CARISMA

WORKSHOP MANUAL
SUPPLEMENT

FOREWORD

This manual outlines changes in servicing procedures related to the chassis including vehicle inspections, adjustments and improvements in the newly equipped models. Use the following manuals in combination with this manual as required.

TECHNICAL INFORMATION MANUAL	
	PYGE95E1
	PYGE95E1-A (Supplement)
WORKSHOP MANUAL	
ENGINE GROUP	PWEE□□□□ (Looseleaf edition)
CHASSIS GROUP	PWDE9502
	PWDE9502-A (Supplement)
ELECTRICAL WIRING	PHDE9501
	PHDE9501-A (Supplement)
	PHDE9501-B (Supplement)
BODY REPAIR MANUAL	PBGE95E1
	PBGE95E1-A (Supplement)
PARTS CATALOGUE	N606C006D□

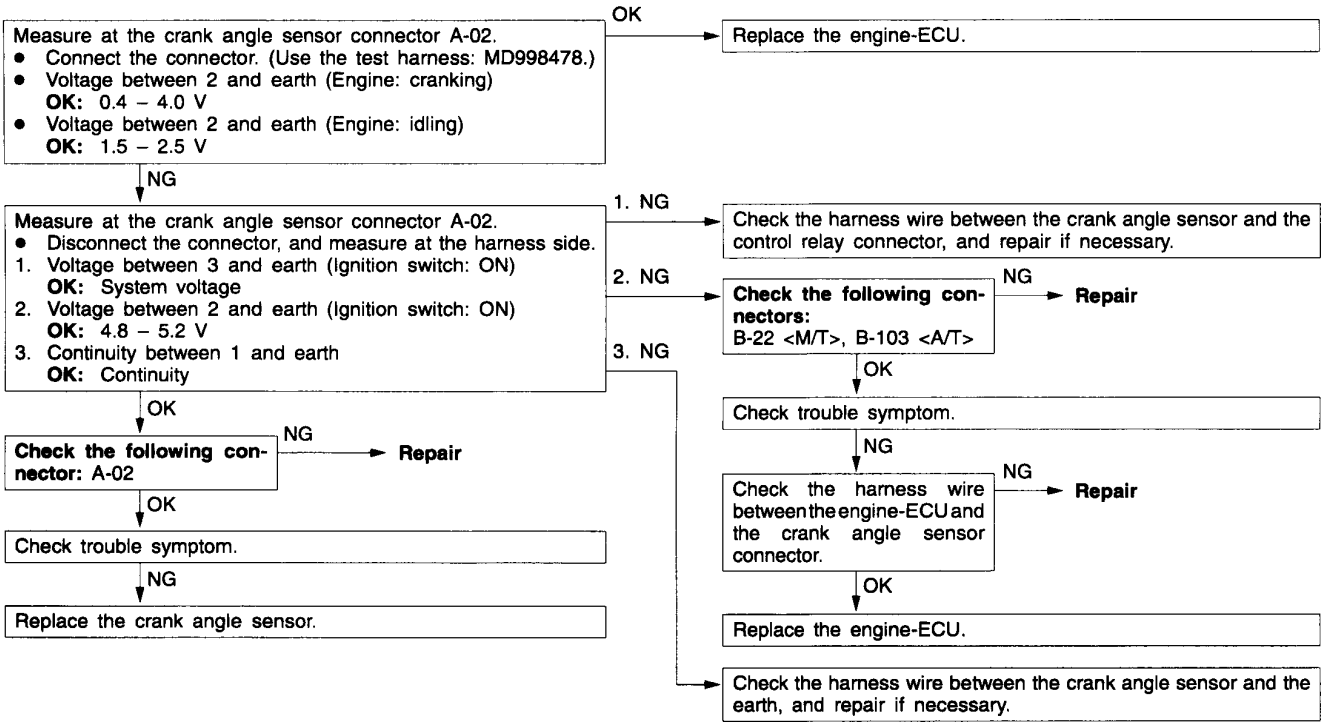
All information, illustrations and product descriptions contained in this manual are current as at the time of publication. We, however, reserve the right to make changes at any time without prior notice or obligation.

MITSUBISHI MOTOR SALES
Europe B.V.

<DA2A, DA4A>

Items			DA2A SNJEL6, SNJER6	DA2A SRJEL6, SRJER6	DA2A SNPEL6, SNPER6	DA2A SRPEL6, SRPER6	DA4A SNDFL6, SNDFR6	DA4A SNJFL6, SNJFR6	DA4A SNPFL6, SNPFR6
Vehicle dimensions mm	Overall length	1	4,435	4,435	4,435	4,435	4,445	4,445	4,445
	Overall width	2	1,710	1,710	1,710	1,710	1,710	1,710	1,710
	Overall height (unladen)	3	1,405	1,405	1,405	1,405	1,405	1,405	1,405
	Wheelbase	4	2,550	2,550	2,550	2,550	2,550	2,550	2,550
	Track-front	5	1,455	1,455	1,455	1,455	1,455	1,455	1,455
	Track-rear	6	1,475	1,475	1,475	1,475	1,475	1,475	1,475
	Overhang-front	7	880	880	880	880	890	890	890
	Overhang-rear	8	1,005	1,005	1,005	1,005	1,005	1,005	1,005
	Ground clearance (unladen)	9	155	150	155	150	155	155	155
Vehicle weight kg	Kerb weight		1,110	1,140	1,115	1,145	1,130	1,145	1,150
	Max. gross vehicle weight rating		1,640	1,670	1,640	1,670	1,675	1,675	1,675
	Max. axle weight rating-front		900	900	900	900	900	900	900
	Max. axle weight rating-rear		850	850	850	850	845	845	845
Seating capacity			5						
Engine	Model No.		4G93				F8QT		
	Total displacement mℓ		1,834				1,870		
Transmission	Model No.		F5MR2	F4A42	F5MR2	F4A42	F5MR3		
	Type		5-speed manual	4-speed auto-matic	5-speed manual	4-speed auto-matic	5-speed manual		
Fuel system	Fuel supply system		Electronic control multipoint fuel injection				Fuel injection pump		

Code No. 22 Crank angle sensor system	Probable cause
Range of Check • Engine is cranking. Set conditions • Sensor output voltage does not change for 4 seconds (no pulse signal input.)	• Malfunction of the crank angle sensor • Improper connector contact, open circuit or short-circuited harness wire of the crank angle sensor • Malfunction of the engine-ECU

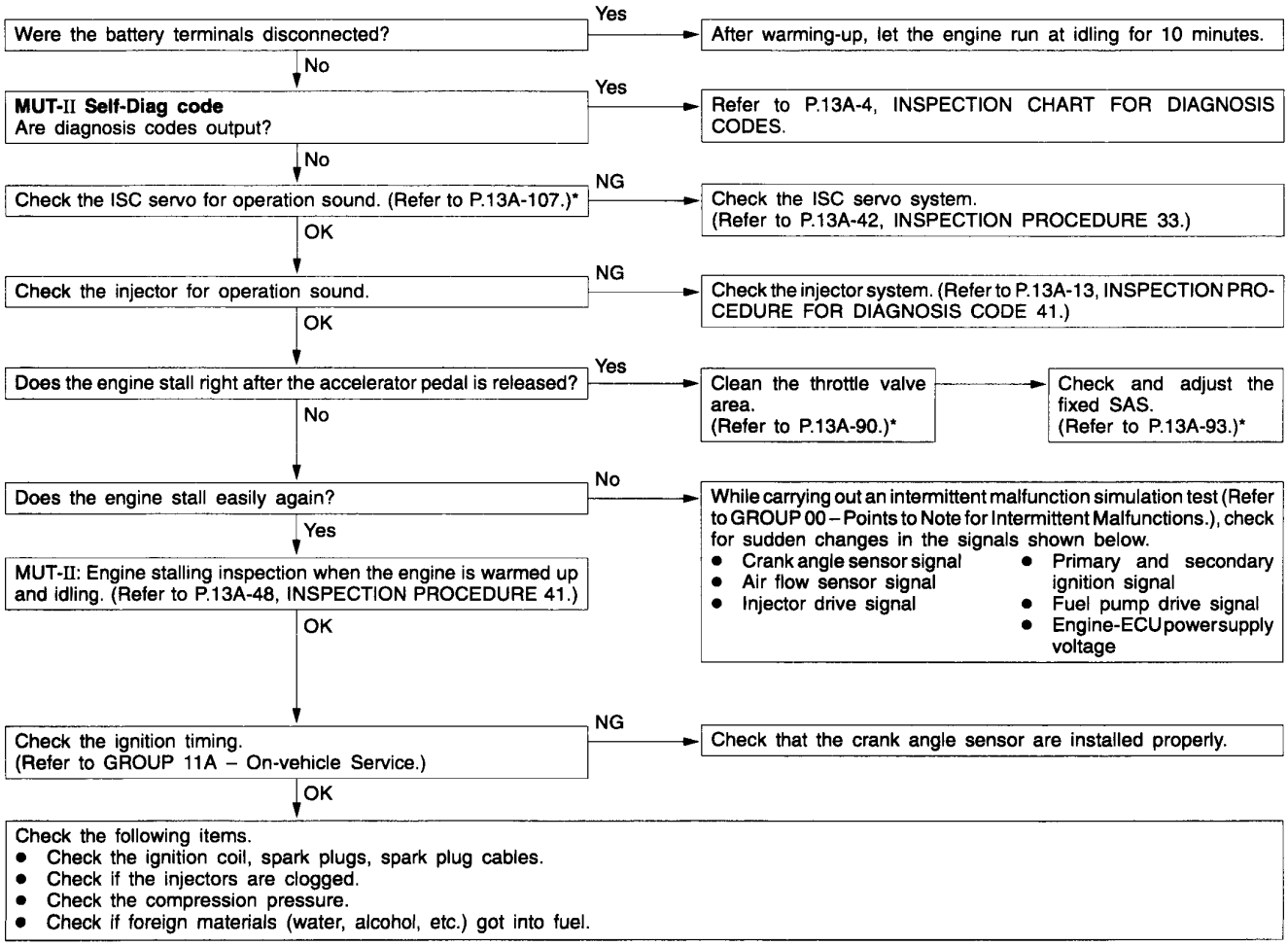


INSPECTION CHART FOR TROUBLE SYMPTOMS

Trouble symptom		Inspection procedure No.	Reference page
Communication with MUT-II is impossible.	Communication with all systems is not possible.	1	13A-20
	Communication with engine ECU only is not possible.	2	13A-20
Engine warning lamp and related parts	The engine warning lamp does not illuminate right after the ignition switch is turned to the ON position.	3	13A-21
	The engine warning lamp remains illuminating and never goes out.	4	13A-21
Starting	No initial combustion (starting impossible)	5	13A-22
	Initial combustion but no complete combustion (starting impossible)	6	13A-23
	Long time to start (improper starting)	7	13A-24
Idling stability (Improper idling)	Unstable idling (Rough idling, hunting)	8	13A-25
	Idling speed is high. (Improper idling speed)	9	13A-26
	Idling speed is low. (Improper idling speed)	10	13A-27
Idling stability (Engine stalls)	When the engine is cold, it stalls at idling. (Die out)	11	13A-28
	When the engine becomes hot, it stalls at idling. (Die out)	12	13A-29
	The engine stalls when starting the car. (Pass out)	13	13A-30
	The engine stalls when decelerating.	14	13A-30
Driving	Hesitation, sag or stumble	15	13A-31
	The feeling of impact or vibration when accelerating	16	13A-31
	The feeling of impact or vibration when decelerating	17	13A-32
	Poor acceleration	18	13A-32
	Surge	19	13A-33
	Knocking	20	13A-33
Dieseling		21	13A-33
Too high CO and HC concentration when idling		22	13A-34
Fan (radiator fan, A/C condenser fan) are inoperative.		23	13A-35

INSPECTION PROCEDURE 12

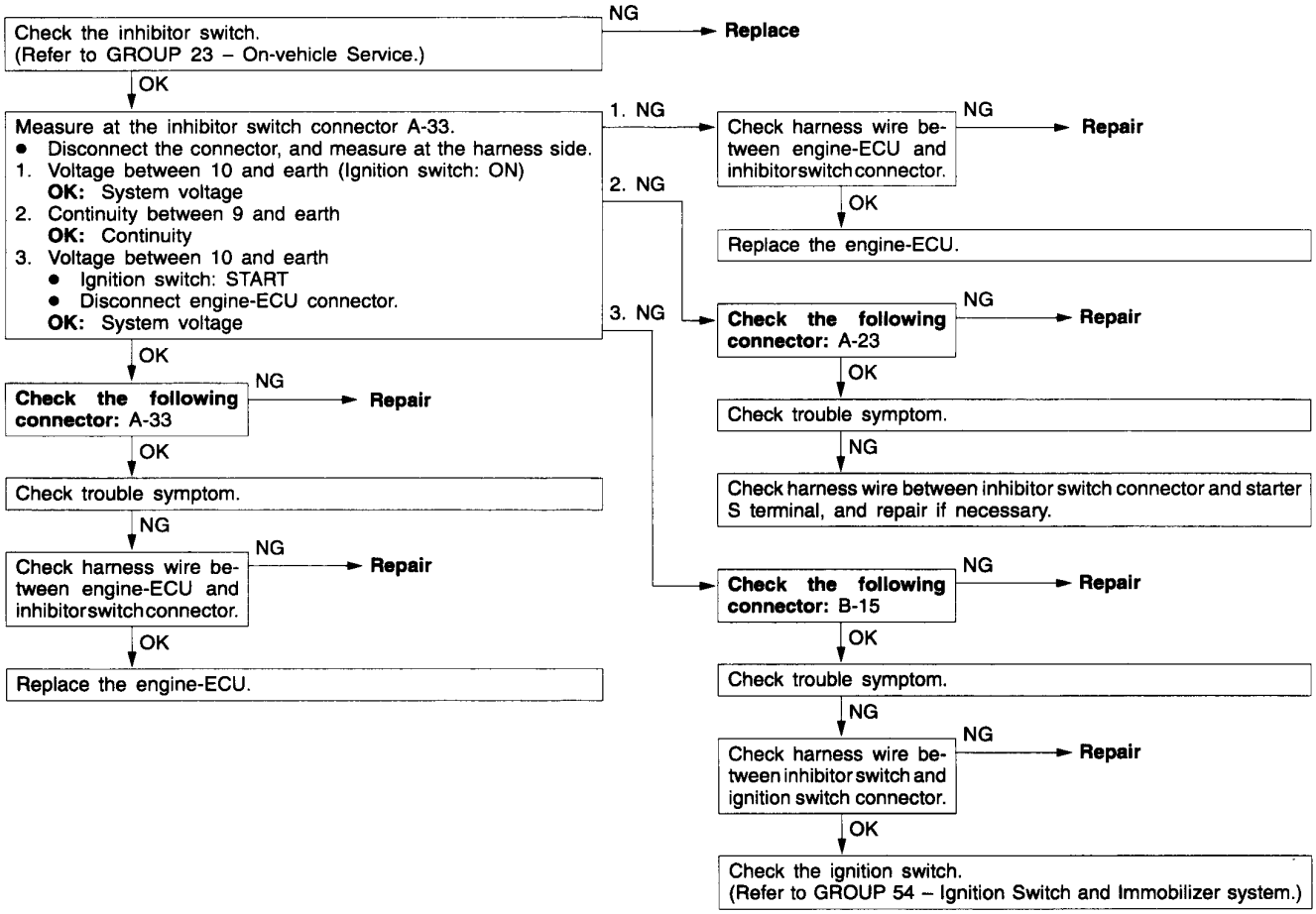
When the engine is hot, it stalls at idling. (Die out)	Probable cause
In such cases as the above, the cause is probably that ignition system, air/fuel mixture, idle speed control (ISC) or compression pressure is defective. In addition, if the engine suddenly stalls, the cause may also be a defective connector contact.	• Malfunction of the ignition system • Malfunction of air-fuel ratio control system • Malfunction of the ISC system • Drawing air into intake system • Improper connector contact



*: Refer to '96 CARISMA Workshop Manual (Pub. No. PWDE9502).

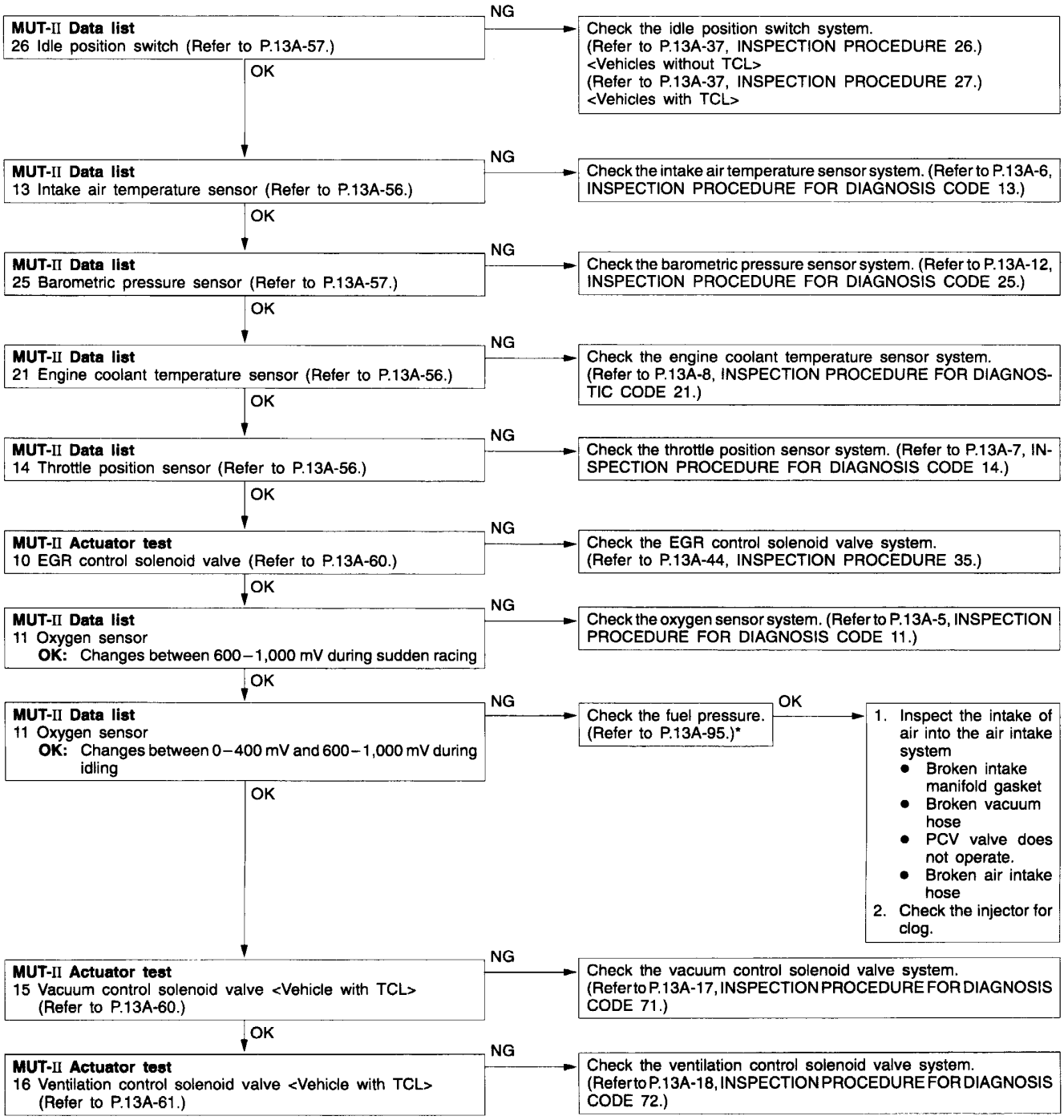
INSPECTION PROCEDURE 29

Ignition switch-ST and inhibitor switch system <A/T>	Probable cause
• The ignition switch-ST inputs a HIGH signal to the engine-ECU while the engine is cranking. The engine-ECU controls fuel injection, etc. during starting based on this input. • The inhibitor switch inputs the condition of the select lever, i.e. whether it is in P or N range or in some other range, to the engine-ECU. The engine-ECU controls the idle speed control (ISC) servo based on this input.	• Malfunction of ignition switch • Malfunction of inhibitor switch • Improper connector contact, open circuit or short-circuited harness wire • Malfunction of the engine-ECU.



INSPECTION PROCEDURE 42

MUT-II: Check if hesitation, sug, stumble or poor acceleration occurs.



*: Refer to '96 CARISMA Workshop Manual (Pub. No. PWDE9502).

Item No.	Inspection item	Inspection contents		Normal condition	Inspection procedure No.	Reference page
44	Ignition coils and power transistors	• Engine: After having warmed up • Timing lamp is set. (The timing lamp is set in order to check actual ignition timing.)	Engine is idling	2 – 18 °BTDC <Except 4G92 (6B model)> 0 – 16 °BTDC <4G92 (6B model)>	–	–
			2,500 r/min	30 – 50 °BTDC <4G92> 22 – 42 °BTDC <4G93>		
45	ISC (stepper) motor position *6	• Engine coolant temperature: 80 – 95°C • Lamps and all accessories: OFF • Transmission: Neutral (A/T : P range) • Idle position switch: ON • Engine: Idling • When A/C switch is ON, A/C compressor should be operating	A/C switch: OFF	2 – 25 STEP		
			A/C switch: OFF → ON	Increases by 10 – 70 steps		
			• A/C switch: OFF • Select lever: N range → D range	Increases by 5 – 50 steps		
49	A/C relay	Engine: After having warmed up/Engine is idling	A/C switch: OFF	OFF (Compressor clutch is not operating)	Procedure No. 31	13A-40
			A/C switch: ON	ON (Compressor clutch is operating)		

INJECTOR

Alternate method (test harness not available) has been changed. <A/T> Other inspection procedures are the same as before. (Refer to '96 CARISMA Workshop Manual [Pub. No. PWDE9502])

Alternate Method (Test harness not available)

1. Connect the analyzer special patterns pickup to engine-ECU terminal 1. (When checking the No. 1 cylinder.)
2. Connect the analyzer special patterns pickup to engine-ECU terminal 9. (When checking the No. 2 cylinder.)
3. Connect the analyzer special patterns pickup to engine-ECU terminal 24. (When checking the No. 3 cylinder.)
4. Connect the analyzer special patterns pickup to engine-ECU terminal 2. (When checking the No. 4 cylinder.)

STEPPER MOTOR

Alternate method (test harness not available) has been established. <A/T> Other inspection procedures are the same as before. (Refer to '96 CARISMA Workshop Manual [Pub. No. PWDE9502])

Alternate Method (Test harness not available)

1. Connect the analyzer special patterns pickup to engine-ECU terminal 14, connection terminal 15, connection terminal 28, and connection terminal 29 respectively.

IGNITION COIL AND POWER TRANSISTOR

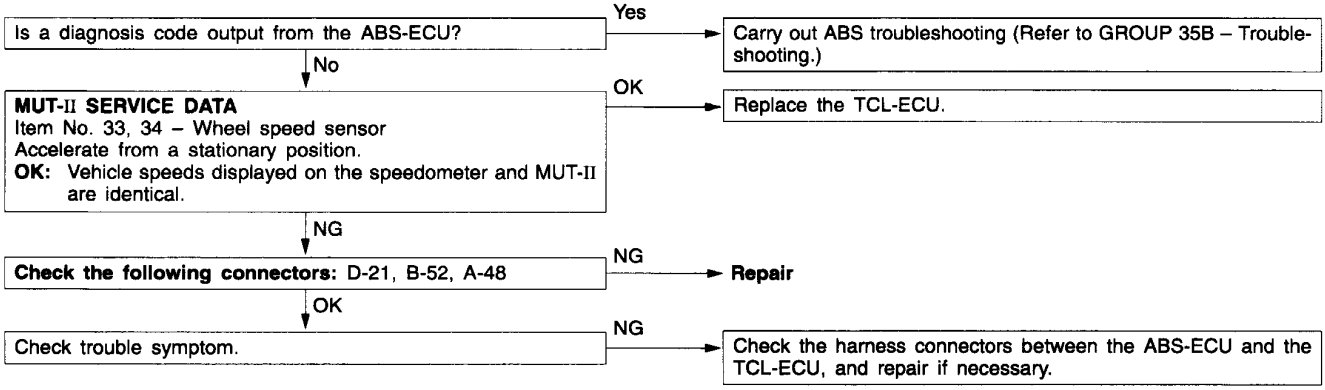
Alternate method (test harness not available) has been established. <A/T> Other inspection procedures are the same as before. (Refer to '96 CARISMA Workshop Manual [Pub. No. PWDE9502])

Alternate Method (Test harness not available)

1. Connect the analyzer special patterns pickup to engine-ECU terminal 11 (No. 1 – No. 4), terminal 12 (No. 2 – No. 3) respectively.

Code No. 35 Rear wheel speed sensor circuit system (1) Code No. 36 Rear wheel speed sensor circuit system (2)	Probable cause
Diagnosis code No. 35 is output if the pulse signal from a rear wheel sensor is momentarily interrupted (0.02 sec.) because of a transient open circuit in a rear wheel speed sensor. Diagnosis code No. 36 is output if a rear wheel speed sensor abnormality is judged when the turning speed of both rear wheels is 0 km/h for 20 seconds or more while TCL is operating.	• Malfunction of rear wheel speed sensor • Malfunction of harness or connector • Malfunction of ABS-ECU • Malfunction of TCL-ECU

NOTE
(1) If the front wheels only are turning while the rear wheels are stationary (wheel slip), the TCL-OFF indicator will start flashing after 20 seconds, and the system will be isolated.
(2) When these diagnosis codes are output, erase the diagnosis code memory after carrying out repairs, and then carry out a road test at 20 km/h or more and check to be sure that the diagnosis codes are not output again.



GROUP 14
ENGINE COOLING

GENERAL

OUTLINE OF CHANGES

- The radiator specifications and service procedure have been changed.

GENERAL SPECIFICATIONS

<4G9-SOHC>

Items		Specifications
Radiator	Performance kJ/h	129,800
Automatic transmission oil cooler	Performance kJ/h	5,300

ROAD TEST

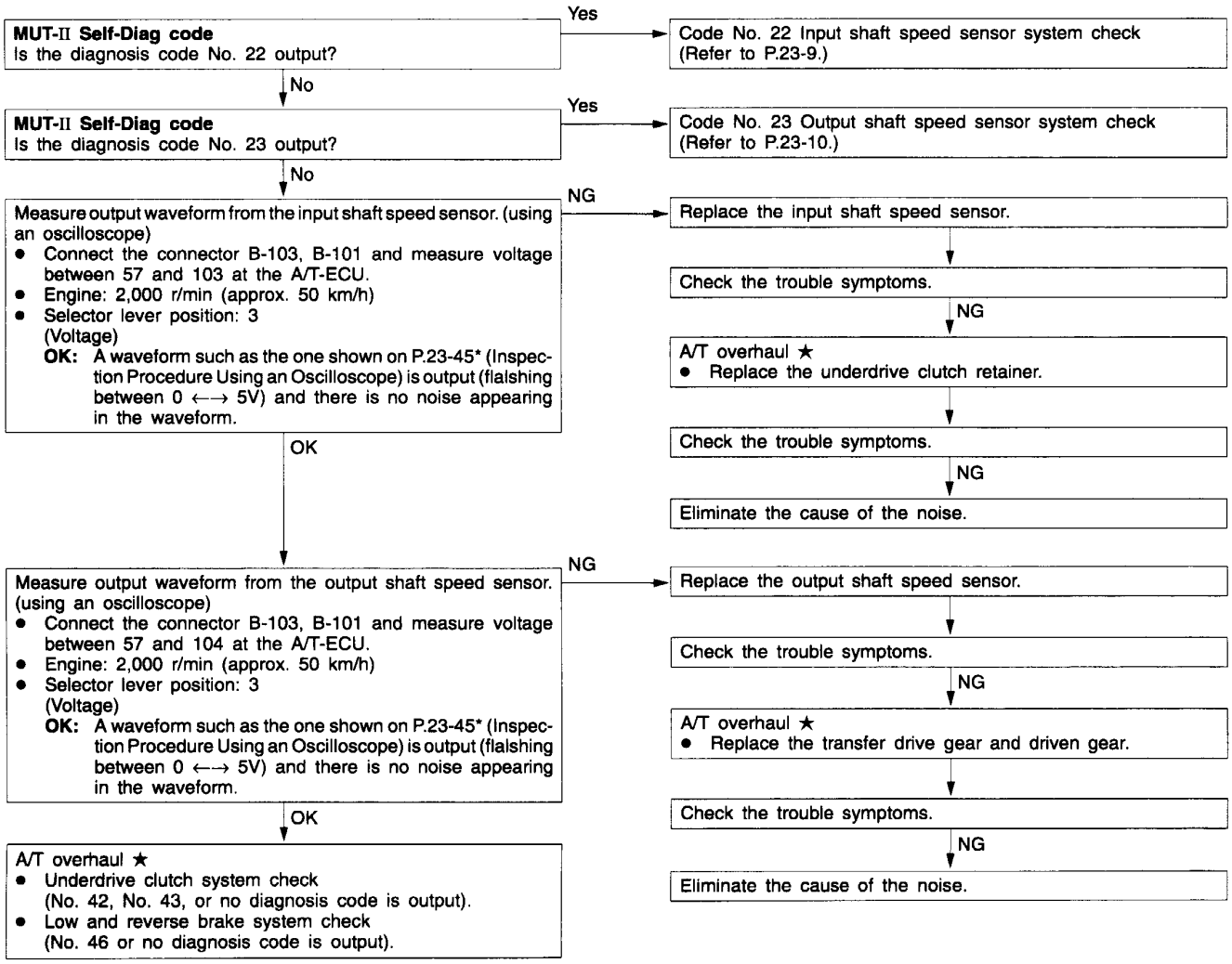
23100780271

Check by the following procedure.

No.	State prior to test and operation	Test and operation	Judgement value	Check item	Diagnosis code No.	Inspection procedure page if there is an abnormality
1	Ignition switch: OFF	Ignition switch (1) ON	Data list No. 54 Battery voltage [V]	Control relay	54	A/T Control relay system (23-18)
2	Ignition switch: ON Engine: Stopped Selector lever position: P	Selector lever position (1) P, (2) R, (3) N, (4) D, (5) 3, (6) 2, (7) L	Data list No. 61 (1) P, (2) R, (3)N, (4) D, (5) 3, (6) 2, (7) L	Inhibitor switch	–	Inhibitor switch system (23-29)
	Ignition switch: ON Engine: Stopped Selector lever position: P	Accelerator pedal (1) Released (2) Half depressed (3) Depressed	Data list No. 11 (1) 400 – 1,000 mV (2) Gradually rises from (1) (3) 4,500 – 5,500 mV	Throttle position sensor <Vehicles without TCL> Accelerator pedal position sensor <Vehicles with TCL>	11 12 14	Throttle position sensor system (23-8) Accelerator pedal position sensor system (23-8)
			Data list No. 25 (1) OFF (2) ON	Wide open throttle switch	25	Wide open throttle switch system (23-10)
		Mode control switch (1) HOLD (2) AUTO	Data list No.62 (1) ON (2) OFF	Mode control switch	–	Mode control switch system (23-29)
		Accelerator pedal (1) Released (2) Depressed	Data list No.25 (1) OFF (2) ON	Wide open throttle switch	25	Wide open throttle switch system (23-10)
		Brake pedal (1) Depressed (2) Released	Data list No. 26 (1) ON (2) OFF	Stop lamp switch	26	Stop lamp switch system (23-11)
3	Ignition switch: ST Engine: Stopped	Starting test with lever P or N range	Starting should be possible	Starting possible or impossible	–	Starting impossible (23-21)
4	Warming up	Drive for 15 minutes or more so that the automatic fluid temperature becomes 70 – 90°C.	Data list No. 15 Gradually rises to 70 – 90°C	Oil temperature sensor	15	Oil temperature sensor system (23-8)

Code No. 41 1st gear ratio does not meet the specification	Probable cause
If the output from the output shaft speed sensor multiplied by the 1st gear ratio is not the same as the output from the input shaft speed sensor after shifting to 1st gear has been completed, diagnosis code No. 41 is output. If diagnosis code No. 41 is output four times, the transmission is locked into 3rd gear as a fail-safe measure, and the N range lamp flashes at a frequency of 1 Hz.	• Malfunction of the input shaft speed sensor • Malfunction of the output shaft speed sensor • Malfunction of the underdrive clutch retainer • Malfunction of the transfer drive gear or driven gear • Malfunction of the low and reverse brake system • Malfunction of the underdrive clutch system • Noise generated

★: Refer to the Transmission Workshop Manual.

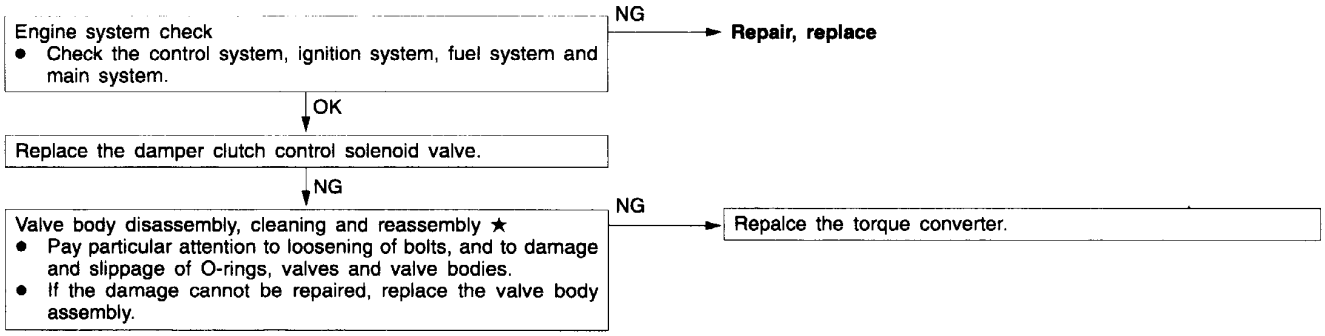


NOTE
*: Refer to '96 CARISMA Workshop Manual (Pub No. PWDE9502).

INSPECTION PROCEDURE 6

Engine stalling when shifting	Probable cause
If the engine stalls when the selector lever is shifted from N to D or R range while the engine is idling, the cause is probably a malfunction of the engine system, damper clutch solenoid valve, valve body or torque converter (damper clutch malfunction).	• Malfunction of the engine system • Malfunction of the damper clutch control solenoid valve • Malfunction of the valve body • Malfunction of the torque converter (Malfuction of the damper clutch)

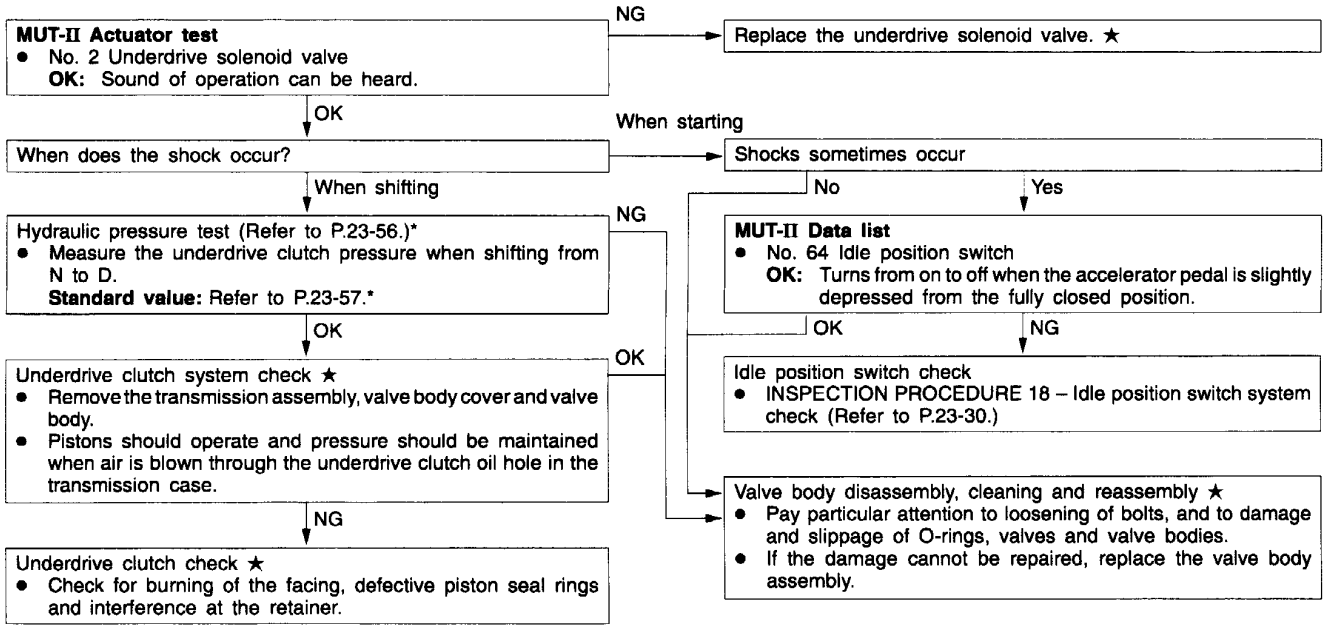
★: Refer to the Transmission Workshop Manual.



INSPECTION PROCEDURE 7

Shocks when changing from N to D and large time lag	Probable cause
If abnormal shocks or a time lag of 2 seconds or more occur when the selector lever is shifted from N to D range while the engine is idling, the cause is probably abnormal underdrive clutch pressure or a malfunction of the underdrive clutch, valve body or idle position switch.	• Abnormal underdrive clutch pressure • Malfunction of the underdrive solenoid valve • Malfunction of the underdrive clutch • Malfunction of the valve body • Malfunction of the idle position switch

★: Refer to the Transmission Workshop Manual.

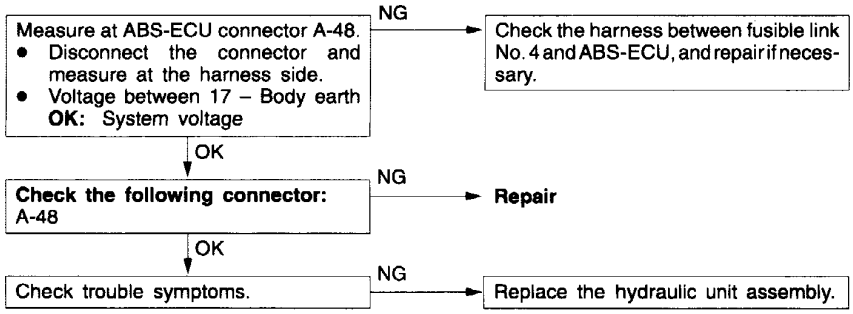


NOTE
*: Refer to '96 CARISMA Workshop Manual (Pub No. PWDE9502).

Terminal No.	Check item	Check requirement	Standard value
103	Input shaft speed sensor	Measure between terminal No. 57 and No. 103 by an oscilloscope. Engine: 2,000 r/min Selector lever position: 3 (3rd gear)	Refer to P.23-45*, Oscilloscope inspection procedure.
104	Output shaft speed sensor	Measure between terminal No. 57 and No. 104 by an oscilloscope. Engine: 2,000 r/min Selector lever position: 3 (3rd gear)	Refer to P.23-45*, Oscilloscope inspection procedure.
106	Second solenoid valve	Selector lever position: 2 (2nd gear)	Battery voltage
		Selector lever position: P	Approx. 7 – 9 V
107	Damper clutch control solenoid valve	Selector lever position: L (1st gear)	Battery voltage
		Selector lever position: 3 (50 km/h in 3rd gear)	Other than battery voltage
108	Inhibitor switch R	Selector lever position: R	Battery voltage
		Selector lever position: Other than above	0 V
109	Inhibitor switch 3	Selector lever position: 3	Battery voltage
		Selector lever position: Other than above	0 V
110	Inhibitor switch L	Selector lever position: L	Battery voltage
		Selector lever position: Other than above	0 V
115	Wide open throttle switch	Accelerator pedal: Released	4 V or more
		Accelerator pedal: Depressed	Less than 0.4 V
120	Underdrive solenoid valve	Selector lever position: L (1st gear)	Battery voltage
		Selector lever position: P	Approx.7 – 9 V
121	Inhibitor switch N	Selector lever position: N	Battery voltage
		Selector lever position: Other than above	0 V
122	Inhibitor switch 2	Selector lever position: 2	Battery voltage
		Selector lever position: Other than above	0 V
123	Stop lamp switch	Brake pedal: Depressed	Battery voltage
		Brake pedal: Released	0 V
124	Oil temperature sensor	ATF temperature: 25 °C	3.8 – 4.0 V
		ATF temperature: 80 °C	2.3 – 2.5 V

NOTE
*: Refer to '96 CARISMA Workshop Manual (Pub No. PWDE9502).

Code No. 53 Pump motor	Probable cause
This code is output when there is an abnormality in the pump motor system.	• Malfunction of wiring harness or connector • Malfunction of hydraulic unit • Malfunction of ABS-ECU



INSPECTION CHART FOR TROUBLE SYMPTOMS

Get an understanding of the trouble symptoms and check according to the inspection procedure chart.

Trouble symptoms		Inspection procedure No.	Reference page
Communication with MUT-II is not possible.	Communication with all systems is not possible.	1	*
	Communication with ABS only is not possible.	2	35B-5
Faulty ABS operation	Unequal braking power on both sides	5	35B-6
	Insufficient braking power		
	ABS operates under normal braking conditions		
	ABS operates before vehicle stops under normal braking conditions		
	Large brake pedal vibration (Caution 2.)	–	–

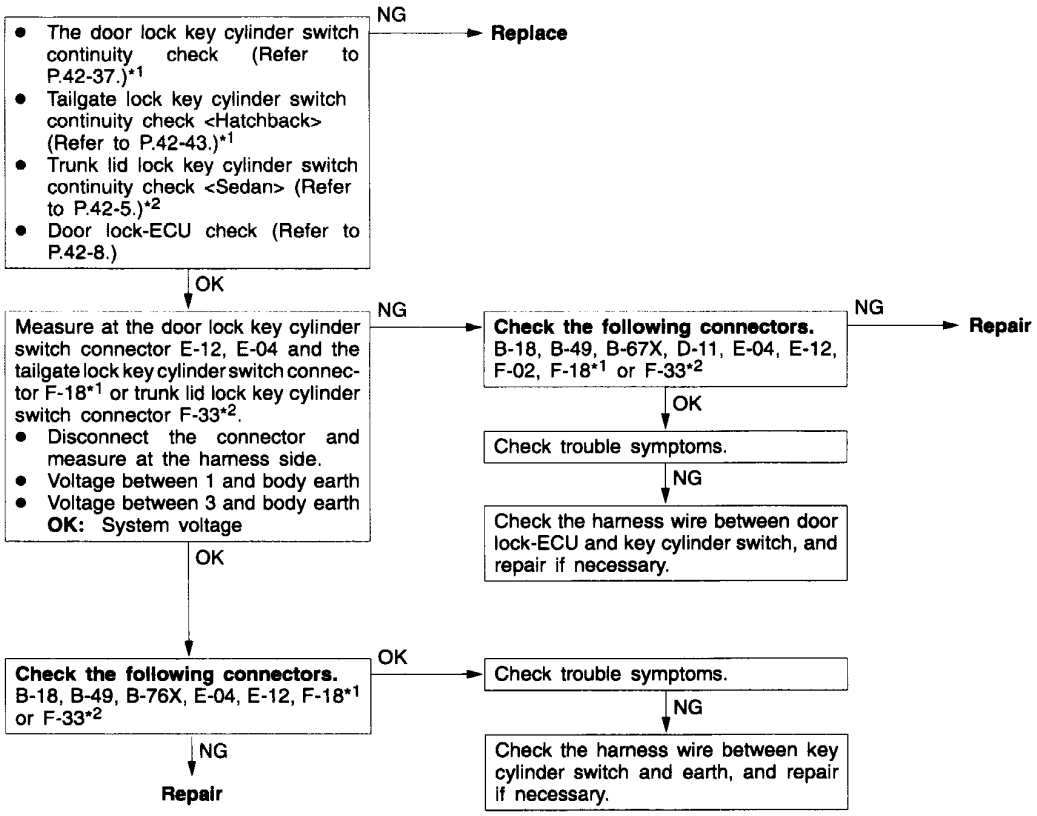
NOTE
*: Refer to '96 CARISMA Workshop Manual (Pub. No.PWDE9502).

Caution

1. **If steering movements are made when driving at high speed, or when driving on road surfaces with low frictional resistance, or when passing over bumps, the ABS may operate even though sudden braking is not being applied. Because of this, when getting information from the customer, check if the problem occurred while driving under such conditions as these.**
2. **During ABS operation, the brake pedal may vibrate or may not be able to be depressed. Such phenomena are due to intermittent changes in hydraulic pressure inside the brake line to prevent the wheels from locking and is not an abnormality.**

Inspection Procedure 11

Doors do not lock or unlock when the key cylinders (except the one at the driver's side door) are operated.	Probable cause
The key cylinder switch or the door lock-ECU may be defective.	• Malfunction of the door lock key cylinder switch • Malfunction of the tailgate lock key cylider switch • Malfunction of the door lock-ECU • Malfunction of 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).

GROUP 52A
INTERIOR

GENERAL

OUTLINE OF CHANGES

The following maintenance service points have been added to correspond to the addition of an SRS side air bag. Maintenance service points not listed below are the same as those given in the '96 CARISMA Basic Manual (Pub. No. PWDE9502).

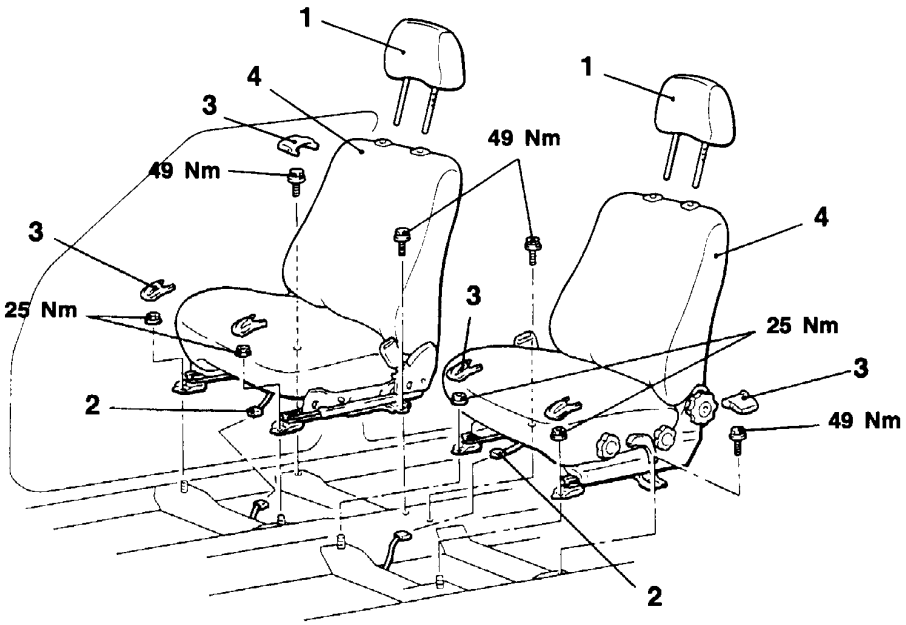
SEAT

FRONT SEAT

REMOVAL AND INSTALLATION

Pre-removal and Post-installation Operation
- Rear Floor Console Assembly Removal and Installation (Refer to '96 CARISMA Basic Manual.)
- Before removal of the seat equipped with the side air bag module, refer to GROUP 52B – SRS Service Precautions and Air Bag Module.

CAUTION: SRS
When removing and installing the rear floor console (vehicles equipped with SRS), do not let it bump against the SRS-ECU.



A19U0134

1. Headrestraint

Front seat assembly removal steps

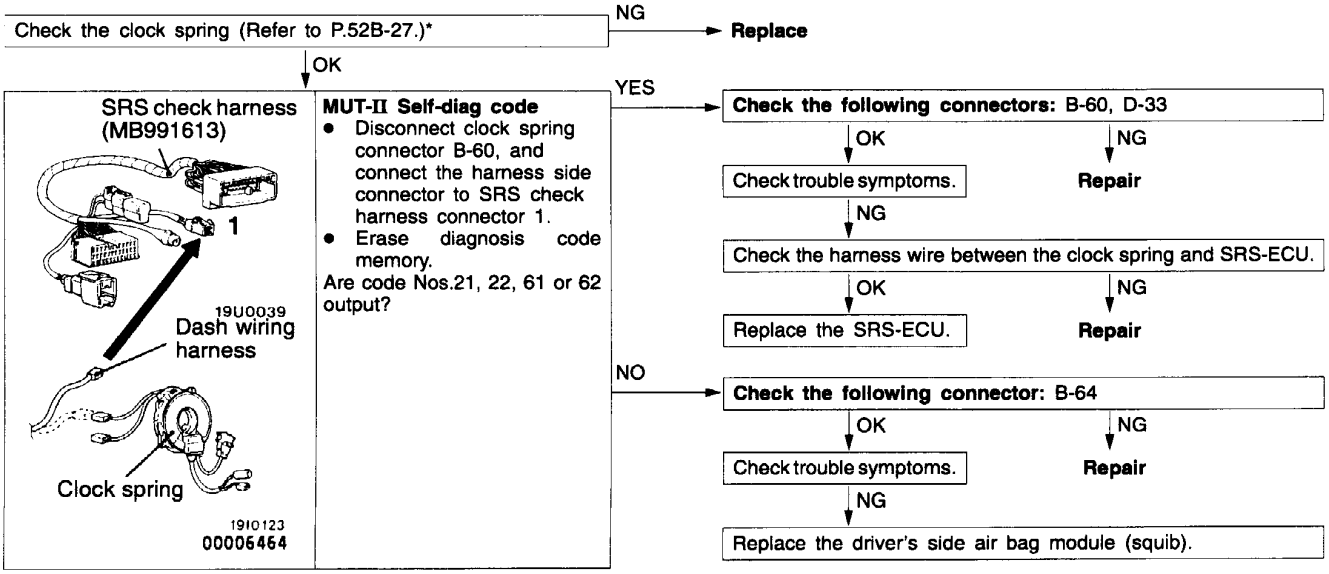
2. Harness connector
3. Seat anchor cover
4. Front seat assembly

▶A◀

NOTE
After provisionally tightening the seat assembly mounting nuts and bolts in every installation location, fully tighten them to the specified torque.

Code No.21, 22, 61 or 62 Driver's side 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 side air bag module (squib). The trouble causes for each diagnosis code No. are as follows.	• Malfunction of clock spring • Partial disconnection due to incorrect clock spring neutral position • Malfunction of wiring harnesses or connectors • Malfunction of driver's side air bag module (squib) • Malfunction of SRS-ECU

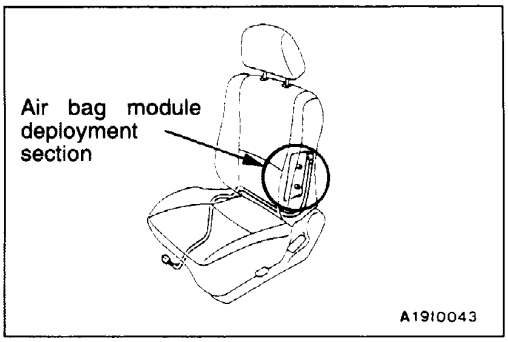
Code No.	Trouble cause
21	• Short in driver's side air bag module (squib) or harness short • Short in clock spring
22	• Open circuit in driver's side air bag module (squib) or open harness • Open circuit in clock spring • Disconnected driver's side air bag module (squib) connector • Partial disconnection due to incorrect clock spring neutral position • Malfunction of connector contact
61	• Short in driver's side air bag module (squib) harness leading to the power supply
62	• Short in driver's side air bag module (squib) harness leading to the earth



NOTE
*: Refer to '96 CARISMA Basic Manual (Pub. No. PWDE9502)

SRS MAINTENANCE

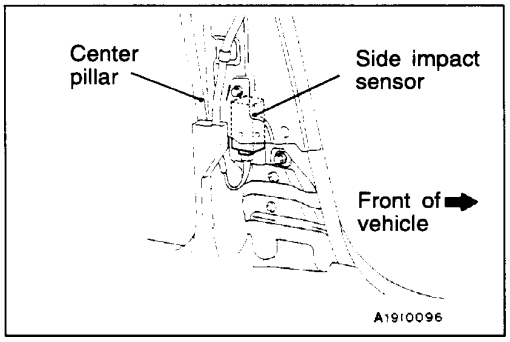
The SRS must be inspected by an authorized dealer 10 years after the date of vehicle registration.



SRS COMPONENT VISUAL CHECK

FRONT SEAT BACK ASSEMBLY (SIDE AIR BAG MODULE)

1. Check that there is no abnormality in the seat air bag module deployment section.
2. Check that there is no connector damage, bent terminals or clamping of the harness.



SIDE IMPACT SENSORS

1. Check that there is no bending or corrosion in the center pillar.
2. Check that there is no denting, breakage, bending or corrosion of the side impact sensor.
3. Check that there is no clamping of the harness, connector damage or bent terminals.

NOTE
The illustration at left shows the side impact sensor (L.H.). The position of the side impact sensor (R.H.) is symmetrical to this.

Caution
The SRS may not activate if the side impact sensors are not installed properly, which could result in serious injury or death to the vehicle's driver or front passenger.