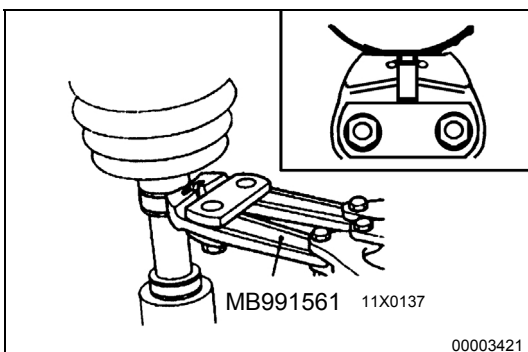
Loosen the adjusting bolt.

NOTE

- (1) The value of W will change by approximately 0.7 mm for each turn of the adjusting bolt.
- (2) The adjusting bolt should not be turned more than once.



- (6) Place the B.J. boot band (small against the projection at the edge of the boot, and then secure it so that there is a clearance left as shown by (A) in the illustration.

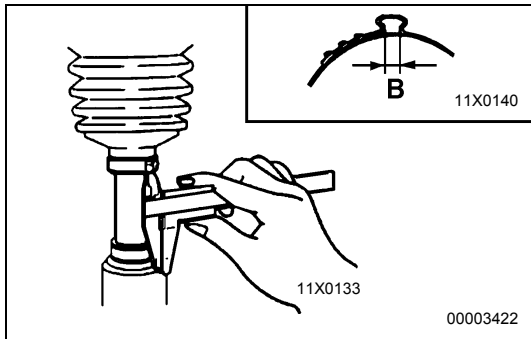


- (7) Use the special tool to crimp the B.J. boot band (small).

Caution

1. Secure the drive shaft in an upright position and clamp the part of the B.J. boot band to be crimped securely in the jaws of the special tool.
2. Crimp the B.J. boot band until the special tool touches the stopper.

<Added>



- (8) Check that the crimping amount (B) of the B.J. boot band is at the standard value.

Standard value (B): 2.4 - 2.8 mm

<If the crimping amount is larger than 2.8 mm>

Read just the value of (W) in step (5) according to the following formula, and then repeat the operation in step (7).

W = 5.5 mm - B

Example: If B = 2.9, then W = 2.6 mm.

<If the crimping amount is larger than 2.4 mm>

Remove the B.J. boot band, read just the value of (W) in step (5) according to the following formula, and then repeat the operations in steps (6) and (7) using a new B.J. boot band.

W = 5.5 mm - B

Example: If B = 2.3, then W = 3.2 mm.

- (9) Check that the B.J. boot band is not sticking out past the place where it has been installed. If the B.J. boot band is sticking out, remove it and then repeat the operations in steps (6) to (8) using a new B.J. boot band.

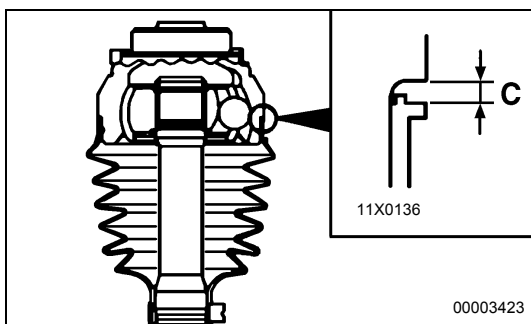
- (10) Fill the inside of the B.J. boot with the specified amount of the specified grease.

Specified grease: Repair kit grease

Amount to use: 120 g

Caution

The driver shaft joint uses special grease. Do not mix old and new or different types of grease.

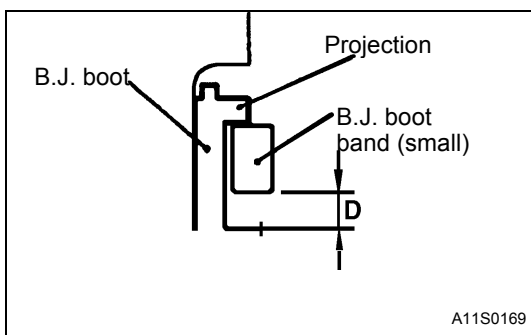


- (11) Install the B.J. boot band (large) so that there is the clearance (C) between it and the B.J. housing is at the standard value.

Standard value (C): 0.1 - 1.5 mm

- (12) Follow the same procedure as in step (5) to adjust the size of the opening (W) on the special tool so that it is at the standard value.

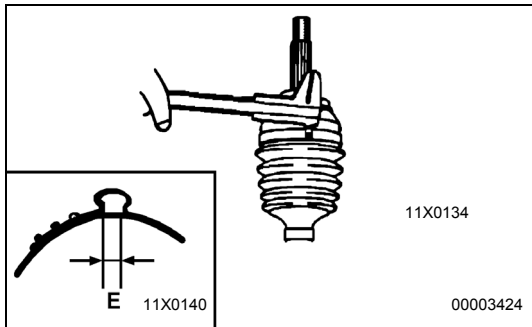
Standard value (W): 3.2 mm



- (13) Place the B.J. boot band (large) against the projection at the edge of the boot, and then secure it so that there is a clearance left as shown by (D) in the illustration.

- (14) Use the special tool to crimp the B.J. boot band (large) in the same way as in step (7).

<Added>



(15) Check that the crimping amount (E) of the B.J. boot band is at the standard value.

Standard value (E): 2.4 - 2.8 mm

<If the crimping amount is larger than 2.8 mm>

Read just the value of (W) in step (12) according to the following formula, and then repeat the operation in step (14).

$$W = 5.8 \text{ mm} - E$$

Example: If E = 2.9, then W = 2.6 mm.

<If the crimping amount is larger than 2.4 mm>

Remove the B.J. boot band, read just the value of (W) in step (12) according to the following formula, and then repeat the operations in steps (13) and (14) using a new B.J. boot band.

$$W = 5.8 \text{ mm} - E$$

Example: If E = 2.3, then W = 3.5 mm.

(16) Check that the B.J. boot band is not sticking out past the place where it has been installed.

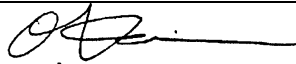
If the B.J. boot band is sticking out, remove it and then repeat the operations in steps (13) to (15) using a new B.J. boot band.

<Added>



SERVICE BULLETIN

PUBLICATION GROUP, AFTER SALES SERVICE DEP.
MITSUBISHI MOTOR SALES EUROPE BV

SERVICE BULLETIN		No.: ESB-98E00-014	
		Date: 30-09-1999	<Model> (EC,EXP) CARISMA
Subject: CHANGE IN TIGHTENING TORQUE FOR TENSIONER PULLEY MOUNTING NUT		<M/Y> 96-10	
Group: GENERAL			
CORRECTION		 O. Kai - E.V.P. & G.M. After Sales Service Dept.	

1. Description:

This Service Bulletin informs you of change in tightening torque for the mounting nut of the tensioner pulley of Volvo make.

2. Applicable Manuals:

Manual	Pub. No.	Language	Page(s)
'96 CARISMA Workshop Manual chassis	PWDE9502	(English)	11A-7, 55-29
	PWDS9503	(Spanish)	
	PWDF9504	(French)	
	PWDG9505	(German)	
	PWDD9506	(Dutch)	
	PWDW9507	(Swedish)	
	PWDI96E1	(Italian)	

4. Tighten the lock bolt.

Tighten torque: 23 Nm

5. Tighten the nut of the alternator pivot bolt

Tighten torque: 44 Nm

6. Tighten the adjusting bolt

Tighten torque: 6 Nm

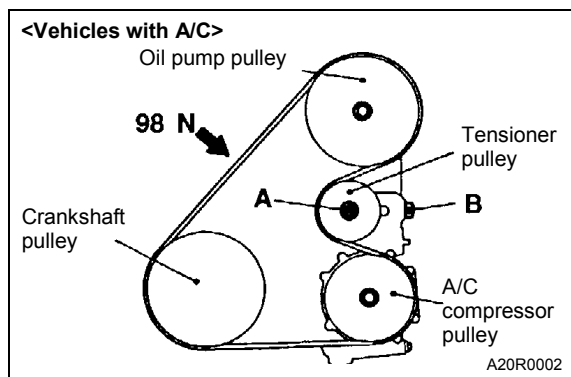
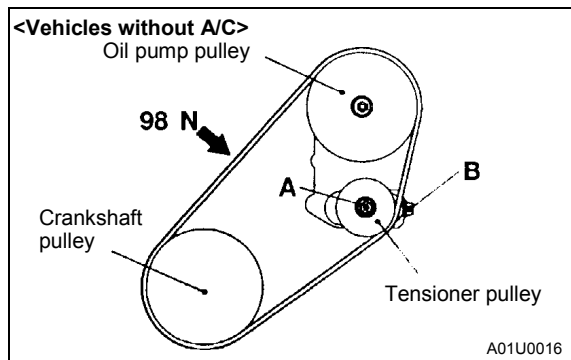
POWER STEERING OIL PUMP AND AIR CONDITIONER COMPRESSOR DRIVE BELT TENSION CHECK AND ADJUSTMENT

11100130035

1. Use belt tension gauge to check that the belt tension is at the standard value at a point half-way between the two pulleys (indicated by an arrow in the illustration). In addition, press this section with a force of 98 N and check that the amount of belt deflection at the standard value.

Standard value:

Items	When checked	When a used belt is installed	When a new belt is installed
Tension N	392-588	441-539	637-833
Deflection mm	10.0-12.0	10.0-11.0	7.0-9.0



2. If the tension or deflection is outside the standard value, adjust by the following procedure. **<Correct>**

- (1) Loosen tension pulley fixing bolt A. **<Correct>** Flange nut
- (2) Adjust amount of belt deflection using adjusting bolt B.
- (3) Tighten fixing bolt A. **<Correct>** Flange nut
- (4) Check the belt deflection amount and tension, and readjust if necessary.

Caution

- Check after turning the crankshaft once or more clockwise (right up).

<Added>

Tighten torque:
25 Nm (for flange nut with flange O.D. of 19.5 mm)
38 Nm (for flange nut with flange O.D. of 21.8 mm)

COMPRESSOR AND TENSION PULLEY

55200410068

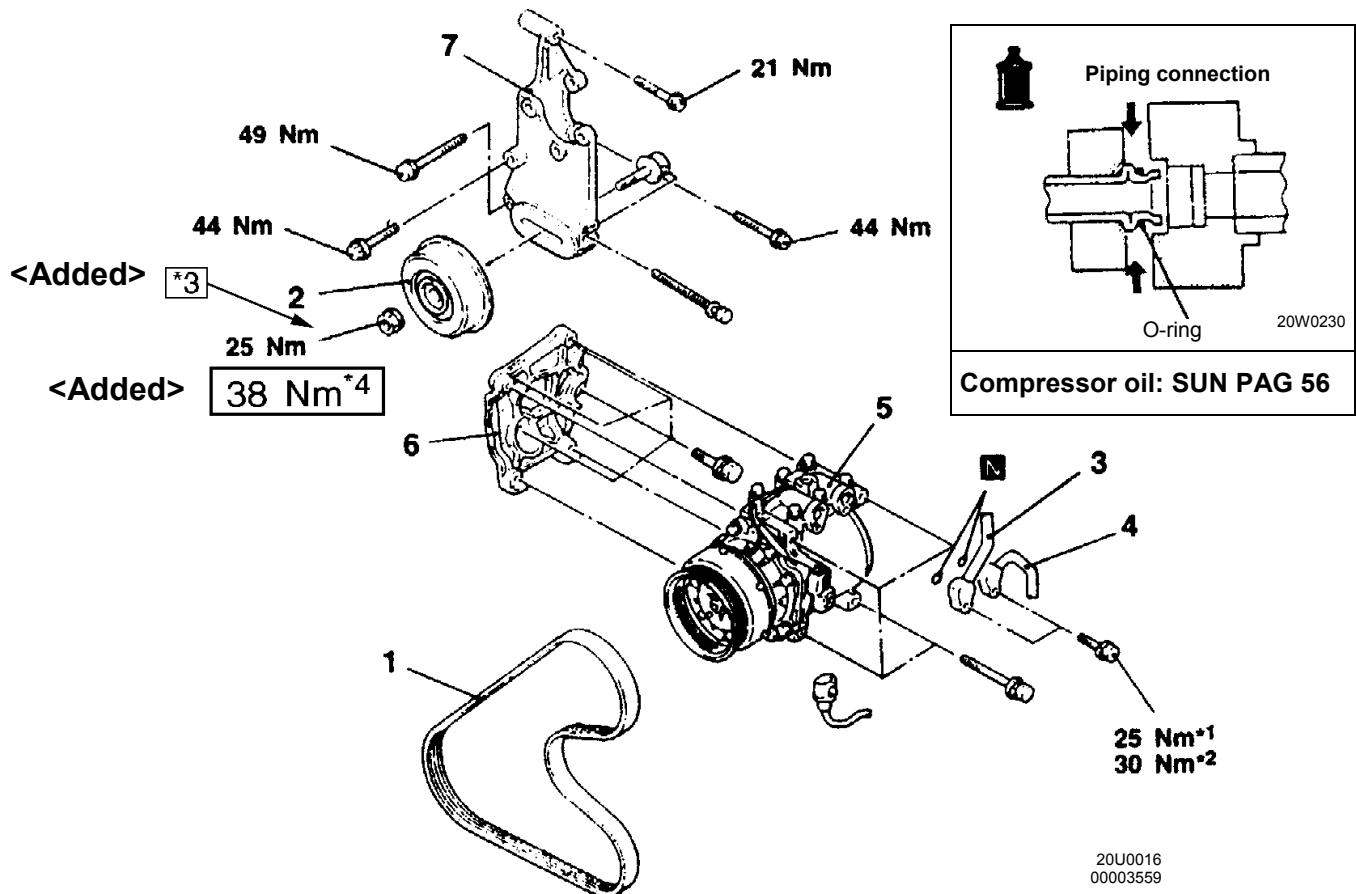
REMOVAL AND INSTALLATION

Pre removal Operation

- Discharging of Refrigerant (Refer to P.55-15)
- Under Cover, Removal (R.H. side)
- Power Steering Oil Pump Removal (Refer to GROUP 37A)

Post-installation Operation

- Charging of Refrigerant (Refer to P.55-11.)
- Under Cover Installation (R.H. side)
- Power Steering Oil Pump Removal (Refer to GROUP 37A)
- A/C Compressor Drive Belt Tension Adjustment (Refer to GROUP 11A- On-vehicle Service.)



Removal steps

- ◀A▶ 1. A/C compressor drive belt
 ▶ 2. Tension pulley
 ▶ 3. Suction hose connection
 ▶ 4. Discharge pipe connection
 ▶ 5. Compressor
 ▶ 6. Compressor bracket
 ▶ 7. Power steering oil pump bracket

NOTE

- (1) ^{*1} : indicates flange bolt
 (2) ^{*2} : indicates flange bolt

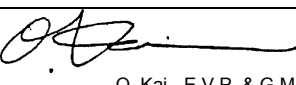
- (3) *3 : indicates flange nut with flange O.D. of 19.5 mm.
 (4) *4 : indicates flange nut with flange O.D. of 21.8 mm.

<Added>



SERVICE BULLETIN

PUBLICATION GROUP, AFTER SALES SERVICE DEP.
MITSUBISHI MOTOR SALES EUROPE BV

SERVICE BULLETIN		No.: ESB-99E21-501	
		Date: 1999-12-15	<Model> (EC) CARISMA (EC) SPACE STAR (DG1A, DG5A)
Subject: CORRECTION TO CLUTCH PEDAL HEIGHT		<M/Y> 96-10	
Group: CLUTCH			
CORRECTION		 O. Kai - E.V.P. & G.M. After Sales Service Dept.	

1. Description:

The incorrectness of the clutch pedal height has been rectified.

2. Applicable Manuals:

Manual	Pub. No.	Language	Page(s)
'96 CARISMA Workshop Manual chassis	PWDE9502	(English)	21-2
	PWDS9503	(Spanish)	
	PWDF9504	(French)	
	PWDG9505	(German)	
	PWDD9506	(Dutch)	
	PWDW9507	(Swedish)	
	PWDI96E1	(Italian)	
'99 SPACE STAR Workshop Manual chassis	CMXE99E1	(English)	21-2
	CMXS99E1	(Spanish)	
	CMXF99E1	(French)	
	CMXG99E1	(German)	
	CMXD99E1	(Dutch)	
	CMXW99E1	(Swedish)	
	CMXI99E1	(Italian)	

3. Details:

'96 CARISMA Workshop Manual chassis, page 2

'99 SPACE STAR Workshop Manual chassis, page 3

CLUTCH

21100010031

GENERAL INFORMATION

The clutch is a dry single-disc diaphragm type; hydraulic pressure is used for the clutch control.

<Correct>

171.2 - 174.2

21100030037

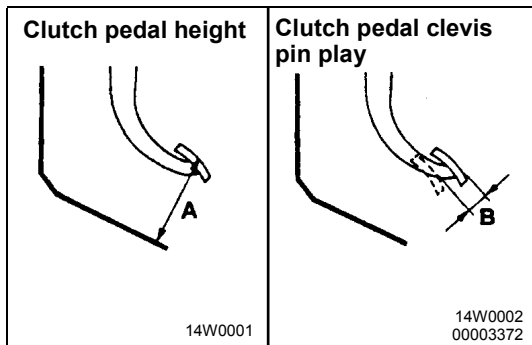
SERVICE SPECIFICATIONS

Items	Standard value
Clutch pedal height mm	163.5 - 166.5 (L.H. drive vehicles) 162.5 - 165.5 (R.H. drive vehicles) <Incorrect>
Clutch pedal free play mm	6 - 13
Clutch pedal clevis pin play mm	1 - 3
Distance between the clutch pedal and the toeboard when the clutch is disengaged mm	85

LUBRICANTS

21100040023

Items	Specified lubricants	Quantity
Clutch fluid	Brake fluid DOT 3 or DOT 4	As required
Push rod assembly	Rubber grease	
Boot		
Release cylinder push rod	MITSUBISHI genuine grease Part No. 0101011	



ON-VEHICLE SERVICE

21100090035

CLUTCH PEDAL INSPECTION AND ADJUSTMENT

1. Measure the clutch pedal height and the clutch pedal clevis pin relay.

Standard value (A): 163.5 - 166.5 mm

<L.H. drive vehicles>

171.2 - 174.2

~~162.5 - 165.5~~ mm <Incorrect>

<R.H. drive vehicles>

<Correct>

GENERAL INFORMATION

21100010031

The clutch is a dry single-disc diaphragm type; hydraulic pressure is used for the clutch control.

<Correct>

173.3 - 176.3
172.8 - 175.8

21100030198

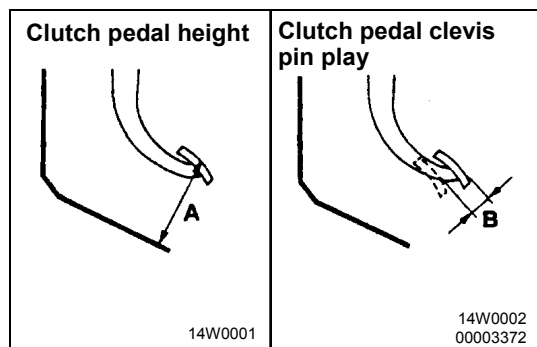
SERVICE SPECIFICATIONS

Items	Standard value
Clutch pedal height mm	173.3 - 176.3 172.8 - 175.8 163.5 - 166.5 (L.H. drive vehicles) 162.5 - 165.5 (R.H. drive vehicles)
Clutch pedal free play mm	6 - 13
Clutch pedal clevis pin play mm	1 - 3
Distance between the clutch pedal and the toeboard when the clutch is disengaged mm	50 <L.H. drive vehicles> 75 <R.H. drive vehicles>

LUBRICANTS

21100040023

Items	Specified lubricants	Quantity
Clutch fluid	Brake fluid DOT 3 or DOT 4	As required
Push rod assembly	Rubber grease	
Boot		
Release cylinder push rod	MITSUBISHI genuine grease Part No. 0101011	



ON-VEHICLE SERVICE

2100090189

CLUTCH PEDAL INSPECTION AND ADJUSTMENT

1. Turn up carpet, etc. under the clutch pedal
2. Measure the clutch pedal height and the clutch pedal clevis pin relay.

Standard value (A):

<Incorrect> ~~163.5 - 166.5~~ mm <L.H. drive vehicles>
~~162.5 - 165.5~~ mm <R.H. drive vehicles>

Standard value (B): 1-3 mm

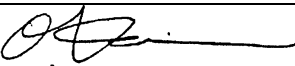
173.3 - 176.3
172.8 - 175.8

<Correct>



SERVICE BULLETIN

PUBLICATION GROUP, AFTER SALES SERVICE DEP.
MITSUBISHI MOTOR SALES EUROPE BV

SERVICE BULLETIN		No.: ESB-99E33-501		
		Date: 1999-11-15	<Model> (EC,EXP) CARISMA SPACE STAR	<M/Y> 96-10
Subject:		CORRECTION TO FRONT SUSPENSION CAMBER AND CASTER VALUES		
Group:		FRONT SUSPENSION		
CORRECTION		 O. Kai - E.V.P. & G.M. After Sales Service Dept.		

1. Description:

A descriptive omission found in the front suspension camber and caster values has been rectified.

2. Applicable Manuals:

Manual	Pub. No.	Language	Page(s)
'96 CARISMA Technical Information Manual	PYGE95E1	(English)	3-4
'96 CARISMA Workshop Manual chassis	PWDE9502	(English)	33A-3,6
	PWDS9503	(Spanish)	
	PWDF9504	(French)	
	PWDG9505	(German)	
	PWDD9506	(Dutch)	
	PWDW9507	(Swedish)	
	PWDI96E1	(Italian)	
'99 SPACE STAR Technical Information Manual	1MXE99E1	(English)	3-4
'99 SPACE STAR Workshop Manual chassis	CMXE99E1	(English)	33A-3,6
	CMXS99E1	(Spanish)	
	CMXF99E1	(French)	
	CMXG99E1	(German)	
	CMXD99E1	(Dutch)	
	CMXW99E1	(Swedish)	
	CMXI99E1	(Italian)	

3. Details

'96 CARISMA Technical Information Manual, page 2
'96 CARISMA Workshop Manual chassis, page 3, 4
'99 SPACE STAR Technical Information Manual, page 5
'99 SPACE STAR Workshop Manual chassis, page 6, 7

SPECIFICATIONS
SUSPENSION SYSTEM

Item	Specifications
Suspension method	McPherson strut with coil springs and compression rods

WHEEL ALIGNMENT

Item	Specifications
Camber	0° 0 0' ± 3 0' [*] <Added>
Caster	2° 1 2' ± 30' [*] <Added>
Kingpin inclination	1 2° 4 1'
Toe-In	At the centre of tyre tread mm
	1 ± 2
	Toe-angle (per wheel)
	0° 0 6' ± 1 2'
Toe-out angle on turns (inner wheel when outer wheel at 20°)	2 1. 8°

NOTE

*: difference between right and left wheels: less than 30'

<Added>

SERVICE SPECIFICATIONS

Items		Standard value
Toe-in	At the centre of tyre tread mm	1 ± 2
	Toe-angle (per wheel)	0° 03' ± 06'
Toe-out angle on turns (inner wheel when outer wheel at 20°)		21.8°
Steering angle	Inner wheel	39°00' ± 1°30'
	Outer wheel	32°00'
Camber		0° 00' ± 30' * <Added>
Caster		2° 12' ± 30' * <Added>
Kingpin inclination		12° 41'
Lower arm ball joint starting torque Nm		1.0 – 6.5
Lower arm ball joint turning torque Nm		1.0 – 3.9
Stabilizer link ball joint turning torque Nm		1.7 – 3.1

NOTE

*: difference between right and left wheels: less than 30'

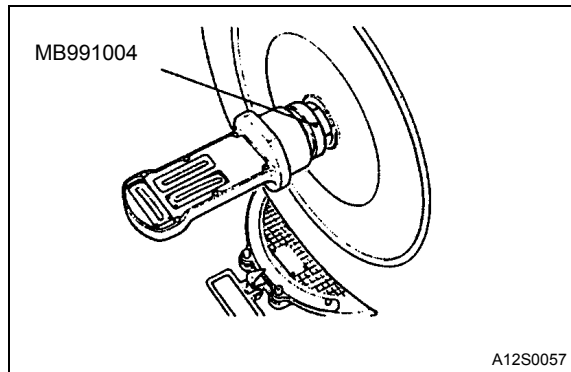
<Added>

STEERING ANGLE

Standard value:

Inner wheel $39^{\circ}00' \pm 1^{\circ}30'$ Outer wheel $32^{\circ}00'$

<Added>

(difference between right and left wheels: less than $30'$.)**CAMBER, CASTER AND KINGPIN INCLINATION**

Standard value:

Camber $0^{\circ}00' \pm 30'$ Caster $2^{\circ}12'$ Kingpin inclination $12^{\circ}41'$

<Added>

 $\pm 30'$ (difference between right and left wheels: less than $30'$.)**NOTE**

1. Camber and caster are preset at the factory and cannot be adjusted.
2. If camber is not within the standard value, check and replace bent or damaged parts.
3. For vehicles with aluminium type wheels, attach the camber/caster/kingpin gauge to drive shaft by using the special tool. Tighten the special tool to the same torque 200-260 Nm as the drive shaft nut.

Caution

Never subject the wheel bearings to the vehicle load when the drive shaft nuts are loosened.

SPECIFICATIONS**SUSPENSION SYSTEM**

Item	Specifiactions
Suspension method	McPherson strut with coil springs and compression rods

WHEEL ALIGNMENT

Item	Specifiactions
Camber	$-0^{\circ}40' \pm 30'$ * <Added>
Caster	$2^{\circ}54' \pm 30'$ * <Added>
Kingpin inclination	$13^{\circ}36'$
Toe-In	At the centre of tyre tread mm
	0 ± 2
	Toe-angle (per wheel)
	$0^{\circ}00' \pm 06'$
Toe-out angle on turns (inner wheel when outer wheel at 20°)	$21^{\circ}39'$

NOTE*: difference between right and left wheels: less than $30'$

<Added>

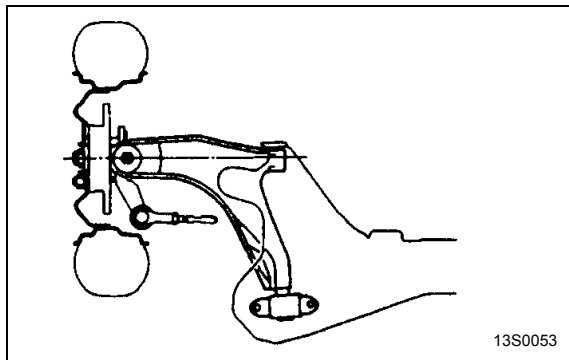
LOWER ARM

A compression type lower arm is fitted, giving the following advantages.

- Prevents fore/aft compliance steering by optimizing the lower arm pivot axis.
- Box-type cross-sectional construction for superior strength and light weight.
- Lower arm rear bushing with non-symmetrical spring characteristics in the vehicle lateral direction for steering stability and riding comfort.
- Front supporting point (lower arm front bushing section) positioned near the front wheel axis line to provide higher lateral rigidity and reduce lateral force steering.
- Lower arm ball joint using polyacetal resin bearing which changes the rotating torque according to applied vibration frequency.

LOWER ARM FRONT BUSHING

Lower arm front bushing has “hard” characteristics in the vehicle left/right direction and “soft” characteristics in both fore/aft and twisting directions, which means that it functions to provide both steering stability and riding comfort.



Also the lower arm front bushing is installed at a point almost on the same line as the front wheel axis line to provide increased lateral rigidity and reduced lateral force steering.

SERVICE SPECIFICATIONS

Items		Standard value
Toe-in	At the centre of tyre tread mm	0 ± 2
	Toe-angle (per wheel)	0° 00' ± 06'
Toe-out angle on turns (inner wheel when outer wheel at 20°)		21°39'
Steering angle	Inner wheel	41°30'
	Outer wheel	34°00'
Camber		0° 40' ± 30' * <Added>
Caster		2° 54' ± 30' * <Added>
Kingpin inclination		13° 36'
Lower arm ball joint starting torque Nm		1.0 – 6.4
Lower arm ball joint turning torque Nm		1.0 – 2.5
Protruding length of stabilizer bar mounting bolt mm		22

NOTE

*: difference between right and left wheels: less than 30'

<Added>

STEERING ANGLE

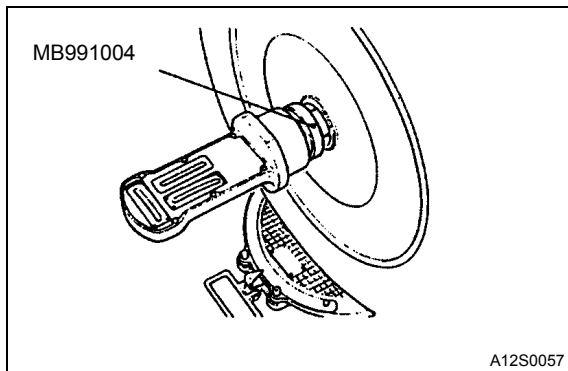
Standard value:

Inner wheel 41°30'

Outer wheel 34°00'

<Added>

(difference between right and left wheels: less than 30'.)

**CAMBER, CASTER AND KINGPIN INCLINATION**

Standard value:

Camber 0°40' ± 30'

Caster 2°54'

Kingpin inclination 13°36'

<Added>

± 30' (difference between right and left wheels: less than 30'.)

NOTE

4. Camber and caster are preset at the factory and cannot be adjusted.
5. If camber is not within the standard value, check and replace bent or damaged parts.
6. For vehicles with aluminium type wheels, attach the camber/caster/kingpin gauge to drive shaft by using the special tool. Tighten the special tool to the same torque 216-255 Nm as the drive shaft nut.

Caution

Never subject the wheel bearings to the vehicle load when the drive shaft nuts are loosened.

BALL JOINT DUST COVER CHECK

33200660076

1. Check the dust cover for cracks or damage by pushing it with finger.
2. If the dust cover is cracks or damaged, replace the lower arm assembly.

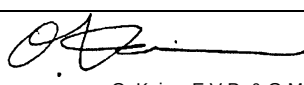
NOTE

Cracks or damage of dust cover may cause damage of the ball joint.

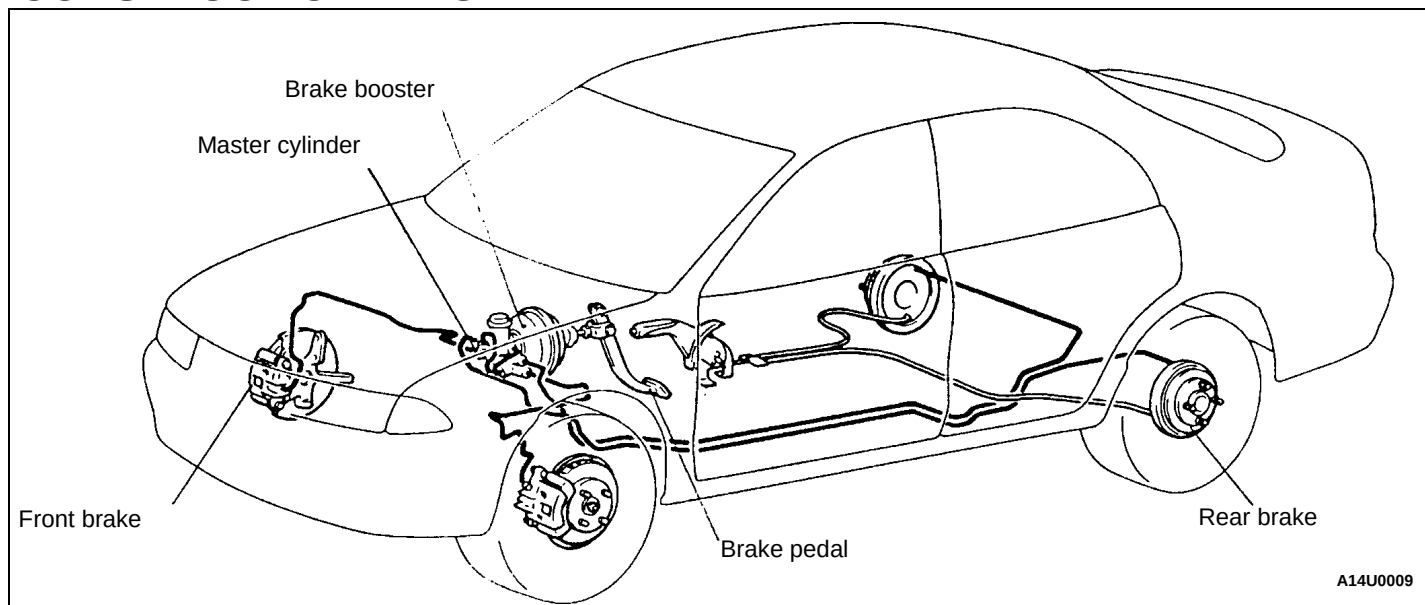


SERVICE BULLETIN

PUBLICATION GROUP, AFTER SALES SERVICE DEP.
MITSUBISHI MOTOR SALES EUROPE BV

SERVICE BULLETIN		No.: ESB-99E35-001																					
		Date: 1999-08-31	<Model> (EC) CARISMA <M/Y> 96-10																				
Subject: CHANGE TO LIMIT OF FRONT BRAKE DISC THICKNESS																							
Group: SERVICE BRAKE																							
CORRECTION		 O. Kai — E.V.P. & G.M. After Sales Service Dept.																					
1. Description: On the 1.8-liter engine equipped car, limit of the front brake disc thickness has been changed. (The standard value remains unchanged.)																							
2. Applicable Manuals: <table border="1"> <thead> <tr> <th>Manual</th> <th>Pub. No.</th> <th>Language</th> <th>Page(s)</th> </tr> </thead> <tbody> <tr> <td rowspan="7">'96 CARISMA Workshop Manual Chassis</td> <td>PWDE9502</td> <td>(English)</td> <td rowspan="7">35A-4, 35A-12</td> </tr> <tr> <td>PWDS9503</td> <td>(Spanish)</td> </tr> <tr> <td>PWDF9504</td> <td>(French)</td> </tr> <tr> <td>PWDG9505</td> <td>(German)</td> </tr> <tr> <td>PWDD9506</td> <td>(Dutch)</td> </tr> <tr> <td>PWDW9507</td> <td>(Swedish)</td> </tr> <tr> <td>PWDI96E1</td> <td>(Italian)</td> </tr> </tbody> </table>				Manual	Pub. No.	Language	Page(s)	'96 CARISMA Workshop Manual Chassis	PWDE9502	(English)	35A-4, 35A-12	PWDS9503	(Spanish)	PWDF9504	(French)	PWDG9505	(German)	PWDD9506	(Dutch)	PWDW9507	(Swedish)	PWDI96E1	(Italian)
Manual	Pub. No.	Language	Page(s)																				
'96 CARISMA Workshop Manual Chassis	PWDE9502	(English)	35A-4, 35A-12																				
	PWDS9503	(Spanish)																					
	PWDF9504	(French)																					
	PWDG9505	(German)																					
	PWDD9506	(Dutch)																					
	PWDW9507	(Swedish)																					
	PWDI96E1	(Italian)																					
3. Interchangeability: Not interchangeable																							
4. Effective Date: From February 12, 1996 (Chassis No.: XMCLNDA2ATF024244 and up)																							

CONSTRUCTION DIAGRAM



SERVICE SPECIFICATIONS

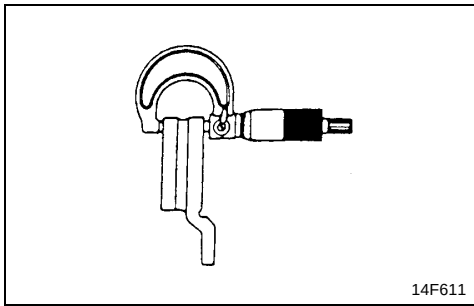
35100030058

Items		Standard value	Limit
Brake pedal height mm	L.H. drive vehicles	163.5 - 166.5	—
	R.H. drive vehicles	162.5 - 165.5	—
Brake pedal free play mm		3 - 8	—
Brake pedal to floor board clearance mm		80	—
Proportioning valve	Split point Mpa	1600	3.43 ± 0.25
		1800	3.92 ± 0.25
	Output fluid pressure (input fluid pressure) Mpa	1600	5.03 ± 0.4 (9.81)
		1800	5.39 ± 0.4 (9.81)
	Output fluid pressure difference between left and right Mpa		—
Brake booster push rod to master cylinder piston clearance mm		0.6 - 0.8	—
Front disc brake	Pad thickness mm		10.0
	Disc thickness mm	1600	18.0
		1800	24.0
	Disc runout mm		—
	Drag force (tangential force of wheel mounting bolts) N		40 or less

<New>
<From February 12, 1996>

21.5

<Old>
<Up to February 11, 1996>



14F611

BRAKE DISC THICKNESS CHECK

35100160047

1. Using a micrometer, measure disc thickness at eight positions, approximately 45° apart and 10 mm in from the outer edge of the disc.

Brake disc thickness**Standard value:**

<1600> 18.0 mm

<1800> 24.0 mm

Limit:

<1600> 16.4 mm

<1800> 22.5 mm

<New>

21.5 mm

<From February 12, 1996>

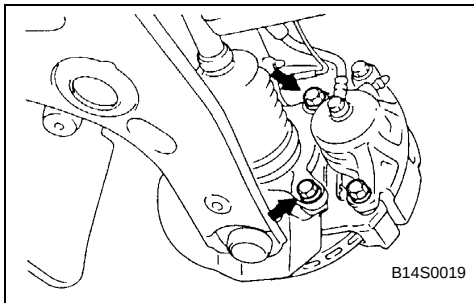
<Old>

<Up to february 11, 1996>

Thickness variation (at least 8 positions)

The difference between any thickness measurements should not be more than 0.015 mm.

2. If the disc is beyond the limits for thickness, remove it and install a new one. If thickness variation exceeds the specifications, replace the brake disc or turn rotor with on the car type brake lathe ("MAD, DL-8700PF" or equivalent).

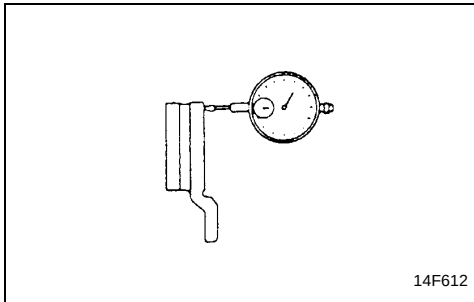


B14S0019

BRAKE DISC RUN-OUT CHECK

35100170040

1. Remove the caliper support: then raise the caliper assembly upward and secure by using wire.
2. Inspect the disc surface for grooves, cracks and rust. Clean the disc thoroughly and remove all rust.

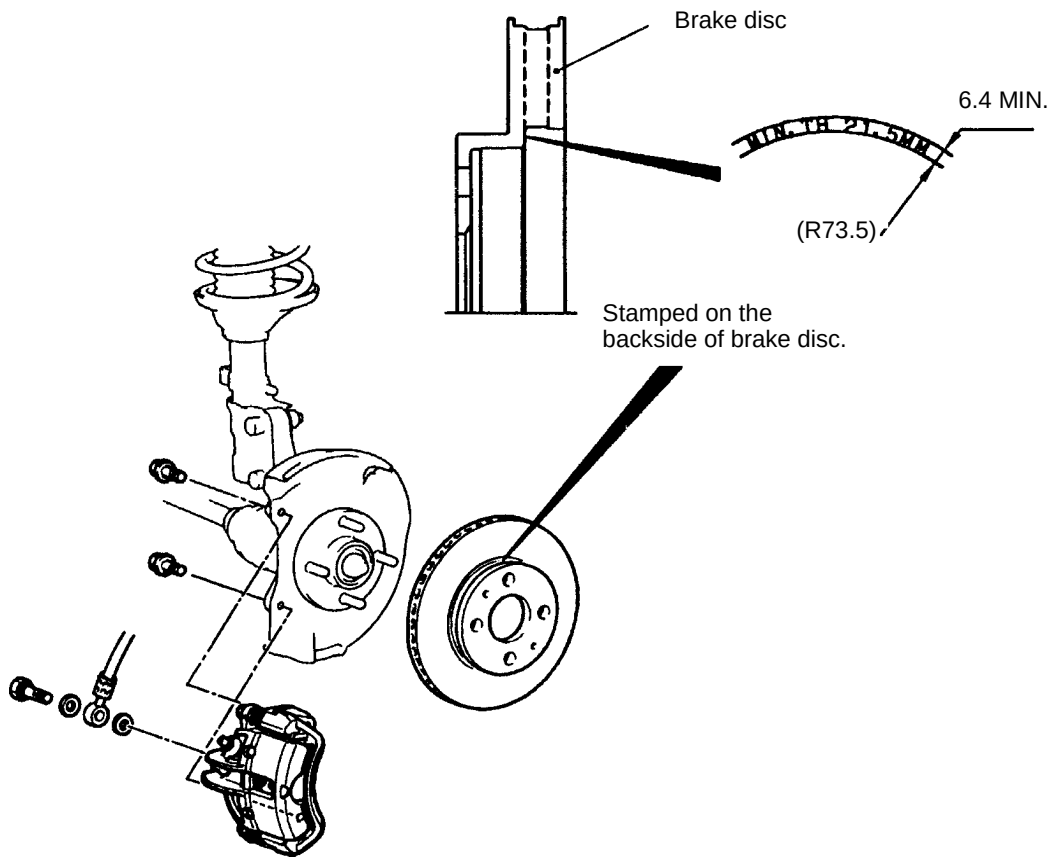


14F612

3. Place a dial gauge approximately 5 mm from the outer circumference of the brake disc, and measure the run-out of the disc.

Limit: 0.07 mm or less**NOTE**

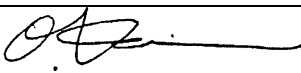
Tighten the nuts in order to secure the disc to the hub.





SERVICE BULLETIN

PUBLICATION GROUP, AFTER SALES SERVICE DEP.
MITSUBISHI MOTOR SALES EUROPE BV

SERVICE BULLETIN		No.: ESB-99E35-505	
		Date: 2000-07-15	<Model> (EC) CARISMA <M/Y> 98-10
Subject: ADDITION OF DIAGNOSTIC TROUBLE CODE NO.15 Group: SERVICE BRAKE			
CORRECTION		 O. Kai - E.V.P. & G.M. After Sales Service Dept.	
1. Description: For the troubleshooting of the ABS and the TCL, diagnostic trouble code No.15 has been added.			
2. Applicable Manuals:			
Manual	Pub. No.	Language	Page(s)
'98 CARISMA Workshop Manual (except GDI) Chassis	PWDE9502-B	(English)	35B-1 and 2
	PWDS9503-B	(Spanish)	
	PWDF9504-B	(French)	
	PWDG9505-B	(German)	
	PWDD9506-B	(Dutch)	
	PWDW9507-B	(Swedish)	
	PWDI96E1-B	(Italian)	
'00 CARISMA Workshop Manual Chassis	PWDE9502-D	(English)	35C-10
	PWDS9503-D	(Spanish)	
	PWDF9504-D	(French)	
	PWDG9505-D	(German)	
	PWDD9506-D	(Dutch)	
	PWDW9507-D	(Swedish)	
	PWDI96E1-D	(Italian)	
3.details: '98 CARISMA Workshop Manual Chassis (page 2,3,4) '00 CARISMA Workshop Manual Chassis (page 5)			

GROUP 35B

ANTI-SKID BRAKING SYSTEM (ABS) <2WD>

GENERAL

OUTLINE OF CHANGES

- The hydraulic unit has been changed.
- ABS-ECU connectors have been changed. Correspond to this, troubleshooting and inspection procedure for the wheel speed sensor have been changed.

TROUBLESHOOTING

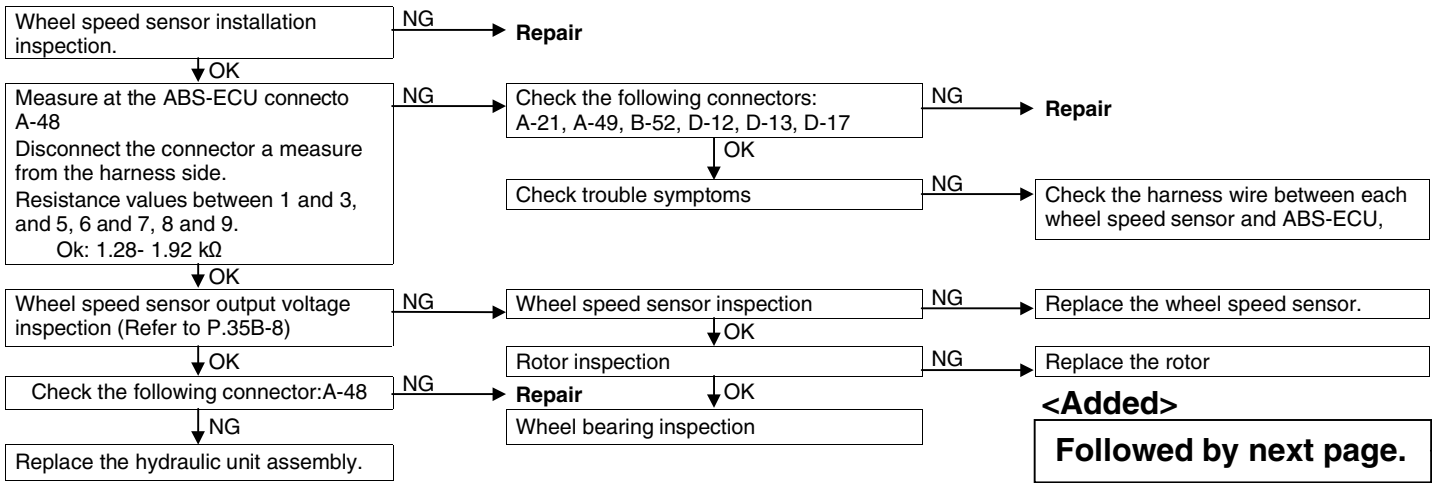
INSPECTION CHART FOR DIAGNOSIS CODES

Inspect according to the inspection chart that is appropriate for the malfunction code.

Diagnosis code No.	Inspection item	Diagnosis content	Reference page
11	Front right wheel speed sensor	Open circuit	35B-2 <Added> 
12	Front left wheel speed sensor		
13	Rear right wheel speed sensor		
14	Rear left wheel speed sensor		
15	Wheel speed sensor	Abnormal output signal	See page 4 of this S/B
16	Power supply system		35B-2
21	Front right wheel speed sensor	Short circuit	35B-2
22	Front left wheel speed sensor		
23	Rear right wheel speed sensor		
24	Rear left wheel speed sensor		
38	Stop lamp switch system		35B-3
41	Front right inlet solenoid valve		35B-9 (replace the hydraulic unit assembly)
42	Front left inlet solenoid valve		
43	Rear right inlet solenoid valve		
44	Rear left inlet solenoid valve		
45	Front right outlet solenoid valve		
46	Front left outlet solenoid valve		
47	Rear right outlet solenoid valve		
48	Rear left outlet solenoid valve		
51	Valve power supply		35B-3
53	Pump motor		35B-4
63	ABS-ECU		35B-9 (Replace the hydraulic unit assembly)

INSPECTION PROCEDURE FOR DIAGNOSIS CODES

Code Nos.11, 12, 13 and 14 Wheel speed sensor open circuit	Probable cause
Code Nos.21, 22, 23 and 24 Wheel speed sensor short circuit	
Code Nos.11,12, 13 and 14 are output if the ABS-ECU detects an open circuit in any one of the four wheel speed sensor	• Malfunction of wheel speed sensor • Malfunction of wiring harness or connector • Malfunction of ABS-ECU
Code Nos.21, 22, 23 and 24 are output in the following cases. • When there is input from any one of the four wheel speed sensors when travelling at 12 km/h or more, even though open circuit verified. • When a chipped or blocked-up ABS rotor is detected during driving at 12 km/h or more	• Malfunction of wheel speed sensor • Malfunction of wiring harness or connector • Malfunction of rotor • Malfunction of ABS-ECU • Malfunction of wheel bearing

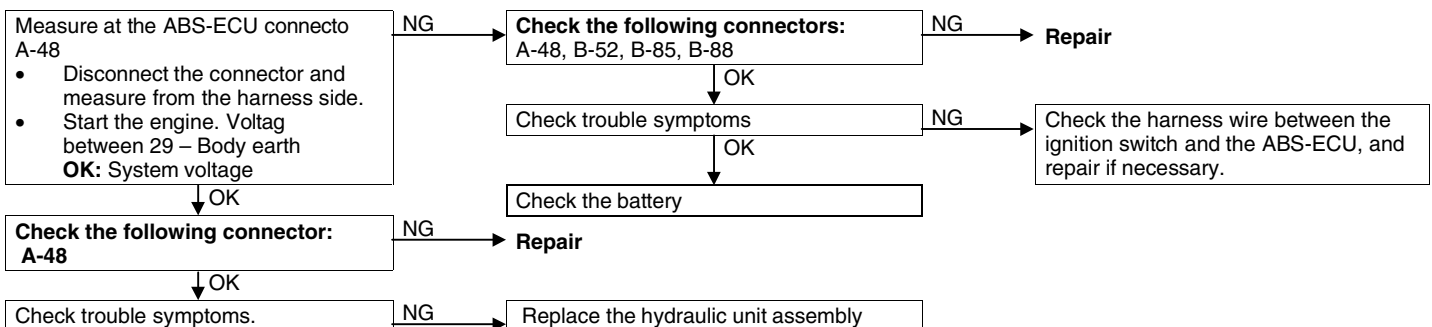


Code No. Power supply system	Probable cause
The voltage of the ABS-ECU power supply drops lower or rises higher than the specified value. If the voltage returns to the specified value, this code is no longer output.	• Malfunction of wiring harness or connector. • Malfunction of ABS-ECU

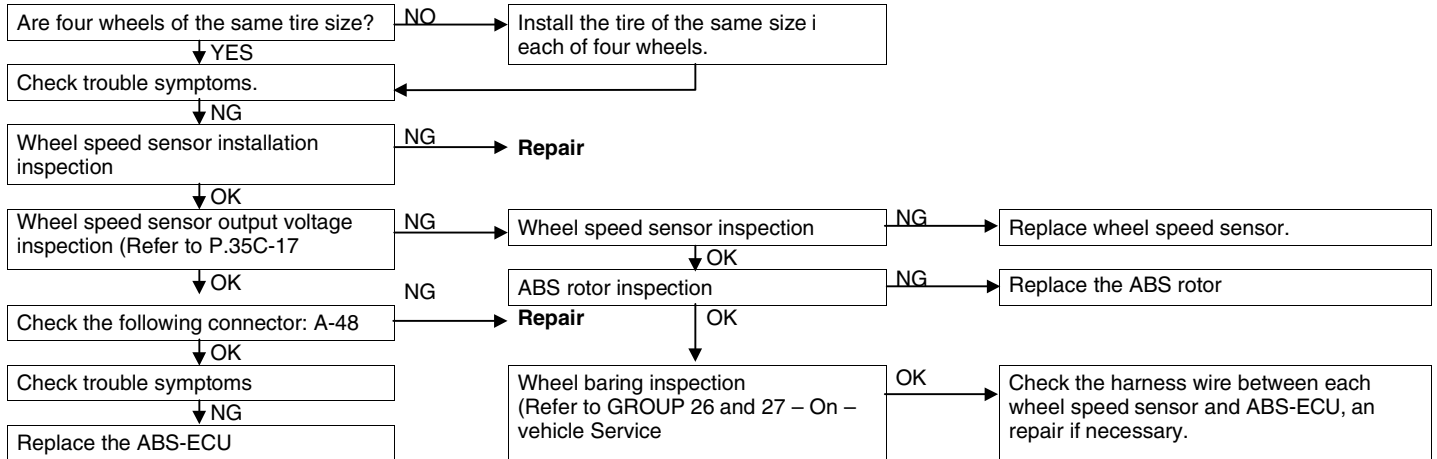
Caution

If battery voltage drops or rises during inspection, this code will be output as well. If the voltage returns to standard value, this code is no longer output.

Before carrying out the following inspection, check the battery level, and refill it if necessary.



Code No. 15 Wheel speed sensor (Abnormal output signal)	Probable cause
A wheel speed sensor outputs an abnormal signal (Other than an open short-circuit).	• Tire sizes of four wheels not unified. • Improper installation of wheel speed sensor • Malfunction of wheel speed sensor • Malfunction of ABS rotor • Malfunction of wheel bearing • Malfunction of wiring harness or connector • Malfunction of ABS-ECU



★: Refer to Basic Manual (Pub. No. PWDE9502)

INSPECTION CHART FOR DIAGNOSIS CODES

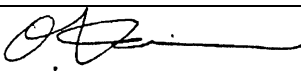
Inspect according to the inspection chart that is appropriate for the malfunction code.

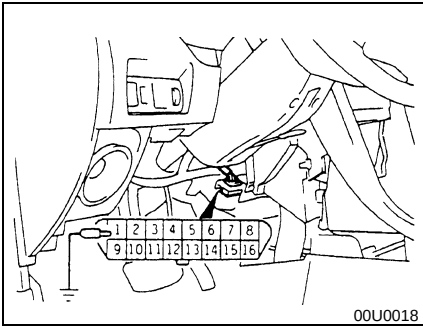
Diagnosis code No.	Inspection item	Diagnosis content	Reference page
11	Front right wheel speed sensor	Open circuit	Refer to '98 CARISMA Workshop Manual – GROUP 35B – Troubleshooting
12	Front left wheel speed sensor		
13	Rear right wheel speed sensor		
14	Rear left wheel speed sensor		
15 <Added>	Wheel speed sensor	Abnormal output signal	Refer to '98 CARISMA Workshop Manual – GROUP 35B Troubleshooting
16	Power supply system		Refer to '98 CARISMA Workshop Manual - GROUP 35B – Troubleshooting
21	Front right wheel speed sensor	Short circuit	Refer to '98 CARISMA Workshop Manual – GROUP 35B – Troubleshooting
22	Front left wheel speed sensor		
23	Rear right wheel speed sensor		
24	Rear left wheel speed sensor		
25	Engine speed		35C-10
31	TLC solenoid valve (inlet)		
32	TLC solenoid valve (outlet)		
33	TLC solenoid valve (inlet)		
34	TLC solenoid valve (outlet)		
38	Stop lamp switch system		Refer to '98 CARRISMA Workshop Manual – GROUP 35B - Troubleshooting
41	Front right inlet solenoid valve		35C-10
42	Front left inlet solenoid valve		
43	Rear right inlet solenoid valve		
44	Rear left inlet solenoid valve		
45	Front right outlet solenoid valve		
46	Front left outlet solenoid valve		
47	Rear left outlet solenoid valve		
48	Rear left outlet solenoid valve		
51	Valve power supply		35C-10
53	Pump motor		35C-10
63	ABS-ECU		Refer to '98 CARRISMA Workshop Manual – GROUP 35B – Troubleshooting (Replace the Hydraulic unit assembly)



SERVICE BULLETIN

PUBLICATION GROUP, AFTER SALES SERVICE DEP.
MITSUBISHI MOTOR SALES EUROPE BV

SERVICE BULLETIN		No.: ESB-99E35-506	
		Date: 2000-04-15	<Model> (EC) CARISMA (EC) SPACE STAR
Subject: ADDITION OF CAUTION ON READING OF DIAGNOSTIC TROUBLE CODES		<M/Y> 96-10	
Group: SERVICE BRAKE			
CORRECTION		 O. Kai - E.V.P. & G.M. After Sales Service Dept.	
1. Description: Caution has been added on reading of the diagnostic trouble codes by use of the ABS warning light.			
2. Applicable Manuals:			
Manual	Pub. No.	Language	Page(s)
'96 CARISMA Workshop Manual Chassis	PWDE9502	(English)	35B-7
	PWDS9503	(Spanish)	
	PWDF9504	(French)	
	PWDG9505	(German)	
	PWDD9506	(Dutch)	
	PWDW9507	(Swedish)	
	PWDI96E1	(Italian)	
'99 SPACE STAR Workshop Manual Chassis	CMXE99E1	(English)	35B-6
	CMXS99E1	(Spanish)	
	CMXF99E1	(French)	
	CMXG99E1	(German)	
	CMXD99E1	(Dutch)	
	CMXW99E1	(Swedish)	
	CMXI99E1	(Italian)	
3. Details: '96 CARISMA Workshop Manual chassis, page 2 '99 SPACE STAR Workshop Manual chassis, page 3			



Without the MUT-II

1. Use the special tool to earth diagnosis connector terminal No. 1.

2. Turn the ignition switch to ON and then take a reading of the diagnosis codes from the flashing of the ABS warning lamp.

<Added>

Caution:

After placing the ignition switch in the ON position, do not press the brake pedal.

When an ABS fault occurs, if the brake pedal is depressed with the ignition switch in the ON position, the ABS warning light will remain illuminated.

This makes it impossible for the diagnostic trouble codes to be read.

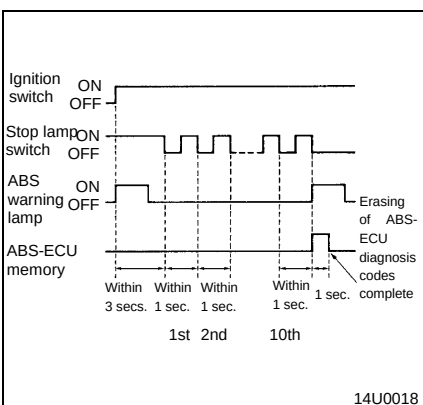
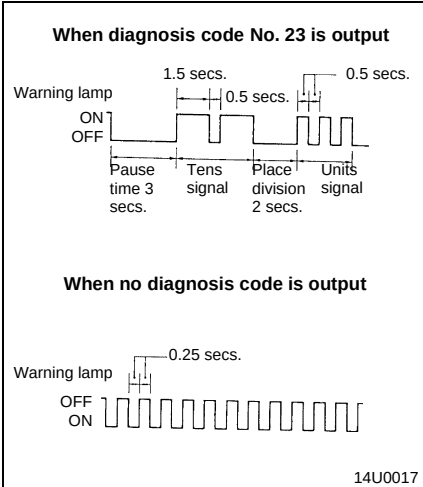
ERASING DIAGNOSIS CODES

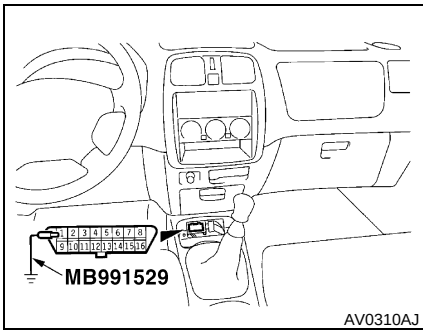
With the MUT-II

Connect the MUT-II to the diagnosis connector (16-pin), then erase the diagnosis codes.

Without the MUT-II

The diagnosis codes can only be erased by operating the brake switch ten times according to the pattern shown in the illustration at left while the ABS is active and while driving at a speed of 10 km/h or less.



**Without the MUT-II**

- L. Use the special tool to earth diagnosis connector terminal No. 1.

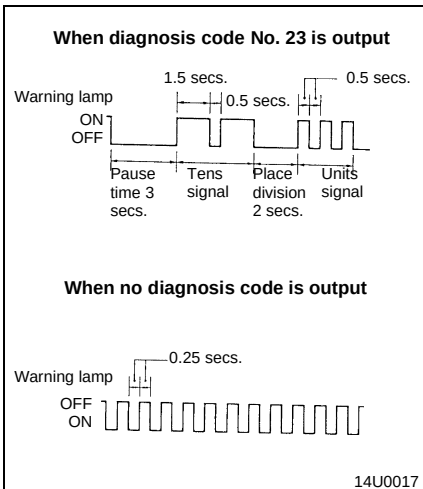
3. Turn the ignition switch to ON and then take a reading of the diagnosis codes from the flashing of the ABS warning lamp.

<Added>**Caution:**

After placing the ignition switch in the ON position, do not press the brake pedal.

When an ABS fault occurs, if the brake pedal is depressed with the ignition switch in the ON position, the ABS warning light will remain illuminated.

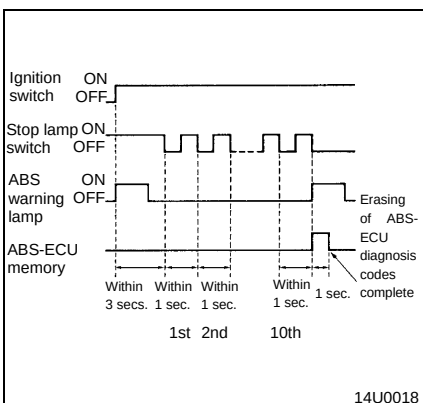
This makes it impossible for the diagnostic trouble codes to be read.

**ERASING DIAGNOSIS CODES****With the MUT-II**

Connect the MUT-II to the diagnosis connector (16-pin), then erase the diagnosis codes.

Without the MUT-II

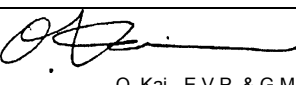
The diagnosis codes can only be erased by operating the brake switch ten times according to the pattern shown in the illustration at left while the ABS is active and while driving at a speed of 10 km/h or less.





SERVICE BULLETIN

PUBLICATION GROUP, AFTER SALES SERVICE DEP.
MITSUBISHI MOTOR SALES EUROPE BV

SERVICE BULLETIN		No.: ESB-99E37-001																					
		Date: 1999-12-30	<Model> (EC) CARISMA <M/Y> 97-10																				
Subject: CHANGE TO POWER STEERING OIL PUMP																							
Group: STEERING																							
CORRECTION		 O. Kai - E.V.P. & G.M. After Sales Service Dept.																					
1. Description: The power steering oil pump has been changed in the shape of hub from the round type to a three-spoke type. Accordingly, removal and installation procedures of the power steering oil pump have been changed.																							
2. Applicable Manuals: <table border="1"> <thead> <tr> <th>Manual</th> <th>Pub. No.</th> <th>Language</th> <th>Page(s)</th> </tr> </thead> <tbody> <tr> <td rowspan="7">'97 CARISMA Workshop Manual Chassis Supplement</td> <td>PWDE9502-A</td> <td>(English)</td> <td rowspan="7">37A-1</td> </tr> <tr> <td>PWDS9503-A</td> <td>(Spanish)</td> </tr> <tr> <td>PWDF9504-A</td> <td>(French)</td> </tr> <tr> <td>PWDG9505-A</td> <td>(German)</td> </tr> <tr> <td>PWDD9506-A</td> <td>(Dutch)</td> </tr> <tr> <td>PWDW9507-A</td> <td>(Swedish)</td> </tr> <tr> <td>PWDI96E1-A</td> <td>(Italian)</td> </tr> </tbody> </table>				Manual	Pub. No.	Language	Page(s)	'97 CARISMA Workshop Manual Chassis Supplement	PWDE9502-A	(English)	37A-1	PWDS9503-A	(Spanish)	PWDF9504-A	(French)	PWDG9505-A	(German)	PWDD9506-A	(Dutch)	PWDW9507-A	(Swedish)	PWDI96E1-A	(Italian)
Manual	Pub. No.	Language	Page(s)																				
'97 CARISMA Workshop Manual Chassis Supplement	PWDE9502-A	(English)	37A-1																				
	PWDS9503-A	(Spanish)																					
	PWDF9504-A	(French)																					
	PWDG9505-A	(German)																					
	PWDD9506-A	(Dutch)																					
	PWDW9507-A	(Swedish)																					
	PWDI96E1-A	(Italian)																					
3. Details:																							

GROUP 37A STEERING

<Added>

GENERAL OUTLINE OF CHANGES

"SPECIAL TOOLS" on the following page comes here.

- The following service procedures have been added to the addition of the diesel-powered vehicle.
Applicable models: 1900D
 - Removal and installation of the power steering oil pump
 - Removal and installation of the power steering hoses

POWER STEERING OIL PUMP <Round hub type> <Added>

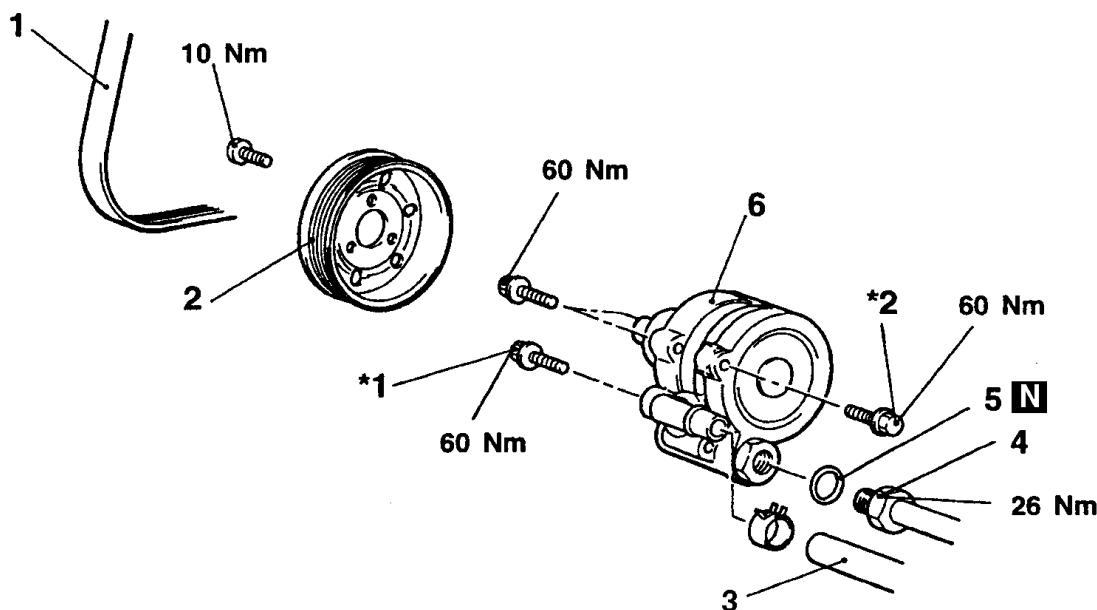
REMOVAL AND INSTALLATION

Pre-removal Operation

- Power Steering Fluid Draining
- Timing Belt Lower Cover Removal (Refer to GROUP 11 - Crankshaft Pulley.)

Post-installation Operation

- Power Steering Fluid Supplying
- Drive-belt Tension Adjusting
- Power Steering Fluid Line Bleeding
- Oil Pump Pressure Check
- Timing Belt Lower Cover Installation (Refer to GROUP 11 - Crankshaft Pulley.)



Removal steps

- Drive belt
- Power steering pump pulley
- Suction hose connection
- Pressure hose connection
- O-ring

6. Oil pump

NOTE

*1: Vehicles with A/C

*2: Vehicles without A/C

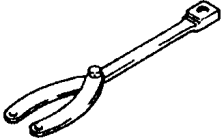
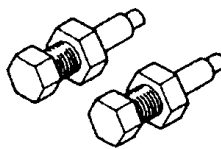
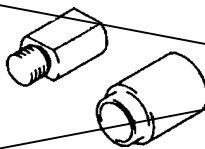
<Added>

Descriptions on pages 4 to 6 added here.

INSPECTION

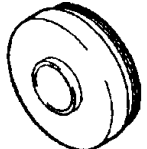
Check the drive-belt for cracks.
Check the pulley assembly for uneven rotation

SPECIAL TOOLS

Tool	Number	Name	Use
 B991367	MB991367	Special spanner	Removal and installation of the power steering pump pulley
 B991394	MB991394	Pin set	
	MB996047	Special bolt	
	MD999574	セカンドサーボポンプレッサーアダプターセット	Installation of the power steering pump hub

<Old>

<New>

	MD998815	Adapter, installer
---	----------	--------------------

POWER STEERING OIL PUMP <3-SPOKE HUB TYPE>

37200520163

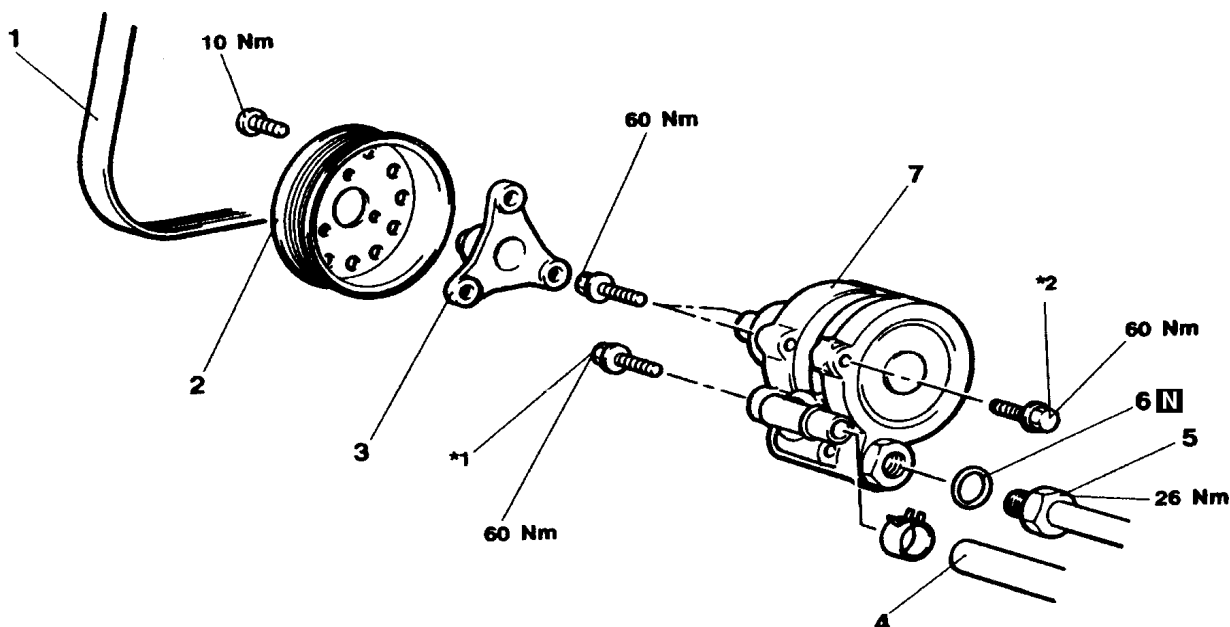
REMOVAL AND INSTALLATION

Pre-removal Operation

- Power Steering Fluid Draining.
- Hydraulic unit remove <Vehicles with ABS>
- Alternator remove.

Post-installation Operation

- Alternator installation
- Hydraulic unit installation. <Vehicles with ABS>
- Power Steering Fluid Supplying.
- Drive Belt Tension Check.
- Power steering Fluid Line Bleeding.
- Oil Pump Pressure Check



AX0115BN

Removal steps

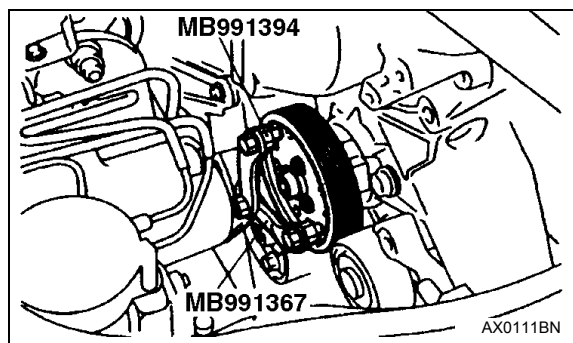
1. Drive belt
2. Power steering pump pulley
3. Power steering pump hub
4. Suction hose connection
5. Pressure hose connection
6. O-ring
7. Oil Pump

◀A▶ ▶B◀
◀B▶ ▶A◀

NOTE

*1: Vehicles with A/C

*2: Vehicles without A/C

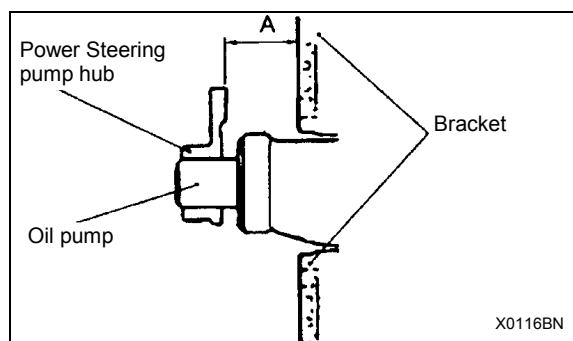


REMOVAL SERVICE POINT

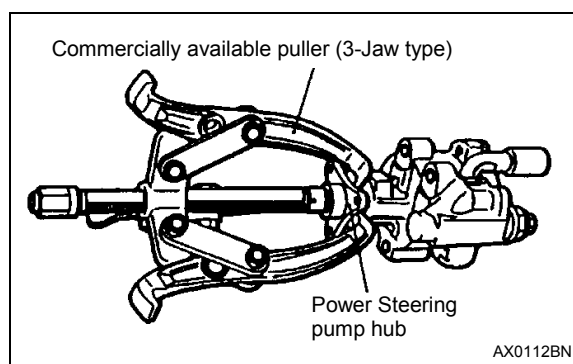
◀A▶ POWER STEERING PUMP PULLEY REMOVAL

◀B▶ POWER STEERING PUMP HUB REMOVAL

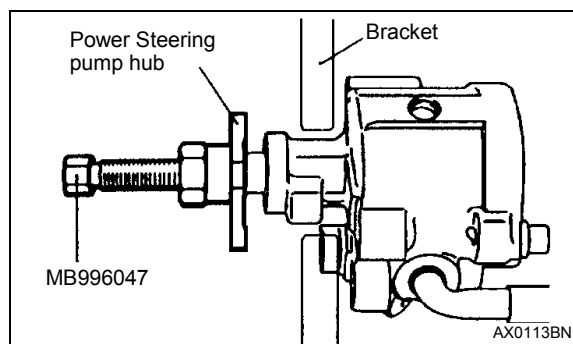
1. Remove the engine mount (RH) to body bolts. Lift the engine on a garage jack, etc. to ensure that the working space is available.



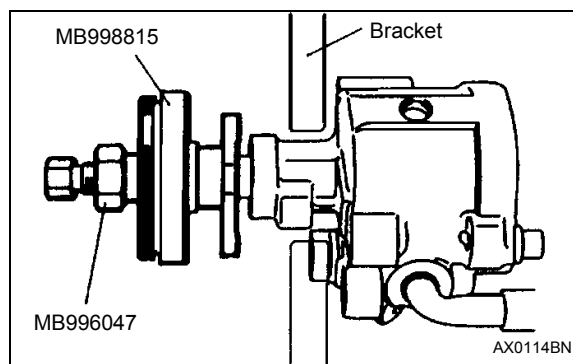
2. Measure dimensions A between the power steering pump hub and the bracket.

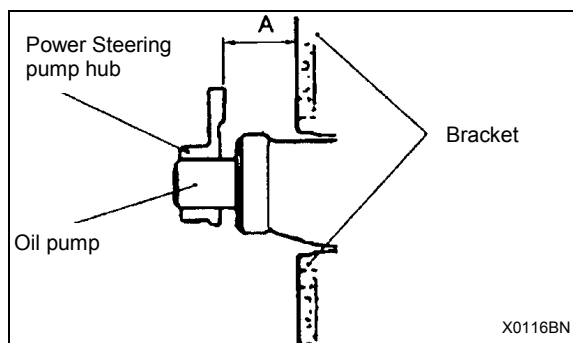


3. Using a commercially available puller (3-jaw type), remove the power steering pump hub.

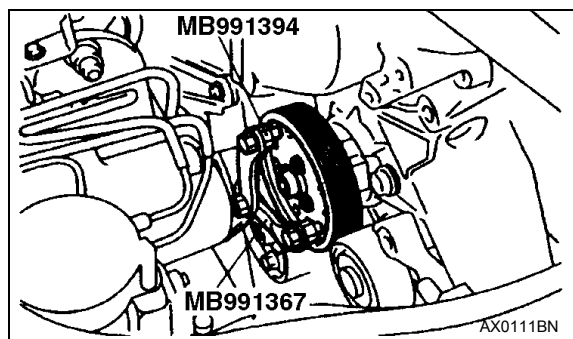
**INSTALLATION SERVICE POINTS****◀A▶ POWER STEERING PUMP HUB INSTALLATION**

1. Install the special tool in the power steering pump hub, and install the bolt of the special tool to the oil pump.
2. Holding the bolt of the special tool from turning, install the power steering pump hub while turning the nut.
3. When the nut of the special tool no longer turns, remove the special tool.
4. Combine special tool MB996047 and special tool MD998815, and again install the bolt of the special tool on the power steering pump.





5. Secure the bolt of the special tool to prevent it from turning until dimension (A) between the power steering pump hub and the bracket becomes the same as before removal. Then turn the nut to install the power steering pump hub.
6. Install the engine mount to body bolts.

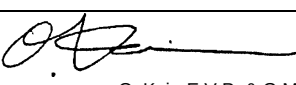


►◄ POWER STEERING PUMP PULLEY INSTALLATION



SERVICE BULLETIN

PUBLICATION GROUP, AFTER SALES SERVICE DEP.
MITSUBISHI MOTOR SALES EUROPE BV

SERVICE BULLETIN		No.: ESB-99E42-504	
		Date: 1999-11-15	<Model> (EC,EXP) CARISMA
Subject: CORRECTION TO CENTER DOOR LOCK TROUBLESHOOTING		<M/Y> 98-10	
Group: BODY			
CORRECTION		 O. Kai - E.V.P. & G.M. After Sales Service Dept.	

1. Description:

This Service Bulletin informs you that typographical errors in the center door lock troubleshooting have been rectified.

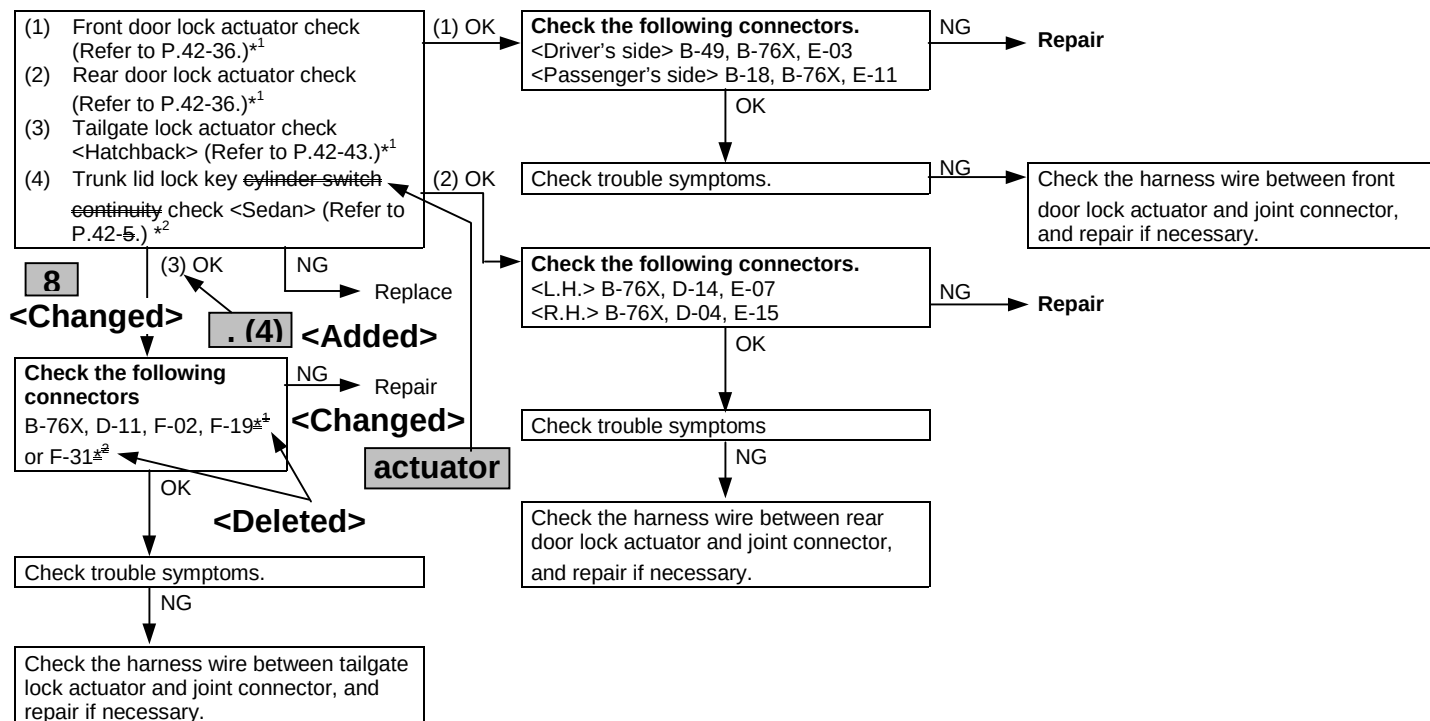
2. Applicable Manuals:

Manual	Pub. No.	Language	Page(s)
'98 CARISMA Workshop Manual chassis	PWDE9502-B	(English)	42-5
	PWDS9503-B	(Spanish)	
	PWDF9504-B	(French)	
	PWDG9505-B	(German)	
	PWDD9506-B	(Dutch)	
	PWDW9507-B	(Swedish)	
	PWDI96E1-B	(Italian)	

3. Details:

Inspection Procedure 13

Some doors do not lock or unlock	Probable cause
The door lock actuator, a harness or connector may be defective.	- Malfunction of the door lock actuator - Malfunction of the wiring harness or connector



NOTE

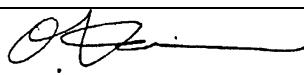
*¹: Refer to '96 CARISMA Workshop Manual (Pub. No. PWDE9502).

*²: Refer to '97 CARISMA Workshop Manual (Pub. No. PWDE9502-A).



SERVICE BULLETIN

PUBLICATION GROUP, AFTER SALES SERVICE DEP.
MITSUBISHI MOTOR SALES EUROPE BV

SERVICE BULLETIN		No.: ESB-99E51-001	
		Date: 1999-12-15	<Model> (EC,EXP) CARISMA
Subject: ADDITION OF WASHER MOTOR REMOVAL		<M/Y> 96-10	
Group: EXTERIOR			
INFORMATION		 O. Kai - E.V.P. & G.M. After Sales Service Dept.	
1. Description: The washer motor removal procedure has been added.			
2. Applicable Manuals:			
Manual	Pub. No.	Language	Page(s)
'96 CARISMA Workshop Manual	PWDE9502	(English)	51-9, 10
	PWDS9503	(Spanish)	
	PWDF9504	(French)	
	PWDG9505	(German)	
	PWDD9506	(Dutch)	
	PWDW9507	(Swedish)	
	PWDI96E1	(Italian)	
3. Details:			

WINDSHIELD WIPER AND WASHER REMOVAL AND INSTALLATION

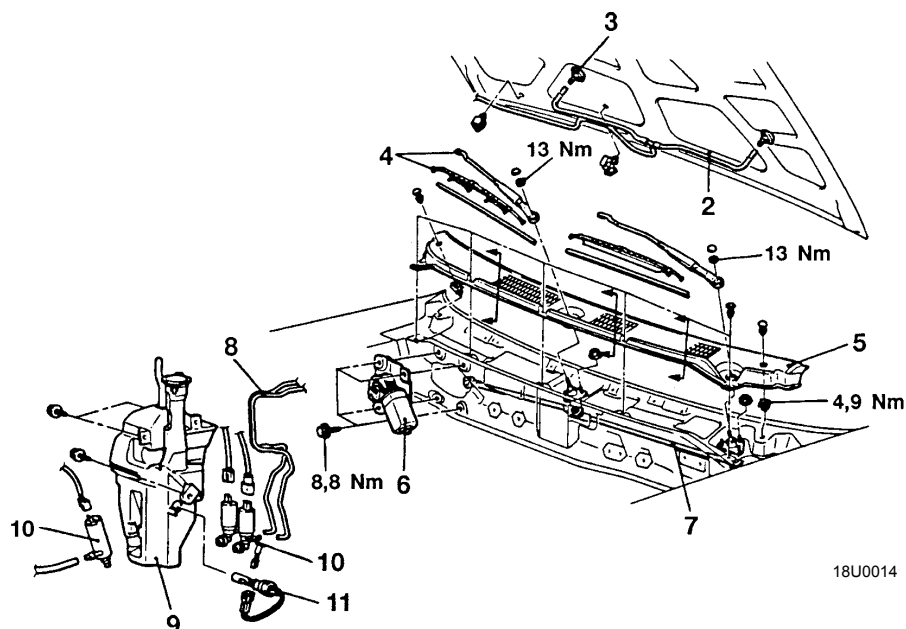
51100760032

Pre-removal and Post-installation Operation

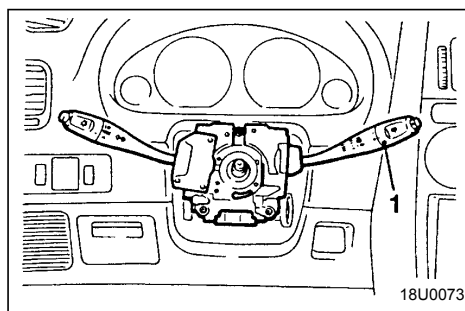
- Relay Box Removal and installation
<R.H. drive vehicles>

CAUTION: SRS

Before removal of air bag module and clock spring, refer to GROUP 52B - SRS Service Precautions and Air Bag Module and Clock Spring

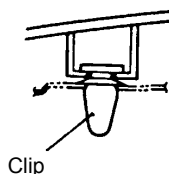


18U0014



18U0073

Section A-A



19X0027

00003366

1. Column switch assembly
(with built-in wiper and washer switch,
and wiper relay)
(Refer to GROUP 37A - Steering wheel
and shaft.)
2. Washer hose
3. Washer nozzle

Wiper motor and linkage removal steps

4. Wiper arm and blade assembly
5. Front deck garnish
6. Wiper motor
7. Linkage

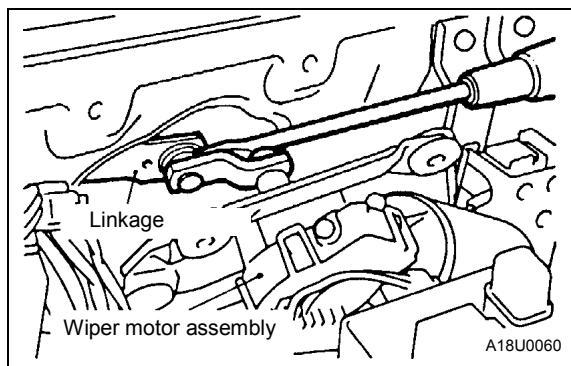
Washer tank removal steps

- Draining of washer fluid
- Front bumper (Refer to P.51-3.)
- 8. Washer hose
- 9. Washer tank
- 10. Washer motor
- 11. Washer fluid level switch

<Added>

Washer motor removal

10. Washer motor



REMOVAL SERVICE POINT

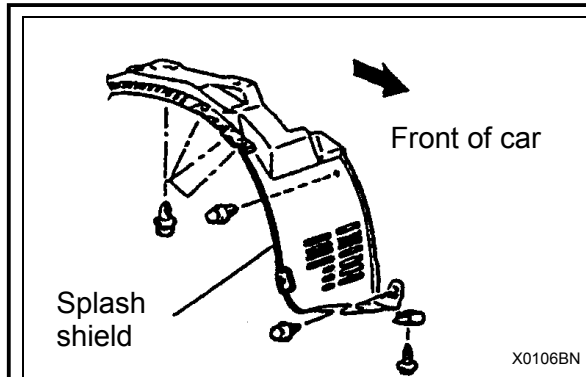
◀A▶ WIPER MOTOR REMOVAL

Loosen the wiper motor assembly mounting bolts, and then remove the wiper motor assembly. Disconnect the linkage and the motor assembly, and then remove the linkage.

Caution

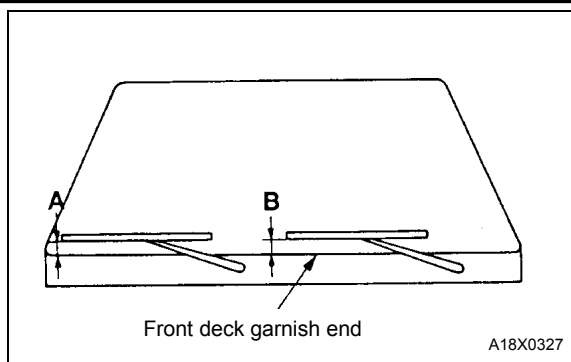
Because the installation angle of the crank arm and the motor has been set, do not remove them unless it is necessary to do so. If they must be removed, remove them only after marking their mounting positions.

<Added>



◀B▶ WASHER MOTOR REMOVAL

1. Remove the front under cover panel.
2. Partially remove the splash shield as shown.
3. Replace each washer motor.



INSTALLATION SERVICE POINT

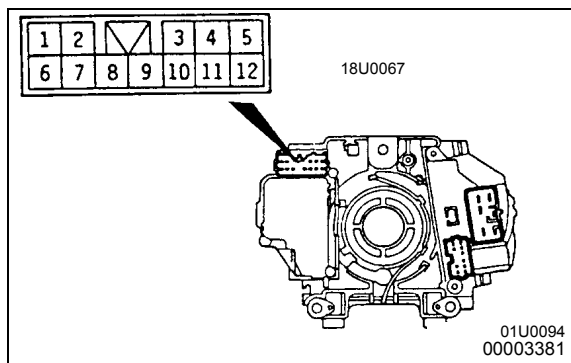
▶A▶ WIPER ARM AND BLADE ASSEMBLY INSTALLATION

- (1) The movements of the left and right wiper arms are different, so check the identification marks.
- (2) Install the wiper blade in the specified position (standard value) as shown in the illustration.

Standard value:

Passenger's side (A): 20 ± 5 mm

Driver's side (B): 25 ± 5 mm



INSPECTION

COLUMN SWITCH CHECK

51100770035

Wiper and Washer Switch

Switch position		Terminal No.				
		6	7	8	9	10
Wiper switch	OFF		○	○		
	INT		○	○		
	1 (LO)			○		○
	2 (HI)				○	○
Washer switch	ON	○				○

Intermittent Wiper Relay (Intermittent Operation Inspection)

- (1) Connect the column switch connector.
- (2) Turn the ignition switch to ACC.



SERVICE BULLETIN

QUALITY INFORMATION ANALYSIS
OVERSEAS SERVICE DEPT. MITSUBISHI MOTORS CORPORATION

SERVICE BULLETIN		NO. : MSB-97E11-502	
		DATE : 1997-02-28	<MODEL> ECLIPSE(D30) CARISMA <M/Y> 96-10 96-10
SUBJECT : CHANGE IN LASH ADJUSTER CHECKING PROCEDURE			
GROUP : ENGINE		DRAFTNO. : 96-AL-504	
CORRECTION	OVERSEAS SERVICE DEPT	 R. USAMI - MANAGER QUALITY INFORMATION ANALYSIS	

1. Description:

The lash adjuster checking procedure has been changed as follows:

2. Applicable Manuals:

Manual	Pub. No.	Page	Engine Model
'96 ECLIPSE Workshop Manual – Chassis	PWUE95E1(English)	11A-12~11A-14	4G63-DOHC
	PWUF95E1(French)		
	PWUG95E1(German)		
	PWUD95E1(Dutch)		
'96 CARISMA Workshop Manual – Chassis	PWDE9502(English)	11A-15~11A-17	4G93-DOHC
	PWDS9503(Spanish)		
	PWDF9504(French)		
	PWDG9505(German)		
	PWDD9506(Dutch)		
	PWDW9507(Swedish)		

3. Details:

ENGINE – On-vehicle Service

LASH ADJUSTER CHECK

If an abnormal noise (chattering noise) suspected to be caused by malfunction of the lash adjuster is produced immediately after starting the engine and does not disappear, perform the following check.

NOTE

1. An abnormal noise due to malfunction of the lash adjuster is produced immediately after starting the engine and changes with the engine speed, irrespective of the engine load.
If, therefore, the abnormal noise is not produced immediately after starting the engine or does not change with the engine speed, or it changes with the engine load, malfunction of the lash adjuster is not the cause for the abnormal noise.
 2. When the lash adjuster is malfunctioning, the abnormal noise is rarely eliminated by continuing the warming-up of the engine at idle speed.
However, the abnormal noise may disappear only when seizure is caused by oil sludge in the engine whose oil is not maintained properly.
- (1) Start the engine.
 - (2) Check if abnormal noise produced immediately after starting the engine changes with the change in the engine speed.
If the abnormal noise is not produced immediately after starting the engine or it does not change with the engine speed, malfunction of the lash adjuster is not the cause for the noise. Therefore, investigate other causes. For your information, the abnormal noise is probably caused by some other parts than the engine proper if it does not change with the engine speed. (In this case, the lash adjuster is in good condition.)
 - (3) With the engine idling, change the engine load (shift from N to D range, for example) to make sure that there is no change in the level of abnormal noise.
If there is a change in the level of abnormal noise, a tapping noise due to worn crankshaft bearing or connecting rod bearing is suspected. (In this case, the lash adjuster is in good condition.)
 - (4) After completion of warming-up, run the engine at idle to check for abnormal noise.
If the noise is reduced or disappears, make the following check as it is suspected that the noise is due to seizure of the lash adjuster. If there is no change in the level of the abnormal noise, proceed to step (5).

ENGINE – On-vehicle Service

- 1) Cool the engine sufficiently.
- 2) Give two turns to the crankshaft.
- 3) Perform simple check of the lash adjuster. (See page 5 of this Service Bulletin.)
 - Replace the lash adjuster which allows the rocker arm to be pushed down easily.
 - If the lash adjuster is found normal as a result of simple lash adjuster check (the rocker arm is not pushed down easily), investigate other causes for the abnormal noise.

NOTE

The lash adjuster can be judged correctly by the leak down test whether it is good or bad. (Refer to ENGINE WORKSHOP MANUAL)

Caution

Before installation of a new lash adjuster, be sure to bleed air from the adjuster. (Refer to ENGINE WORKSHOP MANUAL)

- (5) Run the engine to bleed the lash adjuster system. (See page 7 of this Service Bulletin.)
- (6) If the abnormal noise does not disappear after air bleeding operation, perform the following check.
 - 1) Perform simple lash adjuster check. (See page 5 of this Service Bulletin.)
 - If only one of the lash adjusters is found abnormal in the simple lash adjuster check (the rocker arm is pushed down easily), replace the lash adjuster.
 - If two or more lash adjusters are found abnormal (the rocker arm is pushed down easily), clogged oil passage in the cylinder head is suspected. Check for clogged oil passage and repair the passage if it is clogged. If the passage is not clogged, replace the lash adjusters.
 - If all the lash adjusters are found normal (the rocker arms are hard to push down) as a result of simple lash adjuster check, investigate other causes for the abnormal noise.

NOTE

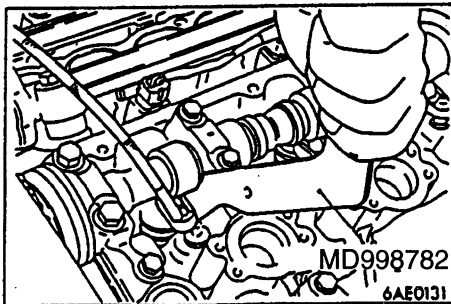
The lash adjuster can be judged correctly by the leak down test whether it is good or bad. (Refer to ENGINE WORKSHOP MANUAL)

ENGINE – On-vehicle Service

Caution

Before installation of a new lash adjuster, be sure to bleed air from the adjuster. (Refer to ENGINE WORKSHOP MANUAL)

- (7) Start the engine and make sure that the abnormal noise has disappeared. Perform air bleeding operation if required. (See page 8 of this Service Bulletin.)
- (8) On DOHC engine (except 4G15-DOHC), the lash adjuster can easily be replaced by the following procedure.

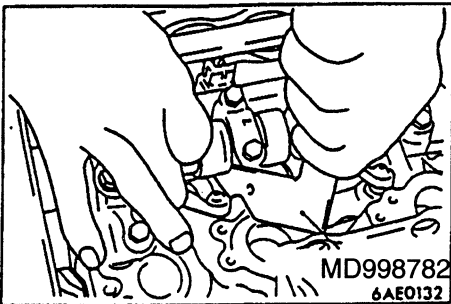


Caution

Before removing the lash adjuster, turn the crankshaft to lower the piston of the cylinder concerned. Otherwise, the valve will come into contact with the piston when the valve is lowered.

In addition, the lash adjuster cannot be removed at the rocker arm lifted by the cam.

In this case, turn the crankshaft so that the rocker arm may not be lifted by the cam.



- 1) Use the special tool to push down the valve and remove the roller rocker arm.
- 2) Pull out the lash adjuster from the cylinder head.
- 3) Install on the cylinder head the new lash adjuster from which air has been bled.
- 4) Use the special tool to push down the valve and install the roller rocker arm.

NOTE

To install the roller rocker arm, place the pivot end of the rocker arm on the lash adjuster first. Then, push down the valve and place the slipper end of the rocker arm on the valve stem end.

ENGINE – On-vehicle Service

<Simple Lash Adjuster Check>

- (1) Stop the engine.
- (2) Remove the rocker cover.
- (3) Set the piston in No.1 cylinder at top dead center of the compression stroke.
- (4) Check the rocker arms indicated by a white arrow in the figure next page by the following procedure.

<Except checking of Y-shaped rocker arm>

- 1) Check if the rocker arm can be pushed down when pushing it at the portion right above the lash adjuster.
 - If the rocker arm can be pushed down easily, record the corresponding lash adjuster as a defective.
 - If the rocker arm cannot be pushed down (it feels very stiff), the lash adjuster is in good condition. Therefore, investigate other causes of the abnormal noise.

<Checking of Y-shaped rocker arm>

NOTE

The Y-shaped rocker arm on exhaust valve side cannot be pushed down if either of the lash adjusters is in good condition.

Therefore, use a feeler gauge to make a check by the following procedure.

- 1) Check if a 0.1 – 0.2 mm leaf of the feeler gauge can be inserted between the valve and the lash adjuster.
 - 2) Record the corresponding lash adjuster as a defective if the leaf of the feeler gauge can be inserted easily.
 - 3) If the feeler gauge leaf cannot be inserted easily, the lash adjuster is in good condition. Therefore, investigate other cause of the abnormal noise.
- (5) Slowly turn the crankshaft 360° clockwise.
 - (6) Follow the same procedure as step (4) to check the rocker arms indicated by a black arrow in the figure next page.

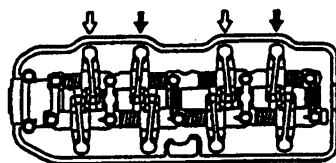
ENGINE – On-vehicle Service

In-line 4-cylinder engine (W-E) – Except Carisma

<SOHC-8valve>

← Timing belt side

Exhaust valve side

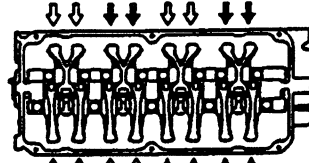


Intake valve side

<SOHC-16valve>

← Timing belt side

Exhaust valve side

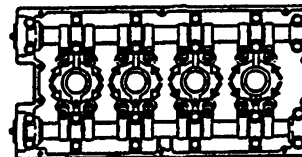


Intake valve side

<DOHC>

← Timing belt side

Exhaust valve side



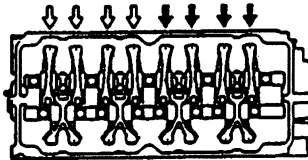
Intake valve side

In-line 4-cylinder engine (E-W) – Carisma

<SOHC-16valve>

← Timing belt side

Intake valve side

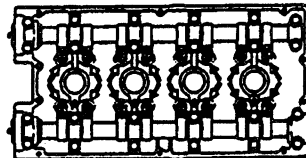


Exhaust valve side

<DOHC>

← Timing belt side

Intake valve side



Exhaust valve side

6EN999X

ENGINE – On-vehicle Service

<Bleeding lash adjuster system>

NOTE

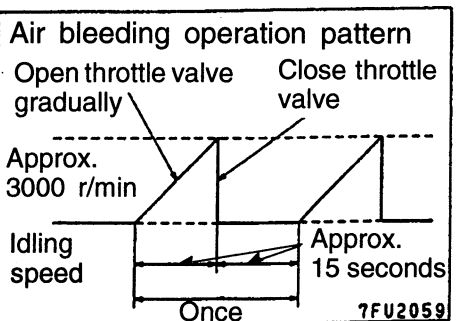
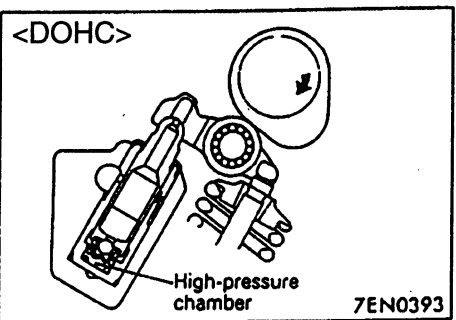
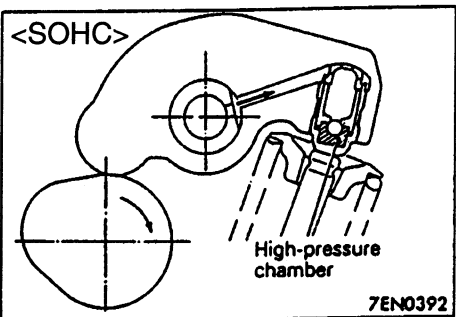
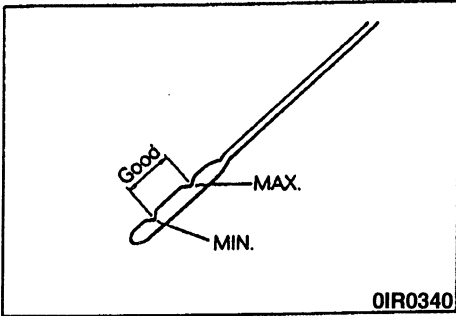
1. Parking the vehicle on a grade for a long time may decrease oil in the lash adjuster, causing air to enter the high pressure chamber when starting the engine.
2. After parking for many hours, oil may run out from the oil passage and it takes time before oil is supplied to the lash adjuster, causing air to enter the high pressure chamber.
3. In the above cases, abnormal noise can be eliminated by bleeding the lash adjuster system.

- (1) Check engine oil and add or change oil if required.

NOTE

1. If the engine oil level is low, air is sucked from the oil screen, causing air to enter the oil passage.
2. If the engine oil level is higher than specification, oil may be stirred by the crankshaft, causing oil to be mixed with a large quantity of air.
3. If oil is deteriorated, air is not easily separated from oil, increasing the quantity of air contained in oil.
4. If air mixed with oil enters the high pressure chamber inside the lash adjuster from the above causes, air in the high pressure chamber is compressed excessively while the valve is opened, resulting in production of abnormal noise at closing of the valve.

This is the same phenomenon as that observed when the valve clearance has become excessive. The lash adjuster can resume normal function when air that has entered the lash adjuster is removed.



- (2) Idle the engine for one to three minutes to warm it up.
- (3) Repeat the operation pattern, shown in left figure, at no load to check for abnormal noise. (Normally the abnormal noise is eliminated after repetition of the operation 10 to 30 times. If, however, no change is observed in the level of abnormal noise after repeating the operation more than 30 times, it is suspected that the abnormal noise is due to some other factors.)
- (4) After elimination of abnormal noise, repeat the operation shown in left figure five more times.
- (5) Run the engine at idle for one to three minutes so as to make sure that the abnormal noise has been eliminated.



SERVICE BULLETIN

QUALITY INFORMATION ANALYSIS

Revised

OVERSEAS SERVICE DEPT. MITSUBISHI MOTORS CORPORATION

SERVICE BULLETIN		NO.: MSB-97E11-503REV	
		DATE: 1997-06-15	<MODEL> (EC,EXP)CARISMA
			<M/Y> 97-10
SUBJECT: INSPECTION & ADJUSTMENT PROCEDURE FOR VALUE CLEARANCE & INJECTION TIMING			
GROUP: ENGINE		DRAFTNO.: 96-CH-504	
CORRECTION	OVERSEAS SERVICE DEPT	<i>R. Usami</i> R. USAMI - MANAGER QUALITY INFORMATION ANALYSIS	

1. Description:

This Service Bulletin informs you of correction to the inspection and adjustment procedure for value clearance and injection timing.

2. Applicable Manuals:

Manual	Pub. No.	Page
'97 CARISMA Workshop Manual chassis (SUPPLEMENT)	PWDE9502-A(English)	11B-6, 11B-8, 11B-9, 11B-10, 11B-11, 11B-12
	PWDS9503-A(Spanish)	
	PWDF9504-A(French)	
	PWDG9505-A(German)	
	PWDD9506-A(Dutch)	
	PWDW9507-A(Swedish)	
ENGINE F8QT Workshop Manual	PWEE9602(English)	11A-19-3, 11A-19-5, 11A-19-6
	PWES9603(Spanish)	
	PWEF9604(French)	
	PWEG9605(German)	
	PWED9606(Dutch)	
	PWEW9607(Swedish)	

NOTE:

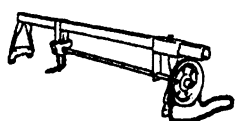
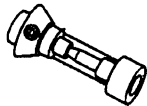
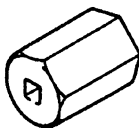
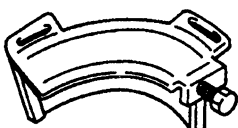
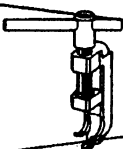
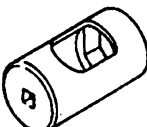
This Service Bulletin supersedes the previously published Service Bulletin MSB-97E11-503.

3. Details:

- '97 CARISMA Workshop Manual chassis (SUPPLEMENT), Page 11B-6.

11B-6

F8QT ENGINE - Special Tools

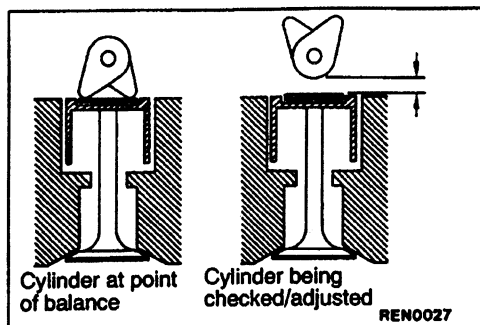
Tool	Number	Name	Use
 Z203827	GENERAL SERVICE TOOL MZ203827	Engine lifter	Supporting the engine assembly during removal and installation of the transmission
 MB996030	MB996030	Measuring device adapter	Adjustment of injection timing
 MB996036	MB996036	Hexagon socket	
 MB996037	MB996037	Sprocket adapter	
 MB996043	MB996043	Sprocket stopper	
 MB996035	MB996035	Valve lifter	
 MB996041	MB996041	Special socket	Removal of fuel injector
 MB996045	MB996045	Tension gauge	Checking of drive belt tension

<Deleted>

- '97 CARISMA Workshop Manual chassis (SUPPLEMENT), Page 11B-8.

11B-8

F8QT ENGINE - On-vehicle Service



VALVE CLEARANCE CHECK AND ADJUSTMENT

1. The valve clearances have to be checked/adjusted in the following sequence:

Cylinder at point of balance	Cylinder being checked/adjusted
1	4
2	3
3	2
4	1

2. Measure the valve clearance.

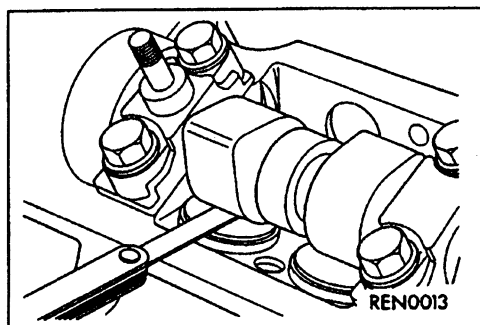
Standard value (cold engine):

Intake valve: 0.15 - 0.25 mm

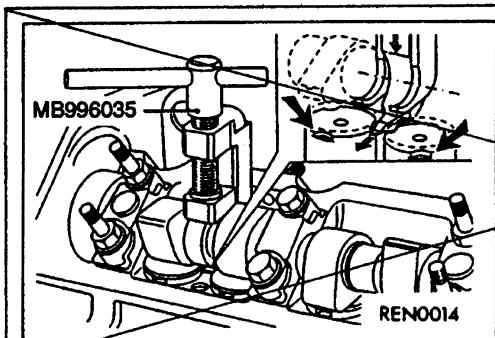
Exhaust valve: 0.35 - 0.45 mm

<Incorrect>

3. If the valve clearance is outside the standard value, adjust by replacing the tappet pads using the following procedure.



<Incorrect>



4. Unscrew the base of special tool a distance of 8 mm.
5. Turn the slots in the tappet to the correct position; see the illustration.
6. Position special tool with the base in the slots of the tappets and then push the tool forwards as far as possible.
7. Depress the tappets.

Caution

When changing tappet pads the piston must not be at TDC. The crankshaft must be turned on to bring it just past TDC, otherwise the valves may strike the piston when the tappets are depressed.

<Correct>

<Correct>

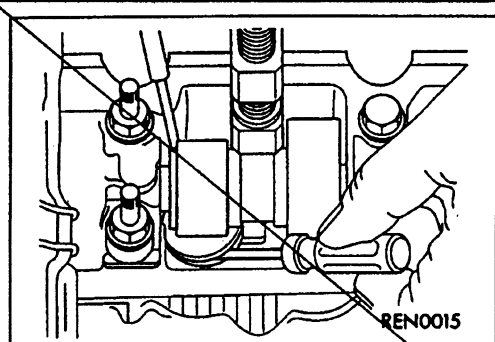
Cold engine	Checking	Adjusting
Intake valve mm	0.15-0.20	0.20
Exhaust valve mm	0.35-0.45	0.40

4. If out of the standard value, measure the value clearance again and record the measurements.
 5. Based on the measurements, select a tappet pad that will bring the value clearance within the standard value.
Thickness of adjusting tappet pad =
Thickness of tappet pad installed at inspection + (Measured value - Standard value)
- NOTE**
1. Measure the thickness of the tappet pad with a micrometer.
 2. Always use new tappet pads.
 3. Tappet pads are available in thickness from 3.25 mm to 4.25 mm, increasing in increments of 0.05 mm; and in thickness from 4.30 mm to 4.50 mm, increasing in increments of 0.10 mm.
 6. Remove the camshaft and install a selected tappet pad.
 7. Reinstall the camshaft.
 8. Give the crankshaft one turn, and check that the value clearance is within the standard value.

- '97 CARISMA Workshop Manual chassis (SUPPLEMENT), Page 11B-9.

F8QT ENGINE - On-vehicle Service

11B-9



8. Use a small screwdriver to remove the tappet pad.
9. Select tappet pads which will bring the valve clearance to the standard value.

Standard value (cold engine):

Intake valve: 0.20 mm

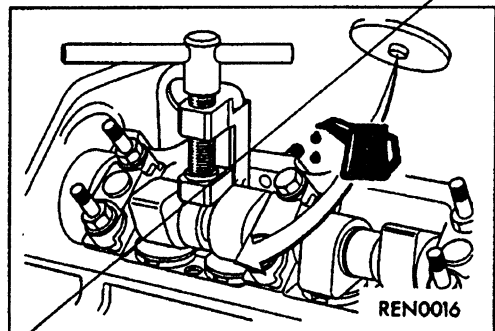
Exhaust valve: 0.40 mm

Example

If the measured valve clearance is 0.25 mm and the required valve clearance is 0.40 mm, then the old tappet pad must be replaced by a new pad which is 0.15 mm thinner.

NOTE

1. Measure the thickness of the tappet pad with a micrometer.
2. Always use new tappet pads.
3. Tappet pads are available in thicknesses from 3.25 mm to 4.25 mm, increasing by increments of 0.05 mm; and in thicknesses from 4.30 to 4.50 mm, increasing by increments of 0.10 mm.



10. The tappet pad must be lubricated with oil and installed with the projection facing towards the tappet.

<Incorrect>

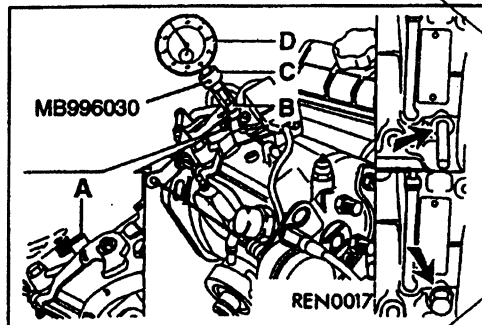
- '97 CARISMA Workshop Manual chassis (SUPPLEMENT), Page 11B-10.

11B-10

F8QT ENGINE - On-vehicle Service

INJECTION TIMING CHECK AND ADJUSTMENT

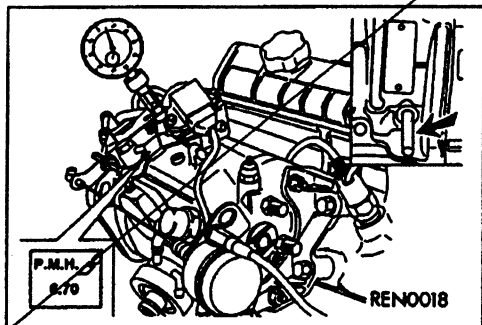
1. Turn the crankshaft clockwise to set the No.1 cylinder to top dead compression centre.
2. Turn the crankshaft 1 3/4 revolutions in its normal direction of rotation.
3. Remove the plug (A).



4. Fit special tool:
 - Locate the guide bush in the pump.
 - Slide the measuring pin (B), which is part of the special tool, into the guideway of the pump.
 - Locate and secure the holder (C).
 - Position the clock gauge (D) and make sure that the plunger is pressed in at least 0.2 mm. Secure the clock gauge and set it at zero.

NOTE

The measuring pin and guide bush can only be supplied and used as a set.



5. Turn the crankshaft in its normal direction of rotation until the clock gauge indicates approximately 5.00 mm.
6. Apply pressure on the locking pin and turn the crankshaft in its normal direction of rotation until the locking pin engages the recess in the crankshaft web.
7. Read off the value on the clock gauge.
8. The reference value for checking purposes is approximately 0.02 mm; this is shown on the pump control arm.
9. If the reference value is not obtained, the pump will have to be adjusted.

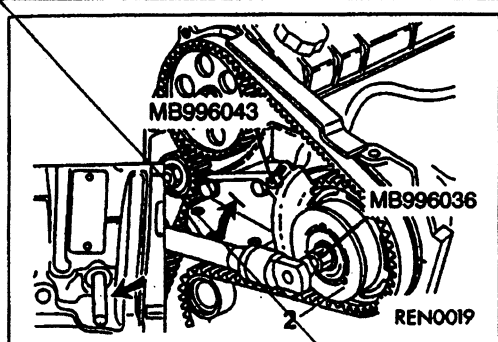
<Incorrect>

<Should be replaced by pages 8 through 11.>

- '97 CARISMA Workshop Manual chassis (SUPPLEMENT), Page 11B-11.

F8QT ENGINE - On-vehicle Service

11B-11

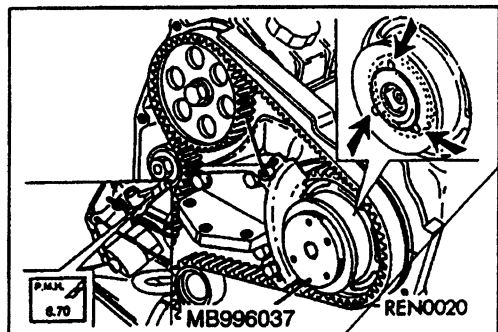


10. Locate special tool (sprocket stopper) between the pump bracket and the sprocket. Secure the tool with the bolt supplied with the set.
11. Insert special tool (hexagon socket) in the screwed sleeve and nut assembly. Back off (turning clockwise) the screwed sleeve and nut assembly one eighten of a turn. It should now be possible to move the flange (2).
12. Remove special tool (sprocket stopper), the locking pin and the clock gauge.

Caution

The plunger is not spring-mounted! When turning over the engine it is possible to break the clock gauge.

13. Turn the crankshaft $1 \frac{3}{4}$ revolutions further, locate the clock gauge and make sure that the plunger is pressed in at least 0.2 mm. Check and adjust the injection timing.



14. Fit special tool in the three holes of the flange.
15. Turn the tool with the flange until the jaws of the tool engage the three internal recesses of the sprocket.
16. Turn the tool with the flange clockwise until the backlash in the pump is eliminated and then turn it to 0.5 mm below the adjustment reference value.
17. Now turn the tool with the flange counter-clockwise until the adjustment reference value is obtained as shown on the pump ± 0.02 mm.
18. Locate special tool (sprocket stopper) and secure it with the bolt supplied with the set.
19. Turn the bracket with the bolt (F) so that the bracket is free from play.

Caution

The pump sprocket must not be displaced (the pointer of the micrometer must not move).

20. Insert special tool (hexagon socket) in the screwed sleeve and nut assembly and tighten the assembly steadily (turning counter-clockwise) to the specified torque.
21. Remove special tool (sprocket stopper), the locking pin and the clock gauge.

<Incorrect>

<Should be replaced by pages 8 through 11.>

- '97 CARISMA Workshop Manual chassis (SUPPLEMENT), Page 11B-12.

11B-12

F8QT ENGINE - On-vehicle Service

- ~~22. Turn the crankshaft 1 3/4 revolutions further, locate the clock gauge and make sure that the plunger is pressed in at least 0.2 mm.~~
- ~~23. Check the injection timing.~~
- ~~24. Remove special tool together with the clock gauge and measuring pin. Fit the plug with a new O-ring.~~
- ~~25. Tighten the plug to the specified torque.~~
- ~~Specified torque: 10 Nm~~
- ~~26. Remove the locking pin and fit the plug with a new sealing washer.~~
- ~~27. Tighten the plug to the specified torque.~~
- ~~Specified torque: 20 Nm~~
- ~~<Incorrect>~~

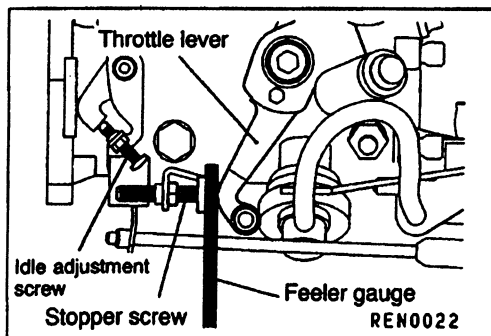
<Should be replaced by pages 8 through 11.>

IDLE SPEED CHECK AND ADJUSTMENT

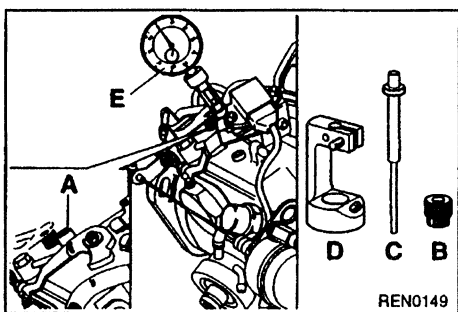
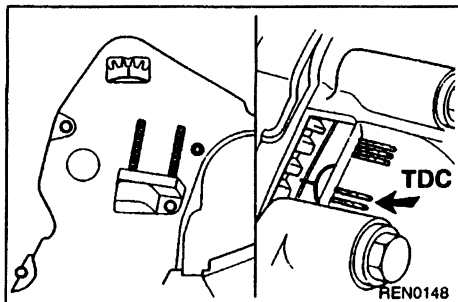
1. Before inspection, set the vehicle to the pre-inspection condition.
2. Connect the MUT-II to the diagnosis connector.
3. Check the idle speed.

Standard value: 825 ± 25 r/min

4. If the idle speed is outside the standard value range, adjust by the following procedure.
5. Loosen the lock nut, and then turn the idle adjustment screw to adjust the idle speed to the standard value.
6. Tighten the lock nut to secure the idle adjustment screw.
7. Insert a feeler gauge with a thickness of 4 mm between the throttle lever and the stopper screw.
8. Check that the idle speed is at 1,250 ± 100 r/min. If the idle speed is outside this range, adjust by turning the stopper screw.
9. Tighten the lock nut to secure the stopper screw.
10. Remove the feeler gauge.
11. Check that the idle speed is within the standard value range. If the idle speed is outside the standard value range, repeat the adjustment procedure from step 5.
12. Disconnect the MUT-II.



- '97 CARISMA Workshop Manual chassis (SUPPLEMENT).



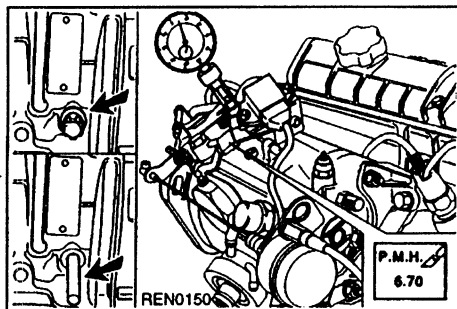
INJECTION TIMING CHECK AND ADJUSTMENT

INJECTION TIMING CHECK

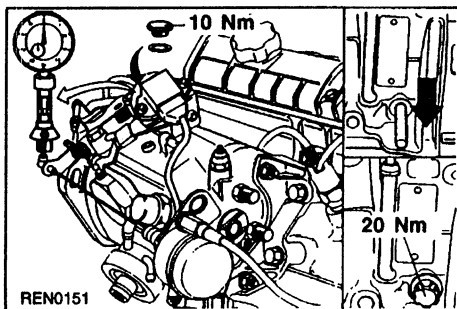
1. Turn the crankshaft clockwise so that the piston of No. 1 cylinder (flywheel end) is at TDC, with the following marks in line with each other:
 - flywheel/clutch housing
 - timing belt cover/camshaft sprocket.
2. Turn the crankshaft (clockwise) 1 3/4 revolutions.
3. Remove the plug **A**.
4. Fit measuring device adaptor MB996030:
 - Locate the guide bush **B** in the pump.
 - Slide the measuring pin **C**, which is part of the measuring tool, into the guideway of the pump.
 - Locate and secure the holder **D**.
5. Position the clock gauge **E** and make sure that the plunger is pressed in at least 0.2 mm. Secure the clock gauge and set it at zero.

NOTE

If the engine is turned above stroke limit of the clock gauge, it may damage the clock gauge. The measuring pin and guide bush can only be supplied and used as a set.

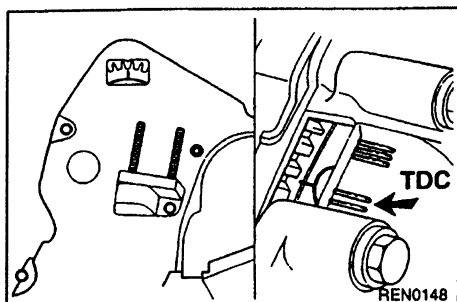


6. Turn the crankshaft **exactly** to TDC (clockwise). To achieve this:
 - Insert an 8 mm diameter locking pin in the hole of torxbolt.
 - Apply pressure just before TDC on this pin until it engages the recess in the crankshaft.
7. Read off the value on the clock gauge. This value should not differ more the 0.02 mm as the set value shown on the pump control arm. If the value is not obtained, the pump has to be adjusted.



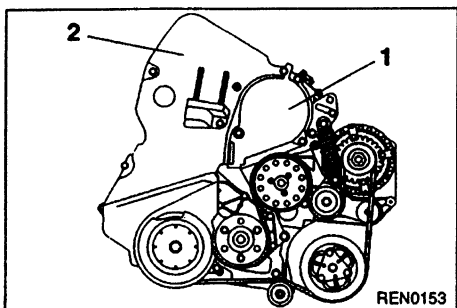
8. Remove measuring device adaptor MB996030 with the clock gauge. Fit the plug with a new O-ring.
9. Tighten the plug to the specified torque.
Specified torque: 10 Nm
10. Remove the locking pin and fit the plug with a new sealing washer.
11. Tighten the plug to the specified torque.
Specified torque: 20 Nm

- '97 CARISMA Workshop Manual chassis (SUPPLEMENT).

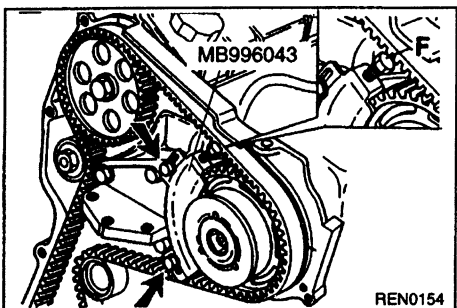


INJECTION TIMING ADJUSTMENT

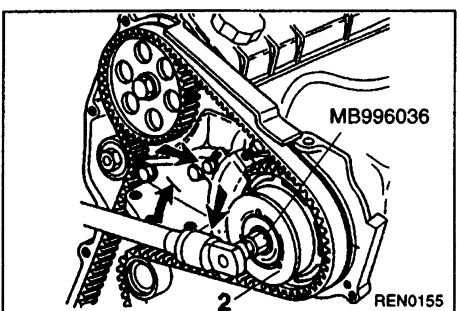
1. Turn the crankshaft clockwise so that the piston of No. 1 cylinder (flywheel end) is at TDC, with the following marks in line with each other:
 - flywheel/clutch housing
 - timing belt cover/camshaft sprocket.



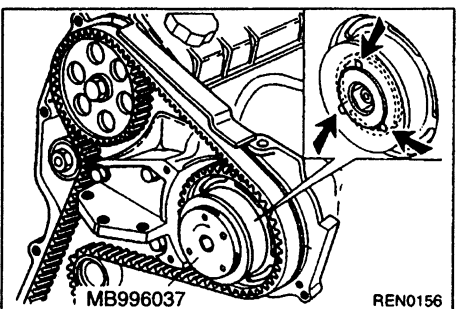
2. Remove cover 1 and the bolts of cover 2.



3. Locate sprocket stopper MB996043 between the pump bracket and the sprocket. Secure the tool with the two bolts supplied with the set. Bolt **F** is not needed now.



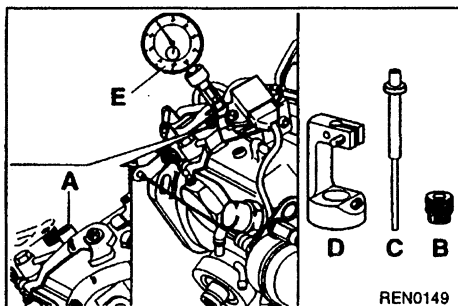
4. Insert Hexagon socket spanner MB996036 in the nut assembly. Loosen nut assembly (approx. 1/4 of turn **clockwise**) until it is possible to move the flange 2.
5. Remove sprocket stopper MB996043.



6. Fit sprocket adaptor MB996037 in the three holes of the flange. Turn the tool with the flange until the jaws of the tool engage the three internal recesses of the sprocket.
7. Turn the tool by hand with the flange **clockwise** until the stop. Remove sprocket adaptor MB996037.

- '97 CARISMA Workshop Manual chassis (SUPPLEMENT).

8. Turn the crankshaft (clockwise) 1 3/4 revolutions.
9. Remove the plug **A**.
10. Fit measuring device adaptor MB996030:
 - Locate the guide bush **B** in the pump.
 - Slide the measuring pin **C**, which is part of the measuring tool, into the guideway of the pump.
 - Locate and secure the holder **D**.



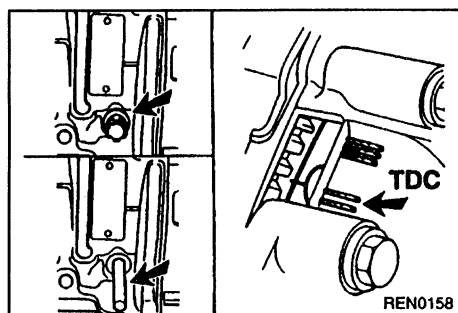
11. Position the clock gauge **E** and make sure that the plunger is pressed in at least 0.2 mm. Secure the clock gauge and set it at zero.

Caution

- If the engine is turned above stroke limit of the clock gauge, it may damage the clock gauge.

NOTE

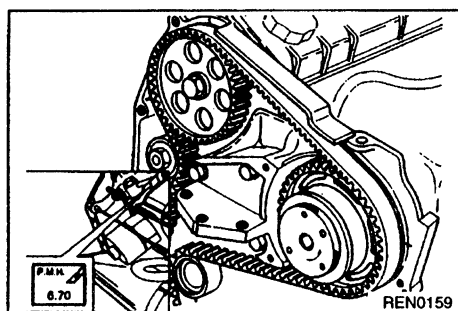
The measuring pin and guide bush can only be supplied and used as a set.



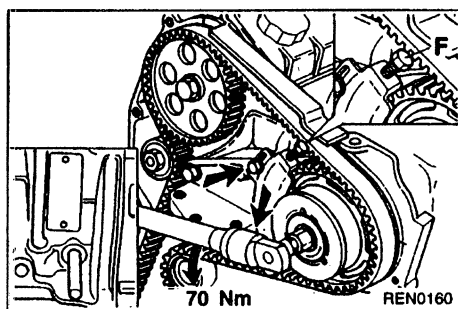
12. Turn the crankshaft **exactly** to TDC (clockwise).

To achieve this:

- Insert an 8 mm diameter locking pin in the hole of torxbolt.
- Apply pressure just before TDC on this pin until it engages the recess in the crankshaft.



13. Now turn the flange with sprocket adaptor MB996037 counterclockwise until the adjustment value is obtained as shown on the pump ± 0.02 mm.



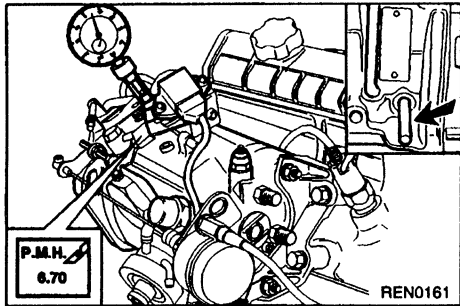
14. Locate sprocket stopper MB996043. Fix the bracket with the two bolts supplied with the set. Secure the bracket with bolt **F** so that it is free from play.

Caution

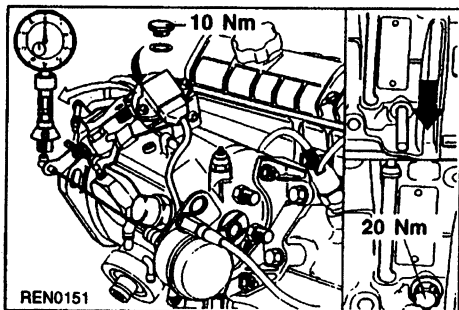
The pump sprocket must not be displaced (the pointer of the micrometer must not move).

15. Insert Hexagon socket spanner MB996036 in the nut assembly and tighten the assembly steadily (turning counterclockwise) to 70 Nm.
16. Remove sprocket stopper MB996043, the locking pin and clock gauge. Check the injection timing.

- '97 CARISMA Workshop Manual chassis (SUPPLEMENT).



17. Turn the crankshaft 1 3/4 revolutions clockwise.
18. Position the clock gauge and make sure that the plunger is pressed in at least 0.2 mm.
Secure the clock gauge and set it at zero.
19. Turn the crankshaft **exactly** to TDC (clockwise).
To achieve this:
 - Insert an 8 mm diameter locking pin in the hole of torxbolt.
 - Apply pressure just before TDC on this pin until it engages the recess in the crankshaft.
20. Read off the value on the clock gauge.
This value should not differ more the 0.02 mm as the set value shown on the pump control arm.
If the value is not obtained, the pump has to be adjusted.

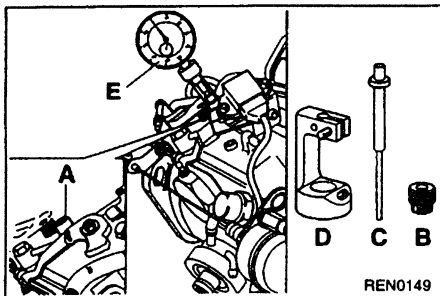
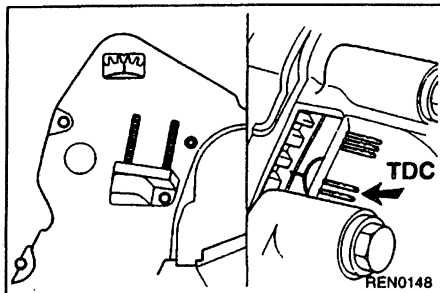


21. Remove measuring device adaptor MB996030 with the clock gauge. Fit the plug with a new O-ring.
22. Tighten the plug to the specified torque.
Specified torque: 10 Nm
23. Remove the locking pin and fit the plug with a new sealing washer.
24. Tighten the plug to the specified torque.
Specified torque: 20 Nm

- ENGINE F8QT Workshop Manual, Page 11A-19-3.

F8QT ENGINE – Fuel Injection Pump

11A-19-3



FUEL INJECTION TIMING CHECK

MEASURING TOOL INSTALLATION

- (1) Turn the crankshaft clockwise so that the piston of No. 1 cylinder (flywheel end) is at TDC, with the following marks in line with each other:
 - flywheel/clutch housing
 - timing belt cover/camshaft sprocket.
- (2) Turn the crankshaft (clockwise) 1 3/4 revolutions.
- (3) Remove the plug A.
- (4) Fit measuring device adaptor MB996030:
 - Locate the guide bush B in the pump.
 - Slide the measuring pin C, which is part of the measuring tool, into the guideway of the pump.
 - Locate and secure the holder D.
- (5) Position the clock gauge E and make sure that the plunger is pressed in at least 0.2 mm. Secure the clock gauge and set it at zero.

NOTE

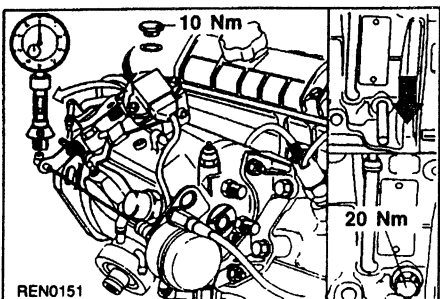
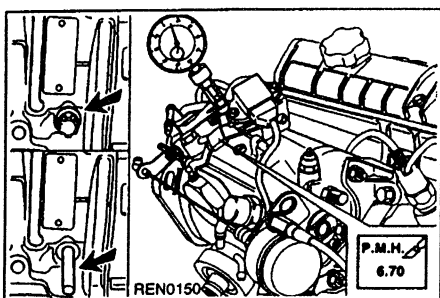
<Incorrect>

When turning the engine with the gauge installed you might damage the clock gauge.

The measuring pin and guide bush can only be supplied and used as a set.

<Correct>

If the engine is turned above stroke limit of the clock gauge, it may damage the clock gauge.



CHECKING THE INJECTION TIMING

- (1) Turn the crankshaft **exactly** to TDC (clockwise). To achieve this:
 - Insert an 8 mm diameter locking pin in the hole of torxbolt.
 - Apply pressure just before TDC on this pin until it engages the recess in the crankshaft.
- (2) Read off the value on the clock gauge. This value should not differ more the 0.02 mm as the set value shown on the pump control arm. If the value is not obtained, the pump has to be adjusted.

MEASURING TOOL REMOVAL

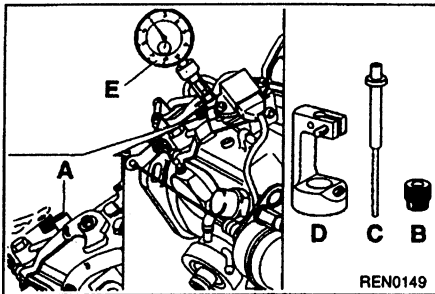
- (1) Remove measuring device adaptor MB996030 with the clock gauge. Fit the plug with a new O-ring. Tighten the plug to the 10 Nm. Remove the locking pin and fit the torxbolt with a new sealing washer. Tighten the plug to 20 Nm.

- ENGINE F8QT Workshop Manual, Page 11A-19-5.

F8QT ENGINE – Fuel Injection Pump

11A-19-5

- (5) Turn the crankshaft (clockwise) 1 3/4 revolutions.
- (6) Remove the plug A.
- (7) Fit measuring device adaptor MB996030.
 - Locate the guide bush B in the pump.
 - Slide the measuring pin C, which is part of the measuring tool, into the guideway of the pump.
 - Locate and secure the holder D.



- (8) Position the clock gauge E and make sure that the plunger is pressed in at least 0.2 mm. Secure the clock gauge and set it at zero.

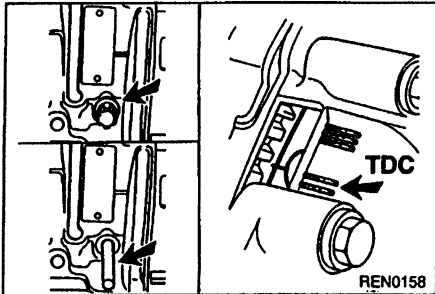
Caution

<Incorrect>

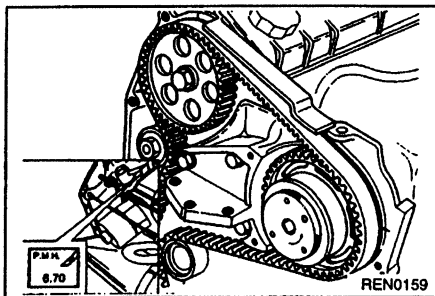
- When turning the engine with the gauge installed you might damage the clock gauge.

NOTE

The measuring pin and guide bush can only be supplied and used as a set.



- (9) Turn the crankshaft **exactly** to TDC (clockwise). To achieve this:
 - Insert an 8 mm diameter locking pin in the hole of torxbolt.
 - Apply pressure just before TDC on this pin until it engages the recess in the crankshaft.



- (10) Now turn the flange with sprocket adaptor MB996037 counterclockwise until the adjustment value is obtained as shown on the pump ± 0.02 mm.

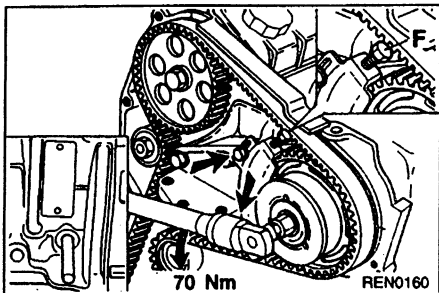
<Correct>

If the engine is turned above stroke limit of the clock gauge, it may damage the clock gauge.

- ENGINE F8QT Workshop Manual, Page 11A-19-6.

11A-19-6

F8QT ENGINE – Fuel Injection Pump



- (11) Locate sprocket stopper MB996043.

Fix the bracket with the two bolts supplied with the set. Secure the bracket with bolt F so that it is free from play.

Caution

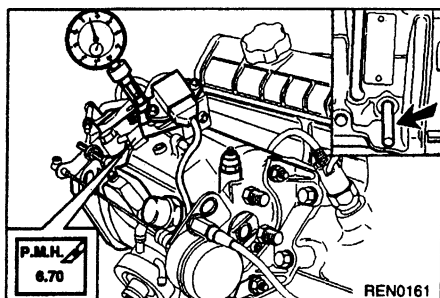
The pump sprocket must not be displaced (the pointer of the micrometer must not move).

- (12) Insert Hexagon socket spanner MB996036 in the nut assembly and tighten the assembly steadily (turning counter-clockwise) to 70 Nm.
- (13) Remove sprocket stopper MB996043, the locking pin and clock gauge. Check the injection timing.

<Added>

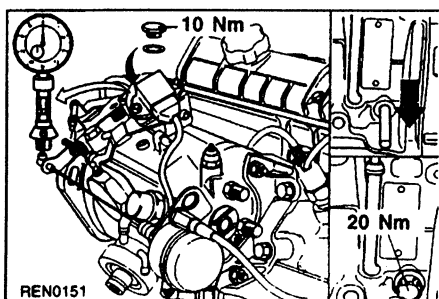
NOTE

If the engine is turned above stroke limit of the clock gauge, it may damage the clock gauge.



CHECKING THE INJECTION TIMING

- (1) Turn the crankshaft 1 3/4 revolutions clockwise.
- (2) Position the clock gauge and make sure that the plunger is pressed in at least 0.2 mm.
- (3) Secure the clock gauge and set it at zero. Turn the crankshaft **exactly** to TDC (clockwise). To achieve this:
 - Insert an 8 mm diameter locking pin in the hole of torxbolt.
 - Apply pressure just before TDC on this pin until it engages the recess in the crankshaft.
- (4) Read off the value on the clock gauge. This value should not differ more than 0.02 mm as the set value shown on the pump control arm. If the value is not obtained, the pump has to be adjusted.



MEASURING TOOL REMOVAL

- (1) Remove measuring device adaptor MB996030 with the clock gauge. Fit the plug with a new O-ring. Tighten the plug to the 10 Nm. Remove the locking pin and fit the torxbolt with a new sealing washer. Tighten the plug to 20 Nm.



SERVICE BULLETIN

QUALITY INFORMATION ANALYSIS
OVERSEAS SERVICE DEPT. MITSUBISHI MOTORS CORPORATION

SERVICE BULLETIN		NO.: MSB-97E16-001		
		DATE: 1997-01-15	<MODEL> CARISMA	<M/Y> 96-10
SUBJECT: CHANGE IN ALTERNATOR OUTPUT CURRENT				
GROUP: ENGINE ELECTRICAL		DRAFTNO.: 96-CH-501		
INFORMATION	OVERSEAS SERVICE DEPT	 R. USAMI - MANAGER QUALITY INFORMATION ANALYSIS		

1. Description:

On the Carisma equipped with the 4G92 SOHC engine and manual transmission and a daytime running lamp, the alternator has been changed in its output current.

2. Effective Date:

From the first production car of 1997 model.

3. Applicable Manual:

Manual	Pub. No.	Page
'96 CARISMA Workshop Manual	PWDE9502	16-3

4. Details:

Output current: (Old) (New)
 70A → 90A



SERVICE BULLETIN

QUALITY INFORMATION ANALYSIS

OVERSEAS SERVICE DEPT. MITSUBISHI MOTORS CORPORATION

SERVICE BULLETIN		No.: MSB-98E52-502	
		Date: 1999-10-31	
Subject: CORRECTION TO ERASING OF DIAGNOSIS CODES		<Model>	<M/Y>
		(EX,EXP)ECLIPSE (D30)	98-10
Group: INTERIOR		(EX,EXP)GALANT (E50-80)	98-10
		(EX,EXP)L200 (K00)	98-10
Draft No.: 98AL070710		(EX,EXP)L300 (P0, P10, P20, P30)	98-10
		(EX,EXP)COLT (CJ0A)	98-10
CORRECTION		(EX,EXP)LANCER (CK0A)	98-10
		(EX,EXP)CARISMA	
OVERSEAS SERVICE DEPT		 T.NITTA - VICE GENERAL MANAGER QUALITY INFORMATION ANALYSIS	

1. Description:

This Service Bulletin informs you of correction to erasing of the diagnosis codes.

2. Applicable Manuals:

Manual	Pub. No.	Language	Page(s)
'96 COLT/LANCER Workshop Manual CHASSIS	PWME9511	(English)	52B-6
	PWMS9512	(Spanish)	
	PWMF9513	(French)	
	PWMG9514	(German)	
	PWMD9515	(Dutch)	
	PWMW9516	(Swedish)	
'98 COLT/LANCER Workshop Manual CHASSIS	PWME9511-A	(English)	52B-5
	PWMS9512-A	(Spanish)	
	PWMF9513-A	(French)	
	PWMG9514-A	(German)	
	PWMD9515-A	(Dutch)	
	PWMW9516-A	(Swedish)	
'96 ECLIPSE Workshop Manual CHASSIS	PWUE95E1	(English)	52B-6
	PWUS95E1	(Spanish)	
	PWUF95E1	(French)	
	PWUG95E1	(German)	
	PWUD95E1	(Dutch)	
	PWUI95E1	(Italian)	
'97 GALANT Workshop Manual CHASSIS	PWDE9611	(English)	52B-8
	PWDS9612	(Spanish)	
	PWDF9613	(French)	
	PWDG9614	(German)	
	PWDD9615	(Dutch)	
	PWDW9616	(Swedish)	

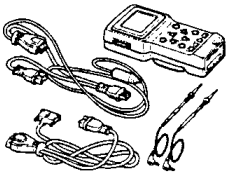
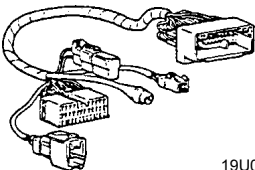
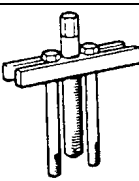
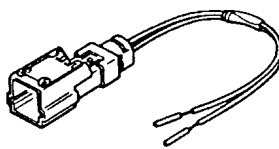
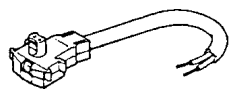
Manual	Pub. No.	Language	Page(s)
'96 CARISMA Workshop Manual CHASSIS	PWDE9502	(English)	52B-6
	PWDS9503	(Spanish)	
	PWDF9504	(French)	
	PWDG9505	(German)	
	PWDD9506	(Dutch)	
	PWDW9507	(Swedish)	
	PWDI95E1	(Italian)	
'97 L200 Workshop Manual CHASSIS	PWTE95E1	(English)	52B-6
	PWTS95E1	(Spanish)	
	PWTF95E1	(French)	
	PWTG95E1	(German)	
'98 L300 Workshop Manual CHASSIS	PWWE8608-Q	(English)	52B-6
	PWWS8613-Q	(Spanish)	
	PWWF8612-Q	(French)	
	PWWG8609-Q	(German)	
	PWWD8610-Q	(Dutch)	
	PWWW8611-Q	(Swedish)	

3. Details:

'96 COLT/LANCER Workshop Manual CHASSIS, page 3
 '98 COLT/LANCER Workshop Manual CHASSIS, page 4
 '96 ECLIPSE Workshop Manual CHASSIS, page 5
 '97 GALANT Workshop Manual CHASSIS, page 6
 '96 CARISMA Workshop Manual CHASSIS, page 7
 '97 L200 Workshop Manual CHASSIS, page 8
 '98 L300 Workshop Manual CHASSIS, page 9

SPECIAL TOOLS

52400070117

Tool	Number	Name	Use
	MB991502	MUT-II sub assembly	• Reading diagnosis codes • Erasing diagnosis code • Reading trouble period • Reading erase times
 19U0039	MB991613	SRS check harness	Checking the SRS electrical circuitry
	MB990803	Steering wheel puller	Steering wheel removal
	MB686560	SRS air bag adapter harness A	• Deployment of air bag modules and seat belt with pre-tensioner inside the vehicle • Deployment of air bag module (front passenger's side) outside the vehicle
	MR203491 or MB628919	SRS air bag adapter harness B	Deployment of air bag module (driver's side) outside the vehicle

TEST EQUIPMENT

52400080035

Tool	Name	Use
 1290748	Digital multi-meter	Checking the SRS electrical circuitry Use a multi-meter for which the maximum test current is 2 mA or less at the minimum range of resistance measurement

TROUBLESHOOTING

52400310097

STANDARD FLOW OF DIAGNOSTIC TROUBLESHOOTING

Refer to GROUP 00 – How to Use Troubleshooting/Inspection Service Points.

DIAGNOSIS FUNCTION

52400320063

DIAGNOSIS CODE CHECK

Connect the MUT-II to the diagnosis connector (16 –pin) under the instrument under cover, then check diagnosis codes.
 (Refer to GROUP 00 – How to Use Troubleshooting/Inspection Service Points.)

ERASING DIAGNOSIS CODES

Refer to GROUP 00 – How to Use Troubleshooting/Inspection Service Points. **<Incorrect>**

WHEN USING THE MUT-II

Connect the MUT-II to the diagnosis connector and erase the diagnosis code.

Caution

Turn off the ignition switch before connecting or disconnecting the MUT-II.

<Correct>

TROUBLESHOOTING

STANDARD FLOW OF DIAGNOSTIC TROUBLESHOOTING

Refer to GROUP 00 – How to Use Troubleshooting/Inspection Service Points.

DIAGNOSIS FUNCTION

DIAGNOSIS CODE CHECK

Connect the MUT-II to the diagnosis connector (16 –pin) under the instrument under cover, then check diagnosis codes.
(Refer to GROUP 00 – How to Use Troubleshooting/Inspection Service Points.)

ERASING DIAGNOSIS CODES

~~Refer to GROUP 00 – How to Use Troubleshooting/Inspection Service Points.~~ **<Incorrect>**

INSPECTION CHART FOR DIAGNOSIS CODES

Inspect according to the inspection chart that is appropriate for the malfunction code.

Code No.	Diagnosis Item	Reference Page
14	Analog G-sensor system in the SRS-ECU	52B-6
15, 16	Front impact safing G sensor system inside SRS-ECU	52B-6
17	Side impact safing G sensor system inside SRS-ECU	52B-6
21, 22, 61, 62	Driver's side air bag module (squib) system	52B-7
24, 25, 64, 65	Front passenger's side air bag module (squib) system	52B-8
31, 32	SRS-ECU capacitor system	52B-8
34*	Connector lock system	52B-9
35	SRS-ECU (deployed air bag) system	52B-9
41*	IG ₁ (A) power circuit system	52B-9
42*	IG ₁ (B) power circuit system	52B-9
43	SRS warning lamp driver circuit system	Lamp does not illuminate.*
		Lamp does not switch off.
44*	SRS warning lamp drive circuit system	52B-10
45	Internal circuit system of non-volatile memory (EEPROM) inside SRS-ECU	52B-11
51, 52	Driver's side air bag module (squib ignition drive circuit) system	52B-11
54, 55	Front passenger's side air bag module (squib ignition drive circuit) system	52B-11
71, 72, 75, 76	Side air bag module (R.H.) (squib) system	52B-11
73, 74	Side air bag module (R.H.) (squib) ignition drive circuit system	52B-12
79, 93	Side air bag module (L.H.) communication system	52B-12
81, 82, 85, 86	Side air bag module (L.H.) (squib) system	52B-12
83, 84	Side air bag module (L.H.) (squib) ignition drive circuit system	52B-13

<Correct>

WHEN USING THE MUT-II

Connect the MUT-II to the diagnosis connector and erase the diagnosis code.

Caution

Turn off the ignition switch before connecting or disconnecting the MUT-II.

TROUBLESHOOTING

STANDARD FLOW OF DIAGNOSTIC TROUBLESHOOTING

Refer to GROUP 00 – How to Use Troubleshooting/Inspection Service Points.

DIAGNOSIS FUNCTION

DIAGNOSIS CODE CHECK

Connect the MUT-II to the diagnosis connector (16 –pin) under the instrument under cover, then check diagnosis codes.
(Refer to GROUP 00 – How to Use Troubleshooting/Inspection Service Points.)

ERASING DIAGNOSIS CODES

~~Refer to GROUP 00 – How to Use Troubleshooting/Inspection Service Points.~~

<Incorrect>



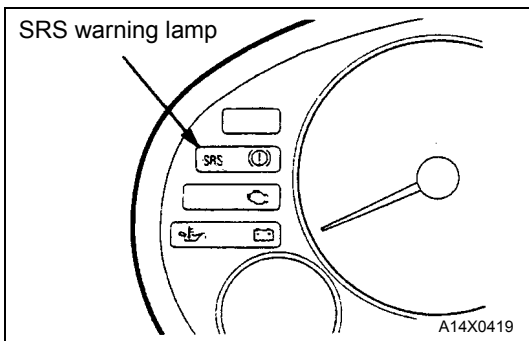
<Correct>

WHEN USING THE MUT-II

Connect the MUT-II to the diagnosis connector and erase the diagnosis code.

Caution

Turn off the ignition switch before connecting or disconnecting the MUT-II.



SRS WARNING LAMP INSPECTION

1. Check that the SRS warning lamp illuminates when the ignition switch is in the ON position.
2. Check that it illuminates for approximately 7 seconds and then switches off.
3. If the above is not the case, check the diagnosis codes.

TEST EQUIPMENT

52400080035

Tool	Name	Use
	Digital multi-meter	Checking the SRS electrical circuitry Use a multi-meter for which the maximum test current is 2 mA or less at the minimum range of resistance measurement

TROUBLESHOOTING

52400310097

STANDARD FLOW OF DIAGNOSTIC TROUBLESHOOTING

Refer to GROUP 00 – How to Use Troubleshooting/Inspection Service Points.

DIAGNOSIS FUNCTION

52400320063

DIAGNOSIS CODE CHECK

Connect the MUT-II to the diagnosis connector (16 –pin) under the instrument under cover, then check diagnosis codes.
(Refer to GROUP 00 – How to Use Troubleshooting/Inspection Service Points.)

ERASING DIAGNOSIS CODES

~~Refer to GROUP 00 – How to Use Troubleshooting/Inspection Service Points.~~

<Incorrect>

↑ <Correct>

WHEN USING THE MUT-II

Connect the MUT-II to the diagnosis connector and erase the diagnosis code.

Caution

Turn off the ignition switch before connecting or disconnecting the MUT-II.

INSPECTION CHART FOR DIAGNOSIS CODES

52400330222

Inspect according to the inspection chart that is appropriate for the malfunction code.

Code No.	Diagnosis Item	Reference Page
14	Analog G-sensor system in the SRS-ECU	52B-9
15, 16	Front impact safing G sensor system inside SRS-ECU	52B-9
17	Side impact safing G sensor system inside SRS-ECU	52B-10
21, 22, 61, 62	Driver's side air bag module (squib) system	52B-10
24, 25, 64, 65	Front passenger's side air bag module (squib) system	52B-11
31, 32	SRS-ECU capacitor system	52B-11
34*	Connector lock system	52B-12
35	SRS-ECU (deployed air bag) system	52B-12
41*	IG ₁ (A) power circuit system	52B-12
42*	IG ₁ (B) power circuit system	52B-13
43	SRS warning lamp drive circuit system	Lamp does not illuminate.*
		Lamp does not switch off.
44*	SRS warning lamp drive circuit system	52B-15
45	Internal circuit system of non-volatile memory (EEPROM) inside SRS-ECU	52B-15

DIAGNOSIS FUNCTION

DIAGNOSIS CODE CHECK

Connect the MUT-II to the diagnosis connector (16 –pin) under the instrument under cover, then check diagnosis codes.
(Refer to GROUP 00 – How to Use Troubleshooting/Inspection Service Points.)

ERASING DIAGNOSIS CODES

~~Refer to GROUP 00 – How to Use Troubleshooting/Inspection Service Points.~~

<Incorrect>

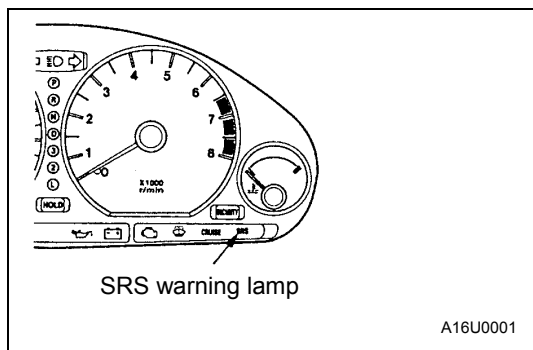
↑ <Correct>

WHEN USING THE MUT-II

Connect the MUT-II to the diagnosis connector and erase the diagnosis code.

Caution

Turn off the ignition switch before connecting or disconnecting the MUT-II.



“SRS” WARNING LAMP CHECK

Turn the ignition with the key “ON” position. Does the “SRS” warning lamp illuminate for about 7 seconds, turn OFF and the remain extinguished for at least 5 seconds? If yes, SRS system is functioning properly. If no, consult page 52B-6.

INSPECTION CHART FOR DIAGNOSIS CODES

Inspect according to the inspection chart that is appropriate for the malfunction code.

Code No.	Diagnosis Item	Reference Page
14	Analog G-sensor system	52B-7
15	Safing G sensor system	52B-7
21, 22	Driver's side air bag module (squib) system	52B-7
24*1, 25*1	Front passenger's side air bag module (squib) system	52B-8
26, 27	Driver's side pre-tensioner (squib) system	52B-9
28, 29	Front passenger's side pre-tensioner (squib) system	52B-9
31, 32	SRS-ECU capacitor system	52B-10
35	SRS-ECU system (ignition of the air bag or activation of the seat belt pre-tensioner completed)	52B-10
41*2	IG1 (A) power circuit system	52B-10
42*2	IG1 (B) power circuit system	52B-11
43*2	SRS warning lamp drive circuit system	Lamp does not illuminate
		Lamp does not switch off
44*2	SRS warning lamp drive circuit system	52B-13

SEALANT

52400060015

Item	Specified sealant	Remark
Sensor cable	3M ATD Part No. 8625 or equivalent	Ribbon sealer

TROUBLESHOOTING

52400310097

STANDARD FLOW OF DIAGNOSTIC TROUBLESHOOTING

Refer to GROUP 00 – How to Use Troubleshooting/Inspection Service Points.

DIAGNOSIS FUNCTION

52400320063

DIAGNOSIS CODE CHECK

Connect the MUT-II to the diagnosis connector (16 –pin) under the instrument under cover, then check diagnosis codes.
(Refer to GROUP 00 – How to Use Troubleshooting/Inspection Service Points.)

ERASING DIAGNOSIS CODES

~~Refer to GROUP 00 – How to Use Troubleshooting/Inspection Service Points.~~

<Incorrect>

↑
<Correct>

WHEN USING THE MUT-II

Connect the MUT-II to the diagnosis connector and erase the diagnosis code.

Caution

Turn off the ignition switch before connecting or disconnecting the MUT-II.

INSPECTION CHART FOR DIAGNOSIS CODES

52400330123

Inspect according to the inspection chart that is appropriate for the malfunction code.

Code No.	Diagnosis Item	Reference Page
11, 12, 13	Front impact sensor system	52B-7
21, 22	Air bag module (squib) system	52B-8
31, 32	SDU capacitor system	52B-9
33*	Cranking signal system	52B-10
34*	Connector lock system	52B-11
41*	IG ₁ (A) power circuit system	52B-11
42*	IG ₁ (B) power circuit system	52B-12
43	SRS warning lamp drive circuit system Lamp does not illuminate*	52B-13
	SRS warning lamp drive circuit system Lamp does not switch off	52B-14
44	SRS warning lamp drive circuit system	52B-14
45	SDU non-volatile memory (EEPROM) and A/D converter system	52B-14

NOTE

- (1) *: If the vehicle condition returns to normal, the diagnosis code will be automatically erased, and the SRS warning lamp will return to normal.
- (2) If the vehicle has a discharged battery it will store the fault codes 41 or 42. When these diagnosis codes are displayed, check the battery.

TEST EQUIPMENT

Tool	Name	Use
	Digital multi-meter	Checking the SRS electrical circuitry Use a multi-meter for which the maximum test current is 2 mA or less at the minimum range of resistance measurement

TROUBLESHOOTING

STANDARD FLOW OF DIAGNOSTIC TROUBLESHOOTING

Refer to GROUP 13 – Service Adjustment Procedures (MPI). (Refer to the '95 L300 Workshop Manual <Pub. No. PWWE9409(1/2)>.)

DIAGNOSIS FUNCTION

DIAGNOSIS CODE CHECK

Connect the MUT-II to the diagnosis connector (16 –pin) under the instrument under cover, then check diagnosis codes.

Refer to GROUP 13 – Service Adjustment Procedures (MPI). (Refer to the '95 L300 Workshop Manual <Pub. No. PWWE9409(1/2)>.)

ERASING DIAGNOSIS CODES

<Incorrect>

~~Refer to GROUP 13 – Service Adjustment Procedures (MPI). (Refer to the '95 L300 Workshop Manual <Pub. No. PWWE9409(1/2)>.)~~



<Correct>

WHEN USING THE MUT-II

Connect the MUT-II to the diagnosis connector and erase the diagnosis code.

Caution

Turn off the ignition switch before connecting or disconnecting the MUT-II.

INSPECTION CHART FOR DIAGNOSIS CODES

Inspect according to the inspection chart that is appropriate for the malfunction code.

Code No.	Diagnosis Item	Reference Page
14	Analog G-sensor system in the SRS-ECU	52B-7
15, 16	Safing G sensor system inside SRS-ECU	52B-7
21, 22, 51, 54* ¹ , 61, 64* ¹	Driver's side air bag module (squib) system	52B-8
24, 25, 51, 54, 61, 64	Front passenger's side air bag module (squib) system	52B-9
31, 32	SRS-ECU capacitor system	52B-19
34* ²	Connector lock system	52B-10
35	SRS-ECU (deployed air bag) system	52B-10
41* ²	IG ₁ (A) power circuit system (fuse No. 14 circuit)	52B-10
42* ²	IG ₁ (B) power circuit system (fuse No. 15 circuit)	52B-10
43	SRS warning lamp drive circuit system	Lamp does not illuminate.* ²
		Lamp does not switch off.
44*	SRS warning lamp drive circuit system	52B-12
45	Internal circuit system of non-volatile memory (EEPROM) inside SRS-ECU	52B-12

Service Bulletin List

NR.	Subject	Date
ESB-96E11-502	OMISSION OF TIGHTENING TORQUE OF A/C COMPRESSOR TENSION PULLEY FIXING BOLT	1997-03-31
ESB-96E13-501	CORRECTION OF FUEL GAUGE UNIT INSTALLATION PROCEDURE	1996-05-15
ESB-96E13-506	CORRECTION TO PROCEDURE FOR EVACUATION OF WATER FROM THE FUEL FILTER	1997-02-28
ESB-96E35-001	FRONT BRAKE DISASSEMBLY AND REASSEMBLY PROCEDURES	1997-02-28
ESB-96E37-002	CHANGE OF POWER STEERING RETURN HOSE AND BOLT TIGHTENING TORQUES	1996-07-30
ESB-96E42-503	PROCEDURE FOR RESETTNG KEYLESS ENTRY RE CEIVER ECU	1997-02-28
ESB-96E52-001	ESTABLISHMENT OF REAR SEATBACK COVER REPLACEMENT PROCEDURE	1996-05-15
ESB-96E54-502	ADDITION OF CONTINUITY CHECKING PROCEDURE FOR SPEEDOMETER REED SWITCH	1997-03-31
ESB-96E55-502	ADDITION TO AIR PURIFIER TROUBLE-SHOOTING SECTION	1997-02-28
ESB-97E00-502	CORRECTION TO TIGHTENING TORQUE INDICATION	1997-01-15
ESB-97E11-503	CORRECTING VALVE CLEARANCE & INJECTION TIMING INSPECTION & ADJUSTMENT PROCEDURE	1997-11-24
ESB-97E13-002	CORRECTION TO ENGINE CONTROL SYSTEM DESCRIPTIONS	1998-02-28
ESB-97E13-501	CHANGES IN VEHICLE SPEED SENSOR AND IN ENGINE-ECU TERMINAL VOLTAGE	1997-03-15

Service Bulletin List

NR.	Subject	Date
ESB-97E13-506	CORRECTION TO TIGHTENING TORQUES OF FUEL TANK BAND NUTS	1998-03-31
ESB-97E17-001	CHANGE IN ERASURE OF CRUISE CONTROL SYSTEM DIAGNOSTIC TROUBLE CODES	1997-09-26
ESB-97E22-502	CORRECTION TO TRANSMISSION GEAR RATIOS AND TO TIGHTENING TORQUES	1999-07-15
ESB-97E22-503	CORRECTION TO GEAR RATIO AND FINAL REDUCTION RATIO FOR MANUAL TRANSMISSION	1997-12-05
ESB-97E22-504	CORRECTION TO TIGHTENING TORQUES FOR FILLER AND DRAIN PLUGS	1997-12-05
ESB-97E35-006	CHANGE IN LIMIT VALUE FOR FRONT BRAKE DISC RUN-OUT	1998-03-15
ESB-97E37-501	POWER STEERING OIL PUMP PRESSURE TEST NEEDED BY AVAILABILITY OF SPECIAL TOOLS	1997-09-26
ESB-97E51-501	CENTER CONSOLE PANEL AND CUP HOLDER REMOVAL	1998-03-15
ESB-97E52-002	ADDITION OF SRS AIR BAG MAINTENANCE PROCEDURE	1997-01-30
ESB-97E52-502	CORRECTION TO CAUTION ON AIR BAG MODULE AND CLOCK SPRING	1997-09-26
ESB-97E54-503	CLOCK REMOVAL AND INSTALLATION	1997-09-26
ESB-97E55-002	CHANGE IN AIR GAP FOR A/C COMPRESSOR	1998-03-15
ESB-97E55-003	CORRECTION TO AIR CONDITIONER PERFORMANCE TEST PROCEDURE	1998-03-15
ESB-98E00-014	CHANGE IN TIGHTENING TORQUE FOR TENSIONER PULLEY MOUNTING NUT	30-09-1999
ESB-98E13-001	CORRECTION OF '98 CARISMA GDI WORKSHOP MANUAL GROUP 13J	1998-05-31

Service Bulletin List

NR.	Subject	Date
ESB-98E13-001REV	CORRECTION OF '98 CARISMA GDI WORKSHOP MANUAL GROUP 13J	1998-12-15
ESB-98E13-002	CHANGES IN TROUBLESHOOTING	1998-12-15
ESB-98E16-001	CHANGE OF SPARK PLUG FROM PLATINUM TO IRIIDIUM PLUG	1998-10-15
ESB-98E16-501	CORRECTION TO DESCRIPTIONS OF IGNITION COIL (SECONDARY COIL)	1999-06-15
ESB-98E23-501	ADDITION / CORRECTION OF HYDRAULIC PRESSURE TEST OF AUTOMATIC TRANSMISSION	1999-06-15
ESB-98E26-001	ADDITION OF DRIVE SHAFT DISASSEMBLY/REASSEMBLY PROCEDURES	1998-02-15
ESB-99E21-501	CORRECTION TO CLUTCH PEDAL HEIGHT	1999-12-15
ESB-99E33-501	CORRECTION TO FRONT SUSPENSION CAMBER AND CASTER VALUES	1999-11-15
ESB-99E35-001	CHANGE TO LIMIT OF FRONT BRAKE DISC THICKNESS	1999-08-31
ESB-99E35-505	ADDITION OF DIAGNOSTIC TROUBLE CODE NO.15	2000-07-15
ESB-99E35-506	ADDITION OF CAUTION ON READING OF DIAGNOSTIC TROUBLE CODES	2000-04-15
ESB-99E37-001	CHANGE TO POWER STEERING OIL PUMP	1999-12-30
ESB-99E42-504	CORRECTION TO CENTER DOOR LOCK TROUBLESHOOTING	1999-11-15
ESB-99E51-001	ADDITION OF WASHER MOTOR REMOVAL	1999-12-15

Service Bulletin List

NR.	Subject	Date
MSB-97E11-502	CHANGE IN LASH ADJUSTER CHECKING PROCEDURE	1997-02-28
MSB-97E11-503REV	INSPECTION & ADJUSTMENT PROCEDURE FOR VALVE CLEARANCE & INJECTION TIMING	1997-06-15
MSB-97E16-001	CHANGE IN ALTERNATOR OUTPUT CURRENT	1997-01-15
MSB-98E52-502	CORRECTION TO ERASING OF DIAGNOSIS CODES	1999-10-31