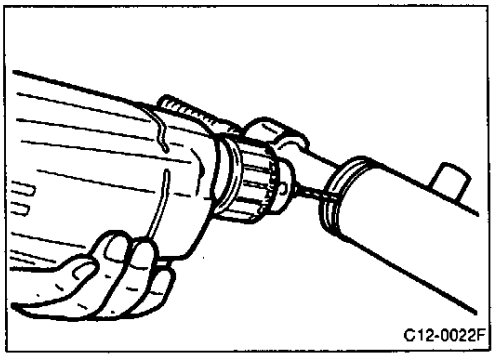
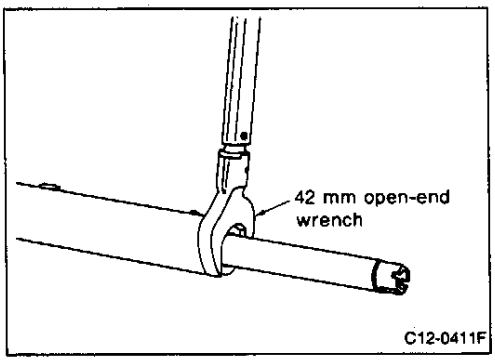
4. Removal and Installation, Assembly and Disassembly (Cont'd)


C12-0022F

[Point 6] End cover removal and installation

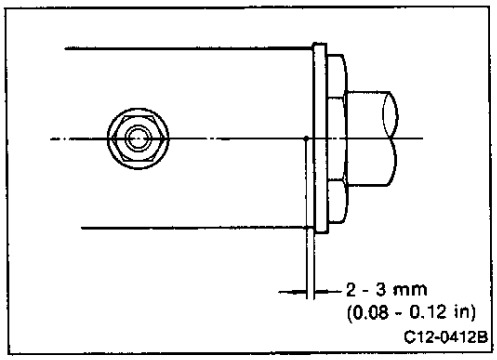
Removal

- Drill staked position of gear housing end with 3.0 mm drill until the staking is eliminated.



C12-0411F

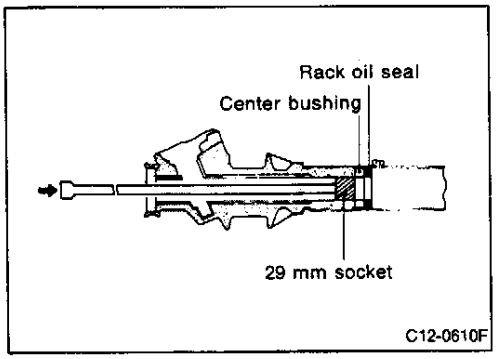
- Remove end cover assembly with 42 mm open-end wrench.



C12-0412B

Installation

- Tighten end cover.
  Fasten end cover assembly to gear housing with staking to prevent looseness as shown in figure.



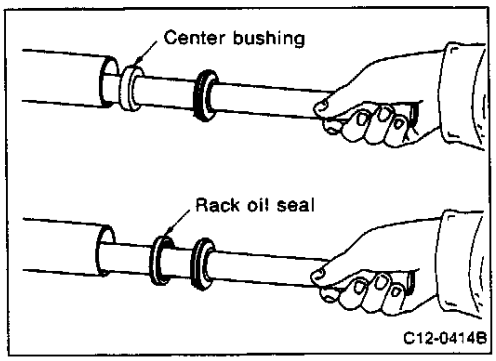
C12-0610F

[Point 7] Center bushing and rack oil seal removal and installation

Removal

- Turn pinion housing side and remove center bushing and rack oil seal at same time using 29-mm tape-wrapped socket and extension bar [length of 2 pieces is approx. 500 mm (19.69 in)].

CAUTION:
Do not scratch pinion housing or cylinder inner surface.



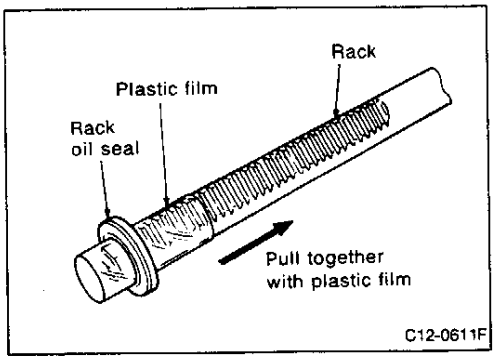
C12-0414B

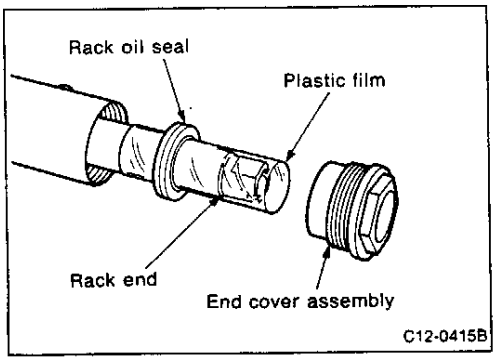
Inner side Installation

- Use rack to install.
- Install center bushing and rack oil seal (inner) separately.

CAUTION:
(1) Do not scratch rack end surface.
(2) To prevent scratching rack oil seal (inner), wrap the gear teeth of rack with protective plastic film, size: 70 x 100 mm (2.76 x 3.94 in) and insert oil seal above the wrapped sheet. Pull rack gears together with protective sheet until it passes.

4. Removal and Installation, Assembly and Disassembly (Cont'd)

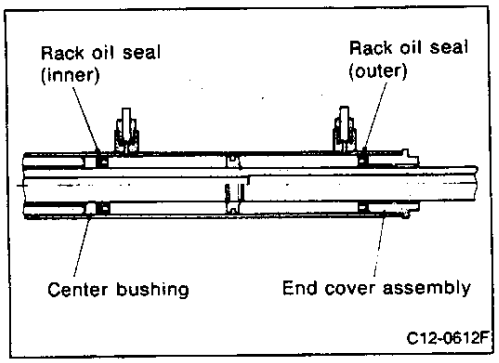




Outer side installation

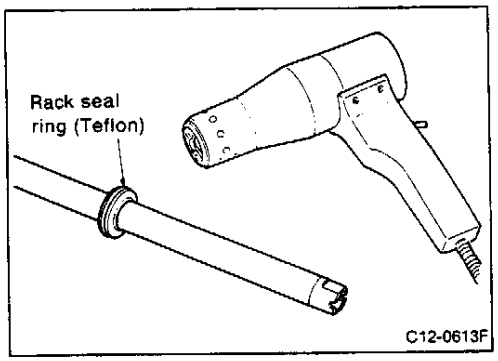
- Use end cover assembly to install outer side.

CAUTION:
To prevent scratching oil seal, wrap end of rack in a protective plastic film, size: 70 x 100 mm (2.76 x 3.94 in) and insert oil seal. Pull plastic film out together with oil seal.



Rack oil seal direction

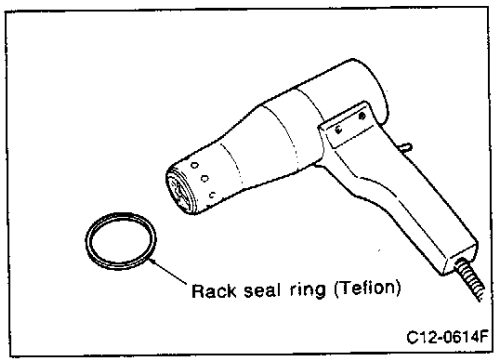
- Make sure inner and outer side lips of rack oil seal are facing correct direction and install seal.



[Point 8] Rack Teflon ring removal and installation

Removal

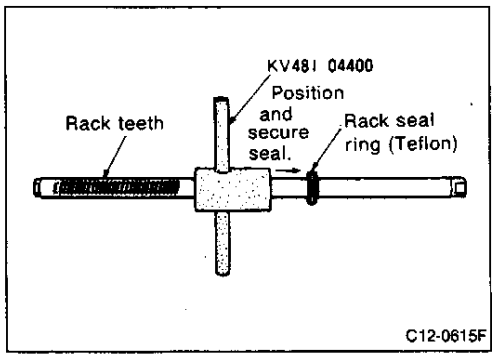
- Using a heat gun, heat rack seal ring (made of Teflon) to approximately 40°C (104°F).
- Remove Teflon rack seal ring. Be careful not to scratch rack.
- Replace O-ring and Teflon ring with new parts at same time.



Installation

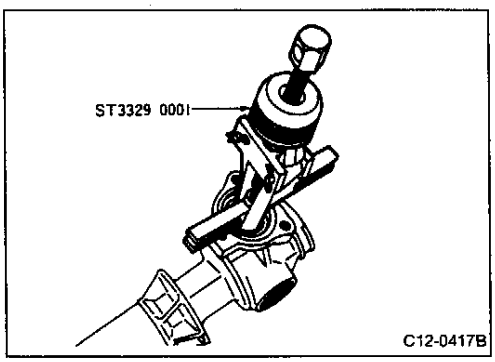
- Using a heat gun, heat rack seal ring (made of Teflon) to approximately 40°C (104°F) and install on rack by hand.

4. Removal and Installation, Assembly and Disassembly (Cont'd)



- Use seal ring correction tool (special service tool), compress periphery of rack seal ring (made of Teflon) to position and secure it on rack.

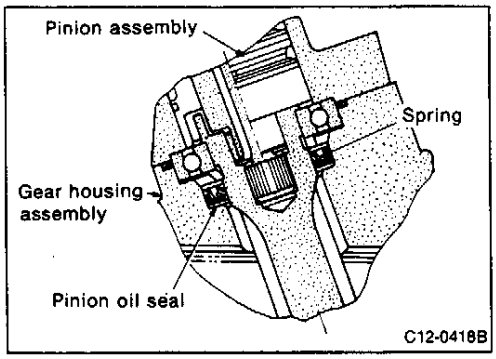
CAUTION:
Always insert the tool from the rack gear side.



[Point 9] Pinion oil seal removal and installation

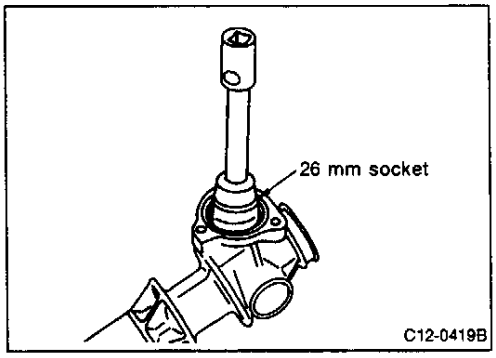
Removal

- Using oil seal puller (special service tool), remove oil seal from gear housing.

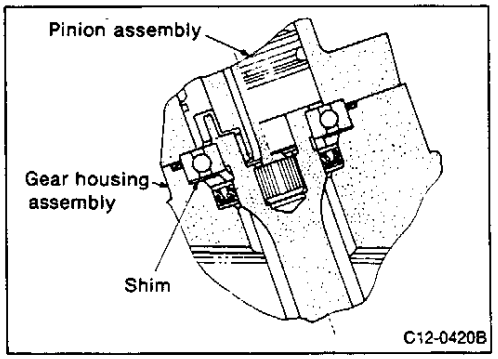


Installation

- Assemble oil seal with spring facing up as shown in figure.



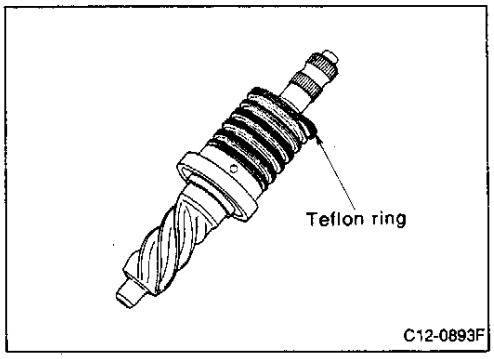
- Use appropriate sized drift and press in oil seal in gear housing.
  Reference: A 26-mm socket can also be used.



[Point 10] Shim selection

- Assemble unit with the same number of shims that were disassembled, whether replacement of pinion assembly gear housing and rear housing is necessary or not.

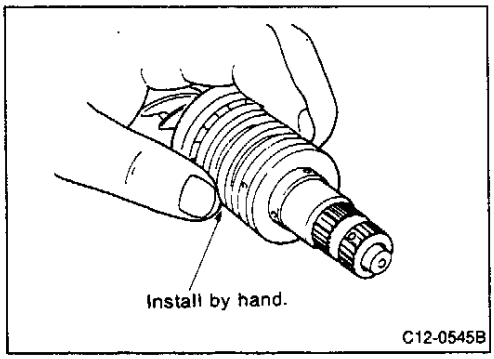
4. Removal and Installation, Assembly and Disassembly (Cont'd)



[Point 11] Pinion Teflon ring removal and installation

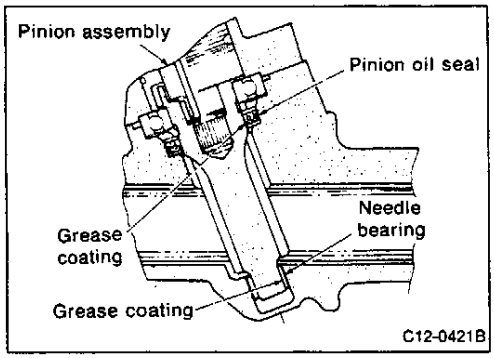
Removal

- Install Teflon ring on pinion assembly.
  Be careful not to damage pinion oil seal.
- Do not reuse Teflon ring.



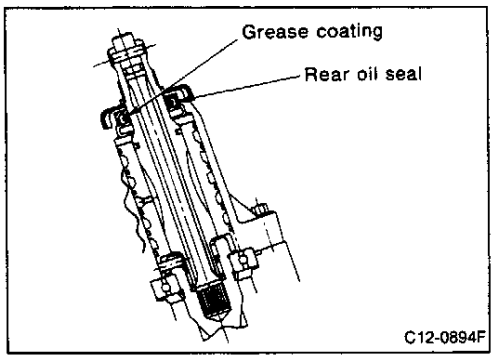
Installation

- Using a heat gun, heat pinion seal ring to approximately 40°C (104°F) before installing it onto pinion gear assembly.
- Make sure pinion seal ring is properly settled in valve groove.



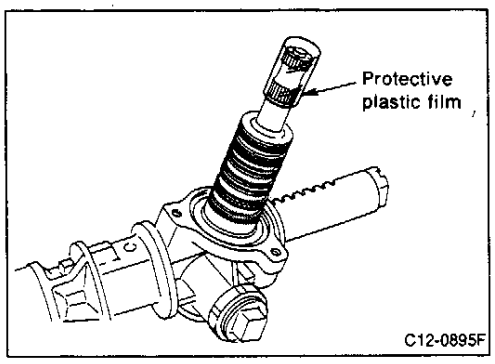
[Point 12] Needle bearing grease coating

- When assembling pinion assembly in gear housing, apply a coat of Nissan MP special grease No. 2 to needle bearing roller and pinion oil seal lip.



[Point 13] Rear oil seal grease coating

- Apply coat of Nissan MP special grease No. 2 to rear oil seal lip before assembling rear housing as shown in figure.

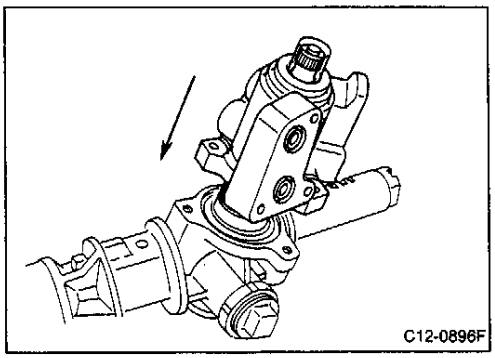


[Point 14] Rear housing assembly installation

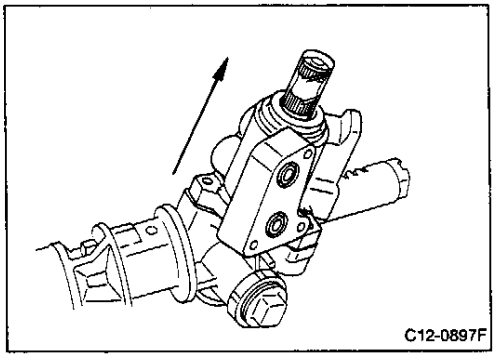
- Protect rear oil seal from damage by serration part of pinion assembly by wrapping it assembly serration in a protective plastic film, 50 x 70 mm (1.97 x 2.76 in)].

CAUTION:
If protective film is wrapped on bearing insertion surface the housing cannot be assembled.

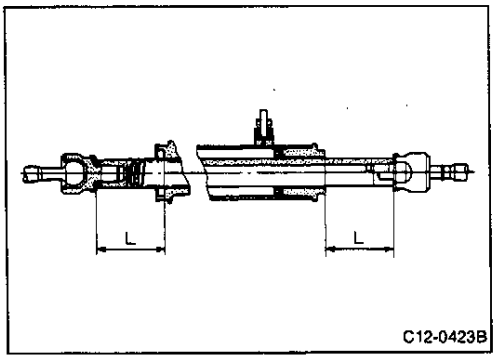
4. Removal and Installation, Assembly and Disassembly (Cont'd)



- Install rear housing assembly straight ahead.

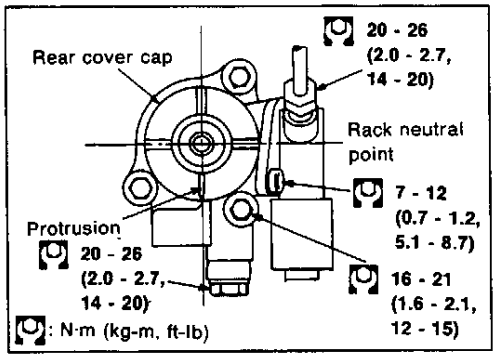


- Insert rear housing assembly in pinion assembly and then remove protective plastic film.

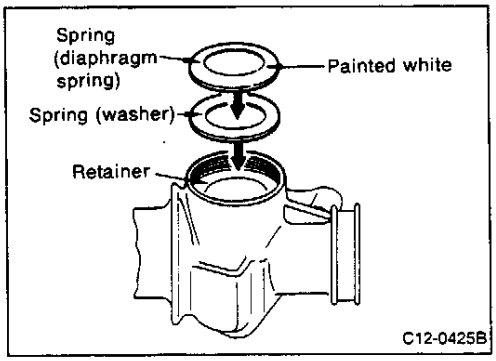


[Point 15] Rear housing cover installation

- Position rack as shown in figure, and determine neutral position.
  L dimension:
  66.5 mm (2.618 in)



- Install rear cover cap so that protrusion of rear housing cover is positioned as shown in figure.



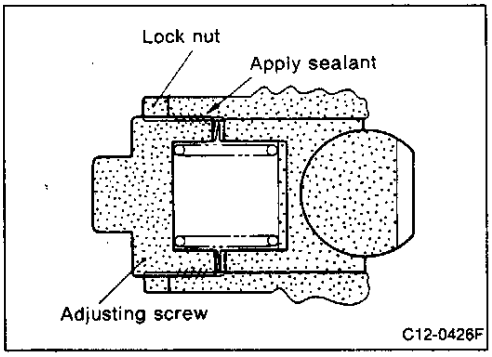
[Point 16] Spring (diaphragm spring) installation

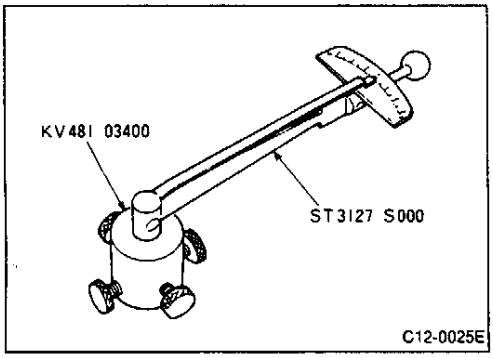
- Always install retainer, spring washer, washer and diaphragm spring in this order.
- Make sure convex end (painted white) of diaphragm spring faces outward when installing.

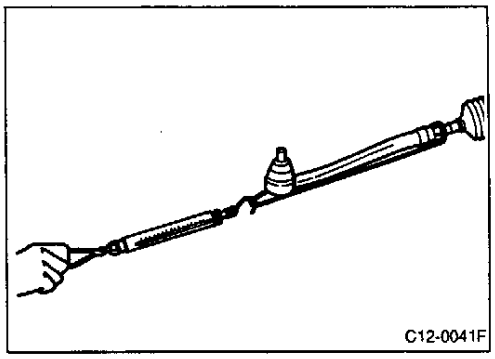
4. Removal and Installation, Assembly and Disassembly (Cont'd)

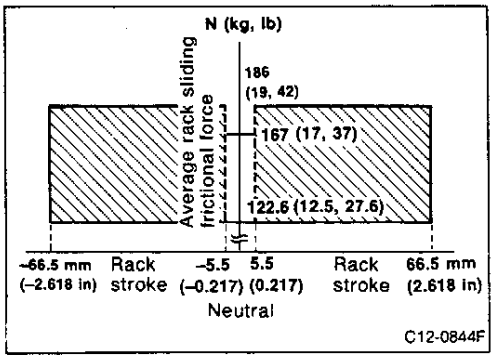
[Point 17] Adjusting screw adjustment

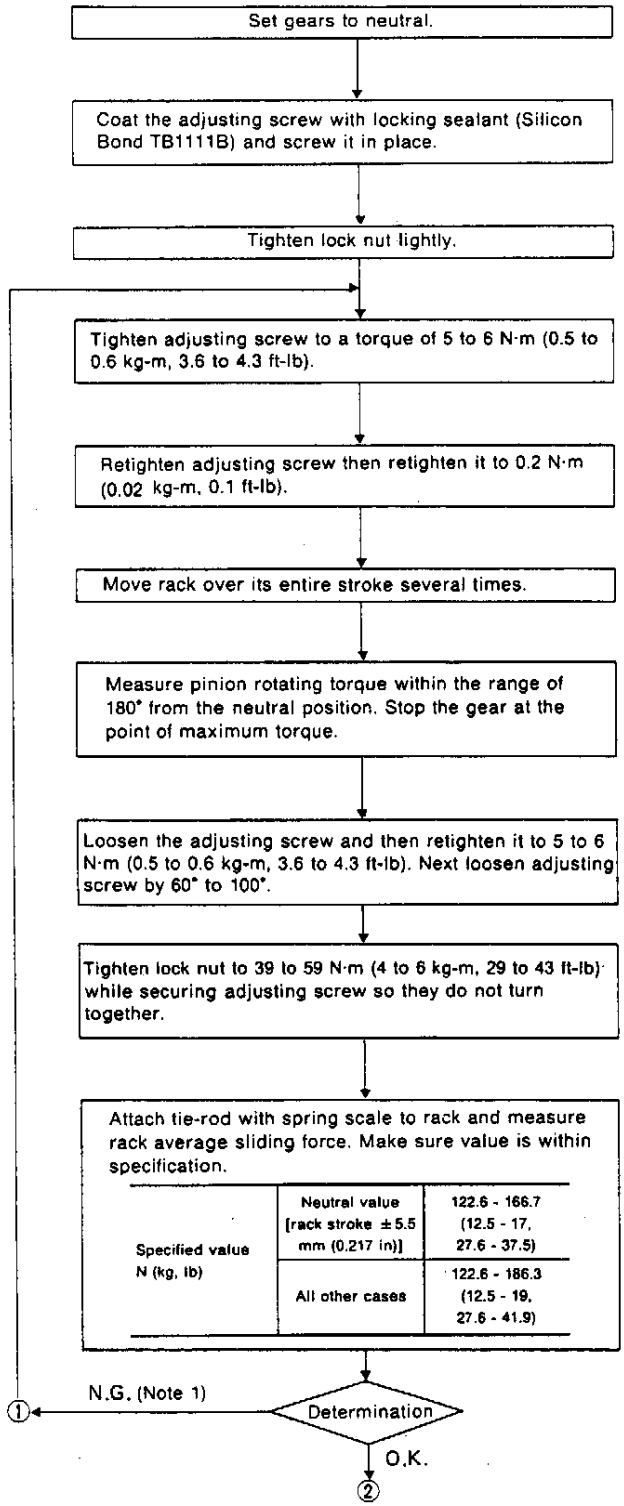
ⓐ Steering gear assembly adjustment (without fluid in gears)





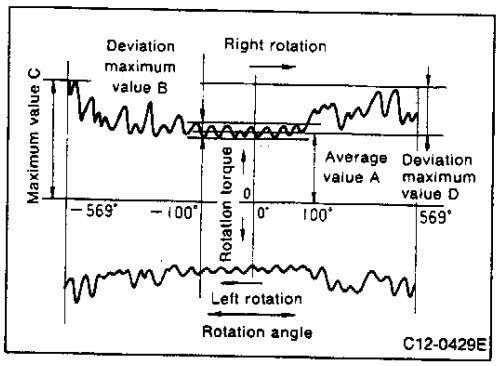


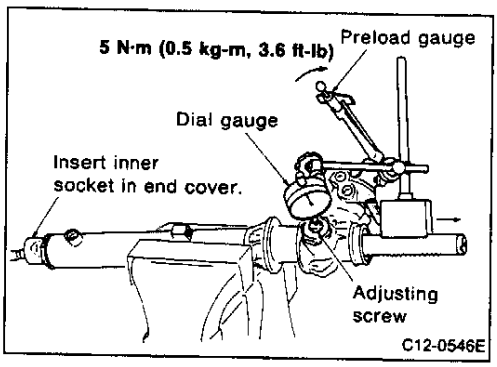




Note 1: If the sliding force is still out of specification even after readjustment, the steering gear is damaged and should be replaced.

4. Removal and Installation, Assembly and Disassembly (Cont'd)





①

②

Measure pinion rotation torque with preload gauge.
Make sure value is within specification.

Specification N·m (kg-m, ft-lb)	Neutral range (within ±100°)	Average value A	0.8 - 1.3 (0.08 - 0.13, 0.6 - 0.9)
		Deviation maximum value B	0.4 (0.04, 0.3) max.
	Other	Maximum value C	1.9 (0.19, 1.4) max.
		Deviation maximum value D	0.6 (0.06, 0.4) max.

Determination

N.G. (Note 2)

O.K.

Note 2: If pinion rotating torque is not within specification after readjustment, replace gear assembly.

Rotate pinion all the way to left with gear assembly tie-rod attached.

Set dial gauge as shown in figure. Rotate pinion to left by applying force of 5 N·m (0.5 kg-m, 3.6 ft-lb) and measure the rack force in vertical direction on dial gauge. Check if force is within specification.

Specification	mm (in)	0.08 (0.0031) max.

Determination

N.G. (Note 3)

O.K.

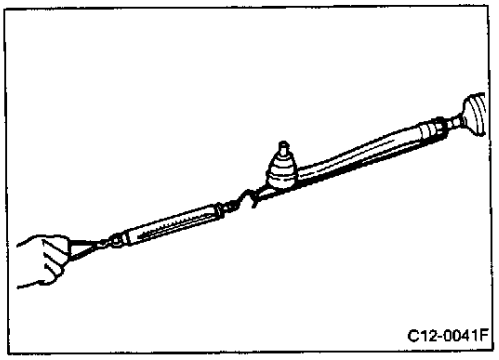
Note 3: If rack sliding force is still out of specification after readjustment, gear assembly must be replaced.

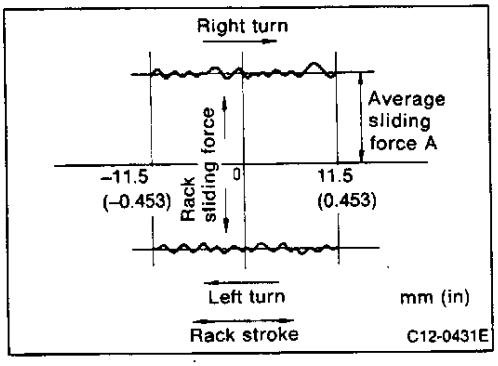
End

4. Removal and Installation, Assembly and Disassembly (Cont'd)

ⓑ Steering gear assembly, on-vehicle inspection (filled with gear oil)

- After adjusting steering gear as described in previous section, assemble in vehicle and perform following inspection.





Separate steering column lower joint, steering gear, tie-rod and knuckle arm.

↓

While pulling tie-rod slowly in the ±11.5 mm (±0.453 in) range from the neutral position, make sure rack sliding force (Note 4) is within specification.

Average rack sliding force A	284 N (29 kg, 64 lb) max.

Note 4: Measure rack sliding force under following conditions.
① Engine speed: Approx. 1,000 rpm
② Temperature: Approx. 55°C (122°F)
③ Rack speed: Approx. 3.5 mm/sec (0.138 in/sec)

↓

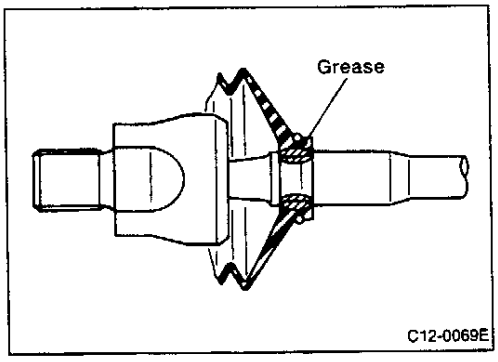
Determination → O.K. → End

Determination → N.G. →

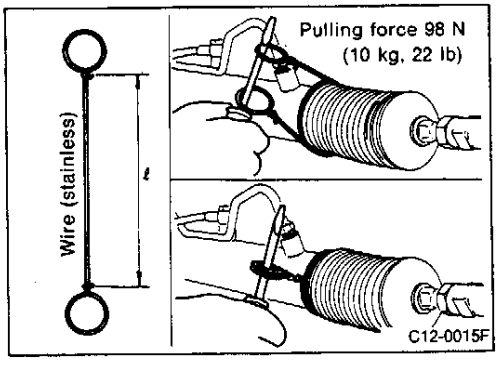
If rack sliding force is still out of specification after readjustment, gear assembly must be replaced.

[Point 18] Dust boot and clamp installation

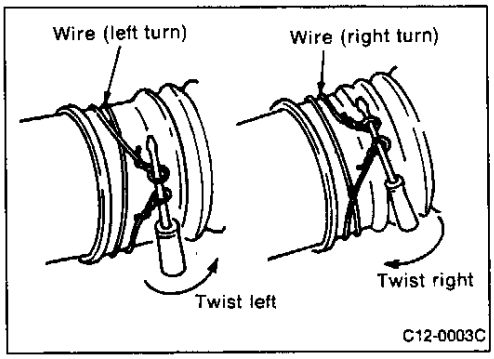
- Before installing boot, coat the contact surfaces between boot and tie-rod with grease.



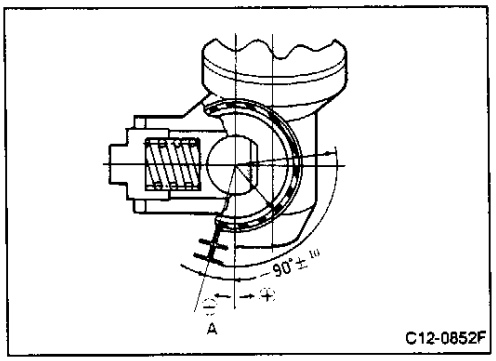
- The boot clamps are only located on large diameter side in two positions.
- The housing side and cylinder end side both have a length (ℓ) of 396 mm (15.59 in).
- To install, wrap boot clamp around boot groove twice. Tighten clamp by twisting rings at both ends 4 to 4-1/2 turns with screwdriver while pulling with a force of approx. 98 N (10 kg, 22 lb).



4. Removal and Installation, Assembly and Disassembly (Cont'd)



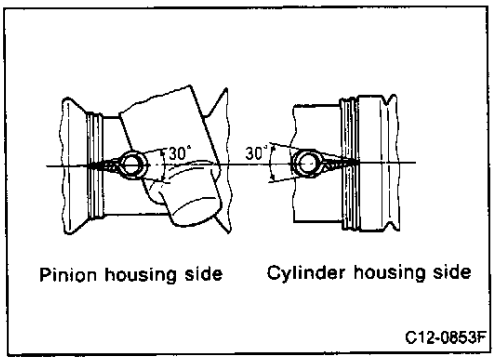
- Twist boot clamp in the direction shown in the figure at left.

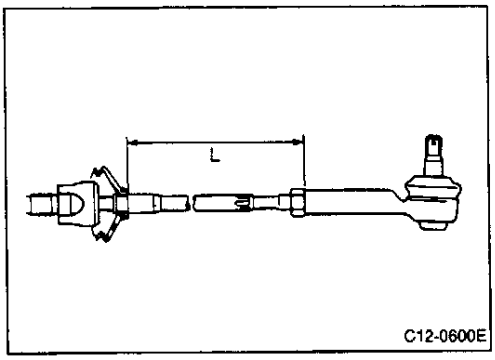


- Install boot clamp so that clamped portion will be behind the gear when gear housing is attached to the vehicle. (This will prevent interference with other parts.)
- After twisting clamp 4 to 4-1/2 times, bend it diagonally so it does not contact boot.

  Angle A:

  –80° to –100°





[Point 19]

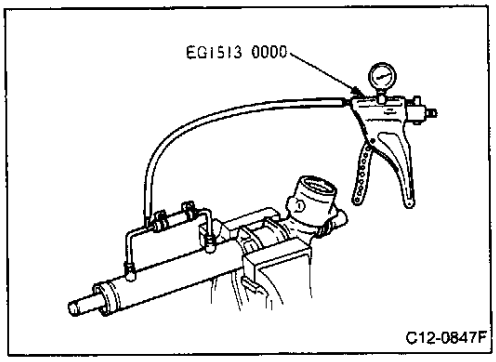
- Set tie-rod length (dimension L) to following specificatior and tighten lock nut.

  Specification:

  126.5 mm (4.98 in)

CAUTION:

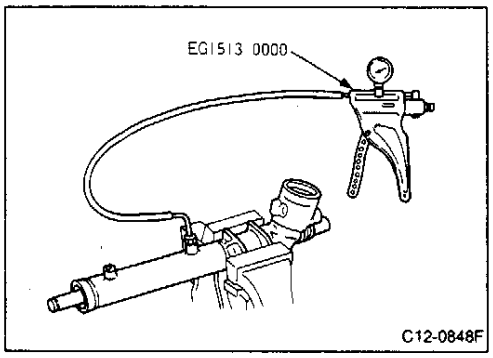
Always adjust toe-in after completing this operation. This dimension may change after toe-in adjustment.



[Point 20] Rack oil seal, Teflon seal and ring seal inspection

- After assembling steering rack, check sealing as shown ir figure.
- Connect vacuum hand pump (special service tool) to tub as shown in figure. Apply vacuum pressure of 53.3 kPa (40 mmHg, 15.75 inHg) for approx. 30 sec and check that ther is no needle deflection.

4. Removal and Installation, Assembly and Disassembly (Cont'd)



- To check rack seal ring (Teflon) and O-ring sealing, connect gauge to pinion side port as shown in figure. Apply vacuum pressure of 53.3 kPa (400 mmHg, 15.75 inHg) for approx. 30 sec and check that there is no needle deflection.

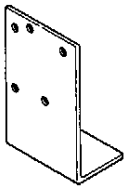
4-3 OIL PUMP, OIL TANK AND HYDRAULIC TUBES

Refer to C12 SUPER HICAS for power steering pump procedures.

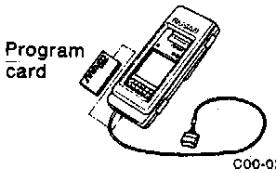
PRECAUTIONS

- The final tightening of rubber bushings should be performed when vehicle is empty and on the ground. Wipe off any oil adhering to part surfaces because it reduces durability.
- Check wheel alignment when preparing suspension parts.
- Use flare nut wrench for removal and installation of steering pipe and power system flare nuts.
- Always adjust front and rear toe-in after power cylinder assembly removal and installation.

SPECIAL SERVICE TOOLS

Tool name Tool number	Description	
Pin punch KV321 01100	 C00-0084	Removing fail-safe valve tube seat
Attachment ST2770 0001	 C00-0144	Assembling and disassembling power steering pump

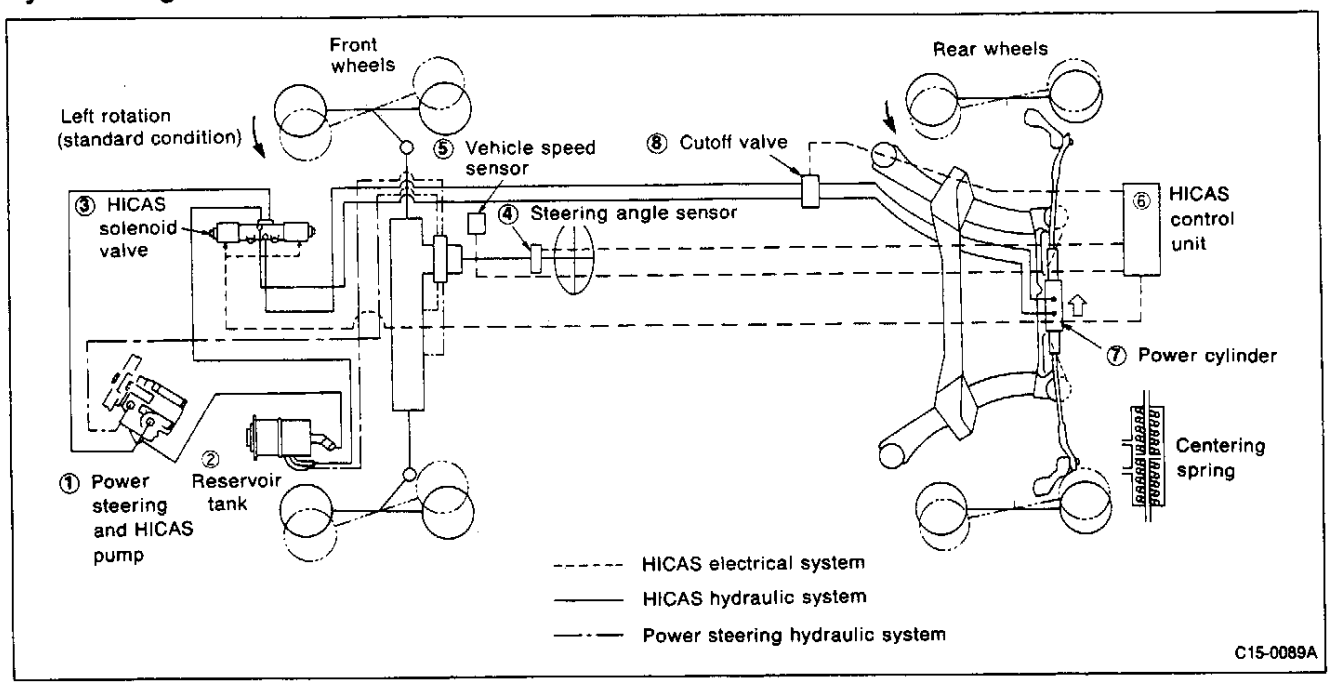
COMMERCIAL SERVICE TOOLS

Tool name Tool number	Description	
Pitman arm puller HT7256 0000	 C00-0231	Removing power cylinder outer link
CONSULT EG1180 0000	 C00-0239	Control unit input/output (I/O) signal inspection

1. Summary

This section describes SUPER HICAS trouble diagnosis procedures. Refer to C7 FRONT SUSPENSION AND AXLE, C8 REAR SUSPENSION AND AXLE and C11 STEERING for further descriptions of other suspension and steering preparation operations.

System diagram



1. Summary (Cont'd)

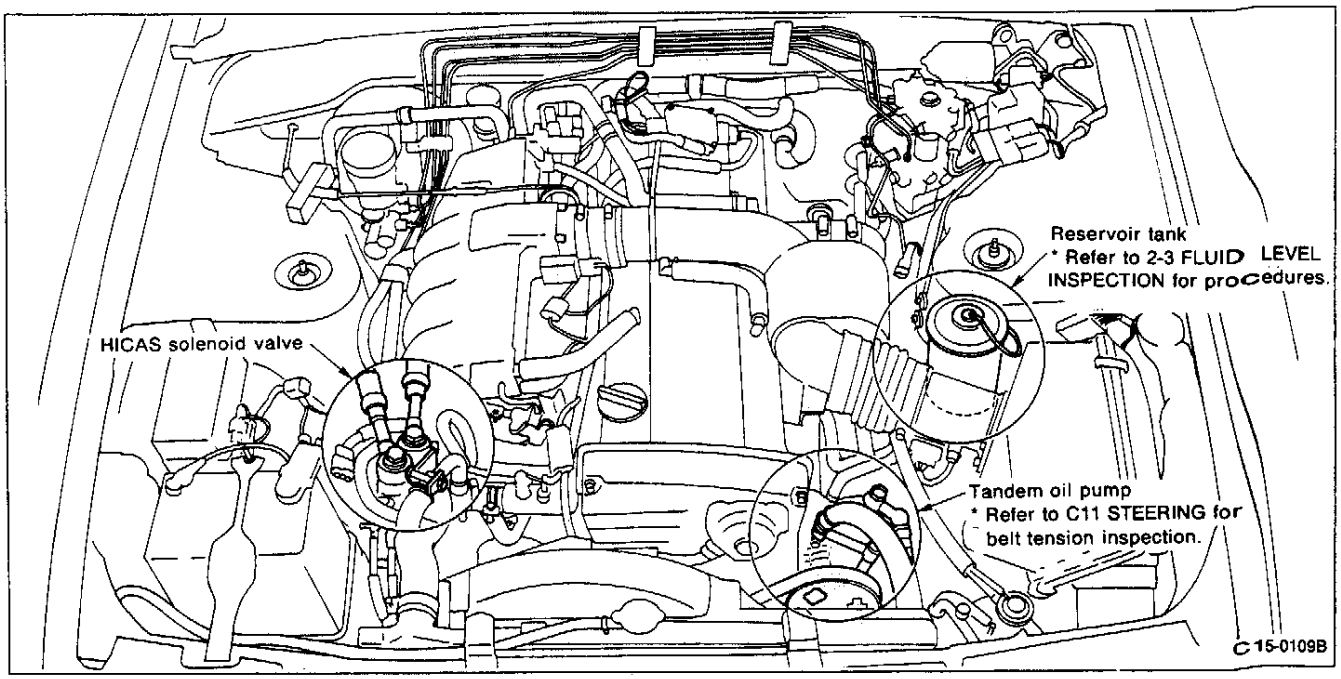
Description \ Engine	Suspension		RB26DETT	
			Front	Rear
Suspension type			Multi-link independent suspension	
Wheel alignment (empty vehicle)	Toe-in	mm (in)	1 ± 1 (0.04 ± 0.04)	2 ± 2 (0.08 ± 0.08)
	Camber	(°)	−0°55′ ± 45′	−1°05′ ± 30′
	Caster	(°)	3°40′ ± 45′	—
	King pin inclination angle	(°)	15°25′ ± 45′	—
	Side slip (reference)	mm (in)	−5 to 5 (−0.20 to 0.20)	
Shock absorber	Damping force [0.3 m (1.0 ft)/s] N·m (kg-m, ft-lb)	Expansion	1,746 (178, 392)	1,108 (113, 249)
		Compression	500 (51, 112)	402 (41, 90)
Coil spring	Spring constant	N/mm (kg/mm, lb/in)	23.5 (2.4, 134)	26.5 (2.7, 151)
	Free length	mm (in)	405 (15.94)	345 (13.58)
	Coil center diameter	mm (in)	110 (4.33) [low side 80 (3.15)]	100 (3.94) [low side 90 (3.54)]
	Wire diameter	mm (in)	12.3 (0.484)	11.8 (0.465)
	Number of active coils		7.92	7.29
Power cylinder	Inner diameter	mm (in)	60 (2.36)	
	Stroke	mm (in)	±3 ± 0.1 (±0.118 ± 0.004)	
	Spring rigidity (Static)	kg-s/mm	450 ± 22.5	
	Part number (55710)		05U10 (RB26DETT)	
Pump	Type		Fixed injection volume	
	Part number (49110)		05U00 (RB26DETT)	
Tension rod outer diameter		mm (in)	20 (0.79)	—
Stabilizer outer diameter		mm (in)	20 (0.79)	25.4 (1.000)
Maximum steering angle (°)		Inner wheel	$38^{\circ}{}^{+1^{\circ}}_{-3^{\circ}}$	1° [Stroke: 3 mm (0.12 in)]
		Outer wheel	32°	1° [Stroke: 3 mm (0.12 in)]

Inspection specifications

Description	Specification	
Rear housing ball joint	Description	Ball joint
	Sliding torque N·m (kg-m, ft-lb)	0.3 - 29 (0.03 - 0.3, 0.2 - 2.2)
	Swinging torque (spring scale conversion value) N (kg, lb)	6.9 - 68.6 (0.7 - 7.0, 1.5 - 15.4)
	Axial end play mm (in)	0 (0)
	Tightening torque N·m (kg-m, ft-lb)	45 - 60 (4.6 - 6.1, 33 - 44)
Operation oil	Nissan power steering fluid	

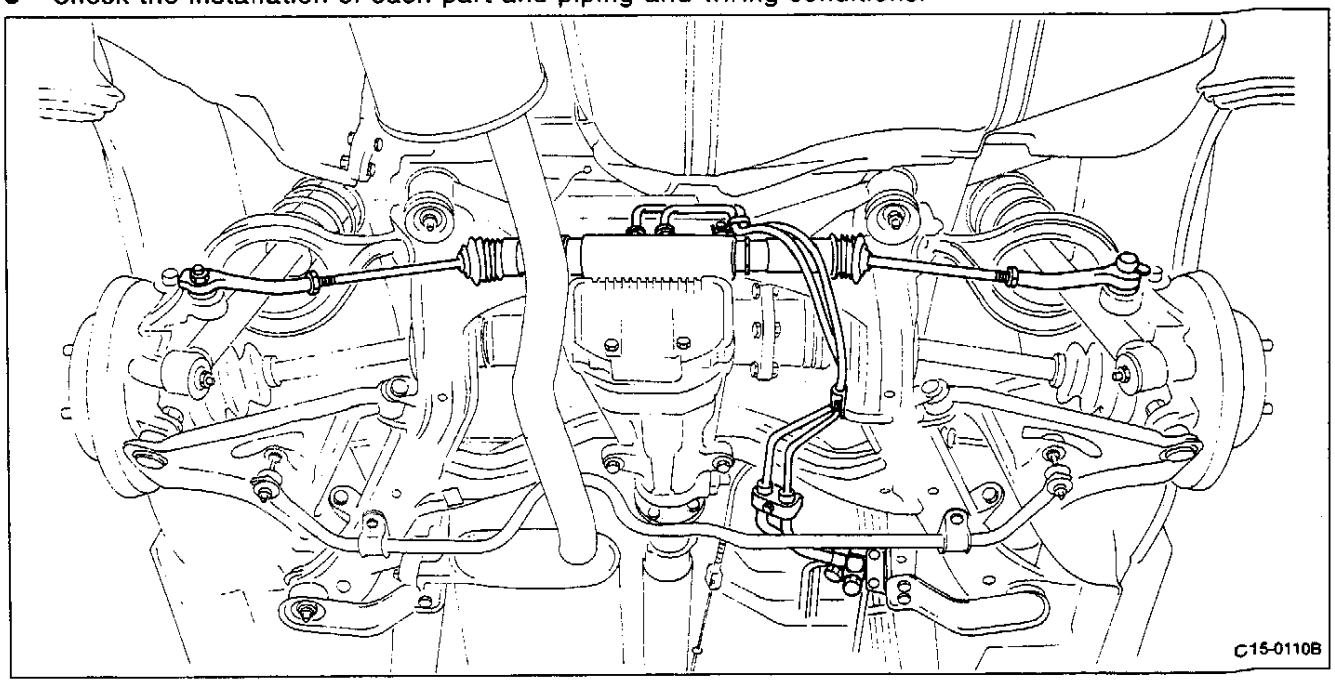
2. On-vehicle Inspection and Adjustment

2-1 INSTALLATION INSPECTION



(1) Engine compartment

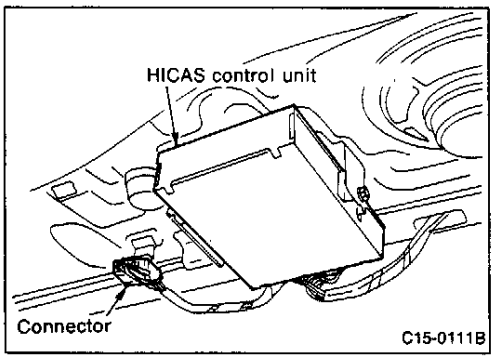
- Check the installation of each part and piping and wiring conditions.



(2) Rear undercarriage

- Check installation of each part and pipe condition.
- Check that rubber parts (boots, insulators, etc.) are not cracked or damaged.
- Check installation condition of suspension parts.

2. On-vehicle Inspection and Adjustment (Cont'd)

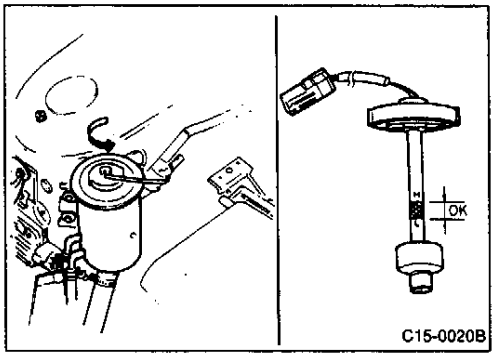


(3) Rear parcel (trunk)

- Check wiring harness connector condition of HICAS control unit in the middle of rear parcel in trunk.

2-2 WHEEL ALIGNMENT INSPECTION AND ADJUSTMENT

- Refer to C7 FRONT SUSPENSION AND AXLE, C8 REAR SUSPENSION AND AXLE for wheel alignment inspection and adjustment procedures.



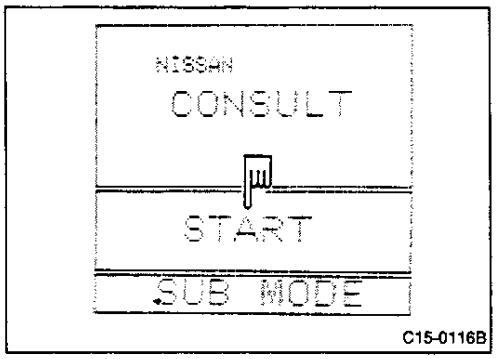
2-3 FLUID LEVEL INSPECTION

- Maintain the fluid level so that the lower surface of the float is maintained between the "L" and "H" marks on the gauge rod. The fluid level should be checked when the engine is stopped and the fluid temperature is normal.

CAUTION:

(1) Never reuse fluid that has been removed.

(2) Never use any other oil except the recommended type of power steering fluid.



2-4 SYSTEM OPERATION INSPECTION

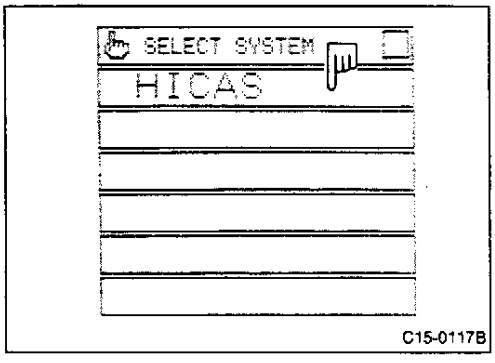
(1) When CONSULT is used:

Perform the following procedures. (2-man operation)

① Have a helper sit in the driver's seat and raise vehicle. (Use a two-pole lift or a center pole lift so that all four wheels are free to rotate.)

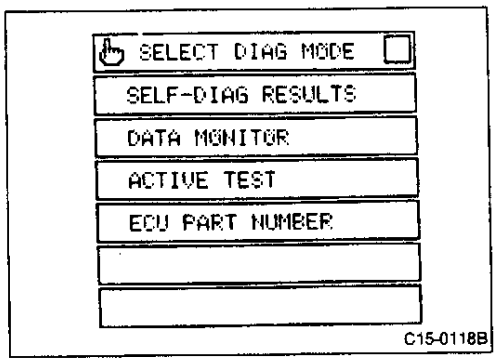
② Connect CONSULT unit to diagnostic connector and start engine.

③ Touch "START" on CONSULT display.

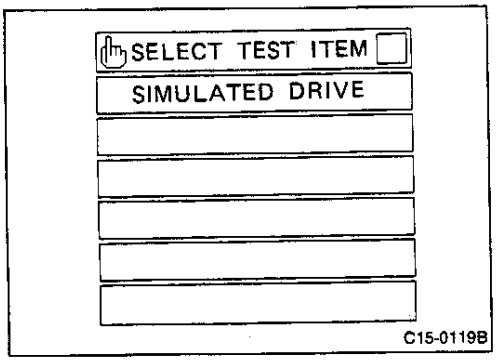


④ Touch "HICAS".

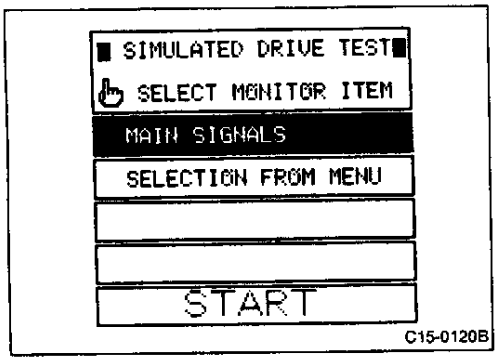
2. On-vehicle Inspection and Adjustment (Cont'd)



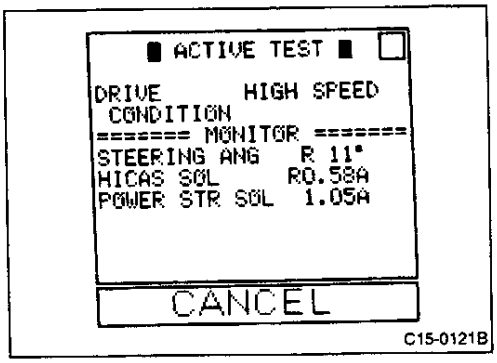
⑤ Touch "ACTIVE TEST".



⑥ Touch "SIMULATED DRIVE".



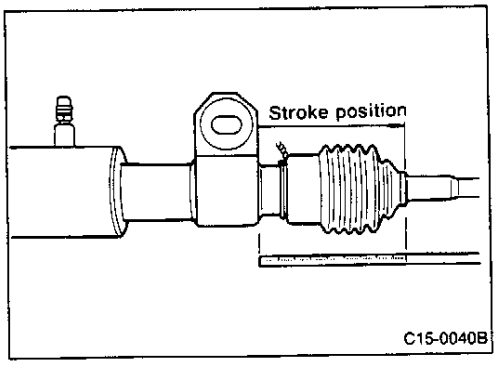
⑦ Touch "START" when MAIN SIGNALS display is reversed.



⑧ Touch "START". (high-speed mode set)

CAUTION:

After simulated drive condition has continued for 5 minutes, it will automatically cancel and CONSULT unit will then show "TEST IS INTERRUPTED TO AVOID OIL TEMP RISE" display. To cancel this mode during self-diagnosis, simply touch "CANCEL".



⑨ Operate engine at speeds greater than 2,000 rpm, and turn steering wheel 180° in one direction from the neutral position. Measure extension value of one power cylinder rod and retraction value of the other. Then, turn steering wheel 180° in the other direction from the neutral position and measure extension value of one cylinder rod and retraction value of the other. Determine strokes of respective power cylinders by adding (measured) extension and retraction values.

CAUTION:

Measure rod strokes in as short a period of time as possible.

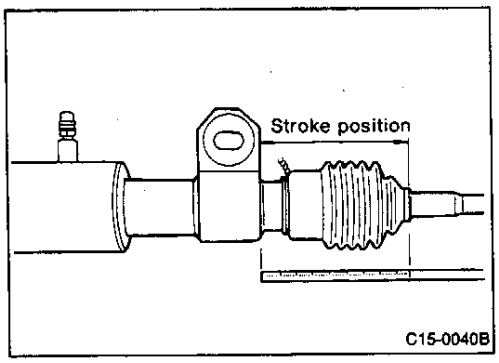
2. On-vehicle Inspection and Adjustment (Cont'd)

Specifications mm (in)	When turned to the right: 3 mm (0.12 in)	Left rod: extended, Right rod: retracted
	When turned to the left : 3 mm (0.12 in)	Left rod: retracted, Right rod: extended
	Total stroke: 6 mm (0.24 in)	—

(2) When CONSULT is not used:

Perform the following operations. (2-man operation)

① Have a helper sit in the driver's seat and raise vehicle.
(Use a 2-pole lift or a center pole lift so that the four wheels are free to rotate.)
② Turn ignition switch OFF.
③ Start engine. Turn steering wheel from left to right (at least 20° from the neutral position) 5 times or more, then depress foot brake pedal at least 5 times all within 10 seconds after ignition switch has been turned "ON".
④ Set steering wheel to a point approximately 10° from the neutral position and check to ensure that rear wheels turn to the left and right alternately.



⑤ Operate engine at speed greater than 2,000 rpm, and turn steering wheel 180° in one direction from the neutral position. Measure extension value of one power cylinder rod and retraction value of the other. Then, turn steering wheel 180° in the other direction from the neutral position and measure extension value of one cylinder rod and retraction value of the other. Determine strokes of respective power cylinders by adding (measured) extension and contraction strokes.

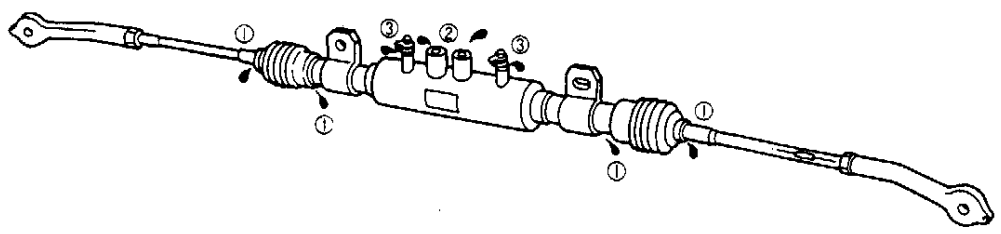
CAUTION:
Measure rod strokes in as short a period of time as possible
Turn ignition switch OFF and cancel self-diagnosis.

Specifications mm (in)	When turned to the right: 3 mm (0.12 in)	Left rod: extended, Right rod: retracted
	When turned to the left : 3 mm (0.12 in)	Left rod: retracted, Right rod: extended
	Total stroke: 6 mm (0.24 in)	—

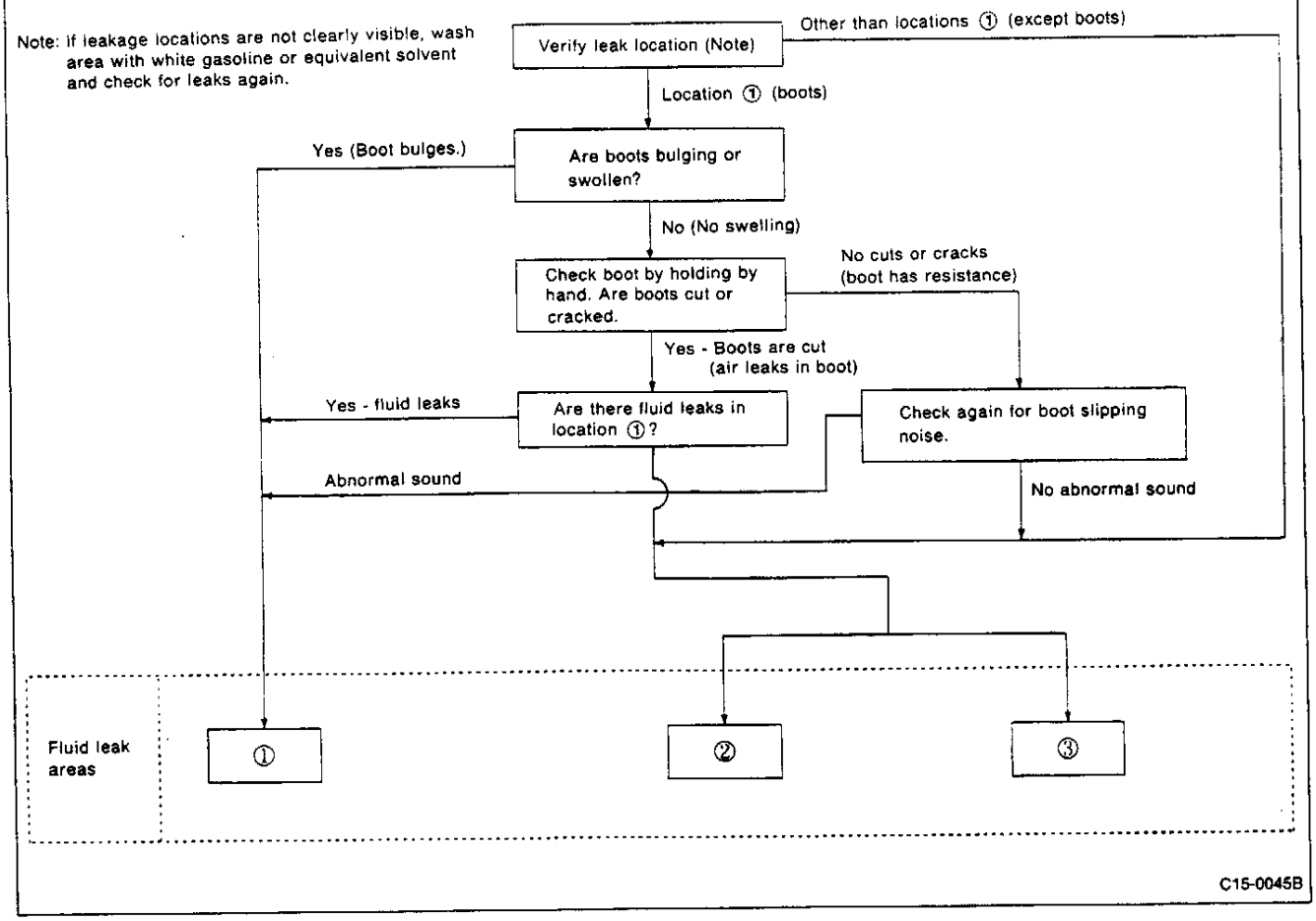
2-5 FLUID LEAK INSPECTION LOCATIONS

- Refer to C11 STEERING, 2. On-vehicle Inspection and Adjustment for descriptions of SUPER HICAS power steering fluid leak inspection locations.
- This section describes the leak inspection locations for the SUPER HICAS power cylinder.

2. On-vehicle Inspection and Adjustment (Cont'd)



C15-0044B



C15-0045B

2. On-vehicle Inspection and Adjustment (Cont'c

Fluid leak location	① Dust boot	② Power cylinder tube connections	③ Power cylinder air bleeder
On-vehicle inspection locations	—	Power steering tube tightening torque • Right port side: 39 - 49 N·m (4.0 - 5.0 kg-m, 29 - 36 ft-lb) • Left port side: 39 - 49 N·m (4.0 - 5.0 kg-m, 29 - 36 ft-lb)	Air bleeder tightening torque • Right side: 6 - 8 N·m (0.6 - 0.8 kg-m, 4.3 - 5.8 ft-lb) • Left side: 6 - 8 N·m (0.6 - 0.8 kg-m, 4.3 - 5.8 ft-lb)
Preparation description (parts requiring replacement)	Power cylinder assembly	Tubes	(Air bleeder)
Related parts requiring inspection	—	Power cylinder assembly	
Preparation procedures	Remove power cylinder from vehicle. ↓ Check contact surfaces inside the power cylinder assembly port and air bleeder for scratches, indentations or damage. ↓ Replace parts as necessary. ↓ Install power cylinder in vehicle. ↓ Bleed air and inspect oil level. ↓ Inspect for fluid leakage.		

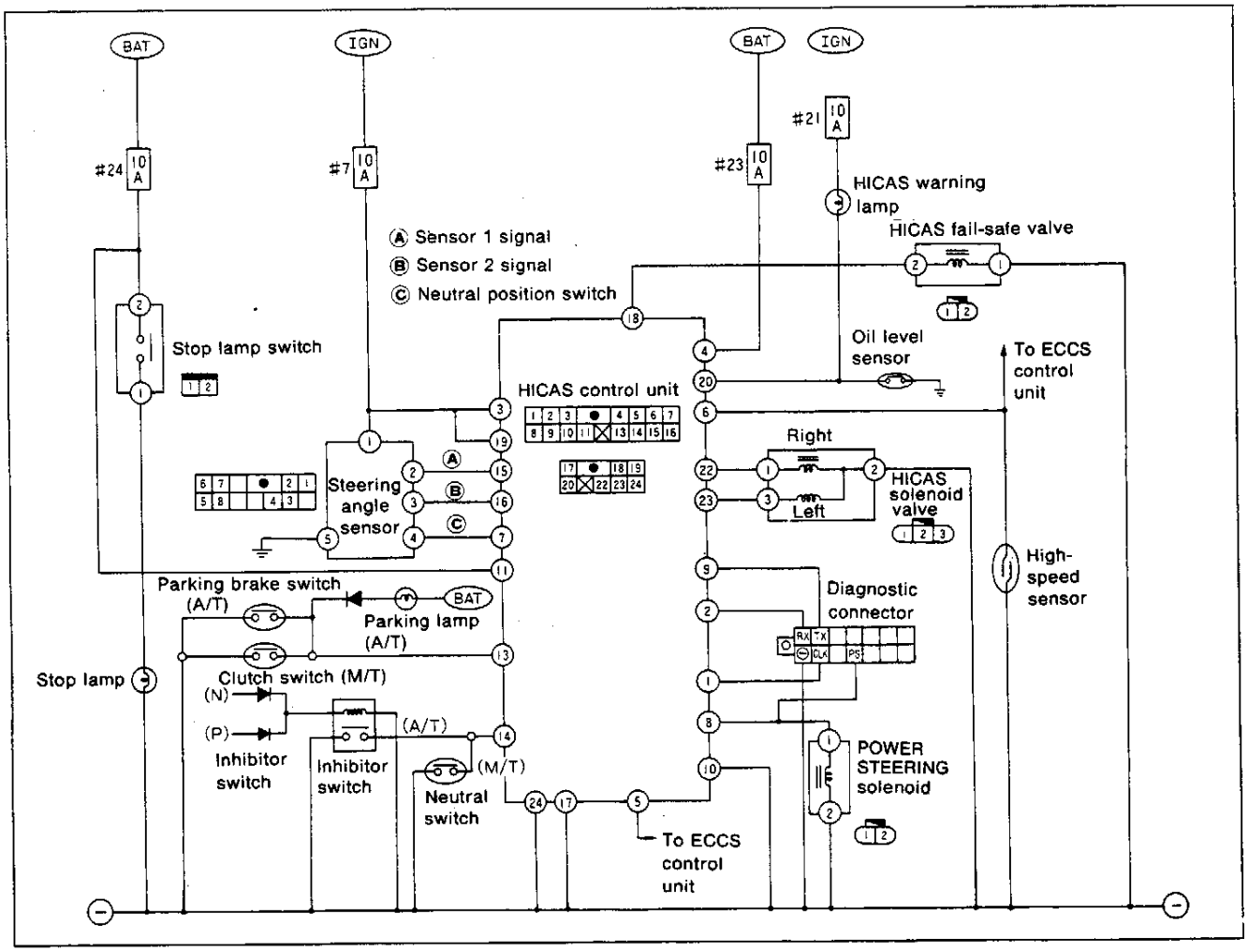
2-6 AIR BLEEDING

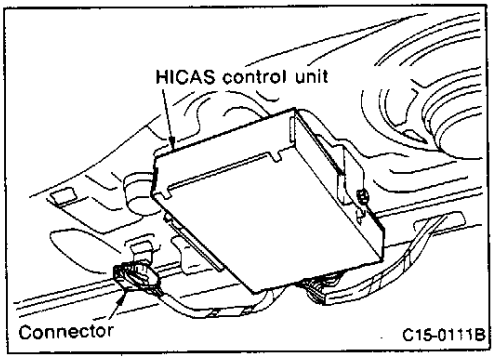
- Refer to "4-1 POWER CYLINDER AND LOWER LINK", ① Removal and installation for description HICAS system air bleeding procedures.

3. Trouble Diagnoses

3-1 ELECTRICAL SYSTEM INSPECTION PREPARATION

(1) Circuit diagram and control unit installation position





HICAS control unit installation position

- The unit is located below the rear parcel shelf.

3. Trouble Diagnoses (Cont'd)

(2) Trouble diagnosis when CONSULT is used

① Self-diagnostic items

Diagnostic item	Description	Remarks
CAR SPEED SENSOR [No signal] (· a)	• No vehicle speed signal is entered after vehicle has been operated above a certain speed.	
CAR SPEED SENSOR [SIG-SUDDEN TURN] (· b)	• Vehicle speed signal changes abruptly during operation.	
STEERING ANGLE SEN [NO ANG SIGNAL] (· a)	• Steering angle has not changed while driving at a speed of at least 60 km/h (37 MPH).	
STEERING ANGLE SEN [NO NEUT SIGNAL] (· b)	• Neutral (ON) signal is not entered after vehicle has been driven.	
STEERING ANGLE SEN [NEUT SIG-360° OFF] (· c)	• Neutral (ON) signal is not entered even after steering wheel has been turned at least 360°.	
STEERING ANGLE SEN [NEUT SIG-30° ON] (· d)	• Neutral (OFF) signal is not entered even after steering wheel has been turned at least 50°. • Neutral (ON) signal is continuously shown at steering angle of at least 30°.	
FAILSAFE VALVE [ABNORMAL SIGNAL]	• Output terminal voltage is abnormal due to broken or shorted HICAS fail-safe valve circuit.	
HICAS SOLENOID-R [ABNORMAL SIGNAL]	• Output terminal voltage is abnormal due to broken or shorted HICAS solenoid (RH) circuit.	
HICAS SOLENOID-L [ABNORMAL SIGNAL]	• Output terminal voltage is abnormal due to broken or shorted HICAS solenoid (LH) circuit.	
POWER STEERING SOL [ABNORMAL SIGNAL]	• Output terminal voltage is abnormal due to broken or shorted power steering solenoid circuit.	

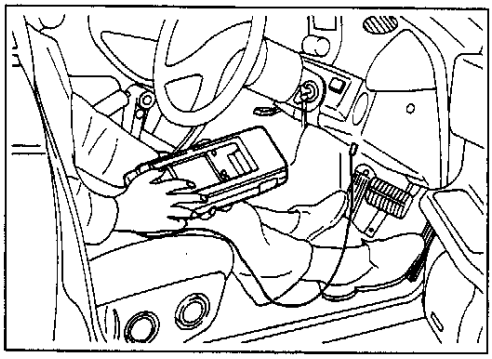
3. Trouble Diagnoses (Cont'd)

② Data monitoring items

○: Standard △: Optional selection

Diagnostic item		Monitor item selection		Remarks
		All signals	Selection from menu	
CAR SPEED	(km/h or MPH)	○	△	
STEERING ANG	(R/L°)	○	△	Abnormal value is shown before straight-ahead position ("0") is set and after battery is disconnected and reconnected.
NEUTRAL SIG	(ON/OFF)	○	△	
STOP LAMP SW	(ON/OFF)	○	△	
PKB/CLUTCH SW	(ON/OFF)	○	△	Clutch switch signal in M/T vehicles, parking brake switch signal in A/T vehicles.
NEUTRAL SW	(ON/OFF)	○	△	Neutral switch signal in M/T vehicles, inhibitor relay (N or P position) in A/T vehicles.
ENG REV (OVER 1,500) or (UNDER 1,500)		○	△	Engine speed greater than/less than 1,500 rpm is shown.
HICAS SOL	(R/L A)	○	△	Controlled current flow from control unit to HICAS solenoid and direction of current control are shown.
POWER STR SOL	(A)	○	△	Controlled current flow from control unit to power steering is shown.
FAILSAFE/V	(ON/OFF)	○	△	ON (when connected) or OFF (when disconnected) is shown.
FAILSAFE	(CUT/NON)	○	△	NON (fail-safe valve ON) refers to "normal" condition. CUT (fail-safe valve OFF) when "fail-safe" condition is shown.
WARNING LAMP	(ON/OFF)	○	△	Illumination control of control unit HICAS warning lamp is shown.
■ VOLTAGE	(V)		△	Voltage measured with voltage probes is shown.
■ PULSE	(msec, Hz or %)		△	Value measured with pulse probes is shown. If pulse cannot be measured, "#" is shown. "#" is also shown at left of final data until measurement results are determined.

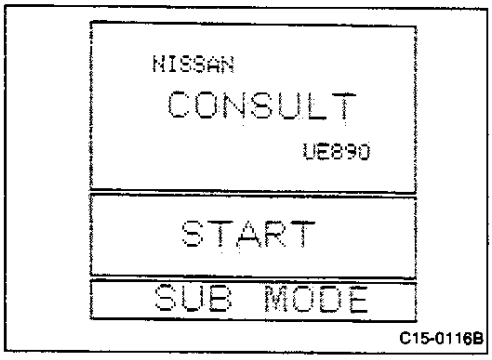
3. Trouble Diagnoses (Cont'd)



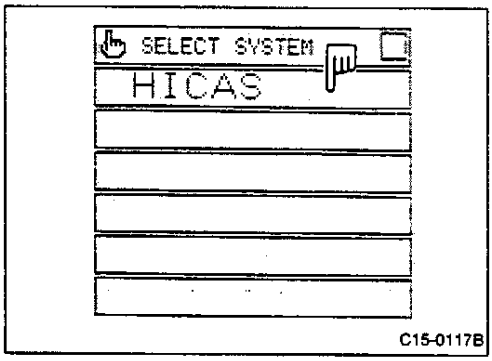
(3) Trouble diagnosis by self-diagnosis

① Self-diagnosis (When CONSULT is used)

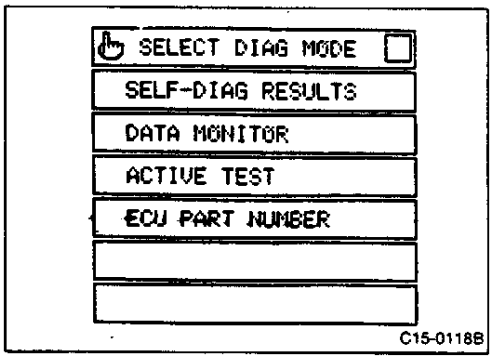
- Turn ignition switch OFF.
- Connect CONSULT unit to diagnostic connectors. (Diagnostic connectors are located in fuse block.)



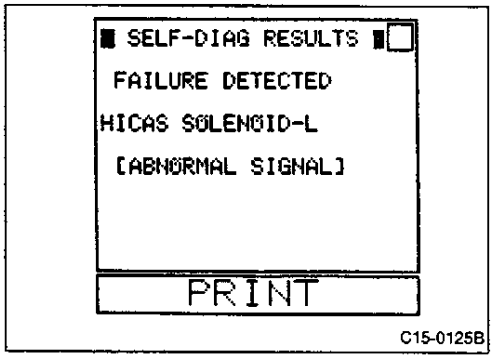
- Start engine.
- Touch "START" on CONSULT display.



- Touch "HICAS".

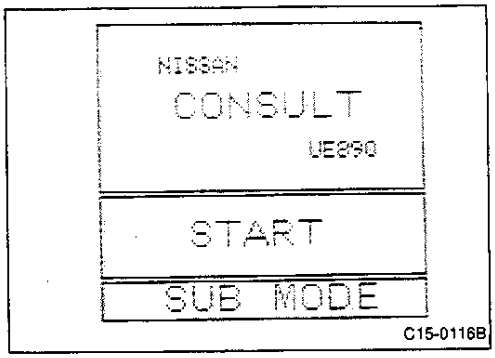


- Touch "SELF-DIAG RESULTS".



- Self-diagnostic results are shown on display.

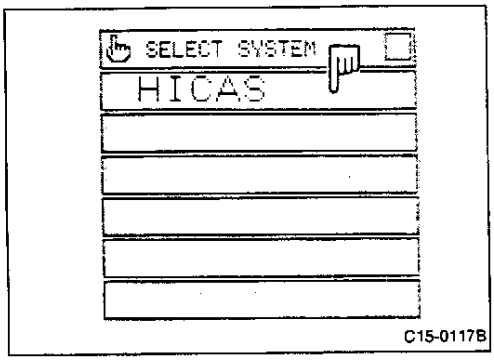
3. Trouble Diagnoses (Cont'd)



C15-0116B

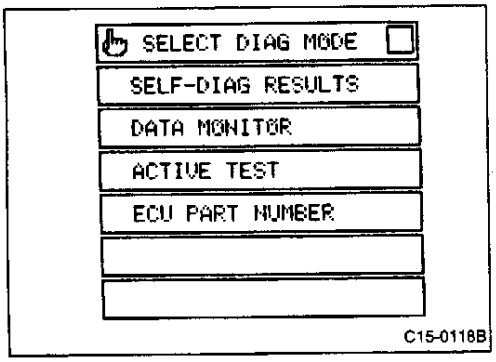
For reference:
Recording input/output signals using data monitor function.

- Start engine.
- Touch "START" (on CONSULT display).



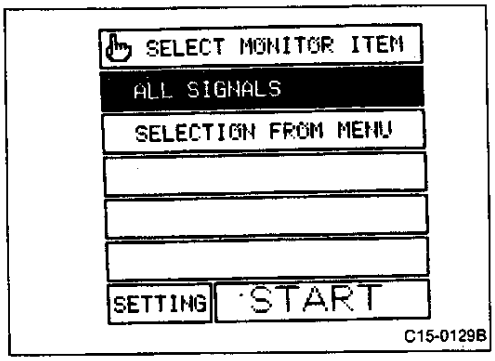
C15-0117B

- Touch "HICAS".



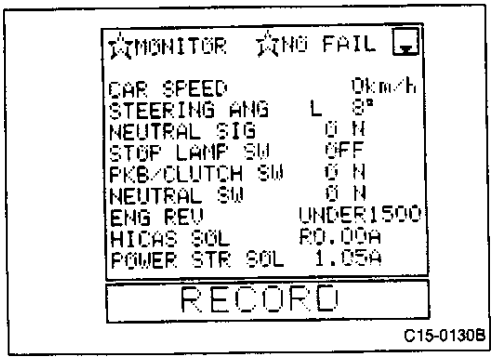
C15-0118B

- Touch "DATA MONITOR".



C15-0129B

- Check to ensure that the ALL SIGNALS display is reversed.
  Touch "START".



C15-0130B

- Touch "RECORD" to record data.
  Make sure that ON-OFF signal is produced when signal is entered from each sensor while monitoring.

CAUTION:
To cancel data recording during operation, touch "CANCEL".

3. Trouble Diagnoses (Cont'd)

② Self-diagnosis (When CONSULT is not used)

Self-diagnosis procedures

ⓐ Input starting conditions for self-diagnosis.

1) Turn ignition switch "OFF".
2) M/T vehicles: Set shift lever in neutral.
   A/T vehicles: Set shift lever to "P" or "N".
3) Immediately start engine.
4) Turn steering wheel from left to right (at least 20° from the neutral position) 5 times or more, then depress foot brake pedal at least 5 times, all within 10 seconds after ignition switch has been turned "ON".

ⓑ Input self-diagnosis item.

1) Depress and release foot brake pedal.
2) Turn steering wheel from left to right (at least 20°) from the neutral position.
3) M/T vehicles: Depress clutch and move shift lever to any gear other than neutral and then return clutch and shift lever to original position.
   A/T vehicles: Disengage and engage parking brake lever. Move shift lever to any position other than Neutral or Parking and return it to Parking.
4) Move car at least 2 to 3 meters (7 to 10 ft) forward and proceed at an indicated speed of at least 2 km/h (1 MPH) in self-diagnosis mode.

ⓒ Self-diagnosis items

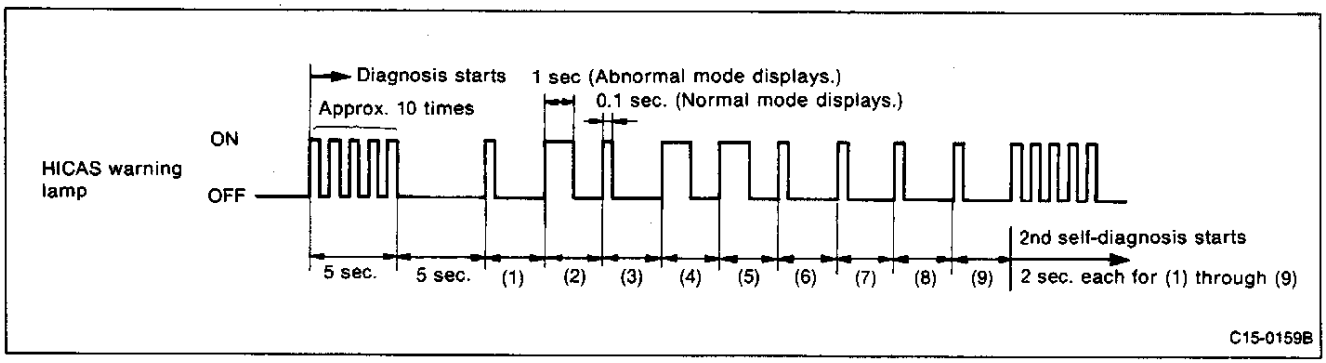
(1) RH solenoid output
(2) LH solenoid output
(3) Fail-safe valve output
(4) Power steering solenoid output
(5) Vehicle speed signal.
(6) Steering angle signal.
(7) Steering angle neutral signal
(8) (A/T) parking brake signal, (M/T) clutch signal
(9) (A/T) inhibitor signal, (M/T) neutral signal

ⓓ Self-diagnosis display pattern

1) When all systems are normal:
   HICAS flashes at 0.25 sec (4 Hz) intervals.
2) If fail-safe system was operated (fail-safe valve is operating) when ignition switch was OFF for the last time, fail-safe items will be displayed in numerical order in modes indicated. After all items are displayed, display is repeated again.

Example:
The warning lamp displays abnormal mode (1 sec. ON) in following sequence: (2) HICAS solenoid LH, (4) power steering solenoid and (5) vehicle speed sensor.

CAUTION:
After this display is shown, when ignition key is turned OFF the next display is ⓔ.

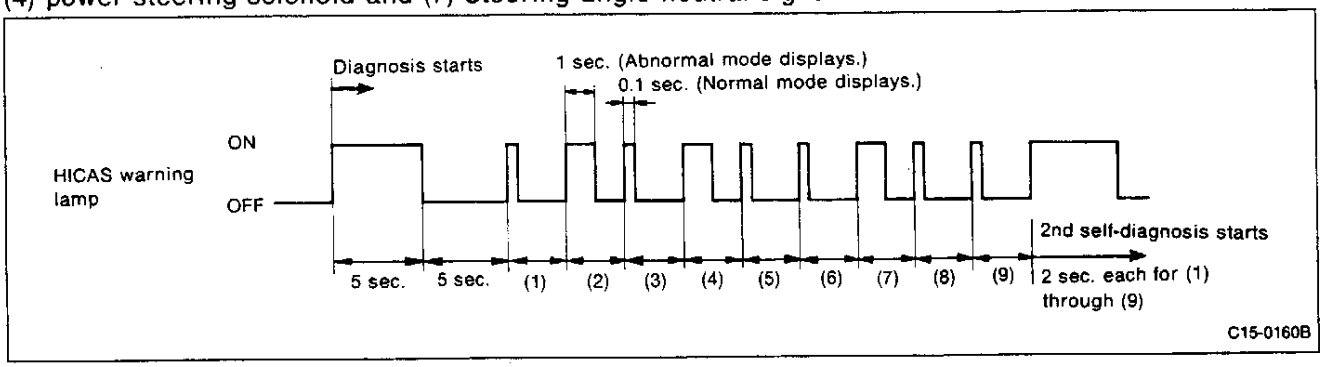


3. Trouble Diagnoses (Cont'd)

3) If fail-safe system was not operated when ignition switch was OFF for the last time, display will show self-diagnosis results in numerical sequence in modes indicated below. After all self-diagnosis, results are shown and display is repeated again.

Example:

The warning lamp displays abnormal mode (1 sec. ON) in following sequence: (2) HICAS solenoid LH, (4) power steering solenoid and (7) Steering angle neutral signal.



⑥ Canceling the self-diagnosis function

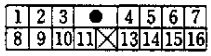
The three methods for canceling the self-diagnosis are described below.

- The self-diagnosis system is canceled by turning ignition switch "OFF".
- The self-diagnosis system is canceled by a vehicle speed of 30 km/h (19 MPH) or over.
- After the self-diagnosis has been operated for approximately 5 minutes, the self-diagnosis system will be automatically canceled.

3. Trouble Diagnoses (Cont'd)

(4) Diagnostic procedures

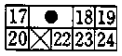
A. When self-diagnosis function is not used:



Disconnect control unit, steering sensor connectors and reconnect them firmly. Conduct self-diagnosis.

Abnormal → Connector is faulty.

Normal (self-diagnosis does not start)



Control unit terminal

Turn ignition switch "ON". Is stop lamp switch signal input to control unit? Measure voltage across terminals ⑪ ⊕ and ㉔ ⊖.

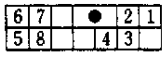
Abnormal (no voltage change) → Stop lamp switch system is faulty.

Normal
(Brake ON: 12V)
(Brake OFF: 0V)

Turn ignition switch ON and turn steering wheel from left to right (at least 20°) from the neutral position. Is steering angle neutral position signal input to control unit? Measure voltage across terminals ⑦ ⊕ and ㉔ ⊖.

Normal
(Neutral position: approx. 5V)
(More than 20°: 0V) → Control unit is faulty.

Abnormal (no voltage change)



Steering angle sensor terminal

Turn ignition switch ON and turn steering wheel from left to right (at least 20°) from the neutral position. Is steering angle neutral position signal output from angle sensor? Measure voltage across terminals ④ ⊕ and ⑤ ⊖.

Normal (Neutral position: approx. 5V)
(More than 20°: 0V) → Control unit steering angle sensor wiring is faulty.

Abnormal (no voltage change)

Check steering angle sensor for IGN power supply and grounding. (Measure voltage between IGN power terminal ① ⊕ and body ground. Check for continuity between IGN power supply terminal ⑤ ⊕ and body ground.)

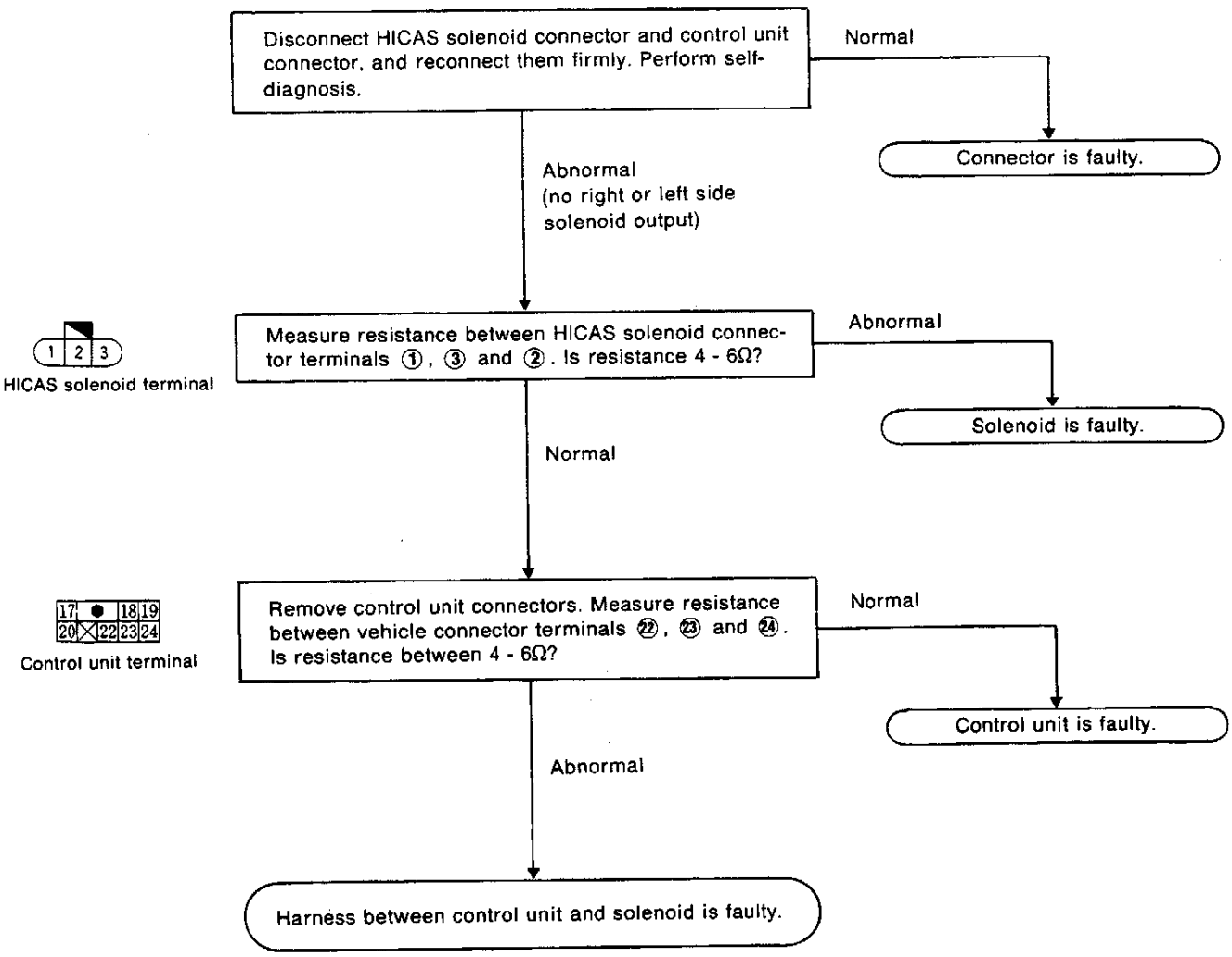
Normal (IGN power: Approx. 12V)
(Ground: Continuity exists) → Steering angle sensor is faulty.

Abnormal
(IGN power: 0V)
(Ground: No continuity)

IGN power supply system or ground circuit is faulty.

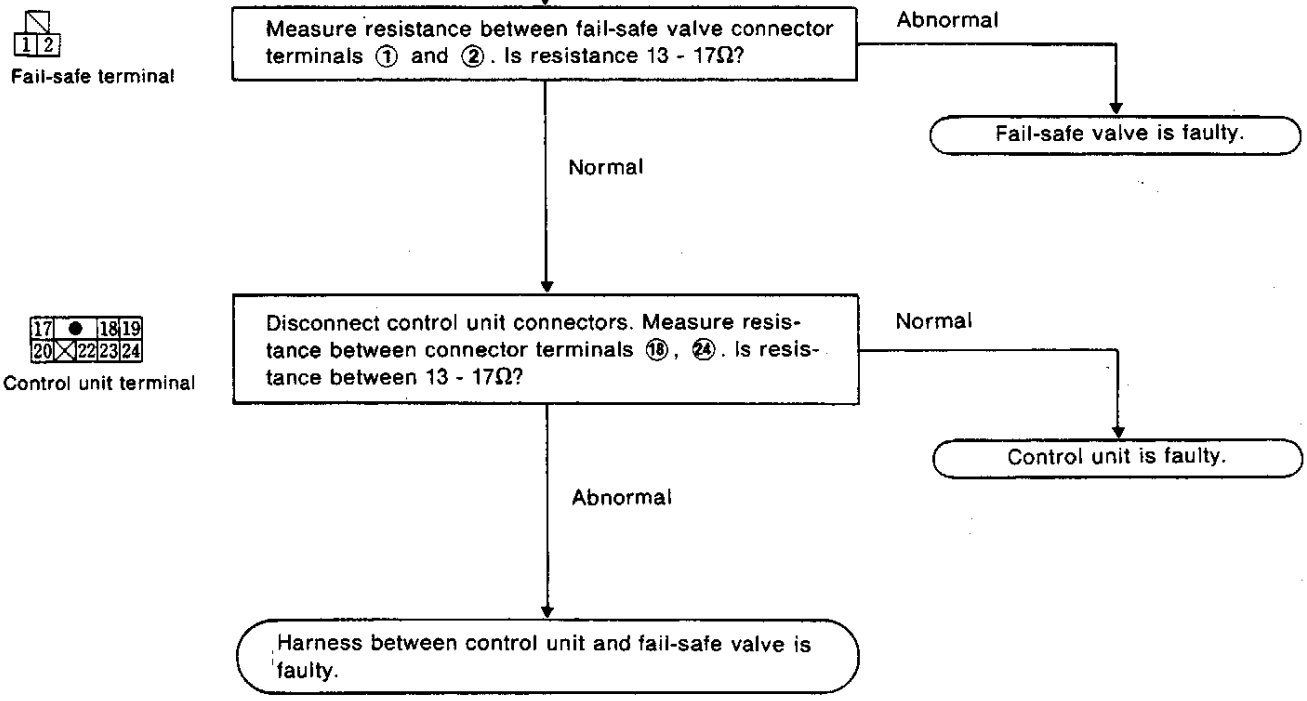
3. Trouble Diagnoses (Cont'd)

B. HICAS solenoid (right and left) output is not present. [Ⓒ Self-diagnosis items (1) and (2)]



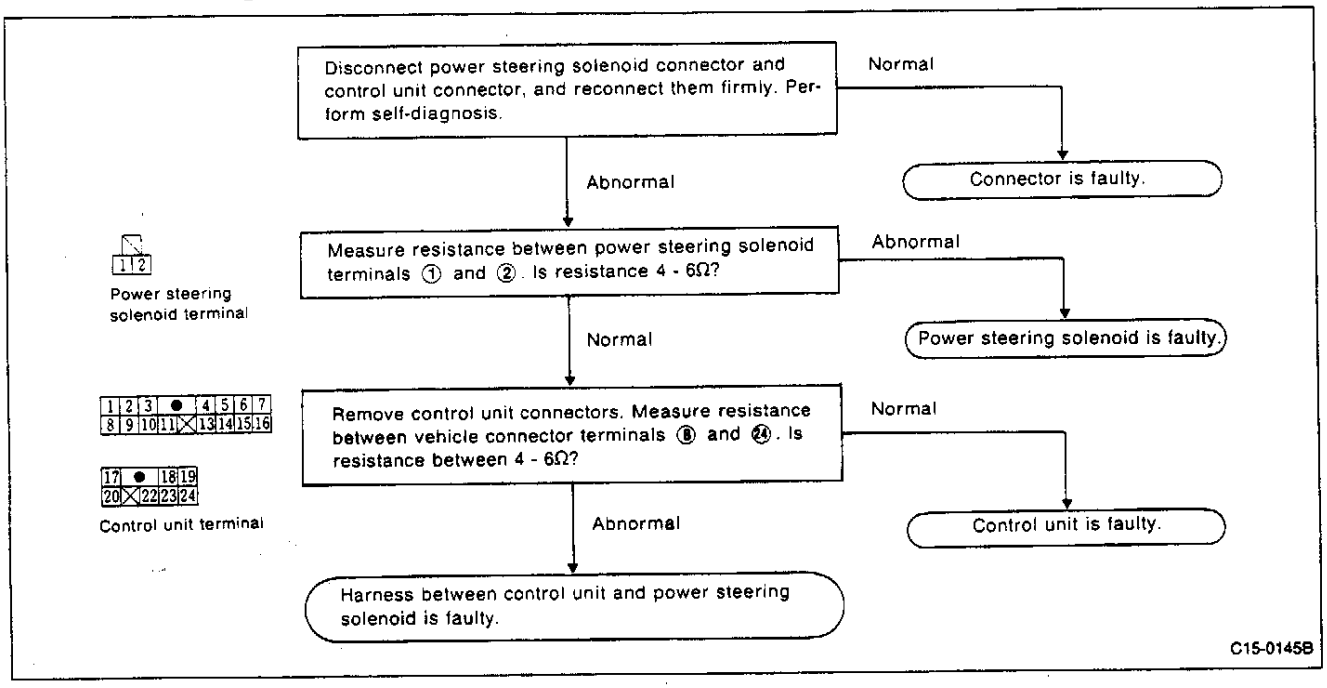
3. Trouble Diagnoses (Cont'd)

C. Fail-safe output is not present. [Ⓒ Self-diagnosis items (3)]

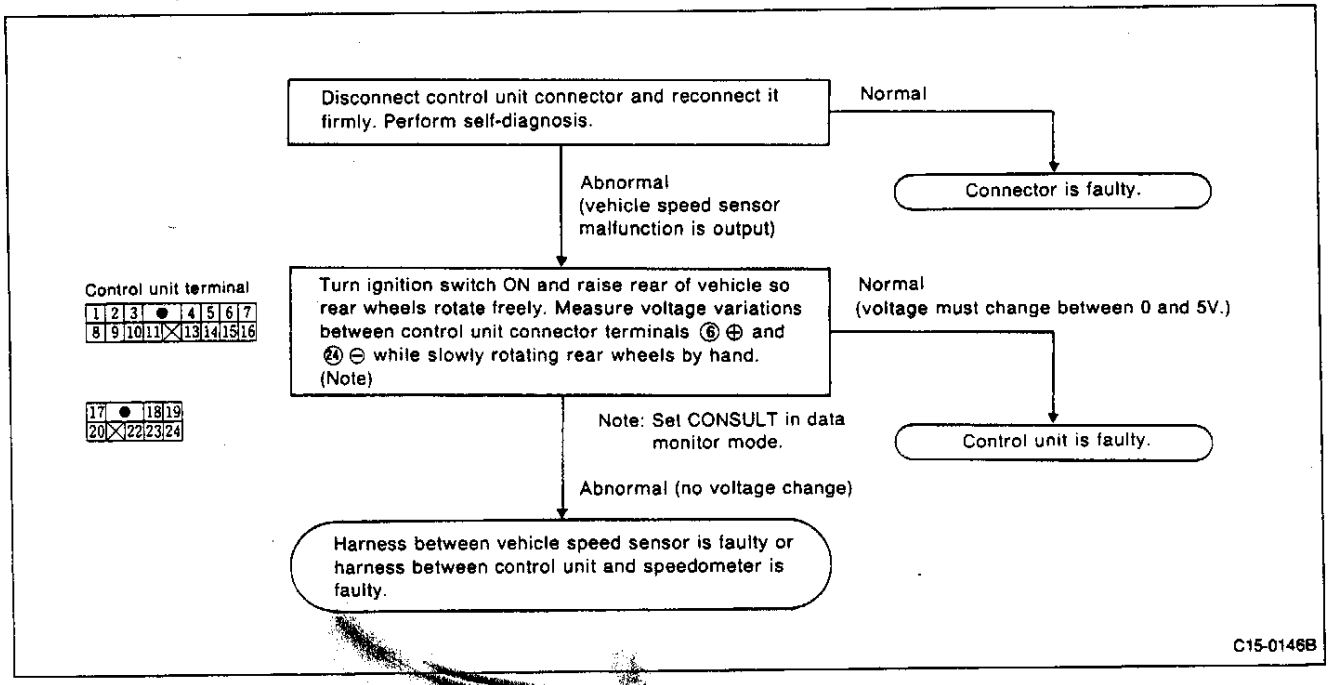


3. Trouble Diagnoses (Cont'd)

D. Power steering solenoid output is not present. [Ⓒ Self-diagnosis items (4)]

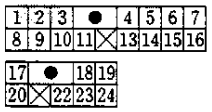


E. Vehicle speed signal is not present. [Self-diagnosis procedure (5)]



3. Trouble Diagnoses (Cont'd)

F. Steering angle signal is not present. [© Self-diagnosis items (6) and (7)]



Control unit terminal

Disconnect control unit, steering sensor connectors and reconnect them firmly. Conduct self-diagnosis.

Normal → Connector is faulty.

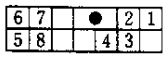
Abnormal (steering angle sensor malfunction is output)

Turn ignition switch ON and turn steering wheel from left to right (at least 20°) from the neutral position. Is steering angle signal input to control unit? Measure voltage across terminals ⑮, ⑯, ⑦ ⊕ and ㉔ ⊖. (Note)

Normal (voltage must change between 0 and 5V.) → Control unit is faulty.

Note: Set CONSULT in data monitor mode.

Abnormal (no voltage change)



Steering angle sensor terminal

Turn ignition switch ON and turn steering wheel from left to right (at least 20°) from the neutral position. Is steering angle sensor signal input to control unit? Measure voltage across terminals ②, ③, ④ ⊕ and ⑤ ⊖.

Normal (voltage must change between 0 and 5V.) → Wiring between control unit and steering angle is faulty.

Abnormal (no voltage change)

Check steering angle sensor for IGN power supply and grounding. (Measure voltage between IGN power terminal ① ⊕ and body ground. Check for continuity between IGN power supply terminal ⑤ ⊕ and body ground.)

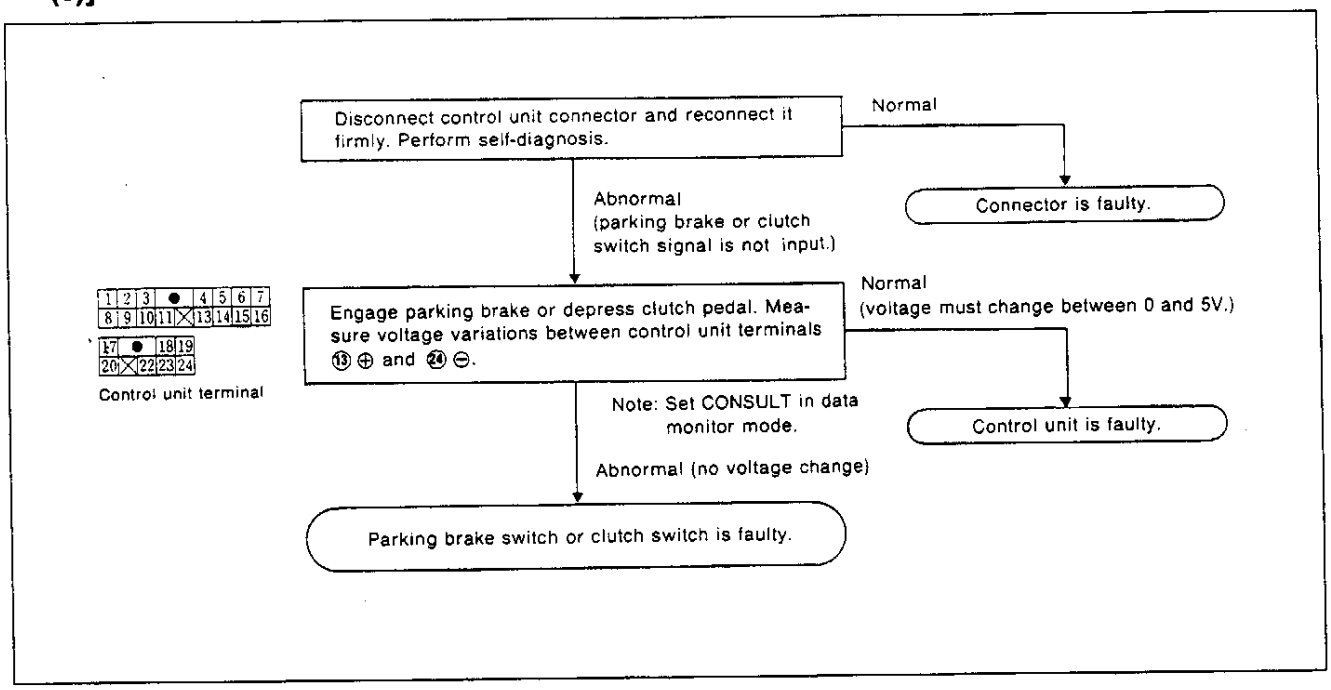
Normal (IGN power: 12V) (Ground: Continuity exists) → Steering angle sensor is faulty.

Abnormal (IGN power: 0V) (Ground: No continuity)

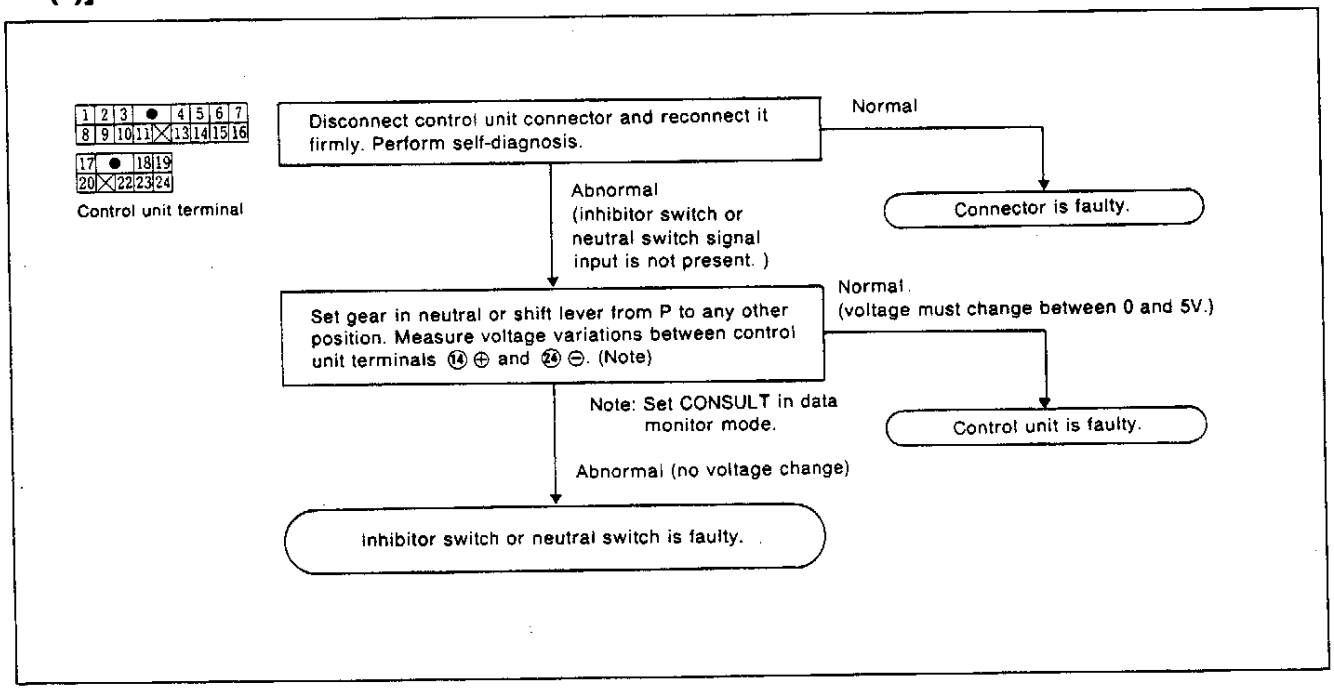
IGN power system or ground circuit is faulty.

3. Trouble Diagnoses (Cont'd)

G. Parking brake (A/T) or clutch switch (M/T) input is not present. [Ⓒ Self-diagnosis items (8)]



H. Inhibitor switch (A/T) or neutral switch (M/T) input is not present. [Ⓒ Self-diagnosis items (9)]



3. Trouble Diagnoses (Cont'd)

(5) Control unit inspection table

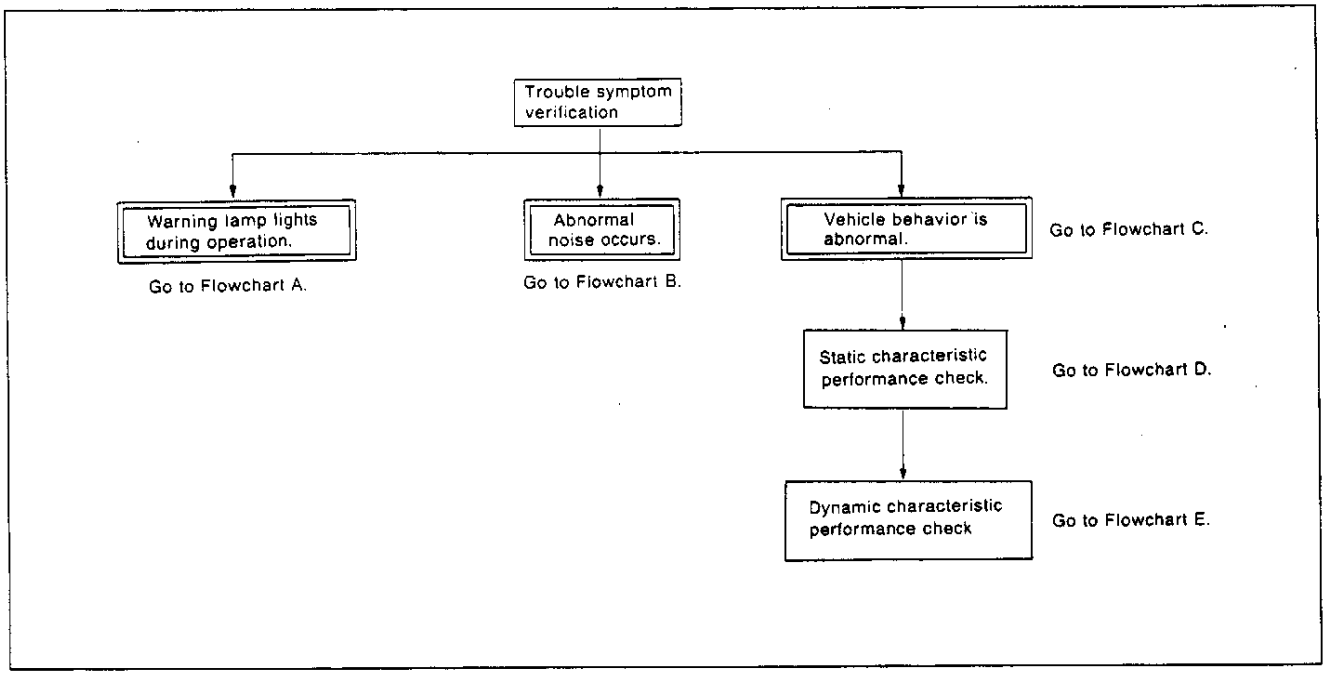
The standard value (voltage) measured with an analog tester in contact with the control unit terminal are shown below.

Terminal No. ⊕	Terminal No. ⊖	Standard Value	Application
①	⑩ or ㉔	—	Service support CLK input
②		—	Service support RX output
③		Ignition switch ON: Approx. 12V Ignition switch in other position: 0V	IGN power supply
④		Approx. 12V	Battery power supply
⑤		—	Number of ECCS revolution signals
⑥		Rear wheel rotating 0V ↔ greater than 5V (approx.) intermittent	Vehicle speed signal
⑦		Approx. 5V (neutral position)	Steering neutral position sensor
⑧		Solenoid resistance value 4 - 6Ω	Resistance of power steering solenoid
⑨		—	Service support TX output
⑪		Brake ON: Approx. 12V Brake OFF: 0V	Stop lamp switch signal
⑬		Parking brake engaged or clutch pedal depressed: Approx. 5V	(A/T) Parking brake signal (M/T) Clutch signal
⑭		Gear in N, or shift lever in any position other than parking: Approx. 5V	(A/T) Inhibitor signal (M/T) Neutral signal
⑮		Steering wheel turned 0 ↔ approx. 5V, intermittent	Steering angle sensor 1 signal
⑯			Steering angle sensor 2 signal
⑰		—	(Reserved for future switch input function.)
⑱		Solenoid resistance 13 - 17Ω	Fail-safe valve resistance
⑲		Ignition switch ON: Approx. 12V Ignition switch in other position: 0V	IGN power supply
⑳		—	HICAS warning lamp
㉒		Solenoid resistance 4 - 6Ω	HICAS solenoid (R.H.)
㉓		Solenoid resistance 4 - 6Ω	HICAS solenoid (L.H.)

3. Trouble Diagnoses (Cont'd)

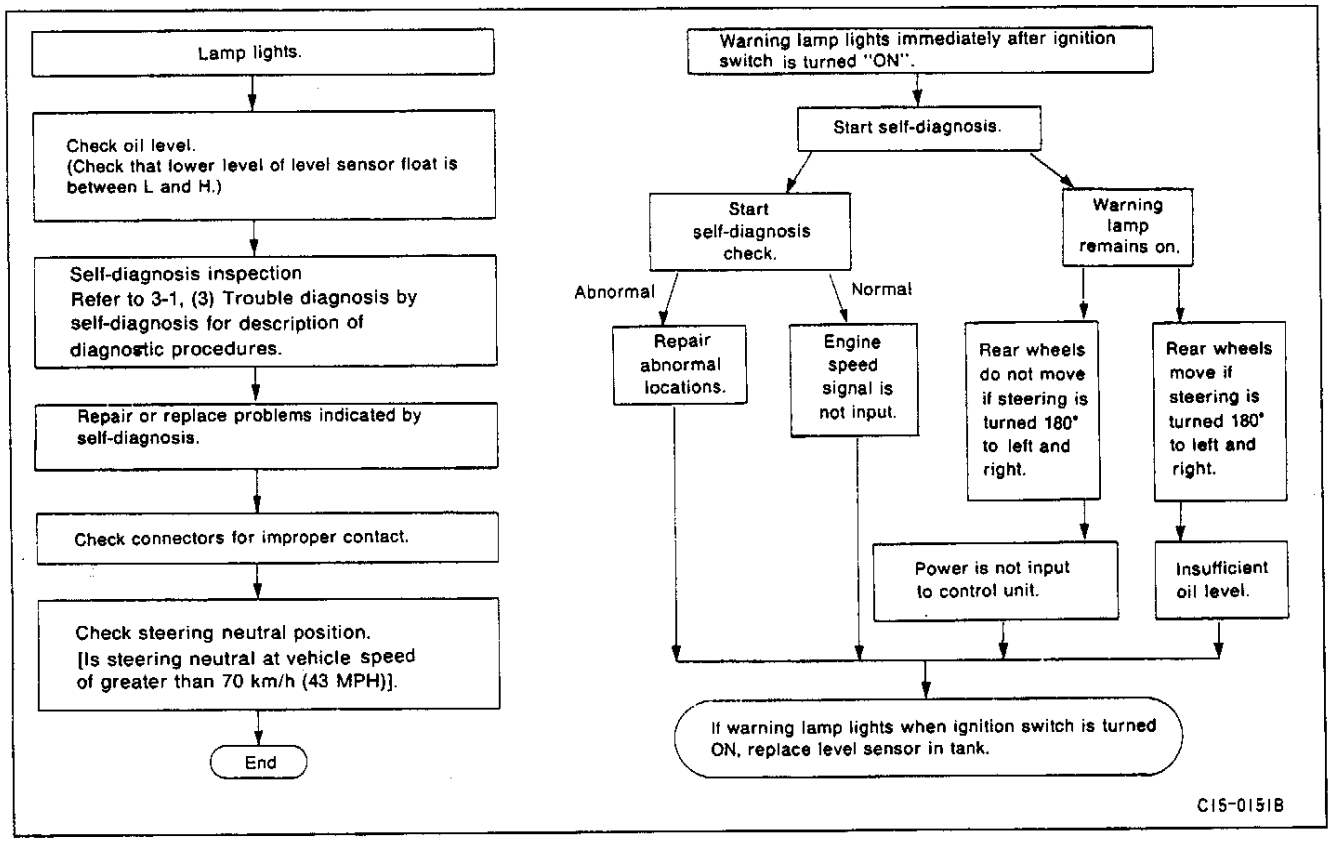
3-2 HYDRAULIC SYSTEM TROUBLE DIAGNOSIS

(1) Diagnosis flowchart



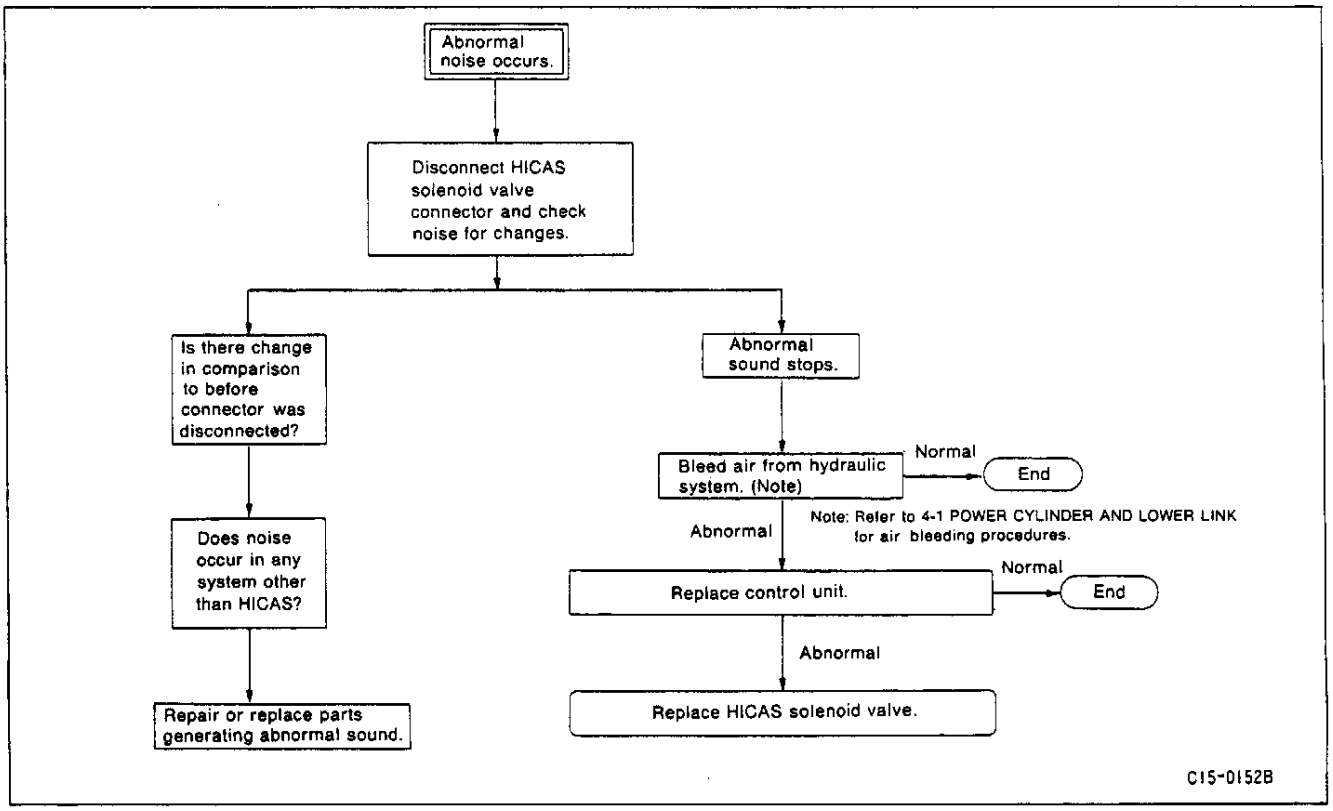
(2) Damage symptom flowchart

A. Warning lamp lights during operation



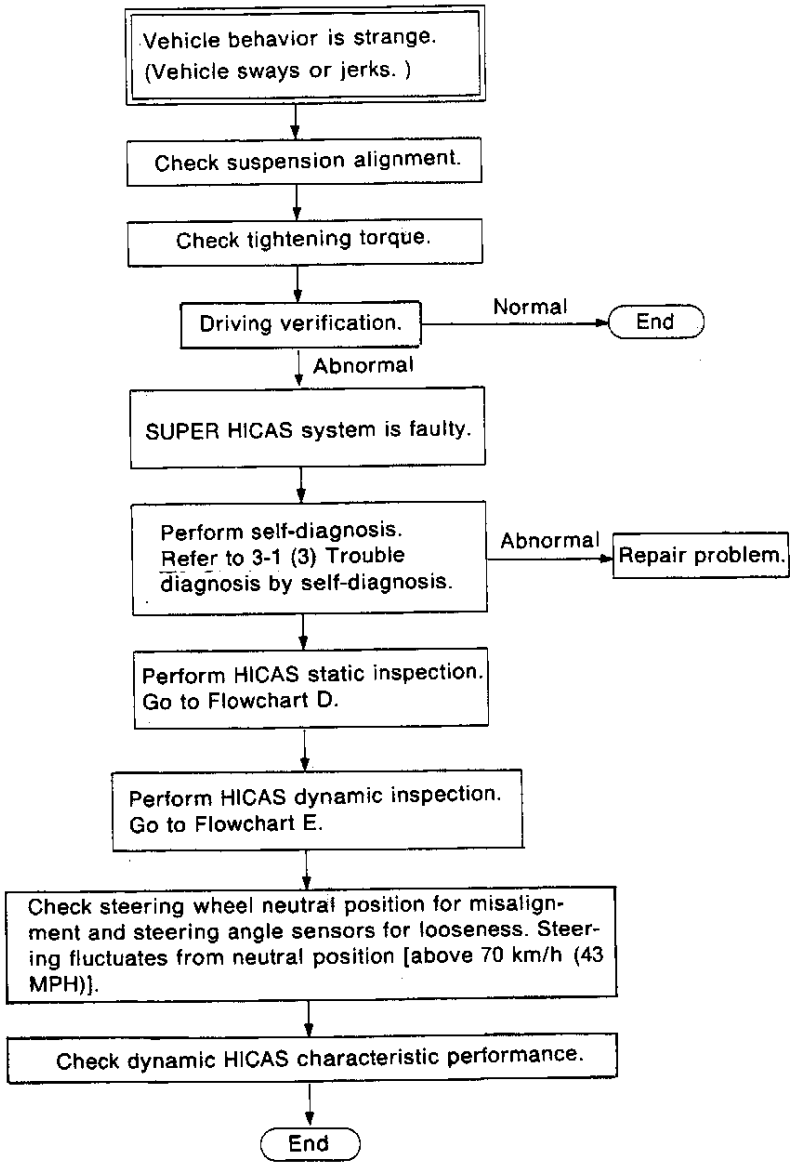
3. Trouble Diagnoses (Cont'd)

B. Abnormal sound is present.



3. Trouble Diagnoses (Cont'd)

C. Vehicle behavior is abnormal.



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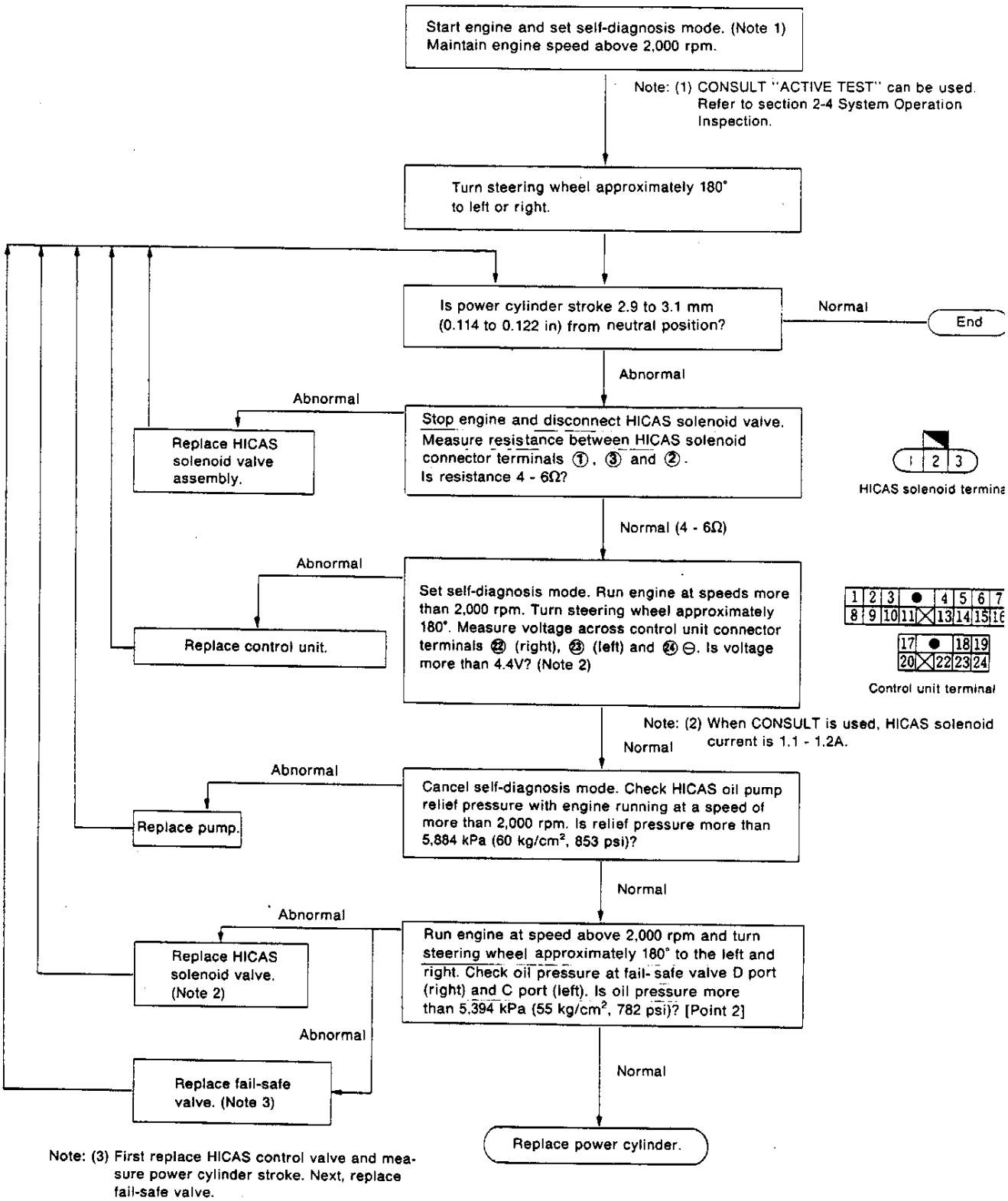
3. Trouble Diagnoses (Cont'd)

D. Static HICAS characteristic performance check



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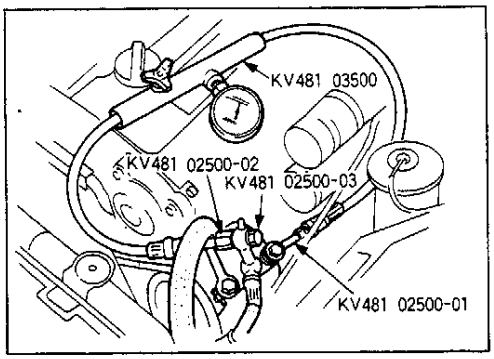
3. Trouble Diagnoses (Cont'd)

[Point 1] HICAS pump relief hydraulic inspection



- Connect power steering pressure gauge adaptor (I-type joint) and power steering pressure gauge (special service tool) to HICAS outlet nozzle connector of power steering pump (tandem type).
- Set the power steering pressure gauge adaptor (flare joint) (special service tool) in HICAS high-pressure hose removed from power steering pump. (Note 1)

↓

Raise vehicle.

↓

Bleed air from hydraulic circuit.

Note 2: Refer to "Power steering gear and linkage removal and installation".

↓

Open power steering pressure gauge valve fully and start engine. Move wheel to left and right to heat oil.

Note 1: If the valve is left fully closed while engine is running, the pressure in oil pump rises to relief pressure limit. Do not turn valve fully closed for extended periods because pressure rises to an abnormal level.

↓

Measure relief pressure when valve is fully closed and check that it does not exceed indicated specification limit.

Relief pressure limit:
5,884 kPa (60 kg/cm^2, 853 psi)

Note 2: Valve must be opened after a maximum of 15 seconds. (If oil temperature rises, it may damage oil pump.)

◇ Abnormal → Replace oil pump assembly.

Normal ↓

Remove power steering oil pressure gauge. Install high-pressure hose in oil pump outlet connector.

↓

Bleed air from hydraulic system.

↓

Relief pressure inspection - END

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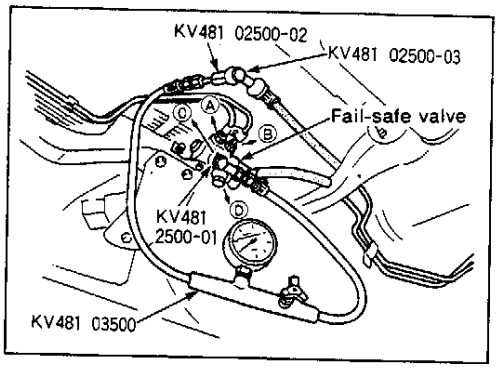
3. Trouble Diagnoses (Cont'd)

[Point 2] HICAS solenoid valve and fail-safe valve inspection (relief pressure inspection)



Raise vehicle.

- Connect power steering pressure gauge adaptor (I-joint) and power steering pressure gauge (special service tool) to ports (C) and (D) of fail-safe valve.
- Set the power steering pressure gauge adaptor (flare joint) (special service tool) in high-pressure hose removed from fail-safe valve. (Note 1)

Bleed air from hydraulic circuit.

Note 2: Refer to "4-1 POWER CYLINDER AND LOWER LINK" removal and installation procedures.

Open power steering pressure gauge valve fully and start engine. Move wheel to left and right to heat oil.

Relief pressure limit:
5,394 kPa (55 kg/cm^2, 782 psi)

Measure relief pressure when valve is fully closed and check that it does not exceed indicated specification limit.

Abnormal → First replace HICAS solenoid valve and measure power cylinder stroke. Next, replace fail-safe valve.

Normal

Remove power steering oil pressure gauge. Install high-pressure hose in oil pump outlet connector.

Bleed air from hydraulic system.

Relief pressure inspection - END

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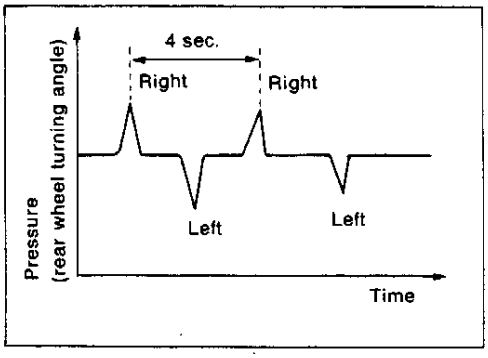
3. Trouble Diagnoses (Cont'd)

E. Dynamic characteristic inspection



Check pipe and connector joints for indentations or clogging. Replace with new parts as necessary. Bleed air thoroughly. (Note)

Note: Refer to "4-1 POWER CYLINDER AND LOWER LINK" for air bleeding procedures.

Start engine and set self-diagnosis mode. Maintain engine at speed above 2,000 rpm.

Set steering wheel in neutral position and check that rear wheels move in pulse to left and right. (Refer to figure.)

Measure power cylinder stroke to one side for rear wheel pulsation. Is stroke distance greater than 2.0 mm (0.079 in)?

Normal → End

Abnormal

Replace HICAS solenoid valve.

Measure power cylinder stroke to one side for rear wheel pulsation. Is stroke distance greater than 2.0 mm (0.079 in)?

Normal → End

Abnormal

Replace power cylinder.

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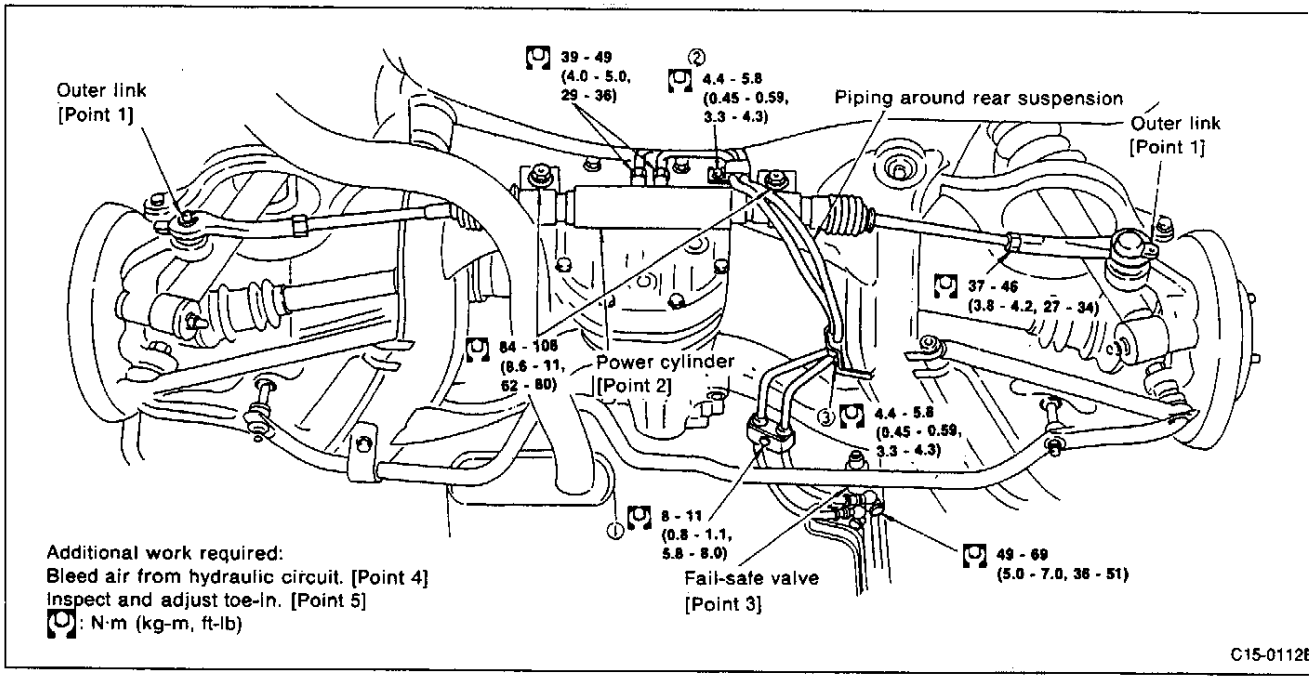
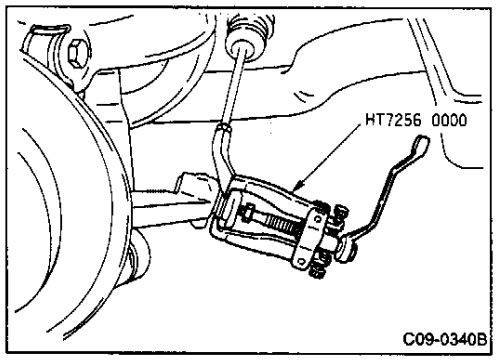
4. Removal and Installation, Assembly and Disassembly

4-1 POWER CYLINDER AND LOWER LINK

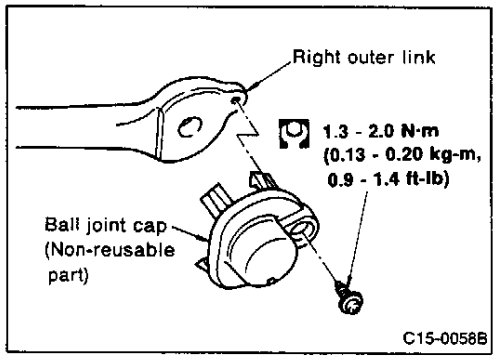
① Removal and installation





[Point 1] Outer link and ball joint separation

- Using Pitman arm puller (commercial service tool), sepa rate power cylinder outer arm link and axle housing ba joint.



CAUTION:
(1) Install ball joint cap only in right outer link. (Refer to figure
(2) Replace non-reusable parts with new parts after disassem bly.

4. Removal and Installation, Assembly and Disassembly (Cont'd)

[Point 2] Power cylinder assembly removal and installation

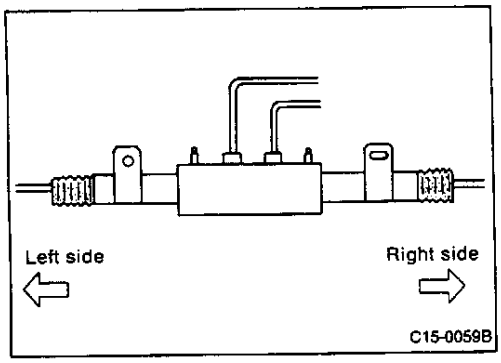
Removal

- Remove piping around power cylinder, outer link and rear suspension with assembly.

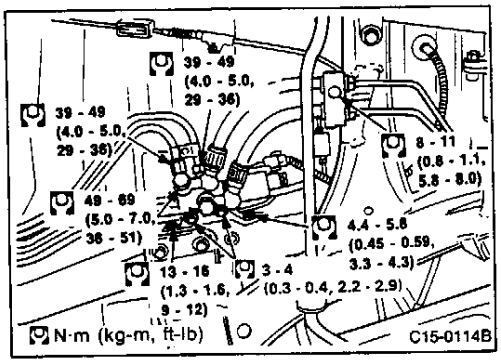
CAUTION:
When removing piping, cover openings so dust, debris and foreign matter cannot enter (especially in pipe connections).

Installation

- When replacing any of the piping surrounding the power cylinder, outer link and rear suspension, attach disassembled parts to suspension members.
- The piping removal and installation sequence is (1), (2), (3) as shown in figure on the preceding page.



- When the power cylinder is installed on suspension member, wipe off all oil, debris and foreign matter from power cylinder side bracket and suspension member contact surfaces. Install bracket left side as reference to determine position of long hole on right side.



[Point 3] Fail-safe valve removal and installation

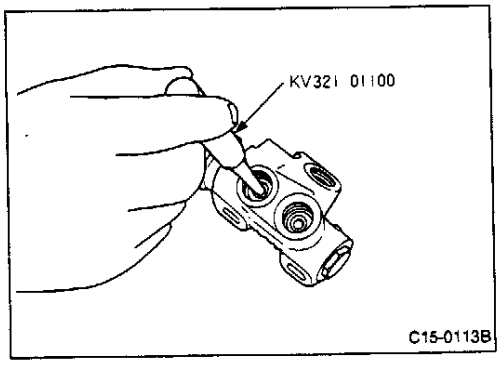
CAUTION:

(1) Blow out pipes and ports with compressed air before installation to prevent entry of dirt, dust and foreign matter.

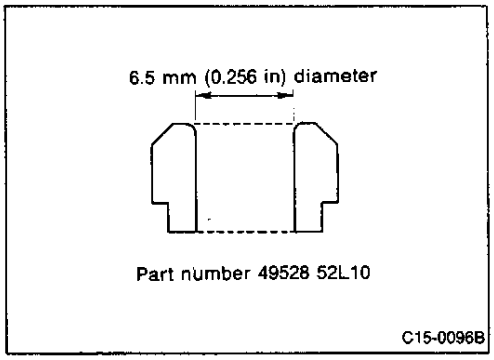
(2) Perform operations in periphery of piping connections (especially in tube sheet removal and installation) with bare hands, being careful not to allow oil, dust or debris to adhere to the hands.

(3) Always replace tube sheets that have been removed after every disassembly.

- After removing piping around rear suspension, always blow off piping and fail-safe valve with compressed air.
- Use pin punch (special service tool) to replace tube sheet as shown in figure on left, because scratches or cracks inside tube sheet in fail-safe valve can cause fluid leakage.



4. Removal and Installation, Assembly and Disassembly (Cont'd)



- Assemble tube sheet in port fail-safe valve as shown ir figure.

4. Removal and Installation, Assembly and Disassembly (Cont'd)

[Point 4] Air bleeding hydraulic circuit

Air bleeding of HICAS system (power cylinder)

CAUTION:

Air bleeding of HICAS system must be performed after the air bleeding of power steering has been completed.

(1) When using CONSULT

- Connect CONSULT unit to vehicle diagnostic connector.
- Have a helper sit in driver's seat and raise vehicle.

Reference: Use a two-pole lift or a center pole lift so that the four wheels are free to rotate.

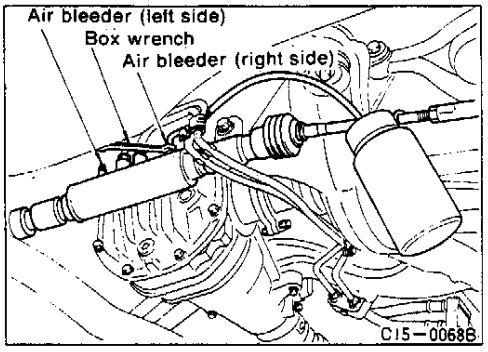
Start engine and maintain idle. Loosen left and right air bleeder valves above power cylinder and release oil until there are no more air bubbles.

Tighten left and right air bleeder valves.

- Start engine again.
- Touch "START" on CONSULT display. (Screen will change.)
- Touch "HICAS", "ACTIVE TEST", "SIMULATED DRIVE" and "START" in this order.

CAUTION: After touching "START", check that MAIN SIGNALS is displayed in reverse.

Touch "HIGH-SPEED SET".



* When engine is idling, turn steering wheel 180° from neutral position to right. Open air bleeder on right side of power cylinder gradually, bleed air from circuit and tighten bleeder again. Then return steering wheel to neutral position.

* When engine is idling, turn steering wheel 180° from neutral position to left. Open air bleeder on left side of power cylinder gradually, bleed air from circuit and tighten bleeder again. Then return steering wheel to neutral position.

- Touch "CANCEL" on CONSULT screen and turn ignition switch OFF.

The procedures marked with an asterisk (*) should be repeated until air bubbles no longer occur. Fill reservoir during operation to prevent fluid level from lowering to suction inlet level.

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4. Removal and Installation, Assembly and Disassembly (Cont'd)

(2) When CONSULT is not used

Have a helper sit in driver's seat and raise vehicle.

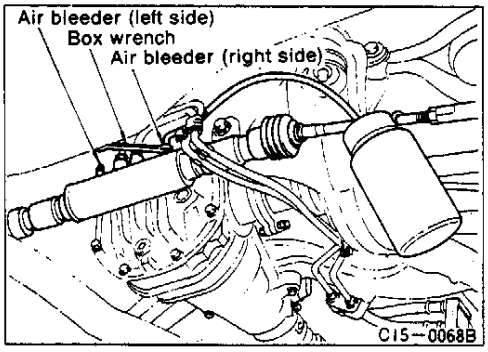
Reference: Use a two-pole lift or a center pole lift so that the four wheels are free to rotate.

Start engine and maintain idle. Loosen left and right air bleeder valves above power cylinder and release oil until there are no more air bubbles.

Tighten left and right air bleeder valves.

Input self-diagnosis item.
- Turn ignition switch OFF.
- Turn steering wheel from neutral to left and right (at least 20° in each direction) 5 times or more while depressing brake pedal at least 5 times, all within 10 seconds after ignition switch has been turned "ON".

Set steering wheel in neutral position (within 10° left and right), and check that both rear wheels are being steered respectively.



* When engine is idling, turn steering wheel 180° from neutral position to right. Open air bleeder on right side of power cylinder gradually, bleed air from circuit and tighten bleeder again. Then return steering wheel to neutral position.

* When engine is idling, turn steering wheel 180° from neutral position to left. Open air bleeder on left side of power cylinder gradually, bleed air from circuit and tighten bleeder again. Then return steering wheel to neutral position.

Turn ignition switch OFF to cancel self-diagnosis.

The procedures marked with an asterisk (*) should be repeated until air bubbles no longer occur. Fill reservoir during operation to prevent fluid level from lowering to suction inlet level.

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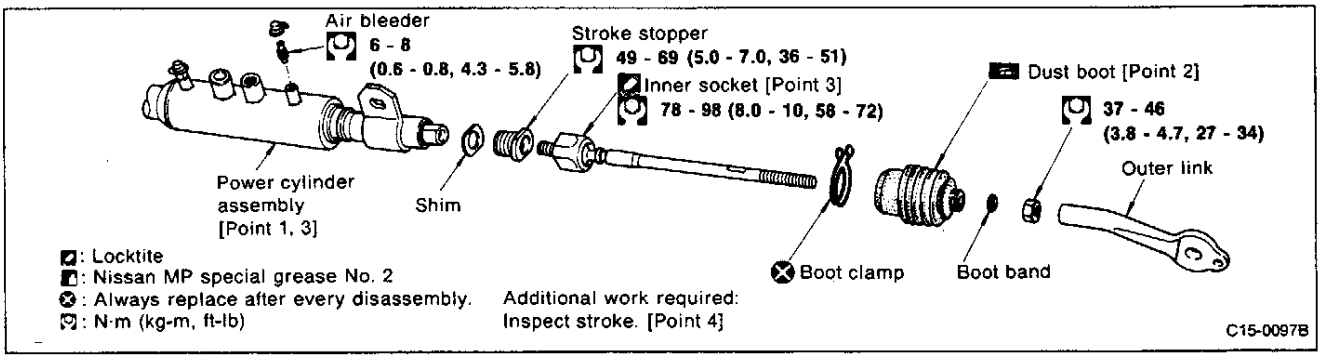
[Point 5] Toe-in distance inspection and adjustment

- After installing power cylinder and lower link assembly perform toe-in inspection and check that distance is within specification.
- If value is outside specification, adjust toe-in.

4. Removal and Installation, Assembly and Disassembly (Cont'd)

② Assembly and disassembly



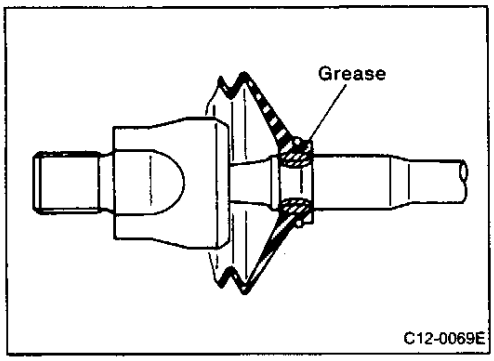
[Point 1] Power cylinder disassembly

CAUTION:

(1) Blow off piping and ports before operation to prevent dust and foreign matter from entering area.

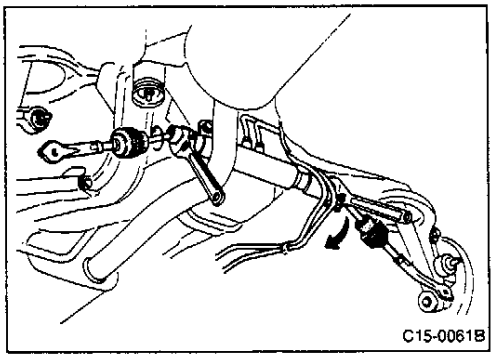
(2) Perform operations in periphery of piping connections (especially in tube sheet removal and installation) with bare hands, being careful not to allow oil, dust or debris to adhere to the hands.

- Do not disassemble any parts other than those shown in above figure (disassembly figure). Only disassemble pipes and inner sockets.



[Point 2] Dust boot installation

- Coat contact surfaces and boot installation groove with grease (Nissan MP special grease No. 2).



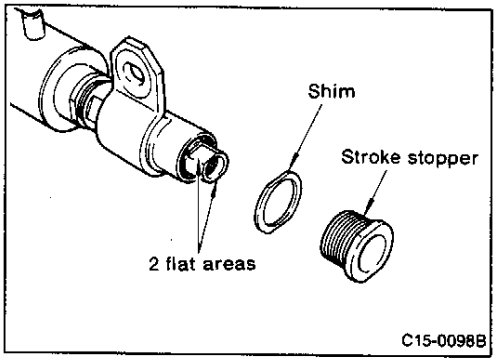
[Point 3] Power cylinder inner socket removal and installation

- Remove and install inner socket with power cylinder assembly installed in vehicle.

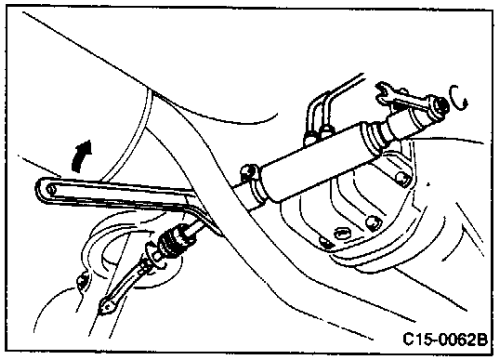
Removal

- Separate tie-rod from rear axle.
- Remove boot clamp from dust boot. Move left and right dust boots to outer link side.
- Attach tool to socket of left and right inner ball joints. Turn in direction that loosens both sides and remove loosened lower link assembly.

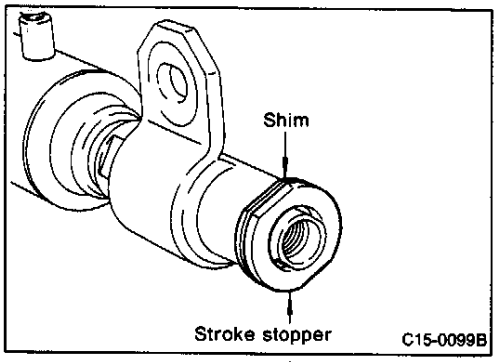
4. Removal and Installation, Assembly and Disassembly (Cont'd)



- Loosen and remove stroke stopper from removed lower link assembly.

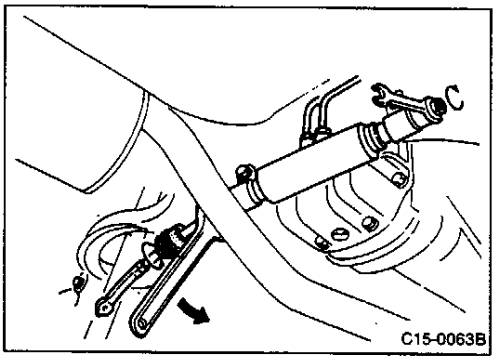


- Attach wrench to the two flat areas on rod end from side stroke stopper that was removed from and turn to tighten Loosen lower link assembly on opposite side and remove

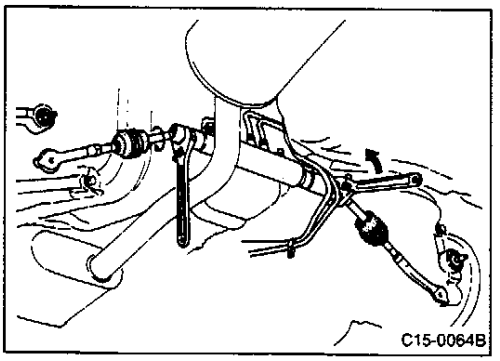


Installation

- Install stroke stopper and shim on assembled side of lower link assembly.



- Apply a coat of Locktite to inner ball joint screw. Attach wrench to the two flat surfaces on piston rod opposite from assembly side and turn to tighten. Install lower link assembly.



- After installing stroke stopper and shim on opposite side, install lower link assembly. Attach wrench to inner ball joint on opposite side and turn to tighten. Tighten to specified torque.

  Inner socket tightening torque:
  78 - 98 N·m (8.0 - 10 kg-m, 58 - 72 ft-lb)

4. Removal and Installation, Assembly and Disassembly (Cont'd)

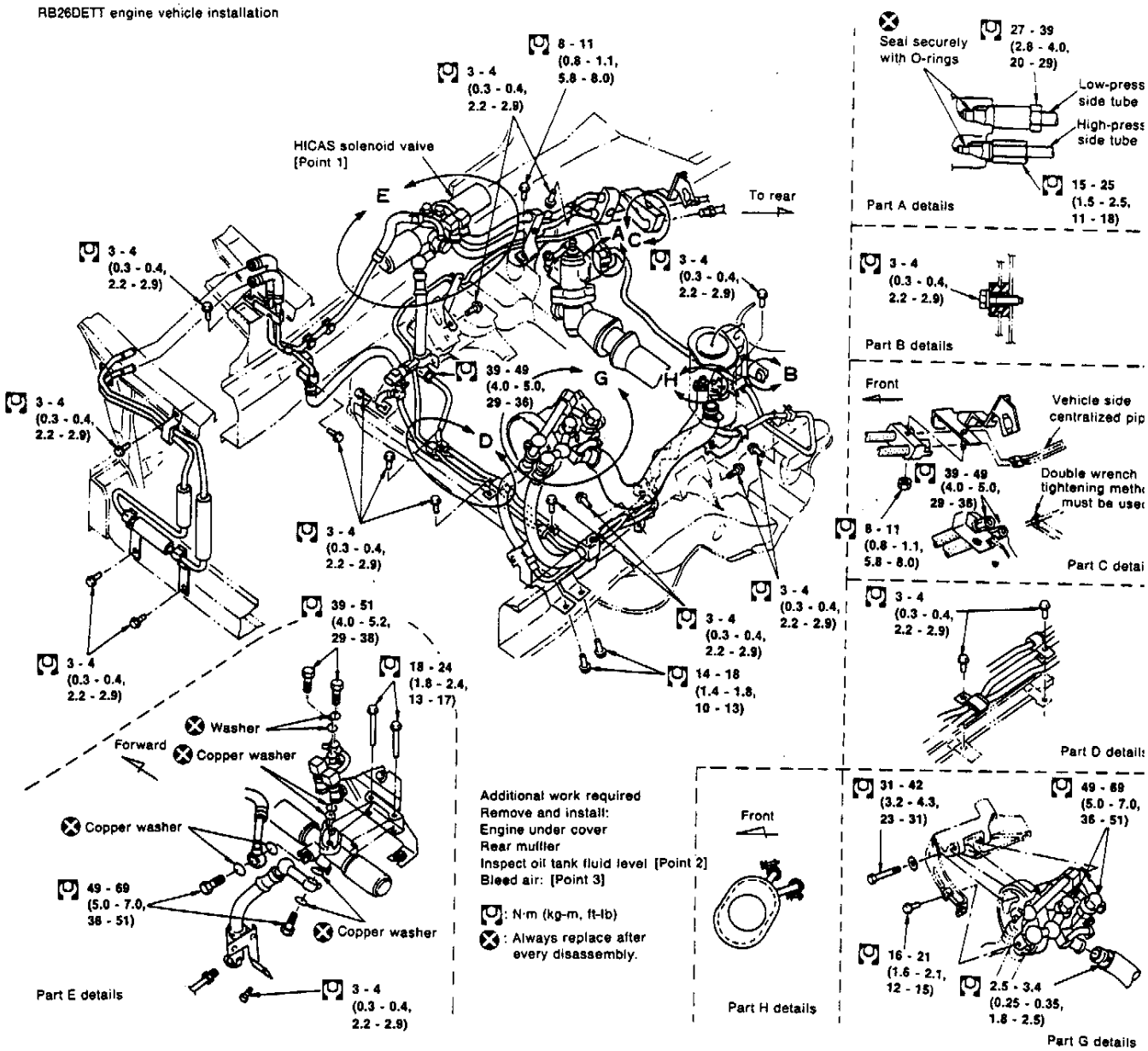
[Point 4] Stroke inspection

- After assembling shim and stroke stopper, check clearance between inner socket and stroke stopper.
  Clearance: 3 ± 0.1 mm (0.118 ± 0.004 in)

4. Removal and Installation, Assembly and Disassembly (Cont'd)

4-2 POWER STEERING PUMP, OIL TANK AND HYDRAULIC PIPING

(1) Removal and installation



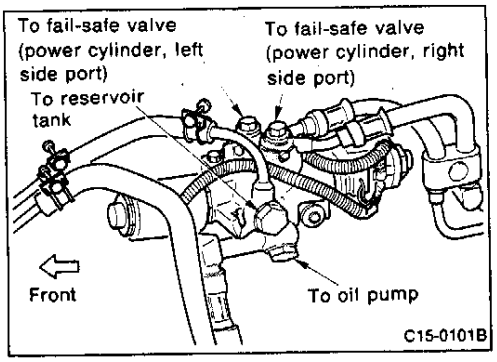
4. Removal and Installation, Assembly and Disassembly (Cont'd)

[Point 1] HICAS solenoid valve piping removal and installation

CAUTION:

(1) Handle pipes with bare hands and pay attention to prevent dust or foreign matter from adhering.

(2) Be careful not to install pipes in incorrect location or sequence during assembly.



Removal

- Remove HICAS solenoid valve connector and pipe clamp bracket.
- Remove power steering fluid from vehicle side centralized pipe connection.
- Remove HICAS solenoid valve pump port, tank port and power cylinder port on right side and flare nuts and union bolts on left side. Remove bolts from HICAS solenoid valve mount.

CAUTION:

(1) Never disassemble HICAS solenoid valve or fail-safe valve. This part cannot be disassembled because if the lock nuts on the fixed part of the HICAS valve solenoid are loosened, the pressure adjustment distance will vary.

(2) Cover caps of removed pipes and hoses with plugs to prevent dust and foreign matter from entering.

Installation

- Temporarily tighten flare nuts and union bolts and tighten HICAS solenoid valve mount bolts. Secure tube clamp bracket and tighten port union bolts.

[Point 2] Fluid tank fluid level inspection

- Refer to "2. On-vehicle Inspection and Adjustment" for inspection procedures.

[Point 3] Air bleeding fluid circuit

- Refer to "4-1 POWER CYLINDER AND LOWER LINK ① Removal and installation" for a description of air bleeding procedures for HICAS system.

4. Removal and Installation, Assembly and Disassembly (Cont'd)

(2) Power steering pump removal and installation, assembly and disassembly

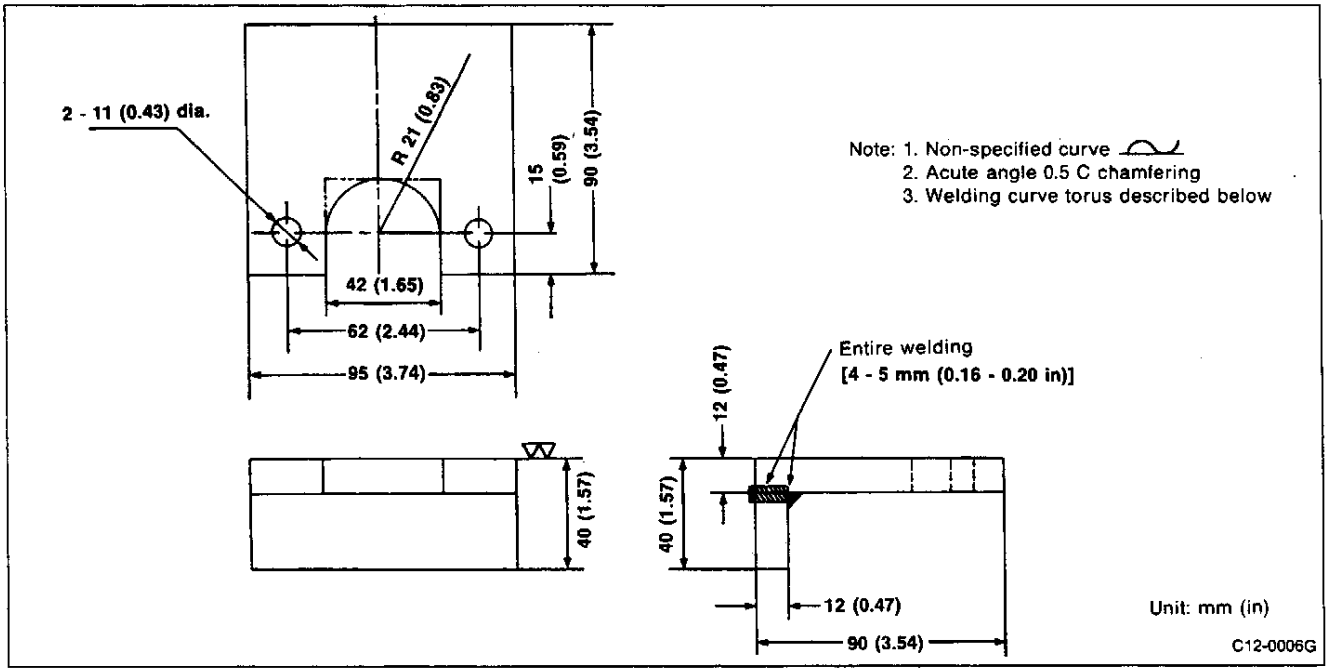
Assembly and disassembly precautions

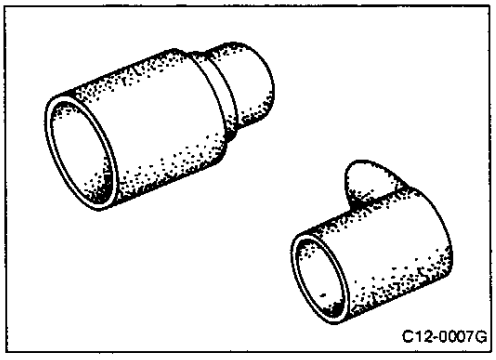
① **If oil pump and tank assembly and disassembly is required, perform the following procedures for removal and installation from vehicle.**

- Indicate oil leakage locations with a white marking pen.
- Remove oil and cap openings.
- Loosen pulley nut before loosening belts. Tighten tension on all belts before installation.

② **Attachment preparation**

- Prepare the following attachments.

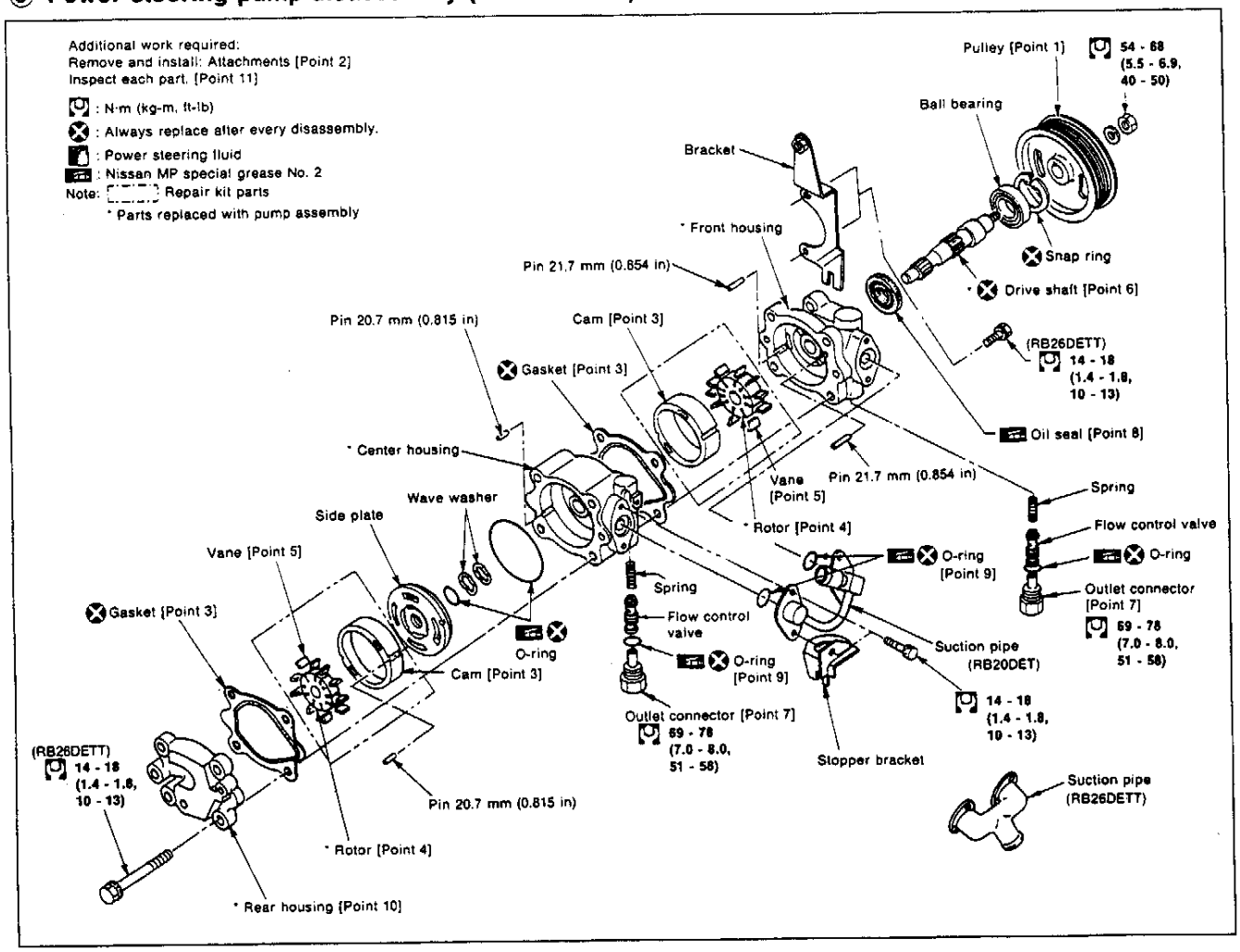


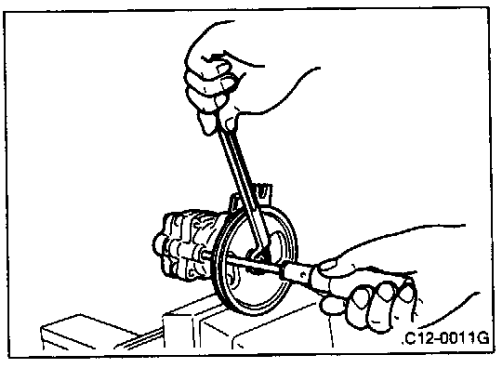


- Wash off grease on oil pump with white gasoline. Cover openings in outlet port, return ports to prevent white gasoline from entering. Be careful not to drop white gasoline on oil seal of drive shaft.
- Never reuse any O-ring, oil seal, snap ring, or washer (copper). Always replace with new part after every use. (New parts are contained in repair kits.)
- Replace entire assembly if front and rear housing, drive shafts, rotor, cam and flow control valve are scratched, dented or scored.

4. Removal and Installation, Assembly and Disassembly (Cont'd)

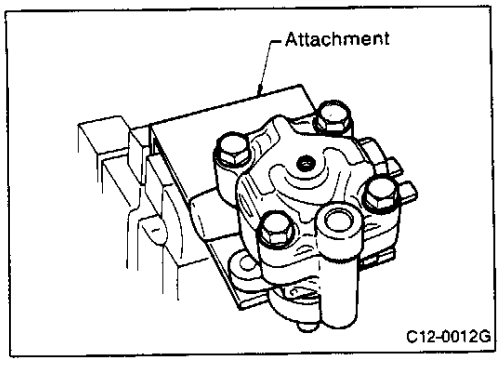
③ Power steering pump disassembly (Model 05U00)





[Point 1] Pulley removal and installation

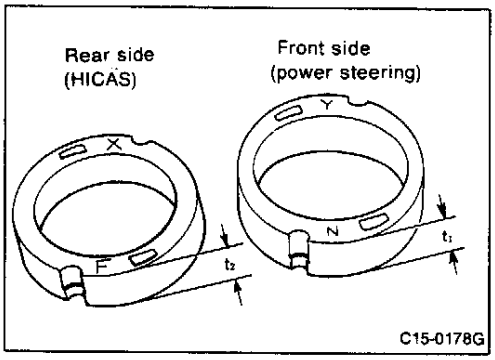
- Loosen in unit if pulley nut cannot be loosened when pump is installed in vehicle.
- Secure bracket in vise.
- Place Fillips head screwdriver in pulley hole and through front housing bolt hole to secure pulley and loosen pulley nut.
- Inscribe mating marks on front side of pulley to prevent incorrect pulley alignment and then remove pulley.



[Point 2] Attachment installation

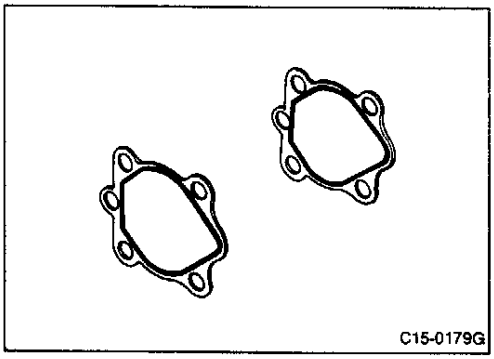
- Secure attachment in vise.
- Install front housing in attachment.

4. Removal and Installation, Assembly and Disassembly (Cont'd)

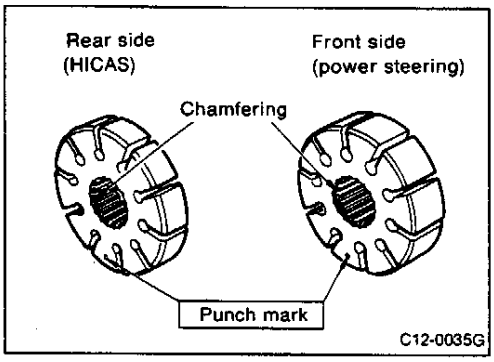


[Point 3] Cam and gasket installation

- Install the thicker side of cam ($t_1 > t_2$) facing front side.

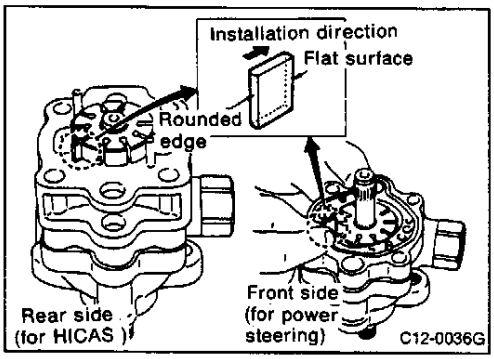


- Check gasket alignment, and install one each at front housing and center housing and center housing and rear housing.



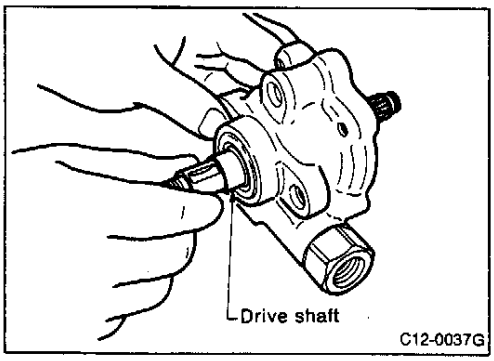
[Point 4] Rotor installation

- Install rotor so the chamfered side of spline is faces rear housing side and side without chamfering faces front housing side. (Otherwise, install rotor so the punch mark side faces rear housing side and side without punch mark faces front housing side.)



[Point 5] Vane installation

- Assemble so rounded end faces cam surface.



[Point 6] Drive shaft removal and installation

- Pull shaft straight out slowly to remove.

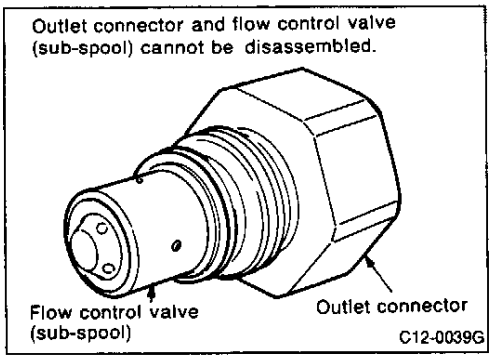
CAUTION:

Be careful not to scratch bushing inside front cover or oil seal.

- Coat drive shaft with power steering fluid and press in slowly to install.
- Press into bottom, pull out 15 mm (0.59 in) and then slowly press in again.

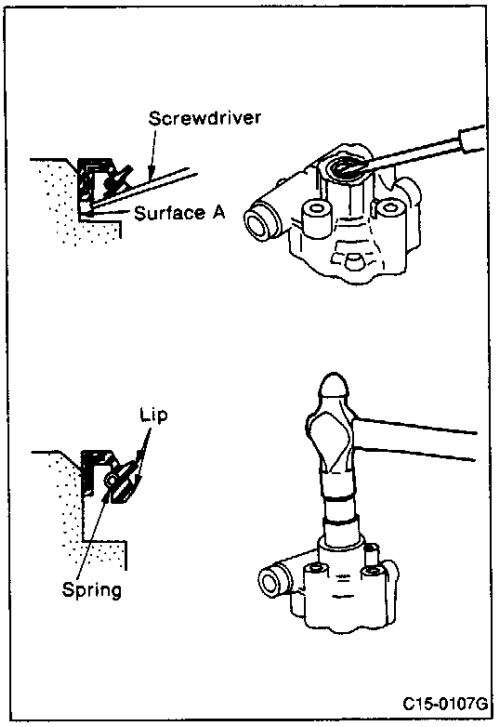
4. Removal and Installation, Assembly and Disassembly (Cont'd)

CAUTION:
Replace oil pump assembly carefully to prevent scratching drive shaft and bushing.



[Point 7] Outlet connector removal

- Outlet connector is installed inside front control valve (sub-spool). Be careful not to drop or deform during removal.
- Do not disassemble outlet connector and flow control valve.



[Point 8] Oil seal removal and installation

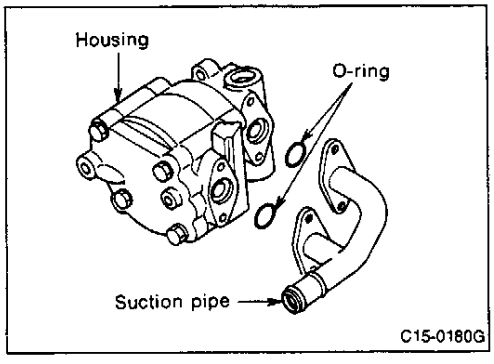
- Pay attention not to scratch sliding surface of oil seal during removal and installation.
- Use a screwdriver wrapped in tape to remove seal.

CAUTION:
(1) Insert screwdriver in position shown in figure.
(2) Do not scratch surface A (oil seal installation mating surface) shown in figure.
If this surface is scratched, replace entire oil pump assembly.

- Use a taped 22-mm box wrench for installation.

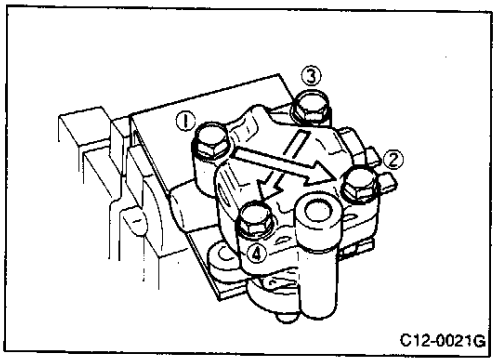
CAUTION:
Check that oil seal is positioned straight and lightly tap seal into end of front housing with hammer to install.

- After installation, apply a thin coat of Nissan MP special grease No. 2 around oil seal lip.
- Touch spring with finger to check that it is installed in correct position.



[Point 9] O-ring installation

- Coat O-rings with power steering fluid.
- Install O-rings inside groove in housing.



4. Removal and Installation, Assembly and Disassembly (Cont'd)

[Point 10] Rear housing installation

- Secure front housing in attachment. Position cam, roto center housing, cam, rotor and rear housing and install.
- Tighten bolts in diagonal sequence. First tighten each bc to approximately half of specified torque and then tighte again to final torque.

Rear housing installation bolt tightening torque:
RB26DETT
31 - 42 N·m (3.2 - 4.3 kg-m, 23 - 31 ft-lb)

[Point 11] Inspection

- Do not reuse removed rubber parts (O-rings, oil seal an snap rings) or washers (copper). (Replace with parts i repair kit.)
- Replace pump assembly if the following parts ar scratched or damaged.

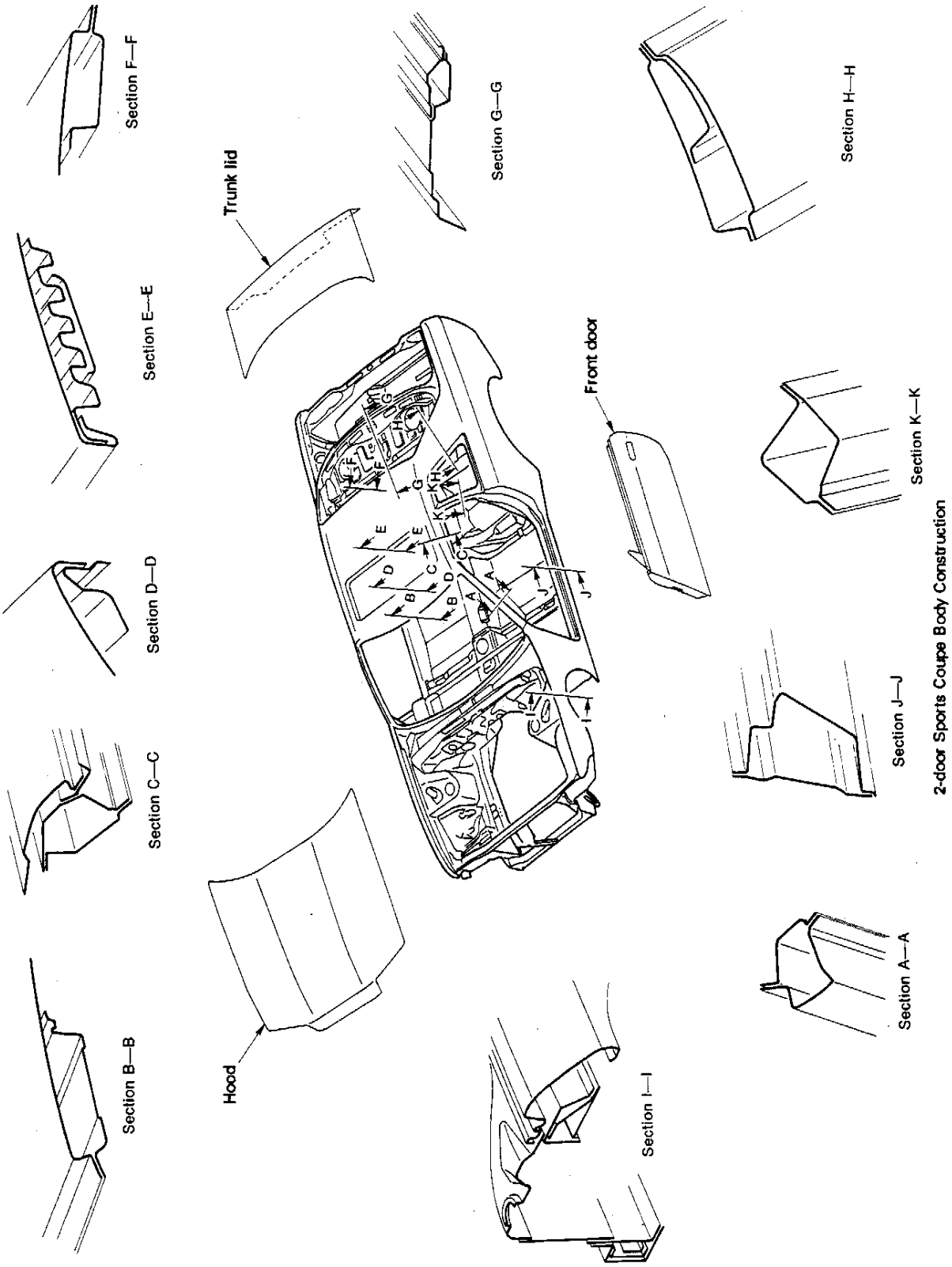
① Front housing and center housing mating surfaces
② Rear housing and cam center housing mating surfaces
③ Front housing oil seal
④ Flow control valve
⑤ Drive shaft
⑥ Rotor

BODY

SECTION BF

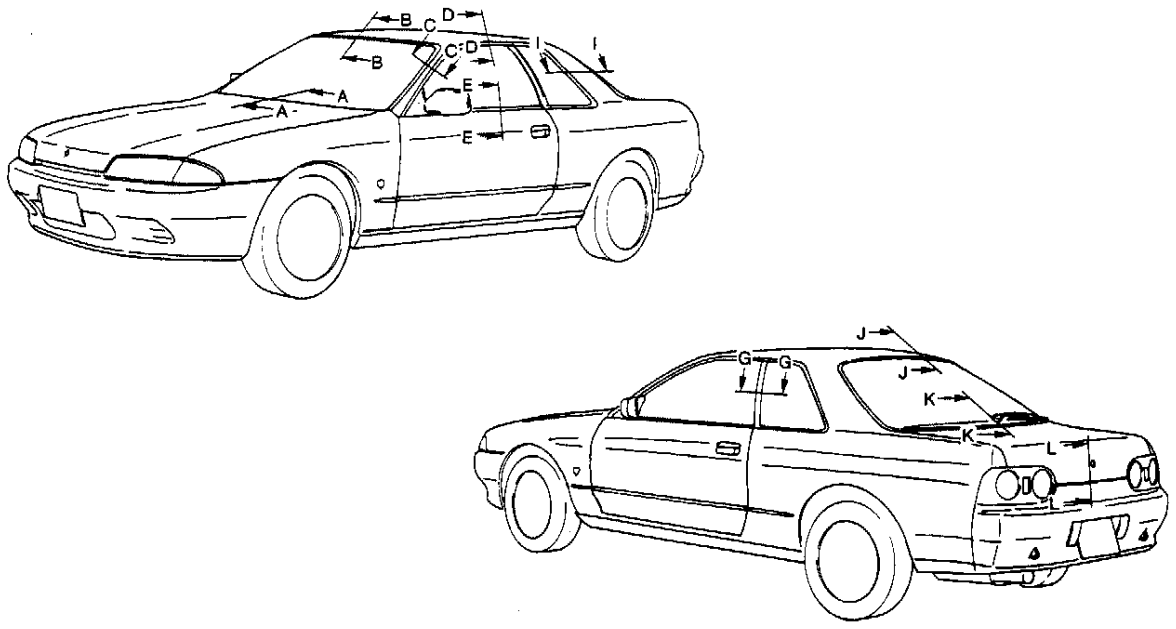
CONTENTS

1. Body Construction



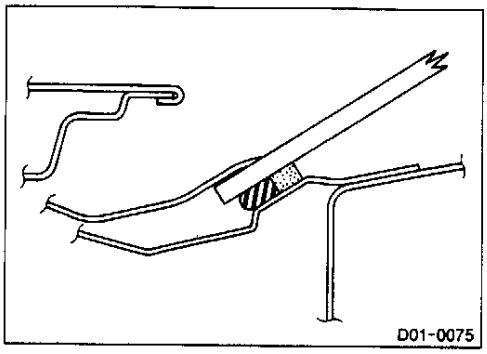
2. Sealing

2-1 WEATHERSTRIPS

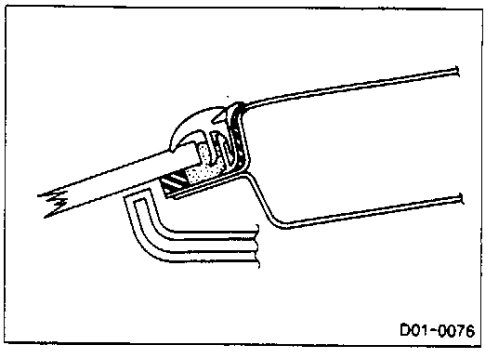


2-door Sports Coupe

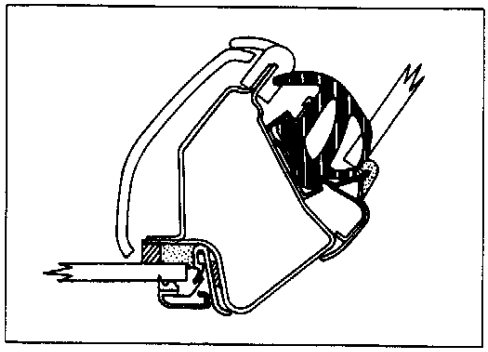
2. Sealing (Cont'd)



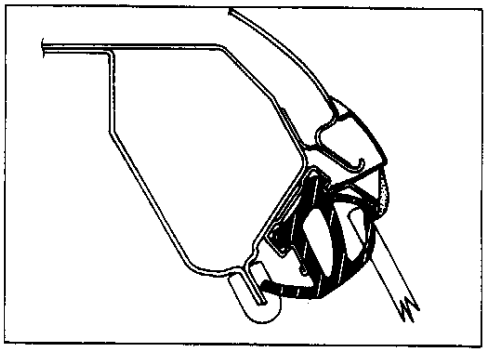
Section A—A



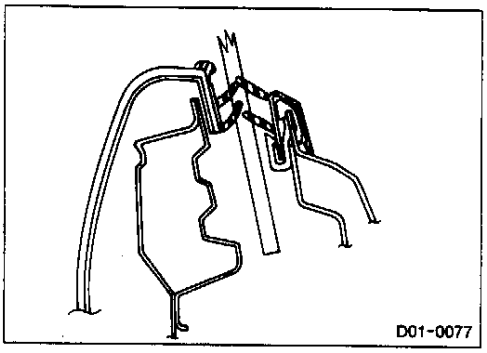
Section B—B



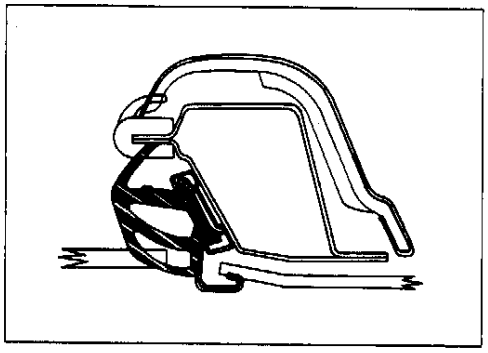
Section C—C



Section D—D

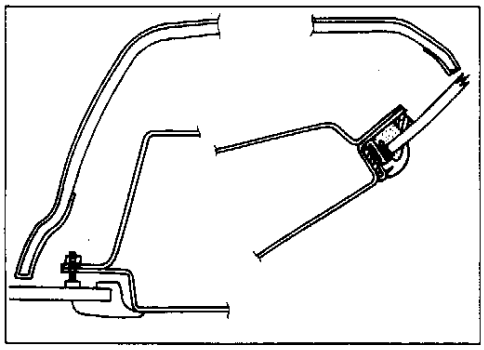


Section E—E

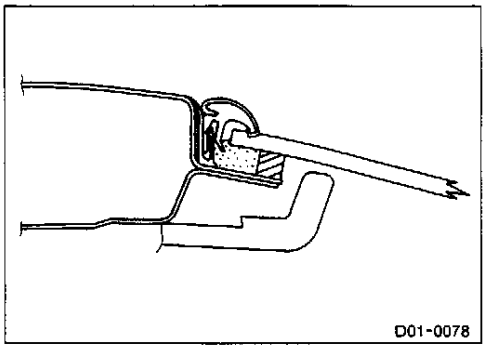


Section G—G

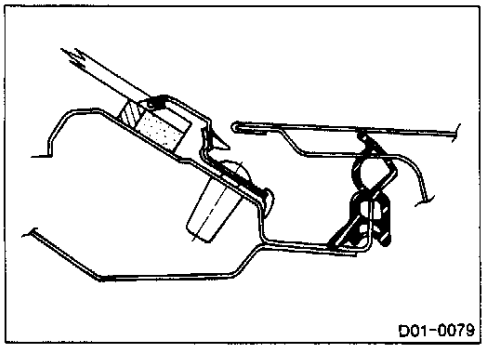
2. Sealing (Cont'd)



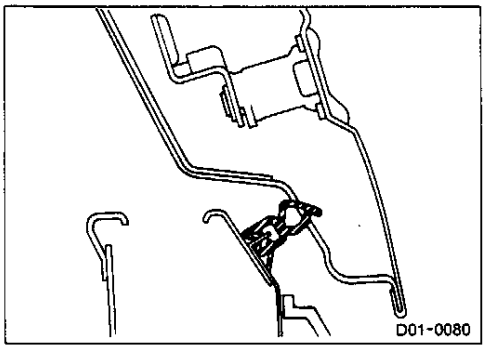
Section I—I



Section J—J



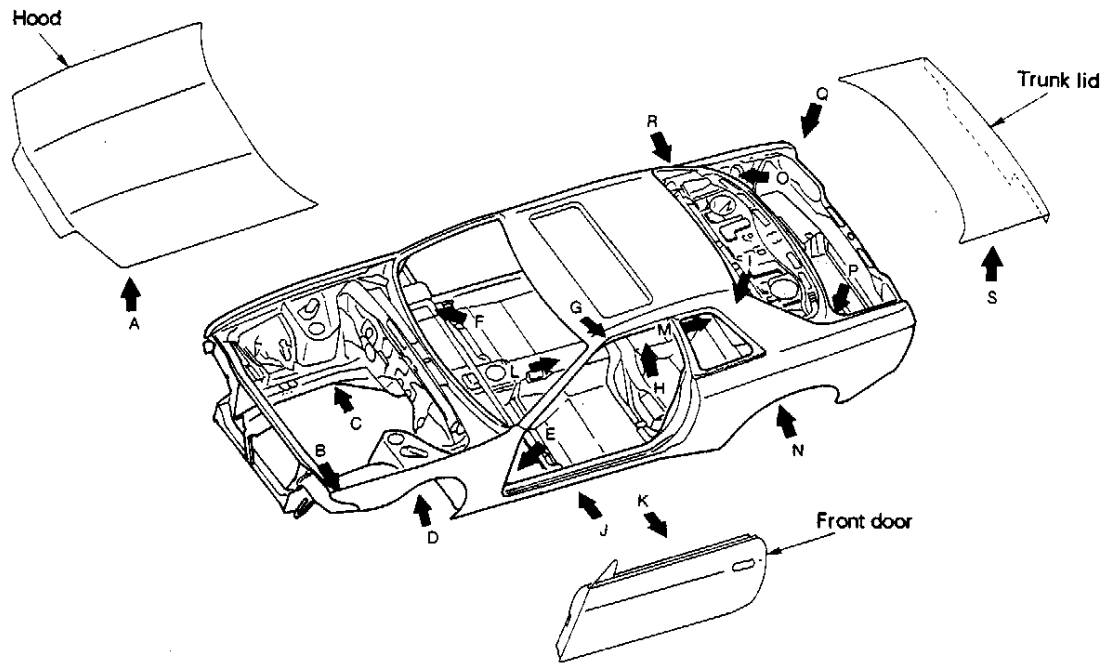
Section K—K



Section L—L

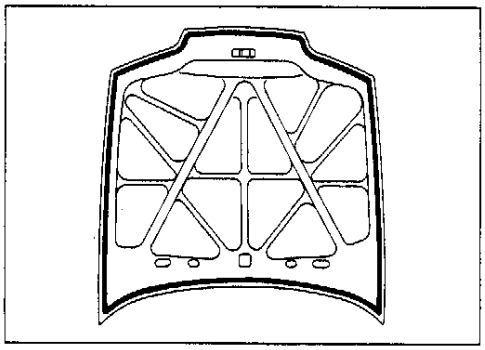
2. Sealing (Cont'd)

2-2 BODY SEALING

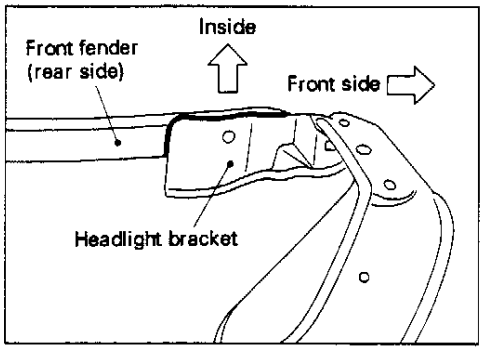


2-door Sports Coupe

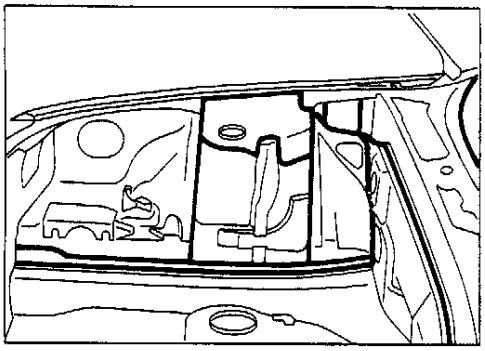
2. Sealing (Cont'd)



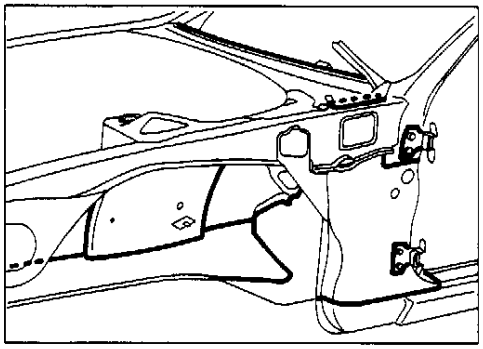
View A



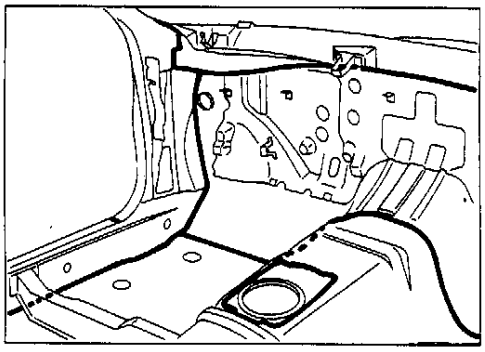
View B



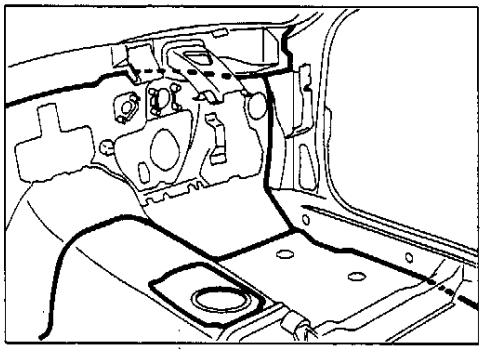
View C



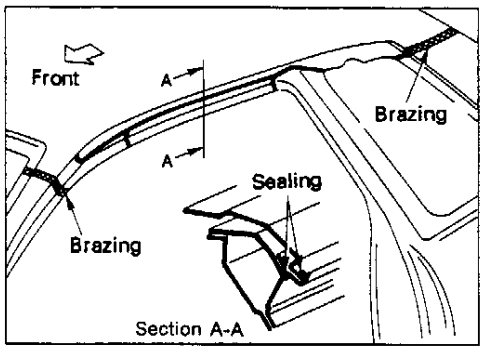
View D



View E

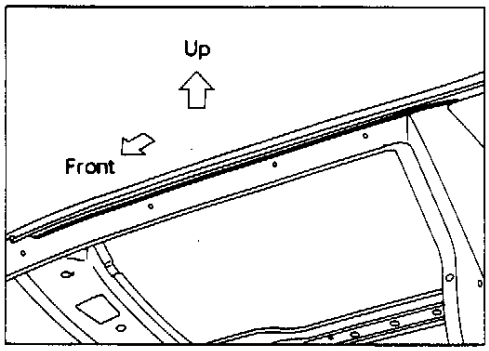


View F

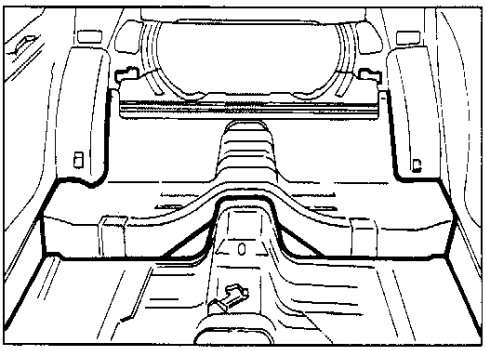


View G (2-door)

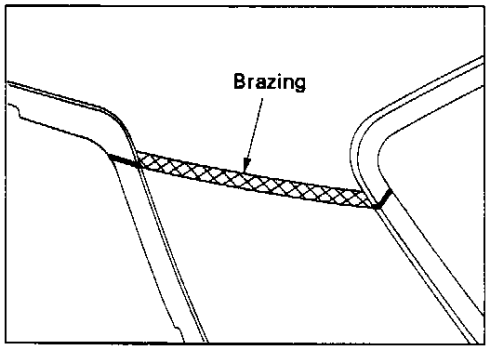
2. Sealing (Cont'd)



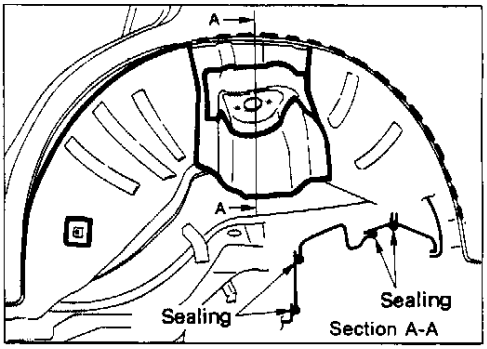
View H (2-door)



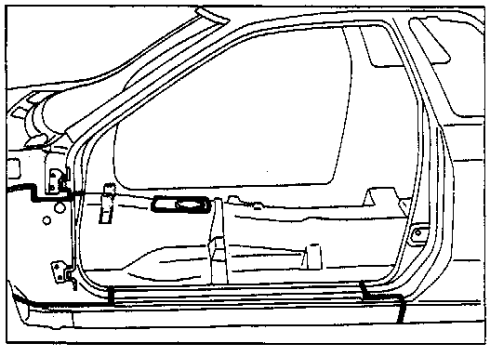
View L



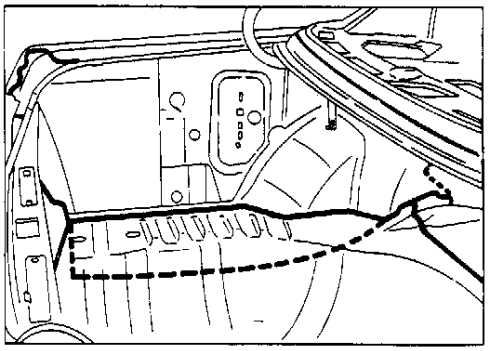
View I (2-door)



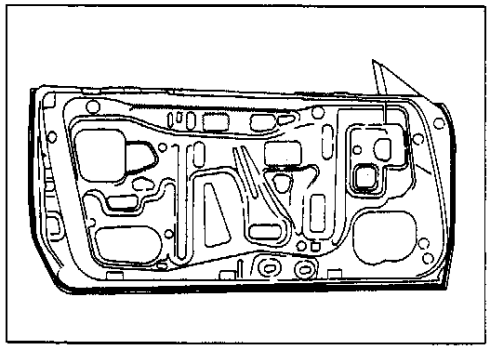
View N



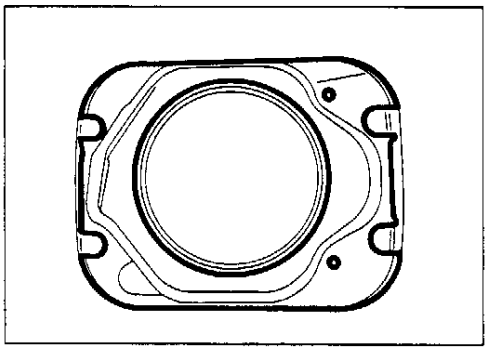
View J (2-door)



View P

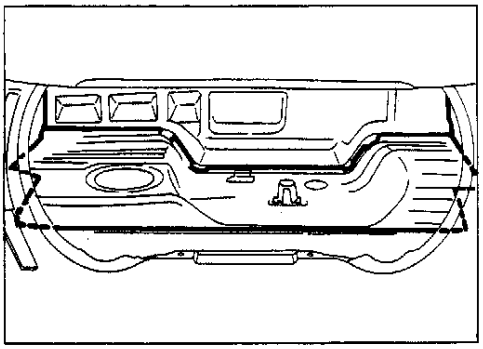


View K (2-door)

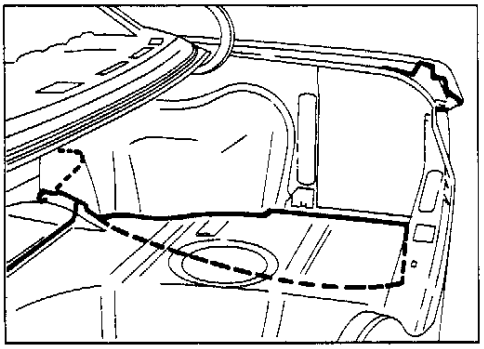


View R

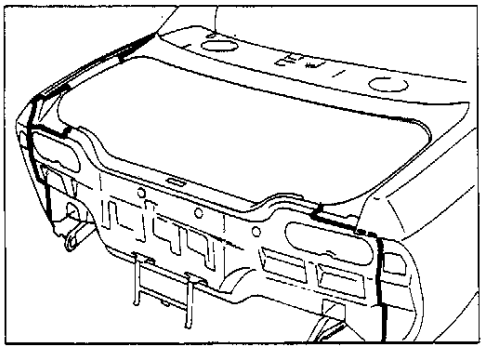
2. Sealing (Cont'd)



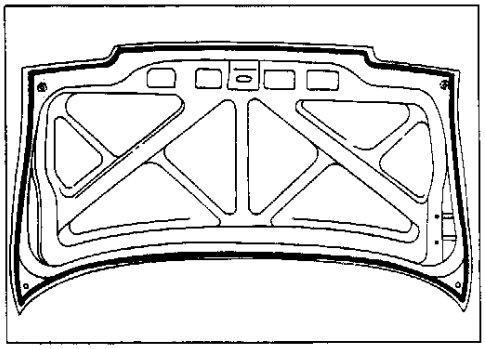
View M



View O



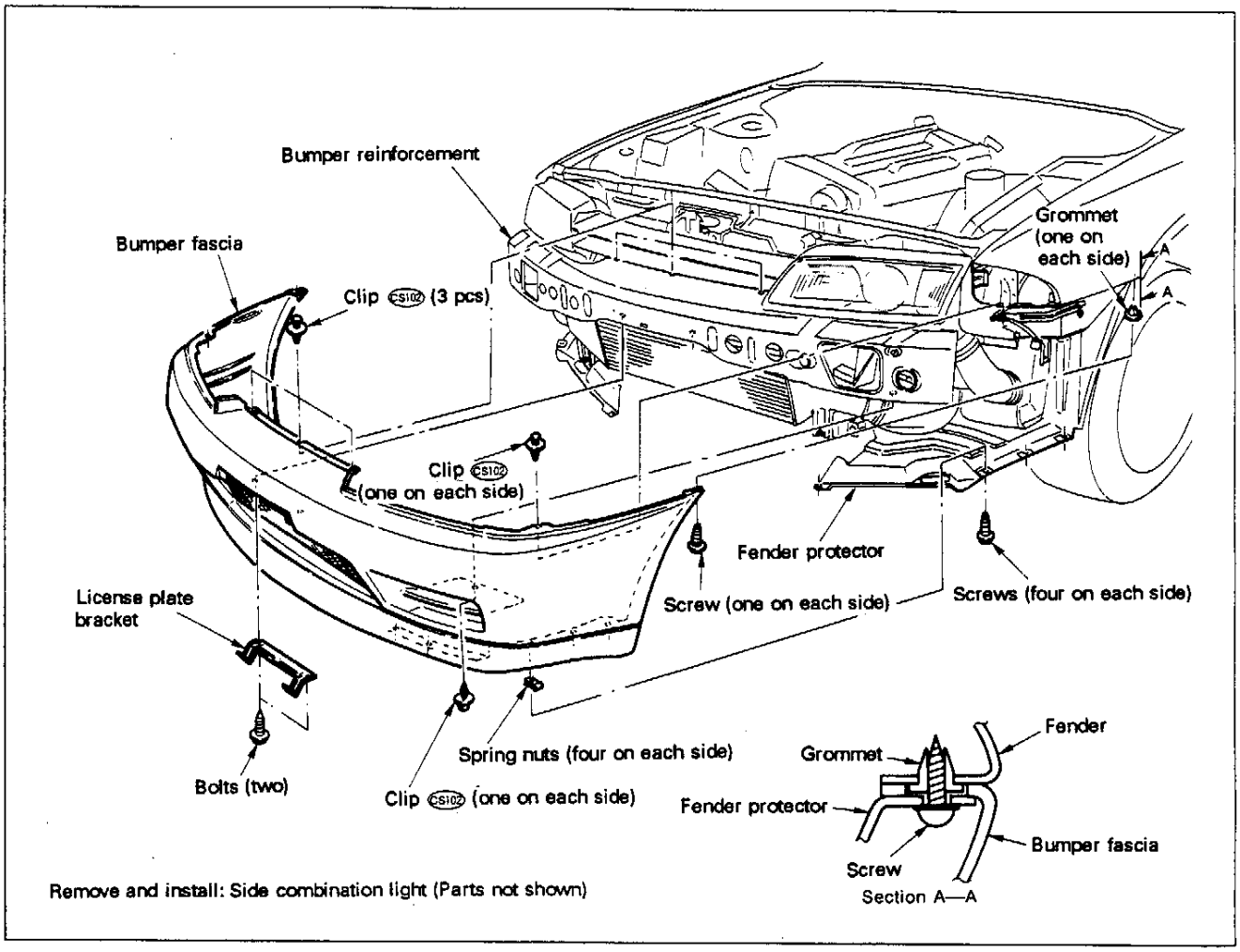
View Q

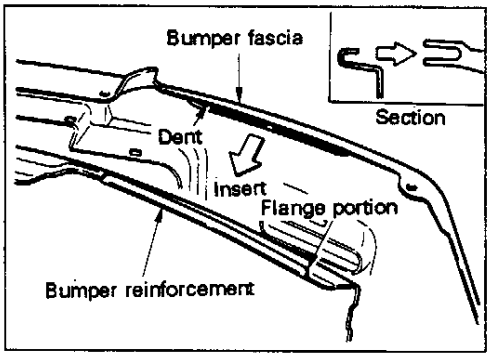


View S

1. Bumper

1-1 BUMPER FASCIA REMOVAL AND INSTALLATION





[Point 1] Bumper fascia removal

- First remove bumper fascia separately because intercooler tube prevents removal of bumper assembly.

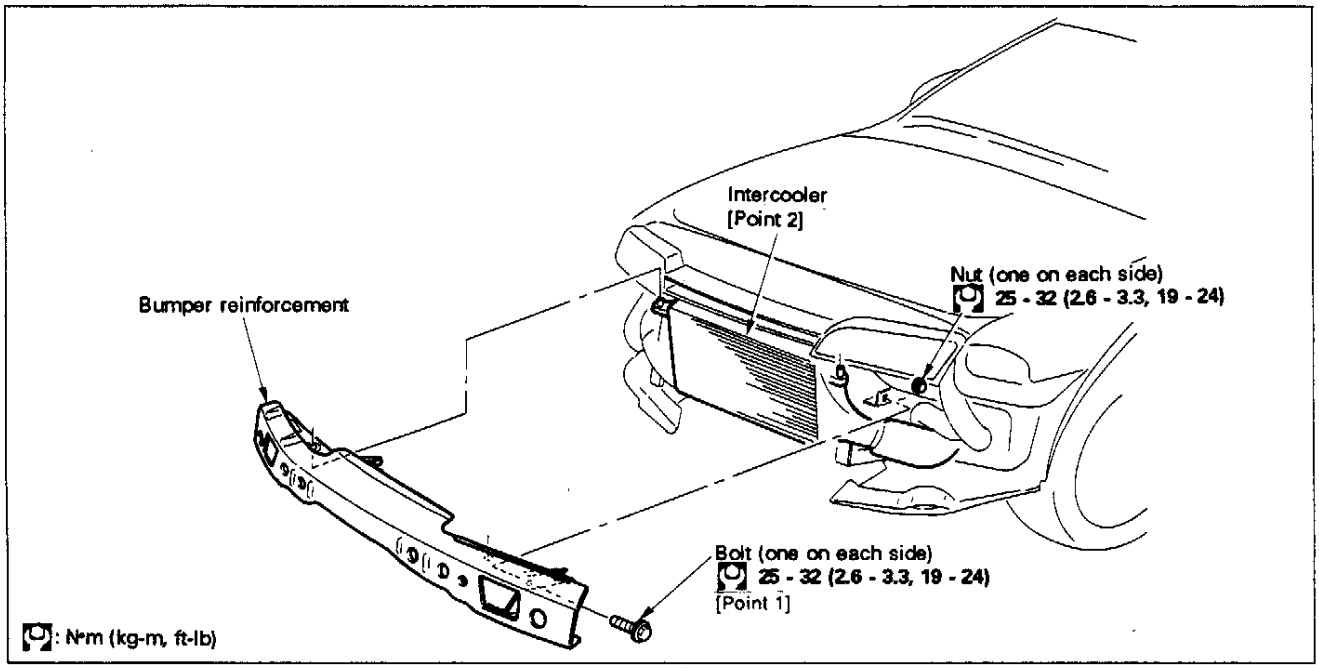
[Point 2] Bumper fascia installation

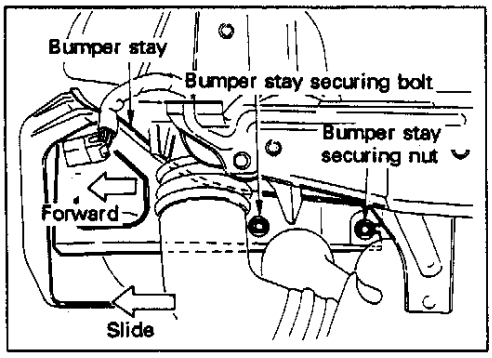
- Install bumper fascia by fitting flange portion of bumper reinforcement into dent of bumper fascia.

1. Bumper (Cont'd)

1-2 BUMPER REINFORCEMENT

(1) Removal and installation



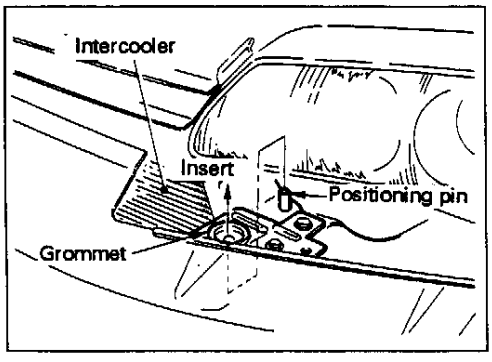


[Point 1] Bumper stay removal

- Remove bumper stay securing bolt.
- Loosen bumper stay securing nut, and remove bumper stay from body by sliding forward.

NOTE:

Do not remove bumper stay securing nut. It should only be loosened but kept attached to stud bolt on body side.

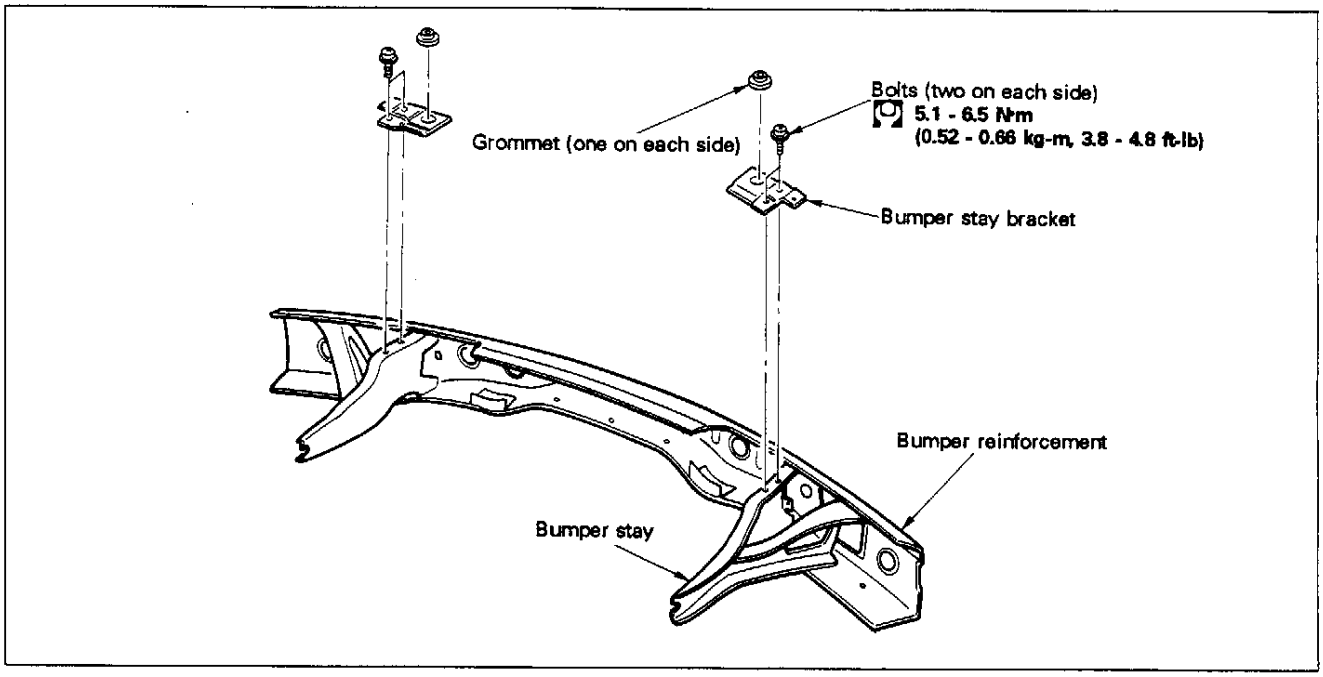


[Point 2] Bumper stay installation

- Attach grommet to bumper stay bracket as shown at left, and then fit grommet onto positioning pin located on the upper part of intercooler.

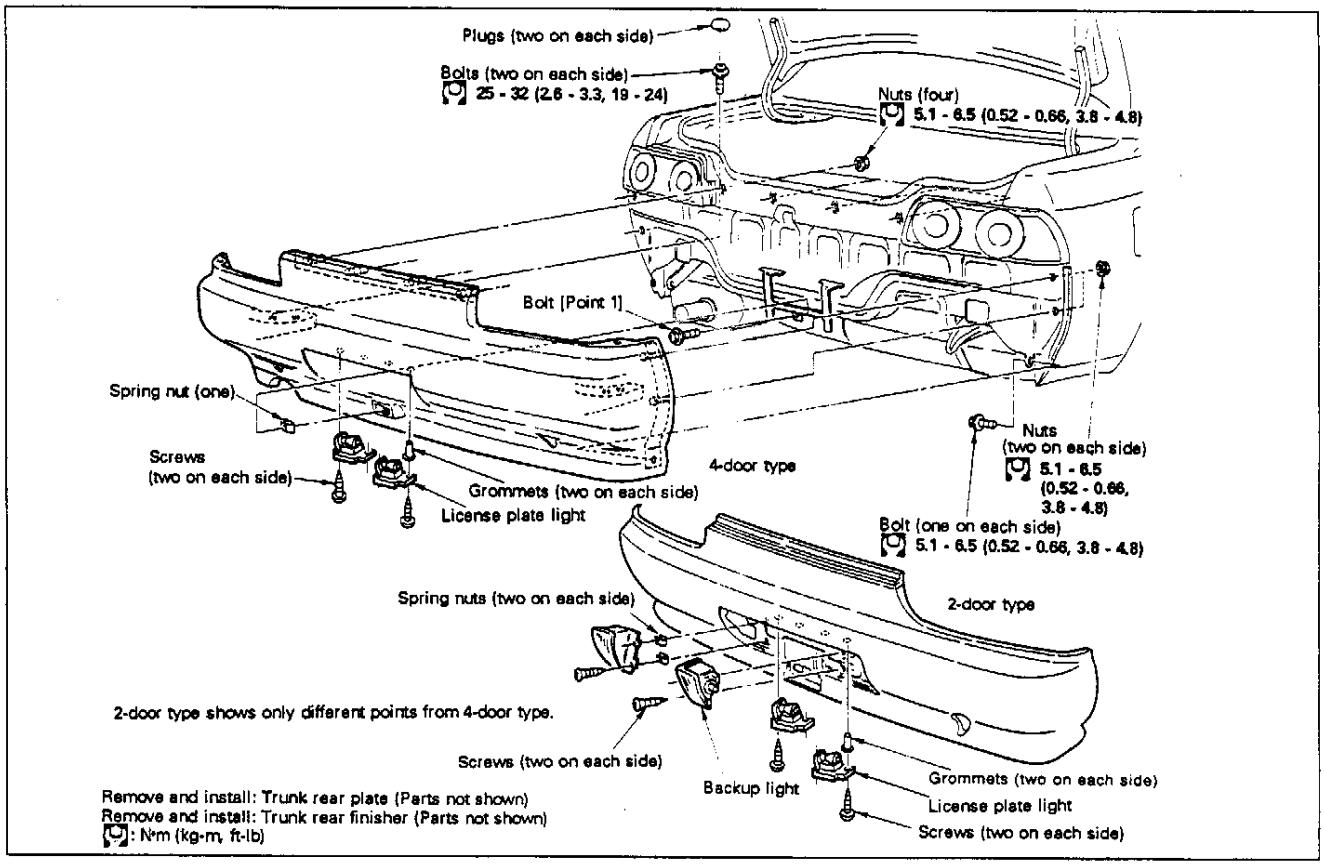
1. Bumper (Cont'd)

(2) Bumper reinforcement disassembly

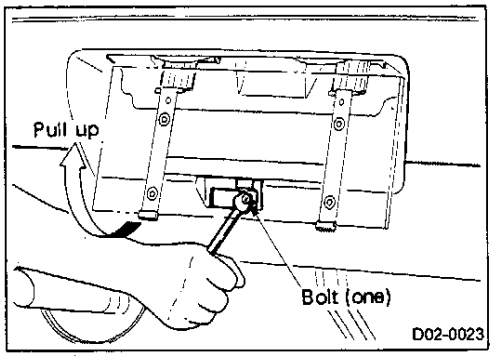


1-3 REAR BUMPER

(1) Removal and installation

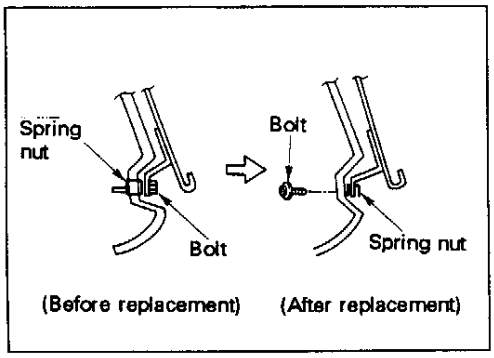


1. Bumper (Cont'd)



[Point 1] License plate bracket removal

- Remove bolt from rear side of license plate.
- Pull up bracket together with license plate.

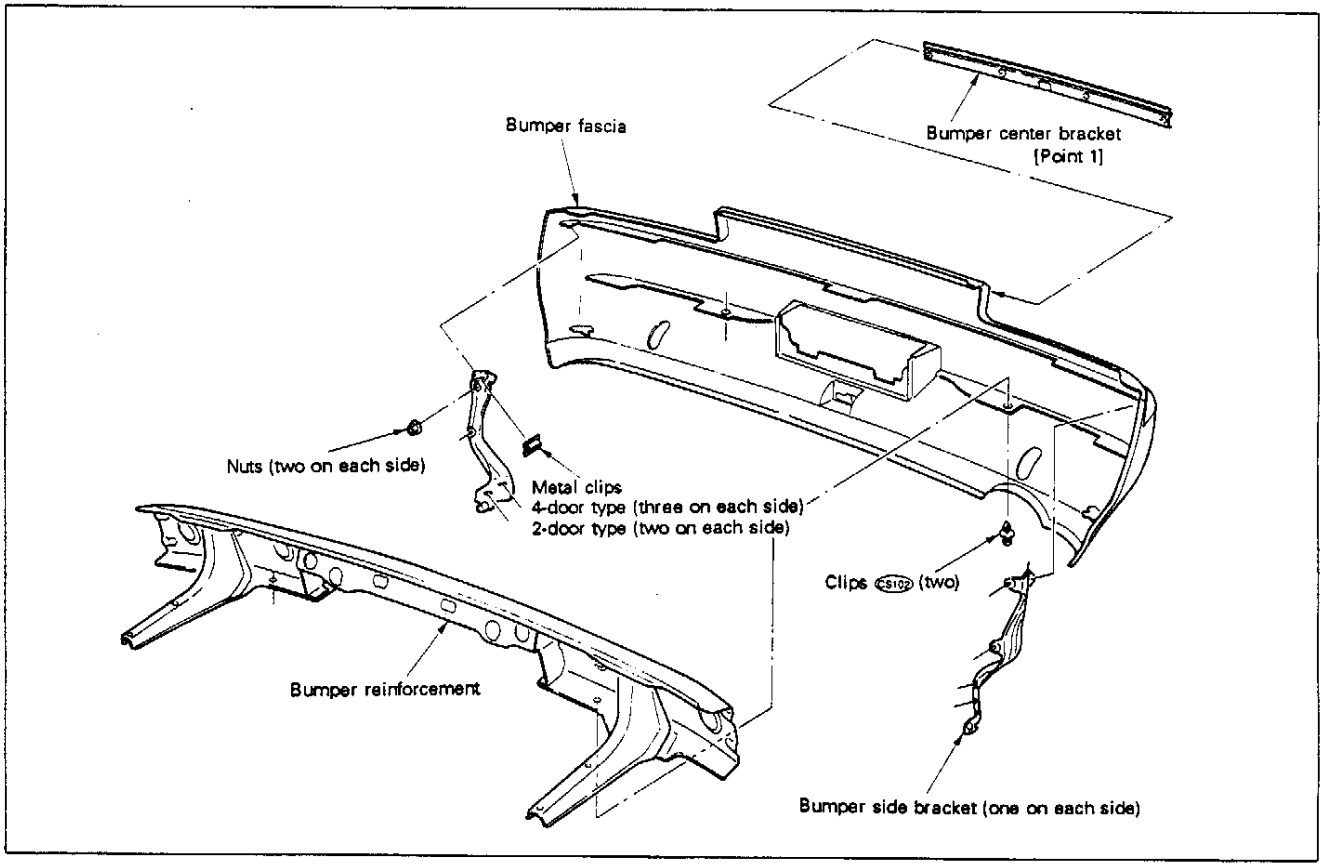


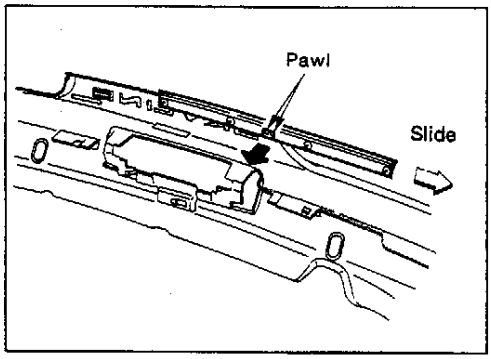
[Point 2] License plate bracket installation

- With 2-door type vehicle, install license plate bracket as shown after replacing bumper, because space is limited around license plate bracket securing bolt.

1. Bumper (Cont'd)

(2) Disassembly



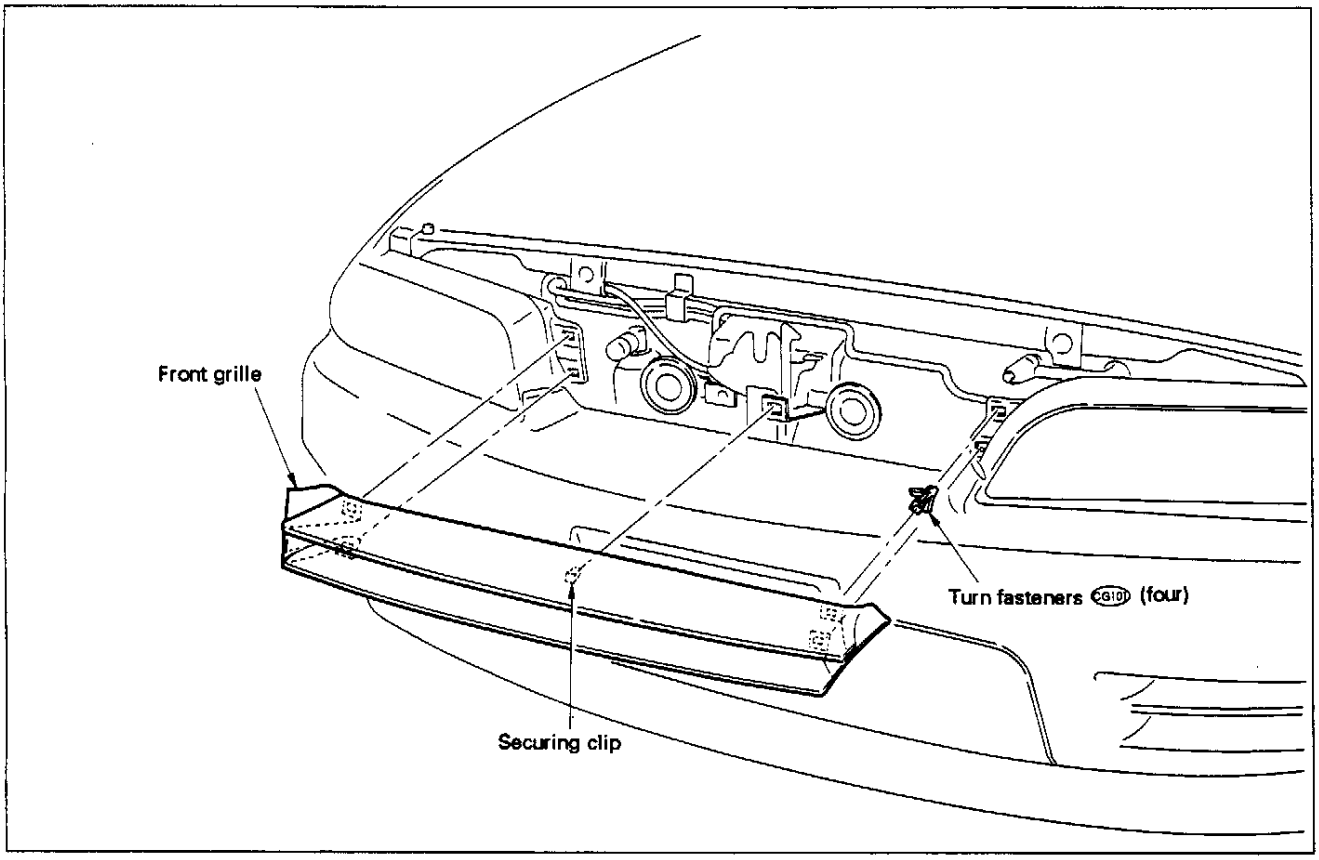


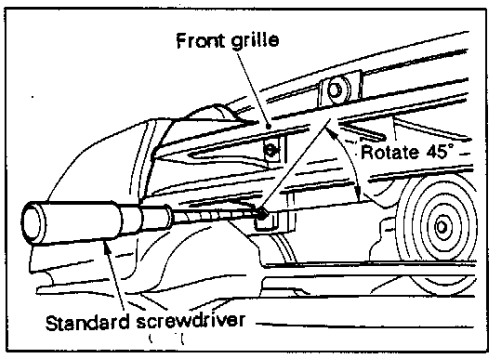
[Point 1] Bumper center bracket removal

- Pull out two pawls located at the center of bumper center bracket in the direction of arrow (➡) using standard screwdriver.
- Draw out bumper center bracket from bumper fascia by sliding it either rightward or leftward.

2. Grille

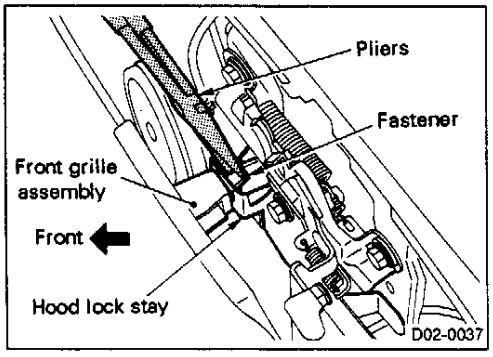
2-1 FRONT GRILLE REMOVAL AND INSTALLATION





[Point 1] Turn fastener removal

- Rotate front grille upper side turn fastener 45° by fitting screwdriver tip into slot of turn fastener head, and remove turn fastener.
  Wrap vinyl tape or cloth around metal part of screwdriver to prevent grille and bumper from being scratched.

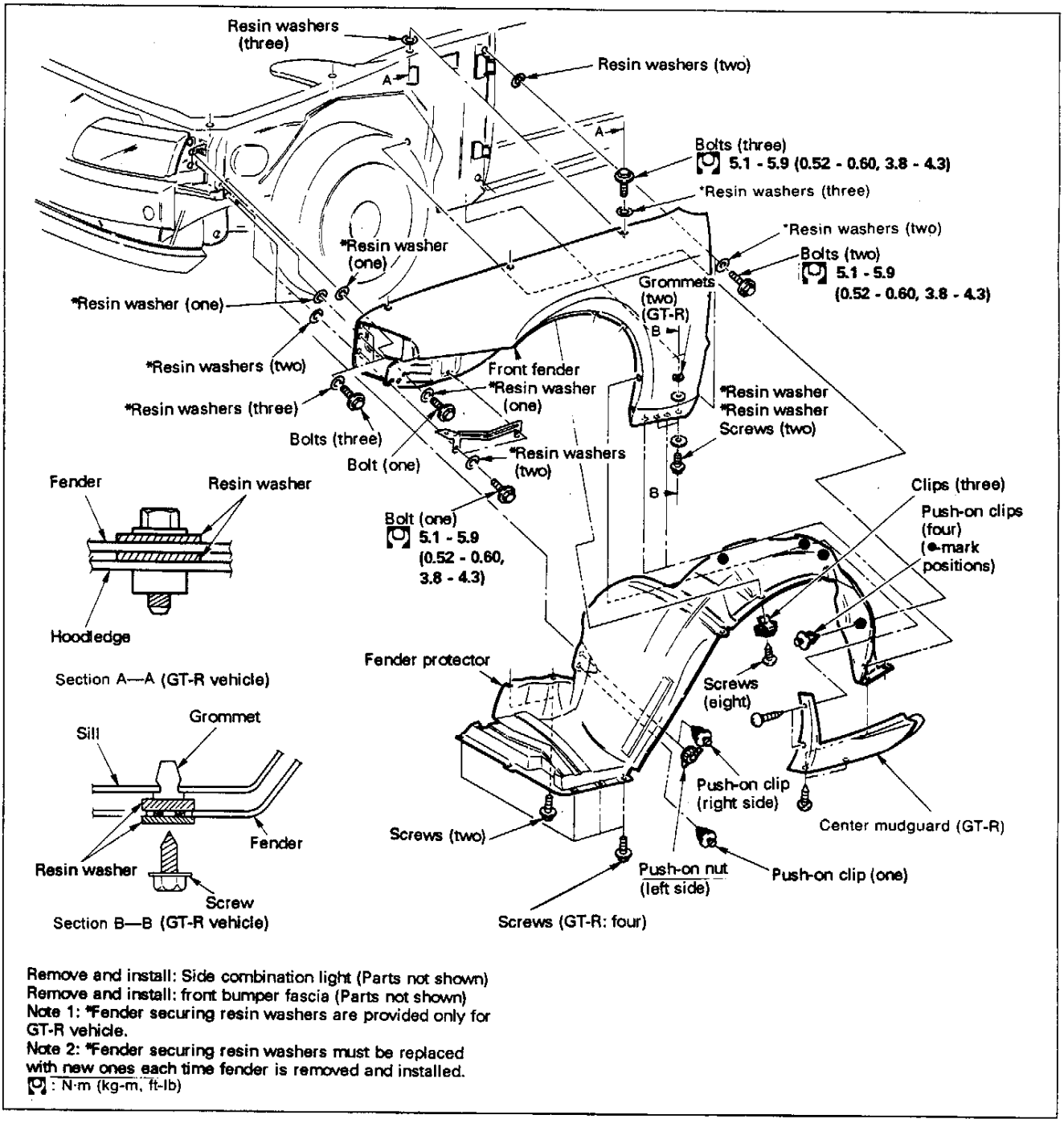


[Point 2] Securing clip removal

- Remove clip by holding with pliers from rear side of hood lock stay.

3. Front Fender

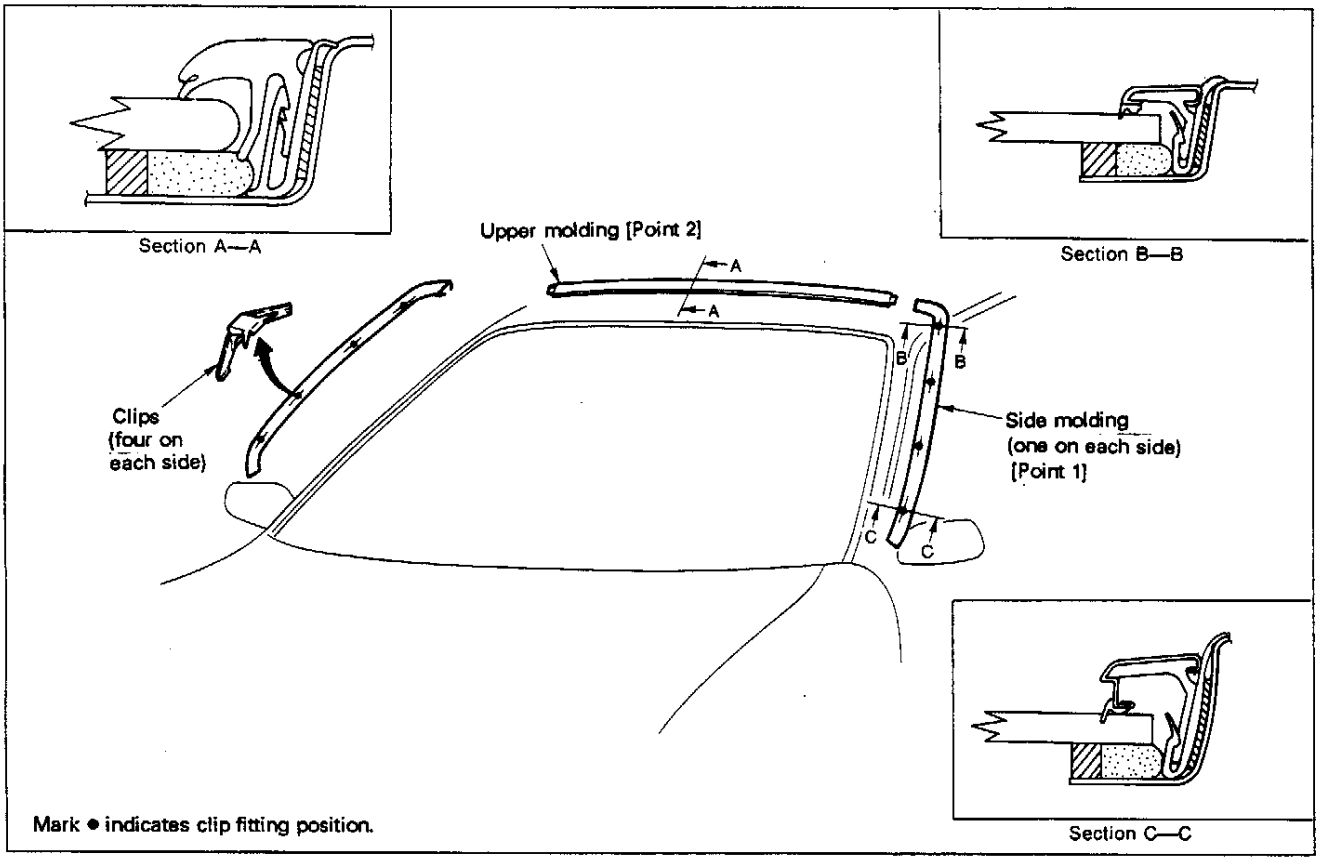
3-1 FENDER AND FENDER PROTECTOR REMOVAL AND INSTALLATION

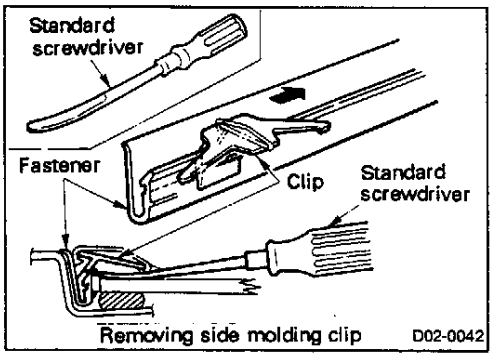


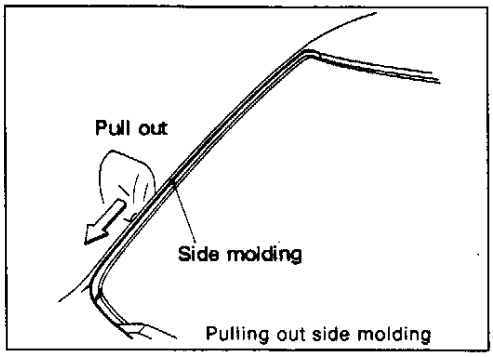
Remove and install: Side combination light (Parts not shown)
Remove and install: front bumper fascia (Parts not shown)
Note 1: *Fender securing resin washers are provided only for GT-R vehicle.
Note 2: *Fender securing resin washers must be replaced with new ones each time fender is removed and installed.
: N·m (kg-m, ft-lb)

4. Molding

4-1 WINDSHIELD MOLDING







[Point 1] Side molding removal and installation

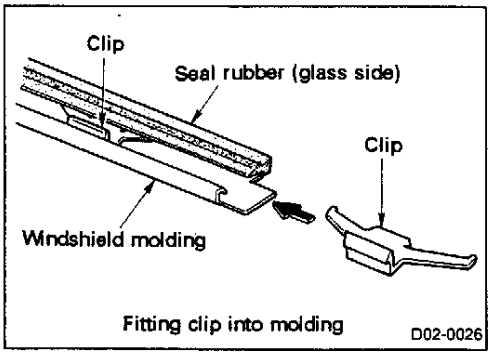
Removal

① Using standard screwdriver with its end portion bent as shown, disengage fastener from side molding by sliding lower two side molding clips.

NOTE:
Be sure to apply cushioning cloth under screwdriver to prevent glass from being damaged.

② Remove side molding from fastener by pulling out lower end of molding.

4. Molding (Cont'd)

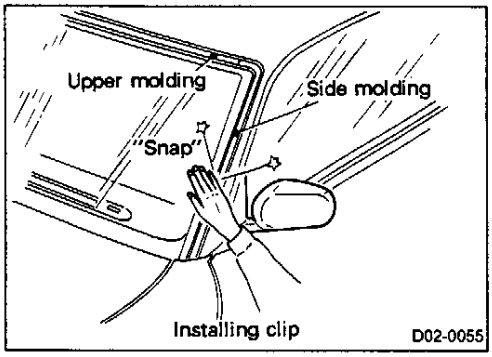


Installation

① Fit clip into side molding as shown at left.

NOTE:

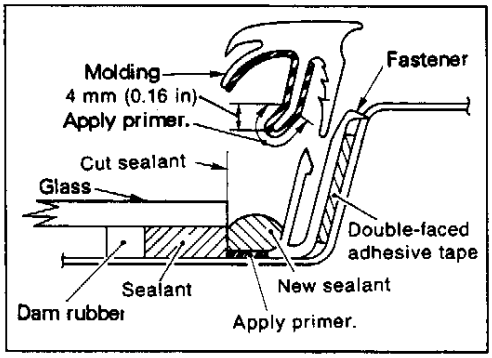
Four different clips are used; Pay attention not to confuse clips.



② Fit upper end of side molding into upper molding, and tap side molding clip portion with hand until clip fits in fastener with a snap.

NOTE:

Do not apply undue force when tapping. If difficult to fit, change clip position slightly.



[Point 2] Upper molding removal and installation

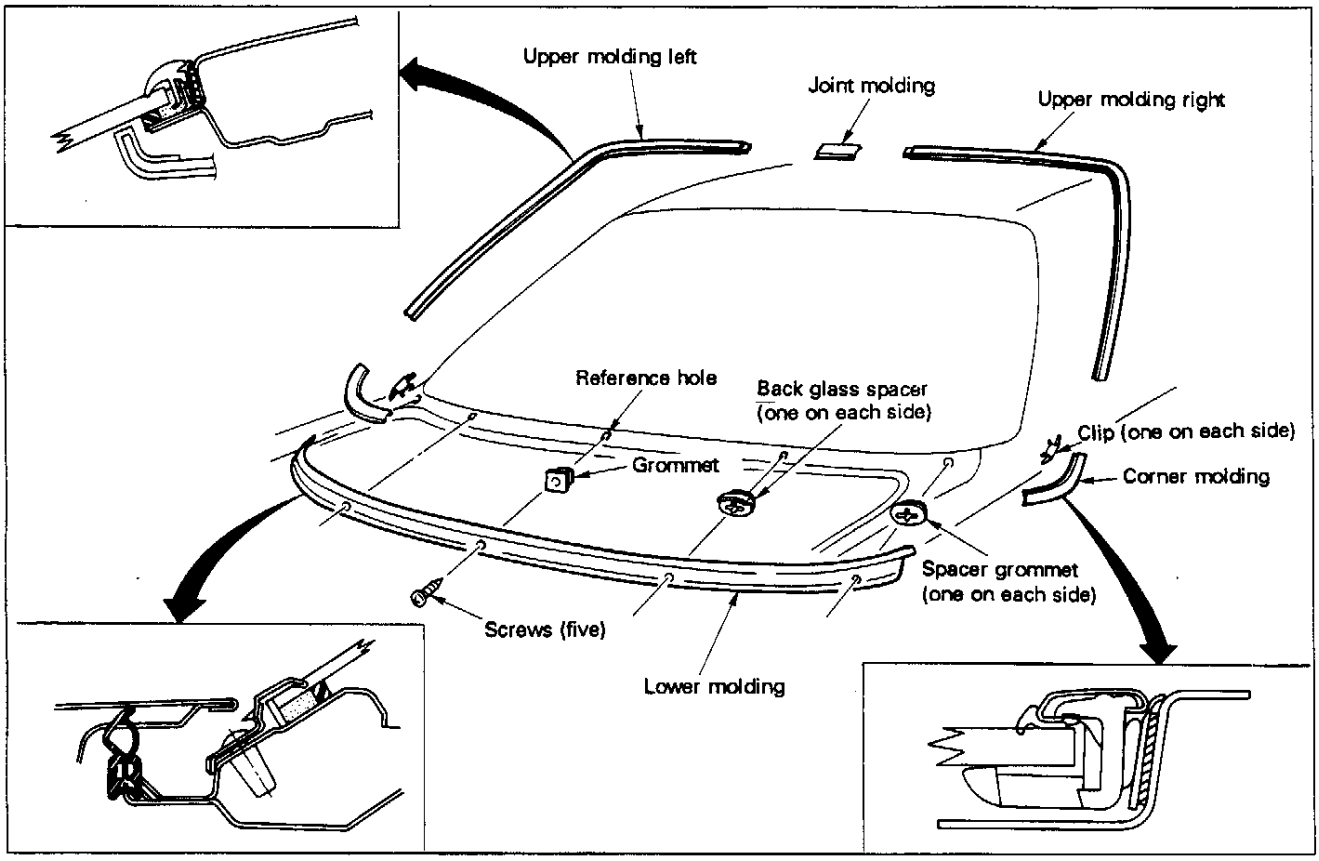
① After removing side molding, pull out upper molding by lifting its end up.
② Cut sealant at end of glass, and clean panel surface after removing fastener.
③ Bond fastener to body using double-faced adhesive tape, then apply primer to panel and molding leg portions.
④ Pack sealant between glass and body so that molding leg can be bonded securely.
⑤ Squeeze upper molding into position.

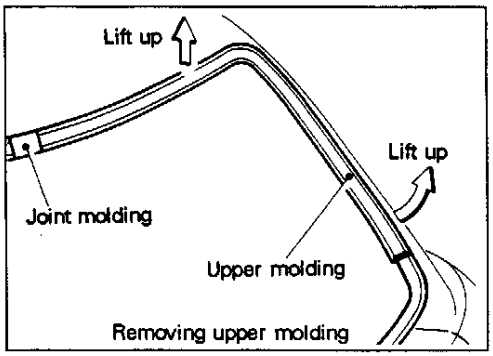
NOTE:

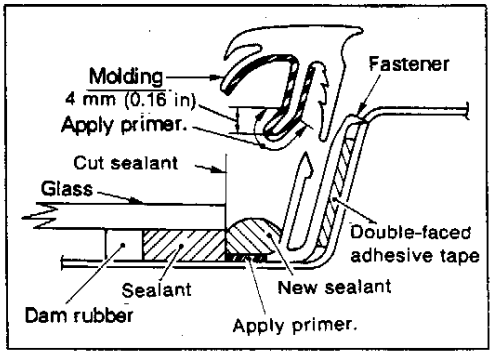
Repair panel surface if scratched when cutting sealant.

4. Molding (Cont'd)

4-2 REAR WINDOW MOLDING







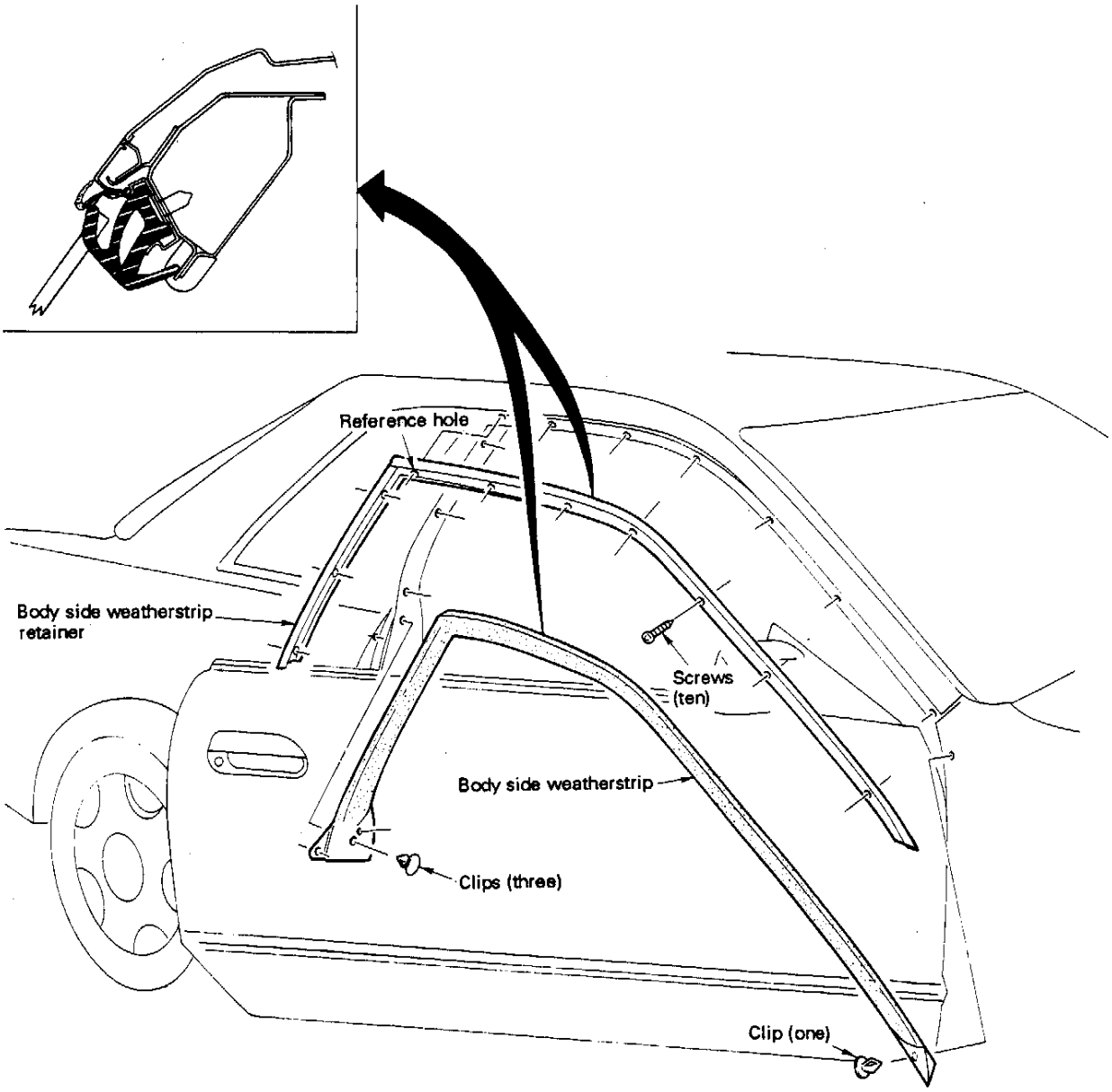
[Point 1] Upper molding removal and installation

① Remove lower molding securing screws, and remove molding from body.
② Remove corner molding clips, and remove corner molding from fastener.
③ Remove upper molding by lifting its end up.
④ Cut sealant at glass end portion, remove faster and clean panel surface.
⑤ Bond fastener to body using double-faced adhesive tape, then apply primer to panel and molding leg portion.
⑥ Pack sealant between glass and body so that molding leg can be bonded securely.
⑦ Bond upper molding and joint molding using sealant to make up sub assembly.
⑧ Squeeze upper molding sub assembly into fastener.
⑨ Fit clip into corner molding, and fit corner molding to upper molding, then tap molding until it fits snugly into fastener.
⑩ Fix lower molding using screws.

NOTE:
Repair panel surface by coating if scratched while cutting sealant.

4. Molding (Cont'd)

4-3 DRIP MOLDING REMOVAL AND INSTALLATION

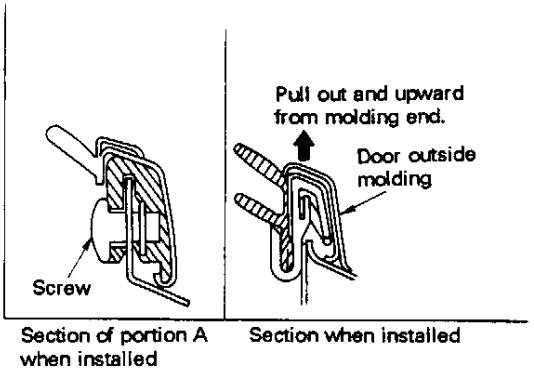


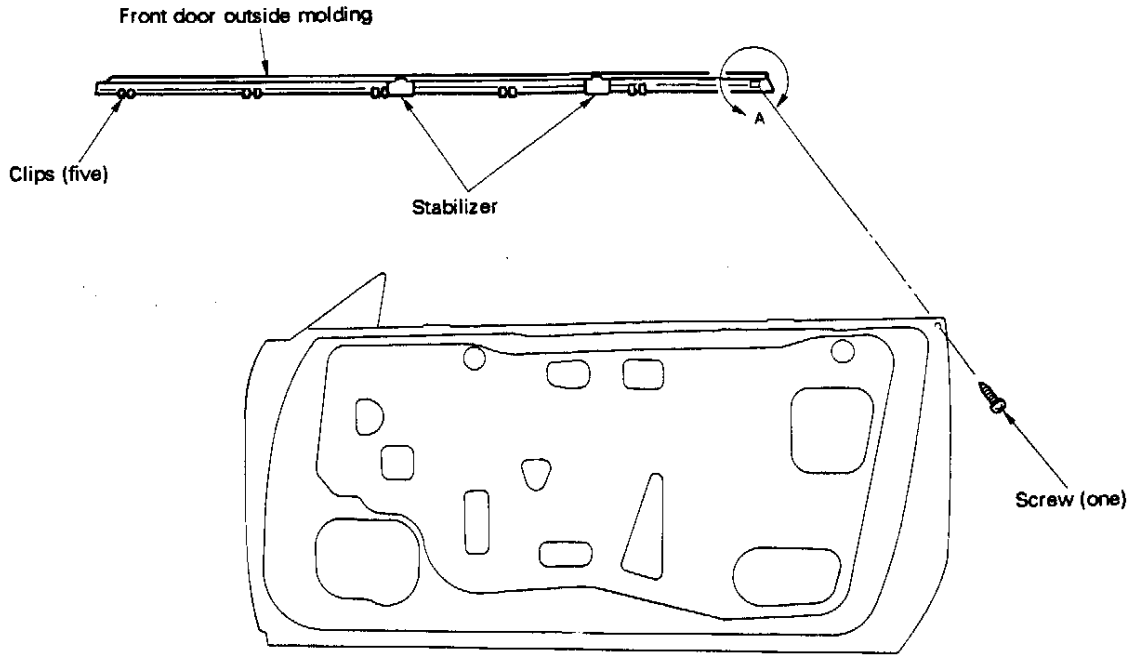
2-door Sports Coupe

NOTE: Pay attention not to create clearance when installing.

4. Molding (Cont'd)

4-4 DOOR OUTSIDE MOLDING REMOVAL AND INSTALLATION



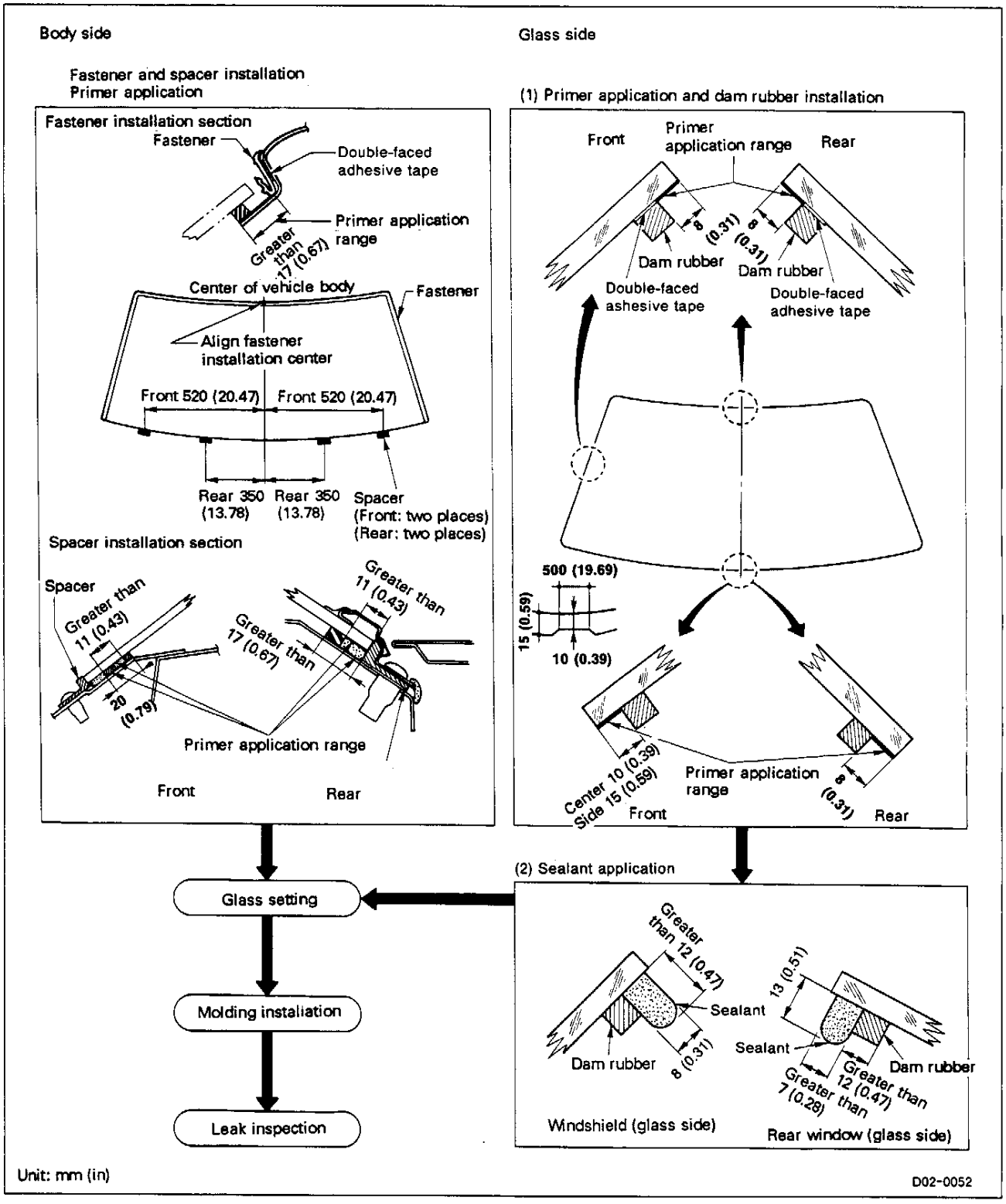


2-door Sports Coupe

5. Window Glass

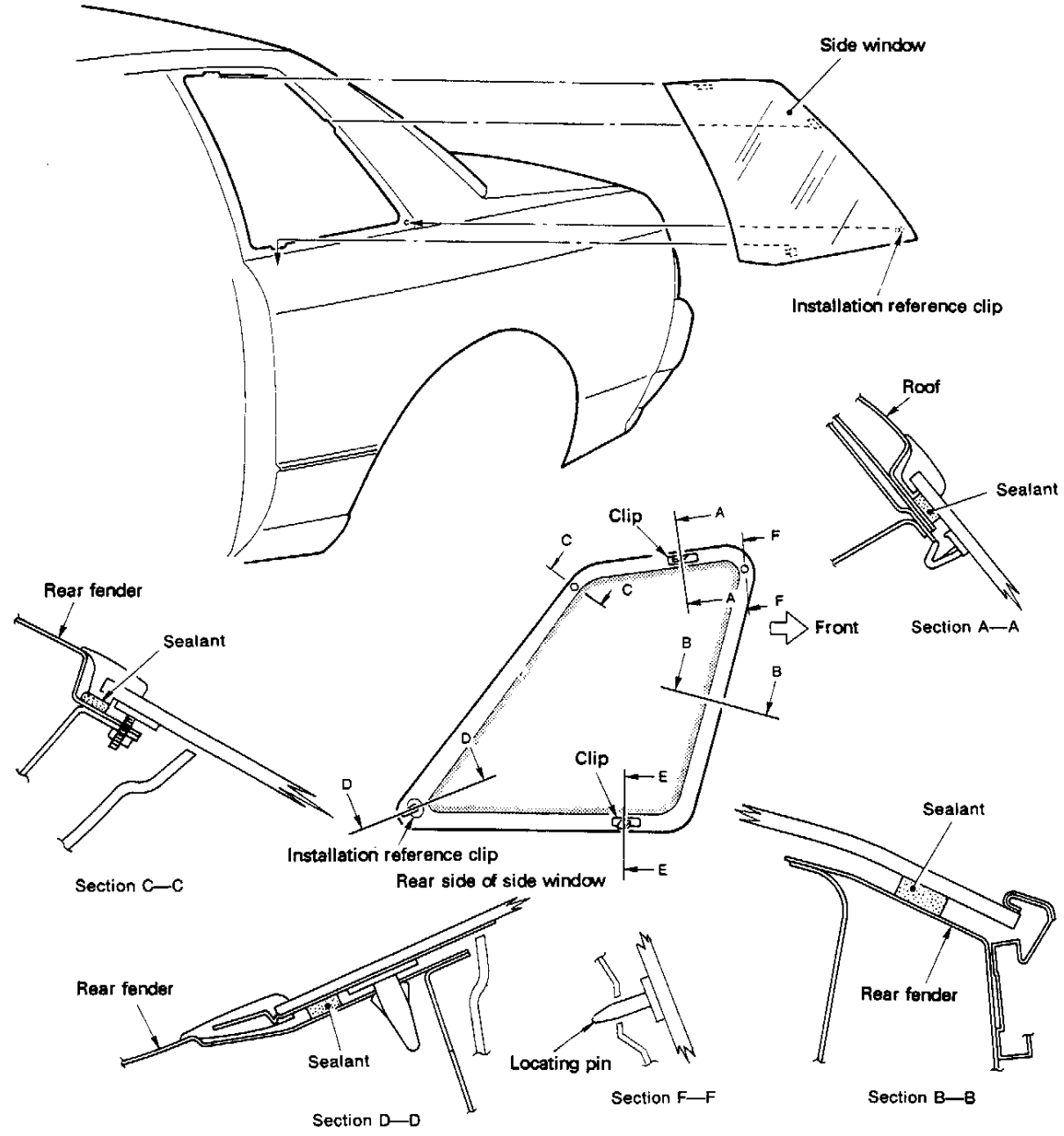
The windshield, rear window and rear side windows are bonded with urethane sealant. Refer to "Windshield removal and installation" in "Basic Servicing Procedure".

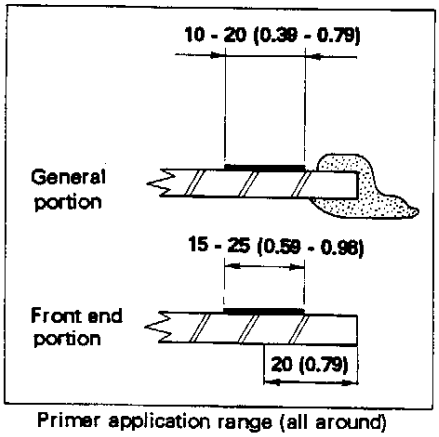
5-1 WINDSHIELD AND REAR WINDOW



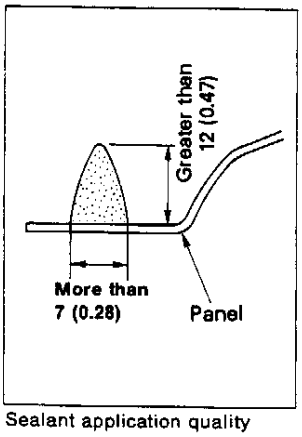
5. Window Glass (Cont'd)

5-2 REAR SIDE WINDOW GLASSES (2-door Sports Coupe)

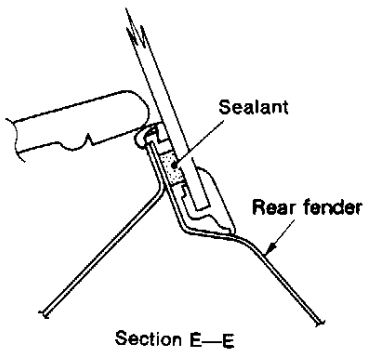




Primer application range (all around)



Sealant application quality



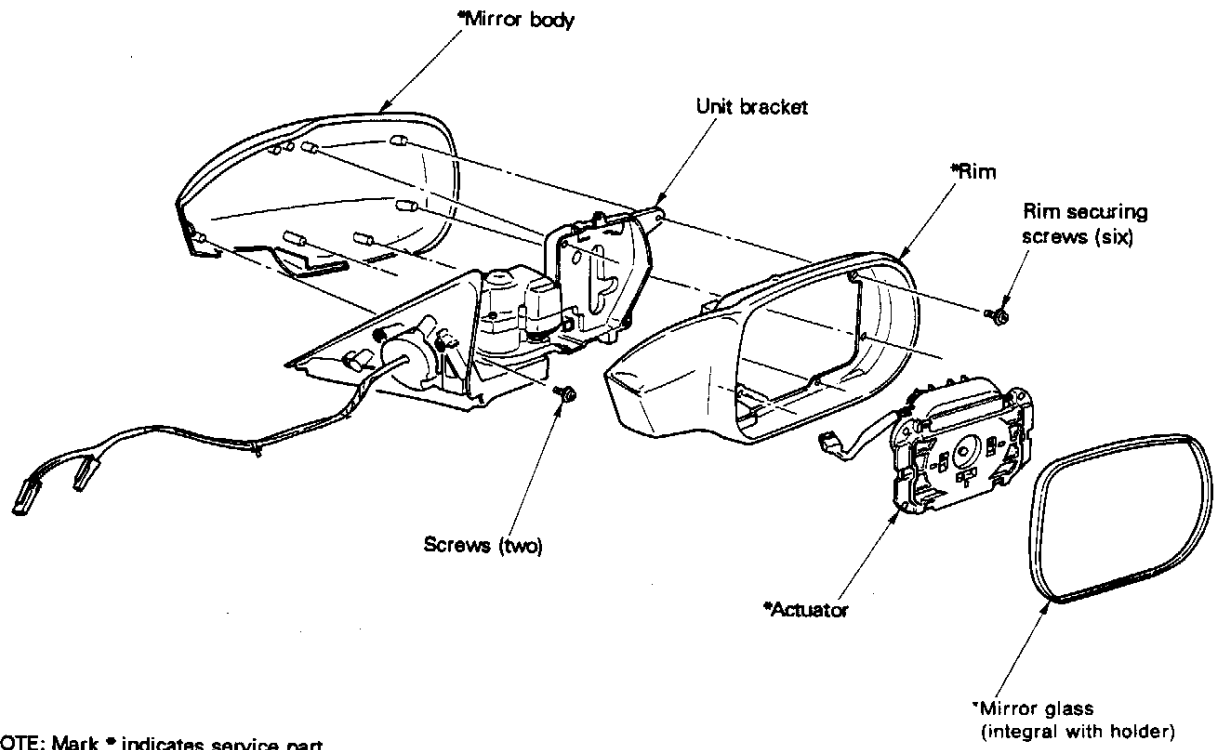
NOTE: Do not apply primer to gradation area.

Unit: mm (in)

6. Outside Mirror

6-1 STANDARD AND HEATER FITTED DOOR MIRROR

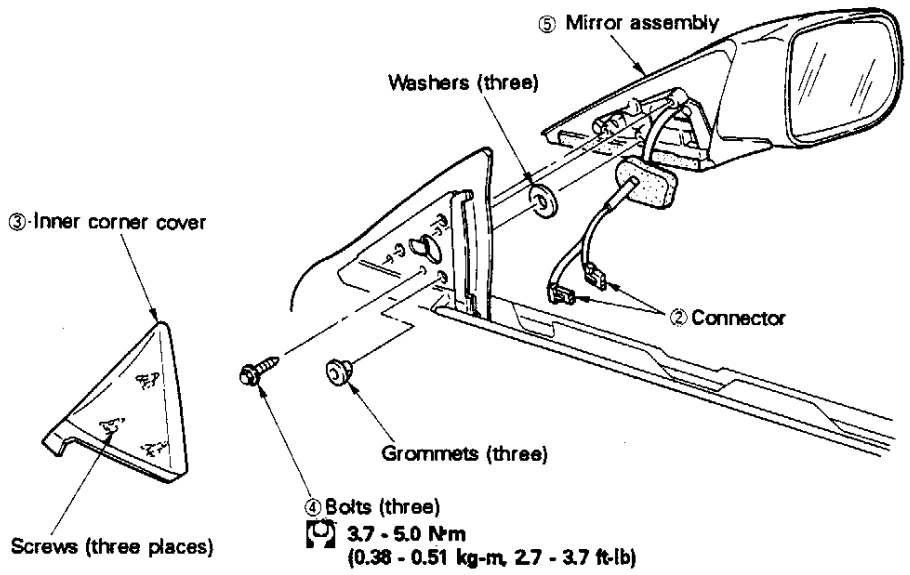
(1) Components



NOTE: Mark * indicates service part.
In addition to those shown in illustration, mirror assembly is set as service part.

D02-0056

(2) Mirror assembly removal and installation



① Remove and install: Front door trim (Part not shown)

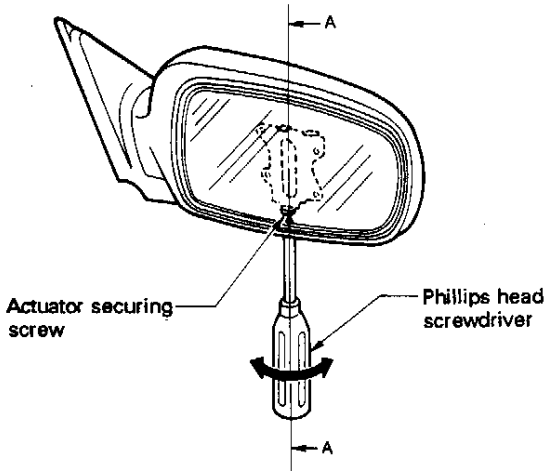
D02-0057

6. Outside Mirror (Cont'd)

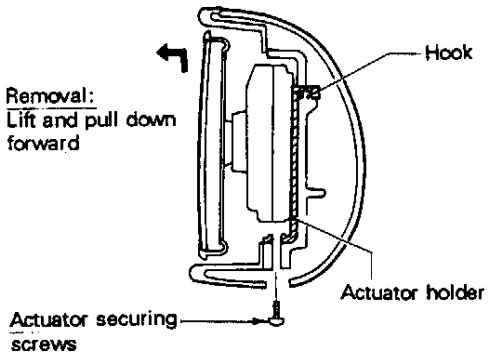
(3) Mirror removal and installation

Electric foldable outside mirror

① Removing actuator securing screw

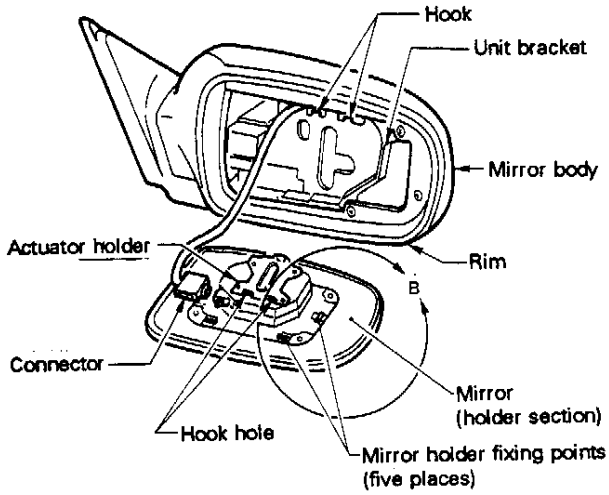


② Removing actuator holder

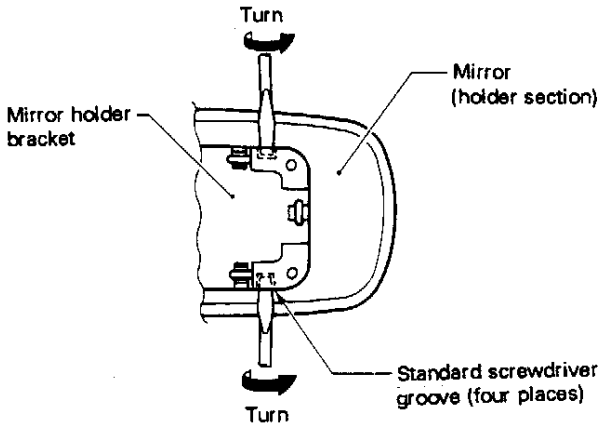


Section A—A

③ Removing harness connector



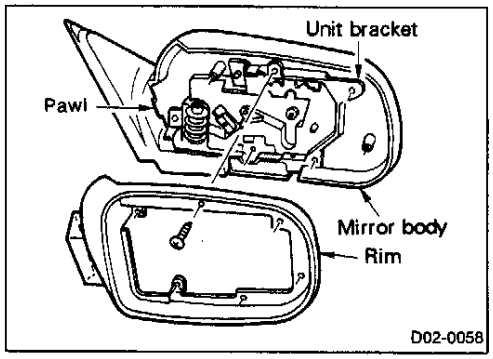
④ Separating mirror from actuator



Details of B

NOTE: To install, proceed as ④ → ③ → ② → ① by reversing the removal sequence.

6. Outside Mirror (Cont'd)

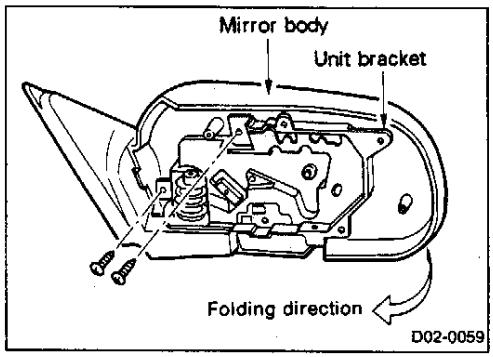


(4) Mirror rim removal and installation

Removal

Remove and install: Mirror and actuator [operations (Parts not shown) ①, ② and ③]

- Remove mirror rim securing screws (six) as shown at left.
- Pull out mirror rim from mirror body by detaching rim from mirror body pawl.



(5) Mirror body removal and installation

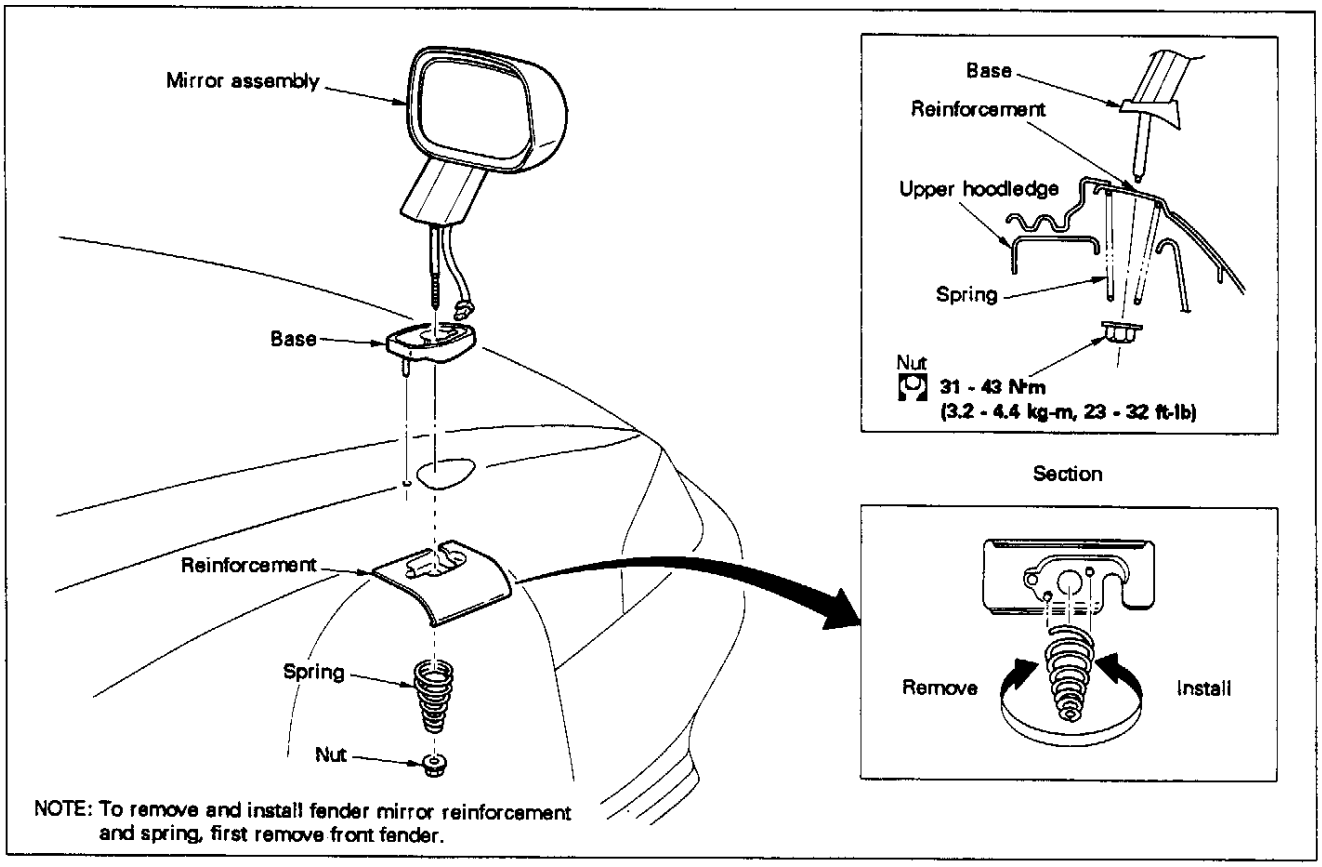
Removal

Remove and install: Mirror, actuator [operations ①, ② and ③] and mirror rim

- Remove mirror fixing screws (two) as shown at left.
- Remove mirror body after setting it in storage position.

6-2 FENDER MIRROR

(1) Fender mirror removal and installation



NOTE: To remove and install fender mirror reinforcement and spring, first remove front fender.

6. Outside Mirror (Cont'd)

6-3 CHANGE INTO DOOR MIRROR AND CHANGE INTO FENDER MIRROR

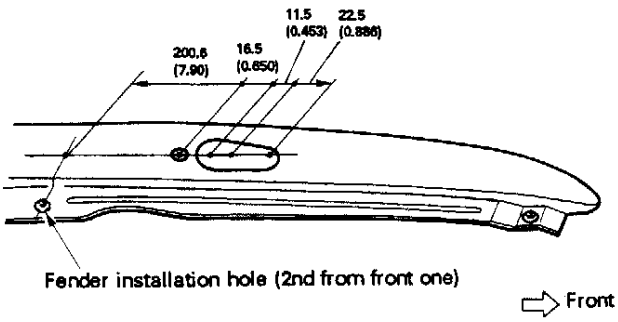
(1) Change from door mirror to fender mirror

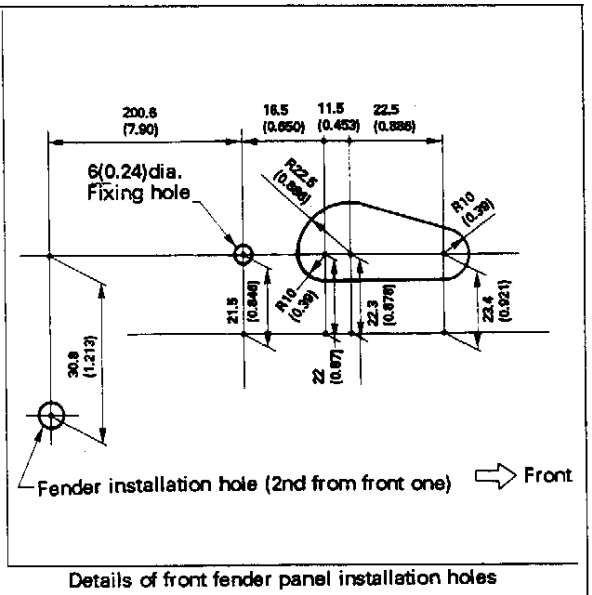
① Whether changeable or not and required items

Changeability	Harness connector in fender portion	Front door cover	Electric fender mirror components	Installation position
Yes	Not provided	Provided	Provided	See below

NOTE:
Only patrol car specification has electrically operated mirror.

② Installation position





Details of front fender panel installation holes

Unit: mm (in)

NOTE:
Apply anti-rust coating to drilled holes.

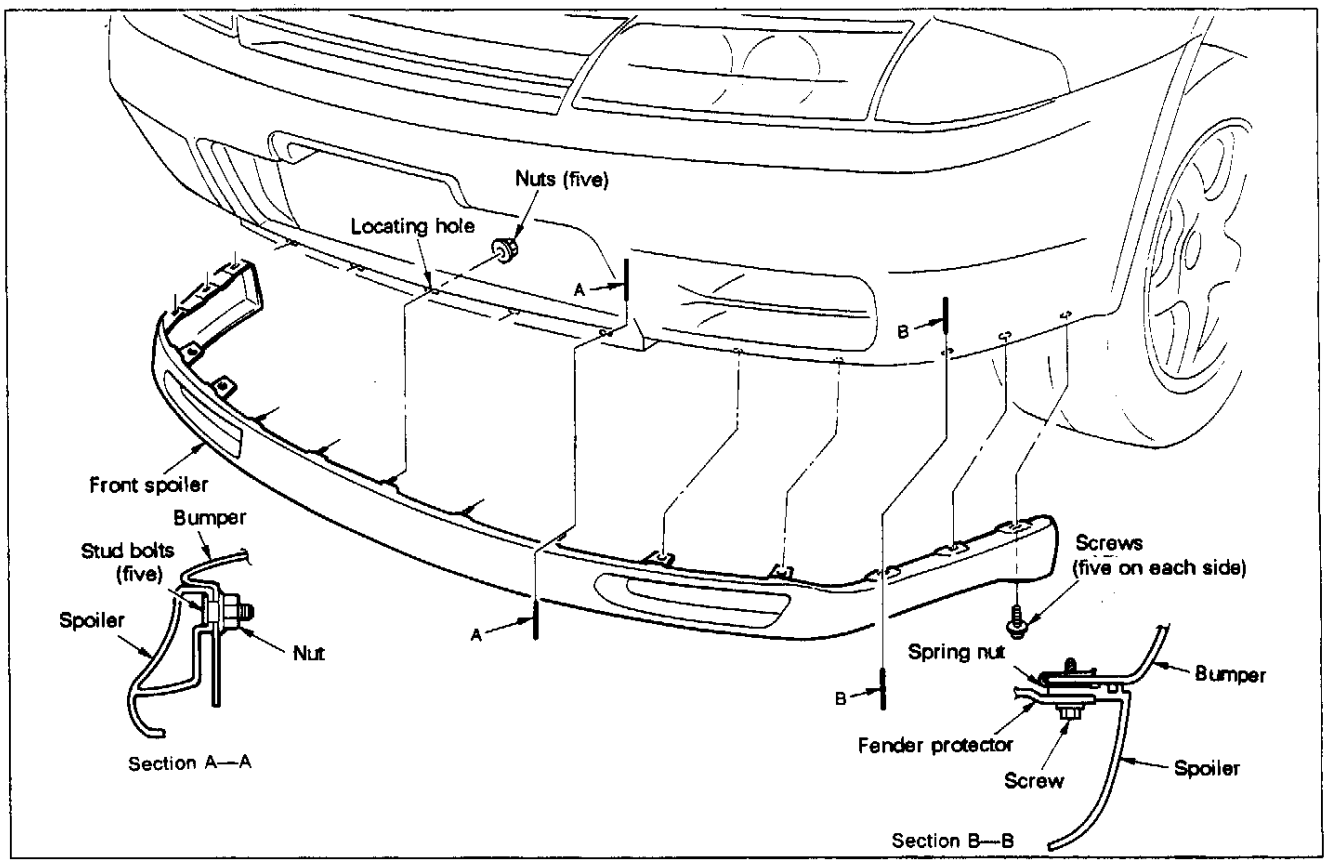
(2) Change from fender mirror to door mirror

① Whether changeable or not and required items

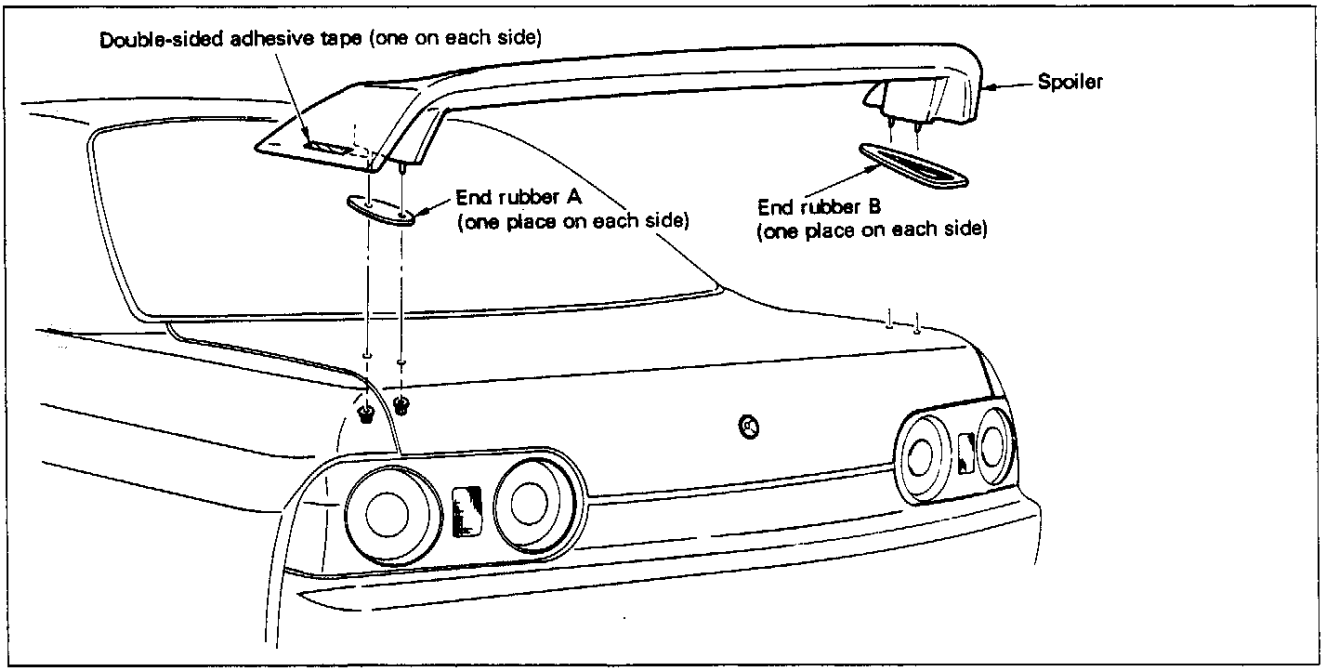
Changeability	Harness up to door	Fender hole stopping patch (service part)	Door mirror
Not provided	Provided	Not provided	Provided

7. Spoilers

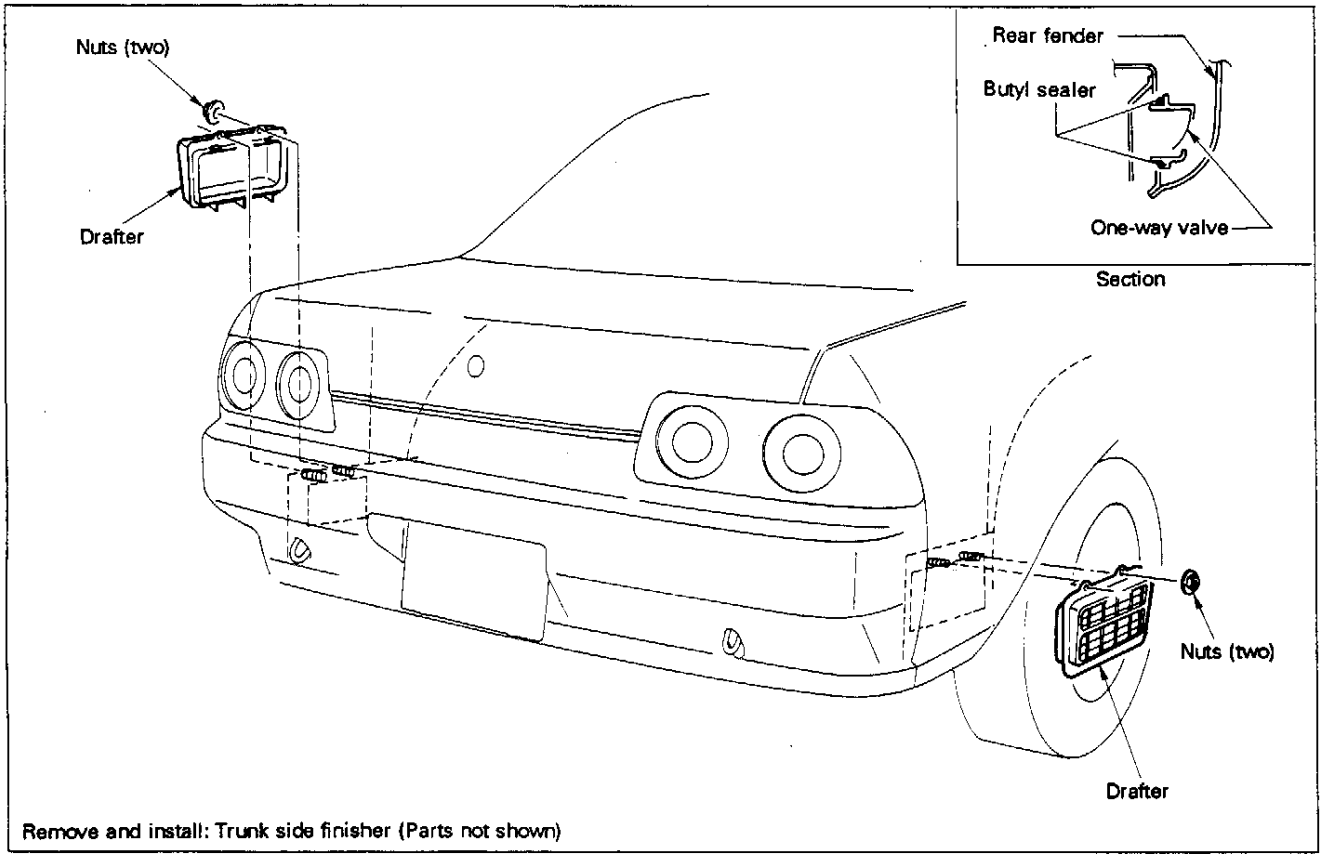
7-1 FRONT SPOILER REMOVAL AND INSTALLATION



7-2 REAR SPOILER REMOVAL AND INSTALLATION

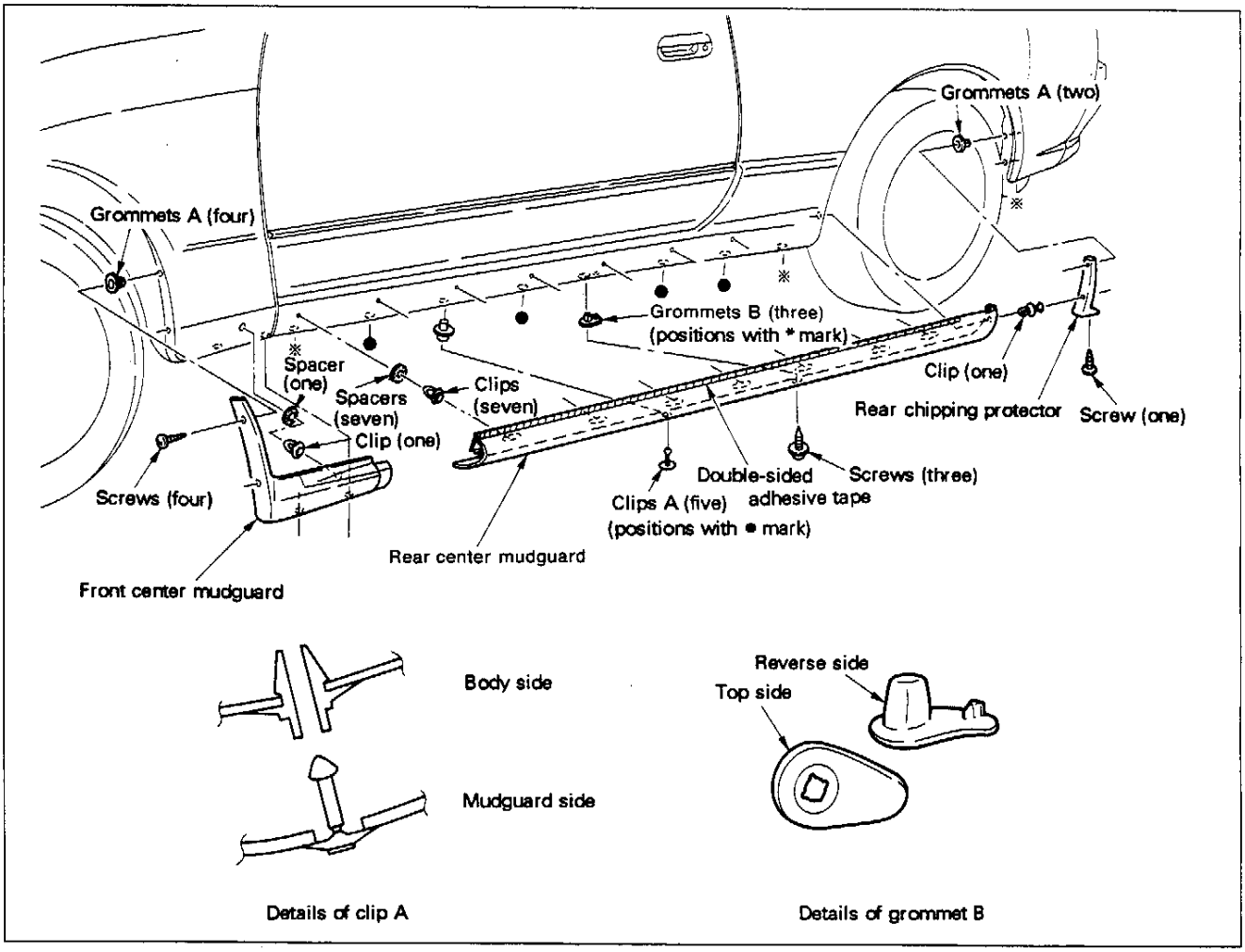


8. Drafter



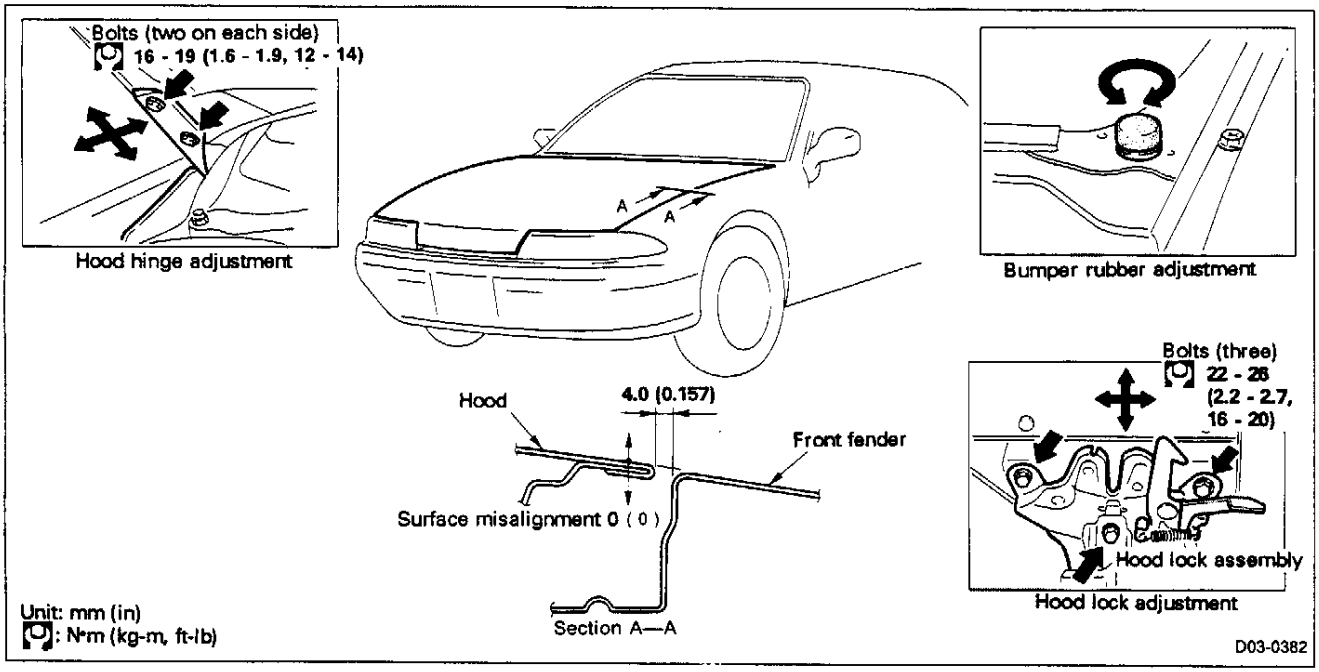
Remove and install: Trunk side finisher (Parts not shown)

9. Center Mudguard and Chipping Protector (GT-R model)

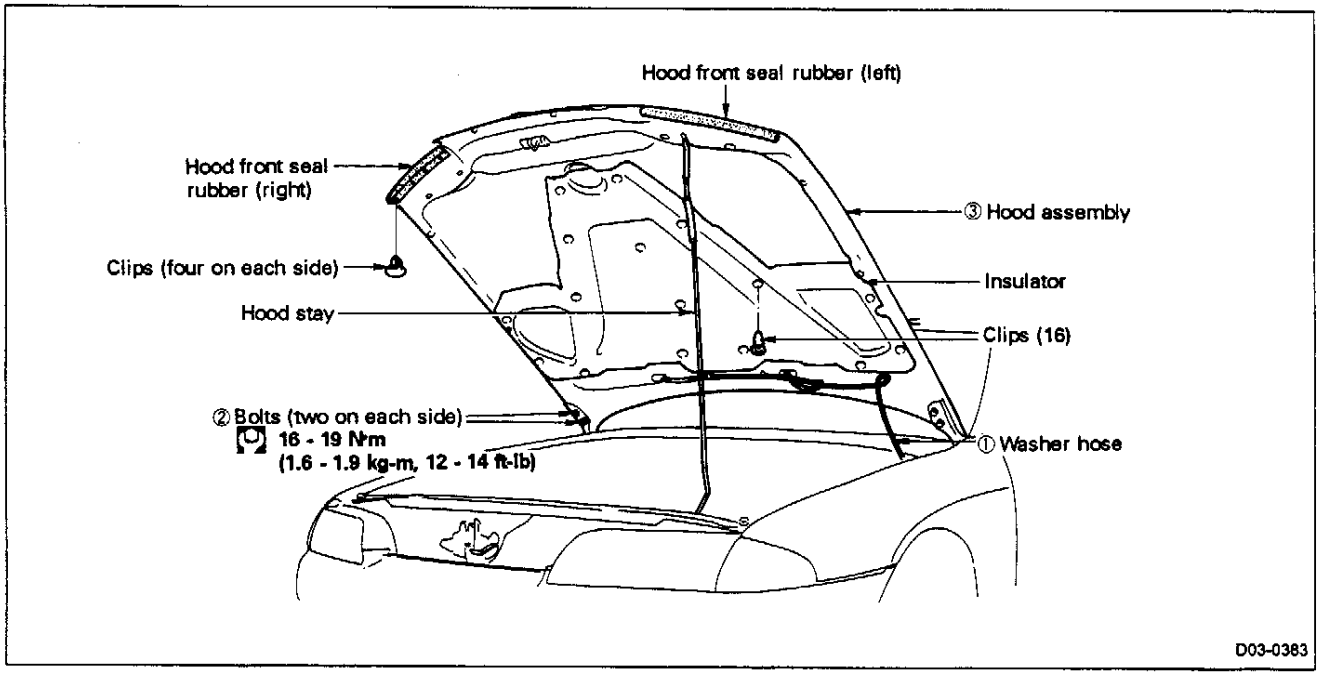


1. Hood

1-1 FITTING STANDARD AND ADJUSTMENT

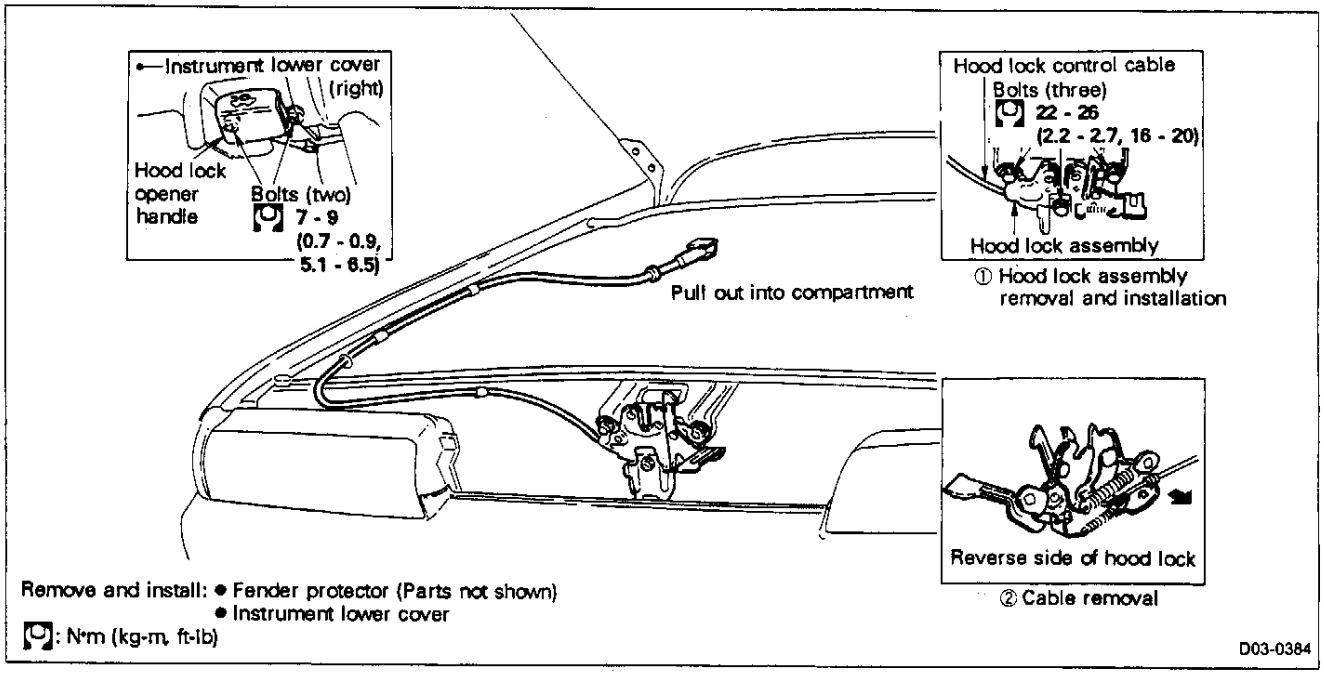


1-2 HOOD ASSEMBLY AND HOOD INSULATOR REMOVAL AND INSTALLATION



1. Hood (Cont'd)

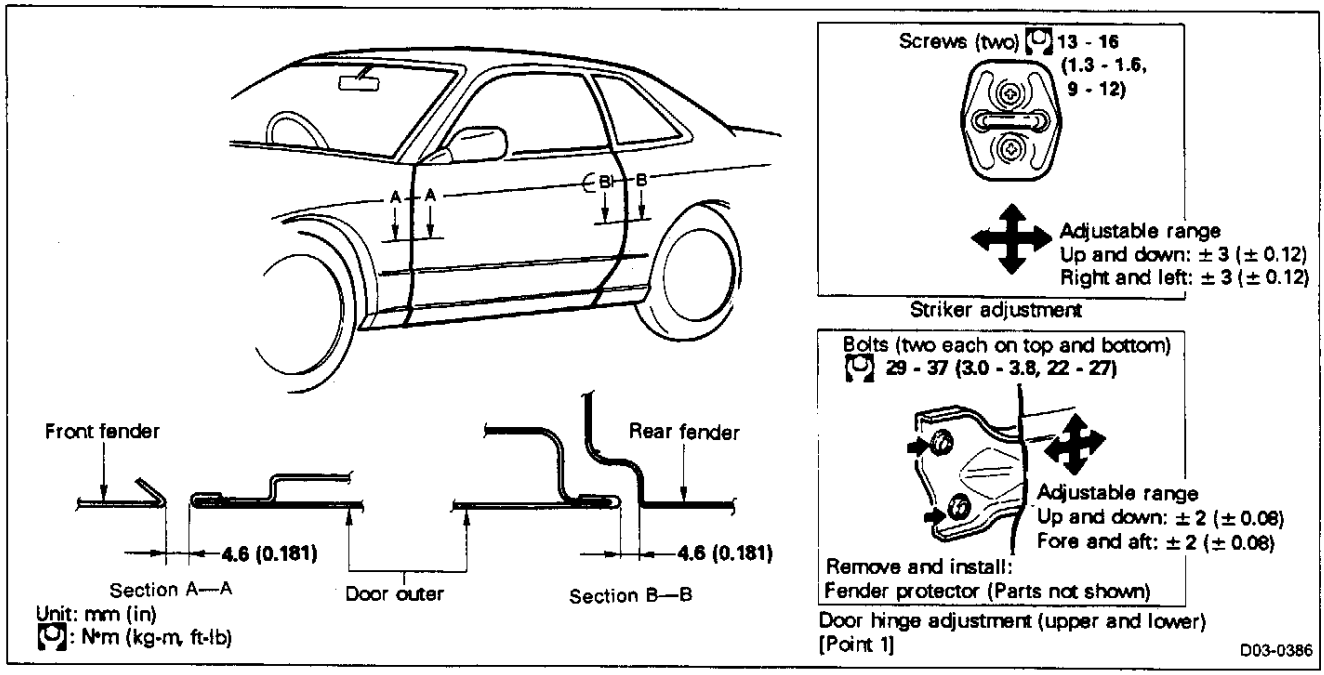
1-3 HOOD LOCK CONTROL REMOVAL AND INSTALLATION



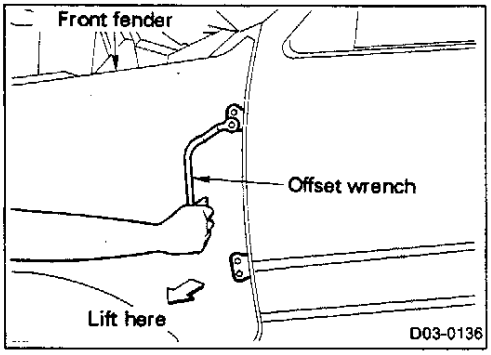
2. Door

2-1 FITTING STANDARD AND ADJUSTMENT

(1) 2-door Sports Coupe



2. Door (Cont'd)



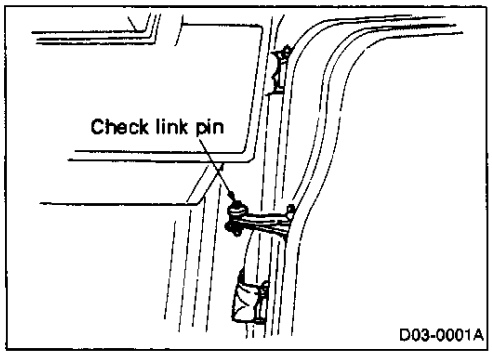
[Point 1] Door hinge adjustment

Remove and install: Fender protector (Parts not shown)

- Remove fender rear end securing bolts (four), and adjust door hinge using offset wrench while lifting fender off vehicle body.

NOTES:

(1) Pay attention not to deform fender when lifting.
(2) Keep waste cloth inserted under upper part of fender while adjusting.



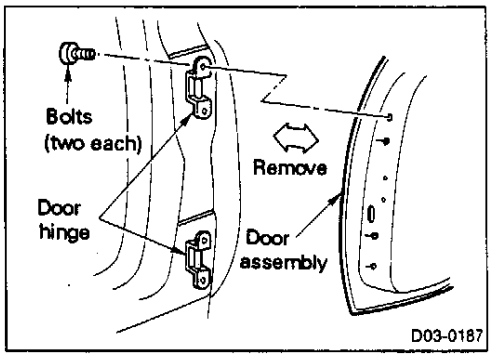
2-2 DOOR ASSEMBLY REMOVAL AND INSTALLATION

(1) Removal, installation and inspection

- To remove and install, remove check link pin and then remove door side hinge bolts (two each, upper and lower).
- When removing, pay attention not to damage coated surface.

NOTES:

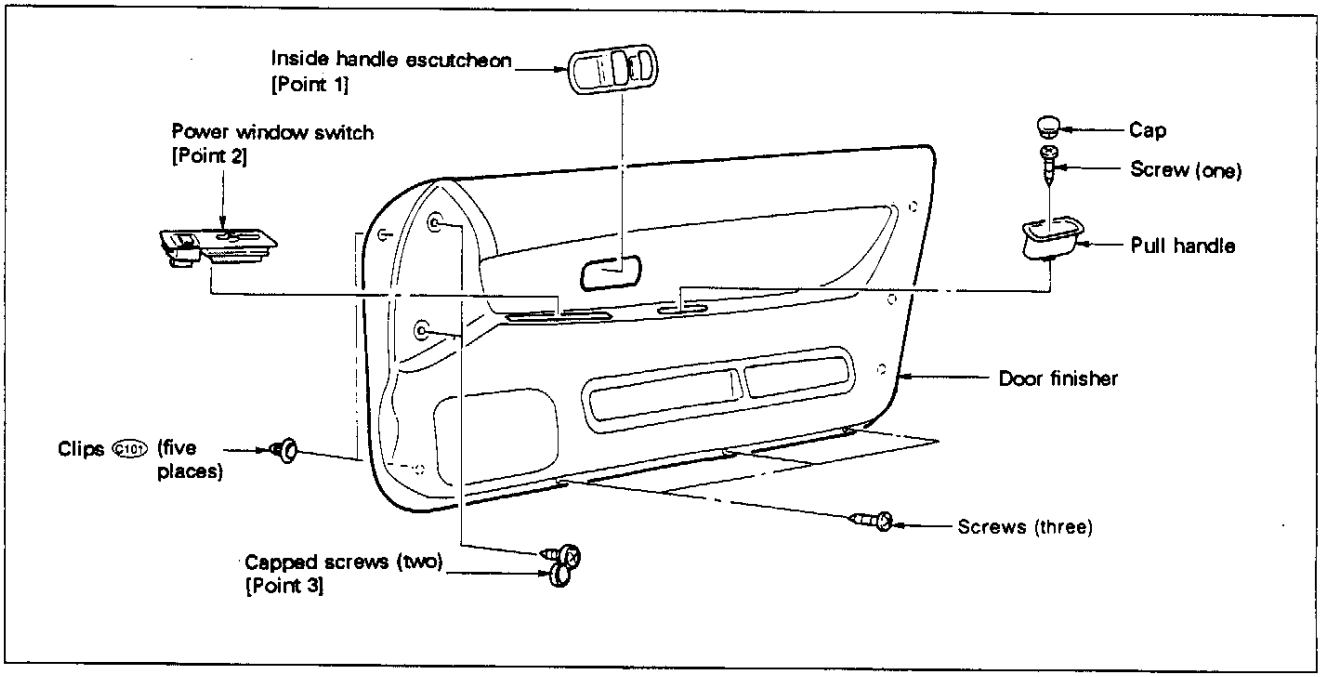
(1) When removing and installing, support door assembly using jack, cushioned with waste cloth to prevent damage to door.
(2) Check door hinge for the following points:
Abnormality or large resistance during opening or closing ... Apply grease
Damage or wear on components ... Replace
(3) Replace check link if damaged or worn abnormally.
(4) Install check link with RH or LH identification mark facing up.
(5) Apply "Nissan body grease" to rotating part of hinge and to check link pin.

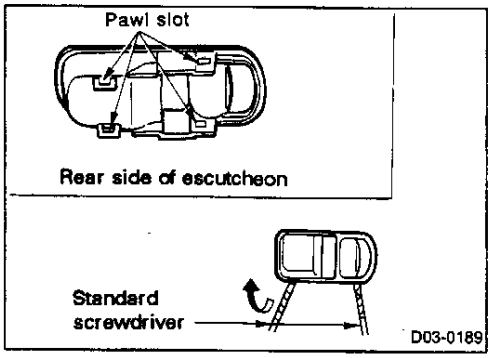


2. Door (Cont'd)

2-3 FRONT DOOR TRIM REMOVAL AND INSTALLATION

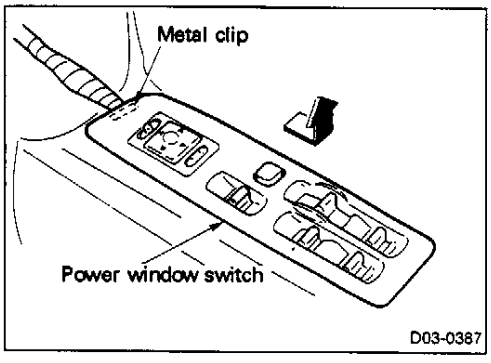
(1) 2-door Sports Coupe





[Point 1] Inside handle escutcheon removal

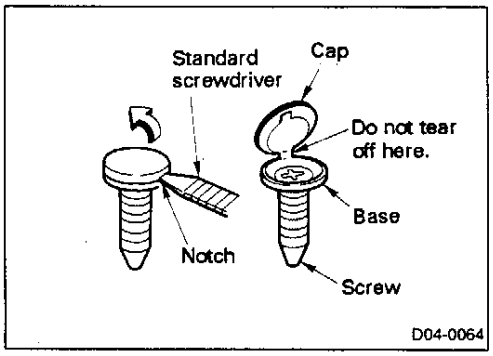
- Using standard screwdriver wrapped with vinyl tape, remove escutcheon by disengaging upper and lower pawls.



[Point 2] Power window switch removal

- Insert standard screwdriver tip to front end, and push screwdriver rearward to disengage metal clip, and then remove power window switch.

2. Door (Cont'd)



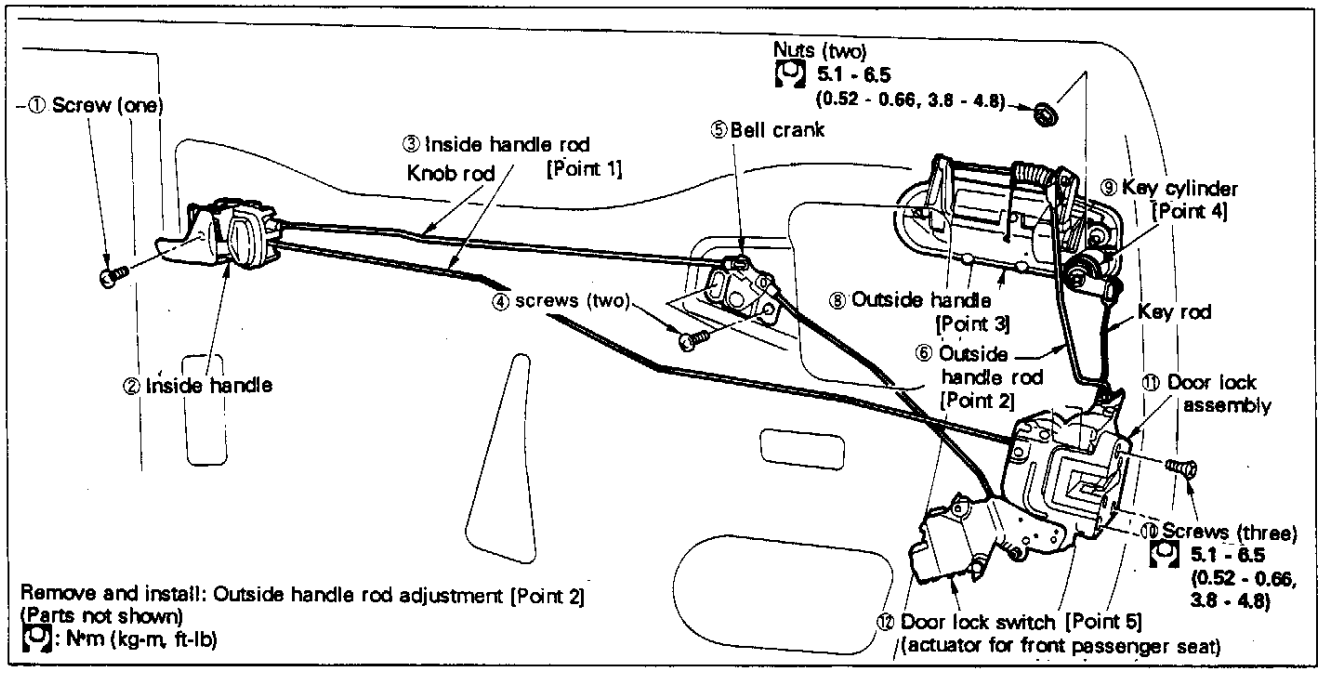
[Point 3] Capped screw removal

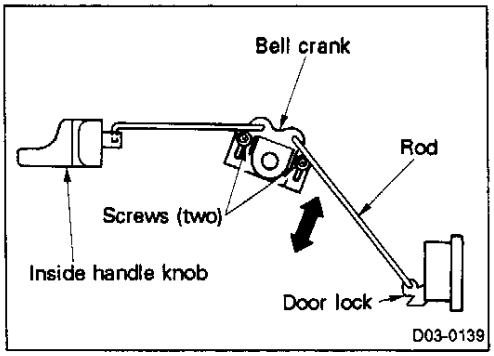
- Using standard screwdriver, open screw head cap, and then remove screw.

NOTE:
Cap is made integral with screw. Pay attention not to tear off cap from cap base when removing screw.

2-4 FRONT DOOR LOCK AND REMOTE CONTROL REMOVAL AND INSTALLATION

(1) 2-door Sports Coupe

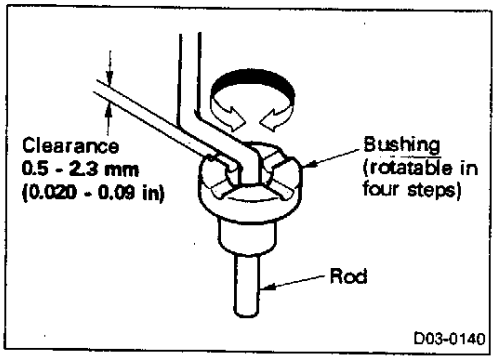




[Point 1] Inside handle rod adjustment

- Fix door lock and inside handle, and adjust bell crank in direction of arrow shown at left to eliminate rod play, then secure with screws.

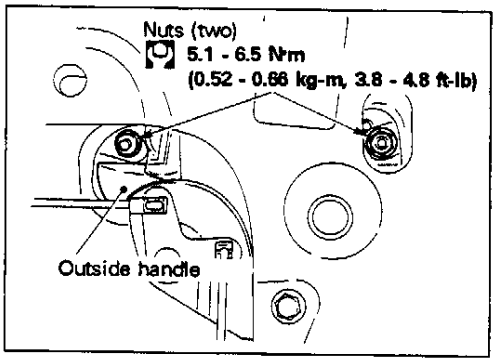
2. Door (Cont'd)



[Point 2] Outside handle rod adjustment

- Rotate bushing so that clearance between bushing and rod meets specification shown at left.

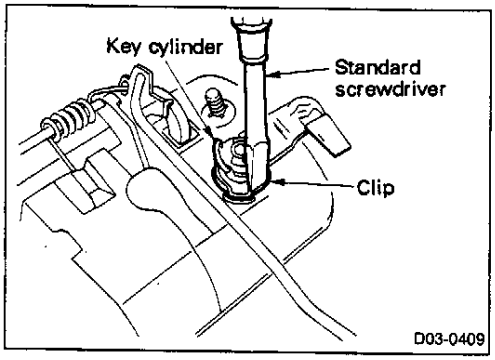
NOTE:
Clearance must be greater than 0 mm (0 in), or outside lever must be free when not being operated.



[Point 3] Outside handle single part removal

Removal

- Completely close window.
- Disconnect key cylinder rod and outside handle rod connections.
- Remove two nuts and remove outside handle.



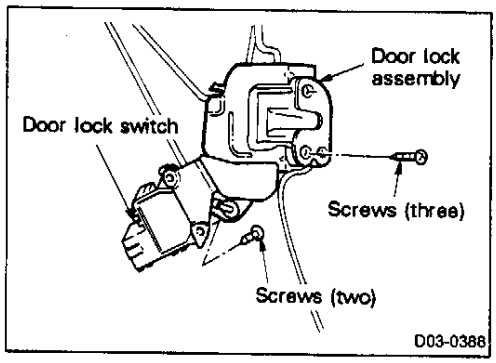
[Point 4] Key cylinder removal and installation

Removal

- Insert tip of small standard screwdriver into clearance between clip and key cylinder to disengage clip, and remove key cylinder.

Installation

- Install clip to key cylinder case, and then insert key cylinder.



[Point 5] Door lock switch removal

Remove and install: Inside and outside handle rods, key cylinder rod (Part not shown)

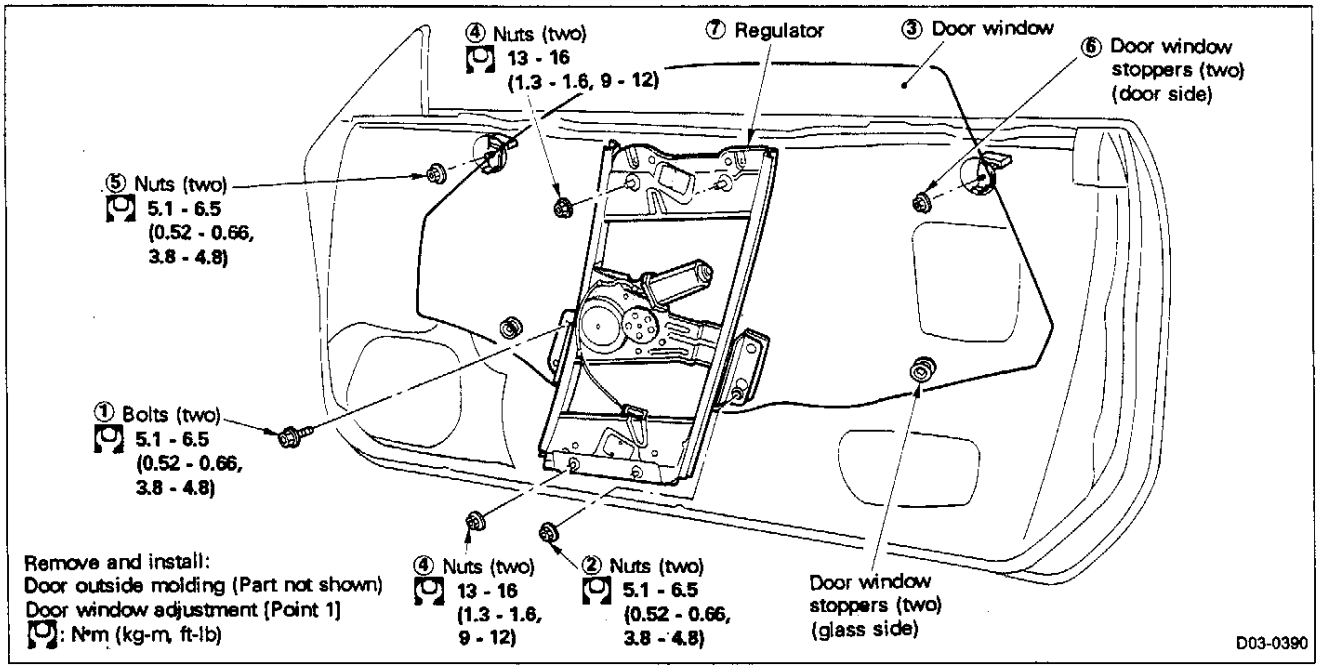
- Remove rod, and remove door lock assembly screws (three) and door lock switch bolt (one), and then remove door lock assembly.
- Remove screws (two) to separate door lock assembly from door lock switch.

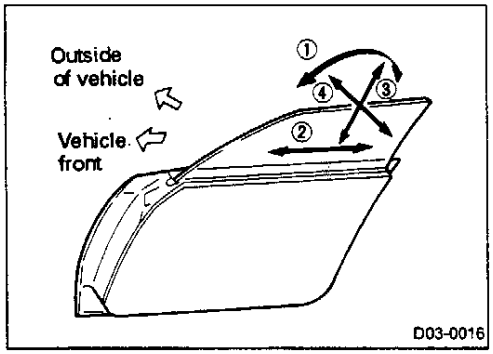
NOTE:
Door lock switch cannot be removed from door lock assembly if the assembly is installed on vehicle. Be sure to remove door lock switch together with door lock assembly.

2. Door (Cont'd)

2-5 FRONT DOOR WINDOW AND REGULATOR REMOVAL AND INSTALLATION

(1) 2-door Sports Coupe





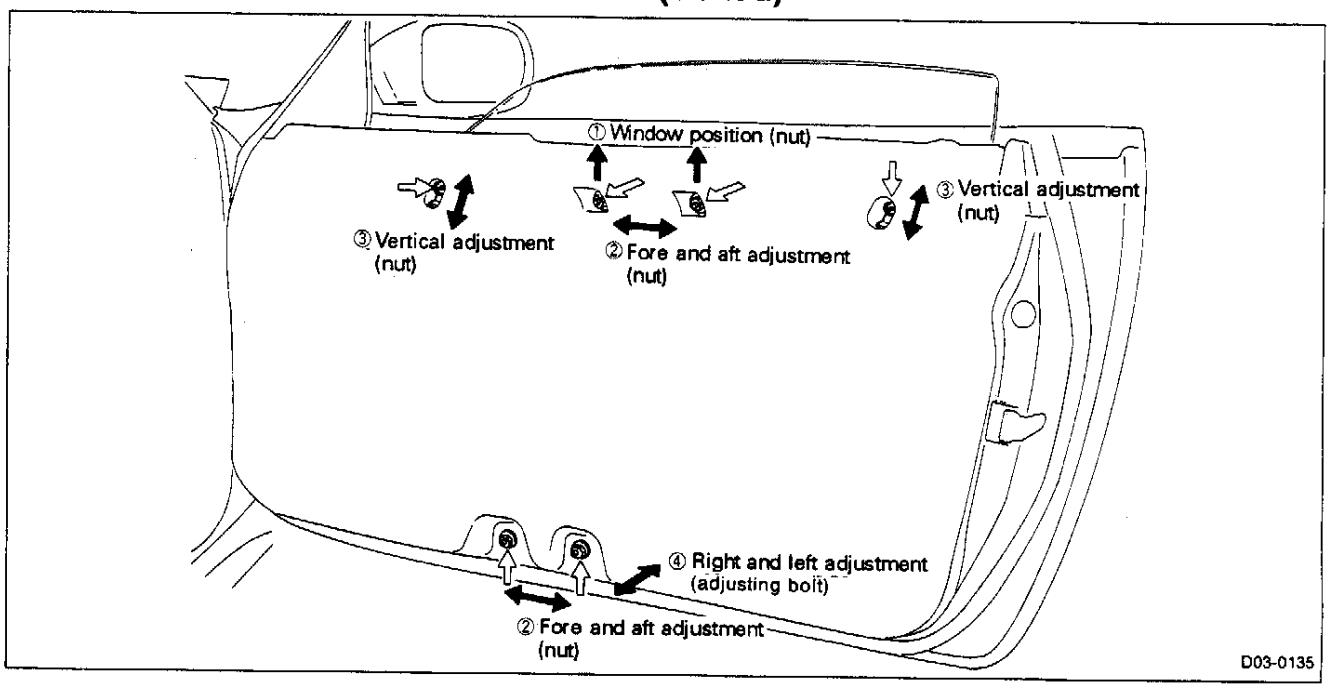
[Point 1] Door window adjustment

- Door window fitting can basically be adjusted by moving window in four directions as shown below.

① Window position (front-end down, rear-end down)
② Fore and aft adjustment of window
③ Vertical adjustment of window (upper limit)
④ Right and left adjustment of window (inward or outward inclination)

- Perform adjustment at the positions shown below.

2. Door (Cont'd)



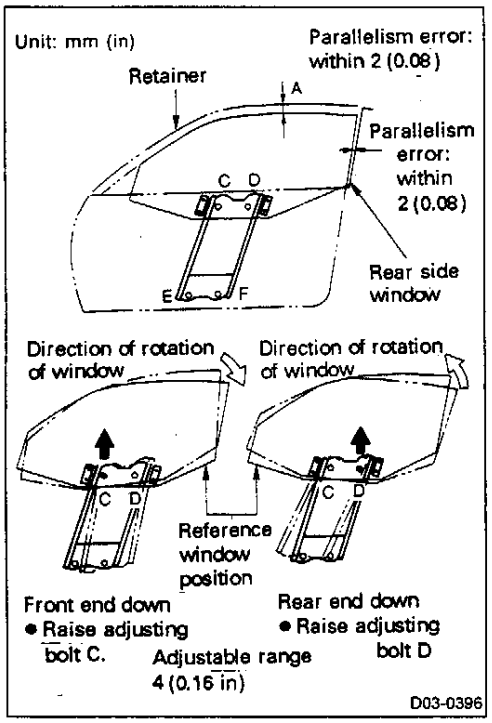
Adjustment work

- To adjust door window position, proceed as follows:

Temporarily tighten regulator assembly securing nuts (four).
↓
Correct window position (front-end down, rear-end down).
↓
Adjust fore-aft position.
↓
Tighten regulator assembly securing nuts (four).
↓
Adjust vertical position.
↓
Adjust right-left position.

Remove body-side weatherstrip when performing these adjustments.

2. Door (Cont'd)



① Window position adjustment

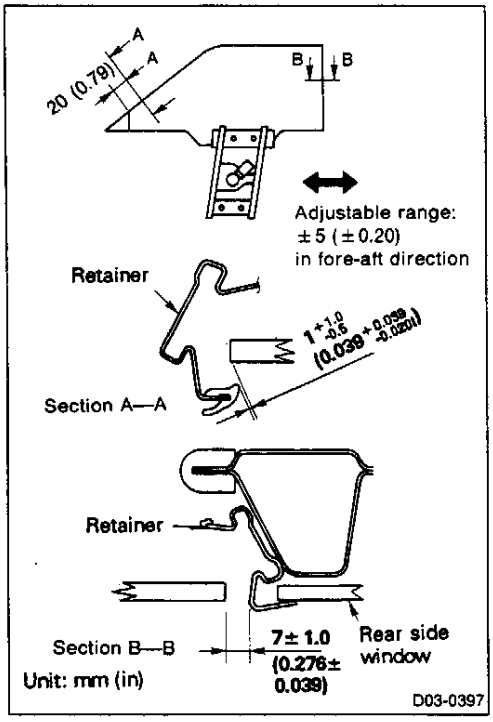
Remove and install: Body side weatherstrip (Part not shown)

NOTE:

Perform this position adjustment simultaneously with fore-aft adjustment in step ②.

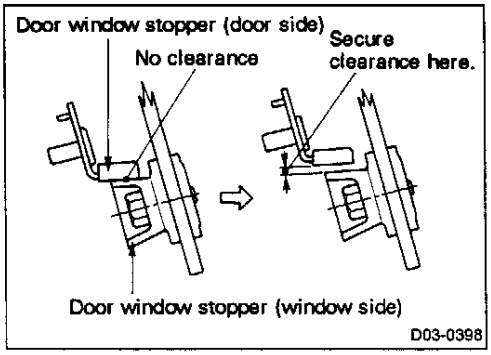
- With window raised, loosen securing bolts C, D, E, and F, and adjust inclination of window using bolts C and D so that a uniform clearance will be obtained between window and retainer at positions A and B.

Window front end down:	Raise adjustment bolt C using bolt D as supporting point.
Window rear end down:	Raise adjustment bolt D using bolt C as supporting point.



② Fore-aft adjustment of window

- Loosen bolts [C, D, E, and F shown in step ① above] and slide regulator in fore-aft direction so that clearance between rear end of window and retainer meet standard shown at left, then temporarily secure bolts by tightening nuts.

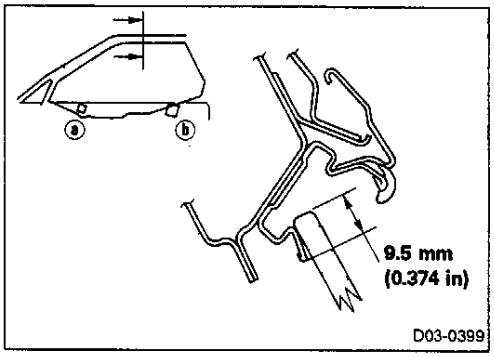


- When adjusting, slightly lower window to create clearance between door side stopper and window side stopper.

NOTE:

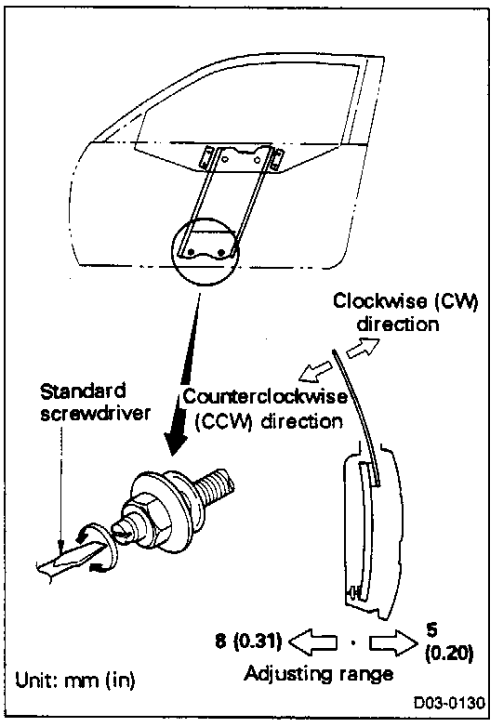
Do not lower window excessively.

2. Door (Cont'd)



③ Vertical adjustment of window

- With window fully closed, adjust height of door window stoppers (door side) ⓐ and ⓑ so that retainer lower end and window top end positions meet specification shown at left, then secure stoppers with nuts.



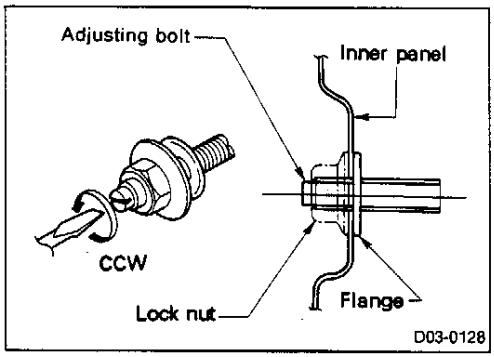
④ Right and left adjusting of window

- Use lower two of four adjusting bolts.

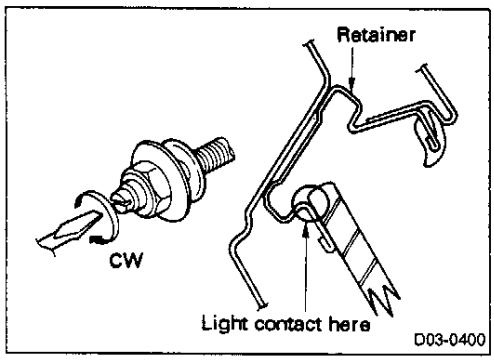
NOTES:

(1) Rotate adjusting bolt in CW direction, and end of window will move outward.
Rotate adjusting bolt in CCW direction, and end of window will move inward.

(2) Slightly lower window, like in the case of fore-aft adjustment, to create a clearance between door side stopper and window side stopper.



- Loosen nuts (front and rear), and loosen adjusting bolt and tilt window fully inward until adjusting bolt flange contacts inner panel.

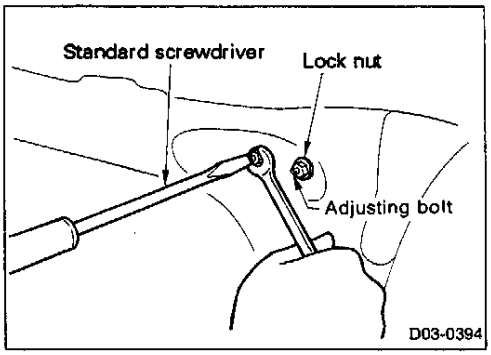


- With door fully closed in the above-mentioned position, tighten adjusting bolts a few turns until inside of window lightly contacts retainer.

NOTE:

Evenly tighten front and rear adjusting bolts.

2. Door (Cont'd)



- After completing adjustment, tighten lock nut securely.

NOTE:
When tightening lock nut, hold adjusting bolt using standard screwdriver to prevent rotation.

2-6 POWER DOOR LOCK TROUBLE DIAGNOSIS

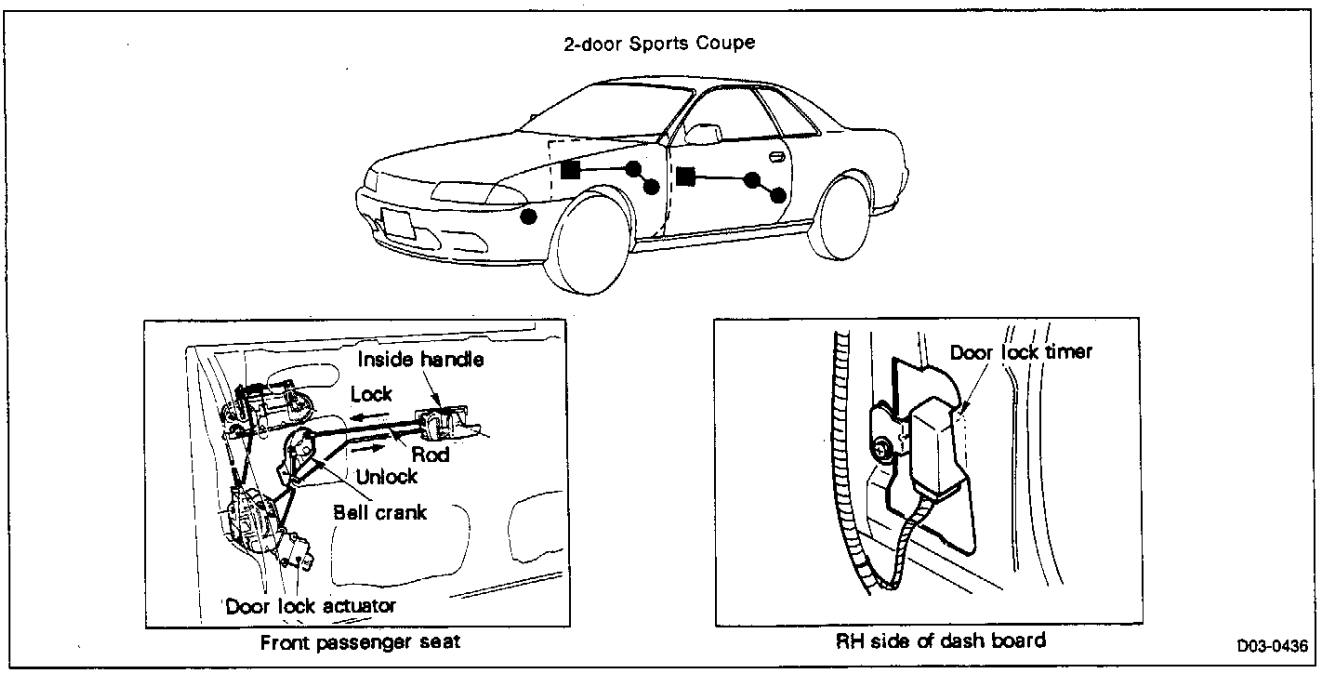
(1) Outline of trouble diagnosis (2-door Sports Coupe)

Carry out trouble diagnosis according to flowchart.

Power door lock fails to operate → Any door other than driver seat (front passenger seat) fails to operate.

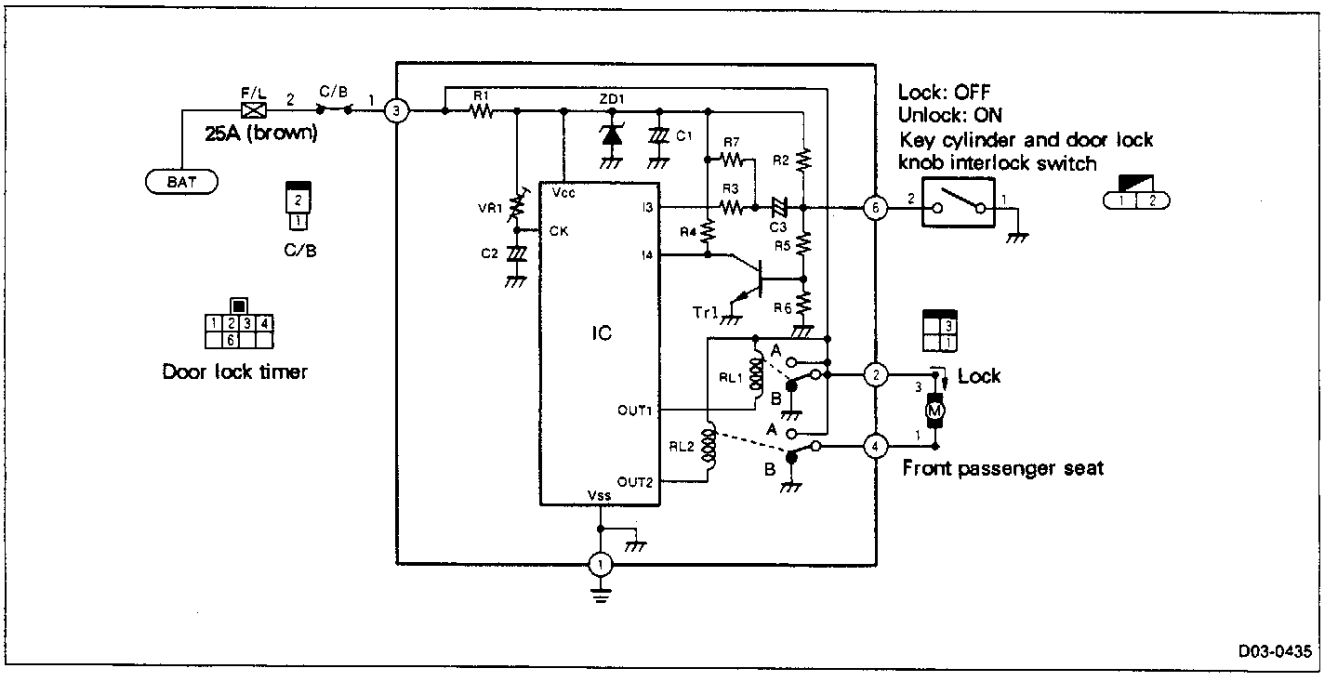
- Prepare the following tools and equipment for trouble diagnosis.
  Analog circuit tester
  Sub harness and battery (for checking door lock actuator operation)
  Tools for removing and installing parts (screwdriver, wrenches, etc.)
- Carry out the following inspection when diagnosing.
  *1: Door lock timer connector disconnected
  *2: Door lock actuator connector disconnected
  *3: Door lock knob and key cylinder interlocking switch disconnected, or rod disconnected, and bell crank installed.

(2) Components



2. Door (Cont'd)

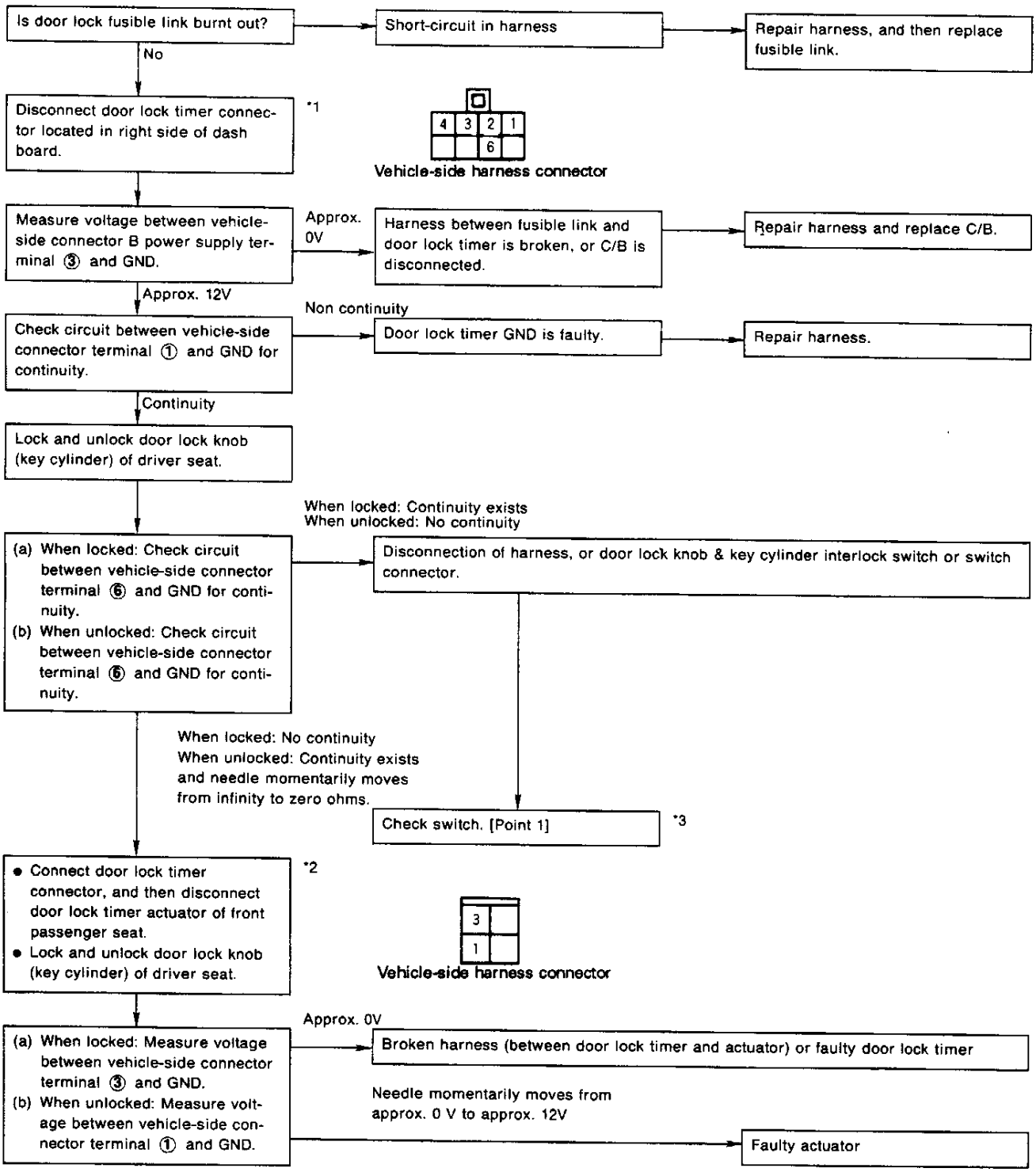
(3) System diagram



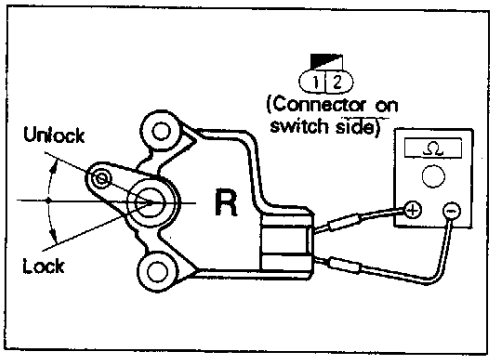
2. Door (Cont'd)

(4) Diagnostic chart

- Front passenger seat door lock fails to operate.



2. Door (Cont'd)



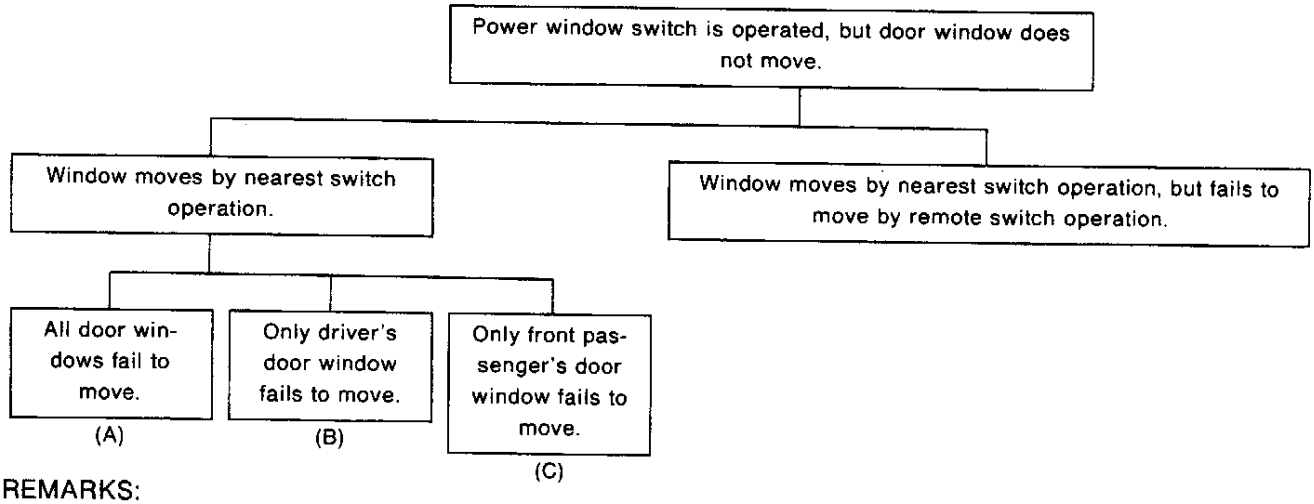
[Point 1] Continuity test on switch

- Manually move rod and check for continuity between terminals. If continuity exists, tester needle will momentarily move from infinity side to zero ohm side.

2-7 POWER WINDOW TROUBLE DIAGNOSIS

(1) Outline of trouble diagnosis (2-door Sports Coupe)

- Troubles on vehicle are classified into four large categories, and trouble diagnosis is performed according to flowchart for each category.
- Trouble diagnostic conditions are: ignition switch ON and power window lock switch in UNLOCK position.



REMARKS:

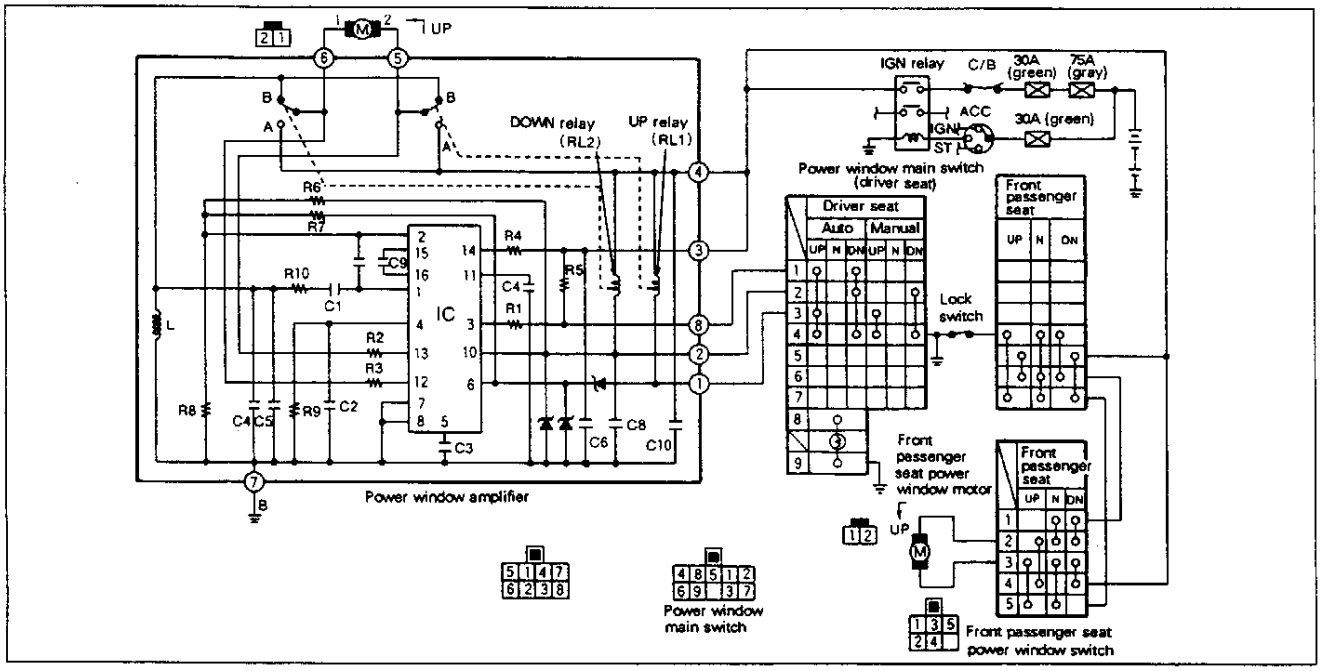
Nearest switch operation: Attempt to operate door window by operating its nearest power window switch.

Remote switch operation: Attempt to operate front passenger door window by operating power window main switch by driver seat.

- Caution during Trouble Diagnosis
  Trouble diagnosis is performed with ignition switch set ON. When repairing trouble, be sure to disconnect battery negative terminal.

2. Door (Cont'd)

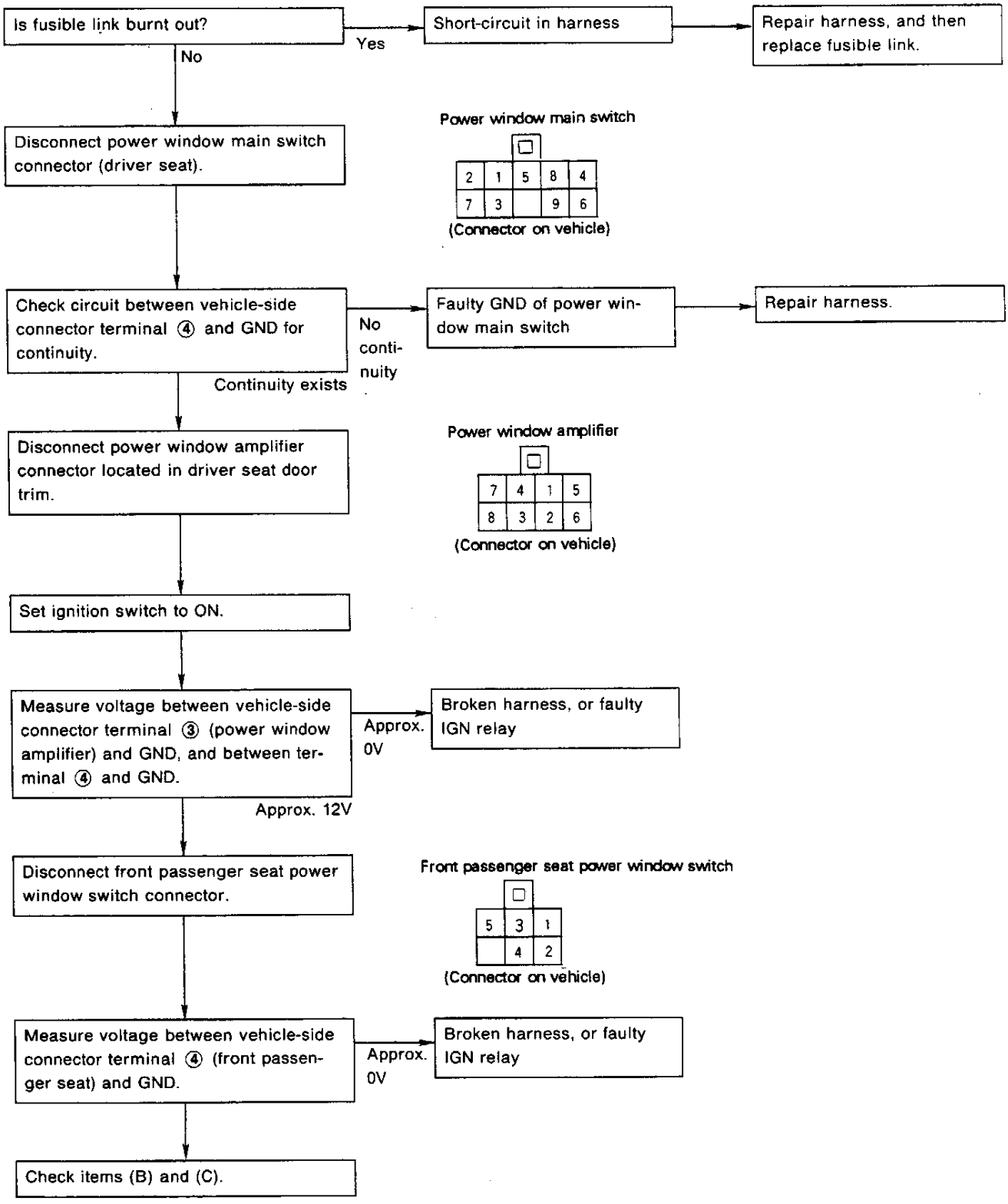
(2) System diagram



2. Door (Cont'd)

(3) Diagnostic chart

(A) No door window moves using respective power window switch



2. Door (Cont'd)

(B) Unable to operate driver seat window alone

Remove power window main switch (driver seat) connector.

↓

Operate power window main switch in driver seat and check for continuity between terminals. [Point 1]

→ No continuity → Power window main switch is faulty. → Replace switch.

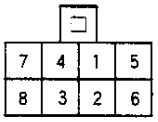
↓ Continuity exists

Connect power window main switch connector.

↓

Disconnect power window amplifier connector.

Power window amplifier



(Vehicle-side connector)

↓

Set ignition switch to ON.

↓

Measure voltage between vehicle-side connector terminal ③ and GND, and between terminal ④ and GND.

→ Approx. 0V → Harness is broken. → Repair harness.

↓ Approx. 12V

Check circuit between vehicle-side connector terminal ⑦ and GND for continuity.

→ No continuity → Power window amplifier GND is faulty. → Repair harness.

↓ Continuity exists

Operate switch in driver seat, and check circuit between vehicle-side connector of power window amplifier and GND for continuity.

- Auto switch
  When set to UP position: Terminal ① and GND
  Terminal ⑧ and GND
- When set to DOWN position: Terminal ② and GND

→ No continuity → Harness is broken. → Repair harness.

↓ Continuity exists

Connect power window amplifier connector.

↓

Disconnect driver seat power window motor connector.

Motor

(Vehicle-side connector)

↓

Operate switch in driver seat to measure voltage sent to motor.
When set to UP position: Vehicle-side connector terminal 2 and GND
When set to DOWN position: Vehicle-side connector terminal 1 and GND

→ Approx. 12V → Driver seat power window motor is faulty. → Replace motor.

→ Approx. 0V → Power window amplifier is faulty, or harness between motor and power window amplifier is broken.

2. Door (Cont'd)

(C) Unable to operate front passenger seat window using the switch on that door

Disconnect driver seat power window main switch connector.

↓

Operate driver seat power window main switch to check lock switch for continuity. [Point 2]

→ No continuity in both locked and unlocked positions → Power window main switch is faulty. → Replace switch.

When locked: No continuity
When unlocked: Continuity exists

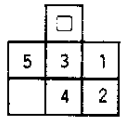
↓

Connect power window main switch connector.

↓

Disconnect front passenger seat power window switch connector.

Front passenger seat power window switch



(Vehicle-side connector)

↓

Set ignition switch to ON.

↓

Measure voltage between vehicle-side connector terminal ④ and GND.

→ Approx. 0V → Harness is broken. → Repair harness.

Approx. 12V

↓

Check circuit between vehicle-side connector terminal ① and GND and between terminal ⑤ and GND for continuity.

→ No continuity → Harness is broken. → Repair harness.

Continuity exists

↓

Operate front passenger seat power window switch to check for continuity between terminals. [Point 3]

→ No continuity → Front passenger seat power window switch is faulty. → Replace switch.

Continuity exists

↓

Connect front passenger seat power window switch connector.

↓

Disconnect front passenger seat power window motor connector.

Motor

(Vehicle-side connector)

↓

Operate front passenger seat power window switch to measure voltage sent to motor.
When set to UP position: Circuit between vehicle-side connector terminal ① and GND

→ Approx. 12V → Front passenger seat power window motor is faulty. → Replace motor.

When set to DOWN position: Circuit between vehicle-side connector terminal ② and GND

→ Approx. 0V → Harness between motor and front passenger seat power window switch is broken. → Repair harness.

2. Door (Cont'd)

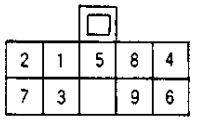
(D) Front passenger seat window will operate with the switch on that door, but will not operate with remote switch.

Set ignition switch to ON.

↓

Disconnect driver seat power window main switch connector.

Power window main switch



(Vehicle-side connector)

↓

Measure voltage between vehicle-side connector terminal ⑤ and GND.

→ Approx. 6V → Harness is broken. → Repair harness.

Approx. 12V

↓

Operate front passenger seat window switch in power window main switch to check for continuity between terminals. [Point 1]

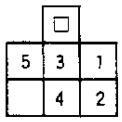
→ No continuity → Power window main switch is faulty. → Replace switch.

Continuity exists

↓

Connect power window main switch connector, and then disconnect front passenger seat power window switch connector.

Front passenger seat power window switch



(Vehicle-side connector)

↓

While not operating front passenger seat power window switch (set in "N"), check continuity between switch side connector terminals: Between terminal ① and terminal ②, and between terminal ③ and terminal ⑤

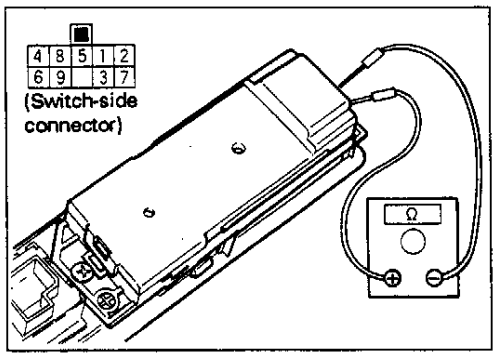
→ No continuity → Front passenger seat power window switch is faulty. → Replace switch.

Continuity exists

↓

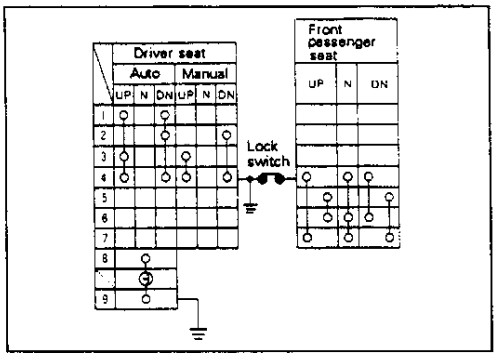
End

2. Door (Cont'd)



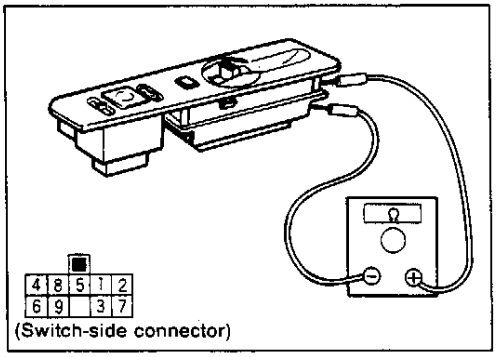
[Point 1] Power window main switch continuity inspection

- Set power window lock switch in locked position (with lock button pressed), and operate driver seat and front passenger seat switches to check continuity between respective terminals using circuit tester.



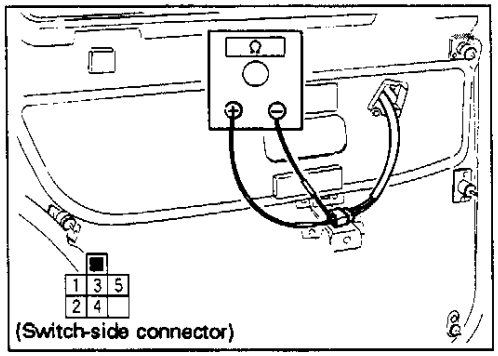
[Point 2] Power window lock switch continuity inspection

- Set lock switch in unlocked position (with lock button not depressed), and press DOWN end of driver seat manual switch. Check continuity between terminals ② and ⑦ using circuit tester.



[Point 3] Continuity inspection of front passenger seat power window switch

- Operate switch in each position, and check continuity between respective terminals using circuit tester.

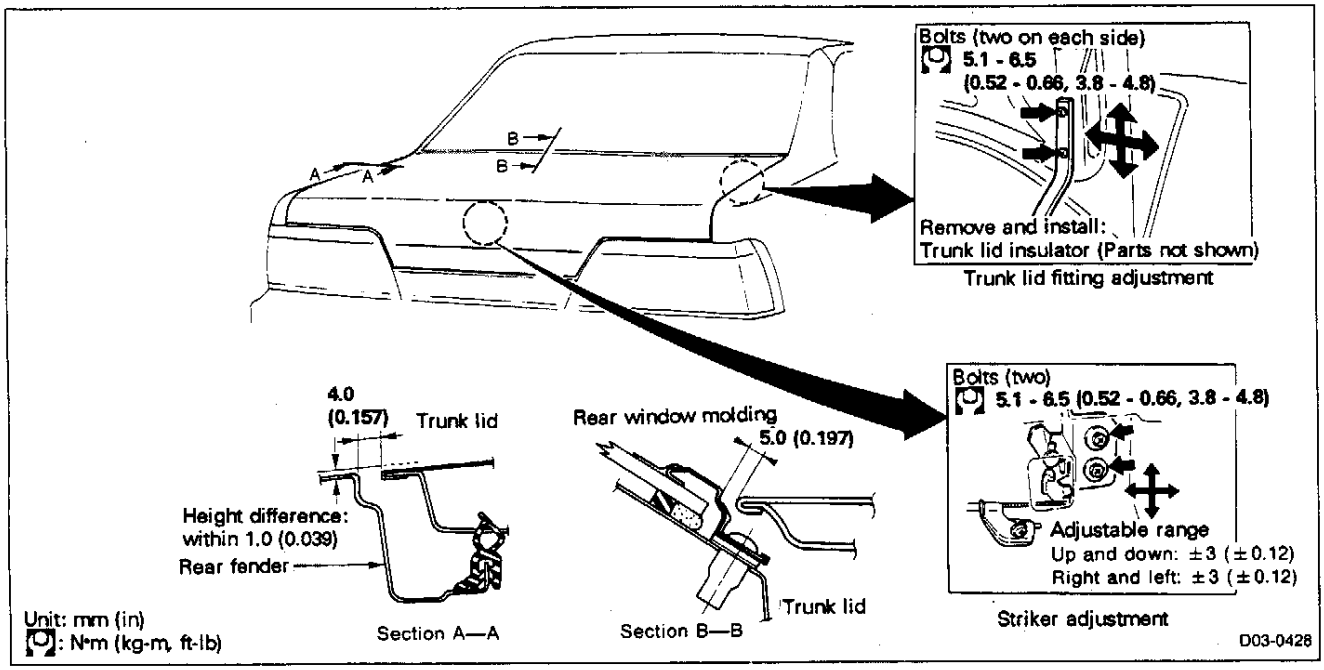


Operation / Terminal No.	Front passenger seat UP	N	DN
①		○	○
②	○	○	○
③	○	○	○
④	○		○
⑤	○	○	

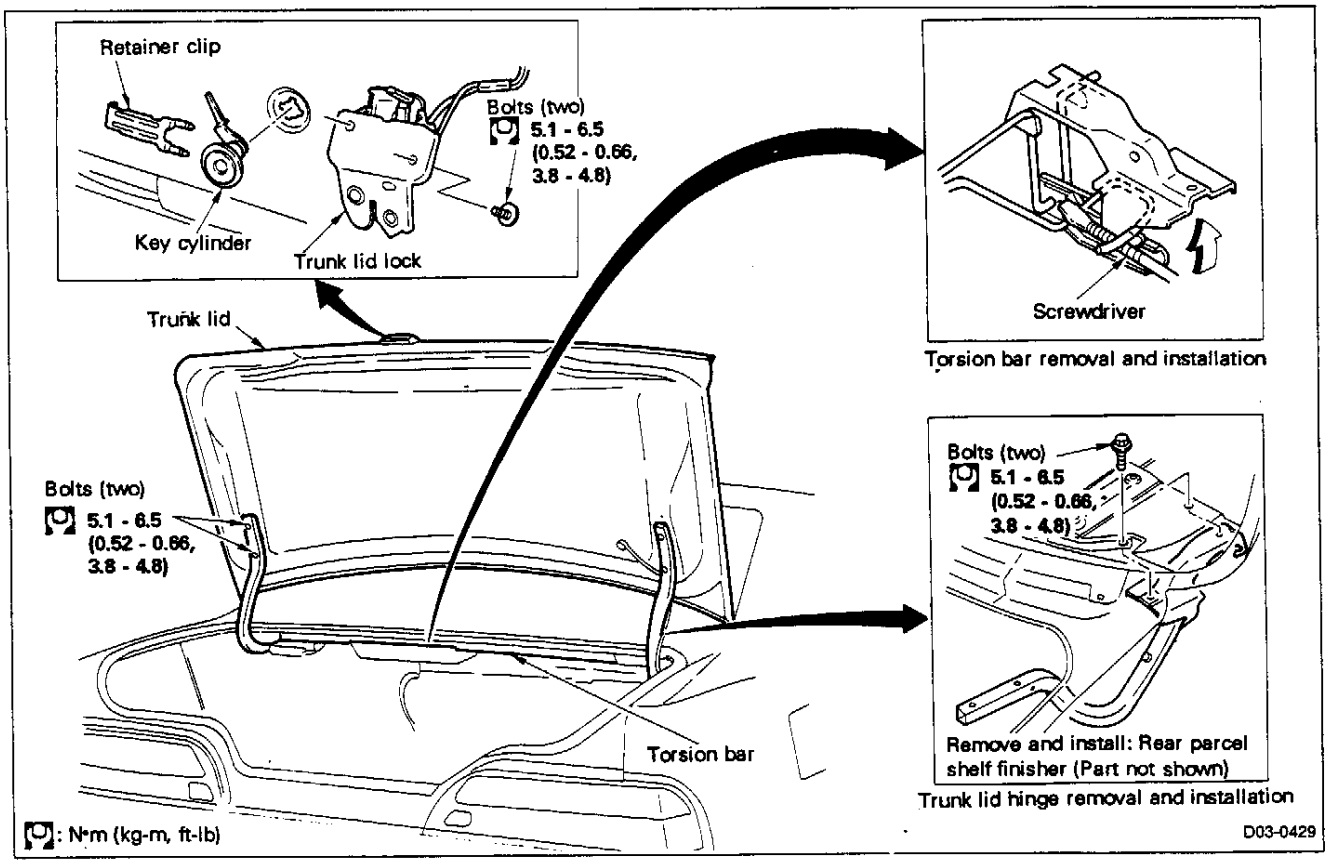
D03-0444

3. Trunk Lid

3-1 FITTING STANDARD AND ADJUSTMENT

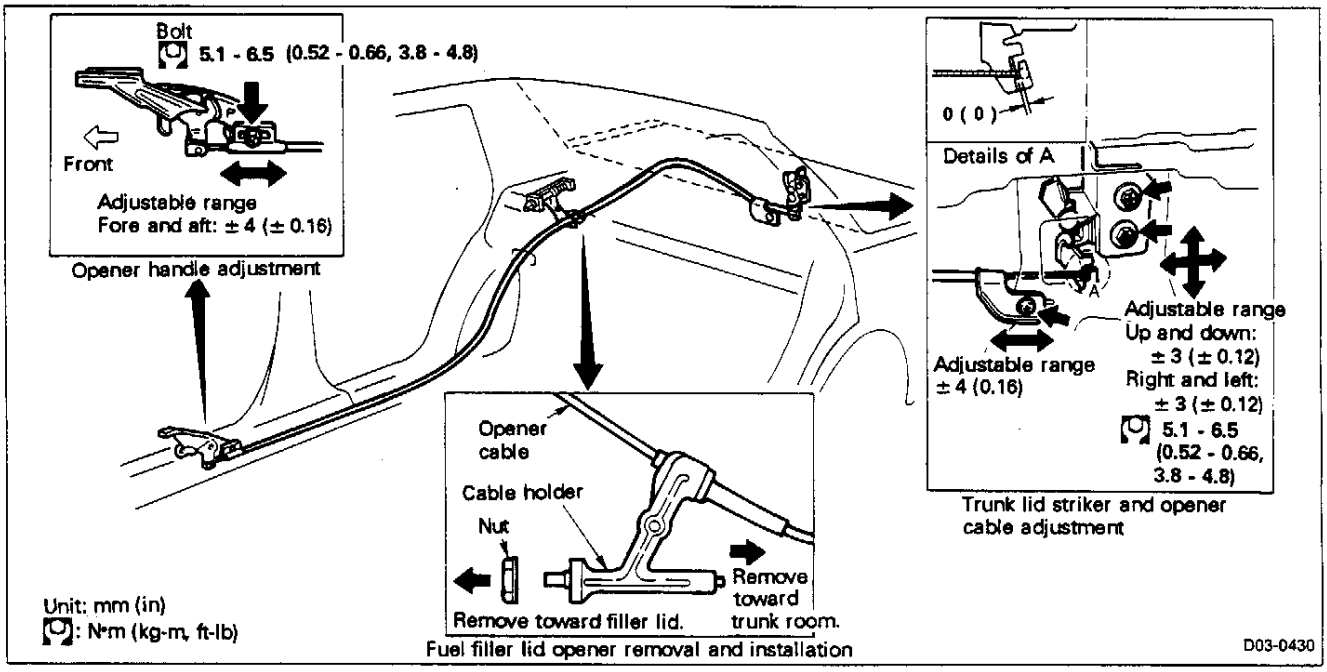


3-2 TRUNK LID ASSEMBLY



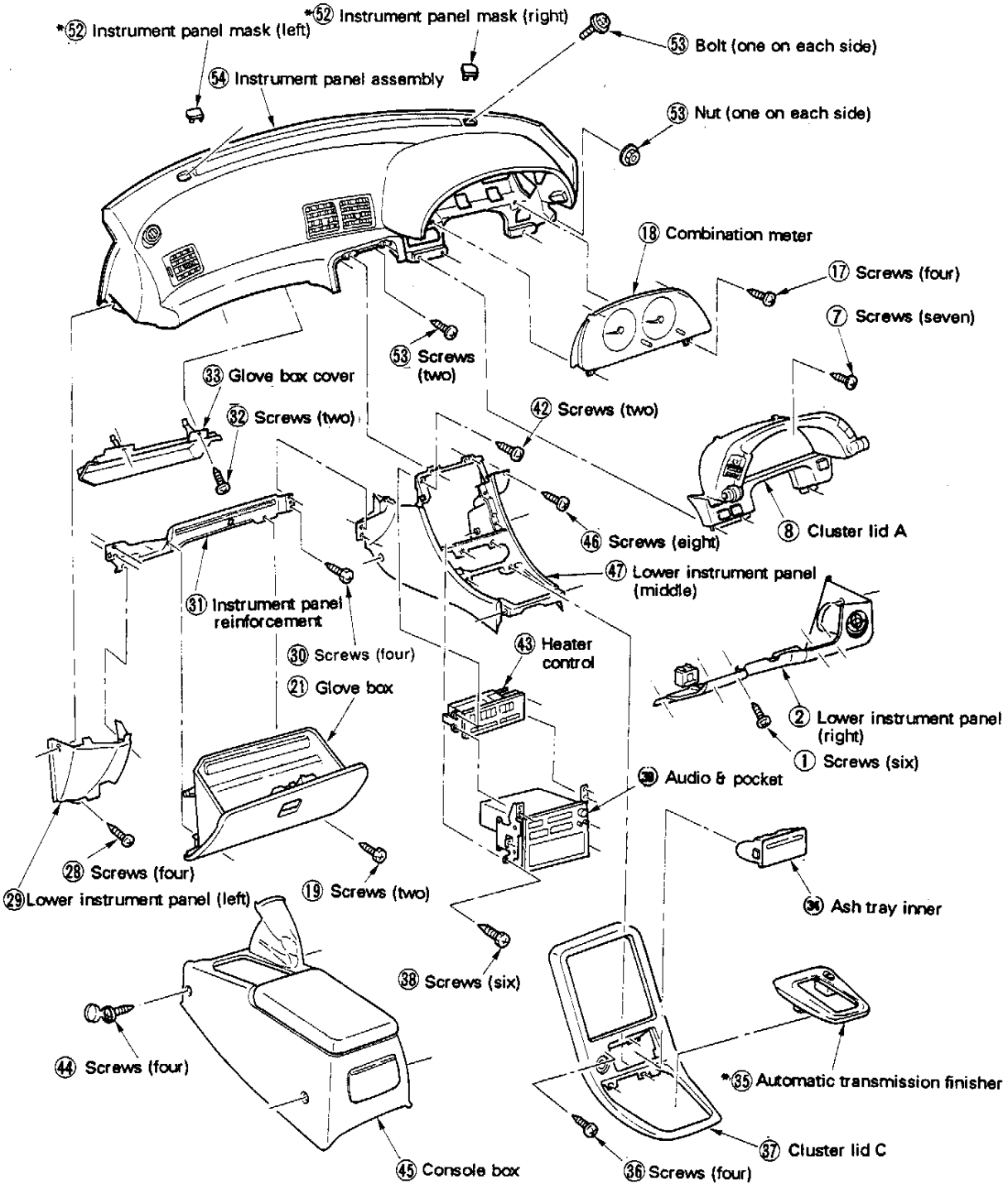
3. Trunk Lid (Cont'd)

3-3 TRUNK LID OPENER AND FUEL LID OPENER REMOVAL AND INSTALLATION



1. Instrument Panel

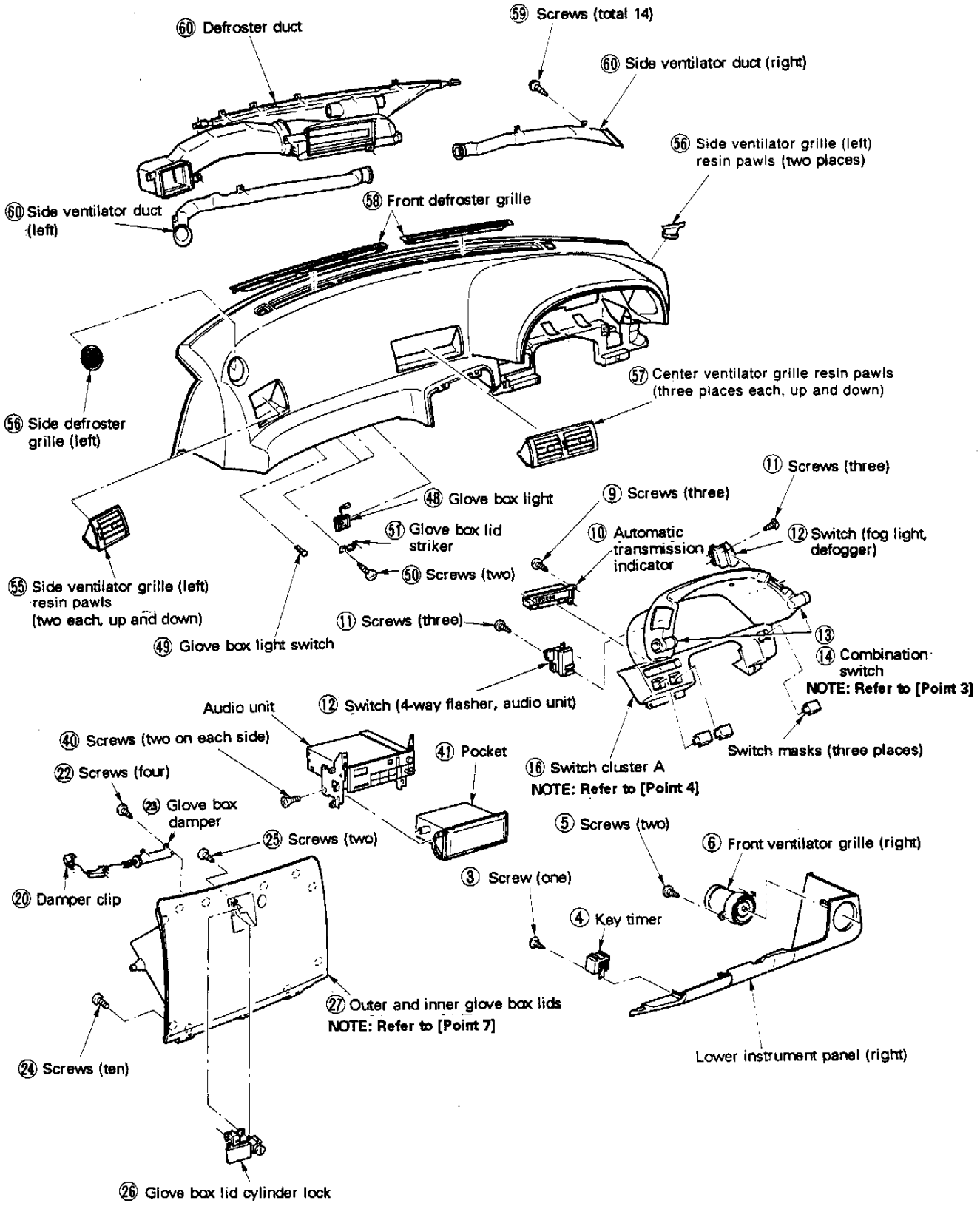
1-1 INSTRUMENT PANEL ASSEMBLY REMOVAL, INSTALLATION AND DISASSEMBLY



NOTE: Parts with mark * must be removed using screwdriver wrapped with vinyl tape or cloth.

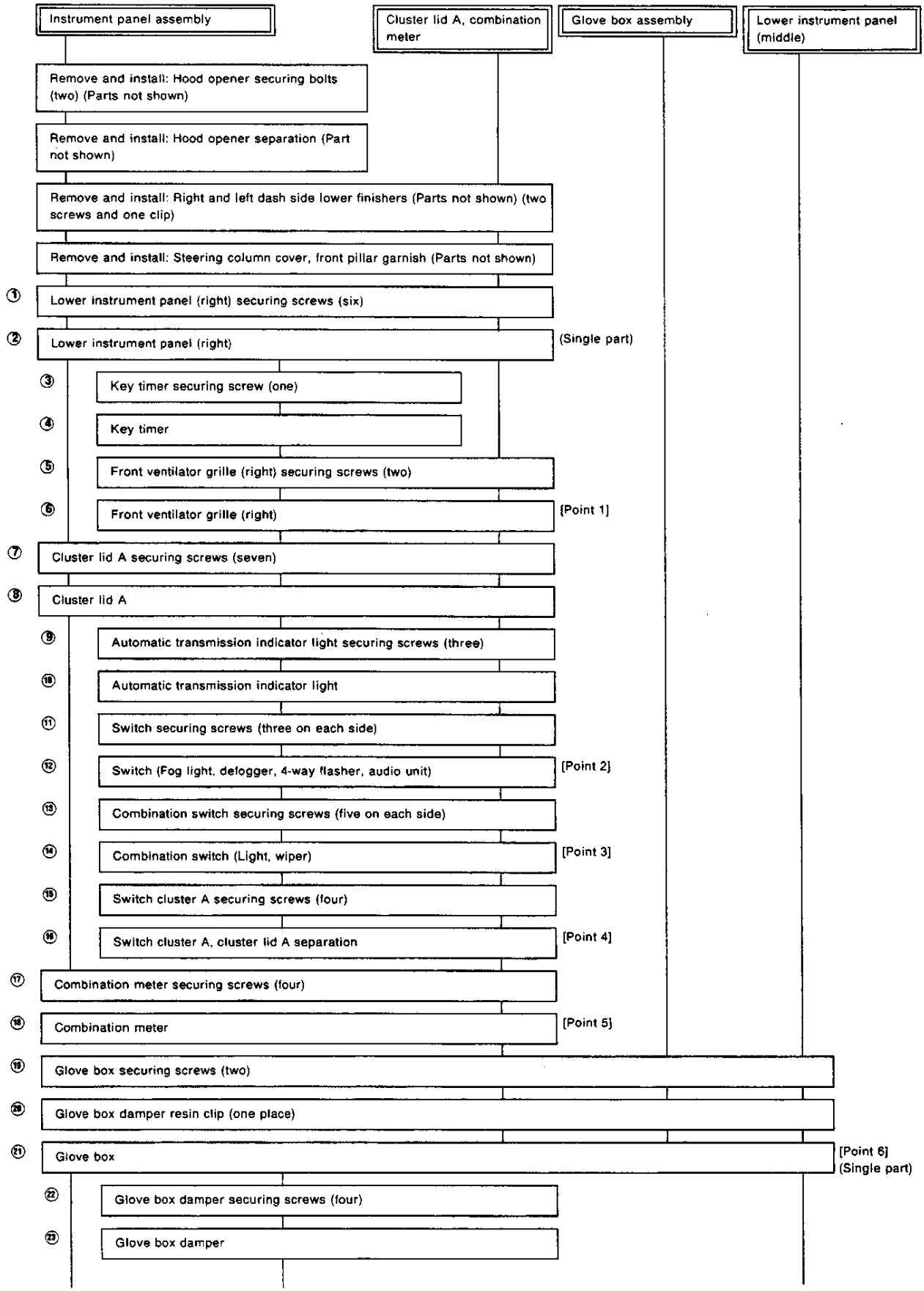
1. Instrument Panel (Cont'd)

1-2 ACCESSORY PARTS REMOVAL AND INSTALLATION AFTER REMOVING AND INSTALLING INSTRUMENT PANEL ASSEMBLY

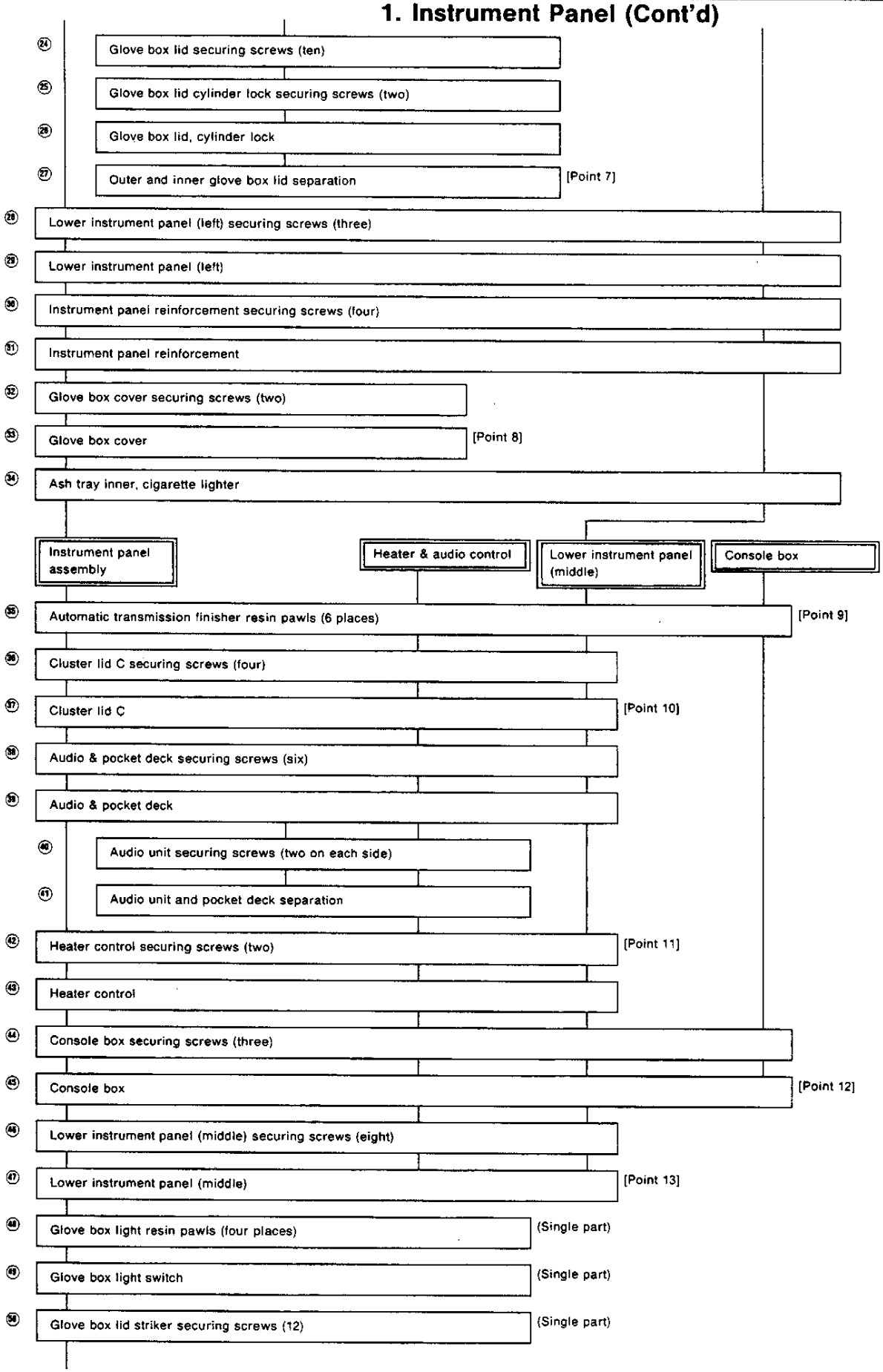


1. Instrument Panel (Cont'd)

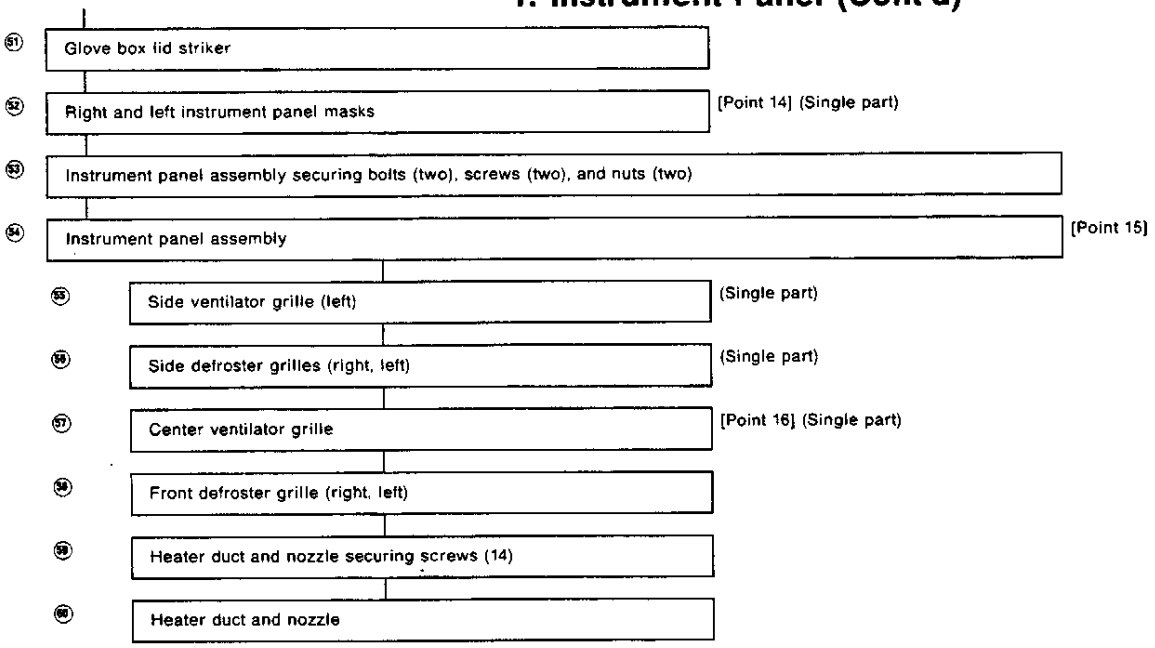
Detailed operations



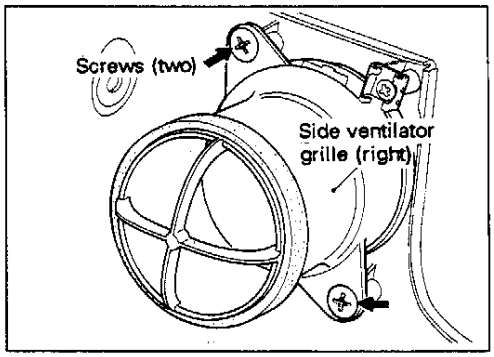
1. Instrument Panel (Cont'd)



1. Instrument Panel (Cont'd)



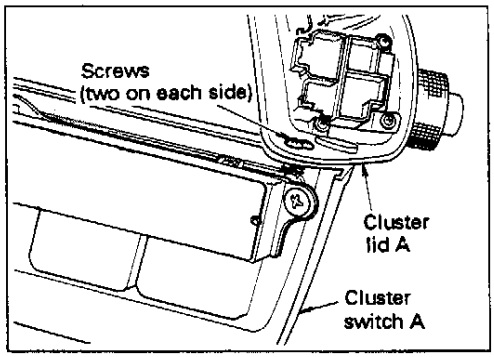
1. Instrument Panel (Cont'd)



[Point 1] Side ventilator grille (right) removal

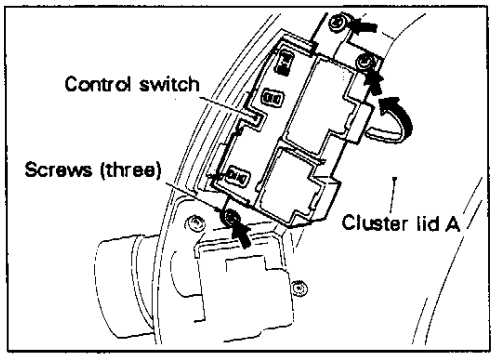
Remove and install: Lower instrument panel cover, hood opener

- Remove ventilator grille securing screws (two) from rear side of lower instrument cover, and remove ventilator grille (right).



[Point 2] Cluster switch A removal

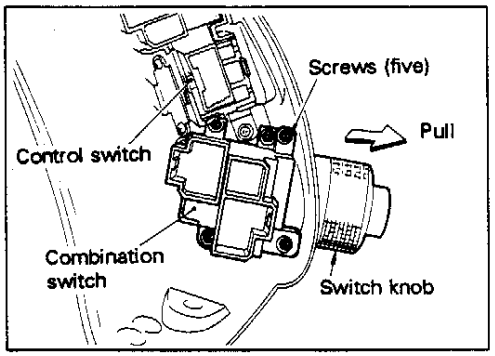
- Remove cluster lid A, and then remove screws (two on each side) from rear side, and separate cluster lid A and cluster switch A.



[Point 3] Control switch removal

- Remove control switch securing screws from rear side of cluster lid A, and then remove switch while pressing it inward.

NOTE:
When installing switch, pay attention not to tighten screws excessively.

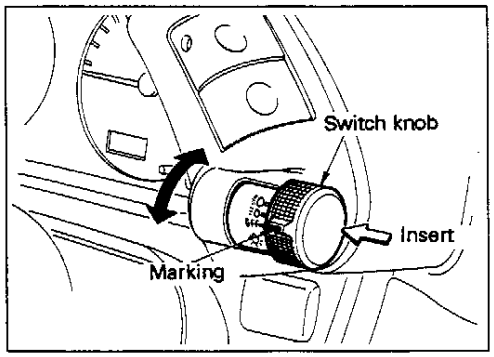


[Point 4] Combination switch removal and installation

Removal

- Remove switch knob by pulling in direction of arrow, and remove combination switch by removing securing screws (five) from rear side of cluster lid A.

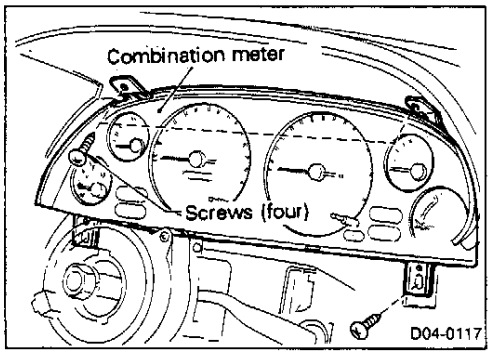
NOTE:
Control switch must be removed before removing combination switch. (This precaution applies to both right and left sides.)



Installation

- Install switch, and then install switch knob by aligning mark position.
- After installation, check for normal switch operation by operating switch.

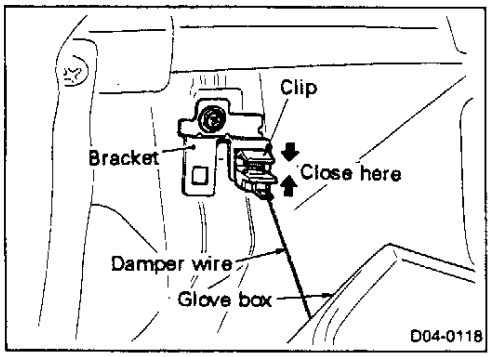
1. Instrument Panel (Cont'd)



[Point 5] Combination meter removal

Remove and install: Cluster lid A (Parts not shown)

- Remove screws (four), and pull out combination meter.



[Point 6] Glove box removal and installation

Removal

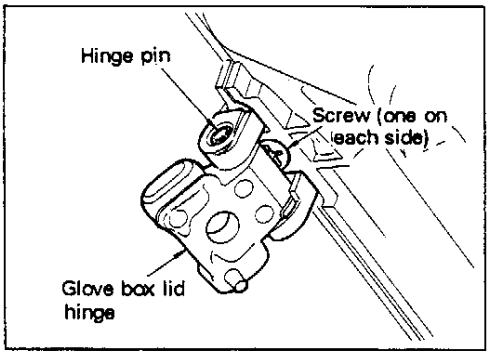
- Remove screws (two), and remove damper clip from bracket located inside of glove box.

Installation

- Insert clip into bracket while pulling damper wire, then install glove box fully closed.

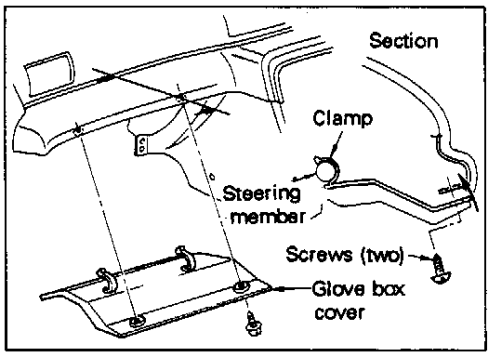
NOTE:

Pay attention not to cut off damper wire.



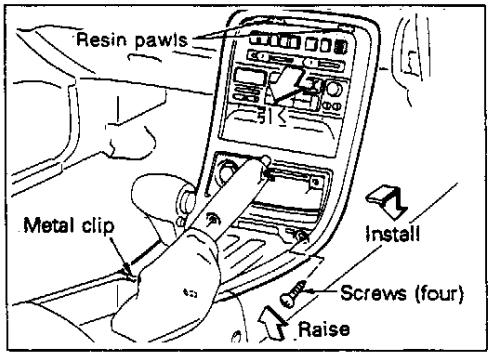
[Point 7] Glove box lid separation

- Remove lid securing screws (eight), and pull off lid hinge pin to disengage hinge, and then remove lower screws (two) to separate glove box lid into inner and outer portions.



[Point 8] Glove box cover installation

- Install glove box light harness connector to cover, and fit cover clamp securely into steering member, and tighten screws (two).



[Point 9] Cluster lid C removal and installation

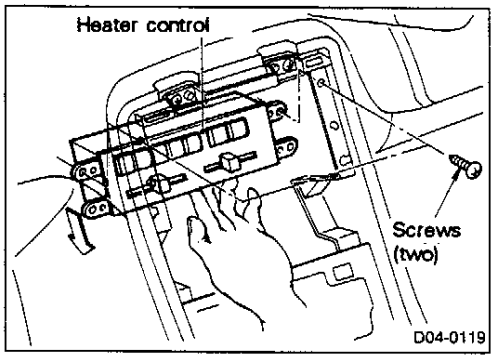
Removal

- Remove cluster lid securing screws (four), and remove rear end metal clip using standard screwdriver, then remove cluster lid by pulling resin pawls fitted upper end portion forward.

Installation

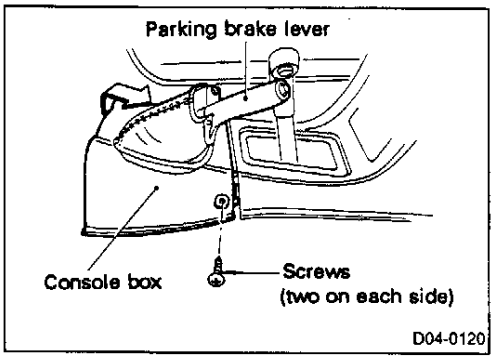
- Fit resin pawls into respective position, and install cluster lid by pressing it in direction of arrow.

1. Instrument Panel (Cont'd)



[Point 10] Heater control removal

- After removing audio unit, remove heater control securing screws (two) and remove heater control by pulling it to the side.



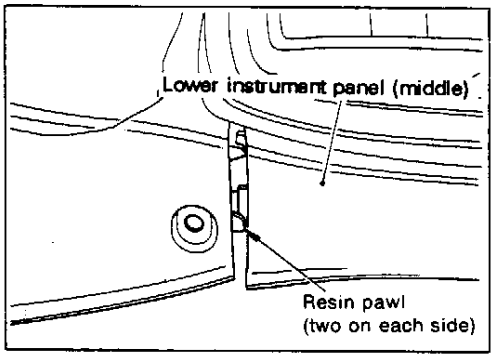
[Point 11] Console box removal and installation

Removal

- Remove console box securing screws (two on each side), and then remove console box by disengaging parking brake lever while lifting console box.

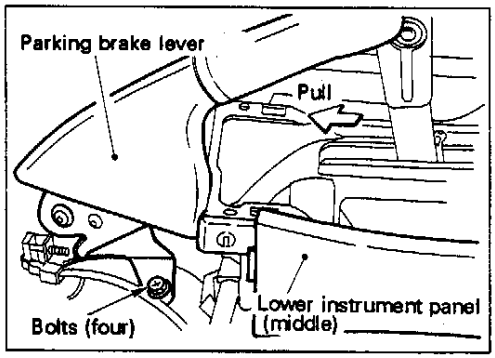
Installation

- Install console box by inserting resin pawls securely into respective holes of lower instrument panel.



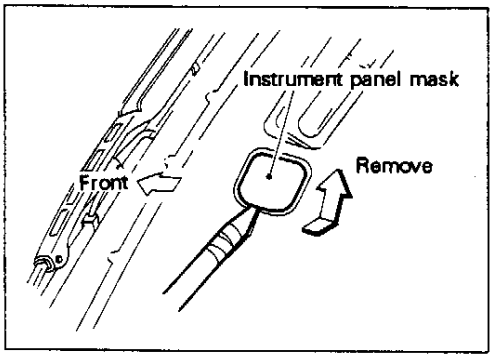
[Point 12] Lower instrument panel (middle) removal

- To prevent interference with parking brake lever, remove parking brake lever securing bolts (four) first, then remove lower instrument panel (middle) by pulling it rearward.

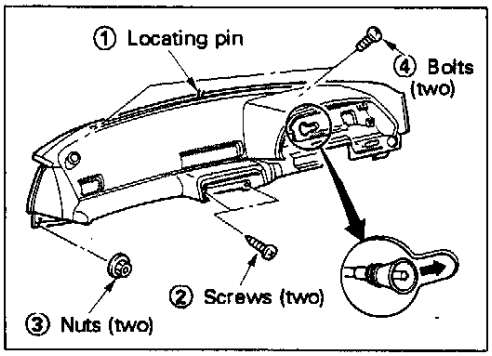


[Point 13] Instrument panel mask removal

- Remove instrument panel mask by inserting stubby standard screwdriver between mask and instrument panel pad.

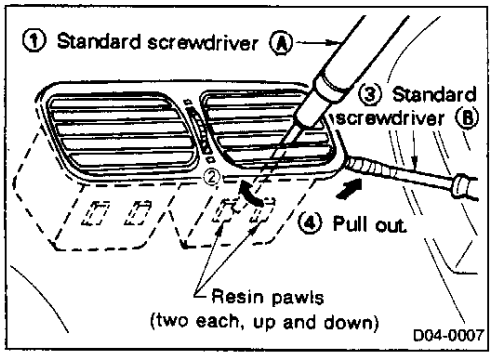


1. Instrument Panel (Cont'd)



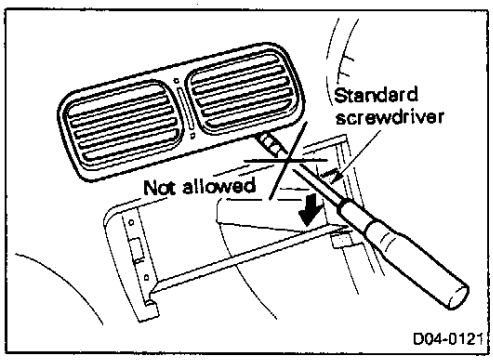
[Point 14] Instrument panel installation

- Set instrument panel by aligning locating pin, and then tighten screws in sequence shown at left.
- Make sure each duct is fitted correctly to grille.
- Secure speedometer cable by sliding it into cut-out portion of cable hole in instrument panel.



[Point 15] Ventilator grille removal

① Insert thin standard screwdriver Ⓐ through clearance between grille fins.
② Pry up resin pawls by inserted screwdriver.
③ Insert another standard screwdriver Ⓑ into clearance between grille and instrument panel.
④ Carefully pull out grille using screwdriver Ⓑ while prying up resin pawls using screwdriver Ⓐ, and remove grille from instrument panel assembly.



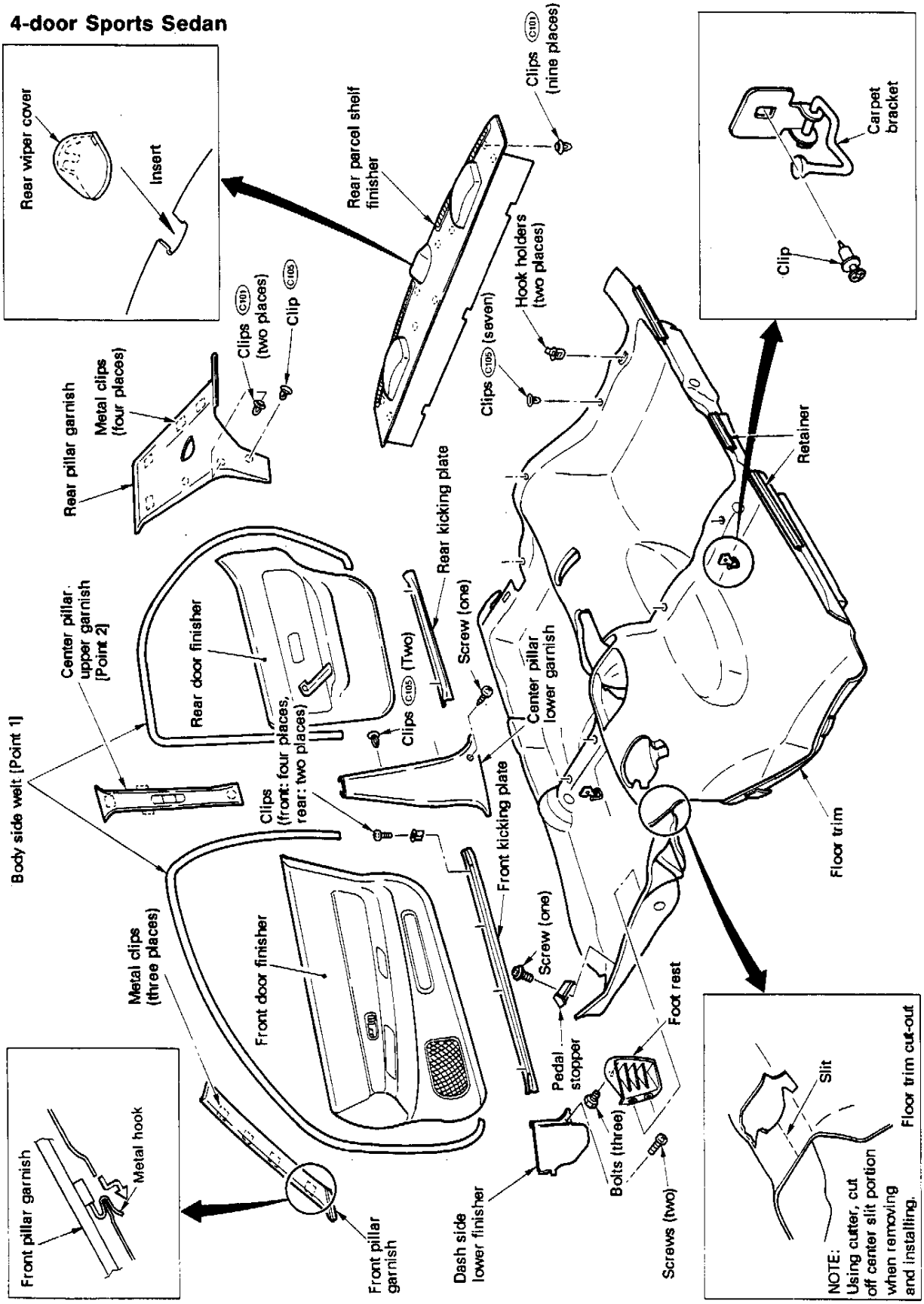
Notes on removal

- Because the grille pawls are positioned deep, do not attempt to pry up grille as shown at left; otherwise, grille main body and grille cover will be damaged.
- If unable to remove grille using method shown in steps ① thru ④, first remove instrument panel assembly, then remove ventilator grille.

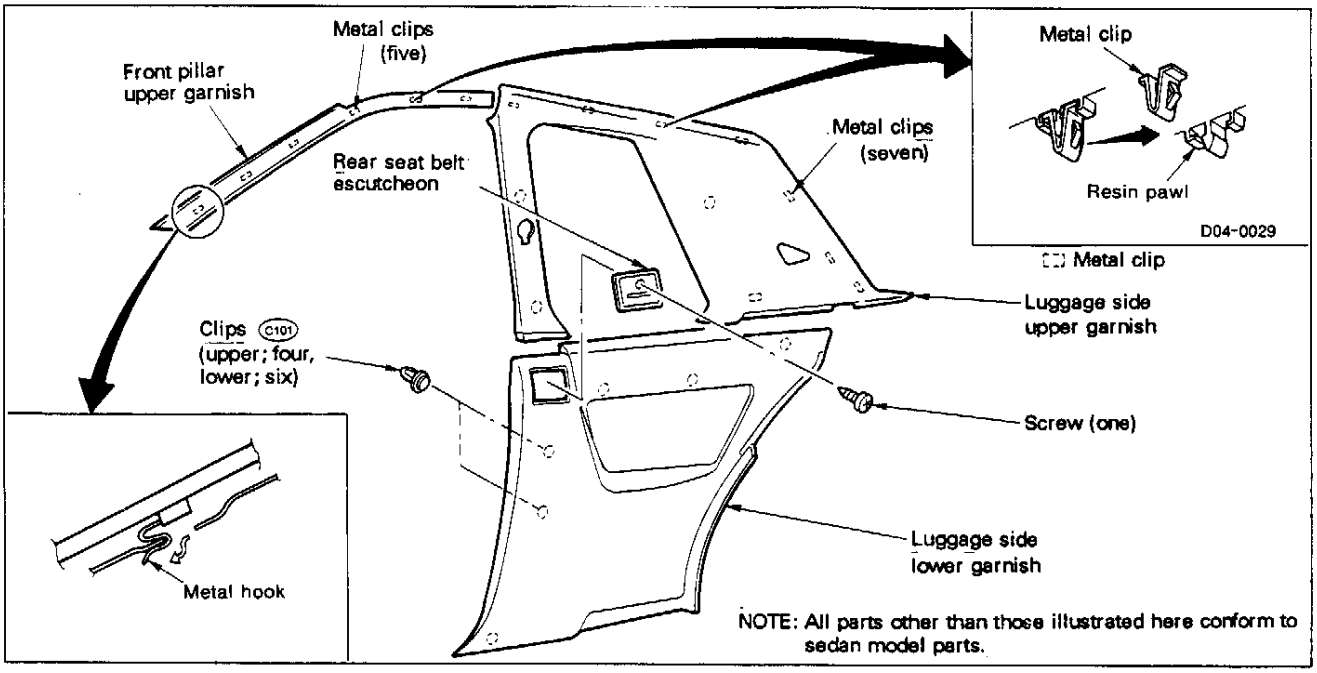
2. Interior Trim and Equipment

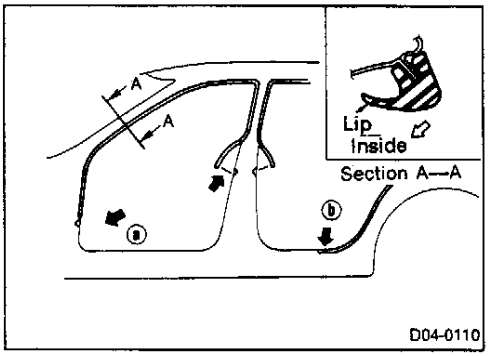
2-1 BODY SIDE AND FLOOR TRIM REMOVAL AND INSTALLATION

(1) 4-door Sports Sedan



(2) 2-door Sports Coupe

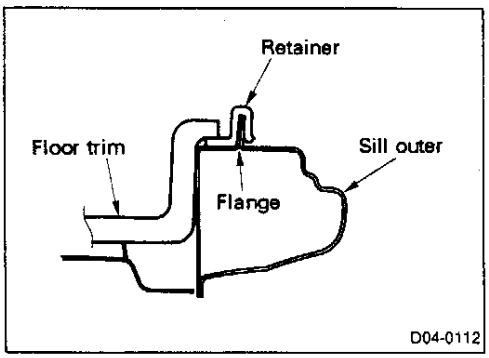




[Point 1] Body side welt installation

- Install body side welt by aligning welt end with cut-out notch of outer panel indicated by arrows at left so that lip will face inside of compartment.

NOTE:
2-door Coupe has notches at ⓐ and ⓑ only. (See illustration at left.)



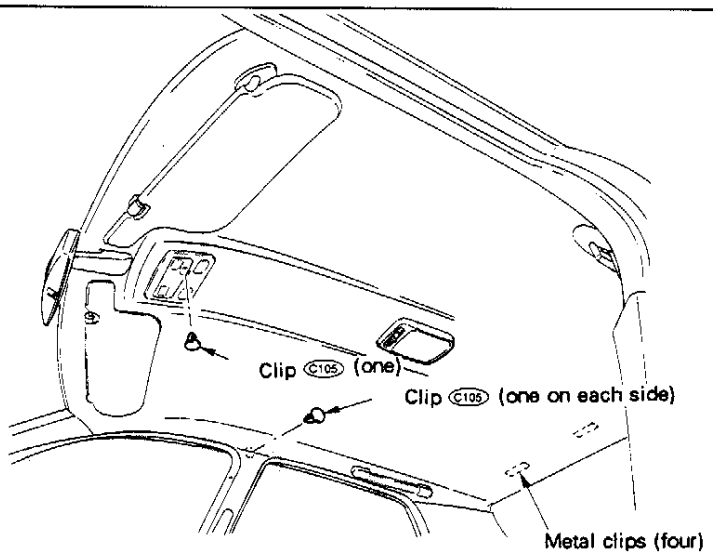
[Point 2] Retainer installation

- Fit floor trim retainer onto sill flange completely.

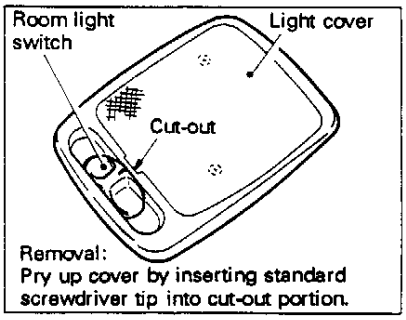
2. Interior Trim and Equipment (Cont'd)

2-2 HEAD LINING REMOVAL AND INSTALLATION

(1) Standard model

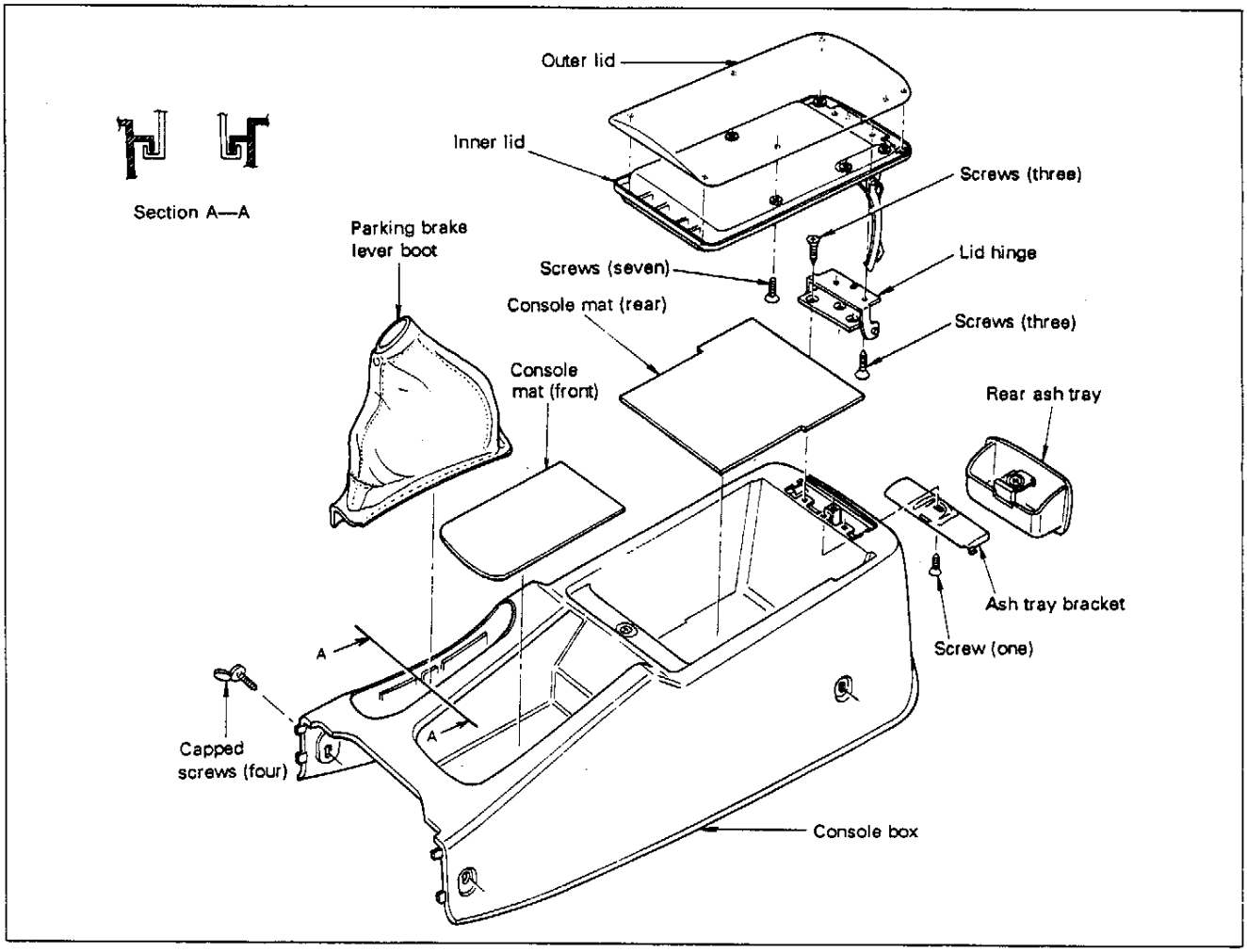


Remove and install: (Part not shown)
Body side welt
Front, center and rear pillar garnishes
Right and left sunvisors
Inside mirror
Room light
Assist clips (two)
Right and left front seat belts
Rear seat cushion & seat back
Right and left rear seat belts

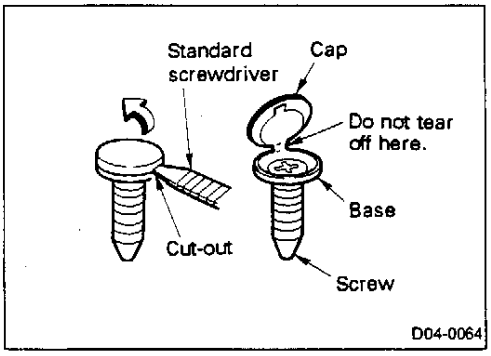


Room light removal

2-3 CONSOLE BOX REMOVAL AND INSTALLATION



2. Interior Trim and Equipment (Cont'd)

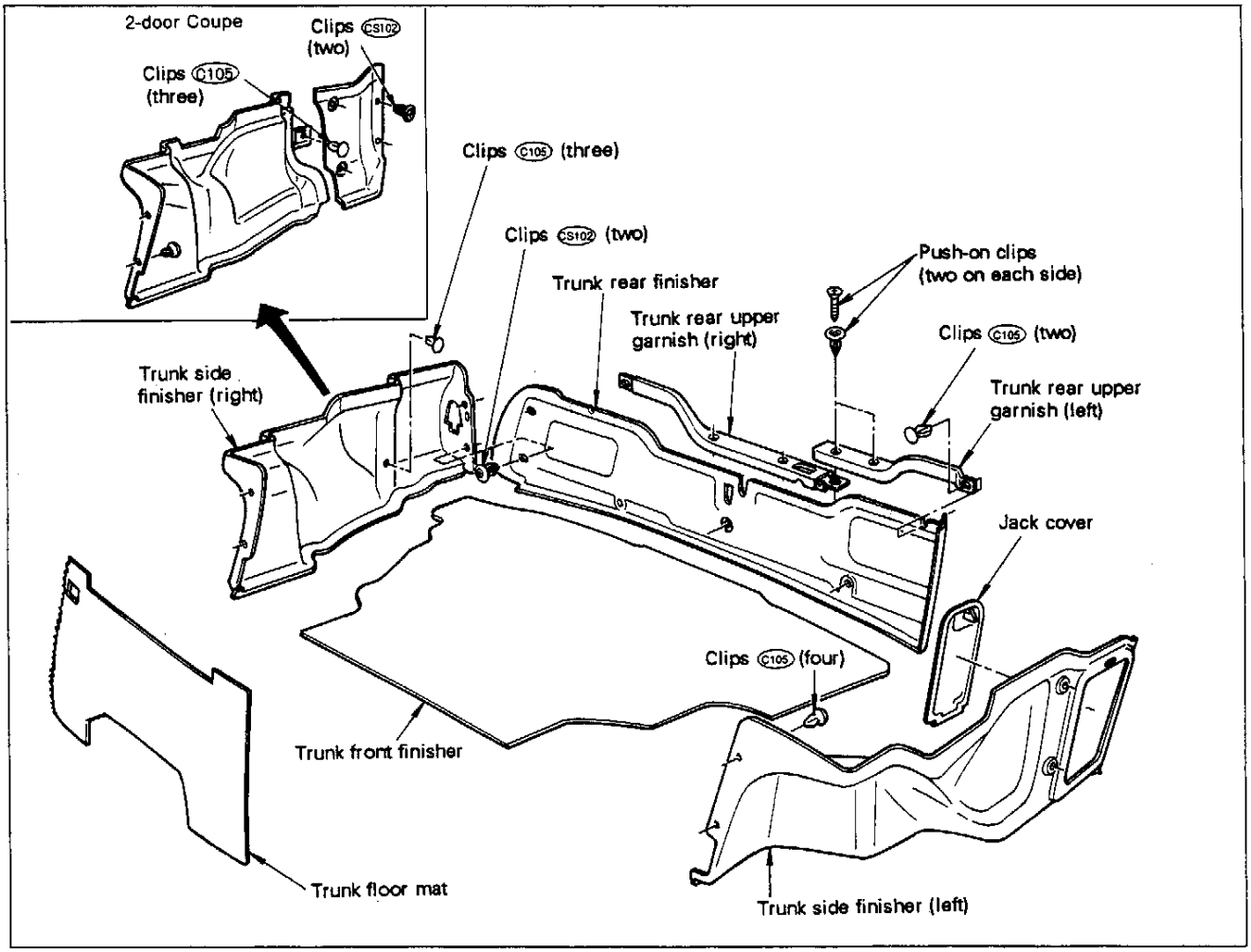


[Point 1] Capped screw removal

- Open screw head cap using standard screwdriver, and then remove screw.

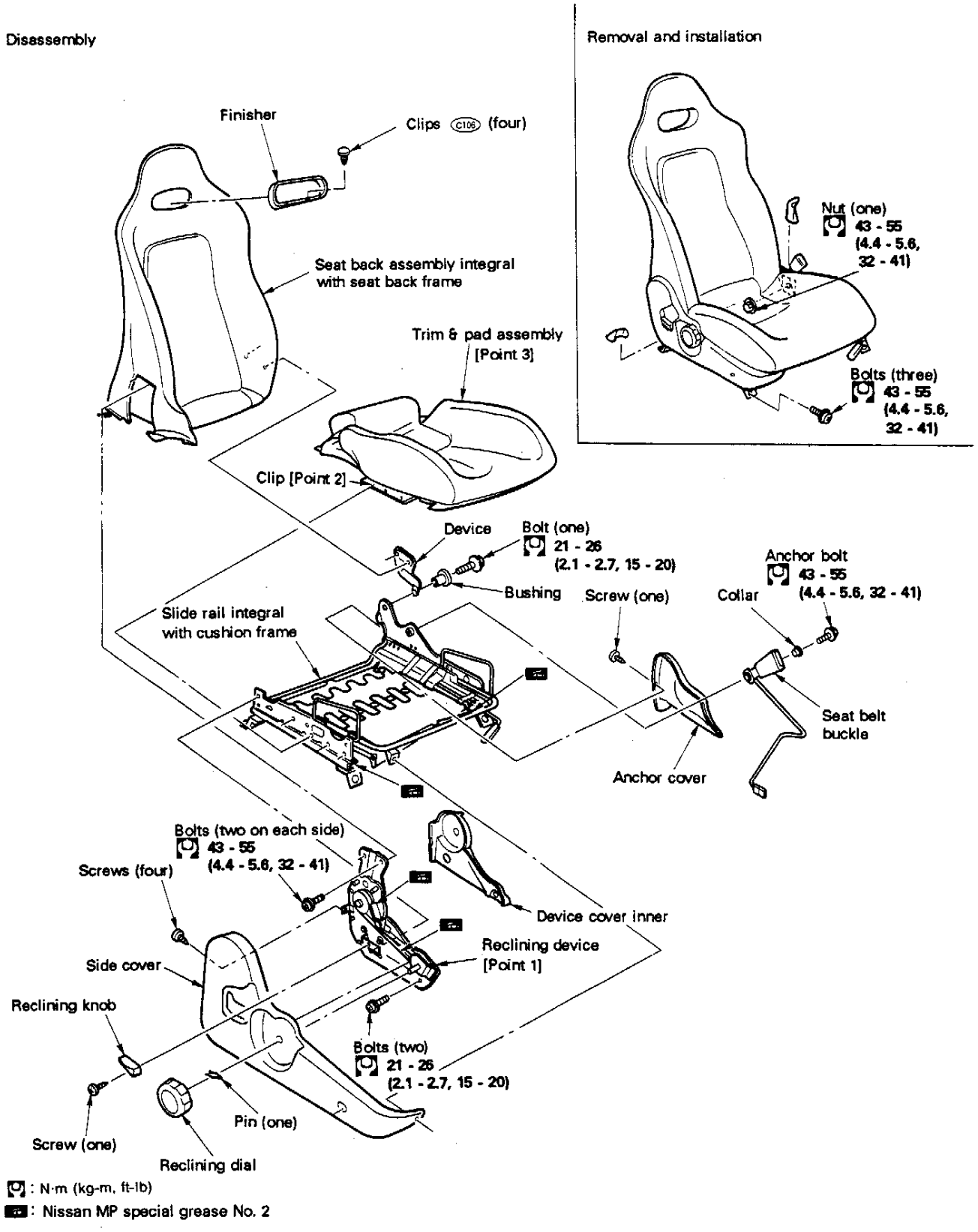
NOTE:
Cap is made integral with screw. Pay attention not to tear off cap from base.

2-4 TRUNK TRIM REMOVAL AND INSTALLATION



3. Seat (GT-R model)

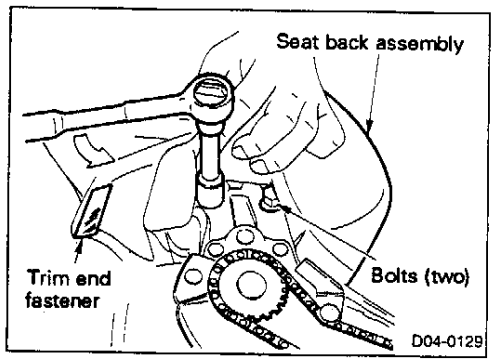
3-1 FRONT SEAT REMOVAL & INSTALLATION, AND DISASSEMBLY



: N·m (kg-m, ft-lb)

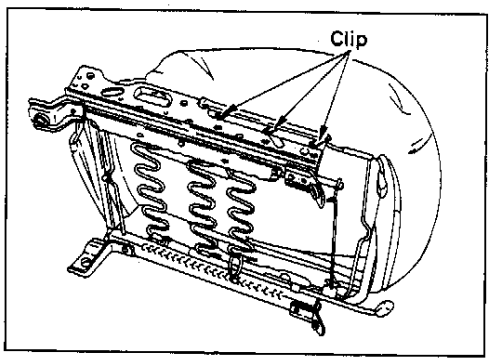
: Nissan MP special grease No. 2

3. Seat (GT-R model) (Cont'd)



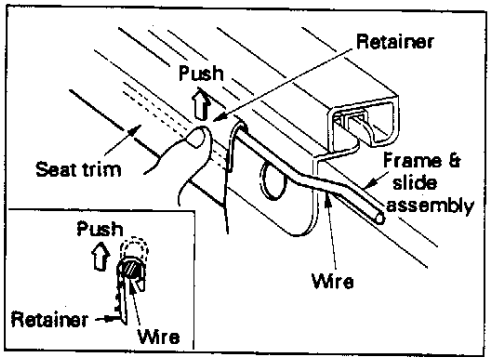
[Point 1] Reclining device removal

- Remove trim end fastener of seat back assembly, and remove two securing bolts by taking off trim.



[Point 2] Seat trim clip removal (outer side)

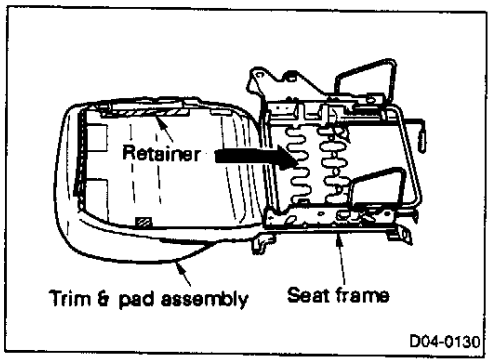
- Using clip screwdriver, carefully remove three clips which secure seat trim to slide rail on side face of seat cushion.



[Point 3] Seat trim retainer removal and installation (inner side)

Removal

- Disengage seat trim retainer from seat frame by pushing down with finger.

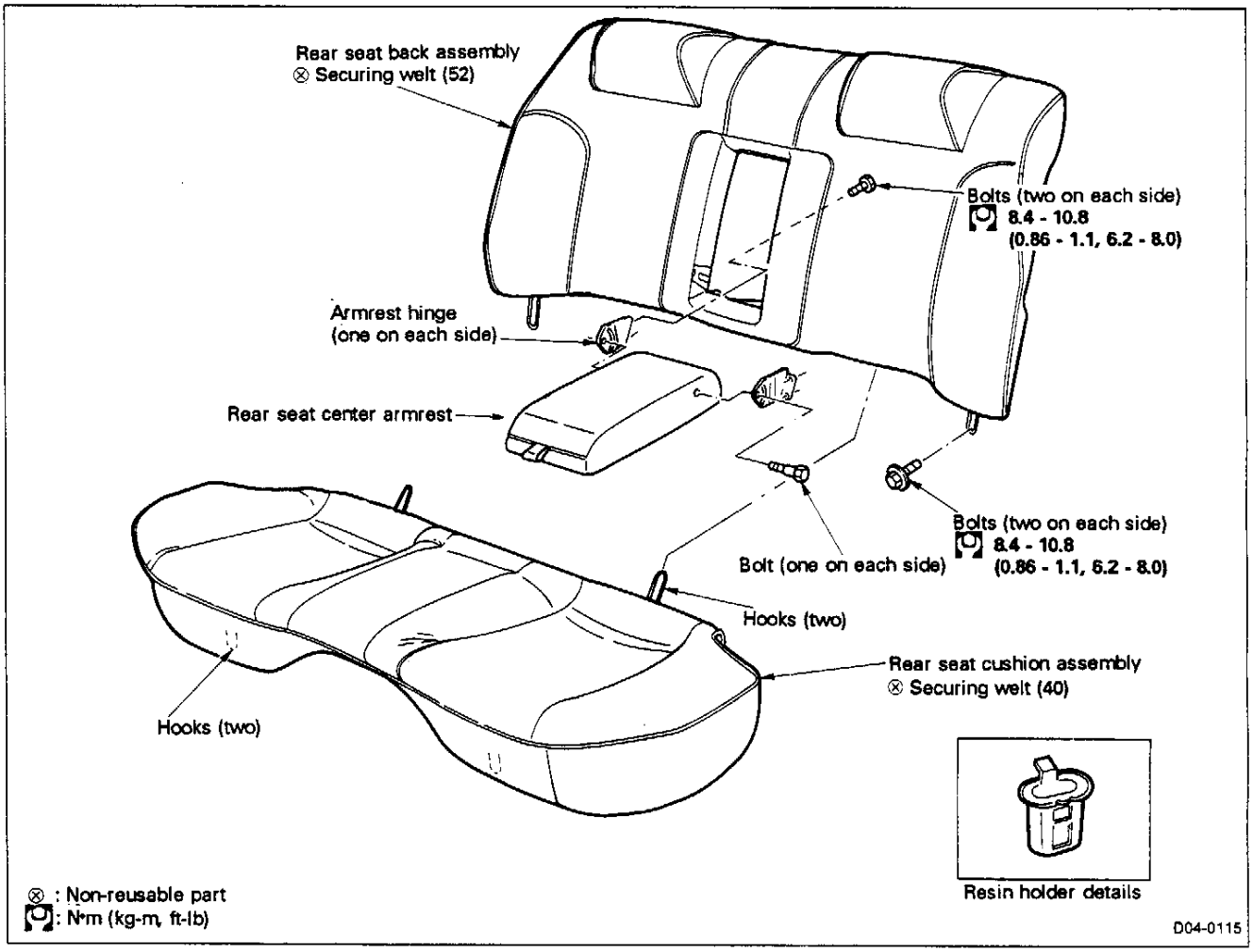


Installation

- Hook trim & pad assembly to seat frame, and inner side retainer to wire.
- Install trim & pad assembly while making sure trim and retainer are correctly engaged.

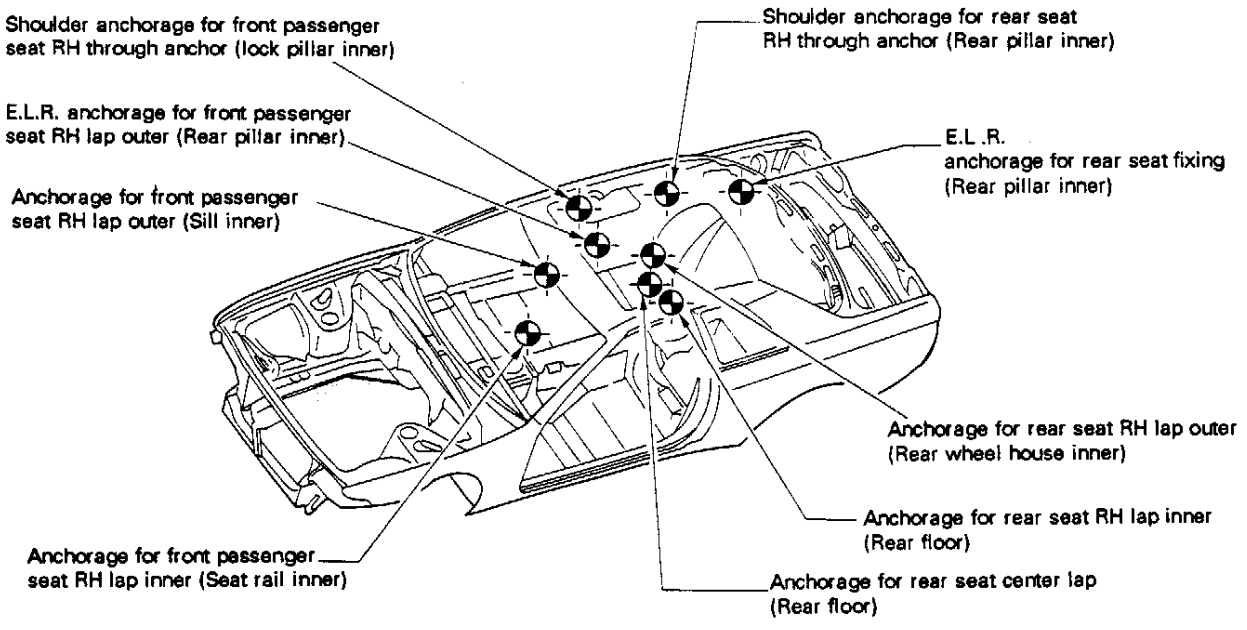
3. Seat (GT-R model) (Cont'd)

3-2 REAR SEAT REMOVAL & INSTALLATION, AND DISASSEMBLY



4. Seat Belts

4-1 SEAT BELT ANCHORAGE



2-door Sports Coupe

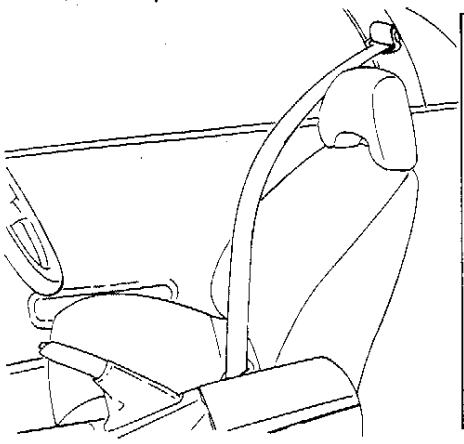
NOTE: LH seat anchorages are symmetrical in shape to RH seat.

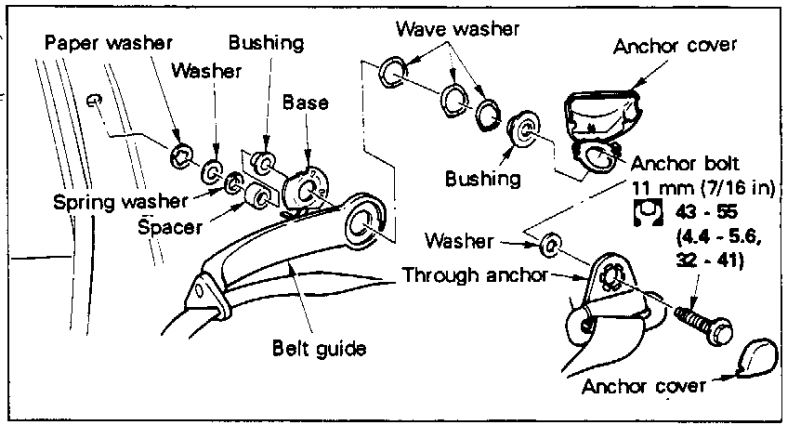
D04-0116

4. Seat Belts (Cont'd)

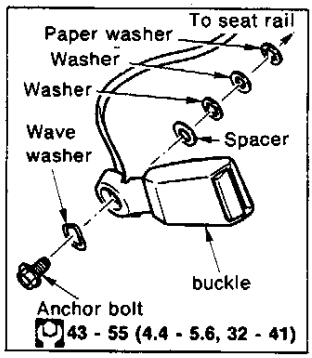
4-2 FRONT SEAT BELT REMOVAL AND INSTALLATION

2-door Sports Coupe

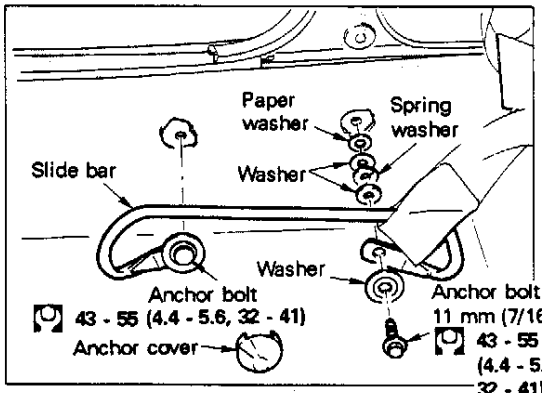




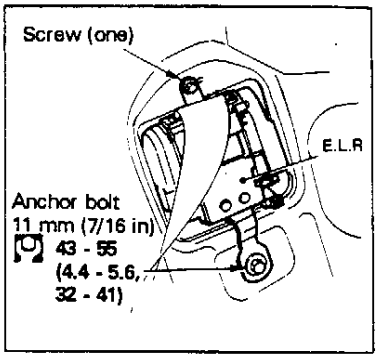
Shoulder anchor section



R.H. lap inner section



RH lap outer section



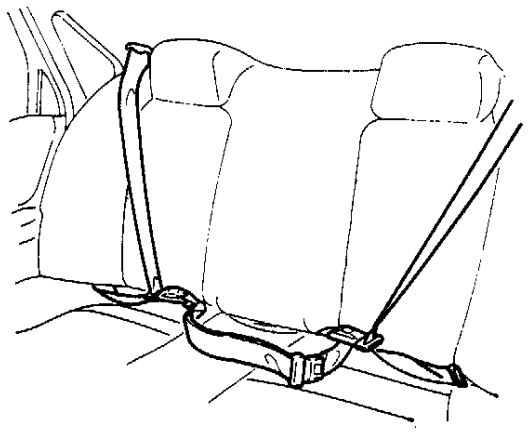
E.L.R. section

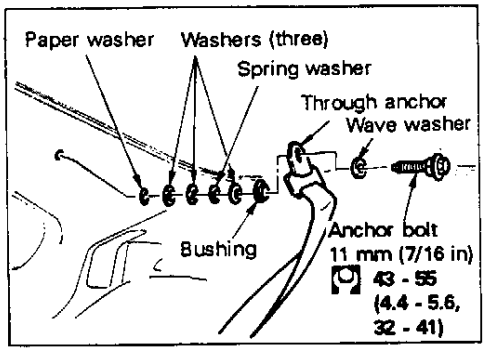
: N·m (kg-m, ft-lb)

D04-0123

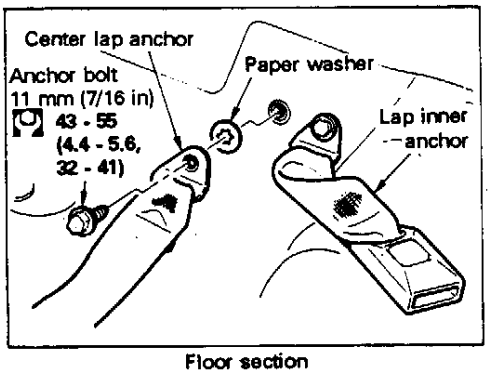
4. Seat Belts (Cont'd)

4-3 REAR SEAT BELT REMOVAL AND INSTALLATION

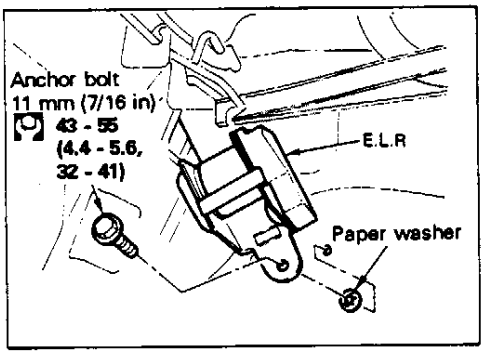




Shoulder anchor section



Floor section



E.L.R. section

: N·m (kg-m, ft-lb)

D04-0108

Inspection

- Check whether seat belt can be handled normally.
- Check seat belt webbing for damage, wear, discoloration, and metal parts for deformation.

NOTES:

(1) Use neutral detergent to clean webbing.

(2) Do not disassemble belt buckle and E.L.R. assembly.

HEATER & AIR CONDITIONER

SECTION HA

CONTENTS

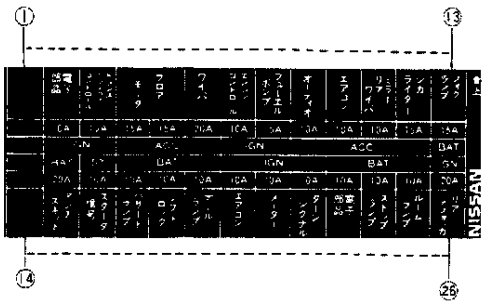
1. Full Automatic Air Conditioner

1-1 PRIOR TO TROUBLE DIAGNOSIS

This fully automatic air conditioner has a self-diagnostic function for checking its major components. Using this self-diagnostic function, it is possible to check whether the signal issued from each sensor is within the effective range of the respective sensor characteristics, and whether each actuator can respond correctly to a control signal issued by force under a predetermined condition. It is also possible to check the function of the display section, mode signal, and each sensor. This means that, using the self-diagnostic function, most components of this fully automatic air conditioner can be checked. After identifying a faulty section, however, each sensor or actuator must be examined using conventional method.

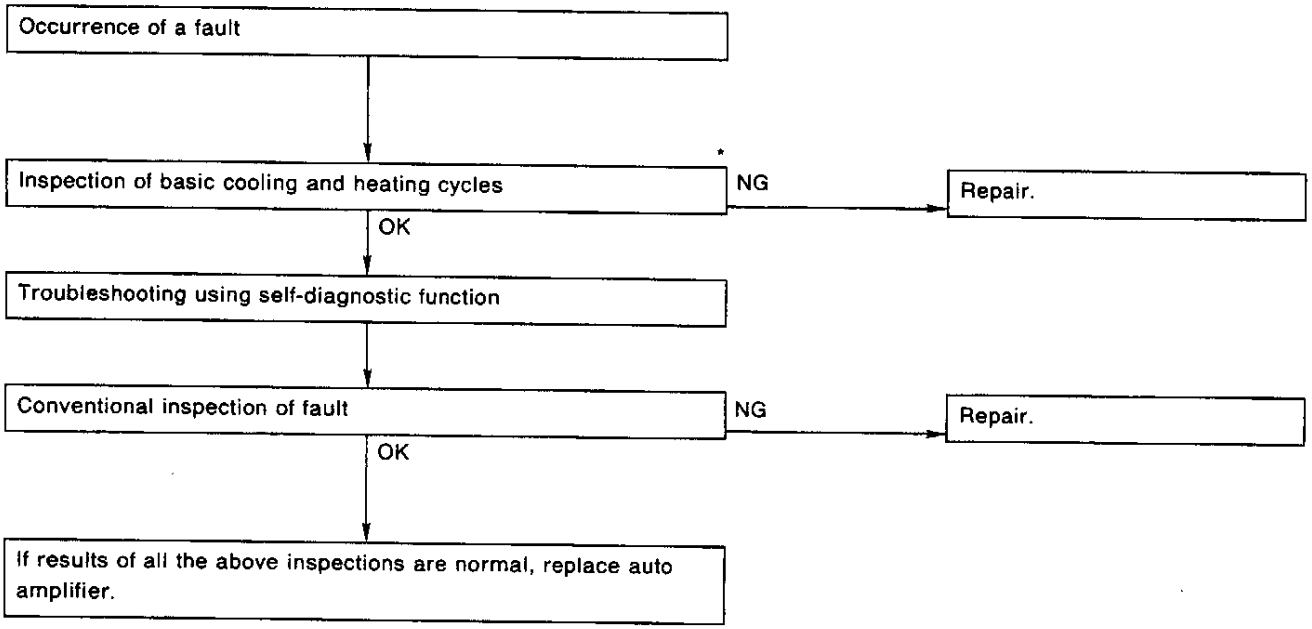
If an error in the electrical system is determined as the cause of a fault, for example, it is also necessary to check fuses, connectors, and terminals, etc. in addition to self-diagnosis.

Fuses that need inspection



No.	Capacity	Power supply system	Major load (Air conditioner)
4	15A	ACC	Blower fan motor, auto amplifier
5			
10	10A		Magnet clutch
20		IGN	Air conditioner relay, intake door actuator, HI relay, auto amplifier
23		BAT	Auto amplifier

The basic troubleshooting flow diagram is shown below:

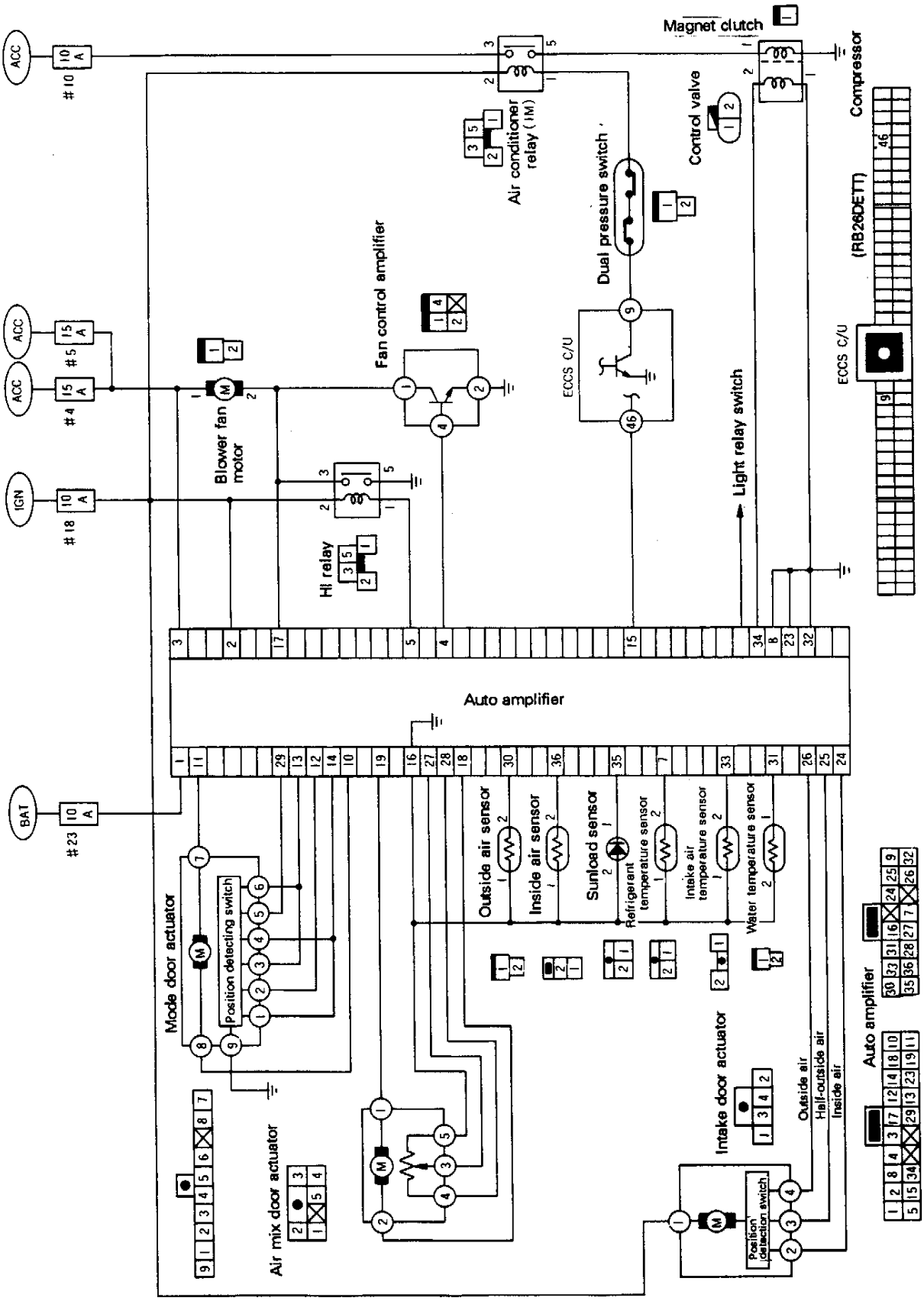


(*) NOTE:

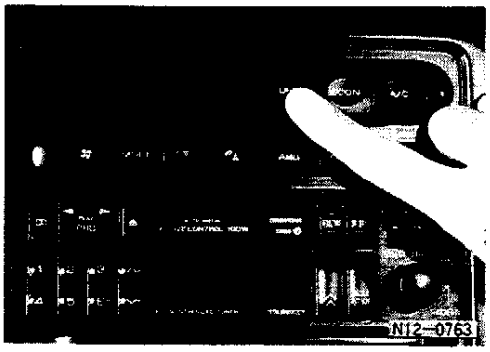
Self-diagnostic function is unable to check such phenomena that cannot be reproduced.

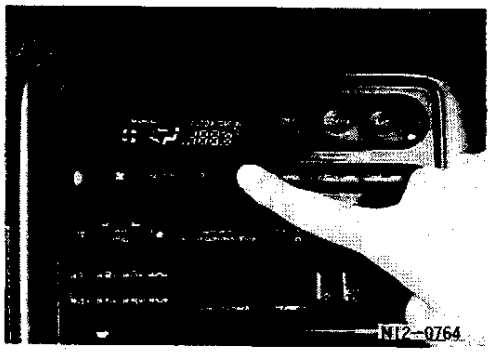
1. Full Automatic Air Conditioner (Cont'd)

1-2 SYSTEM DIAGRAM



1. Full Automatic Air Conditioner (Cont'd)





1-3 SELF-DIAGNOSIS

(1) Self-diagnosis set

To change from ordinary automatic air conditioner control mode into self-diagnosis mode, depress automatic air conditioner OFF switch for more than five seconds within 10 seconds after turning ignition switch to ON from OFF. Start engine to prevent discharging discharged battery when performing self-diagnosis.

To return to automatic air conditioner control mode from self-diagnostic mode, turn ignition switch OFF, or depress air conditioner switch.

Self-diagnostic program is designed to facilitate detection of a fault. It consists of the following five self-diagnostic steps and one customizing step.

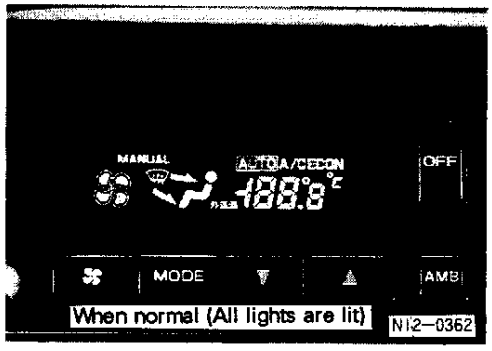
Steps 1-5 can be selected by depressing HOT switch or COLD switch. Steps 5 and 6 can be selected by depressing fan switch.

NOTE:

Step 6 is not used for trouble diagnosis.

Description of each step

Step 1:	Segment check (Display section and LED)
Step 2:	Sensor check
Step 3:	Mode door position check
Step 4:	Actuator operation check
Step 5:	Sensor recognition temperature display
Step 6:	• To set difference between display temperature and sensed temperature • To memorize intake port when ignition switch is OFF

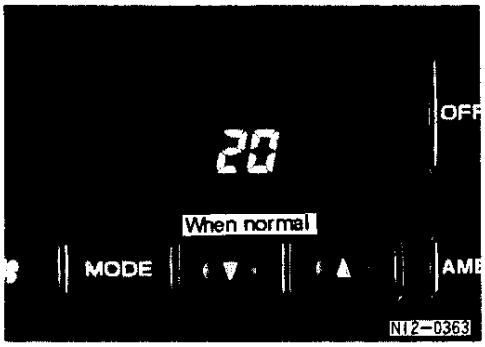


(2) Step 1 (Display section and LED segment check)

Normal: All display and LEDs are lit.

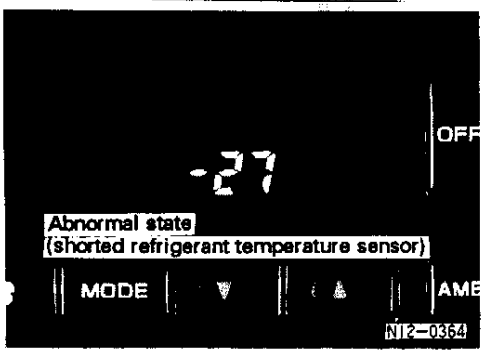
Abnormal: Failed portion is not lit.

1. Full Automatic Air Conditioner (Cont'd)



(3) Step 2 (Sensor check)

Step 2 is selected by depressing HOT switch(△)while in step 1 status.
Microcomputer detects whether each sensor input signal satisfies set conditions, and results are displayed on display section.
Normal: '20' is displayed in display section.



Abnormal: Failed sensor number is displayed. If sensor short-circuit is detected, a minus sign (-) is also indicated.
If error is detected in two or more sensors, each sensor number is displayed by flashing twice in turn.

NOTE:
If vehicle is positioned in dark place or if sunlight is exceptionally strong, then sunload sensor error may be indicated.

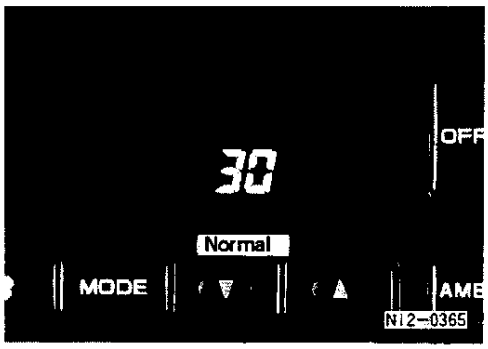
Display number and corresponding sensor, and judgment criteria

Display No.	Sensor	When disconnected	When shorted
20	(Normal)	—	—
21	Outside air sensor	Below –60°C (–76°F)	Above 100°C (212°F)
22	Inside air sensor	Below –60°C (–76°F)	Above 100°C (212°F)
23	Water temperature sensor	Below –50°C (–58°F)	Above 150°C (302°F)
24	Intake temperature sensor	Below –50°C (–58°F)	Above 100°C (212°F)
25	Sunload sensor	Below 0.030 kW (26 kcal/h, 103 BTU/h)/m^2 [0.0028 kW (2.42 kcal/h, 9.6 BTU/h)/sq ft]	Above 1.323 kW (1,138 kcal/h, 4,516 BTU/h)m^2 [0.1229 kW (105.72 kcal/h, 419.5 BTU/h)/sq ft]
26	PBR (Note)	Above 4.9V	Below 0.1V
27	Refrigerant temperature sensor	Below –50°C (–58°F)	Above 100°C (212°F)

NOTE:
PBR is judged based on air mix door opening of 40%.
(Full cold: 0%, full hot: 100%)

If sensor is judged as faulty in step 2, check single sensor according to "1-4. SENSOR INSPECTION", and determine whether failure is in sensor or harness.

1. Full Automatic Air Conditioner (Cont'd)



(4) Step 3 (Mode door position check)

Depress HOT switch (△) while in step 2 status, and step 3 will be selected.

In this step, mode door actuator operates, and whether input signal from position detection switch is normal is checked by microcomputer, and the results are indicated on display section.

NOTE:

Approximately 16 seconds are required to complete inspection of all modes.

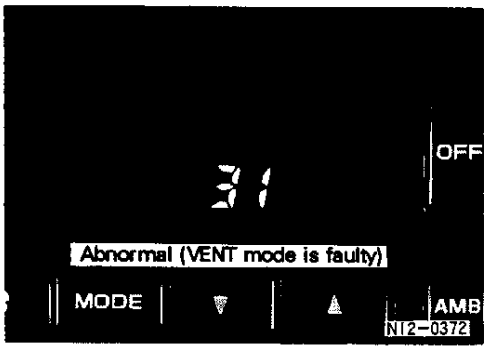
NORMAL: '30' will be displayed.

ABNORMAL: Number of faulty modes are displayed.

If two or more modes are faulty, each mode number is displayed by flashing twice in turn.

NOTE:

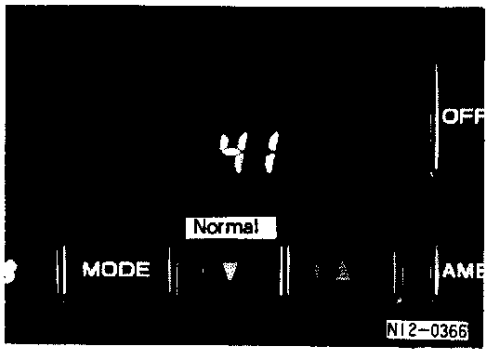
Connector disconnection is indicated by the following pattern: 31 → 32 → 34 → 35 → 36.



Display number and corresponding mode

Display No.	Mode	Display No.	Mode
30	(Normal)	34	FOOT
31	VENT	35	D/F
32	B/L	36	DEF

If any mode is judged as faulty in step 3, it indicates that harness or mode door actuator is faulty.



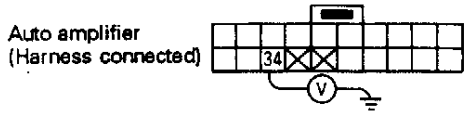
(5) Step 4 (Each actuator operation check)

If HOT switch (△) is depressed while in step 3, step 4 is selected, and '41' displayed. If AMB switch ([AMB]) is depressed in this status, displayed number will change to 42, 43, ... upon each depression of switch, and return to 41 after 47 is displayed.

Auto amplifier provides specified output to each actuator, blower motor and compressor corresponding to these displayed numbers. Check operation of these units visually, or by listening or feeling vibration.

1. Full Automatic Air Conditioner (Cont'd)

NOTE:
Output to compressor is provided as magnet clutch ON-OFF signal and control valve output signal. Control valve output signal causes compressor swash plate inclination angle to change to control compressor delivery. This can be checked by measuring auto amplifier output voltage using a circuit tester.

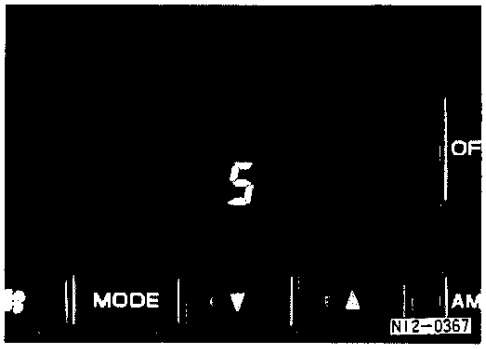


Display number and operation status

Display number	Intake door	Air mix door	Mode door	Blower motor	Compressor	
					Magnet clutch ON-OFF	Output voltage to control valve
41	Inside air	Full cold	VENT	5V	ON	Approx. 1V
42	Inside air	Full cold	VENT	5V	ON	Approx. 4.5V
43	Inside air	Full cold	B/L	10.5V	ON	Approx. 2.5V
44	Half-outside air	Full hot	B/L	8.5V	ON	Approx. 2.5V
45	Outside air	Full hot	FOOT	8.5V	ON	Approx. 4.5V
46	Outside air	Full hot	D/F	8.5V	OFF	0V
47	Outside air	Full hot	DEF	12V	ON	Approx. 2.5V

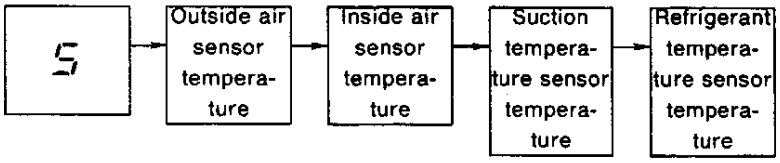
If abnormality of any portion is detected in step 4, be sure to perform inspection according to "1-5 ACTUATOR INSPECTION" flowchart.

Abnormal section	Flowchart
Intake door	1-5 (1) Intake door system
Air mix door	1-5 (2) Air mix door system
Blower motor	1-5 (3) Blower motor system
Compressor	1-5 (4) Compressor system

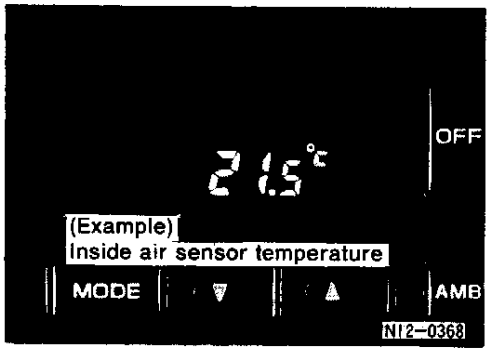


(6) Step 5 (Sensor recognition temperature indication)

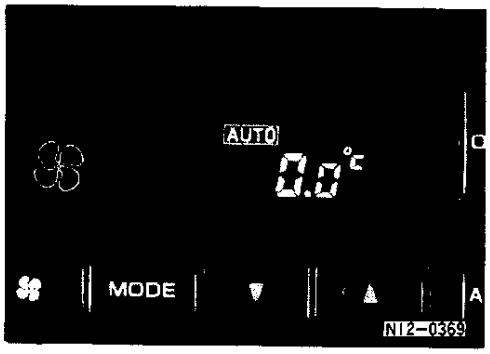
If HOT switch (△) is depressed while in step 4, then step 5 is selected and '5' is indicated in display section. If AMB switch (AMB) is depressed in this status, temperatures sensed by outside air sensor, inside air sensor, suction temperature sensor and refrigerant temperature sensor are displayed in the following sequence.



1. Full Automatic Air Conditioner (Cont'd)



If temperature displayed in step 5 is excessively different from actual temperature, check suspected sensor according to "1-4 SENSOR INSPECTION".

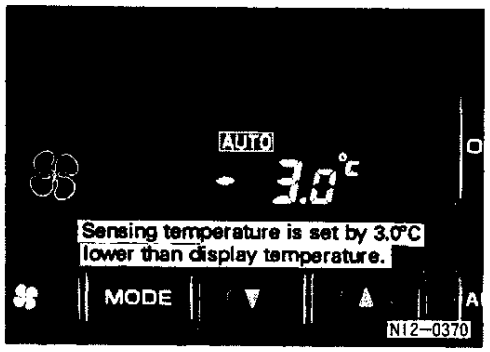


(7) Step 6 (Not used when troubleshooting)

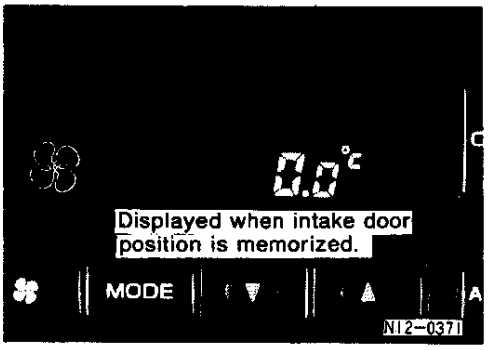
Depress fan switch ( ) while in step 5, then step 6 is selected and display appears as shown at left. If fan switch is depressed again, step 5 is selected again.

① Setting difference between indicated temperature and sensed temperature

- If passenger's bodily sensation differs from the temperature set on the display section, then the auto amplifier sensing temperature can be changed with respect to the displayed temperature.



In this case, depress HOT switch (△) or COLD switch in step 6. Each time the switch is depressed, displayed temperature will change by 0.5°C. In this way, sensed temperature can be varied in the range from +3.0 to –3.0°C.
(Example)
If the sensed temperature is set –3.0°C as shown at left with respect to the set display temperature of 25°C, the auto amplifier sensing temperature will be 22.0°C (25.0 – 3.0 = 22.0). Thus, the actual temperature is controlled at a level lower than the displayed temperature.



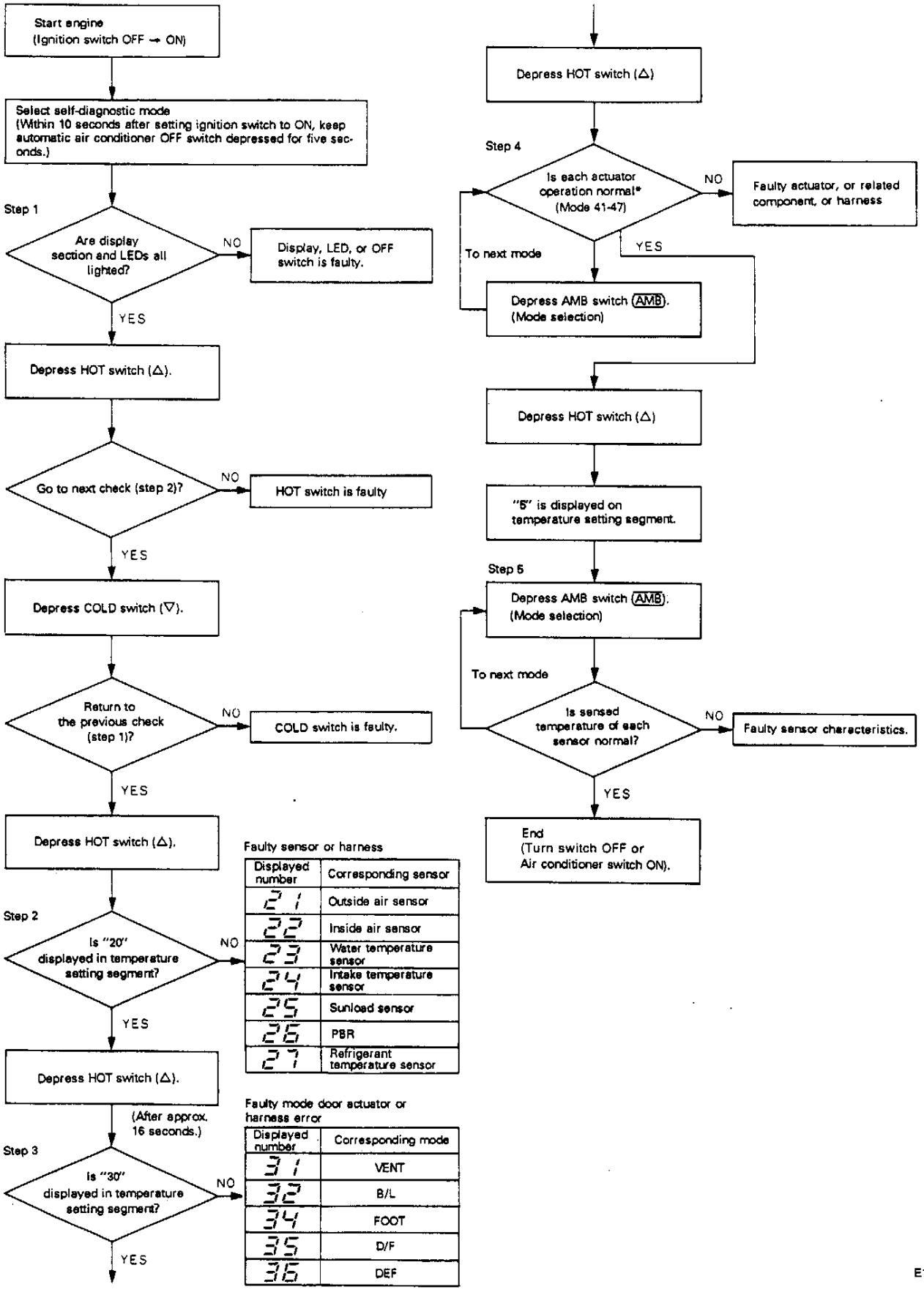
② Memorizing intake door position when turning ignition switch OFF

The intake door position when turning the ignition switch OFF can be memorized, and the air conditioner can be started at the memorized intake door position.
To use this function, depress REC switch in step 6. This will cause the AUTO display to go out and the memory function to be activated. Pressing the REC switch again will cause AUTO to be displayed and the memory function canceled.

NOTE:
Even if condition ① or ② is set in step 6, the set condition will be canceled when the battery is disconnected. If step 6 is set at customer's request, it is necessary to explain this point to the customer.

1. Full Automatic Air Conditioner (Cont'd)

(8) Self-diagnostic procedure flowchart



Faulty sensor or harness

Displayed number	Corresponding sensor
21	Outside air sensor
22	Inside air sensor
23	Water temperature sensor
24	Intake temperature sensor
25	Sunload sensor
26	PBR
27	Refrigerant temperature sensor

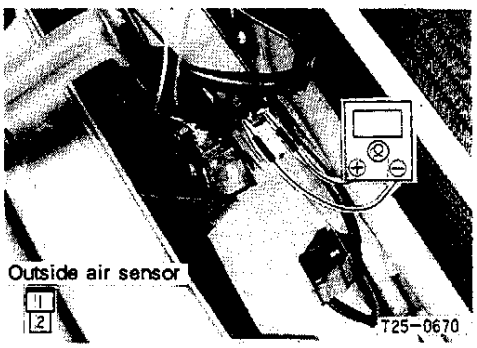
Faulty mode door actuator or harness error

Displayed number	Corresponding mode
31	VENT
32	B/L
34	FOOT
35	D/F
36	DEF

E14-0374

1. Full Automatic Air Conditioner (Cont'd)

1-4 SENSOR INSPECTION

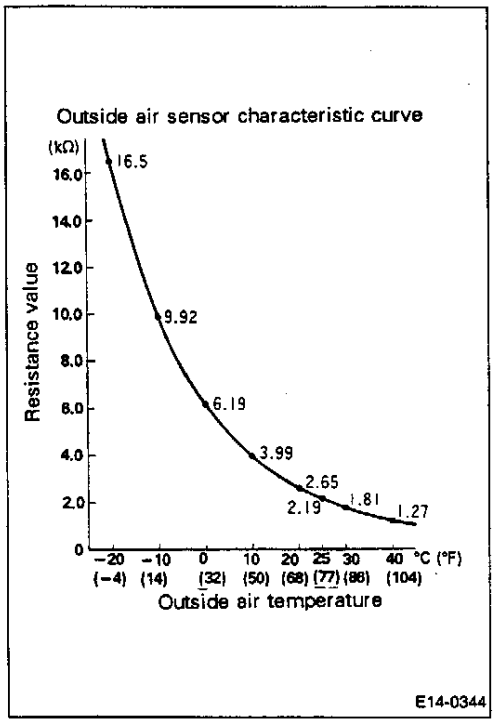


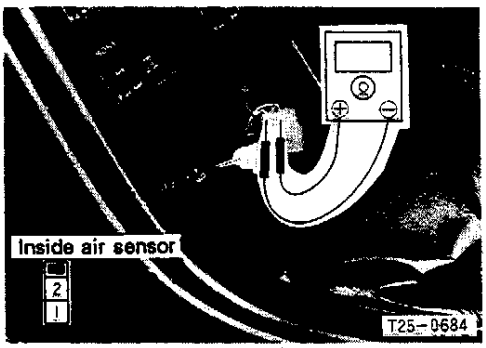
(1) Outside air sensor

Disconnect outside air sensor connector, and measure resistance value between terminals on sensor side.

NOTE:

Perform this check with ignition switch set in OFF position. If the outside air sensor connector or auto amplifier connector is disconnected with the ignition switch ON, the outside air temperature is sensed as extremely low. If the connector is connected after turning the ignition switch OFF, and if the ignition switch is set again to ON, the outside air temperature correcting function prevents the sensing value from rising quickly to correct level. As a result, the compressor remains OFF, and heating function operates. In this case, disconnect the outside air sensor with the ignition switch ON, and then reconnect the sensor connector.

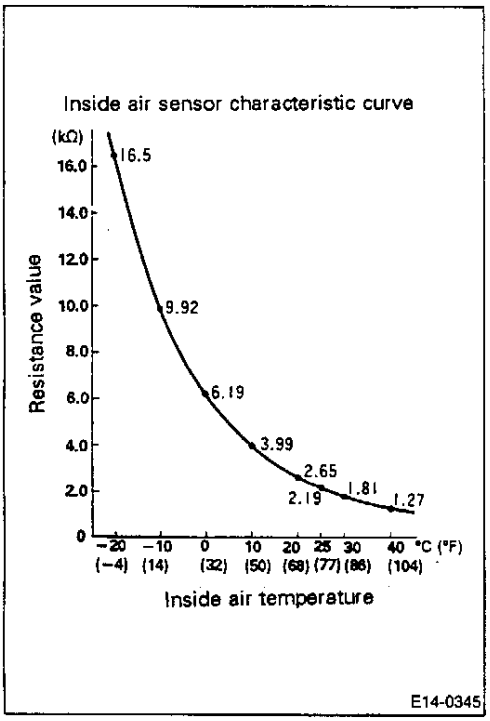


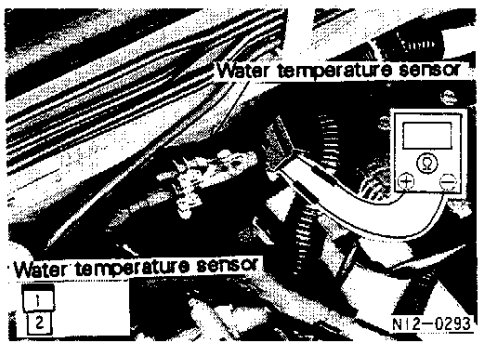


(2) Inside air sensor

Disconnect inside air sensor connector, and measure resistance between terminals on sensor side.

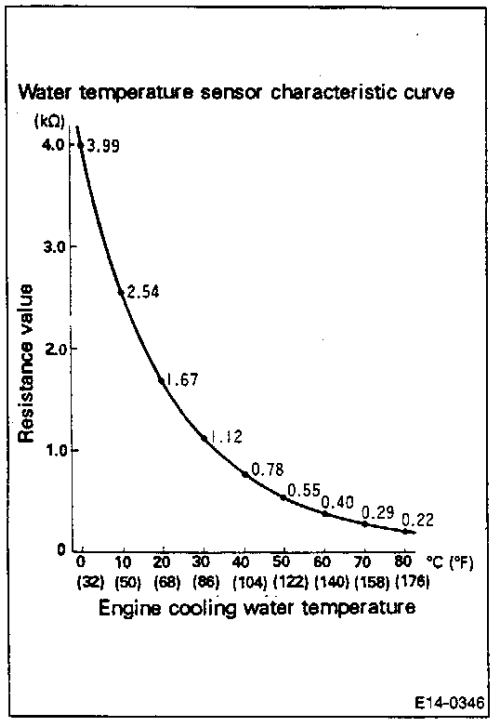
1. Full Automatic Air Conditioner (Cont'd)



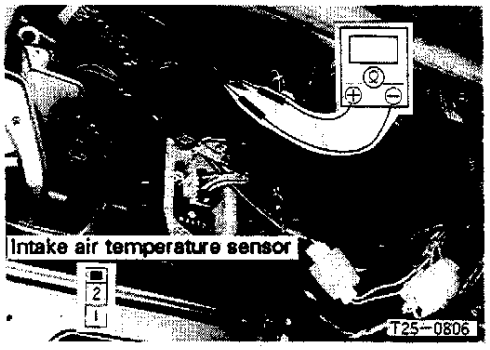


(3) Water temperature sensor

Disconnect water temperature sensor connector, and measure resistance value between terminals on sensor side.

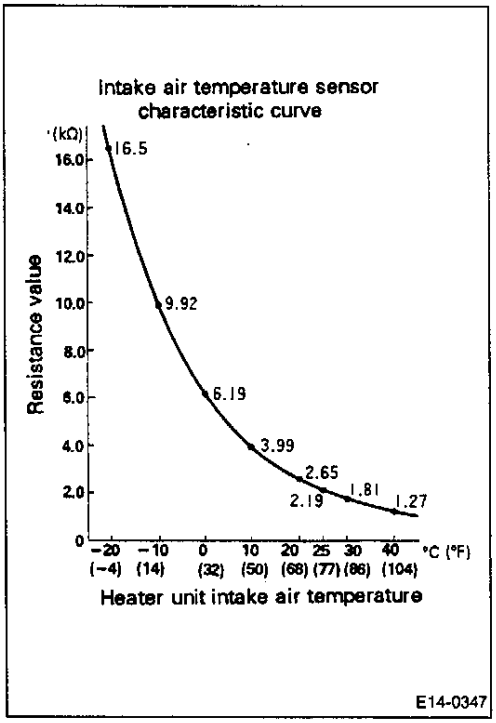


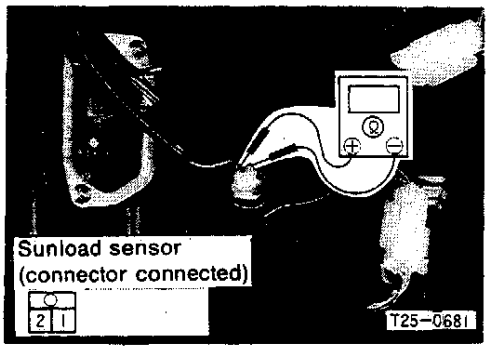
1. Full Automatic Air Conditioner (Cont'd)



(4) Intake air temperature sensor

Disconnect intake air temperature sensor connector, and measure resistance between terminals on sensor side.





(5) Sunload sensor

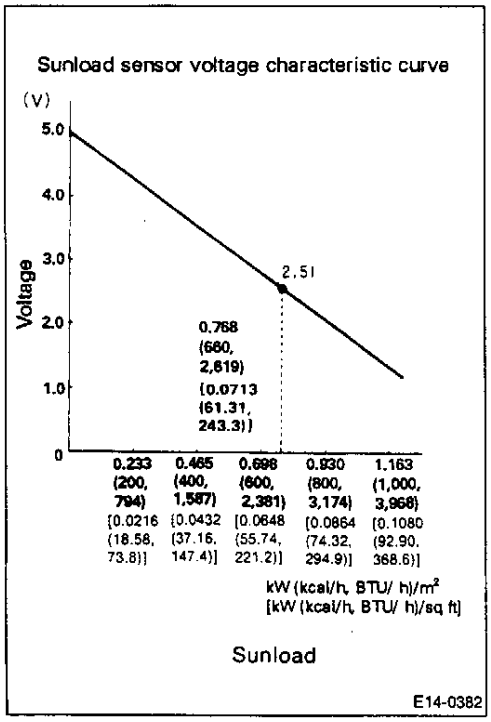
With sunload sensor connector connected, measure voltage between terminals.

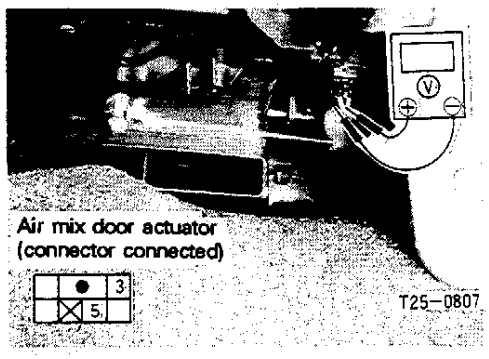
Ignition switch	Terminals		Standard value
	Positive ⊕	Negative ⊖	
ON	①	②	See characteristic curve.

NOTE:

When performing this check indoors, move a 60 watt lamp toward or away from sensor while reading voltage.

Reference: Sunload by direct sunlight during fine weather is equivalent to 0.768 kW (660 kcal/h, 2,619BTU/h)/m^2 [0.0713 kW (61.31 kcal/h, 243.4 BTU/h)/sq ft].

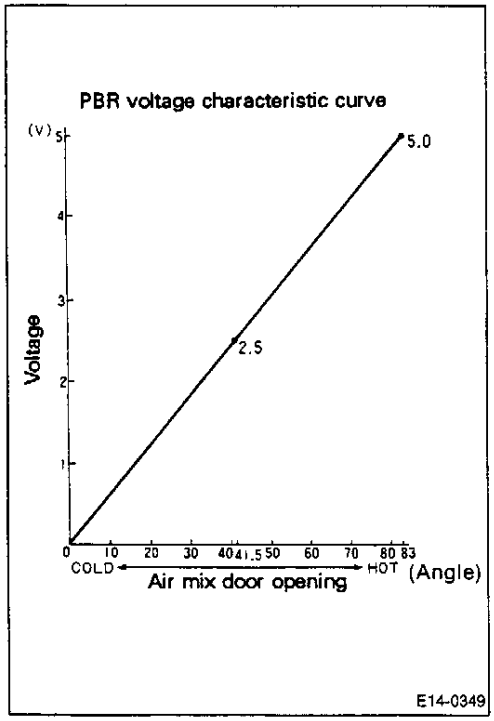




(6) PBR

With air mix door actuator connector connected, measure voltage between terminals.

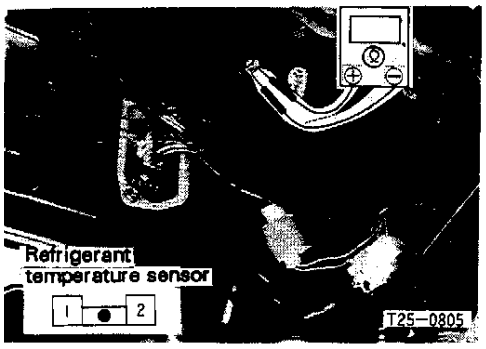
Ignition switch	Terminals		Standard value
	Positive ⊕	Negative ⊖	
ON	3	5	See characteristic curve.

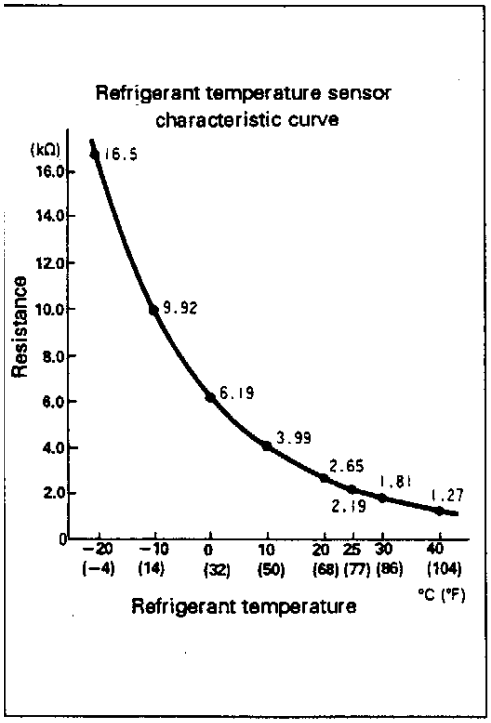


1. Full Automatic Air Conditioner (Cont'd)

(7) Refrigerant temperature sensor

Disconnect refrigerant temperature sensor connector, and measure resistance between terminals on sensor side.

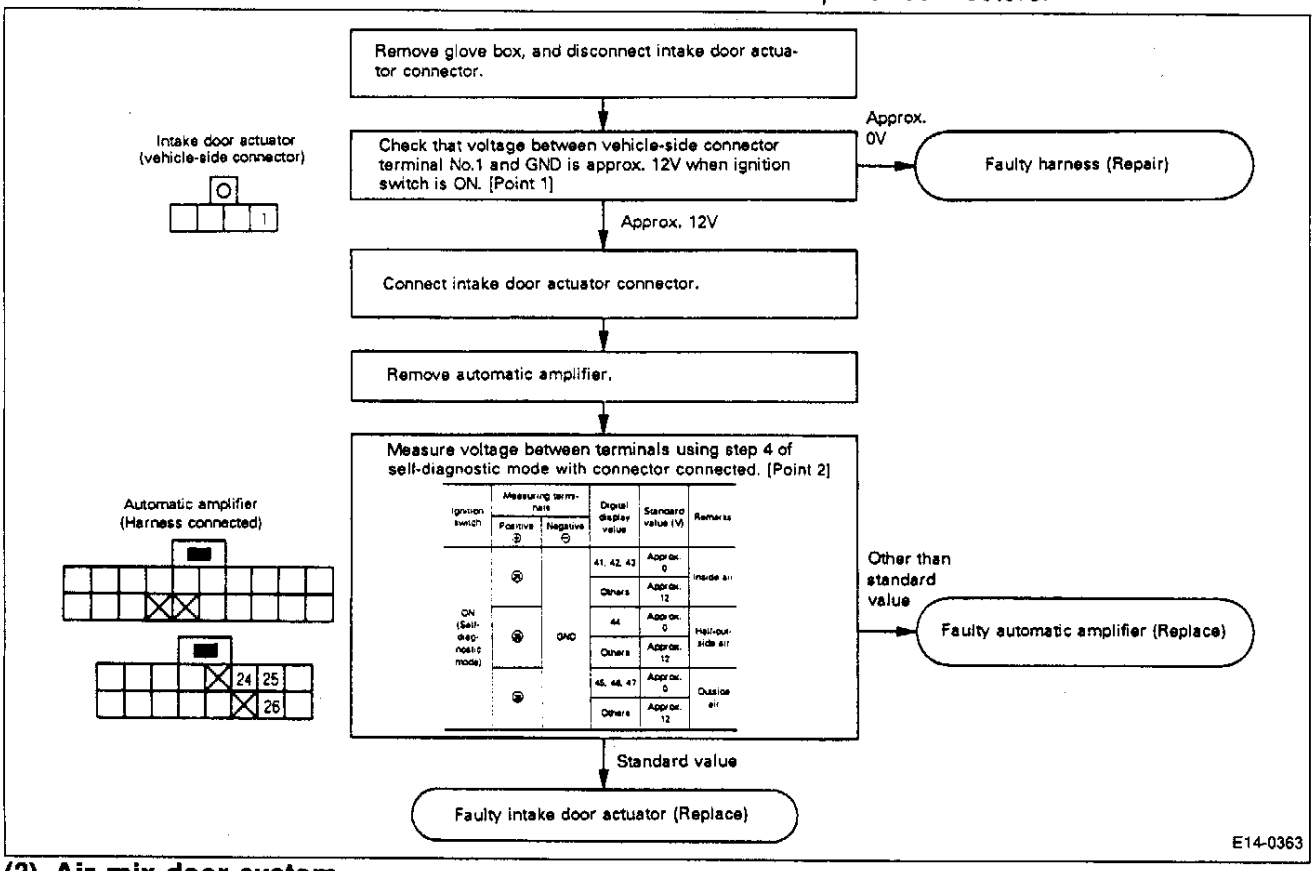




1-5 ACTUATOR INSPECTION

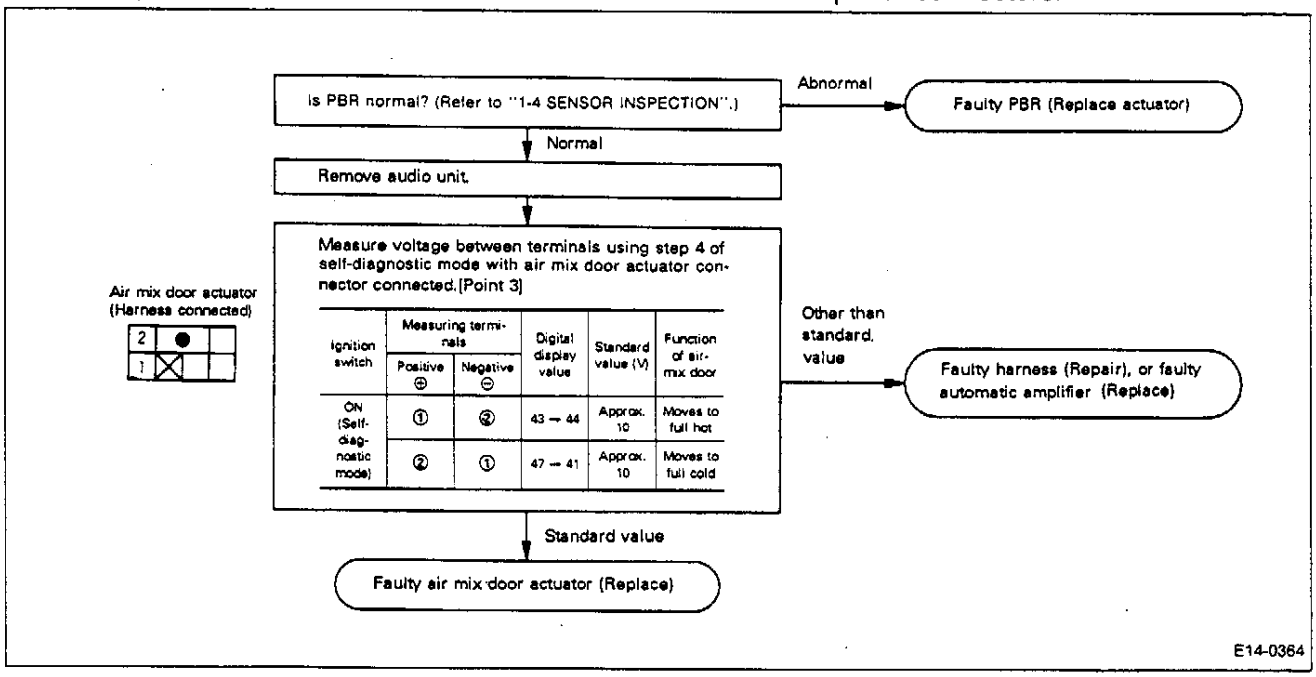
(2) Intake door system

Before inspection, check intake door actuator and automatic amplifier connectors.



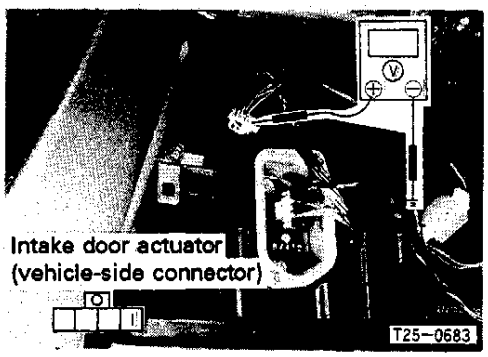
(2) Air mix door system

Before inspection, check air mix door actuator and automatic amplifier connectors.



Ignition switch	Measuring terminals: Positive ⊕	Measuring terminals: Negative ⊖	Digital display value	Standard value (V)	Function of air-mix door
ON (Self-diagnostic mode)	①	②	43 → 44	Approx. 10	Moves to full hot
	②	①	47 → 41	Approx. 10	Moves to full cold

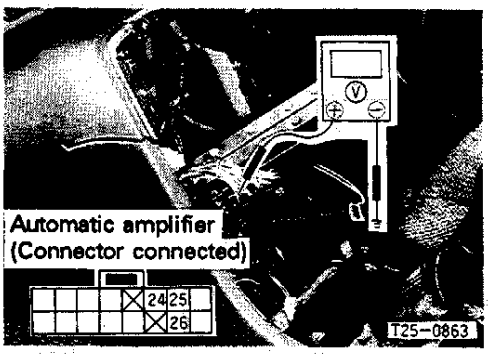
1. Full Automatic Air Conditioner (Cont'd)



[Point 1] Intake door actuator power inspection

- Remove intake door actuator, and measure voltage between vehicle-side connector and GND.

Measuring range	Ignition switch	Measuring terminals		Standard value
		Positive ⊕	Negative ⊖	
Ⓥ	ON	①	GND	Approx. 12V



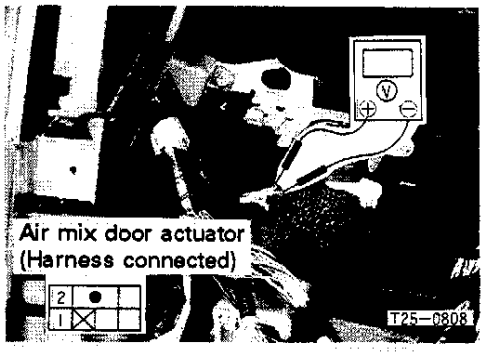
[Point 2] Automatic amplifier output inspection

- Remove automatic amplifier, and measure voltage by applying circuit tester probes to 16-terminal connector. Use step 4 of self-diagnostic mode and keep connector connected during measurement.

Measuring range	Ignition switch	Measuring terminal		Digital display value	Standard value	Remarks
		⊕	⊖			
Ⓥ	ON (Self-diagnostic mode)	㉔	GND	41, 42, 43	Approx. 0V	Inside air
				Others	Approx. 12V	
		㉕		44	Approx. 0V	Half-outside air
				Others	Approx. 12V	
		㉖		45, 46, 47	Approx. 0V	Outside air
				Others	Approx. 12V	

NOTE:
If standard value of approx. 12V is not present, internal circuit of intake door actuator may be disconnected.

1. Full Automatic Air Conditioner (Cont'd)



[Point 3] Automatic amplifier output inspection

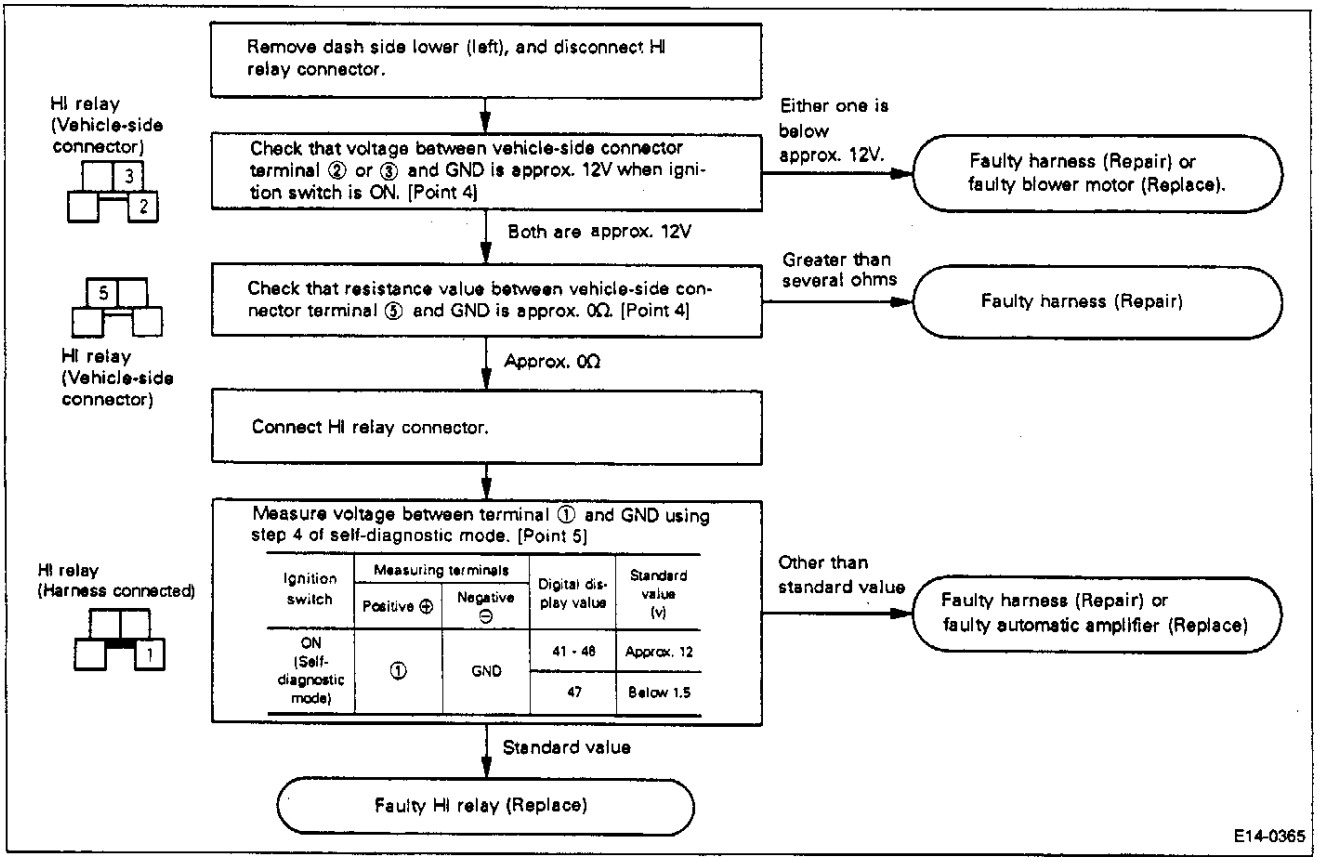
- With air mix door actuator connector connected, measure voltage using step 4 of self-diagnostic mode.

Measuring range	Ignition switch	Measuring terminal ⊕	Measuring terminal ⊖	Digital display value	Standard value	Function of air mix door
Ⓥ	ON (Self-diagnostic mode)	①	②	43 → 44	Approx. 10V	Moves to full hot
		②	①	47 → 41	Approx. 10V	Moves to full cold

(3) Blower motor system

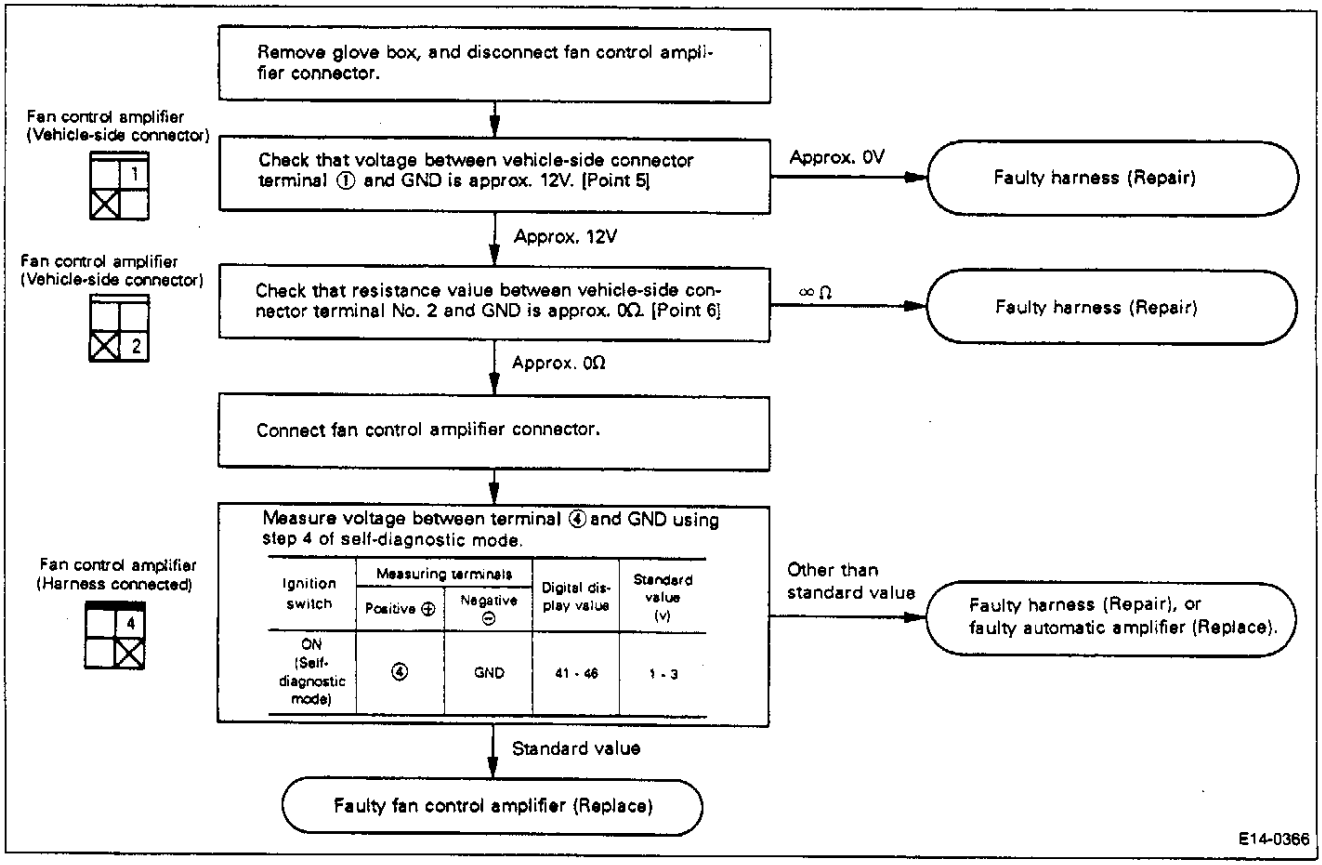
Before inspection, check blower motor, fan control amplifier, HI relay and automatic amplifier connectors.

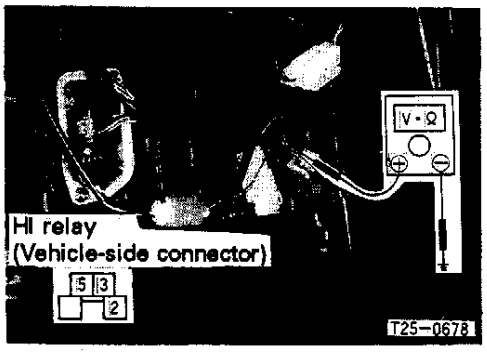
① Blower motor fails to run in HI position.

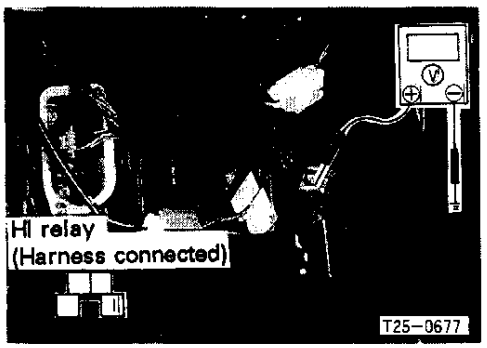


1. Full Automatic Air Conditioner (Cont'd)

② Unable to change blower motor speed, or motor fails to run at any position other than HI.







[Point 4] HI relay power and GND circuit inspection

- Disconnect HI relay connector, and measure voltage and check continuity between vehicle-side connector and GND.

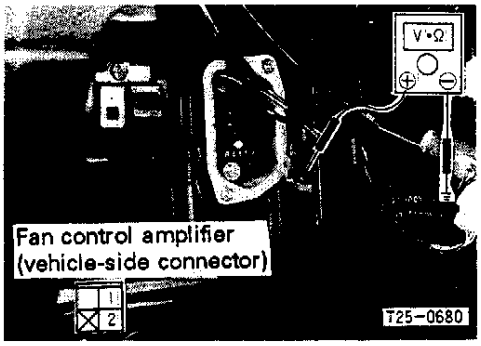
Measuring range	Ignition switch	Fan switch	Measuring terminals ⊕	Measuring terminals ⊖	Standard value
Ⓥ	ACC	OFF	③	GND	Approx. 12V
	ON		②		
Ω	OFF		⑤		0Ω

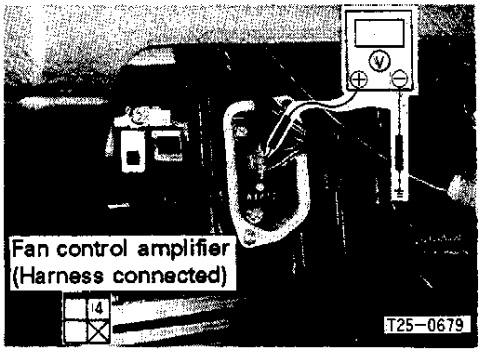
[Point 5] Automatic amplifier output inspection

- With HI relay connector connected, measure voltage using step 4 of self-diagnostic mode.

Measuring range	Ignition switch	Measuring terminals ⊕	Measuring terminals ⊖	Digital display value	Standard value
Ⓥ	ON (Self-diagnostic mode)	①	GND	41 - 46	Approx. 12V
				47	Below 1.5V

1. Full Automatic Air Conditioner (Cont'd)





[Point 6] Fan control amplifier power and GND circuit inspection

- Disconnect fan control amplifier connector, and measure voltage and check continuity between vehicle-side connector and GND.

Measuring range	Ignition switch	Fan switch	Measuring terminals		Standard value
			⊕	⊖	
Ⓥ	ACC	OFF	①	GND	Approx. 12V
Ω	OFF		②		0Ω

[Point 7] Automatic amplifier output inspection

- With fan control amplifier connector connected, measure voltage using step 4 of self-diagnostic mode.

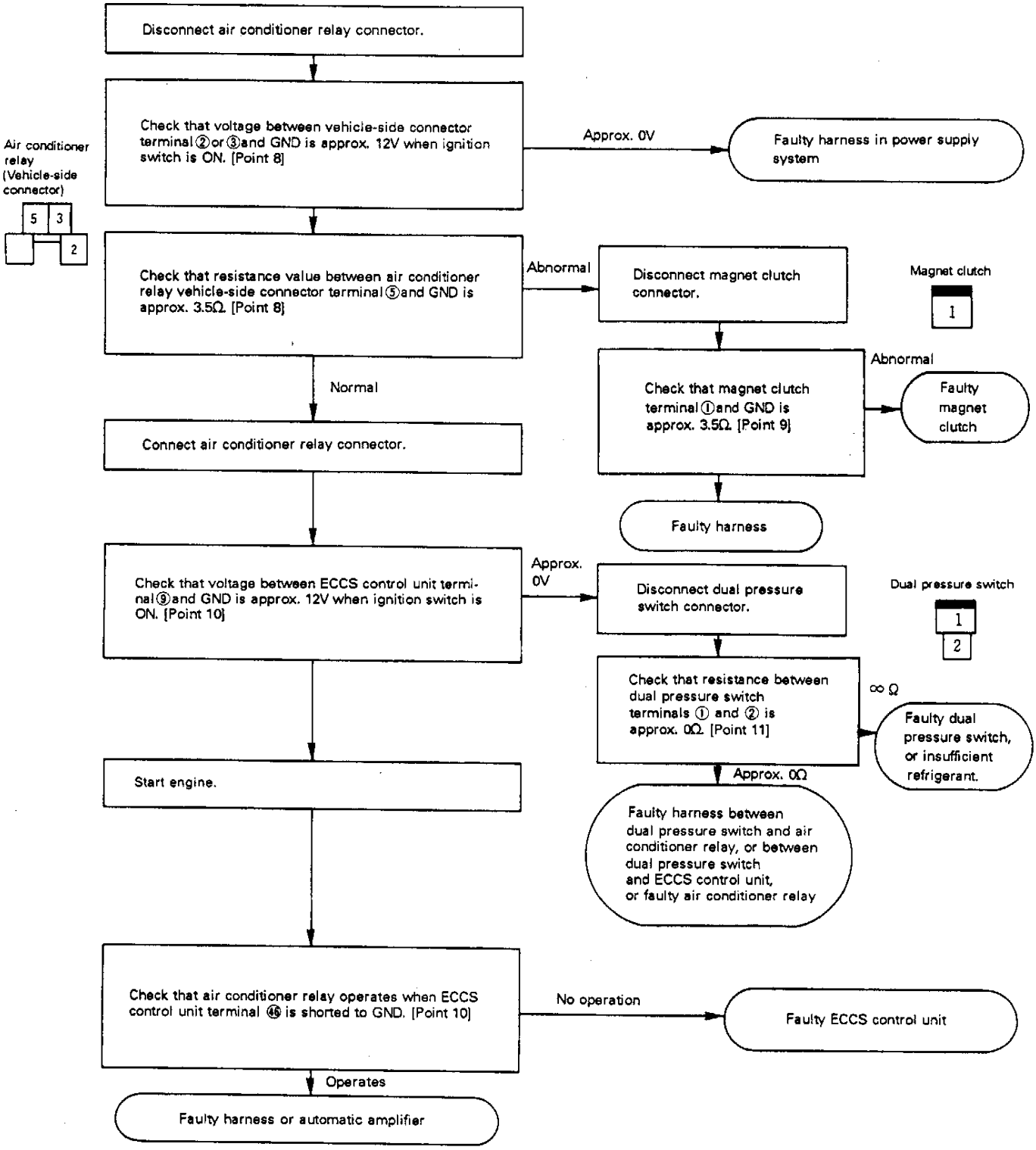
Measuring range	Ignition switch	Measuring terminals		Digital display value	Standard value
		⊕	⊖		
Ⓥ	ON (Self-diagnostic mode)	④	GND	41 - 46	1 - 3V

1. Full Automatic Air Conditioner (Cont'd)

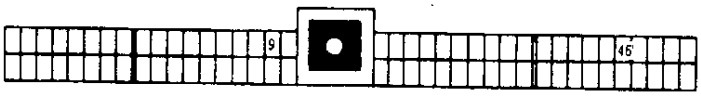
(4) Compressor system

Before inspection, check air conditioner relay, dual pressure switch, automatic amplifier magnet clutch connectors.

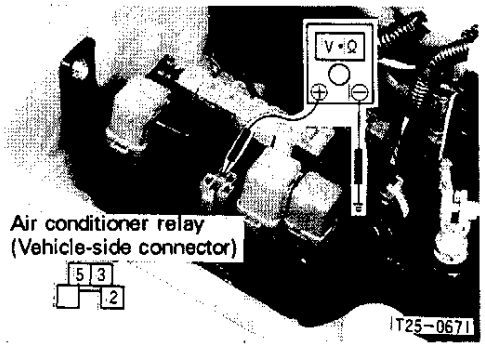
① Magnet clutch system



ECCS C/U (RB26DETT)



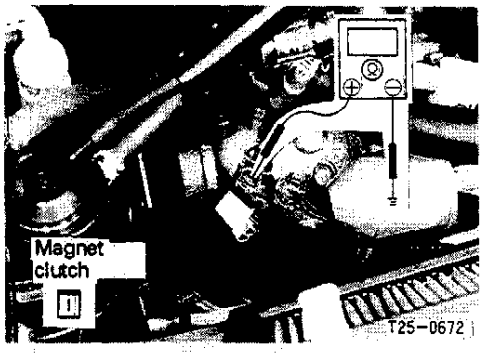
1. Full Automatic Air Conditioner (Cont'd)



[Point 8] Air conditioner relay power supply and magnet clutch circuit inspection

- Remove air conditioner relay, and measure voltage and resistance between vehicle-side connector and GND.

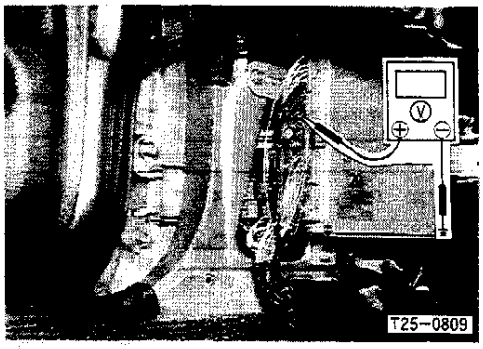
Measuring range	Ignition switch	Measuring terminal ⊕	Measuring terminal ⊖	Standard value	Remarks
Ⓥ	ON	②	GND	Approx. 12V	IGN power
Ⓥ	ACC	③	GND	Approx. 12V	ACC power
Ω	OFF	⑤	GND	Approx. 3.5Ω	Magnet clutch coil resistance



[Point 9] Magnet clutch inspection

- Disconnect magnet clutch connector, and measure resistance between clutch-side connector and GND.

Measuring range	Measuring terminals ⊕	Measuring terminals ⊖	Standard value
Ω	①	GND	Approx. 3.5Ω



[Point 10] Air conditioner control circuit inspection

- With harness connected to ECCS control unit, measure voltage and check relay operation by applying tester probes as shown.

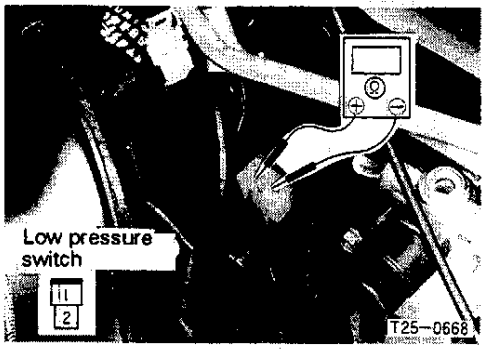
① Air conditioner control circuit inspection

Measuring range	Ignition switch	Measuring terminals ⊕	Measuring terminals ⊖	Standard value
Ⓥ	ON	⑨	GND	Approx. 12V

② Air conditioner relay operation inspection

Ignition switch	Terminal to be shorted to GND	Air conditioner relay operation
ON (Engine is running)	㊻	Air conditioner relay must turn ON.

1. Full Automatic Air Conditioner (Cont'd)



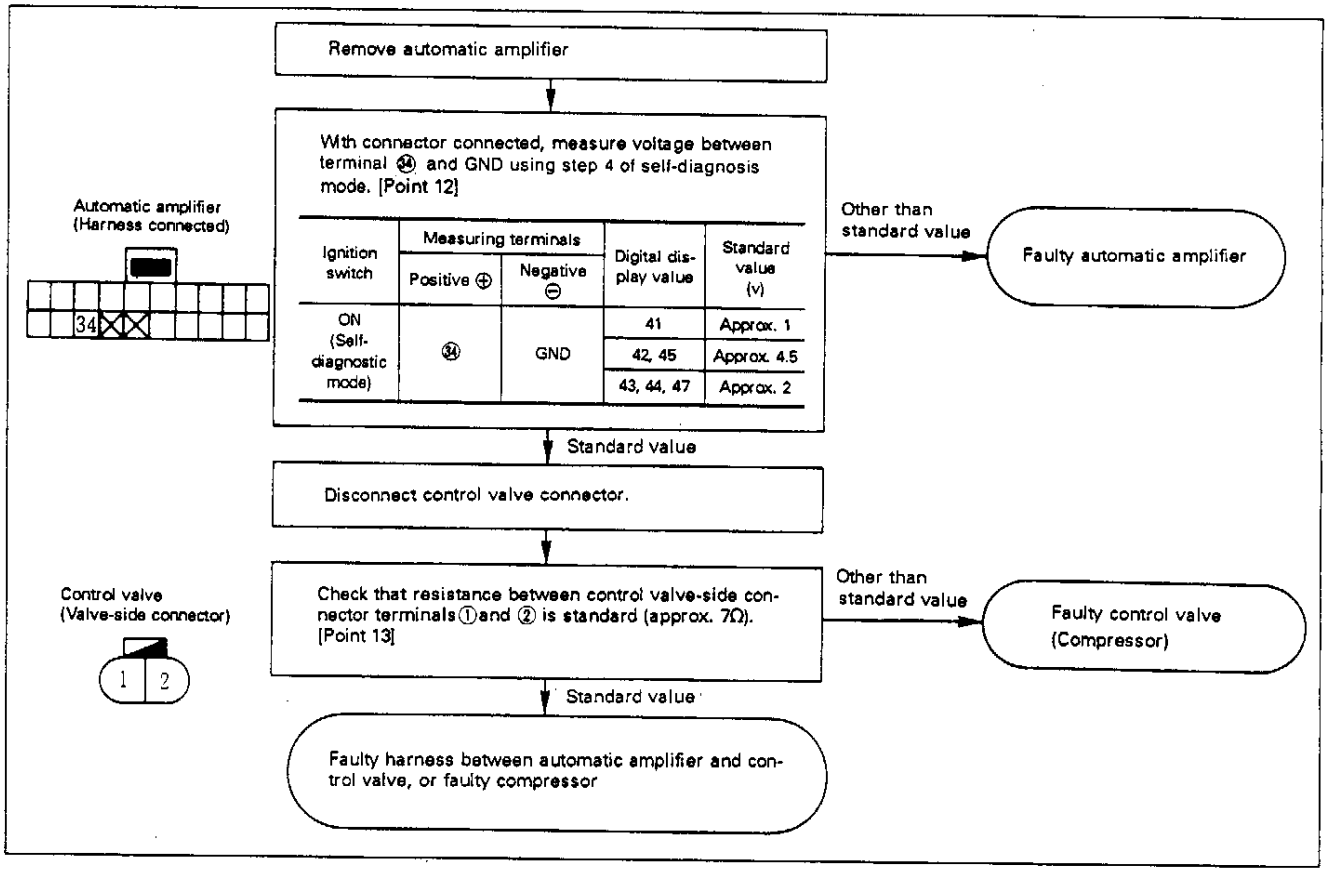
[Point 11] Dual pressure switch continuity inspection

- Disconnect dual pressure switch connector, and measure resistance by applying tester probes to switch side connector as shown.

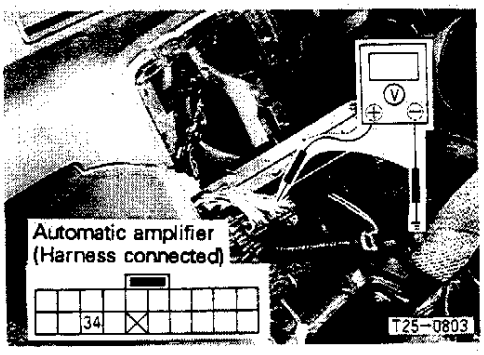
Measuring range	Measuring terminals	Standard value
Ω	① - ②	Approx. 0Ω

NOTE:
If dual pressure switch is OFF, the cause may be a faulty air conditioner cycle.

② Control valve system



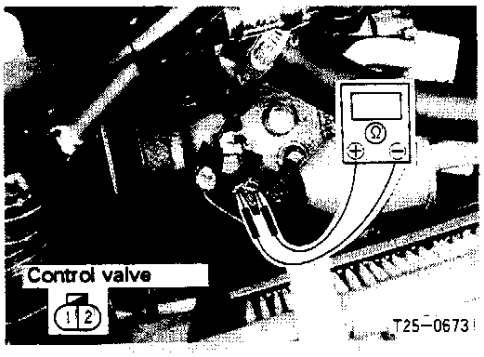
1. Full Automatic Air Conditioner (Cont'd)



[Point 12] Automatic amplifier output signal inspection

- Remove automatic amplifier. With connector connected, measure voltage by applying tester probes to the 20-terminal connector using step 4 of self-diagnostic mode.

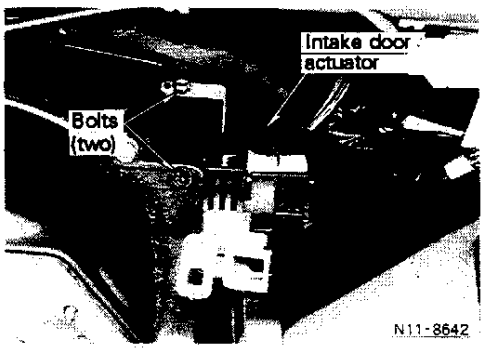
Measuring range	Ignition switch	Measuring terminals ⊕	Measuring terminals ⊖	Digital display value	Standard value
Ⓥ	ON (Self-diagnostic mode)	㉞	GND	41	Approx. 1V
				42, 45	Approx. 4.5V
				43, 44, 47	Approx. 2V



[Point 13] Coil resistance inspection in control valve

- Disconnect control valve connector, and measure resistance of coil by applying tester probes to valve-side connector.

Measuring range	Measuring terminals	Standard value
Ω	① - ②	Approx. 7Ω



1-6 ACTUATOR REMOVAL AND INSTALLATION

(1) Intake door actuator

Removal

Remove and install: Glove box, glove box cover (Parts not shown)

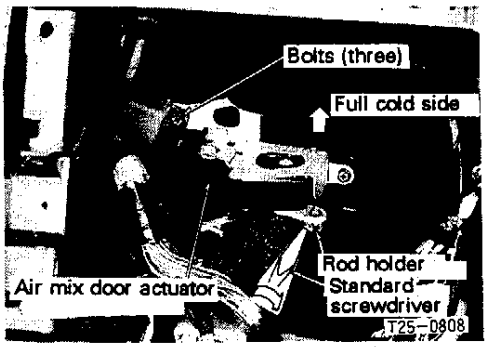
- Remove harness and securing bolts (two), and remove intake door actuator.

NOTE:
Remove actuator in REC state.

Installation

- Connect intake door actuator connector to vehicle harness.
- Set ignition switch to ACC, and set push control REC switch to ON. (Actuator is set in REC state.)
- Install intake door actuator while fixing actuator link in inside air position.
- Operate REC switch to see if actuator link is movable over full stroke range.

1. Full Automatic Air Conditioner (Cont'd)



(2) Air mix door actuator

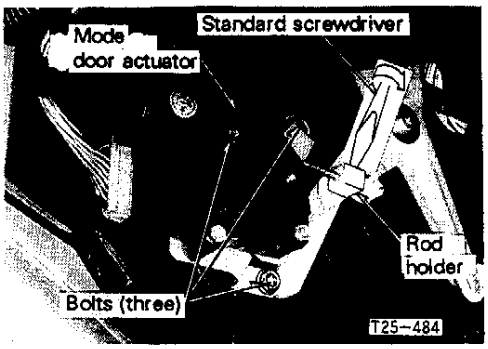
Removal

Remove and install: Automatic transmission finisher, cluster lid C, audio unit, heater nozzle (left)

- Remove connector and securing bolts (three), and remove rod from rod holder.

Installation

- Connect air mix door actuator connector to vehicle-side harness.
- Set ignition switch to ON, and activate self-diagnostic mode step 4, then set full cold status (display value 41, 42, or 43). After this, turn OFF ignition switch.
- Install air mix door actuator.
- Fix air mix door actuator to rod holder while pressing door link toward full cold (driver seat).
- Activate step 4 of self-diagnostic mode. Make sure that air mix door moves over full stroke range when display value is changed from 43 to 44 or from 47 to 41.



(3) Mode door actuator removal and installation

Removal

Remove and install: Instrument panel lower cover

- Remove connector and securing bolts (three), and remove rod by rotating rod holder with standard screwdriver.

NOTE:
Remove rod holder in DEF state.

Installation

- Connect mode door actuator connector to vehicle-side harness.
- Set ignition switch to ACC, and set push control DEF switch to ON. (Actuator is set in DEF state.)
- Install mode door actuator.
- Fix side link to rod holder while holding side link in DEF mode position (by rotating counterclockwise until it stops).
- Operate mode switch and make sure that side link is capable of moving over full stroke range.

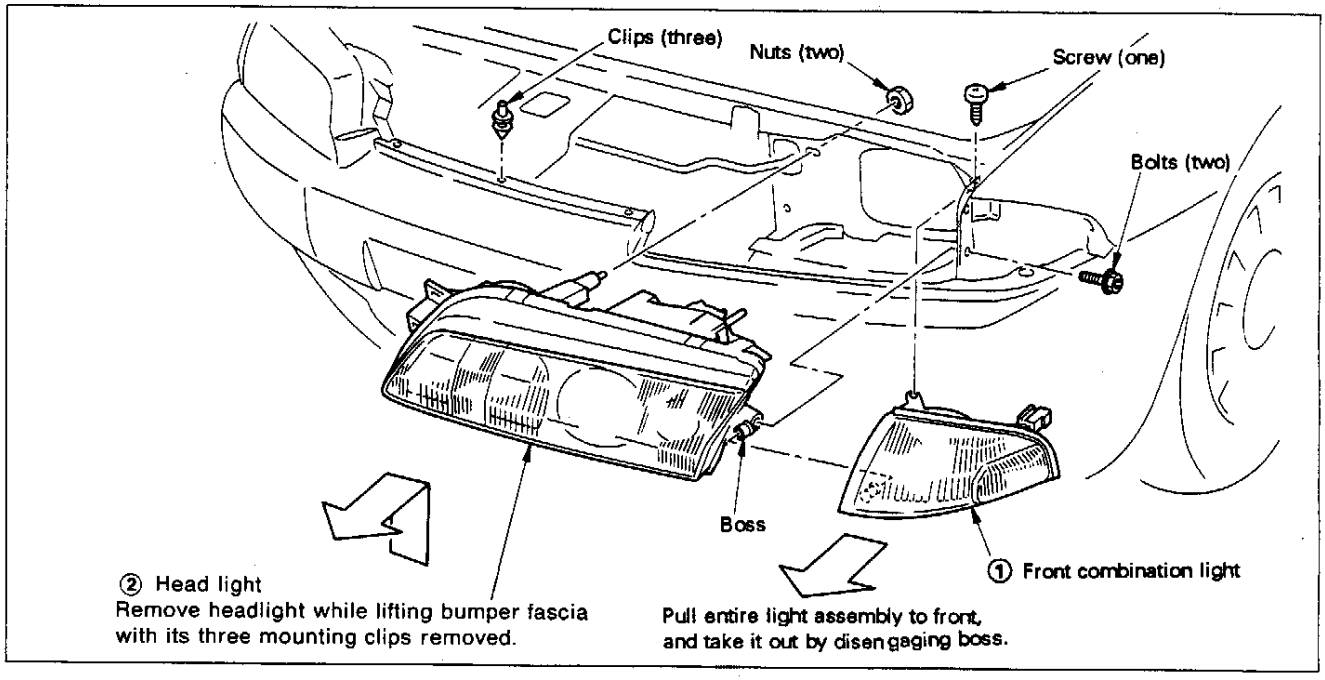
ELECTRICAL SYSTEM

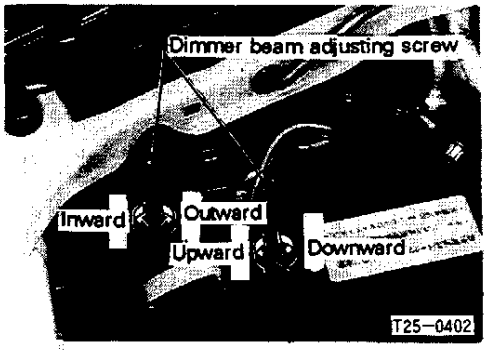
SECTION EL

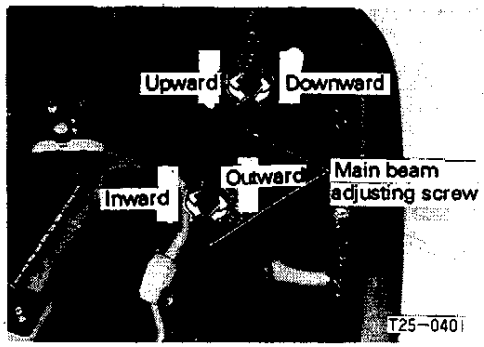
CONTENTS

1. Headlight Assembly

1-1 HEADLIGHT REMOVAL AND INSTALLATION







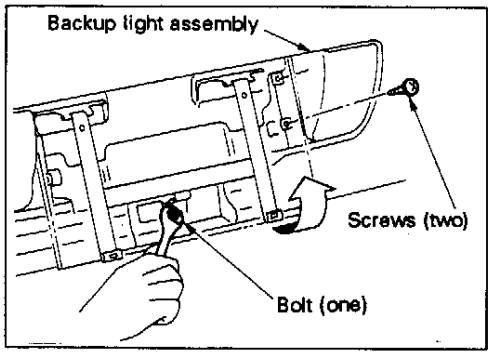
1-2 AIMING HEADLIGHT

- Refer to the Basic Service Manual <A801001> for headlight aiming procedures.

(1) Modified 4-bulb type projector headlight

① Dimmer beam

② Main beam

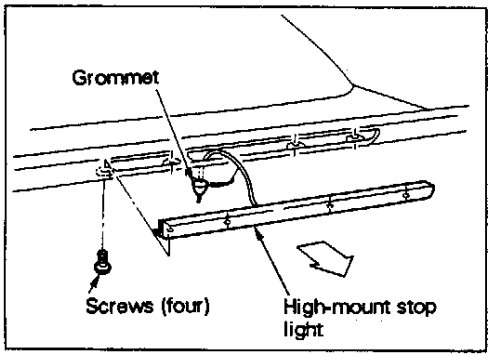


2. Backup Light (2-door model)

2-1 BACKUP LIGHT REMOVAL AND INSTALLATION

Removal

- Remove license plate bracket securing bolt (one), and pull up license plate, then remove light securing screws (two), and then remove backup light.
- Replace bulb after removing light main body.

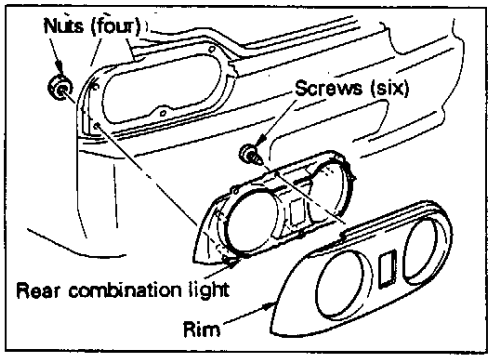


3. High-mount Stop Light (2-door model)

3-1 LIGHT REMOVAL AND INSTALLATION

Removal

- Remove light securing screws (four), and remove connector from light main body.



4. Rear Combination Light

4-1 LIGHT REMOVAL AND INSTALLATION

(1) 2-door model

Removal

Remove and install: Trunk rear finisher

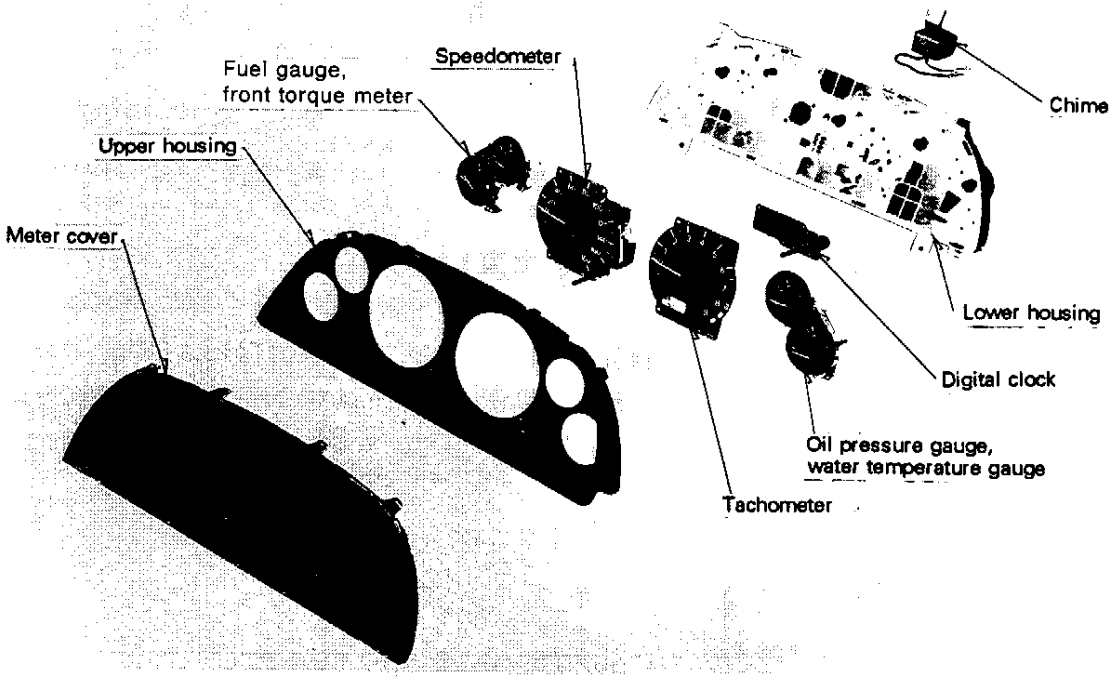
- Heat sealing material fitted around rear combination light using drier and remove light assembly from trunk side.

Installation

- Remove butyl seal from body surface and rear side of light, and apply repair butyl seal to rear surface of rear combination light assembly. Install light assembly after heating butyl seal using dryer.

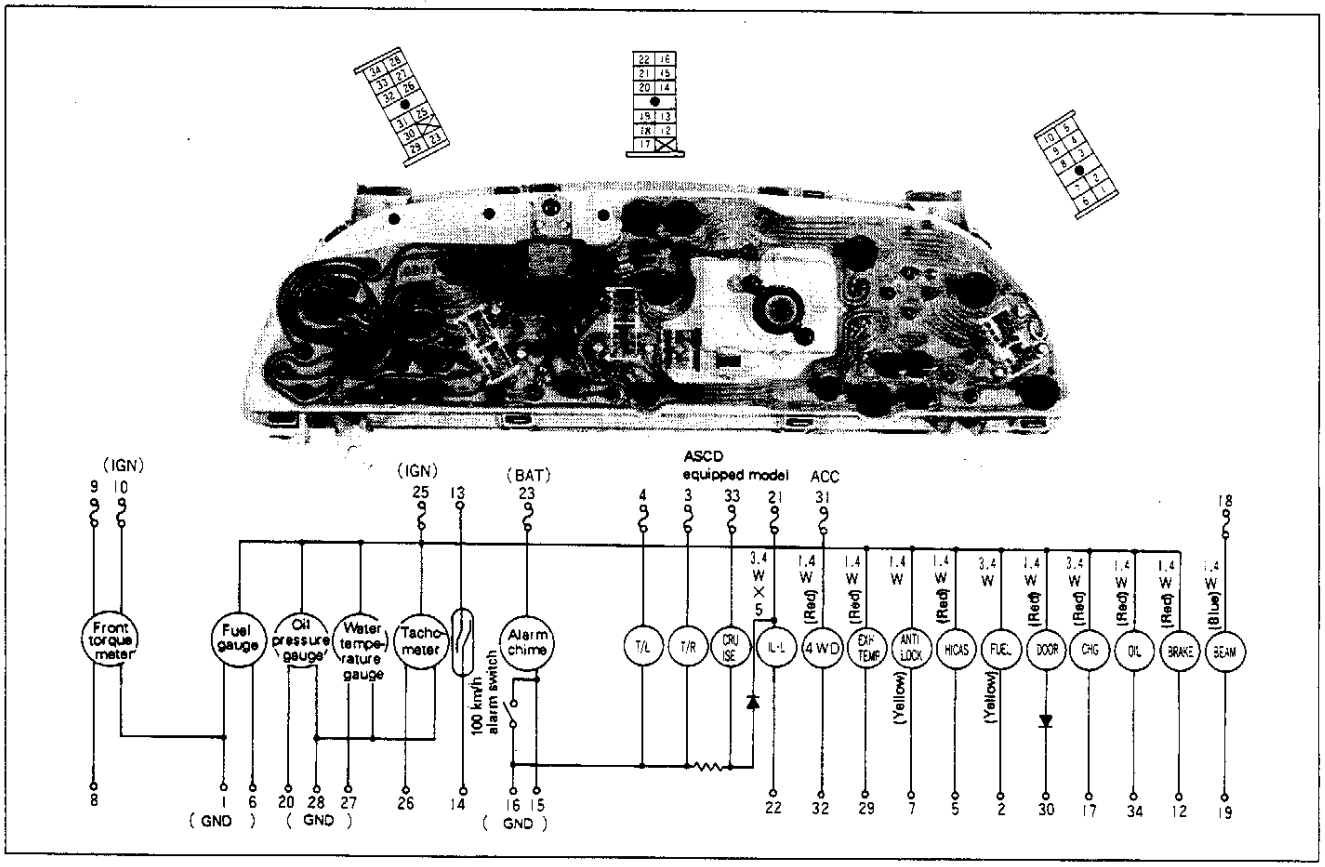
1. Combination Meter

1-1 COMPONENTS



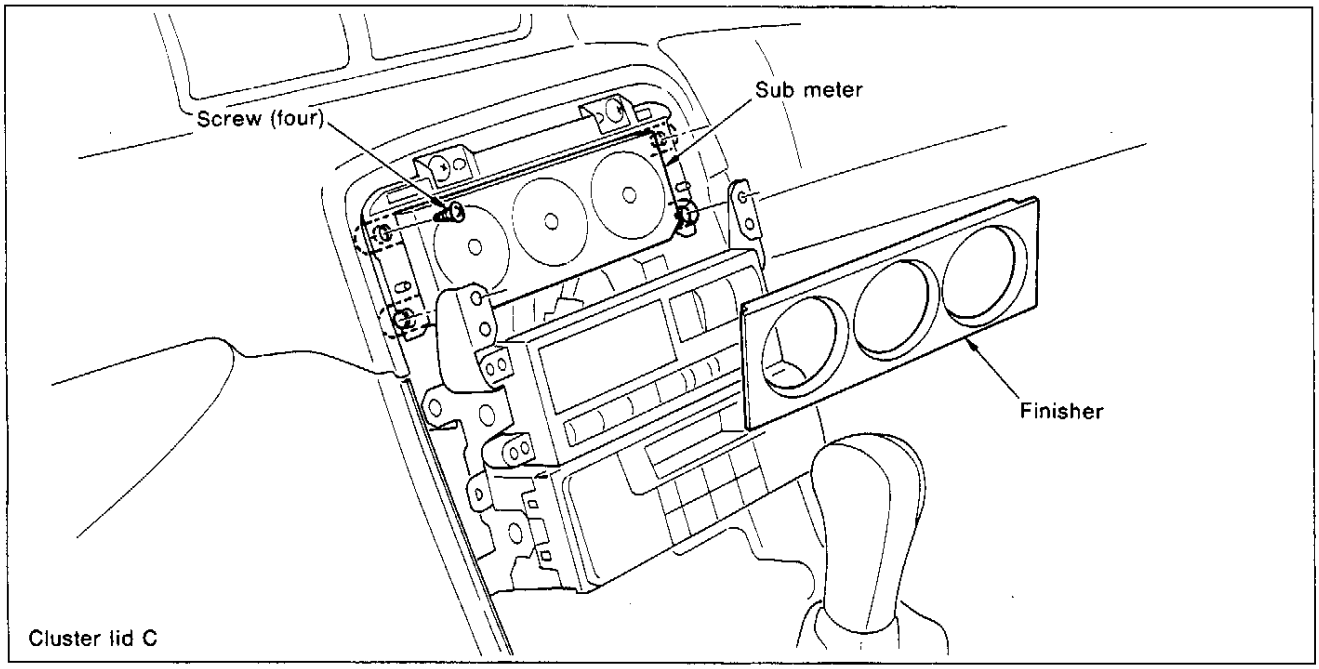
1. Combination Meter (GT-R model)

1-2 REAR SIDE SHAPE AND INTERNAL CIRCUIT

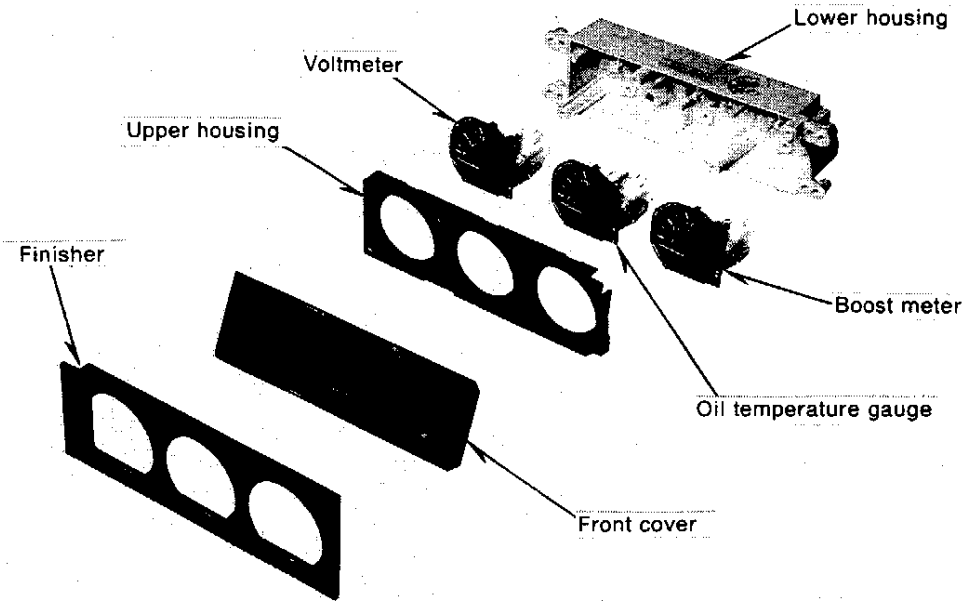


2. Sub Meter

2-1 METER REMOVAL AND INSTALLATION



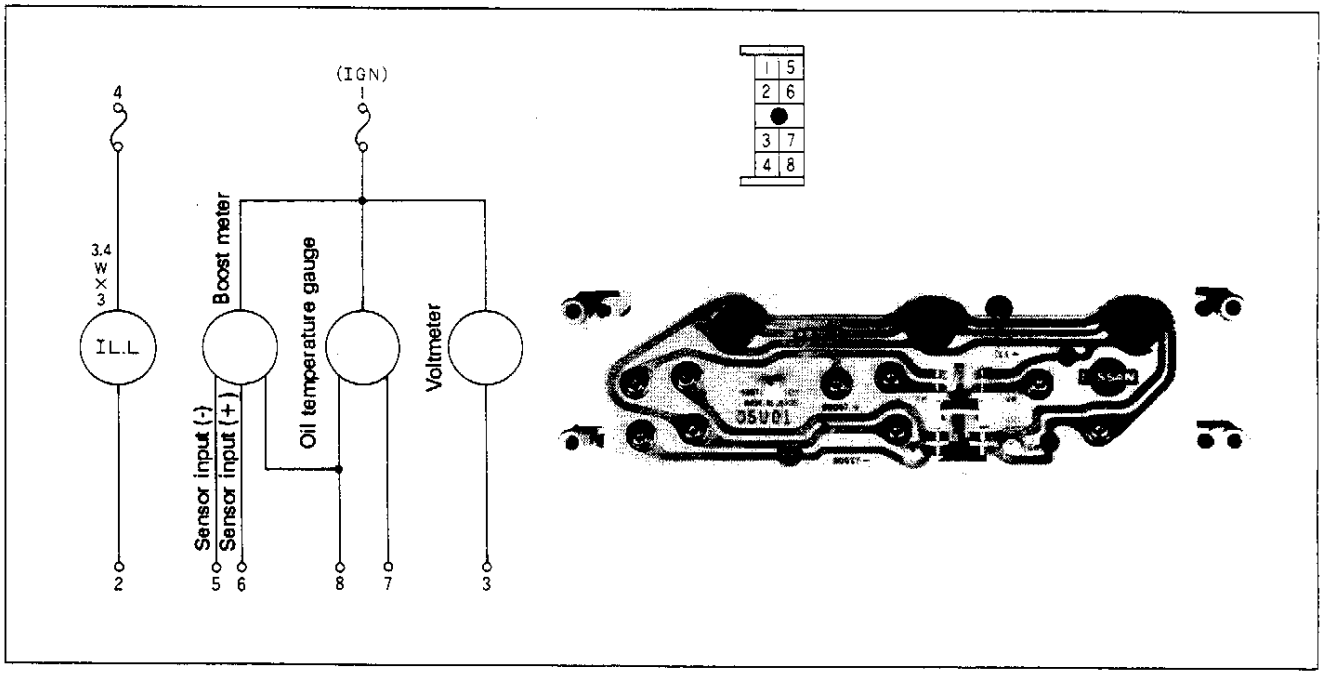
2-2 DISASSEMBLY

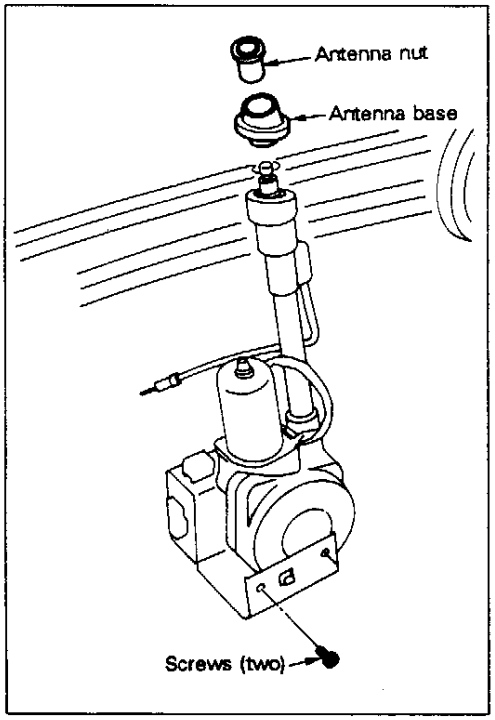


N12-1685

2. Sub Meter (Cont'd)

2-3 REAR SIDE SHAPE AND INTERNAL CIRCUIT

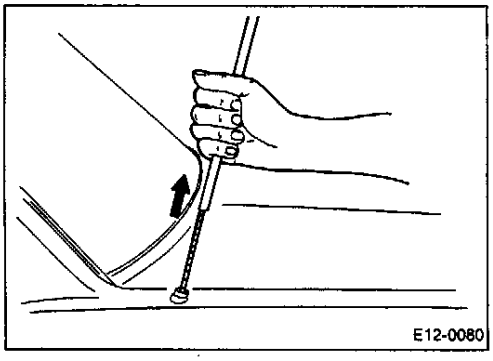




1. Antenna

1-1 FULL AUTOMATIC ANTENNA ASSEMBLY REMOVAL AND INSTALLATION

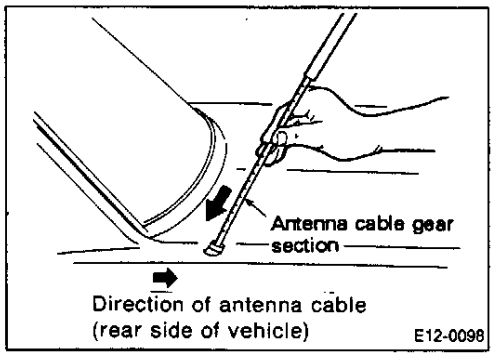
Remove and install: Trunk side finisher (left) (Parts not shown)



1-2 ANTENNA ROD REPLACEMENT

Removal

- Remove antenna nut and antenna base.
- Turn ON radio receiver power switch to raise antenna.
- At this moment, antenna rod and antenna rope can be pulled out by another operator.



Installation (only when installing new part)

- Extend antenna cable end so that it can be easily taken up with motor.
- Turn OFF radio receiver power switch to retract antenna.
- Operator standing outside vehicle: Insert antenna cable into rod hole with gear side facing antenna motor (rear side of vehicle). After confirming that antenna cable has wound around motor, set root portion of rod into pipe, and allow motor to completely retract antenna rod.

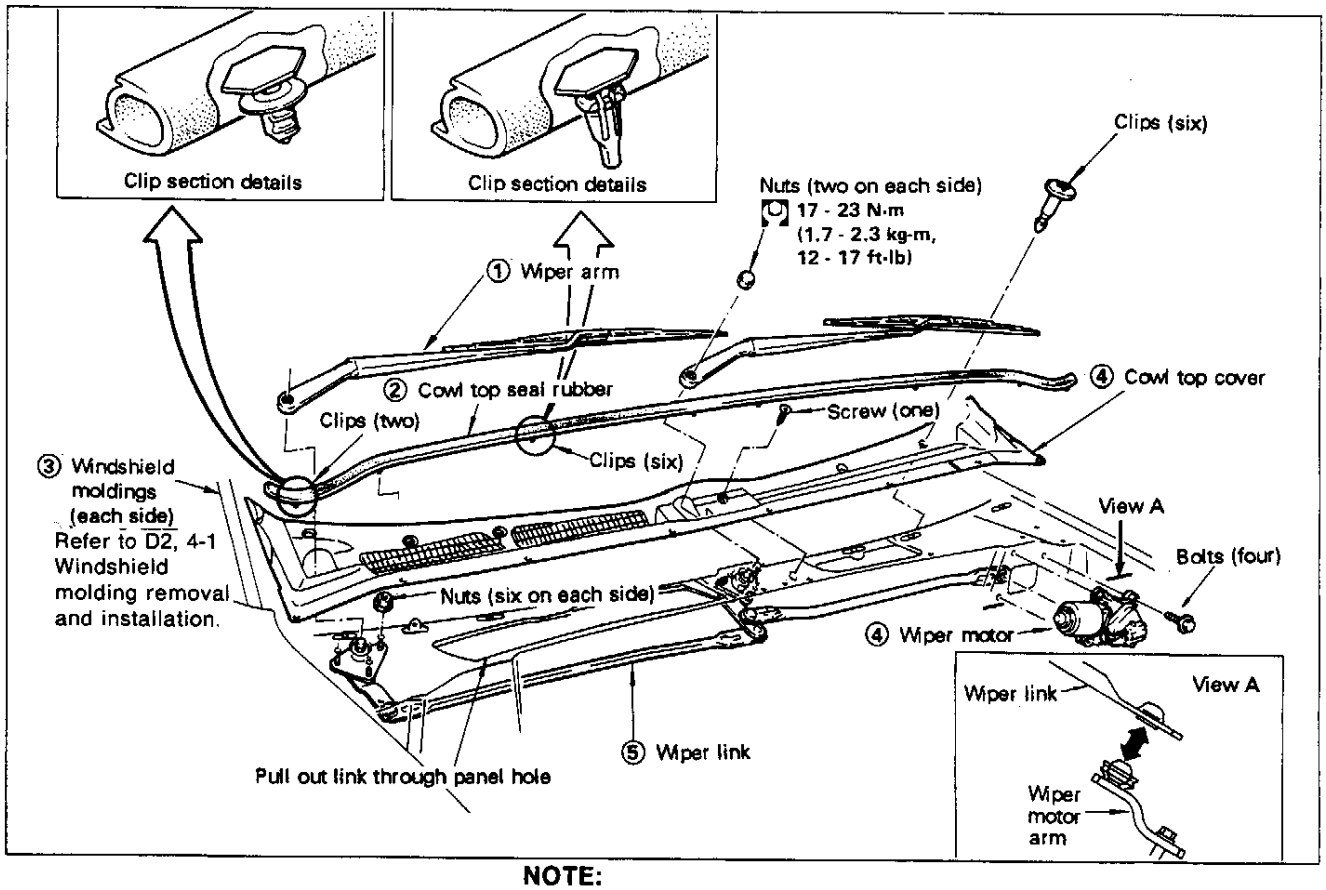
NOTE:
If motor stops during operation, turn radio receiver ON then OFF to rotate motor in retracting direction.

Replacement rod part No.	28215 89904

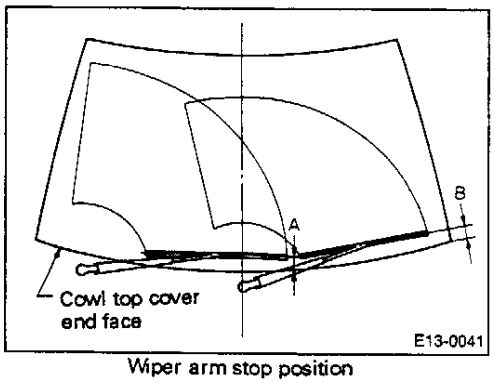
1. Windshield Wipers

1-1 FRONT WIPER

(1) Wiper arm and link removal and installation



NOTE:
If wiper link comes off specified auto stop position, motor may start rotating even though wiper switch is OFF. To prevent this accident, be sure to keep wiper motor disconnected.



Wiper arm stop position

(2) Wiper arm adjustment

- When adjusting wiper arm, operate wiper motor once and allow it to stop at auto stop position.
- When installing wiper arm, align wiper blade end at specified position (wiper arm stop position), and tighten arm while paying attention to avoid movement of wiper link.

NOTE:
If wiper arm stop position has moved due to weight of snow or other external force, first correct wiper pivot fitting portion, then re-install wiper arm in correct position.

1. Windshield wipers (Cont'd)

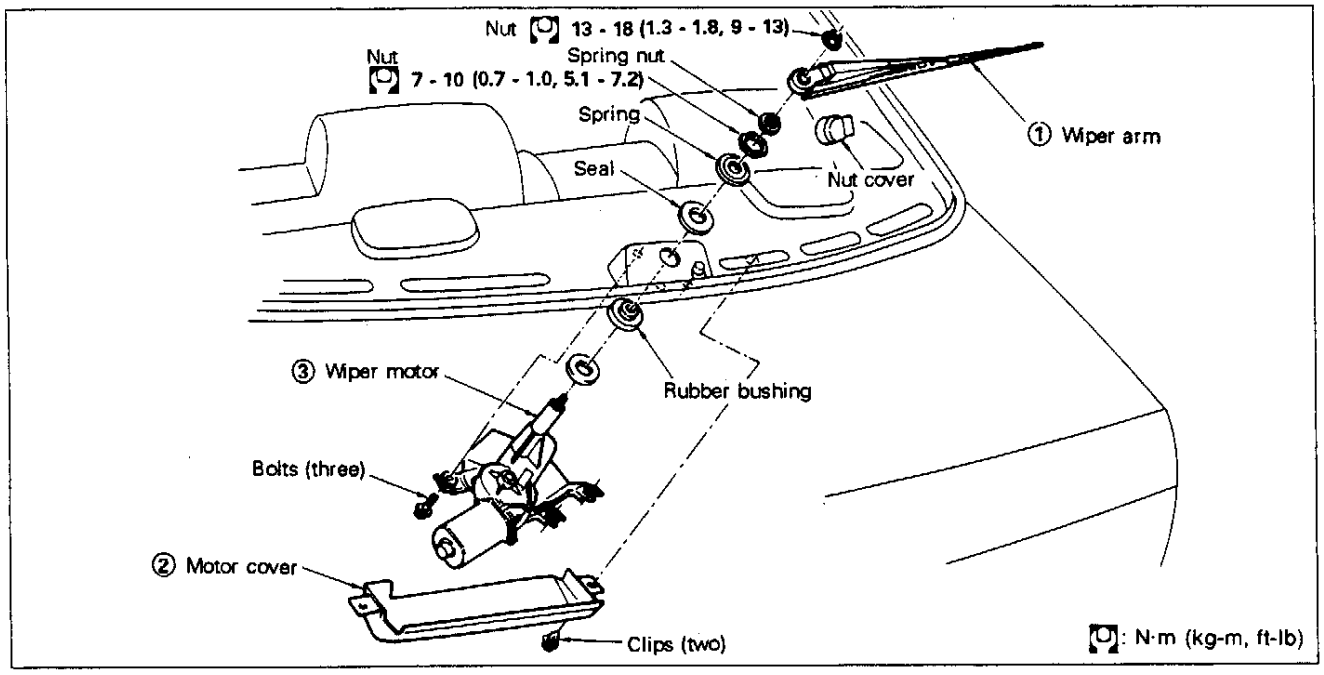
Semi-concealed type (standard)

Unit: mm (in)

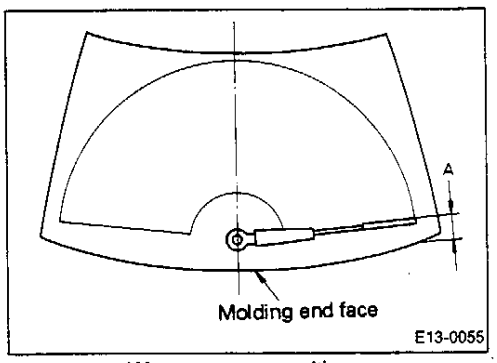
Dimension A	17 - 32 (0.67 - 1.26)
Dimension B	23 - 37 (0.91 - 1.46)

1-2 REAR WIPER

(1) Rear wiper arm and motor removal and installation



NOTE:
If wiper link comes off specified auto stop position, motor may start rotating even though wiper switch is OFF. To prevent this, be sure to keep wiper motor disconnected.

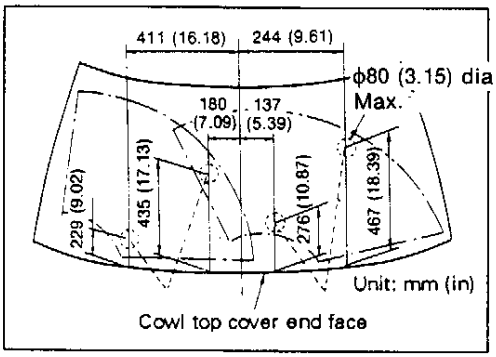


Wiper arm stop position

(2) Wiper arm adjustment

- When adjusting wiper arm position, operate wiper motor once, and allow it to stop at auto stop position.

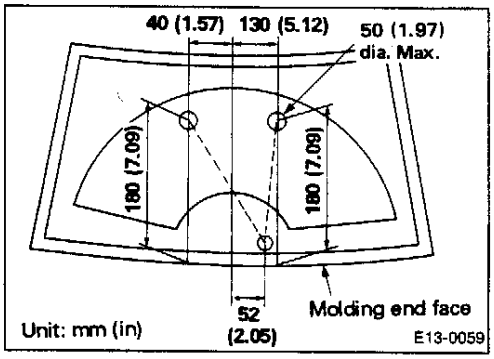
Dimension A	17 - 32 mm (0.67 - 1.26 in)



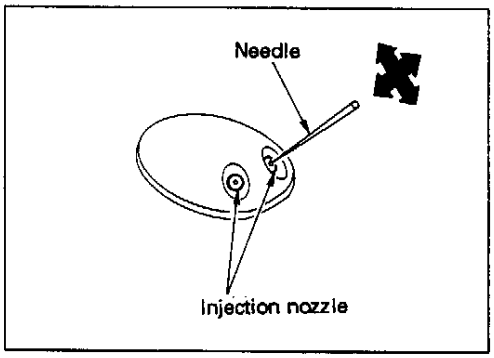
2. Window Washers

2-1 WASHER NOZZLE INJECTION POINT

(1) Front washer



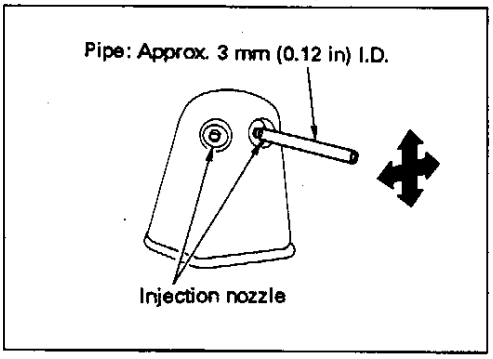
(2) Rear washer



2-2 WASHER NOZZLE ADJUSTMENT

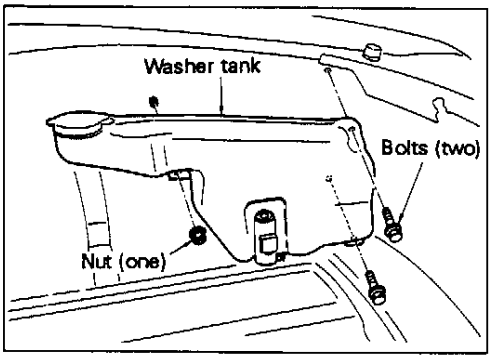
(1) Front washer

- Paying attention not to deform injection nozzle opening, insert a needle into nozzle, and adjust nozzle direction.



(2) Rear washer

- Adjust nozzle direction using a pipe with I.D. 3 mm (0.12 in). Pay attention not to damage nozzle port.



2-3 WASHER TANK

(1) Washer tank removal and installation

Remove and install: Air cleaner (Parts not shown)

■ Chassis Marking Start Number

E-BNR32 vehicle BNR32-000001

■ Abbreviations

Abbreviation	Name
ACC	Accessory
A/C	Air conditioner
A/P	Air purifier
ASCD	Auto speed control device
A/T	Automatic transmission
C/B	Circuit breaker
DSVV	Double solenoid vacuum valve
ELR	Emergency locking retractor
EPS	Electronically controlled power steering
FICD	Fast idle control device
F/L	Fusible link
IGN	Ignition
IL.CON	Illumination control
IL.L	Illumination light
IND.L	Indicator light
M/T	Manual transmission
PBR	Potentiometer balance resistor
P.L	Pilot lamp
P/S	Power steering
PTC	Potentiometer temperature control
P/Tr	Power transistor
P/W	Power window
ST	Start
S/V	Solenoid valve
SW	Switch
Tr	Transistor
V/R	Voltage regulator
W.L	Warning light
2WD	2-wheel drive
4WAS	4-wheel antiskid
4WD	4-wheel drive

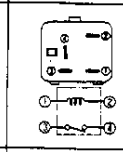
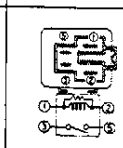
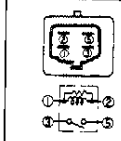
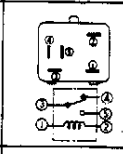
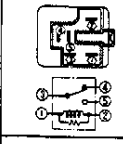
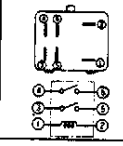
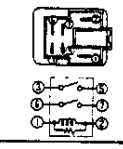
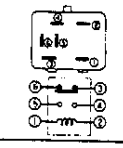
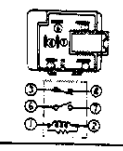
	Abbreviation	Name
Instrument	AMP	Ammeter
	BUST	Vacuum gauge
	FUEL	Fuel gauge
	OIL	Oil pressure gauge
	OIL TEMP	Oil temperature gauge
	TACHO	Tachometer
	TEMP	Water temperature gauge
	VOLT	Voltmeter
Warning lights and pilot lamps	ANTI LOCK	4-wheel antiskid warning light
	BATT	Battery fluid level warning light
	BEAM	Main beam pilot lamp
	BELT	Seat belt warning light
	BRAKE	Brake warning light
	CHECK	Check engine light
	CHG	Charge warning light
	CLUTCH	Clutch fluid level warning light
	CRUISE	Cruise display light
	DEF	Rear defogger pilot lamp
	DOOR	Open door warning light
	EXH TEMP	Exhaust gas temperature warning lamp
	FAN BELT	Loose fan belt warning light
	FILTER	Fuel filter water level warning light
	FUEL	Low fuel level warning light
	FUSE	Fuse blown warning light
	GLOW	Glow pilot lamp
	HICAS	Low HICAS oil level warning light
	OIL	Oil pressure warning light
	RAD	Low radiator fluid level warning light
	STOP	Stop light burnout warning light
	TAIL	Tail lamp burnout warning light
	TURN	Turn signal pilot lamp
	WASH	Low washer fluid warning light

■ Cable Colors

B	BR	CH	DG	G	GY	L	LG	OR	P	PU	R	SB	W	Y
Black	Brown	Charcoal	Dark green	Green	Gray	Blue	Bluish green	Orange	Pink	Purple	Red	Sky blue	White	Yellow

■ Relays

Note: **The part numbers listed in the remarks column identify different manufacturers and the parts affected are interchangeable.**

Type	Sketch	Terminal symbol	Identification color	Remarks
1 M			Green	Part number 25230 - R8100
1 M			Blue	Part number 25230 - C 9970 25230 - C 9980 25230 - C 9985
			Green	25230 - C9965 For EGI
1 M			Blue	Part number 25230 - C 9990
1 T			Black	Part number 25230 - R8201
1 T			Black	Part number 25230 - C 9961 25230 - C 9971
2 M			Brown	Part number 25230 - C 9920 25230 - C 9921
2 M			Brown	Part number 25230 - C 9963
1M1B			Gray	Part number 25230 - C 9915 25230 - C 9916 25230 - C 9910
1M1B			Gray	Part number 25230 - C 9962 25230 - C 9972

■ Fuses

The fuse numbers indicated in the following table agree with those shown in the circuit and wiring diagrams.

(1) Passenger compartment

#1	#2	#3	#4/#5	#6	#7	#8	#9	#10	#11	#12	#13
4WD	Electronic parts	Transmission control	Blower motor	Wiper	Engine control	Fuel pump	Audio set	Air conditioner	Mirror, rear wiper	Cigarette lighter	Fog lamp
10A	10A	10A	15A	15A	20A	10A	15A	10A	10A	10A	15A	15A
	IGN		ACC		IGN		ACC				BAT
	BAT	ST	BAT		IGN		BAT				IGN
	20A	10A	10A	10A	10A	10A	10A	10A	10A	10A	10A	20A
	Antiskid brake	Starter signal	Hazard light	Shift lock	Tail light	Air conditioner	Meter	Turn signal light	Electronic parts	Stop light	Interior light	Rear defogger
#14	#15	#16	#17	#18	#19	#20	#21	#22	#23	#24	#25	#26

(2) Engine compartment (Relay box)

		Ⅶ	Ⅵ	Ⅴ	Ⅳ	Ⅲ	Ⅱ	Ⅰ	
#31	HORN 10A	FL 25A	FL 25A	FL 25A	FL 30A	FL 30A	FL 30A	FL 75A	A/T IND
#32	H/LAMP RH. 15A	RAD FAN	ENG CONT	POWER WDW	ANTI SKID	IGN SW	PTC HEATER 4WD	MAIN	
#33	H/LAMP LH. 15A								

H/LAMP	INHIBIT	AIR CON	BLOWER / RAD FAN	HORN

SERVICE DATA

SECTION SD

CONTENTS

1. Engine

* :Items marked with an asterisk in parenthesesdo not require periodic inspection. These items ae indicated for reference only.

Item		Inspection		RB26DETT
		New engine	Periodic	
Engine	Cylinder head tightening torque N·m (kg-m, ft-lb)	—	○ (for business use)	① 29 (3, 22) ② 108 (11, 80) ③ 0 (0, 0) ④ 29 (3, 22) ⑤ 108±5 (11±0.5, 79.6±3.6)
	Intake and exhaust manifold tightening torque N·m (kg-m, ft-lb)	—	—	Intake: 16 - 21 (1.6 - 2.1, 12 - 15) Exhaust: 18 - 24 (1.8 - 2.4, 13 - 17)
	Valve clearances (when hot) - intake and exhaust mm (in)	—	—	Intake: 0.51 (0.020) Exhaust: 0.44 (0.017) (when cold)
	Standard compression pressure kPa (kg/cm^2, psi)/rpm	—	○	1,177 (12.0, 171)/ 300
	Limit kPa (kg/cm^2, psi)/rpm	—	○	883 (9.0, 128)/ 300
	Difference limit among cylinders kPa (kg/cm^2, psi)/rpm	—	○	98 (1.0, 14)
	Idle rpm rpm	—	○	M/T: 950
Emission control systems	CO/HC concentration %/rpm	○	○	Less than 0.1/ greater than 50
	Dashpot "touch" rpm rpm	—	○	—
	TV valve operating temperature °C (°F)	—	—	—
	Catalytic converter tightening torque N·m (kg-m, ft-lb)	—	○	31 - 42 (3.2 - 4.3, 23 - 31)
	Exhaust temperature sensor tightening torque N·m (kg-m, ft-lb)	—	○	25 - 34 (2.5 - 3.5, 18 - 25)
Engine electrical system	Ignition timing °BTDC/rpm	—	○	M/T: 20/950
	Spark plug gap mm (in)	—	○	1.0 - 1.1 (0.039 - 0.043) (Adjustment not required)
	Specific gravity of battery electrolyte 20°C (68°F)	○	○	1.22 - 1.29

1. Engine (Cont'd)

Cooling system	Coolant pressurization limit kPa (kg/cm², psi)		—	○	98 (1.0, 14)
	Radiator cap relief pressure kPa (kg/cm², psi)		—	○	59 - 98 (0.6 - 1.0, 9 - 14)
	Coolant quantity	Radiator	○	○	Up to lower end of filler opening
		Reservoir tank			Between MIN and MAX
	Fan belt tension [when pressed midpoint with a force of approx. 98 N (10 kg, 22 lb)] mm (in)	When new	○	○	3.0 - 5.0 (0.118 - 0.197)
		When readjusted	○	○	4.0 - 6.0 (0.157 - 0.236)
		Service limit			7.5 (0.295)
Exhaust system	Tightening torque N·m (kg-m, ft-lb)		○	○	
	• Heat-shield plate				5 - 7 (0.5 - 0.7, 3.6 - 5.1)
	• Exhaust manifold-to-front tube				45 - 60 (4.6 - 6.1, 33 - 44)
	• Front tube-to-catalytic converter				43 - 55 (4.4 - 5.6, 32 - 41)
	• Catalytic converter-to-center tube				43 - 55 (4.4 - 5.6, 32 - 41)

2. Chassis

Item		New vehicle inspection	Periodic inspection	Inspection standards
Clutch	Pedal free play (at clevis) mm (in)	○	○	5 - 12 (0.20 - 0.47) [1 - 3 (0.04 - 0.12)]
	Pedal-to-floor (when released) mm (in)		○	81 (3.19)
	Free pedal height mm (in)	○		171.7 - 181.7 (6.76 - 7.15)
Propeller (drive) shaft	Tightening torque of joints N·m (kg-m, ft-lb)		○	
	• Front propeller shaft-to-front final drive			24 - 32 (2.4 - 3.3, 17 - 24)
	• Rear propeller shaft-to-rear final drive			64 - 74 (6.5 - 7.5, 47 - 54)
	• Transfer-to-rear propeller shaft			88 - 98 (9.0 - 10, 65 - 72)
	• Center propeller shaft-to-bearing bracket			Bolt: 32 - 38 (3.3 - 3.9, 24 - 28) Nut: 20 - 23 (2.0 - 2.3, 14 - 17)
	• Center flange-to-propeller shaft			64 - 74 (6.5 -7.5, 47 - 54)
	• Center flange lock nuts			245 - 294 (25 - 30, 181 - 217)
	• Side shaft-to-front drive shaft			16 - 21 (1.6 - 2.1, 12 - 15)
	• Side flange-to-rear drive shaft			83 - 93 (8.5 - 9.5, 61 - 69)
	Propeller shaft runout		○	Less than 6 (0.6, 4.3)
Front suspension and axle	Wheel alignment		○	
	• Toe-in mm (in)			1 ± 1 (0.04 ± 0.04)
	• Camber degree			–0°55′ ± 45′
	• Caster degree			RB26DETT: 3°40′ ± 45′
	• Kingpin inclination degree			15°25′ ± 45′
	Front wheel bearing play		○	
	• Tightening torque N·m (kg-m, ft-lb)			235 - 314 (24 - 32, 174 - 231)
	• Axial end play mm (in)			Less than 0.05 (0.0020)
	Tightening torque of fasteners/ joints N·m (kg-m, ft-lb)			
	• Suspension member securing nuts			74 - 88 (7.5 - 9.0, 54 - 65)
	• Suspension member-to-lower link ball joint			63 - 78 (6.4 - 8.0, 46 - 58)
	• Lower link ball joint-to-lower link			96 - 120 (9.8 - 12.2, 71 - 88)
	• Lower link-to-suspension lower ball joint			96 - 120 (9.8 - 12.2, 71 - 88)
	• Tension rod-to-suspension member			88 - 108 (9.0 - 11, 65 - 80)
	• Tension rod-to-lower link			108 - 127 (11 - 13, 80 - 94)
	• Ball joint-to-knuckle spindle			72 - 97 (7.3 - 9.9, 53 - 72)
	• Kingpin-to-3rd link			98 - 118 (10 - 12, 72 - 87)
	• Knuckle spindle-to-king pin			147 - 186 (15 - 19, 108 - 137)
	• 3rd link-to-upper link			88 - 108 (9.0 - 11, 65 - 80)
	• Upper link-to-bracket			88 - 108 (9.0 - 11, 65 - 80)
	• Upper link bracket-to-car body			88 - 108 (9.0 - 11, 65 - 80)
	• Spring upper seat lock nuts			18 - 24 (1.8 - 2.4, 13 - 17)
	• Shock absorber-to-3rd link			108 - 127 (11 - 13, 80 - 94)
	• Shock absorber-to-car body			39 - 54 (4.0 - 5.5, 29 - 40)
	• 3rd link-to-connecting rod			41 - 47 (4.2 - 4.8, 30 - 35)
	• Connecting rod-to-stabilizer			41 - 47 (4.2 - 4.8, 30 - 35)
	• Stabilizer bracket			39 - 49 (4.0 - 5.0, 29 - 36)
Rear suspension and axle	Wheel alignment			
	• Toe-in mm (in)		○	2 ± 2 (0.08 ± 0.08)
	• Camber degree			RB26DETT: –1°05′ ± 30′
	Rear wheel bearing play			
	• Wheel bearing tightening torque N·m (kg-m, ft-lb)			206 - 275 (21 - 28, 152 - 203)
	• Wheel bearing end play mm (in)			0 (0)
	Tightening torque N·m (kg-m, ft-lb)		○	
	• Suspension member securing nuts			98 - 118 (10 - 12, 72 - 87)
	• Final drive (on housing side) to suspension member			98 - 118 (10 - 12, 72 - 87)

F1 NEW VEHICLE AND PERIODIC INSPECTION AND MAINTENANCE STANDARDS

2. Chassis (Cont'd)

Item		New vehicle inspection	Periodic inspection	Inspection standards
Rear suspension and axle	• Final drive (on differential case side) to suspension member			98 - 118 (10 - 12, 72 - 87)
	• Suspension member-to-lower arm			98 - 118 (10 - 12, 72 - 87)
	• Suspension member-to-upper link (front end)			77 - 98 (7.9 - 10, 57 - 72)
	• Suspension member-to-upper link (rear end)			77 - 98 (7.9 - 10, 57 - 72)
	• Suspension member-to-lower link			69 - 86 (7.0 - 9.0, 51 - 65)
	• Upper link (front end)-to-axle housing			77 - 98 (7.9 - 10, 57 - 72)
	• Upper link (rear end)-to-axle housing			77 - 98 (7.9 - 10, 57 - 72)
	• Lower link-to-axle housing			71 - 86 (7.2 - 8.8, 52 - 64)
	• Lower arm-to-connecting rod			9 - 12 (0.9 - 1.2, 6.5 - 8.7)
	• Connecting rod-to- stabilizer			9 - 12 (0.9 - 1.2, 6.5 - 8.7)
	• Stabilizer bracket			43 - 55 (4.4 - 5.6, 32 - 41)
	• Shock absorber-to- axle housing			88 - 108 (9.0 - 11, 65 - 80)
	• Shock absorber-to- car body			16 - 19 (1.6 - 1.9, 12 - 14)
	• Spring upper seat lock nuts			18 - 24 (1.8 - 2.4, 13 - 17)
	• Member stay-to-car body			43 - 55 (4.4 - 5.6, 32 - 41)
Road wheels and tires	Air pressure	○	○	(See text)
	Tire groove wear limit mm (in)		○	1.6 (0.063)
	Wheel nut tightening torque N·m (kg-m, ft-lb)	○	○	98 - 118 (10 - 12, 72 - 87)
Foot brake	Pedal play mm (in)	○	○	3 - 11 (0.12 - 0.43)
	Pedal-to-floor clearance (when depressed) mm (in)		○	Greater than 85 (3.35)
	Pedal height (From upper surface of floor panel) mm (in)	○		M/T: 172.5 - 182.5 (6.79 - 7.19)
	Pad wear mm (in)		○	Type / Item: OPZ25VR OPZ11VB Standard thickness: 10 (0.39) Service limit: 2.0 (0.079)
	Disk wear mm (in)		○	Type / Item: OPZ25VR / OPZ11VB Standard thickness: 32 (1.26) / 18 (0.71) Service limit: 30 (1.18) / 16 (0.63)
	Brake hose and tube installation		○	
	• Flare nut tightening torque N·m (kg-m, ft-lb)			15 - 18 (1.5 - 1.8, 11 - 13)
Parking brake	Brake drum wear mm (in)		○	Type / Item: LT23C / DS17HD Standard I.D.: 228.6 (9) / 172 (6.77) I.D. service limit: 230 (9.06) / 173 (6.81)
	Brake lining wear mm (in)		○	Type / Item: LT23C / DS17HD Standard thickness: 4.5 (0.177) / 3.0 (0.118) Service limit: 1.5 (0.059) / 1.5 (0.059)
	Lever pull, with a force of 196 N (20 kg, 44 lb) Center lever type: (notch)	○	○	6 - 8

2. Chassis (Cont'd)

Steering system	Steering wheel tightening torque N·m (kg-m, ft-lb)	○	○	29 - 39 (3.0 - 4.0, 22 - 29)
	Steering wheel play mm (in)	○	○	0 - 35 (0 - 1.38)
	Steering gear tightening torque N·m (kg-m, ft-lb)		○	
	• Steering gear securing bolts			88 - 108 (9.0 - 11, 65 - 80)
	• Ball joint-to-knuckle spindle			29 - 39 (3.0 - 4.0, 22 - 29)
	Rod and arm tightening torque N·m (kg-m, ft-lb)		○	
	• Lower joint securing bolts			24 - 29 (2.4 - 3.0, 17 - 22)
	• Steering gear-to-inner socket			78 - 98 (8.0 - 10, 58 - 72)
	• Side rod lock nuts			78 - 98 (8.0 - 10, 58 - 72)
	Power steering belt tension (deflection when pressed midpoint of belt) mm (in)	○	○	Deflection / Engine: When new: RB-series engine: 8 - 10 (0.31 - 0.39); When readjusted: 9 - 11 (0.35 - 0.43); Service limit: 15 (0.59)
Steering system	Power steering system tightening torque N·m (kg-m, ft-lb)		○	
	• Oil pump securing bolts			31 - 42 (3.2 - 4.3, 23 - 31) 16 - 21 (1.6 - 2.1, 12 - 15) (Adjustment side)
	• Oil pump pulley securing nuts			54 - 68 (5.5 - 6.9, 40 - 50)
	• Reservoir tank securing bolts			3 - 4 (0.3 - 0.4, 2.2 - 2.9)
	• Low pressure oil tube-to-steering gear			27 - 39 (2.8 - 4.0, 20 - 29)
	• High pressure oil tube-to-steering gear			15 - 25 (1.5 - 2.5, 11 - 18)
	• High pressure oil tube-to-oil pump			49 - 69 (5.0 - 7.0, 36 - 51)
	• Right tube clamp bracket-to-car body			3 - 4 (0.3 - 0.4, 2.2 - 2.9) [8 - 11 (0.8 - 1.1, 5.8 - 8.0)]
	• Front tube clamp bracket-to-car body			3 - 4 (0.3 - 0.4, 2.2 - 2.9)
	• Cylinder tube-to-gear housing			20 - 26 (2.0 - 2.7, 14 - 20)
SUPER HICAS	• Tightening torque of power cylinder fasteners/joints N·m (kg-m, ft-lb)		○	
	• Power cylinder securing bolts			84 - 108 (8.6 - 11, 62 - 80)
	• Outer link rod lock nuts			37 - 46 (3.8 - 4.7, 27 - 34)
	• Power cylinder outer ring-to-axle housing			45 - 60 (4.6 - 6.1, 33 - 44)
	• Stroke stopper lock nuts			49 - 69 (5.0 - 7.0, 36 - 51)
	Tightening torque of power steering system fasteners/joints N·m (kg-m, ft-lb)		○	
	• Oil pump securing bolts			31 - 42 (3.2 - 4.3, 23 - 31) 16 - 21 (1.6 - 2.1, 12 - 15) (Adjustment side)
	• Reservoir tank securing bolts			3 - 4 (0.3 - 0.4, 2.2 - 2.9)
	• HICAS solenoid valve union bolts (on reservoir tank side)			49 - 69 (5.0 - 7.0, 36 - 51)
	• HICAS solenoid valve union bolts (on oil pump side)			49 - 69 (5.0 - 7.0, 36 - 51)
	• HICAS solenoid valve (on high and low pressure sides)			39 - 51 (4.0 - 5.2, 29 - 38)
	• Solenoid valve-to-bracket			18 - 24 (1.8 - 2.4, 13 - 17)
	Oil pump-to-steering gear (on high pressure side of power steering)			15 - 25 (1.5 - 2.5, 11 - 18)
	Steering gear-to-reservoir tank (on low pressure side of power steering)			27 - 39 (2.8 - 4.0, 20 - 29)
	HICAS solenoid valve-to-oil pump			49 - 69 (5.0 - 7.0, 36 - 51)
	HICAS solenoid valve-to-reservoir tank			49 - 69 (5.0 - 7.0, 36 - 51)
	Power cylinder tube			39 - 49 (4.0 - 5.0, 29 - 36)
	Cylinder tube clamp			4.4 - 5.8 (0.45 - 0.59, 3.3 - 4.3)
	Hose clamp			8 - 11 (0.8 - 1.1, 5.8 - 8.0)
	• Cutoff valve bracket securing bolts			13 - 16 (1.3 - 1.6, 9 - 12) (front) 4.4 - 5.8 (0.45 - 0.59, 3.3 - 4.3) (rear)
	• Cutoff valve-to-power cylinder union bolts			49 - 69 (5.0 - 7.0, 36 - 51)
	• Rear central piping-to-cutoff valve			39 - 49 (4.0 - 5.0, 29 - 36)

F2 PERIODIC REPLACEMENT PARTS AND MAINTENANCE STANDARDS

1. Engine

Periodic replacement parts	Replacement interval
Air cleaner element	Every 60,000 km (36,000 miles)
Timing belt	Every 100,000 km (60,000 miles)
Engine oil	Every 5,000 km (3,000 miles)
Oil filter	Every 10,000 km (6,000 miles) or yearly
Fuel filter	Every 100,000 km (60,000 miles)
Fuel hose (except for type D)	First time: After 5 years Thereafter: Every 4 years
	Every 2 years (inside engine compartment) Every 4 years (outside engine compartment)
LLC	First time: After 3 years Thereafter: Every 2 years
	Every 2 years
Catalyst	Yearly
Spark plug	Every 100,000 km (60,000 miles)

2. Chassis

Periodic replacement parts		Replacement interval
Brake system	Brake hose	First time: After 5 years Thereafter: Every 4 years
		Every 4 years
	Brake fluid	First time: After 3 years Thereafter: Every 2 years
		Yearly
	Master cylinder cup and dust seal	First time: After 3 years Thereafter: Every 2 years
		Every 2 years
	Wheel cylinder (including caliper) cup and dust seal	First time: After 5 years Thereafter: Every 4 years
		Every 2 years
Suspension ball joint grease		Every 120,000 km (72,000 miles) or every 4 years
Manual transmission fluid		Every 100,000 km (60,000 miles) or every 2 years
Differential fluid		Every 100,000 km (60,000 miles) or every 2 years

F3 LUBRICANTS AND SERVICE POINTS AND MAINTENANCE STANDARDS

1. Engine

Inspection and service points	Lubricant type	Remarks
Throttle chamber linkage	Nissan MP No. 2 Grease	Apply during disassembly.
Accelerator linkage	NISSAN MP No. 2 Grease or Chassis Grease	Apply during disassembly.

2. Chassis

Inspection and service points		Lubricant type	Remarks
Clutch disc spline		Nissan Clutch Grease (KRI06-00010)	
Main drive shaft spline			
Clutch release mechanism		Nissan Clutch Sleeve Grease (KRI06-00010)	
Manual transmission		Nissan Gear Oil MP-G Special GL-475W-90	Gear Oil GL-4 MP-G 80W-90 (for extremely cold areas)
Automatic transmission		Nissanmatic Fluid D	
Transfer		Nissanmatic Fluid D	
ETS hydraulic unit		Nissan Power Steering Fluid Special	
Propeller shaft center bearing washer		Nissan Clutch Molybdenum Grease	
Propeller shaft universal joint		Nissan MP Special Grease No. 2	
Front final drive	F160	Nissan Gear Oil Hypoid GL-5 85W-90	
Rear final drive	R200 (Mechanical LSD)	Nissan Gear Oil Hypoid LSD GL-5 80W-90	
Drive shaft	Fixed joint	6080 grease (Kyodo brand)	
	Sliding joint		
Front and rear wheel bearings		Nissan MP Special Grease No. 2	
Brake (Master cylinder)		Nissan Brake Fluid No. 2500 (NR-3)	
Cylinder rubber parts (Brake system)		Nissan Rubber Lubricant (KRE12-00030)	
Disc brake		Nissan Disc Brake Grease (KRF16-00005)	
Brake pedal fulcrum pin or shaft		Nissan MP Special Grease No. 2	
Parking brake cable		Nissan MP Special Grease No. 2	
Power steering		Nissan Power Steering Fluid	

1. Tightening Torque

1-1 ENGINE COMPONENTS

	Components	Tightening torque		
		RB26DETT		
		N·m	kg-m	ft-lb
Engine body	Main bearing cap bolts	46 - 52	4.7 - 5.3	34 - 38
	Connecting bolts and nuts	① 14 - 16	1.4 - 1.6 ② (60° - 65°)	10 - 12
	Flywheel bolts (M/T models)	142 - 152	14.5 - 15.5	105 - 112
	Drive plate bolts (A/T models)	—	—	—
	Crank pulley bolts	446 - 466	45.5 - 47.5	329 - 344
	Oil strainer securing bolt	16 - 21	1.6 - 2.1	12 - 15
	Rear oil seal retainer securing bolts	6.3 - 8.3	0.64 - 0.85	4.6 - 6.1
	Oil pump securing bolts	10 - 12	1.0 - 1.2	7 - 9
	Water pump securing bolts	M6:7 - 8 M8:16 - 21 M10:30 - 40	0.7 - 0.8 1.6 - 2.1 3.1 - 4.1	5.1 - 5.8 12 - 15 22 - 30
	Cam pulley securing bolts	14 - 19	1.4 - 1.9	10 - 14
	Camshaft retainer securing bolts	9.0 - 11.8	0.92 - 1.2	6.7 - 8.7
	Rocker cover screws	2 - 4	0.2 - 0.4	1.4 - 2.9
	Timing belt cover	3 - 5	0.3 - 0.5	2.2 - 3.6
	Belt tensioner securing nut	43 - 58	4.4 - 5.9	32 - 43
	Water drain plug	34 - 44	3.5 - 4.5	25 - 33
	Blow-by control valve	29 - 39	3.0 - 4.0	22 - 29
	Oil pan drain plug	29 - 39	3.0 - 4.0	22 - 29
	Oil pan securing bolts	M6:6.3 - 8.3 M10:31 - 42	0.64 - 0.85 3.2 - 4.3	4.6 - 6.1 23 - 31
	Oil filter stud: (cylinder block side)	29 - 39	3.0 - 4.0	22 - 29
	(oil filter side)	15 - 21	1.5 - 2.1	11 - 15
	Cylinder head bolts	M12: ① 29 ② 108 ③ 0 (Lower) ④ 29 ⑤ (85° - 90°) or 103 - 113 M6: 9.0 - 11.8	3 11 0 3 (85° - 90°) or 10.5 - 11.5 0.92 - 1.2	22 80 0 22 (85° - 90°) or76 - 83 6.7 - 8.7
Intake and exhaust systems	Intake manifold securing bolts	16 - 21	1.6 - 2.1	12 - 15
	Intake manifold securing nuts	16 - 21	1.6 - 2.1	12 - 15
	Collector bolts	16 - 21	1.6 - 2.1	12 - 15
	Exhaust manifold securing nuts	18 - 24	1.8 - 2.4	13 - 17
	O_2 sensor securing nuts	18 - 24	1.8 - 2.4	13 - 17
	Throttle chamber securing bolts	16 - 21	1.6 - 2.1	12 - 15
	Throttle valve switch	2.0 - 2.4	0.2 - 0.24	1.4 - 1.7
	Intake manifold support bracket securing bolts	—	—	—
	Turbocharger inlet nuts	23 - 29	2.3 - 3.0	17 - 22
	Turbocharger outlet nuts	23 - 29	2.3 - 3.0	17 - 22
	Water bypass tube	15 - 20	1.5 - 2.0	11 - 14

1. Tightening Torque (Cont'd)

	Components	Tightening torque		
		RB26DETT		
		N·m	kg-m	ft-lb
Intake and exhaust systems	Turbocharger oil tube (turbo side)	17 - 21	1.7 - 2.1	12 - 15
	Turbocharger oil tube (cylinder block side)	15 - 20	1.5 - 2.0	11 - 14
	Turbocharger water tube (turbo side)	20 - 31	2 - 3.2	14 - 23
	Turbocharger water tube (cylinder block side)	20 - 31	2 - 3.2	14 - 23
Sensors and others	Crank angle sensor	4 - 5	0.4 - 0.5	2.9 - 3.6
	Crank angle sensor bracket	16 - 21	1.6 - 2.1	12 - 15
	Spark plugs	20 - 29	2.0 - 3.0	14 - 22
	Engine temperature sensor	20 - 29	2.0 - 3.0	14 - 22
	Thermal transmitter	15 - 20	1.5 - 2.0	11 - 14
	Knock sensor	21 - 26	2.1 - 2.7	15 - 20
	O_2 sensor	18 - 24	1.8 - 2.4	13 - 17
	Exhaust temperature sensor	25 - 34	2.5 - 3.5	18 - 25
	Injector holder securing bolts	4 - 5	0.4 - 0.5	2.9 - 3.6
	Air regulator securing bolts	8.4 - 10.8	0.86 - 1.1	6.2 - 8.0
	IAA unit securing bolts	—	—	—
	Water outlet securing bolts	16 - 21	1.6 - 2.1	12 - 15
	Water inlet securing bolts	—	—	—
	Alternator securing-adjusting bolts	9.1 - 11.8	0.93 - 1.2	6.7 - 8.7
	Alternator securing nuts	45 - 60	4.6 - 6.1	33 - 44
	Starter motor securing bolts	30 - 40	3.1 - 4.1	22 - 30
	Compressor securing bolts	37 - 50	3.8 - 5.1	27 - 37
	Compressor bracket securing bolts	37 - 50	3.8 - 5.1	27 - 37
	Power steering bracket securing bolts	37 - 50	3.8 - 5.1	27 - 37
	Power steering adjustment bar securing bolts	14 - 19	1.4 - 1.9	10 - 14
	Ignition coil bracket securing bolts	9.1 - 11.8	0.93 - 1.2	6.7 - 8.7

1. Tightening Torque (Cont'd)

1-2 MANUAL TRANSMISSION COMPONENTS

Unit: N·m (kg-m, ft-lb)

Components \ Type	FS5R30A
Rear extension securing bolts	31 - 42 (3.2 - 4.3, 23 - 31)
Front cover securing bolts	16 - 21 (1.6 - 2.1, 12 - 15)
Check ball plug	19 - 25 (1.9 - 2.6, 14 - 19)
Filler plug	25 - 34 (2.5 - 3.5, 18 - 25)
Drain plug	25 - 34 (2.5 - 3.5, 18 - 25)
Reverse lamp switch	20 - 29 (2.0 - 3.0, 14 - 22)
Neutral switch	20 - 29 (2.0 - 3.0, 14 - 22)
Control housing-to-rear extension	
M8 bolts	16 - 21 (1.6 - 2.1, 12 - 15)
Select check plug	20 - 29 (2.0 - 3.0, 14 - 22)
Bearing retainer-to- adapter plate	16 - 21 (1.6 - 2.1, 12 - 15)
5-R fork rod securing bolts	16 - 21 (1.6 - 2.1, 12 - 15)
Reverse fork securing bolts	19 - 25 (1.9 - 2.6, 14 - 19)
Rear guide plate securing bolts	6.3 - 8.3 (0.64 - 0.85, 4.6 - 6.1)

1. Tightening Torque (Cont'd)

1-3 F160 FINAL DRIVE

Unit: N·m (kg-m, ft-lb)

Components	Tightening torque
Drive gear securing bolts	93 - 113 (9.5 - 11.5, 69 - 83)
Drive pinion securing bolts	167 - 196 (17 - 20, 123 - 145)
Side retainer securing bolts	16 - 19 (1.6 - 1.9, 12 - 14)
Side shaft securing bolts	16 - 21 (1.6 - 2.1, 12 - 15)
Carrier cover securing bolts	29 - 37 (3.0 - 3.8, 22 - 27)

1-4 R200 FINAL DRIVE

Unit: N·m (kg-m, ft-lb)

Components	Tightening torque
Drive gear securing bolts	177 - 196 (18.0 - 20.0, 130 - 145)
Bearing cap securing bolt	88 - 98 (9 - 10, 65 - 72)
Drive pinion securing nut	186 - 294 (19 - 30, 137 - 217)
Carrier case cover securing nuts	39 - 49 (4 - 5, 29 - 36)
Drain plug	59 - 98 (6 - 10, 43 - 72)
Filler plug	59 - 98 (6 - 10, 43 - 72)

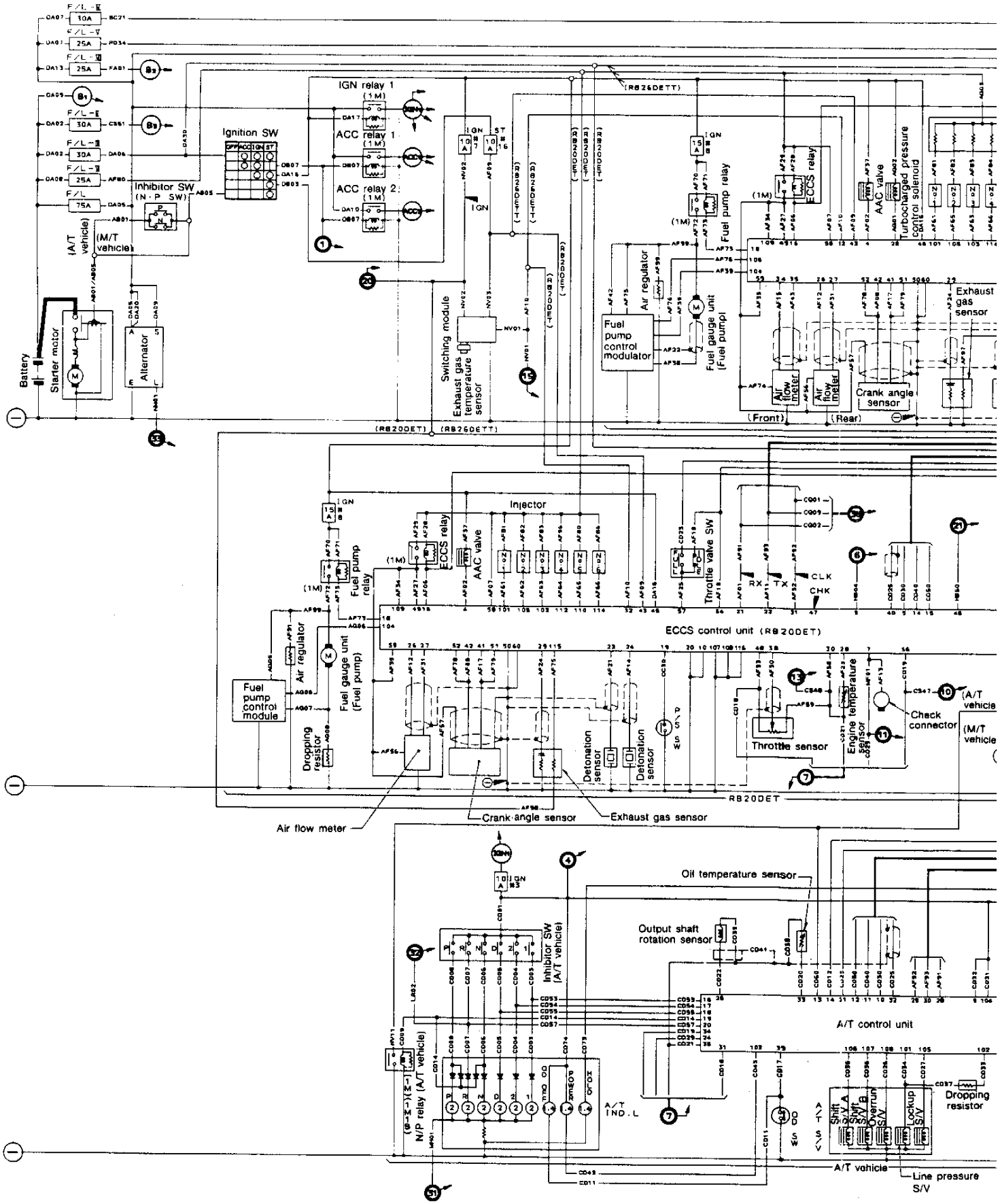
2. Engine Specifications and Major Data

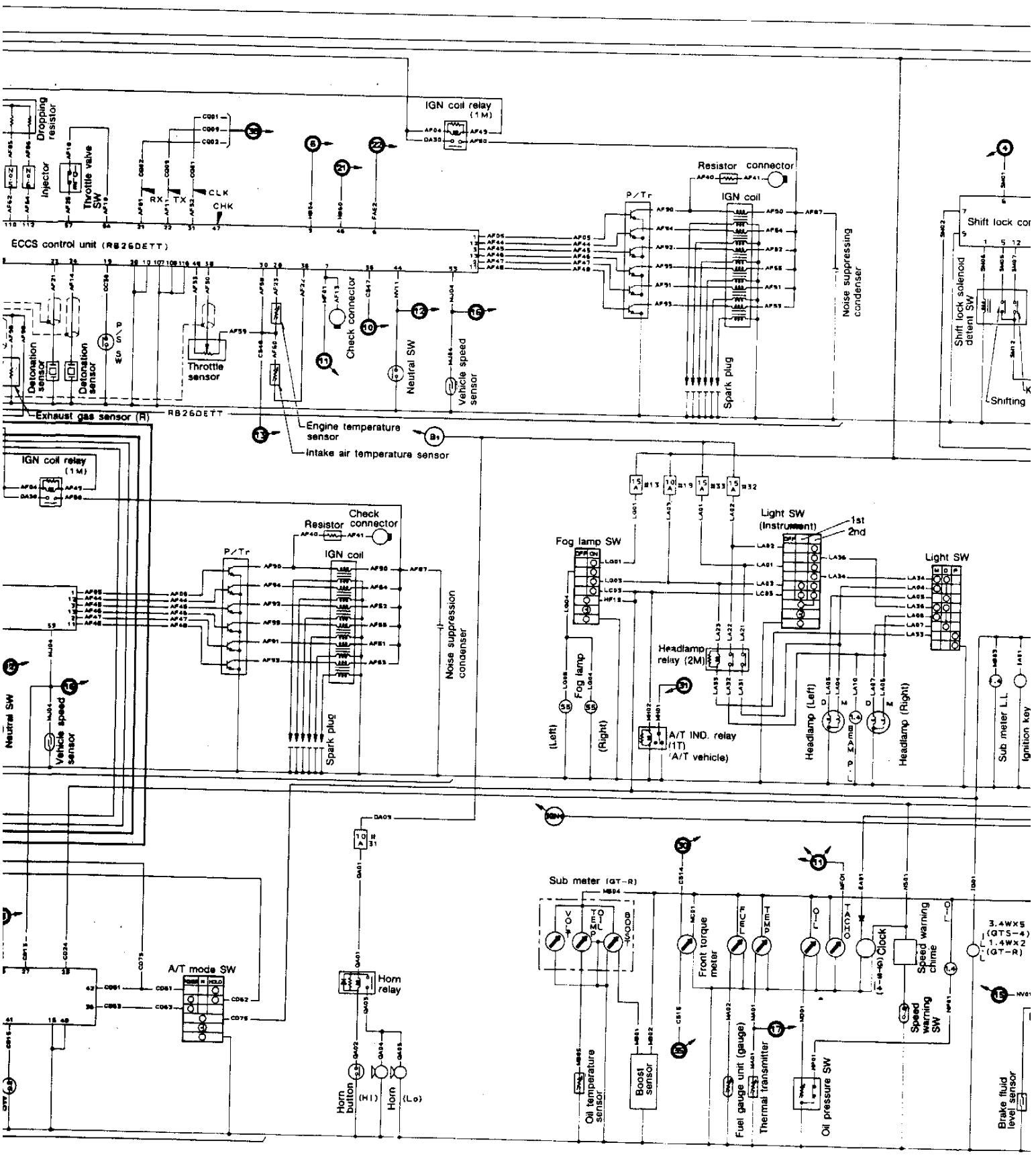
	Item		RB26DETT
Cylinder block	Bore diameter	mm (in)	86.000 - 86.030 (3.3858 - 3.3870)
	Wear limit	mm (in)	0.2 (0.008)
	Out-of-roundness	mm (in)	0.015 (0.0006)
	Taper	mm (in)	0.010 (0.0004)
	Warpage limit of cylinder block upper surface	mm (in)	0.1 (0.004)
Cylinder head	Ream limit of valve guide holes Intake	mm (in)	10.46 - 10.67 (0.4118 - 0.4201)
	Exhaust		11.46 - 11.47 (0.4512 - 0.4516)
	Ream limit of inside diameter Intake	mm (in)	6.000 - 6.018 (0.2362 - 0.2369)
	Exhaust		7.000 - 7.018 (0.2756 - 0.2763)
	Service limit of valve guide-to-valve stem clearance	mm (in)	0.080 - 0.113 (0.0031 - 0.0044)
	Warpage limit of lower surface	mm (in)	0.2 (0.008)
	Cylinder head gasket thickness	mm (in)	1.2 (0.047)
Piston rings	Piston type		Thermal flow
	Standard outside diameter of piston skirt	mm (in)	85.955 - 85.985 (3.3840 - 3.3852)
	Piston skirt-to-cylinder clearance	mm (in)	0.035 - 0.055 (0.0014 - 0.0022)
	Standard piston pin outside diameter	mm (in)	20.989 - 21.001 (0.8263 - 0.8268)
	Piston pin-to-piston pin bore clearance	mm (in)	0 to –0.004 (0 to –0.0002)
	Piston ring end clearance Top	mm (in)	0.24 - 0.34 (0.0094 - 0.0134)
	Second		0.42 - 0.57 (0.0165 - 0.0224)
	Oil		0.20 - 0.60 (0.0079 - 0.0236)
	Piston ring side clearance Top	mm (in)	0.040 - 0.075 (0.0016 - 0.0030)
	Second		0.030 - 0.065 (0.0012 - 0.0026)
	Oil		0.065 - 0.135 (0.0026 - 0.0053)
Connecting rod	Center-to-center distance of large and small end bores	mm (in)	121.45 - 121.55 (4.7815 - 4.7854)
	Large end bore diameter	mm (in)	47.989 - 48.007 (1.8893 - 1.8900)
	Bend and twist limit [per 100 mm (3.94 in) in length]	mm (in)	Bend 0.15 (0.0059) and Twist 0.3 (0.012)
	Large end side clearance	mm (in)	0.2 - 0.3 (0.008 - 0.012)
	Large end oil clearance	mm (in)	0.020 - 0.040 (0.0008 - 0.0016)
	Piston pin-to-connecting rod small end bore clearance	mm (in)	0.005 - 0.017 (0.0002 - 0.0007)
Crankshaft	Standard journal diameter	mm (in)	54.951 - 54.975 (2.1634 - 2.1644)
	Standard pin diameter	mm (in)	47.961 - 47.974 (1.8882 - 1.8887)
	Out-of-roundness and taper of journal	mm (in)	Less than 0.005 (0.0002)
	Out-of-roundness and taper of pin	mm (in)	Less than 0.005 (0.0002)
	Main bearing oil clearance	mm (in)	0.028 - 0.047 (0.0011 - 0.0019) (selective fit)
	Standard thrust clearance	mm (in)	0.2 - 0.3 (0.008 - 0.012)
Camshaft	Cam nose height (oblong diameter) Intake	mm (in)	40.580 - 40.583 (1.5976 - 1.5978)
	Exhaust		40.280 - 40.283 (1.5858 - 1.5859)
	Bend limit	mm (in)	0.05 (0.0020)
	Standard cam bracket inside diameter	mm (in)	No. 1 - No. 7 28.000 - 28.021 (1.1024 - 1.1032)
	Standard cam journal outside diameter	mm (in)	No. 1 - No. 7 27.935 - 27.955 (1.0998 - 1.1006)

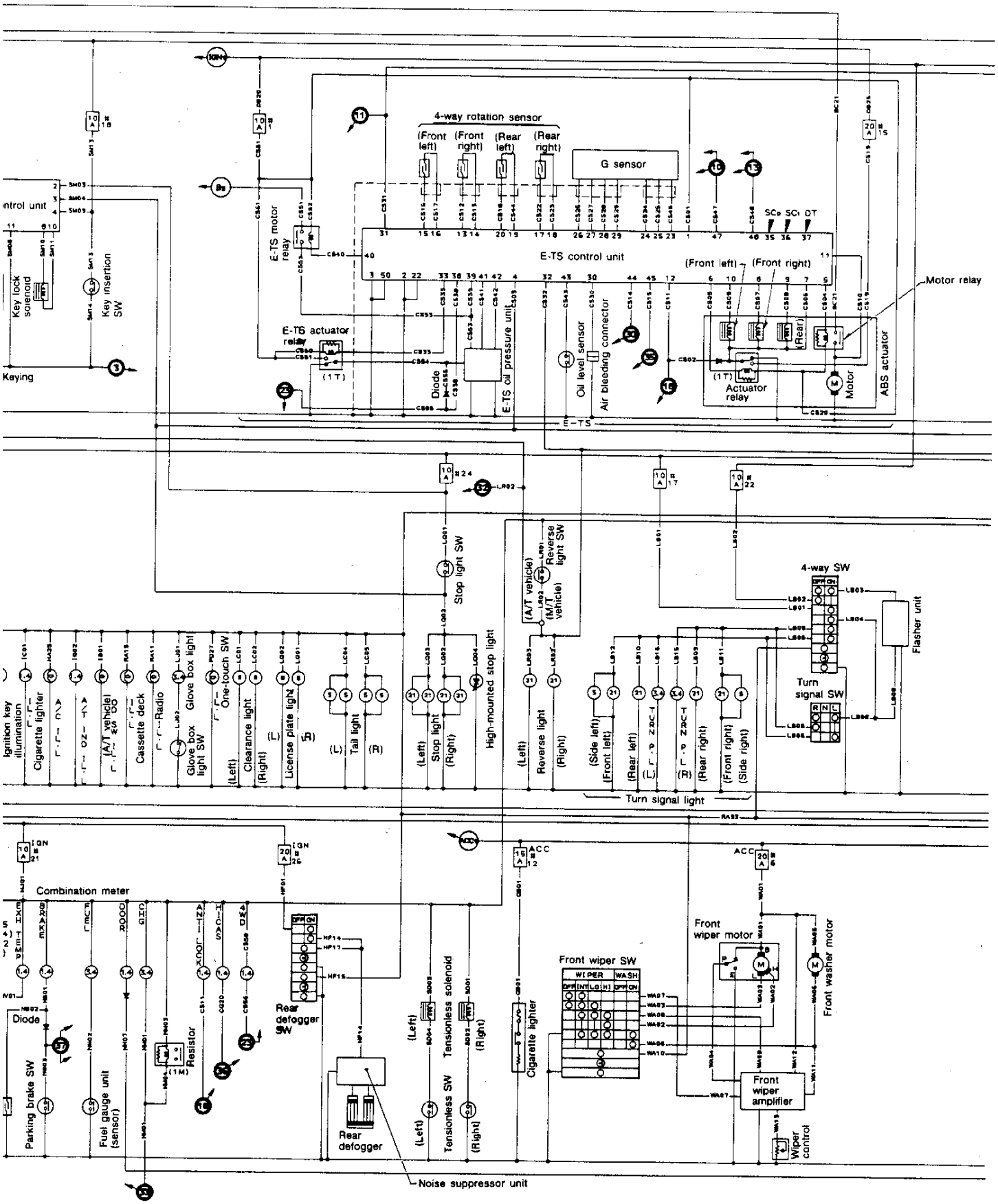
2. Engine Specifications and Major Data (Cont'd)

	Item		RB26DETT
Camshaft	Standard bracket-to-journal clearance	mm (in)	No. 1 - No. 7 0.045 - 0.086 (0.0018 - 0.0034)
	Standard end play	mm (in)	0.030 - 0.080 (0.0012 - 0.0031)
Valves and valve springs	Standard valve lifter outside diameter	mm (in)	30.955 - 30.965 (1.2187 - 1.2191)
	Lifter guide bore diameter	mm (in)	31.000 - 31.020 (1.2205 - 1.2213)
	Standard lifter-to-lifter guide clearance	mm (in)	0.035 - 0.065 (0.0014 - 0.0026)
	Valve face outside diameter	mm (in)	34.5 - 34.7 (1.358 - 1.366) 30.0 - 30.2 (1.181 - 1.189)
	Valve stem outside diameter	mm (in)	5.980 - 5.965 (0.2354 - 0.2348) 6.920 - 6.905 (0.2724 - 0.2718)
	Valve spring squareness limit	mm (in)	1.8 (0.071) (Single spring)
	Standard valve spring free length	mm (in)	46.54 (1.8323) (Single spring)
	Standard as-installed load of valve spring	N (kg, lb)	235.4 (24.0, 52.9) [35 mm (1.38 in)] (Single spring)
Flywheel	Runout limit (on clutch disc mating surface) (M/T models)	mm (in)	1.0 (0.039)

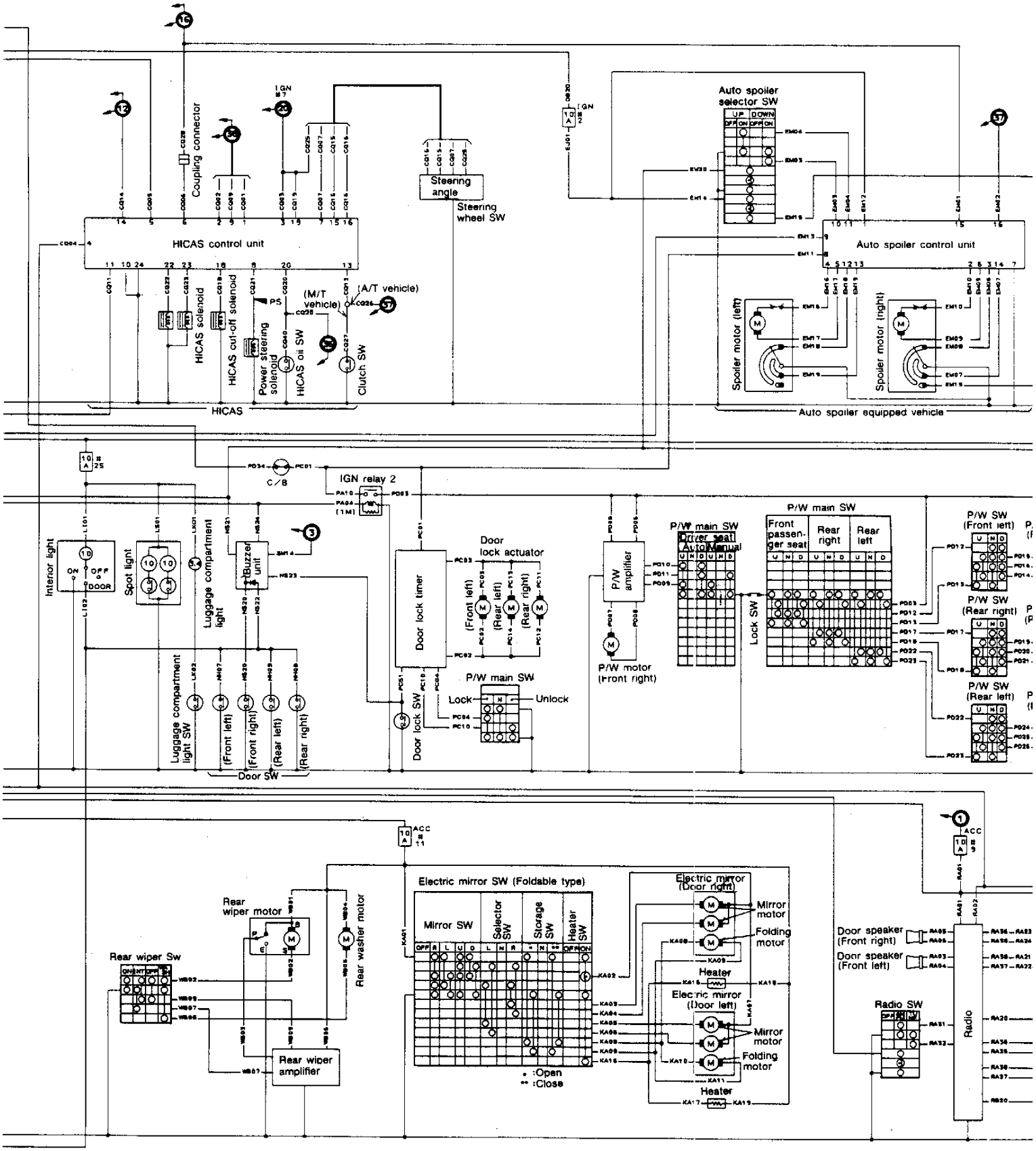
FIG. NO. 1 C-1 4WD vehicles (RB20DET/RB26DETT equipped models)

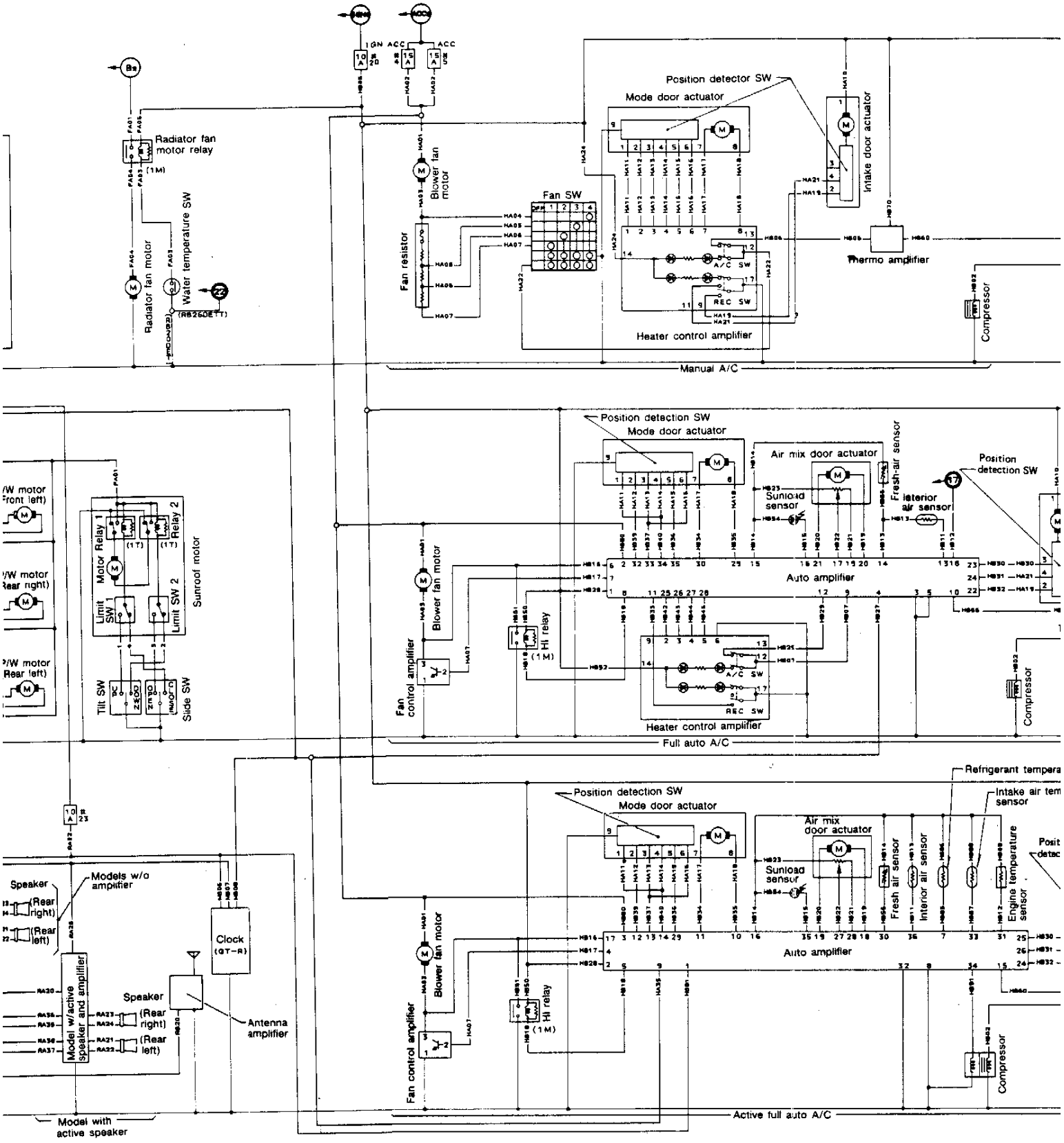



IGN coil relay (1M)
Dropping resistor
Injector
Throttle valve SW
CLK
RX
TX
CHK
ECCS control unit (RB26DETT)
Detonation sensor
Detonation sensor
Throttle sensor
Check connector
Neutral SW
Vehicle speed sensor
Exhaust gas sensor (R)
RB26DETT
Engine temperature sensor
Intake air temperature sensor
Resistor connector
IGN coil
P/Tr
Spark plug
Noise suppressing condenser
Shift lock solenoid detent SW
Shift lock cor
Shifting
Fog lamp SW
Fog lamp
(Left)
(Right)
Light SW (Instrument)
1st
2nd
Light SW
Headlamp relay (2M)
A/T IND. relay (1T) (A/T vehicle)
Headlamp (Left)
Headlamp (Right)
Sub meter I.L.
Ignition key
Sub meter (GT-R)
Front torque meter
Clock
Speed warning chime
Speed warning SW
3.4WX5 (GTS-4)
1.4WX2 (GT-R)
Oil temperature sensor
Boost sensor
Fuel gauge unit (gauge)
Thermal transmitter
Oil pressure SW
Brake fluid level sensor
A/T mode SW
Horn relay
Horn button
Horn (Hi)
Horn (Lo)


4-way rotation sensor
(Front left)
(Front right)
(Rear left)
(Rear right)
G sensor
E-TS motor relay
E-TS control unit
E-TS actuator relay
Diode
E-TS oil pressure unit
Oil level sensor
Air bleeding connector
(Front left)
(Front right)
Motor relay
(Rear)
Actuator relay
Motor
ABS actuator
E-TS
Key lock solenoid
Key insertion SW
Keying
Stop light SW
(A/T vehicle)
(M/T vehicle)
Reverse light SW
4-way SW
Flasher unit
Turn signal SW
Ignition key illumination
Cigarette lighter
Cassette deck
Radio
Glove box light
Glove box light SW
One-touch SW
Clearance light
License plate light
Tail light
Stop light
High-mounted stop light
Reverse light
Turn signal light
Combination meter
Diode
Parking brake SW
Fuel gauge unit (sensor)
Resistor
Rear defogger SW
Rear defogger
Tensionless solenoid
Tensionless SW
Cigarette lighter
Front wiper SW
Front wiper motor
Front washer motor
Front wiper amplifier
Wiper control
Noise suppressor unit

Cont'd Fig. No. 1 C-1 4WD Vehicles (RB20DET/RB26DETT equipped models)




IGN
ACC
ACC
Radiator fan motor relay
(1M)
Radiator fan motor
Water temperature SW
Blower fan motor
Fan resistor
Fan SW
Position detector SW
Mode door actuator
Intake door actuator
Thermo amplifier
A/C SW
REC SW
Heater control amplifier
Compressor
Manual A/C
Position detection SW
Mode door actuator
Air mix door actuator
Sunload sensor
Fresh air sensor
Interior air sensor
Auto amplifier
Hi relay
(1M)
Fan control amplifier
Full auto A/C
Refrigerant tempera
Intake air tem sensor
Engine temperature sensor
Active full auto A/C
Motor Relay 1
Relay 2
Limit SW 1
Limit SW 2
Sunroof motor
Tilt SW
Slide SW
Speaker
(Rear right)
(Rear left)
Models w/o amplifier
Clock
(QT-R)
Antenna amplifier
Model w/active speaker and amplifier
Model with active speaker

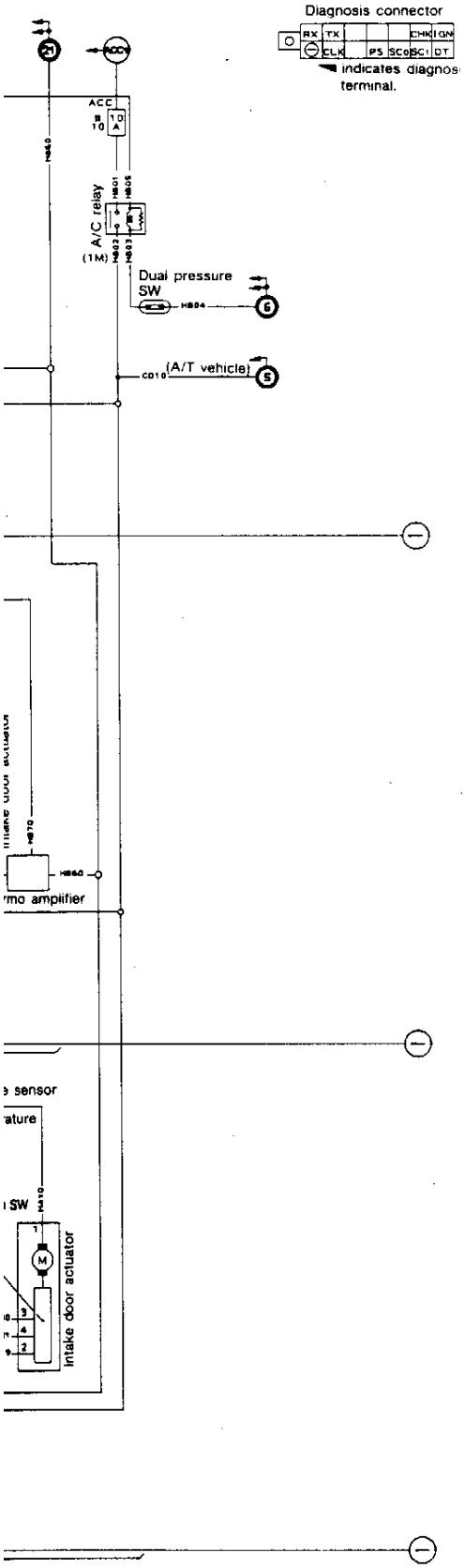
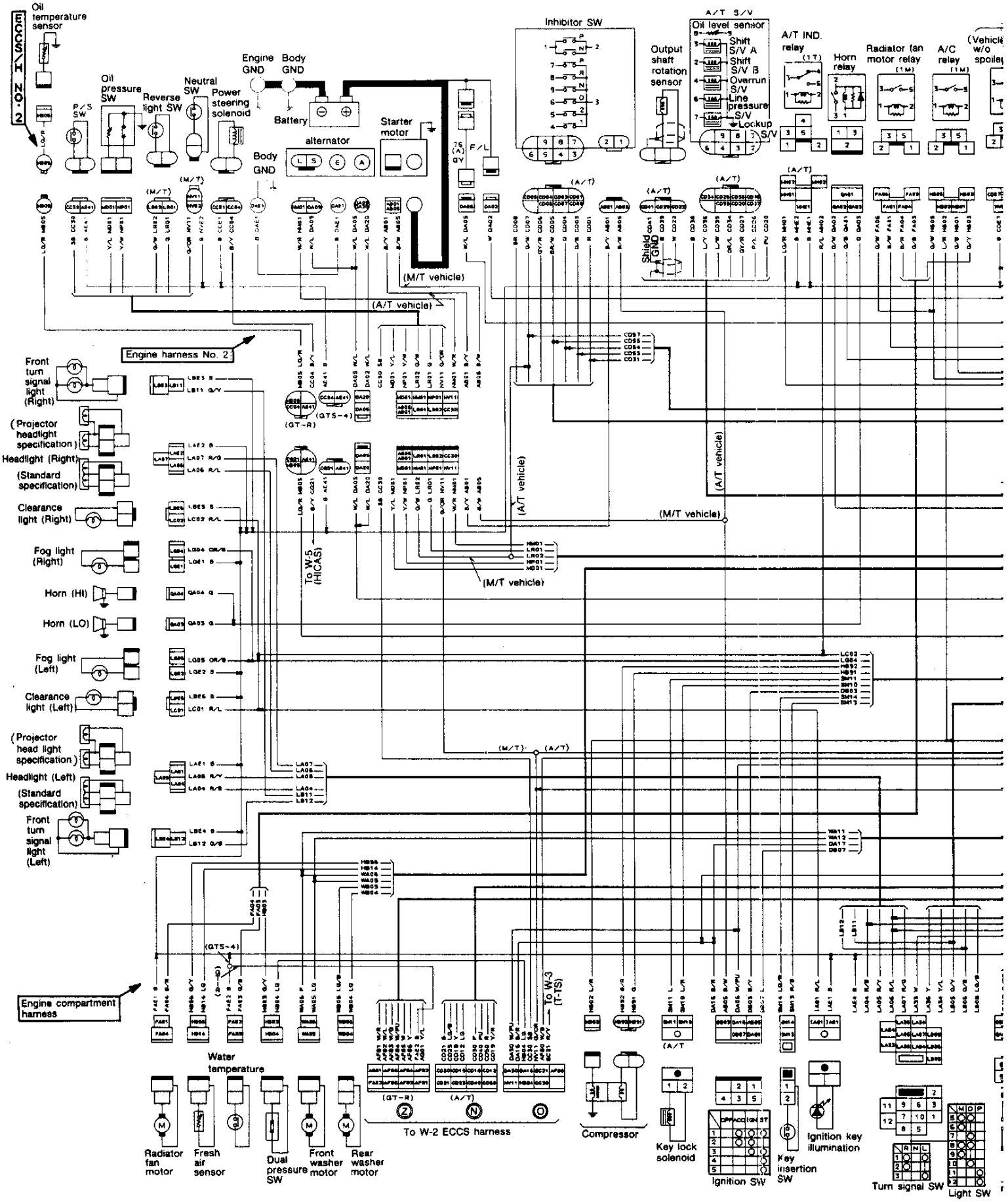
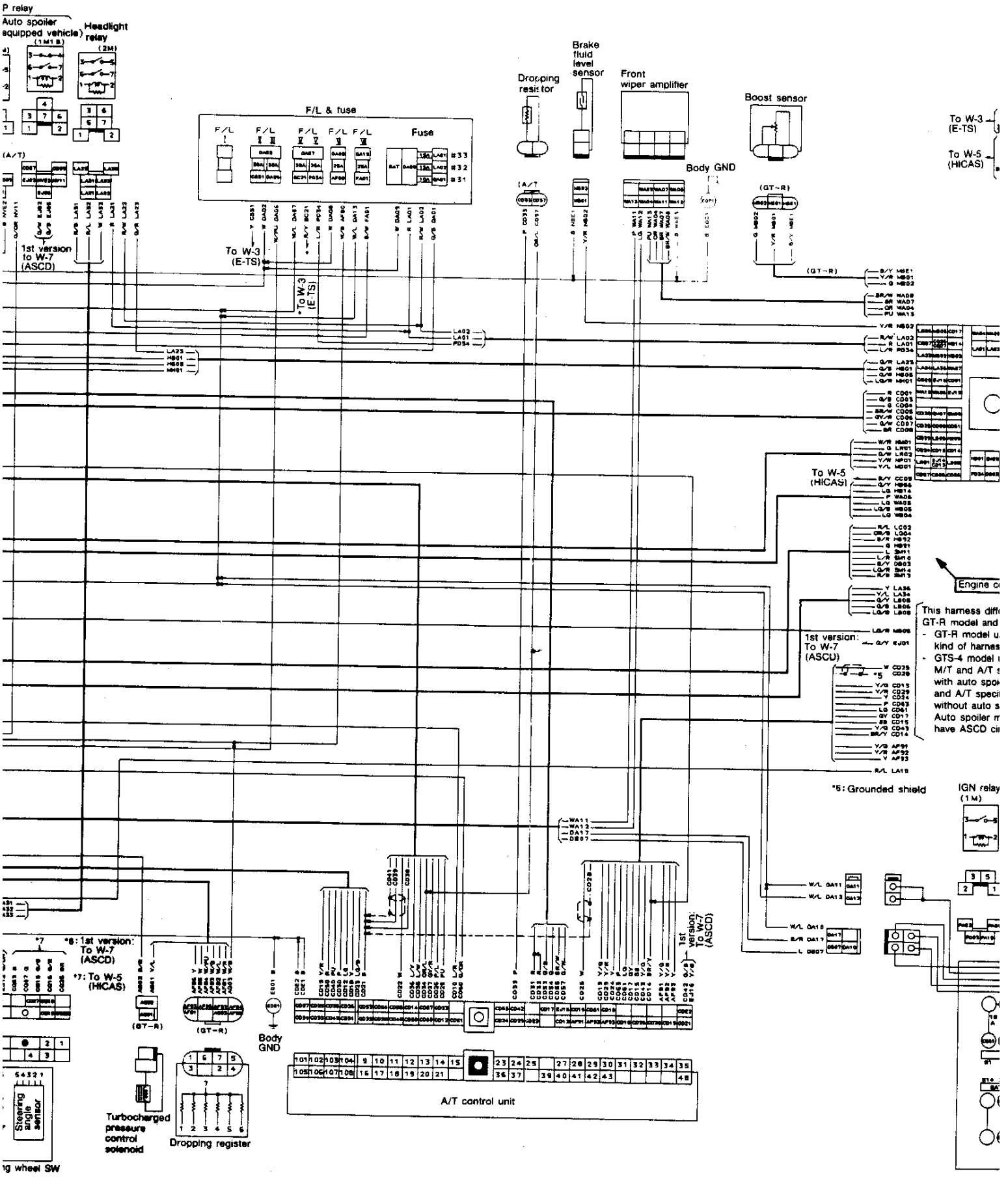
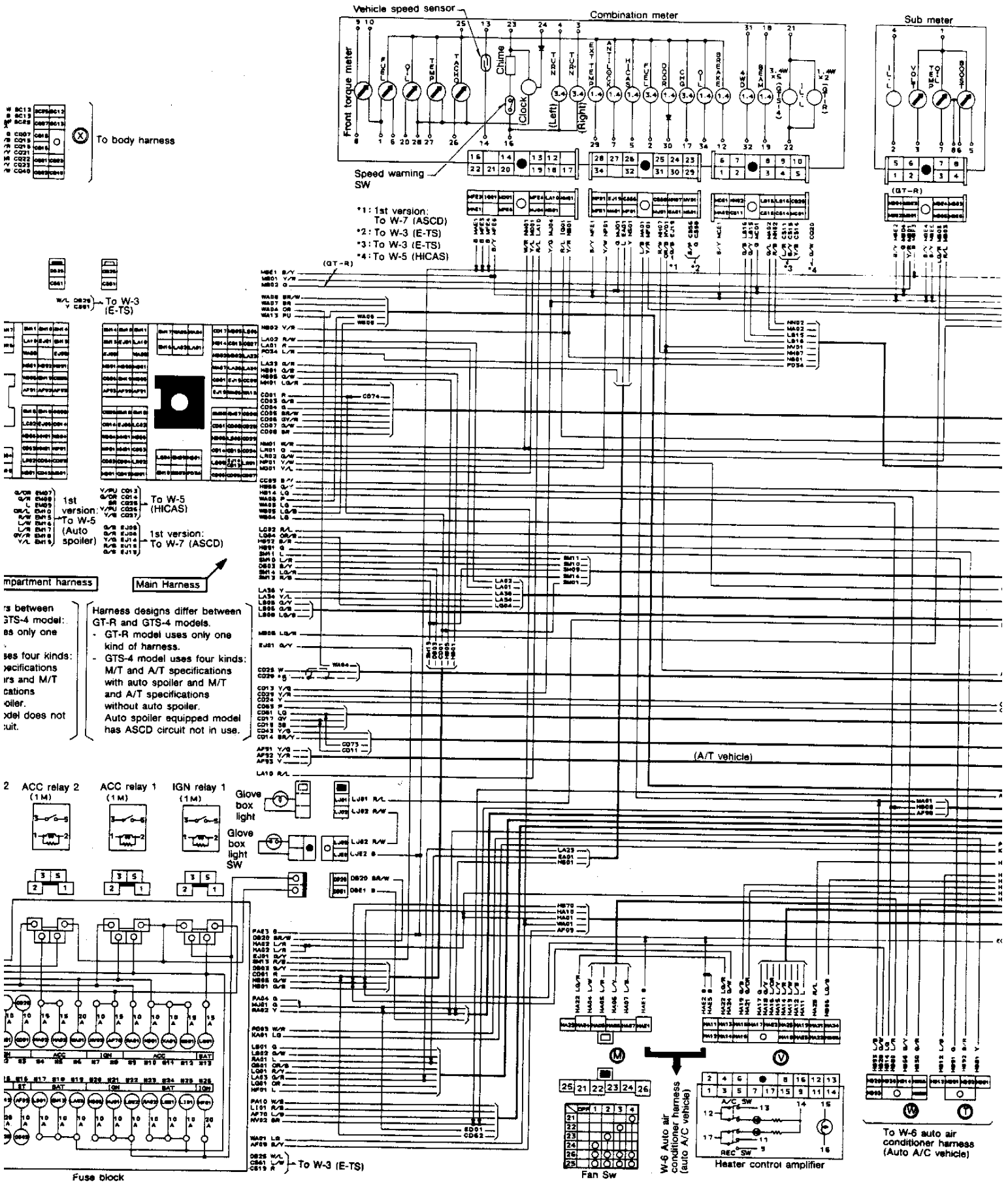

Diagnosis connector
RX
TX
CHK
IGN
CLK
PS
SC0
SC1
DT
indicates diagnos
terminal.
ACC
10A
A/C relay
(1M)
Dual pressure
SW
(A/T vehicle)
rmo amplifier
sensor
ature
SW
Intake door actuator

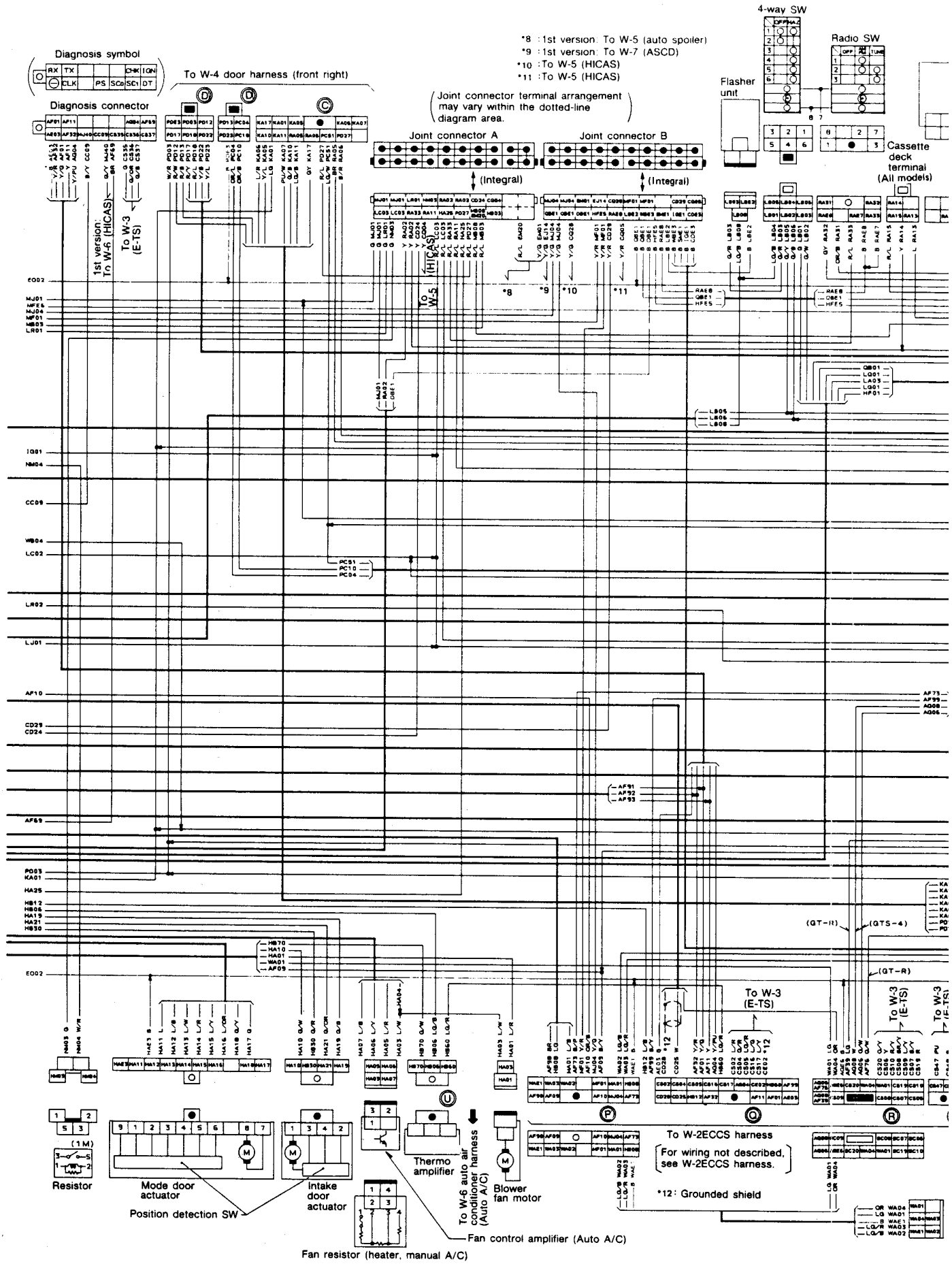
Fig. No. 2 W-1 4WD VEHICLE (RB20DET/RB26DETT EQUIPPED MODELS)

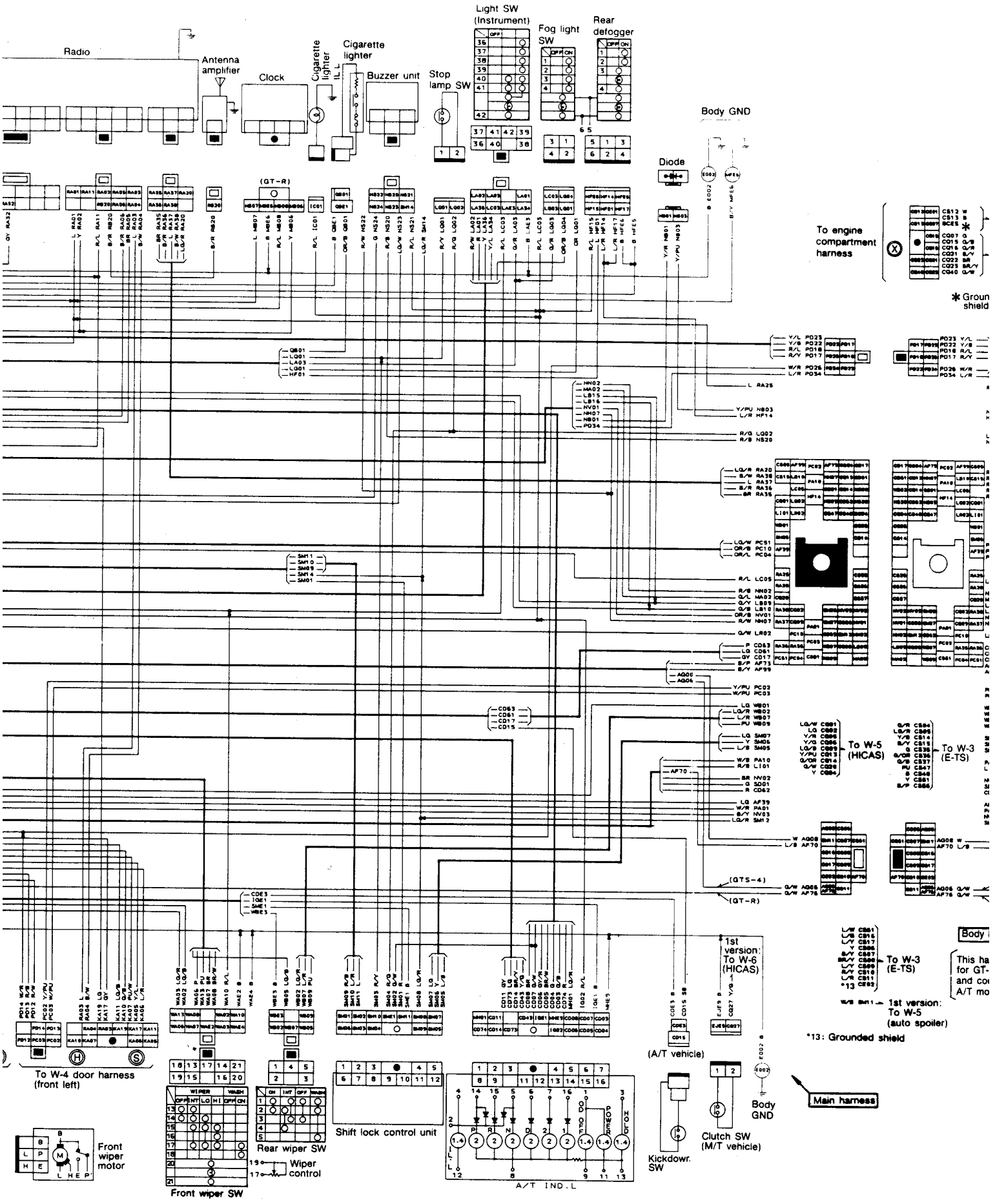


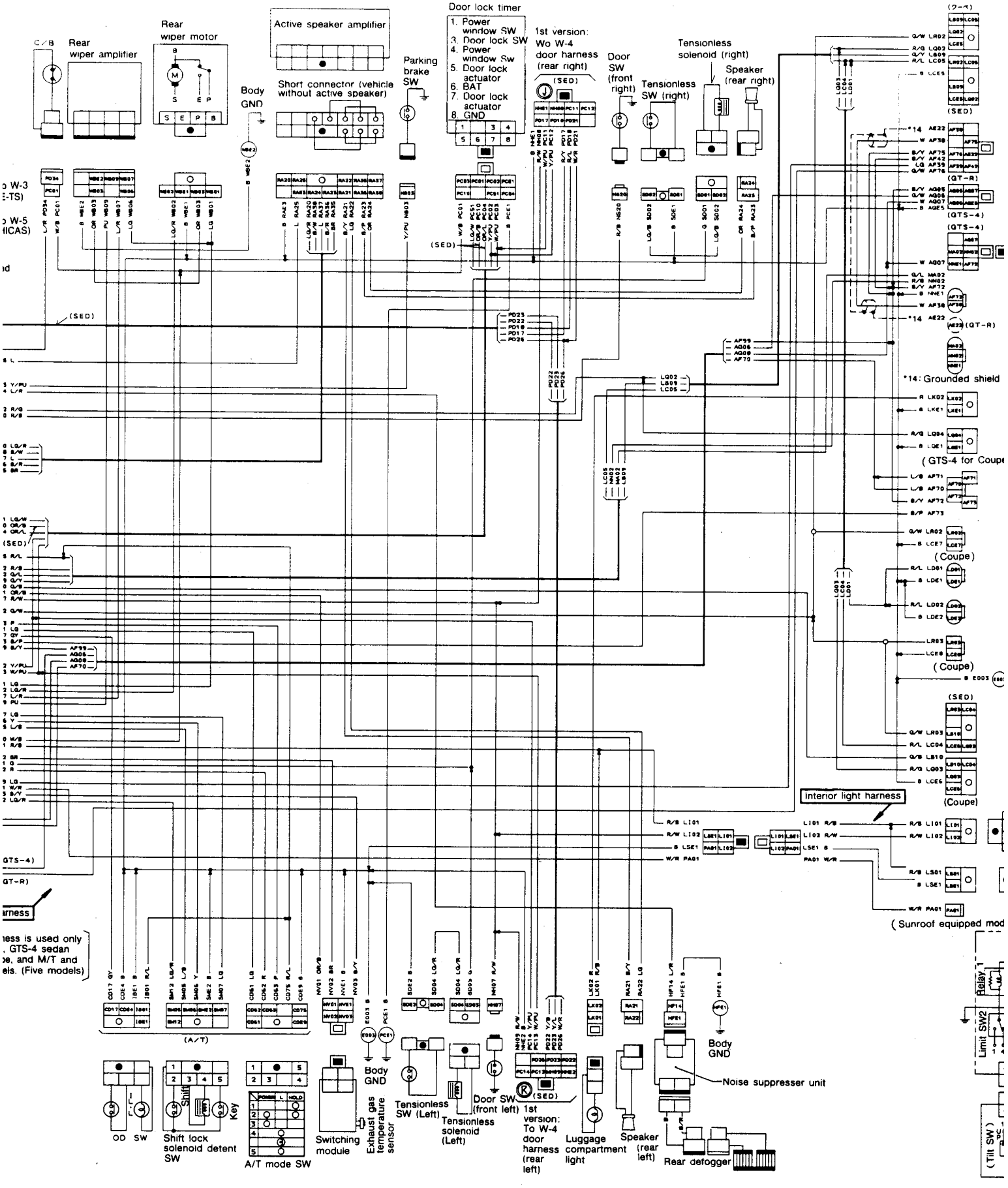

P relay
Auto spoiler equipped vehicle)
Headlight relay
(1M1 B)
(2M)
(A/T)
F/L & fuse
F/L
Fuse
Dropping resistor
Brake fluid level sensor
Front wiper amplifier
Boost sensor
Body GND
(GT-R)
To W-3 (E-TS)
To W-5 (HICAS)
1st version to W-7 (ASCD)
*To W-3 (E-TS)
To W-5 (HICAS)
Engine c
This harness diff
GT-R model and
- GT-R model u
kind of harnes
- GTS-4 model
M/T and A/T
with auto spo
and A/T speci
without auto s
Auto spoiler m
have ASCD ci
1st version: To W-7 (ASCU)
*5: Grounded shield
IGN relay (1M)
*6: 1st version: To W-7 (ASCD)
*7: To W-5 (HICAS)
(GT-R)
(GT-R)
Body GND
1st version: To W-7 (ASCD)
A/T control unit
Turbocharged pressure control solenoid
Dropping register
Steering angle sensor
g wheel SW

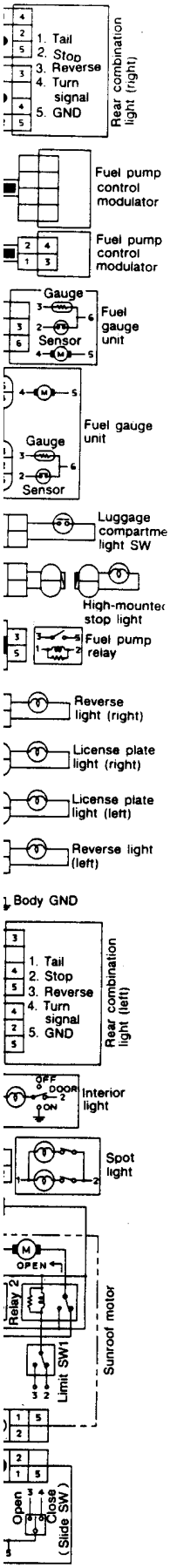

Vehicle speed sensor
Combination meter
Sub meter
Front torque meter
Chime
Clock
Speed warning SW
(Left)
(Right)
*1 : 1st version: To W-7 (ASCD)
*2 : To W-3 (E-TS)
*3 : To W-3 (E-TS)
*4 : To W-5 (HICAS)
(GT-R)
To body harness
To W-3 (E-TS)
1st version: To W-5 (Auto spoiler)
To W-5 (HICAS)
1st version: To W-7 (ASCD)
Main Harness
Harness designs differ between GT-R and GTS-4 models.
- GT-R model uses only one kind of harness.
- GTS-4 model uses four kinds: M/T and A/T specifications with auto spoiler and M/T and A/T specifications without auto spoiler. Auto spoiler equipped model has ASCD circuit not in use.
(A/T vehicle)
ACC relay 2 (1M)
ACC relay 1 (1M)
IGN relay 1 (1M)
Glove box light
Glove box light SW
Fuse block
To W-3 (E-TS)
Fan Sw
W-6 Auto air conditioner harness (auto A/C vehicle)
Heater control amplifier
To W-6 auto air conditioner harness (Auto A/C vehicle)

Cont'd Fig. No. 2 W-1 4WD Vehicles (RB20DET/RB26DETT)

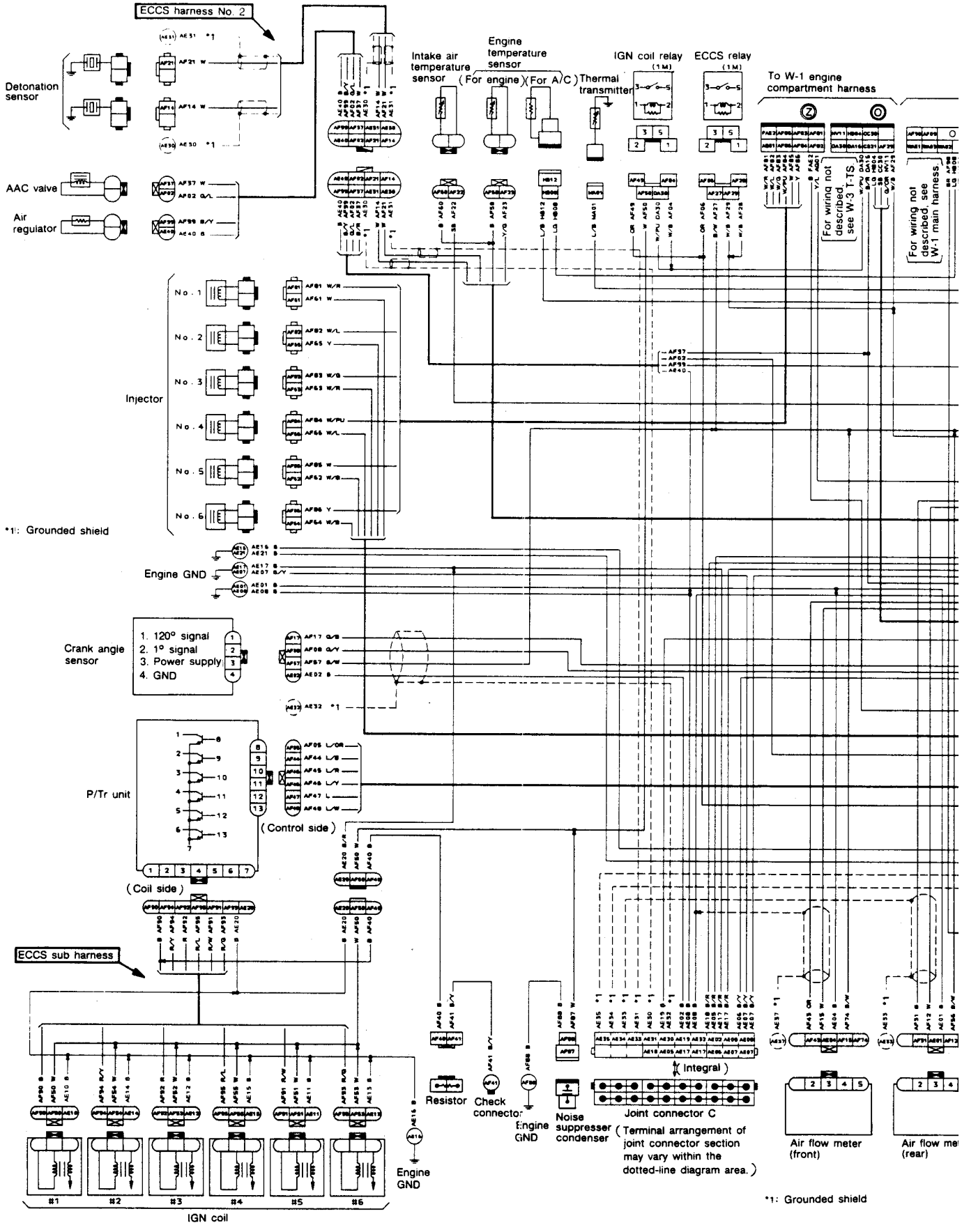



Radio
Antenna amplifier
Clock
Cigarette lighter
Cigarette lighter
Buzzer unit
Stop lamp SW
Light SW (Instrument)
Fog light SW
Rear defogger
Body GND
Diode
(GT-R)
To engine compartment harness
To W-5 (HICAS)
To W-3 (E-TS)
(GTS-4)
(GT-R)
1st version: To W-6 (HICAS)
To W-3 (E-TS)
1st version: To W-5 (auto spooler)
*13: Grounded shield
To W-4 door harness (front left)
(A/T vehicle)
Main harness
Front wiper motor
Front wiper SW
Rear wiper SW
Wiper control
Shift lock control unit
A/T IND.L
Kickdowr. SW
Clutch SW (M/T vehicle)
Body GND


C/B
Rear wiper amplifier
Rear wiper motor
Active speaker amplifier
Short connector (vehicle without active speaker)
Body GND
Parking brake SW
Door lock timer
1. Power window SW
3. Door lock SW
4. Power window Sw
5. Door lock actuator
6. BAT
7. Door lock actuator
8. GND
1st version: Wo W-4 door harness (rear right)
Door SW (front right)
Tensionless SW (right)
Tensionless solenoid (right)
Speaker (rear right)
(SED)
(GTS-4)
(GT-R)
(Coupe)
(GTS-4 for Coupe)
*14: Grounded shield
Interior light harness
(Sunroof equipped mod
(A/T)
OD SW
Shift lock solenoid detent SW
Shift
Key
A/T mode SW
Switching module
Exhaust gas temperature sensor
Body GND
Tensionless SW (Left)
Tensionless solenoid (Left)
Door SW (front left)
1st version: To W-4 door harness (rear left)
Luggage compartment light
Speaker (rear left)
Noise suppresser unit
Rear defogger
Relay 1
Limit SW2
(Tilt SW)


1. Tail
2. Stop
3. Reverse
4. Turn signal
5. GND
Rear combination light (right)
Fuel pump control modulator
Fuel pump control modulator
Gauge
Sensor
Fuel gauge unit
Fuel gauge unit
Luggage compartme light SW
High-mounte stop light
Fuel pump relay
Reverse light (right)
License plate light (right)
License plate light (left)
Reverse light (left)
Body GND
1. Tail
2. Stop
3. Reverse
4. Turn signal
5. GND
Rear combination light (left)
OFF
DOOR
ON
Interior light
Spot light
OPEN
Relay 2
Limit SW1
Sunroof motor
Open
Close
(Slide SW)

(03) RB26DETT


ECCS harness No. 2
Detonation sensor
AAC valve
Air regulator
Intake air temperature sensor
Engine temperature sensor
(For engine)
(For A/C)
Thermal transmitter
IGN coil relay
ECCS relay
To W-1 engine compartment harness
For wiring not described, see W-3 T-TS.
For wiring not described, see W-1 main harness.
Injector
No. 1
No. 2
No. 3
No. 4
No. 5
No. 6
*1: Grounded shield
Engine GND
Crank angle sensor
1. 120° signal
2. 1° signal
3. Power supply
4. GND
P/Tr unit
(Control side)
(Coil side)
ECCS sub harness
Resistor
Check connector
Engine GND
Noise suppresser condenser
Integral
Joint connector C
(Terminal arrangement of joint connector section may vary within the dotted-line diagram area.)
Air flow meter (front)
Air flow meter (rear)
#1
#2
#3
#4
#5
#6
IGN coil
Engine GND
*1: Grounded shield

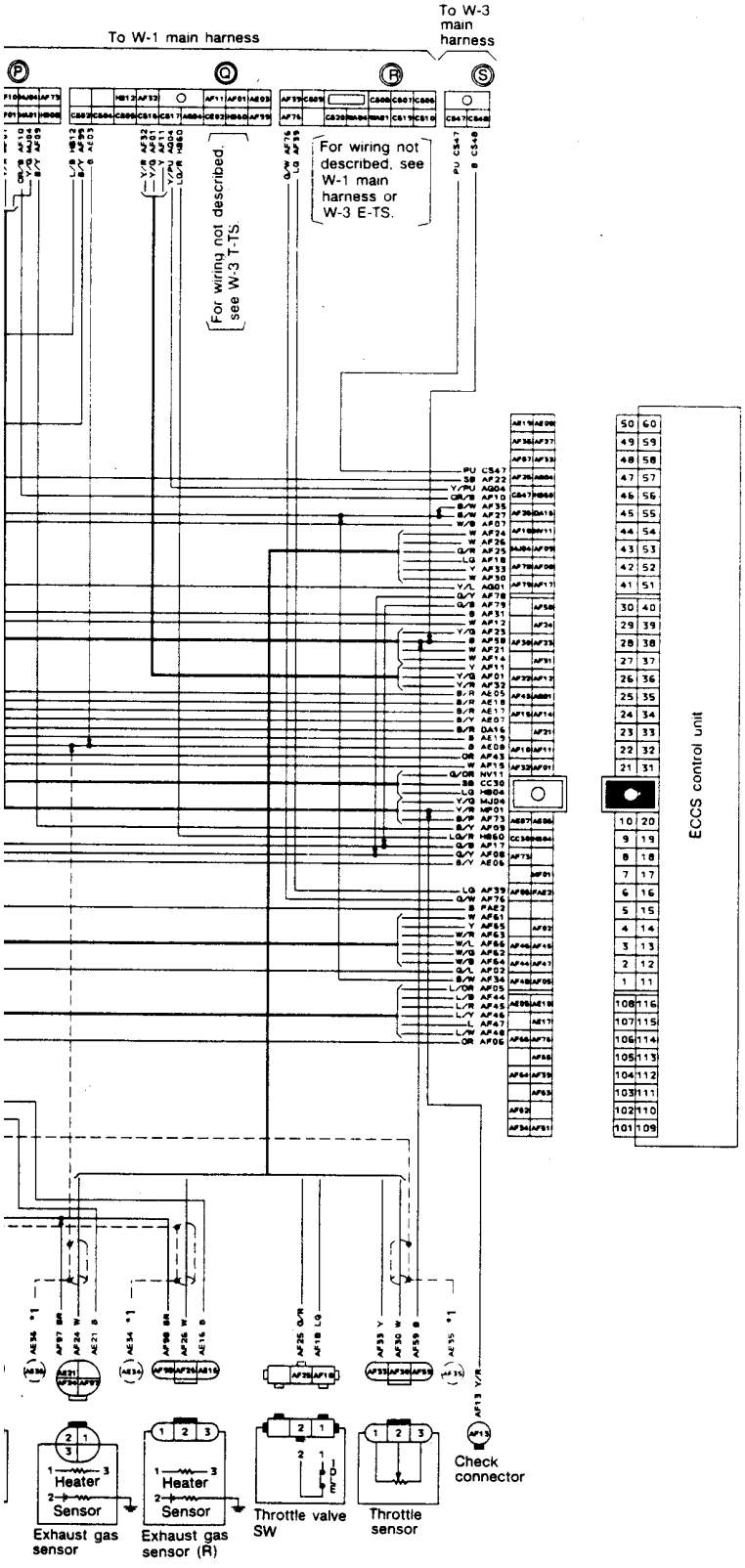
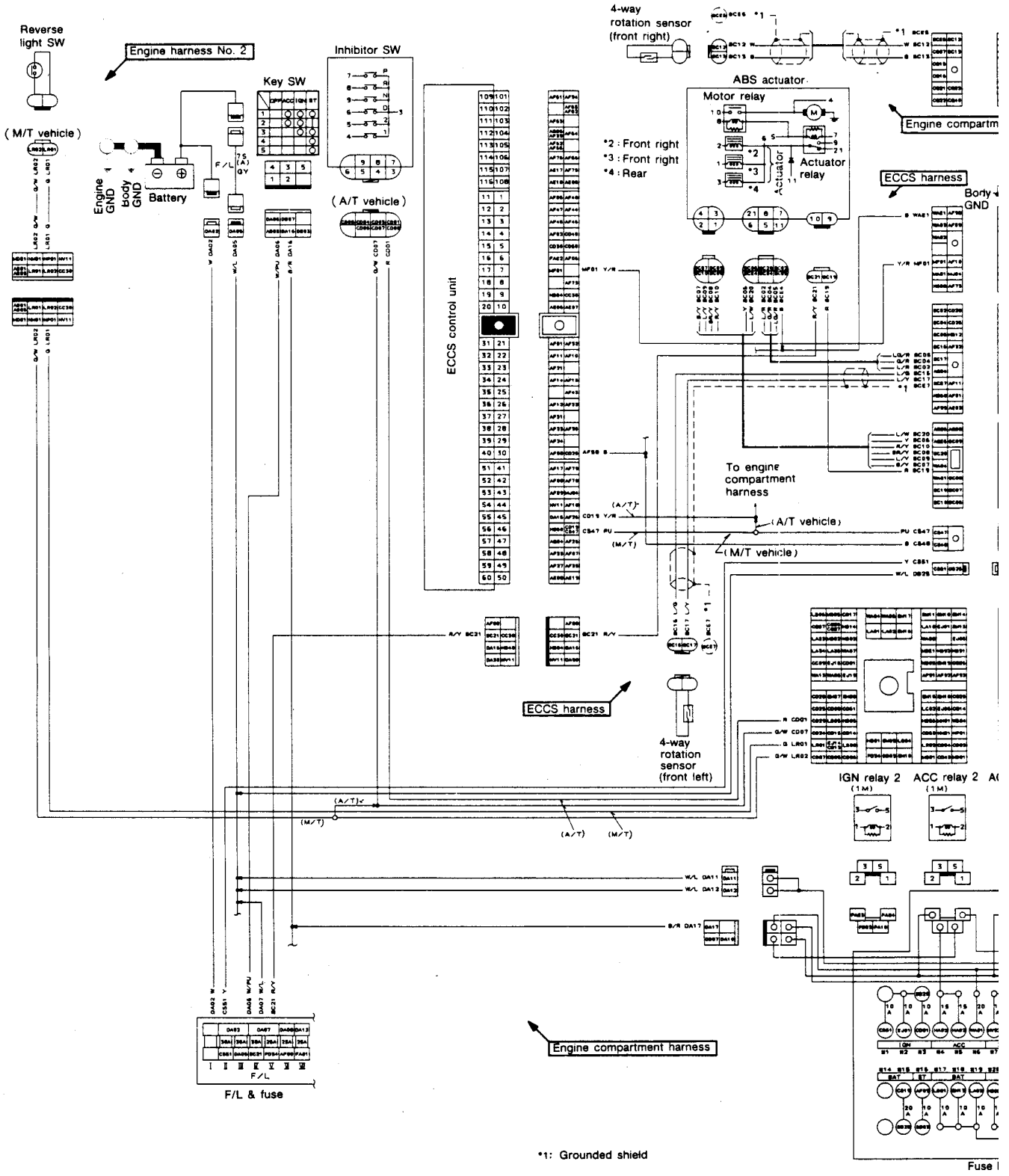

To W-1 main harness
To W-3 main harness
For wiring not described, see W-1 main harness or W-3 E-TS.
For wiring not described, see W-3 T-TS.
ECCS control unit
Heater
Sensor
Exhaust gas sensor
Exhaust gas sensor (R)
Throttle valve SW
Throttle sensor
Check connector

Fig. No. 5 W-3 E-TS SYSTEM



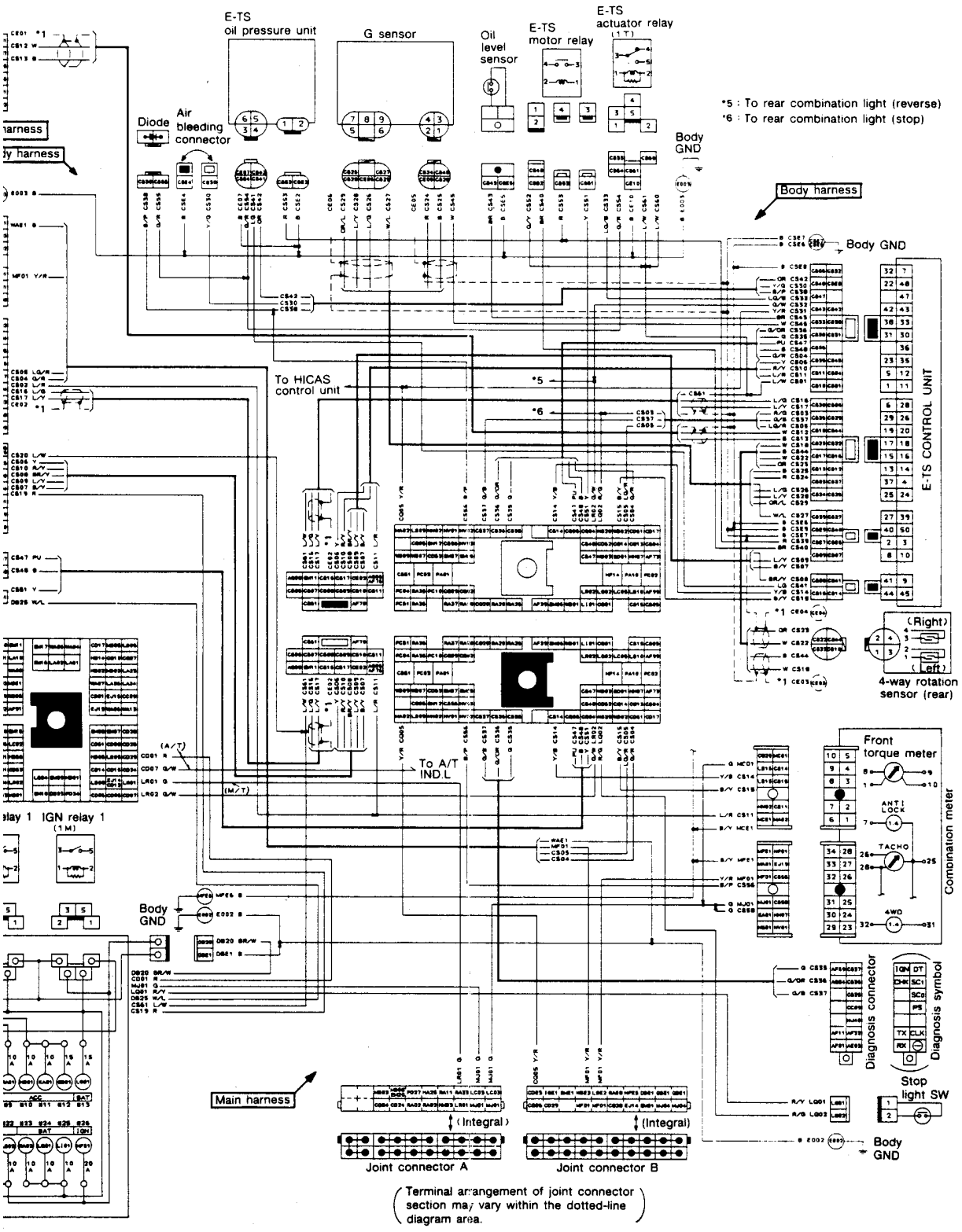

E-TS oil pressure unit
G sensor
Oil level sensor
E-TS motor relay
E-TS actuator relay
Diode
Air bleeding connector
Body GND
*5 : To rear combination light (reverse)
*6 : To rear combination light (stop)
Body harness
To HICAS control unit
E-TS CONTROL UNIT
4-way rotation sensor (rear)
(Right)
(Left)
To A/T IND.L
Front torque meter
Comoination meter
Diagnosis connector
Diagnosis symbol
Stop light SW
IGN relay 1
(1M)
Main harness
(Integral)
Joint connector A
Joint connector B
Terminal arrangement of joint connector section may vary within the dotted-line diagram area.

Fig. No. 6 W-4 DOOR HARNESS

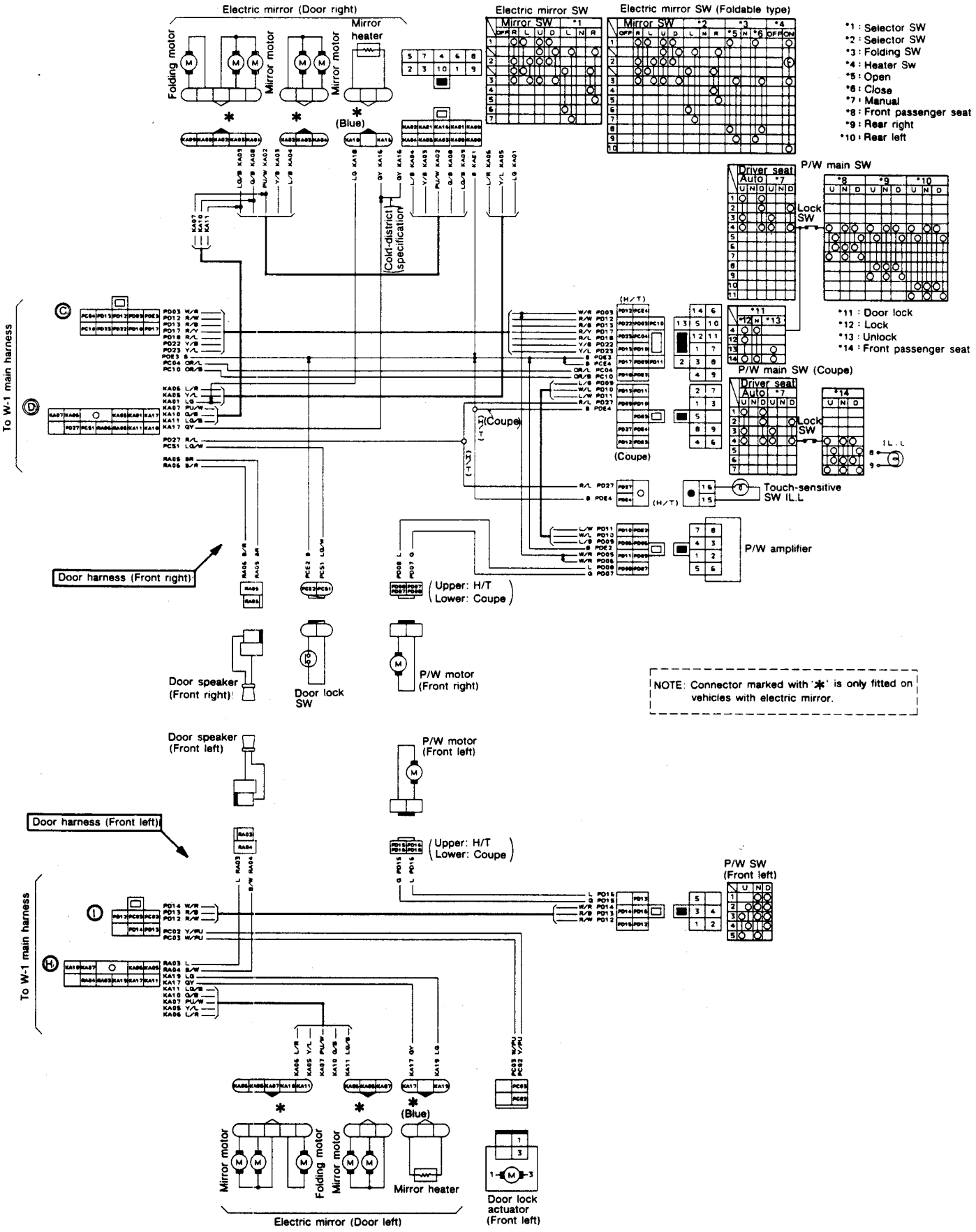
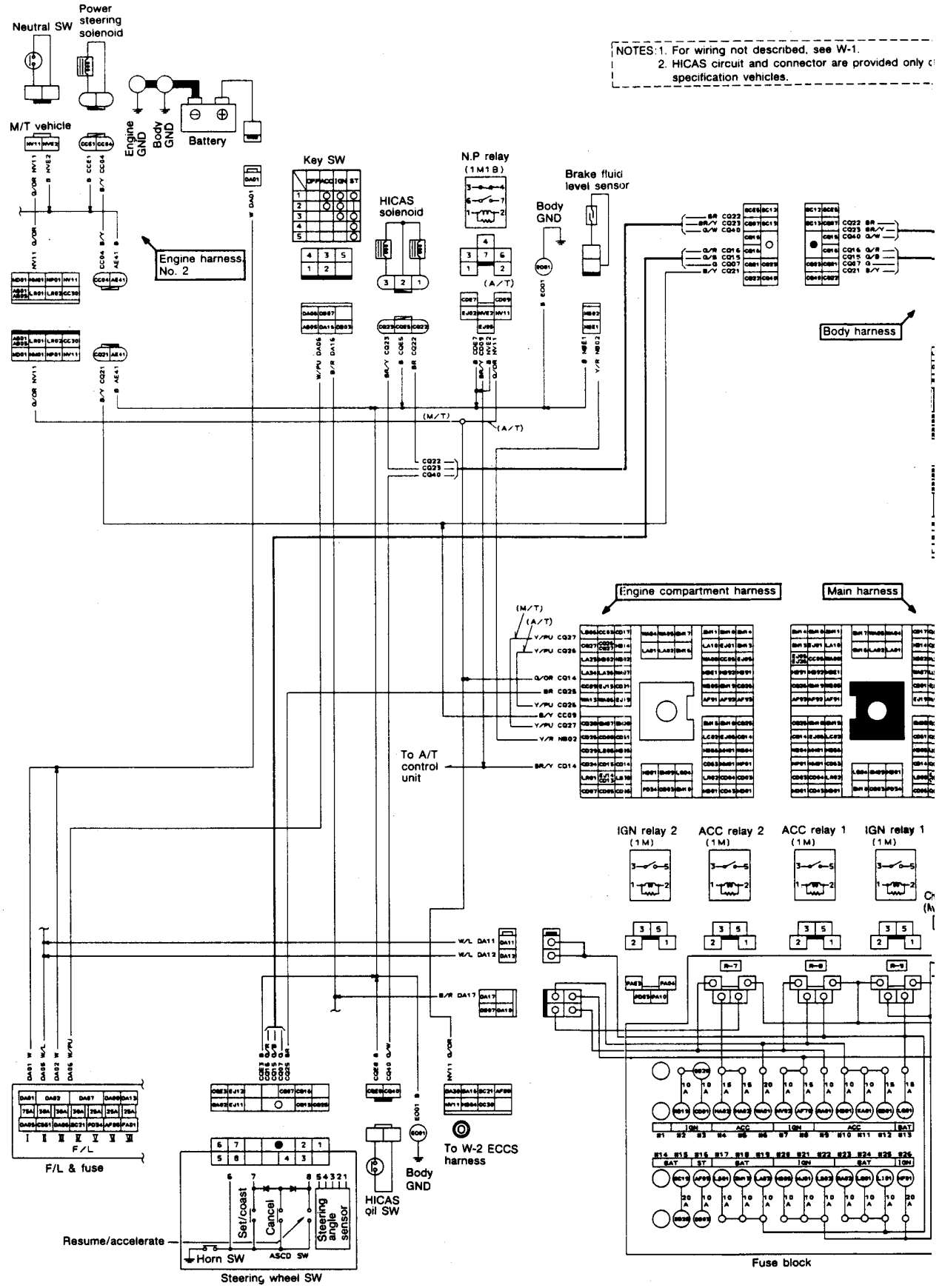


Fig. 7 W-5 HICAS SYSTEM



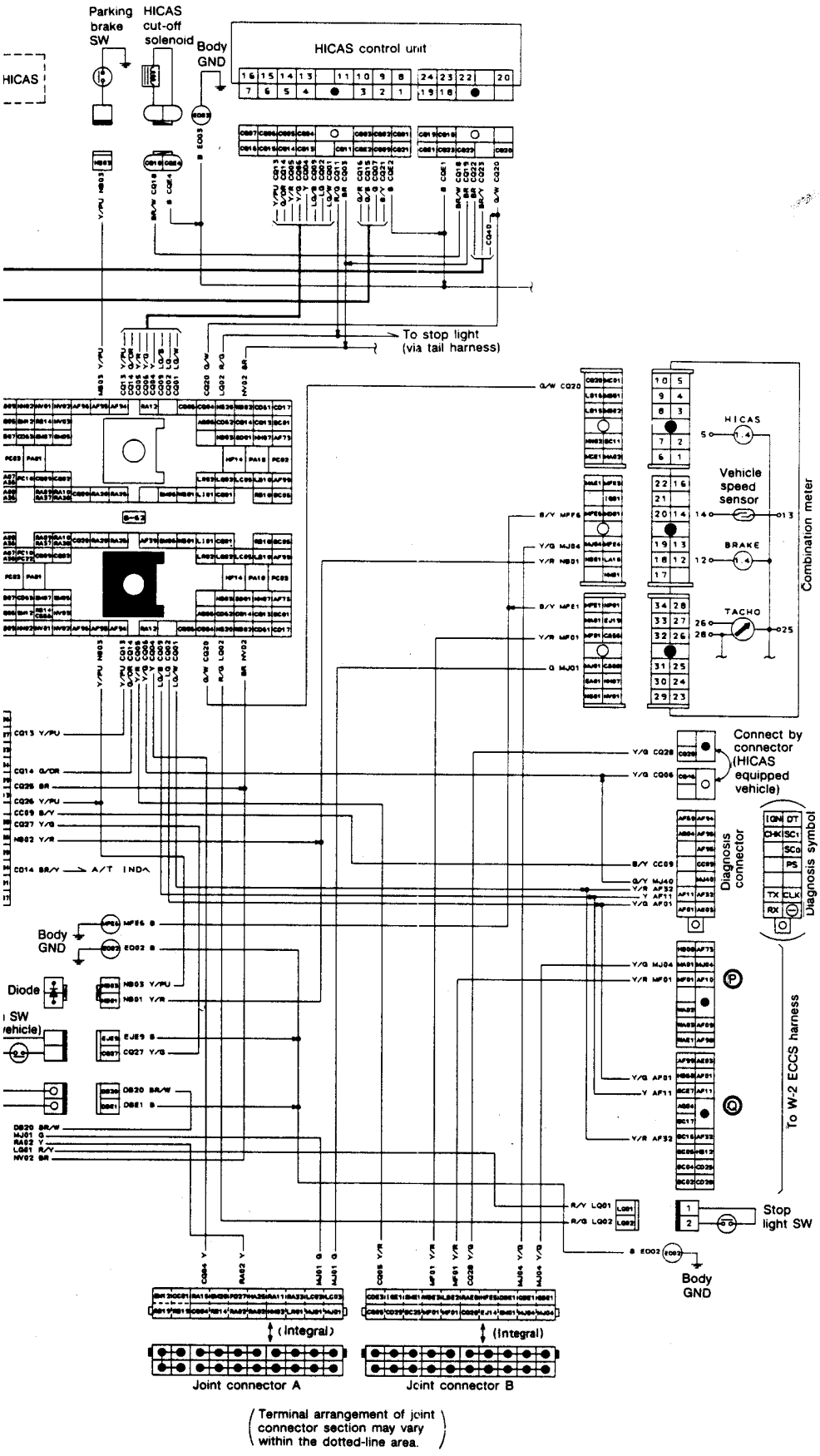
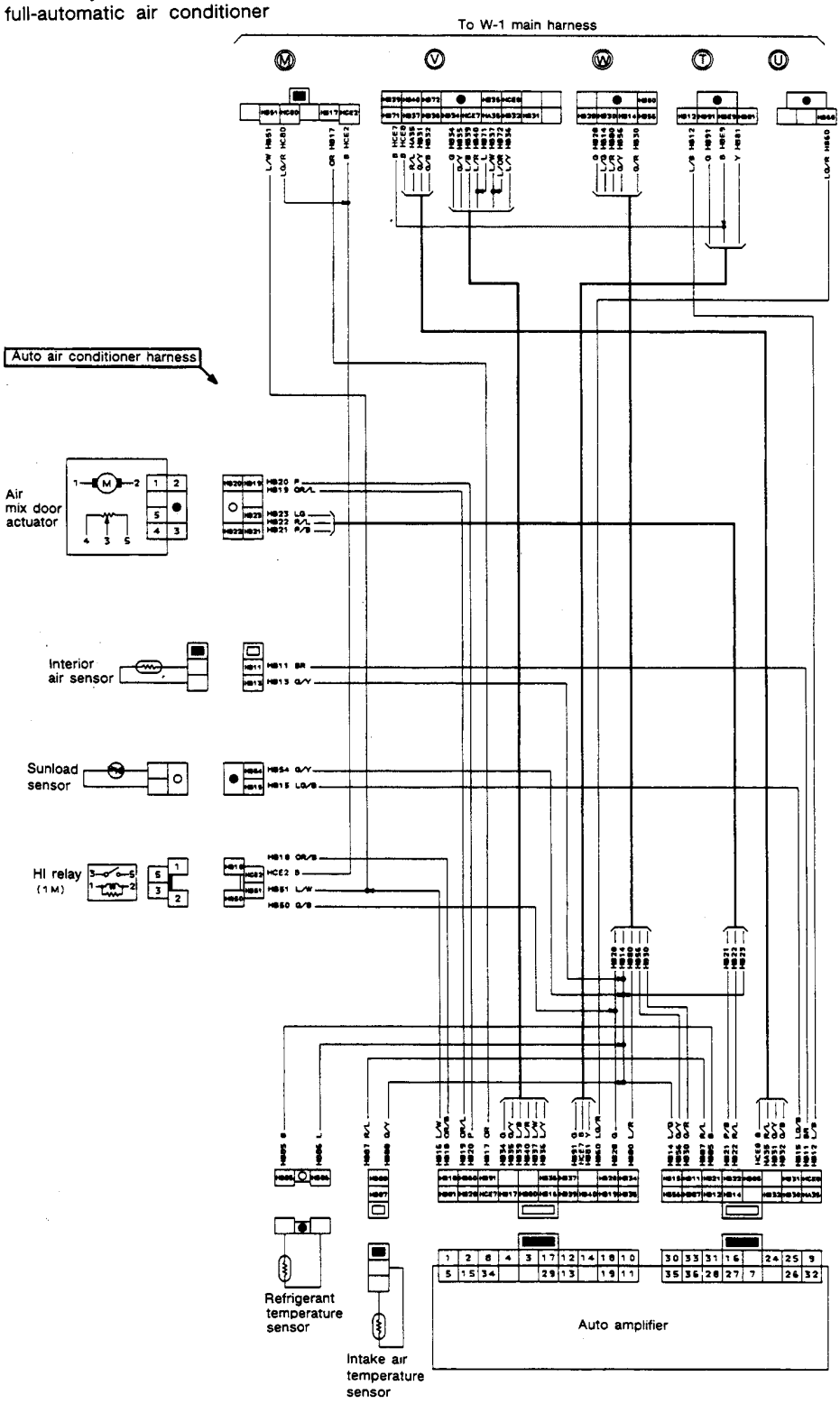

Parking brake SW
HICAS cut-off solenoid
Body GND
HICAS control unit
HICAS
To stop light (via tail harness)
Combination meter
HICAS
Vehicle speed sensor
BRAKE
TACHO
Connect by connector (HICAS equipped vehicle)
Diagnosis connector
Diagnosis symbol
To W-2 ECCS harness
Stop light SW
Body GND
Diode
A/T IND
(Integral)
(Integral)
Joint connector A
Joint connector B
Terminal arrangement of joint connector section may vary within the dotted-line area.

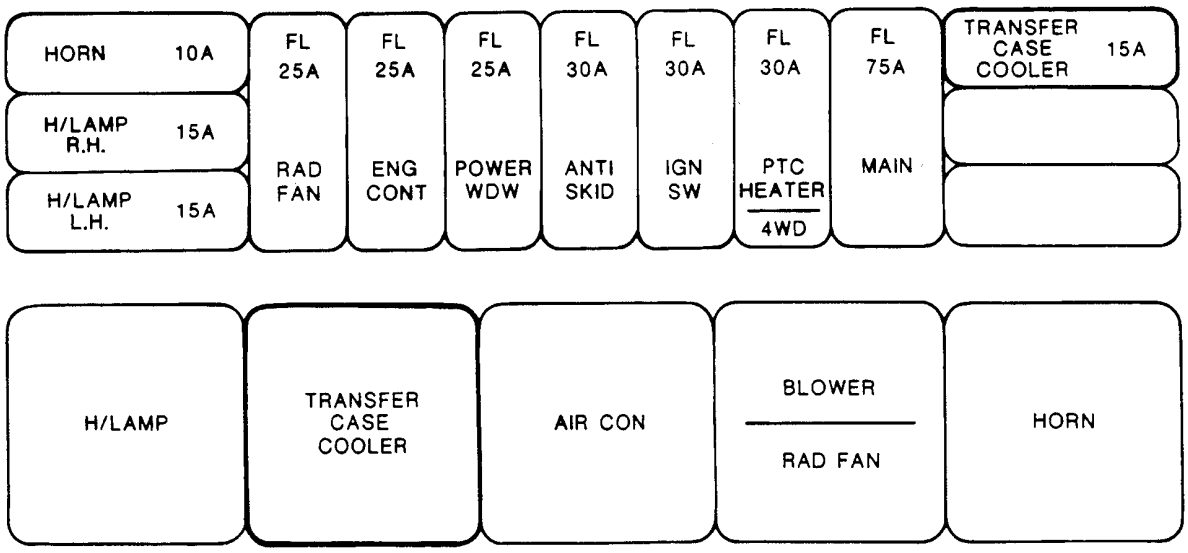
Fig. No. 8 W-6 AIR CONDITIONER HARNESS

Electrically controlled active
full-automatic air conditioner

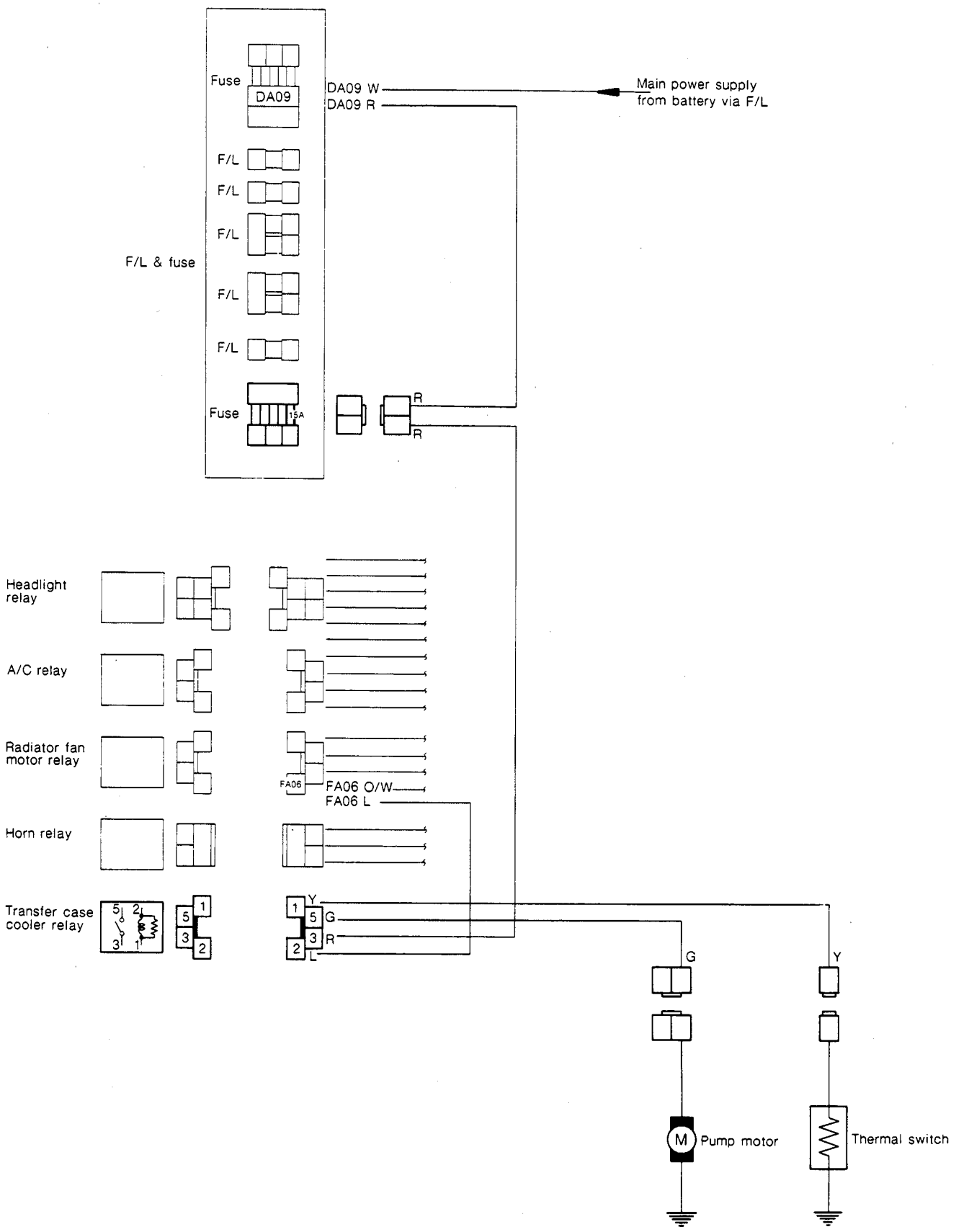


ENGINE COMPARTMENT – RELAY BOX

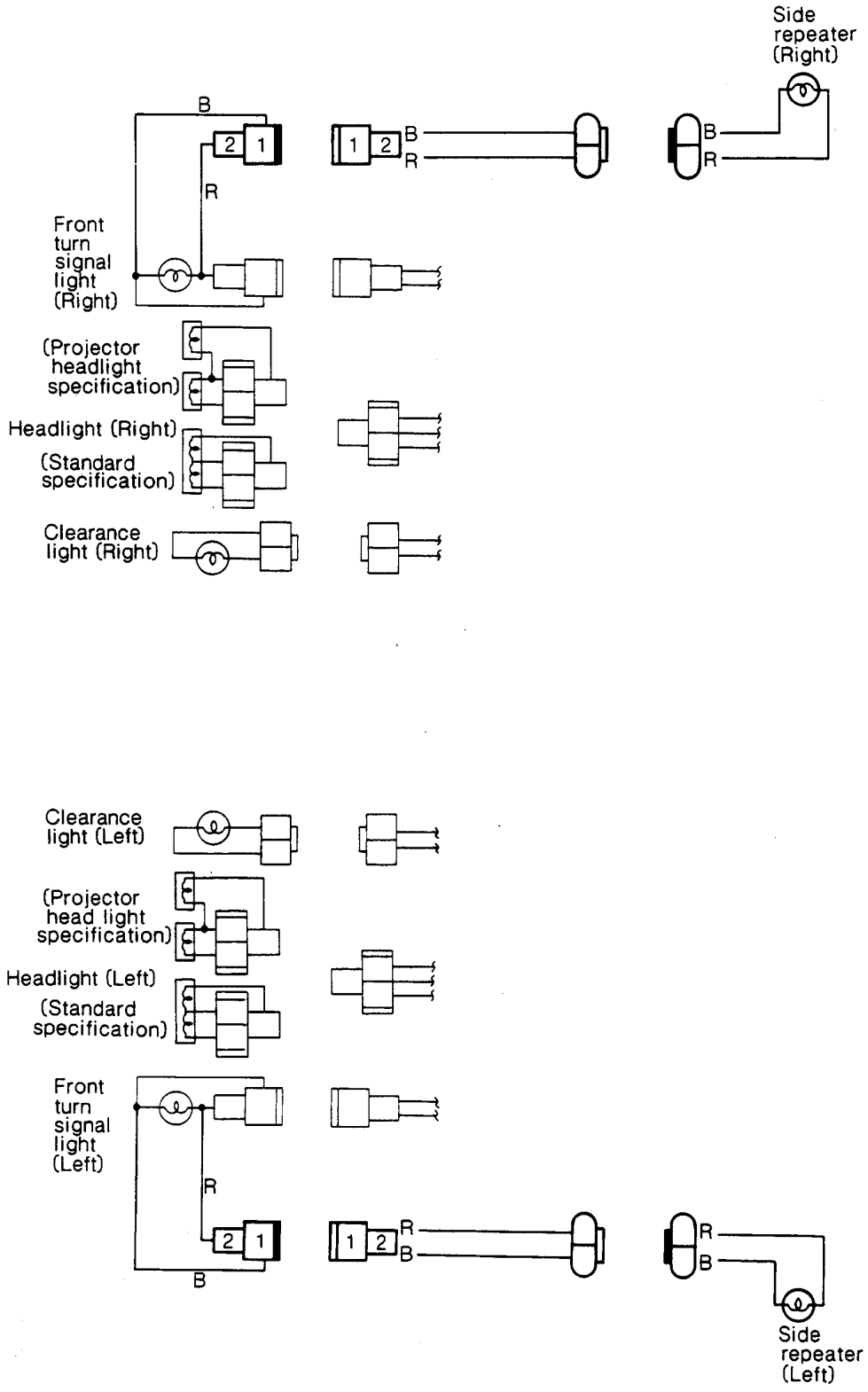
ENGINE COMPTARTMENT – RELAY BOX



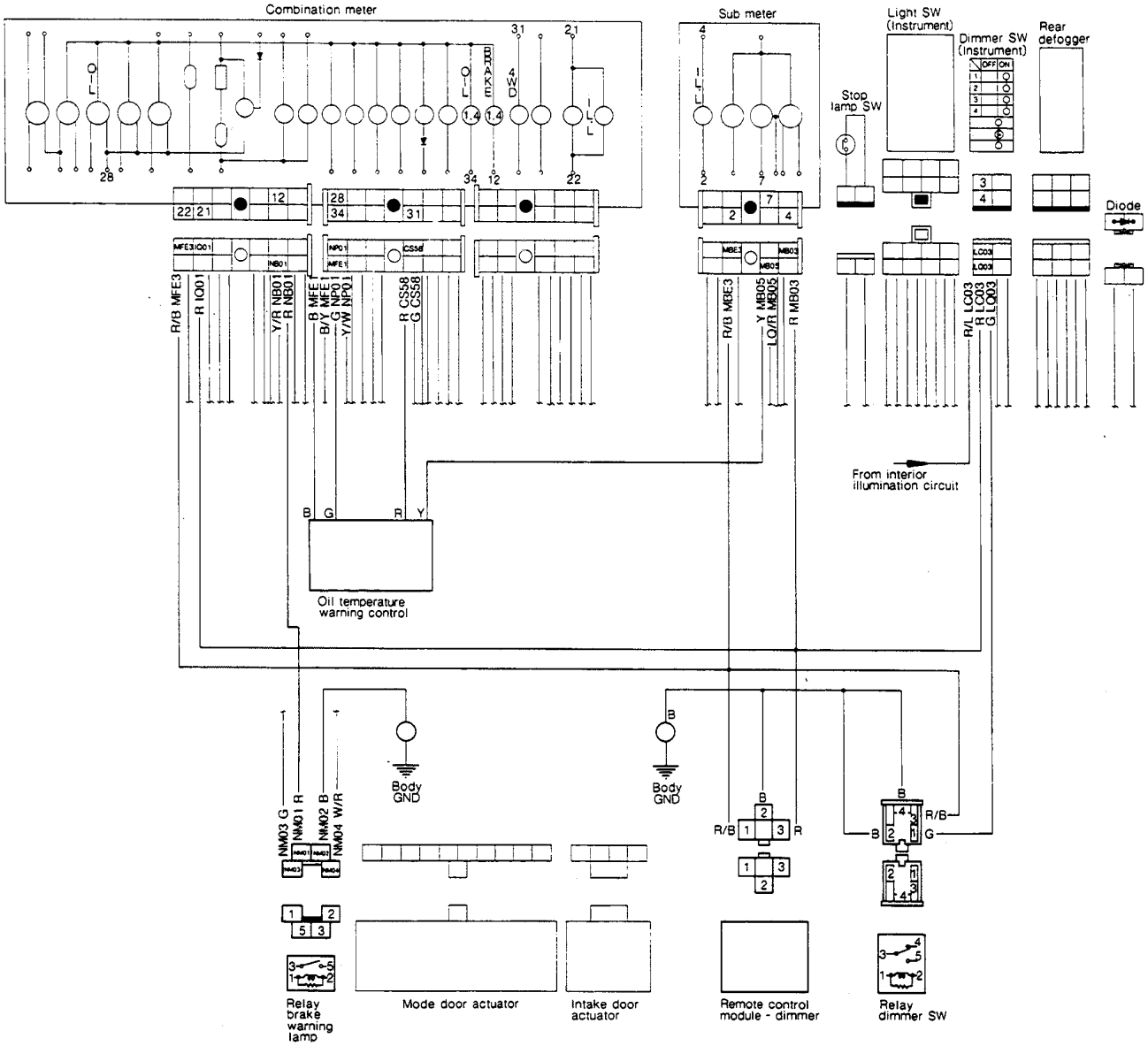
TRANSFER CASE COOLER



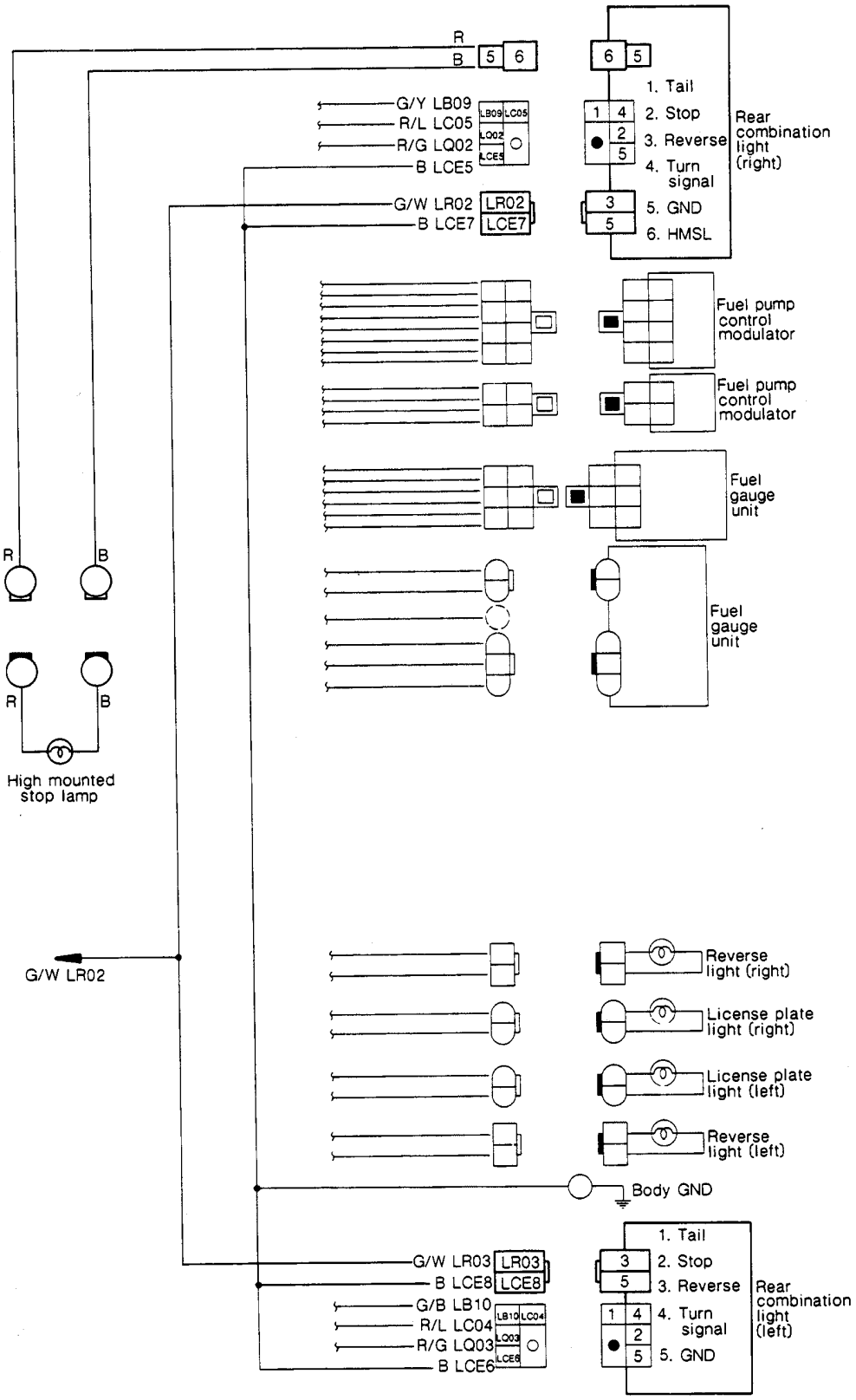
SIDE REPEATER LAMPS



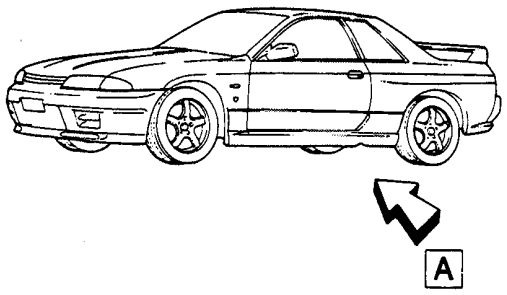
OIL TEMPERATURE WARNING
BRAKE LIGHT WARNING
DIMMER SW INSTRUMENT PANEL ILLUMINATION

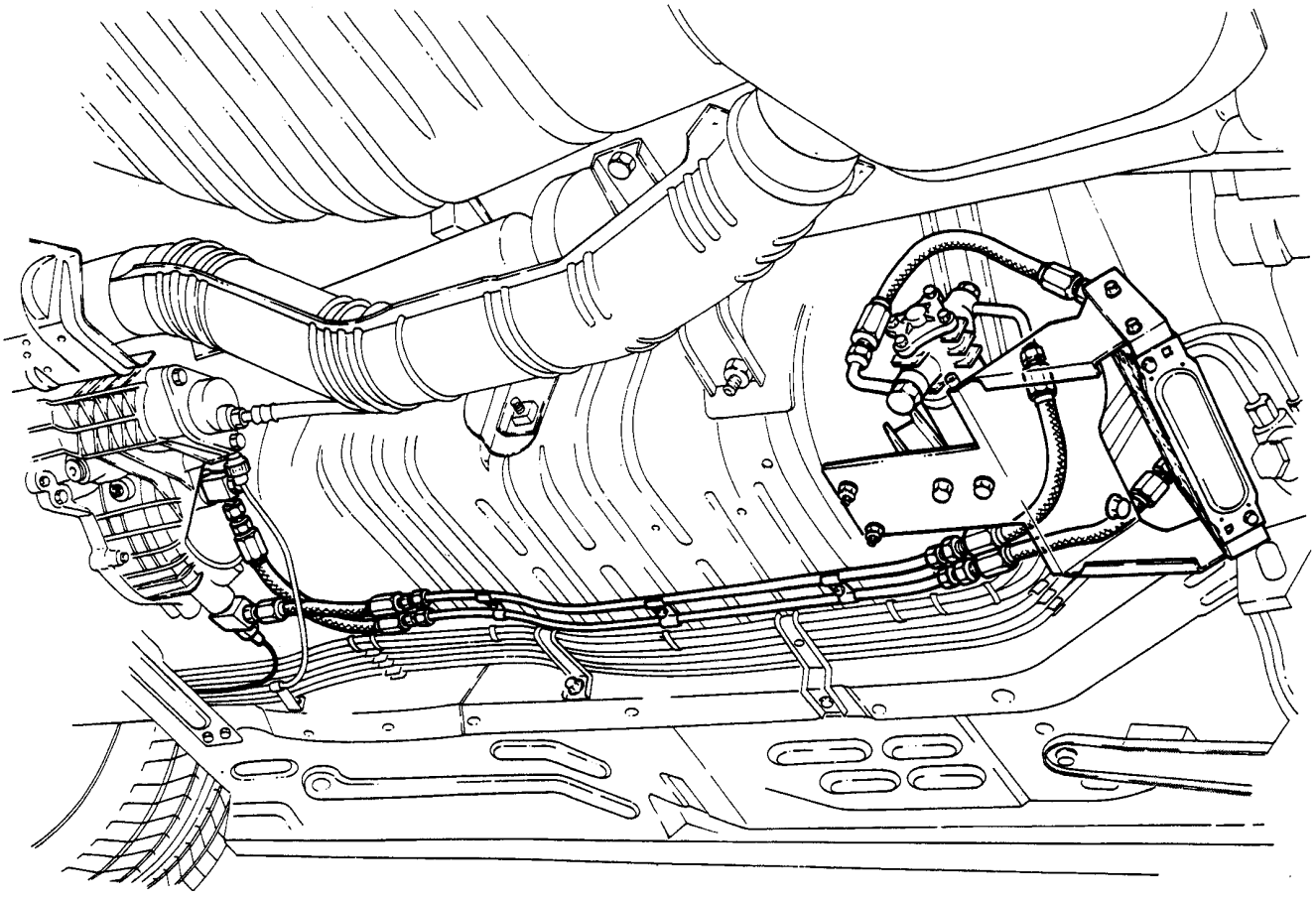


REAR LAMPS AND H.M.S.L.



TRANSFER CASE COOLER





VIEW A

ETC ELECTRONIC TORQUE SPLIT CONTROLLER

HKS ELECTRONICS TECHNOLOGY

HKS
Pursuing the Ultimate in Engine Performance and Efficiency.
HKS Company Limited
札幌営業所 (011)723-1110
仙台営業所 (022)259-2626
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名古屋営業所 (052)354-6833
大阪営業所 (0727)28-3663
広島営業所 (082)871-1020
福岡営業所 (092)471-5931

ETC取扱説明書

この度は、ＨＫＳエレクトロニック トルク スプリット コントローラー(ＥＴＣ)をお買い上げ下さいまして誠にありがとうございます。
本商品は、精密機械であるため、取り付けに際しては本書にしたがって、充分注意して行って下さい。
お取付の前に取扱説明書をよくお読み下さい。お読みになった後は大切に保管して下さい。

特徴

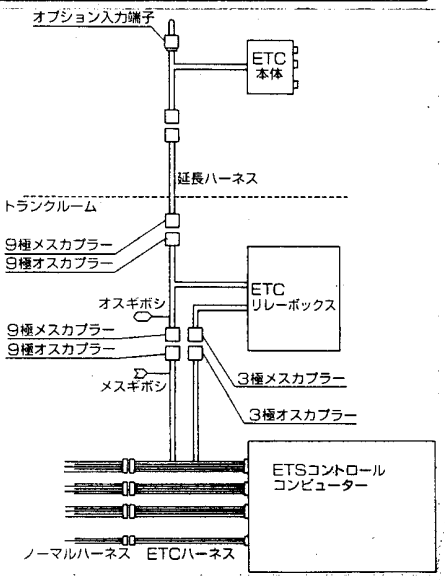
- ノーマルのＥＴＳシステム(BNR32、HNR32に搭載)の作動に関わらず、前輪に伝えるトルクを任意に設定する事により、個々のドライバーの好みとするドライブフィーリングを得られる商品です。
- ＥＴＣ作動中ノーマルのトルクメーターは、ＥＴＣのボリュームで設定したトルク値を表示します。
- ＥＴＣ作動中にＡＢＳ(アンチロックブレーキ)が作動するとＥＴＣはノーマル復帰し、ＡＢＳの作動が停止すればＥＴＣは、ＯＮ又はＡＵＴＯに戻ります。

目次

1パーツリスト

- ＥＴＣ本体 ……1ヶ
- ＥＴＣリレーボックス ……1ヶ
- ＥＴＣハーネス ……1ヶ
- 延長ハーネス ……1本
- 両面テープ ……3ヶ
- 取扱説明書 ……1部
- 保証書 ……1部

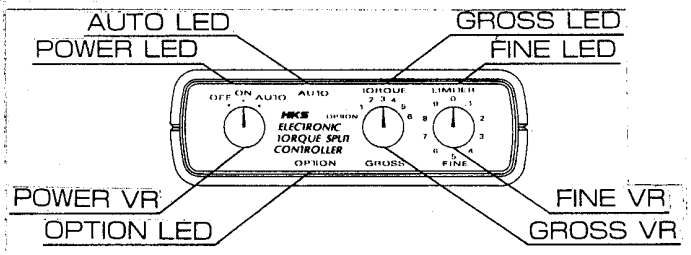
2全体配線図



3取付方法

(1)バッテリーの(－)端子を外します。
(2)トランクルーム内にあるＥＴＳコントロールユニットに、ＥＴＣハーネスを接続します。
(3)リレーボックスから出ている９極メスカプラーと３極メスカプラーにＥＴＣハーネスから出ている９極オスカプラーと３極オスカプラーを接続します。
(4)リレーボックスをハーネスの届く範囲で、両面テープにて固定して下さい。
(5)トランクルームから延長ハーネスを室内に通し、リレーボックスから出ている９極オスカプラーに延長ハーネスの９極メスカプラーを接続します。
(6)ＥＴＣハーネスから出ているメスギボシ端子とリレーボックスから出ているオスギボシ端子を接続します。
(7)ＥＴＣ本体を、室内に通した９極カプラーに接続し、両面テープ等で任意の場所へ固定して下さい。
(8)バッテリーの(－)端子を接続します。

4ETC本体説明



(1)POWERボリューム
　ＯＦＦ……ノーマル状態
　ＯＮ……常時GROSS、ＦＩＮＥボリュームで設定したトルクを前輪にかけます。
　ＡＵＴＯ……車速がおよそ15km／ｈ以上でGROSS、ＦＩＮＥボリュームで設定したトルクを前輪にかけ、車速が15km／ｈ以下でノーマル状態になります。

(2)GROSSボリューム
　ＯＰＴＩＯＮ…ＥＴＣには、ＯＰＴＩＯＮ入力端子が装備されており、後にシステムの拡張が可能となっております。
　１～６……前輪にかけられるトルクを大まかに設定出来ます。

(3)ＦＩＮＥボリューム
　０～９……前輪にかけられるトルクを微調整出来ます。

LED点灯条件

POWER LED……IG ONで常時点灯
AUTO LED……POWERボリュームがＡＵＴＯモードでなおかつ、車速がおよそ15km／ｈ以上で点灯。
GROSS FINE LED…POWERボリュームがＯＮ又はＡＵＴＯモードで点灯(但しＡＵＴＯモードでは車速がおよそ15km／ｈ以上になった時点灯)
OPTION LED……POWERボリュームがＯＮ又はＡＵＴＯで、且つGROSSボリュームがＯＰＴＩＯＮを選択した時に点灯(但しＡＵＴＯモードでは車速がおよそ15km／ｈ以上になった時点灯)

(注)ABS作動中はAUTO LED、GROSS LED、FINE LEDともに消灯し、ＡＢＳ解除後は、上記のように点灯します。

5注意事項

ＥＴＣを取付、使用する際以下の注意事項を必ず守って下さい。
(1)バッテリーの(－)端子を外してから、作業を行って下さい。
(2)ＥＴＣは、構造上完全なＦＲとは成らず前輪に多少のトルクがかかるため、パワーチェックの際には、フロントプロペラシャフトを外すか、エンジンルーム内に有る４ＷＤのヒュージブルリンクを外し２ＷＤに成っている事を確認のうえ行って下さい。
(3)前輪に常に高トルクをかけていると駆動系に負担がかかりますので、必要の無いときはノーマルもしくはＦＲに近い状態で使用して下さい。