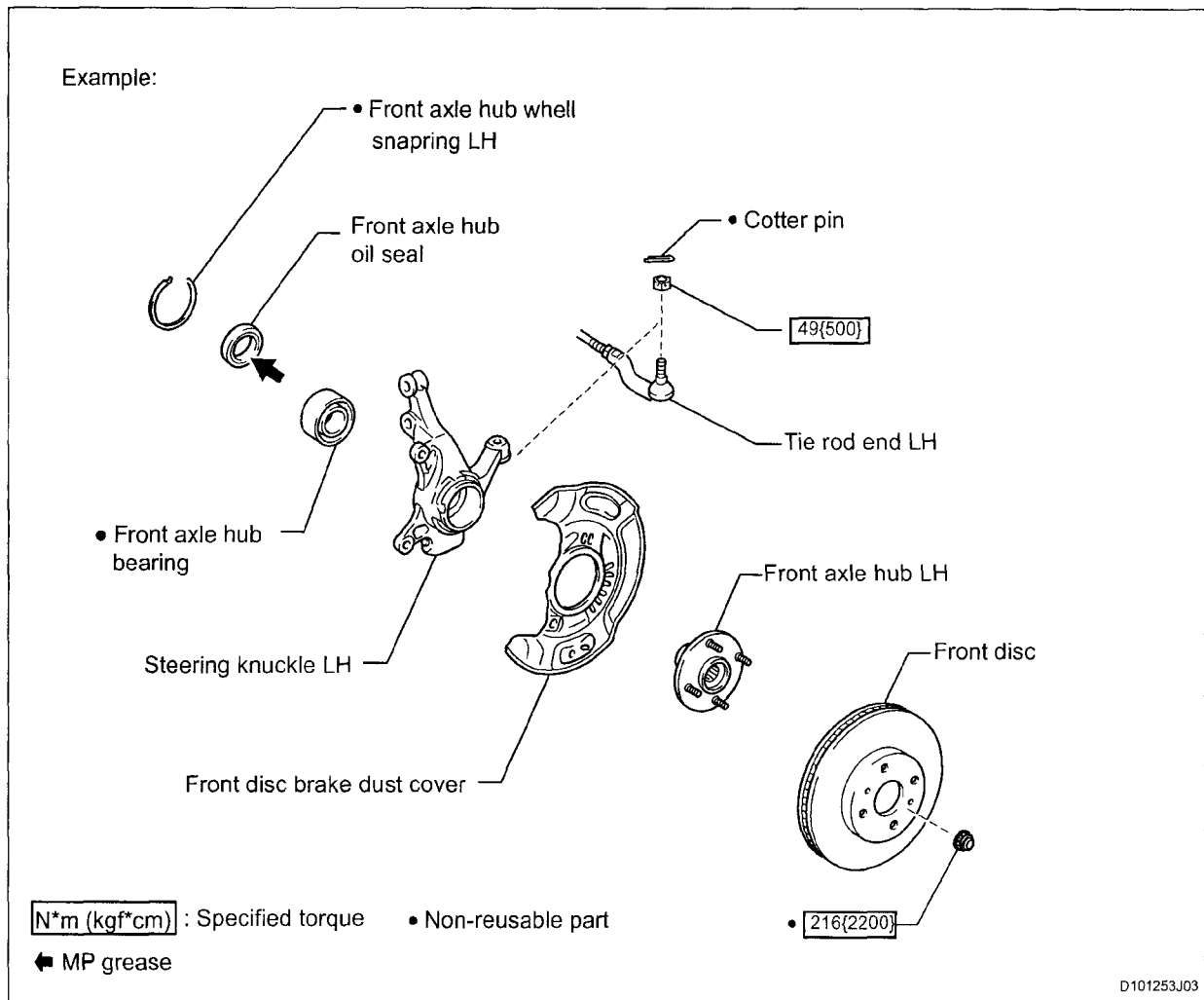


	GENERAL	01
	PREPARATION	02
	SERVICE DATA	03
ENGINE	ENGINE CONTROL	06
	ENGINE MECHANICAL	07
	FUEL	08
	EMISSION CONTROL	09
	EXHAUST	11
	COOLING	12
	LUBRICATION	13
	IGNITION	14
	STARTING	16
	CHARGING	17
TRANSMISSION / TRANSAXLE	AUTOMATIC TRANSAXLE	26
	CLUTCH	27
	MANUAL TRANSAXLE	29
DRIVELINE / AXLE	TRANSFER	33
	PROPELLER SHAFT	35
	DRIVE SHAFT	36
	DIFFERENTIAL	37
	AXLE	38
SUSPENSION	SUSPENSION	42
	TIRE & WHEEL	43
BRAKE	BRAKE CONTROL	44
	BRAKE	45
	PARKING BRAKE	46
STEERING	STEERING COLUMN	48

	POWER STEERING	49
AIR CONDITIONING	AIR CONDITIONER	52
SRS AIRBAG & SEAT BELT	SRS AIRBAG	55
	SEAT BELT	56
BODY & ELECTRICAL	ENGINE IMMOBILIZER	58
	LIGHTING	60
	WIPER & WASHER	61
	DOOR LOCK	62
	METER	63
	AUDIO & VISUAL	64
	OTHER SYSTEM	73
	GLASS & WINDOW	75
	MIRROR	76
	INSTRUMENT PANEL	78
	SEAT	79
	BODY	80
	EXTERIOR	82
	INTERIOR	83
CONTROL SYSTEMS	MULTIPLEX COMMUNICATION	94
	CAN COMMUNICATION	95



(3) The torques, grease applying points, and nonreusable parts are indicated as key points of the procedure.

<CAUTION>

If the items above can be indicated with the illustration only, the block diagram describing the procedure is contained. Information on the torque and grease are also included in the illustration in that case.

(4) Procedural steps are shown for the items with the procedure only. The work part and content are indicated by the illustration and the text contains the detail work steps, the specified values and cautions.

(5) Some illustrations may be shared by similar vehicle types. Therefore, the details may be different from the actual vehicle.

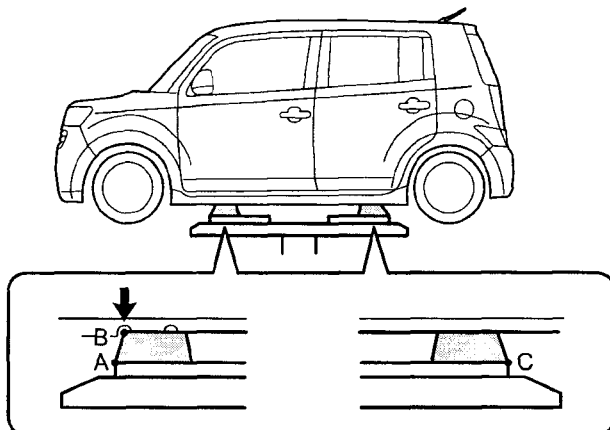
(4) Be sure to drive the vehicle in to the specified position.

Vehicle setting position in the horizontal direction	Drive the vehicle in the center of the lift.
Vehicle setting position in the anteroposterior direction	<ul style="list-style-type: none"> > Align the end of the plate cushion rubber to the bottom end of the attachment (A and C). > Adjust and align the top end of the attachment to the front notch of the rigid rack support position on the front side, avoiding contacting the rocker molding (B).

01

(5) Lift the vehicle until the tire is slightly lifted up and check if the vehicle is stable.

Plate lift :

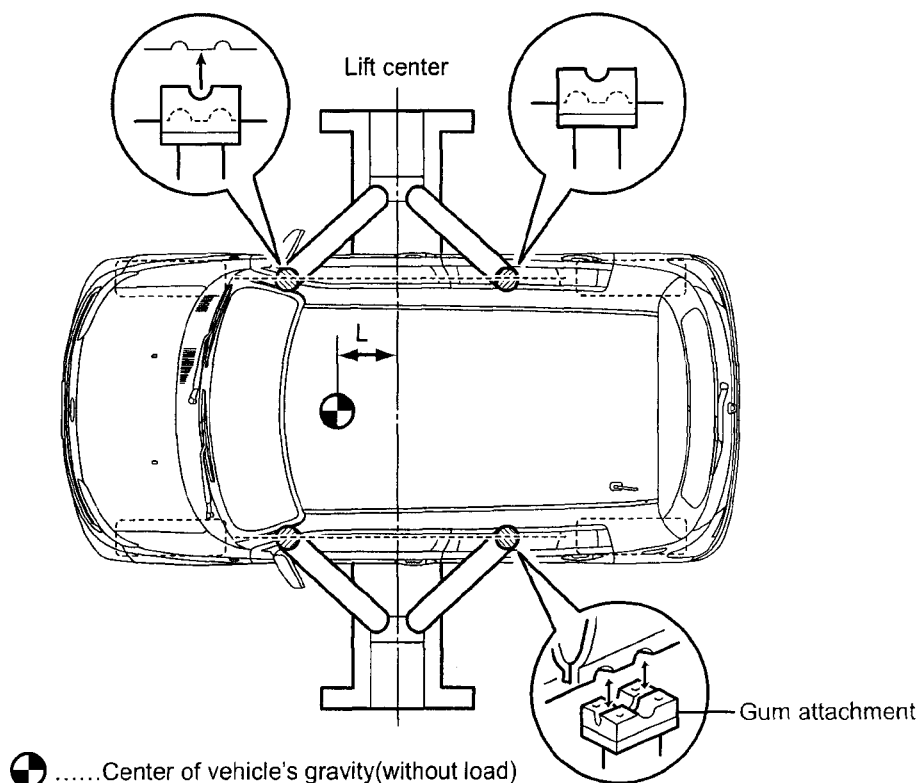


0

D101351J02

5. Cautions when the swing arm lift is used

Swing arm lift:



⊗Center of vehicle's gravity(without load)

D101849J01

- (1) Operate the lift safely according to the operation manual of the lift.
- (2) Use the support with rubber attachment as shown in the diagram.
- (3) Drive the vehicle in so that the lift center is as close to the vehicle center of gravity as possible (L is as short as possible).

TERMS


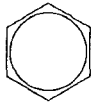
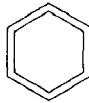
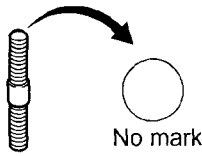
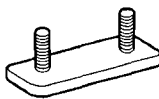




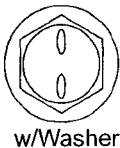


















DESCRIPTION OF ABBREVIATION

Abbreviation	Original word	Description
FF	Front-Engine Front-Wheel-Drive	Front-Engine Front-Wheel-Drive
2WD	Two Wheel Drive	Two wheel drive
4WD	Four Wheel Drive	Four wheel drive
ABS	Antilock Brake System	Antilock brake system
ABV	Air Bypass Valve	Air bypass valve
A/C	Air Conditioner	Air conditioner
ACC	Accessory	Accessories
ACV	Air Control Valve	Air control valve
A/F	Air-Fuel Ratio	Air-fuel ratio
AI	Artificial Intelligence	Artificial intelligence
ALT	Alternator	Alternator
AMP	Amplifier	Amplifier
ANT	Antenna	Antenna
API	American Petroleum Institute	American Petroleum Institute
ASSY	Assembly	Assembly
A/T	Automatic Transmission (Transaxle)	Automatic transmission, automatic transaxle
ATDC	After Top Dead Center	After top dead center
ATF	Automatic Transmission Fluid	Automatic transmission fluid
AV	Audio & Visual	Audio & Visual
+B	Battery Plus	Battery plus
BA	Brake Assist	Brake assist
BDC	Bottom Dead Center	Bottom dead center
BTDC	Before Top Dead Center	Before top dead center
BVSV	Bimetallic Vacuum Switching Valve	Bimetallic vacuum switching valve
CAN	Controller Area Network	Controller area network
CCD	Charge Coupled Device	Charge coupled device
CD	Compact Disc	Compact disc
CNG	Compressed Natural Gas	Compressed natural gas
CO	Carbon Monoxide	Carbon monoxide
CRT	Cathode-Ray Tube	Cathode-ray tube
CTR	Center	Center
CVT	Continuously Variable Transmission	Continuously variable transmission
DLC	Data Link Connector	Data link connector
DLI	Distributorless Ignition	Distributorless ignition
DSP	Digital Sound Processor	Digital sound processor
DTC	Diagnostic Trouble Code	Diagnostic trouble code
DVD	Digital Versatile Disc	Digital versatile disc
EBD	Electronic Brake force Distribution	Electronic brake force distribution
ECU	Electronic Control Unit	Electronic control unit
EGR	Exhaust Gas Recirculation	Exhaust gas recirculation system
ELR	Emergency Locking Retractor	Emergency locking retractor
EPS	Electronic Power Steering	Electronic power steering
ESA	Electronic Spark Advance	Electronic spark advance
EX	Exhaust	Exhaust
FL	Fusible Link	Fusible link
FP	Fuel Pump	Fuel pump
FR	Front	Front side (front)
GND	Ground	Ground
HC	Hydro Carbon	Hydro carbon
IC	Integrated Circuit	Integrated circuit

STANDARD BOLTS

HOW TO DETERMINE BOLT STRENGTH

03

Bolt types				Strength class
Hexagon bolt		Stud bolt	Welded bolt	
Standard recess bolt	Tape recess bolt			
<div></div> <div> No mark</div>	<div> No mark</div>	<div> No mark</div>	<div></div>	4T
<div></div> <div></div>	<div></div>			5T
<div></div> <div> w/Washer</div>	<div> w/Washer</div>	<div></div>		6T
<div></div> <div></div>	<div></div> <div></div>			7T
<div></div>	<div></div>	<div></div> <div></div>		8T
<div></div>	<div></div>			9T
<div></div>	<div></div> <div></div>			10T
<div></div>	<div></div> <div></div>			11T

D101882

OPERATION SETTINGS WHEN INSTALLING, REMOVING AND REPLACING PARTS

LIST OF WORK

1. List of replacement parts

Replacement parts	Necessary work	Phenomena before implementation / disabled functions
> Automatic transaxle assembly > Valve body assembly > Each solenoid	1. AT learning value initialization 2. AT initial learning	> Shift shock is great
> Brake actuator assembly [with ABS]	1. Test mode check	> ABS warning lamp on > ABS control prohibition or malfunction
> ABS & traction actuator assembly [with VSC] > Yaw rate sensor (built-in G sensor) [with VSC]	1. Test mode check	> Slip indicator lamp on > VSC warning lamp on > ABS warning lamp on > Buzzer sounding > VSC control prohibition or malfunction
> Steering column assembly (built-in torque sensor)	1. Initialization of torque sensor zero-point correction signal 2. Torque sensor zero-point correction	> Lateral difference in steering force > EPS warning lamp on > Torque sensor error diagnosis memory
> Power steering computer assembly	1. Torque sensor zero-point correction	> EPS warning lamp on > EPS control
> Engine control computer (engine ECU) > Transponder transmitter (main key, sub key)	1. Identification code registration	> Wireless function > Engine start
> Combination meter assembly	1. CAN communication destination information setting	> VSC warning lamp malfunction > ABS warning lamp malfunction > Slip indicator lamp malfunction > O/D OFF indicator lamp malfunction

03

2. AT learning value initialization

(1) Erase by DS-II

<HINT>

Mere removal of the battery does not automatically initialize learning values.

(a) Connect DS-II to DLC.

(b) Turn IG on (Do not start the engine).

(c) According to the instructions on the screen, use DS-II to go to the main menu [OBD] → [A/T] screen and select [DTC].

(d) Select [Clear] on the screen to initialize AT learning values.

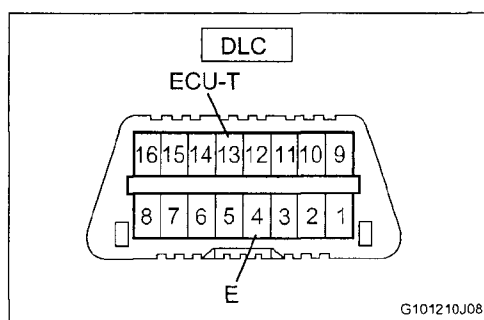
(e) Turn IG off.

(2) Erase by DLC short circuit

<HINT>

Mere removal of the battery does not automatically initialize learning values.

SST 09991-87403, 09991-87404



(a) Short-circuit between the terminals 13 (ECU-T) ↔ 4 (E) of DLC using SST.

<CAUTION>

Never confuse the short circuit positions. Otherwise a failure may occur.

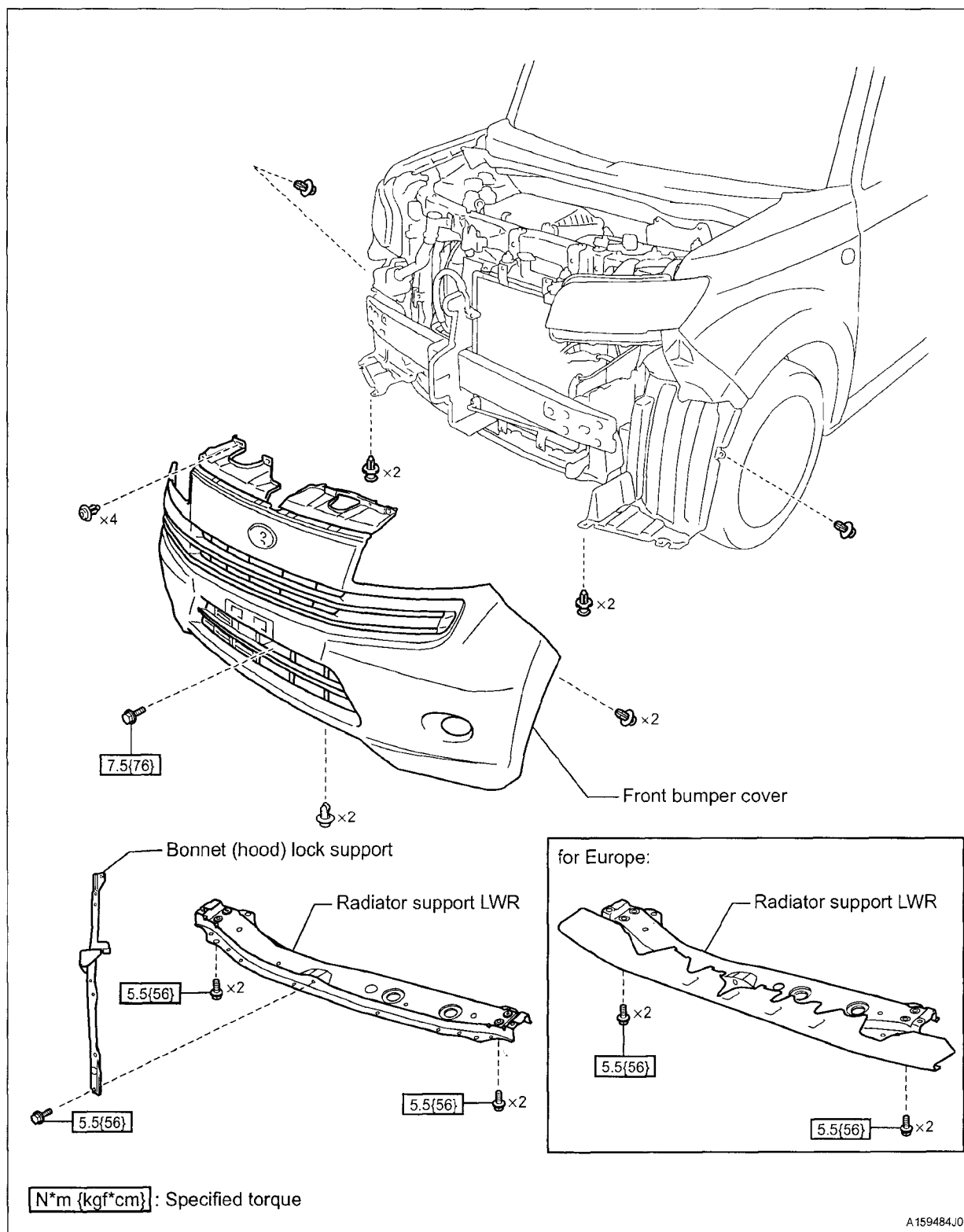
(b) Turn IG on (Do not start the engine). Step on the brake pedal within three seconds and hold it down until erasing is complete.

(c) Move the shift lever from P → R → P within one second (The whole operation of moving from P → R → P should be complete within one second).

PARTIAL ENGINE ASSEMBLY (3SZ-VE, K3-VE / FF)

COMPONENTS

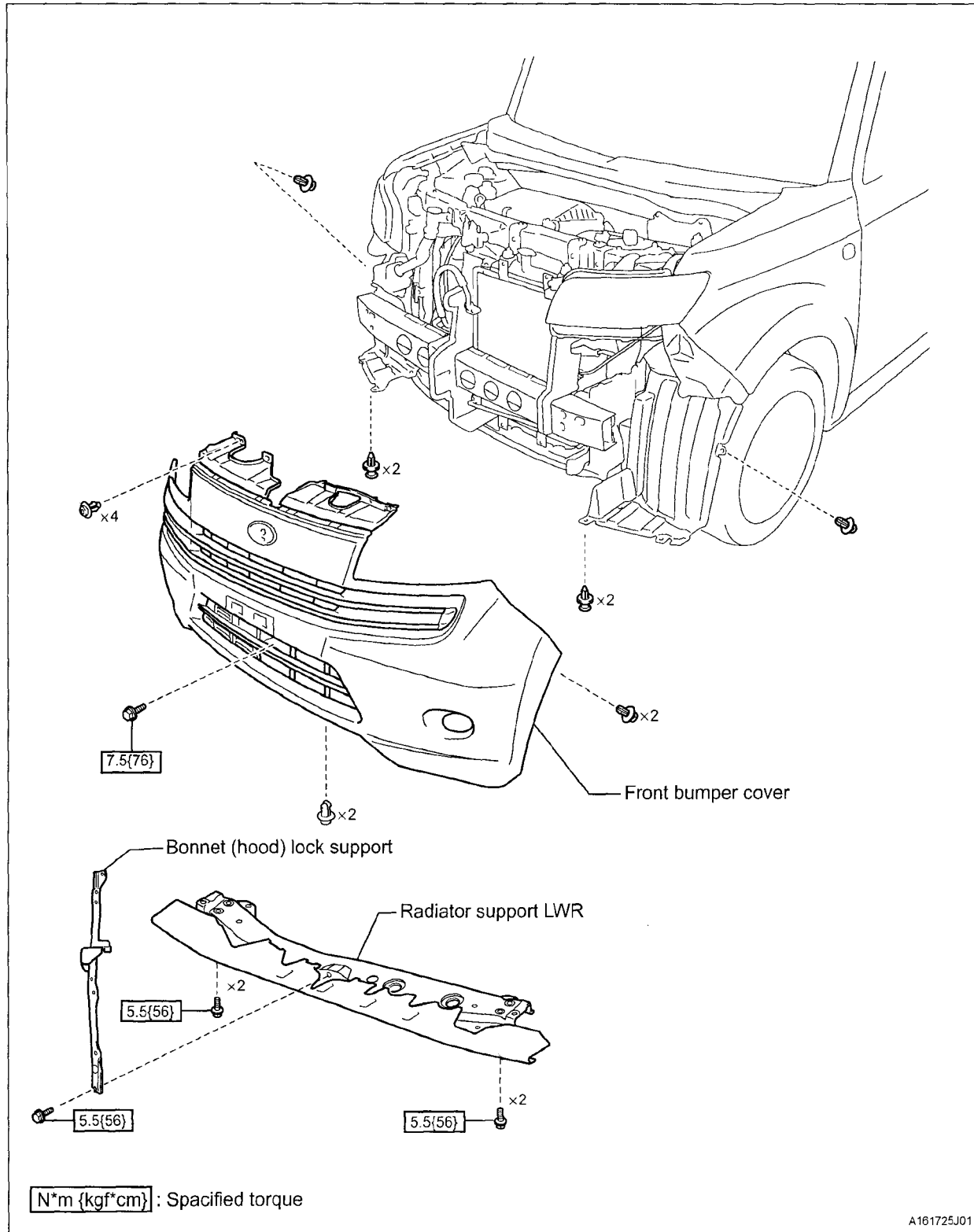
07



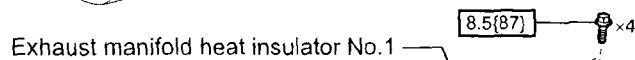
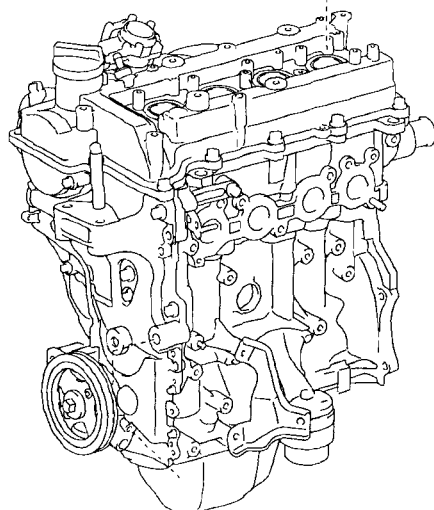
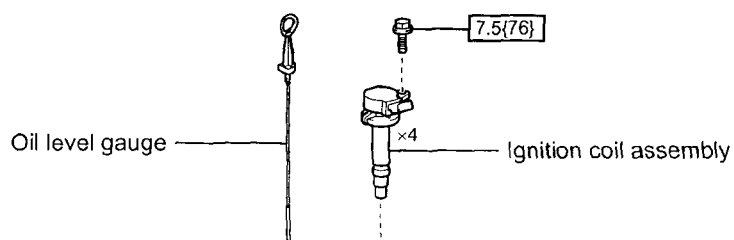
PARTIAL ENGINE ASSEMBLY (3SZ-VE / 4WD)

COMPONENTS

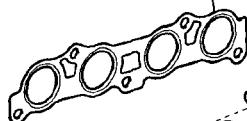
07



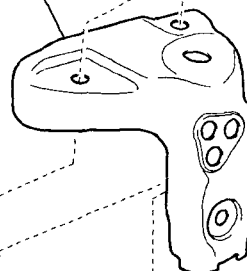
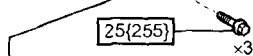
07



- Exhaust manifold two head gasket



Exhaust manifold converter



Manifold stay

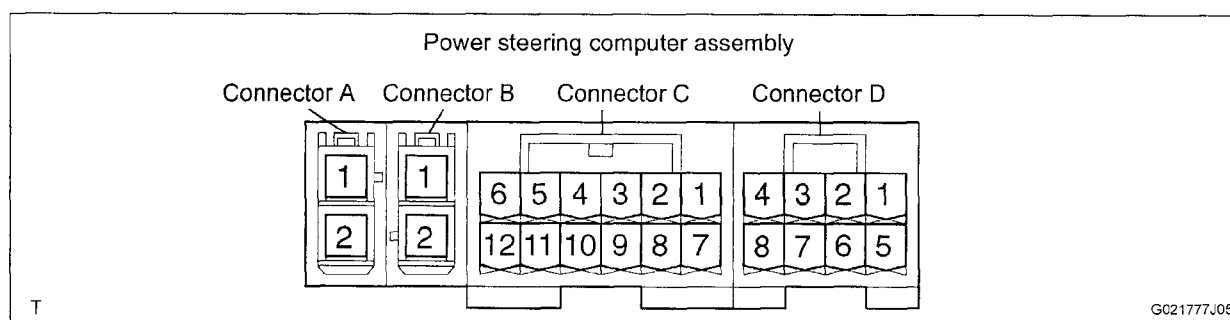


N*m {kgf*cm} : Specified torque

- Non-reusable part

REMOVAL

1. Fuel spill prevention work (See page 07-48)
2. Battery minus terminal disconnection
3. Cooling fluid drainage (See page 12-6)
4. Refrigerant HFC-134a (R134a) evacuate (with Air conditioning system) (See page 52-42)
5. Front tire removal
6. Engine oil drainage
7. Automatic transaxle fluid drainage (See page 26-102)
8. Exhaust pipe assembly FR removal (See page 11-15)
9. Battery hold down clamp removal (See page 07-48)
10. Radiator reserve tank assembly removal (See page 07-48)
11. Battery cover removal
12. Battery removal
13. Battery tray removal (See page 07-48)
14. Air cleaner cap removal
15. Air cleaner filter element removal
16. Vacuum sensor disconnection (See page 06-136)
17. Vacuum switching valve assembly (with Bracket) disconnection (RHD) (See page 06-136)
18. Vacuum switching valve assembly (with Bracket) disconnection (LHD) (See page 06-136)
19. Inlet air temperature sensor disconnection (See page 06-136)
20. Precleaner hose removal (See page 06-137)
21. Air cleaner assembly removal (See page 06-137)
22. Radiator inlet hose disconnection (See page 12-10)
23. Water bypass hose disconnection (See page 12-10)
24. Radiator outlet hose disconnection (See page 12-10)
25. With water fan assembly removal (See page 12-11)
26. Oil cooler outlet hose removal (See page 26-98)
27. Oil cooler inlet hose removal (See page 26-98)
28. Heater inlet water hose disconnection (RHD) (See page 52-73)
29. Heater inlet water hose disconnection (LHD) (See page 52-164)
30. Heater outlet water hose disconnection (RHD) (See page 52-73)
31. Heater outlet water hose disconnection (LHD) (See page 52-164)
32. Front bumper cover removal (See page 82-5)
33. Fan & alternator V belt removal (See page 07-6)
34. Cooler refrigerant suction hose No. 1 disconnection (with Air conditioning system) (See page 52-131)
35. Cooler refrigerant discharge hose No. 1 disconnection (with Air conditioning system) (See page 52-136)
36. Compressor assembly with magnet clutch removal (with Air conditioning system) (See page 52-131)
37. Cooler refrigerant liquid pipe A disconnection (with Air conditioning system) (See page 52-136)
38. Radiator assembly removal (See page 07-49)
39. Fuel hose disconnection (See page 07-49)
40. Accelerator control cable assembly disconnection (RHD) (See page 07-50)
41. Accelerator control cable assembly disconnection (LHD) (See page 07-50)
42. Ground cable disconnection (See page 07-51)
43. Vacuum hose assembly disconnection (See page 07-51)
44. Engine room main wire disconnection (See page 07-51)
45. Engine wire disconnection (See page 07-51)
46. Steering column hole cover No.1 removal (RHD) (See page 48-6)
47. Steering column hole cover No.1 removal (LHD) (See page 48-15)



Connector A

Terminal number	Terminal symbol	Input/output	Measuring item	Measuring condition	Reference
1	BAT + (Motor power) ↔ Body earth	Input	Voltage	IG ON	10 - 16 V
2	GND (Power GND) ↔ Body earth	-	Electrical continuity	Always	With electrical continuity

Connector B

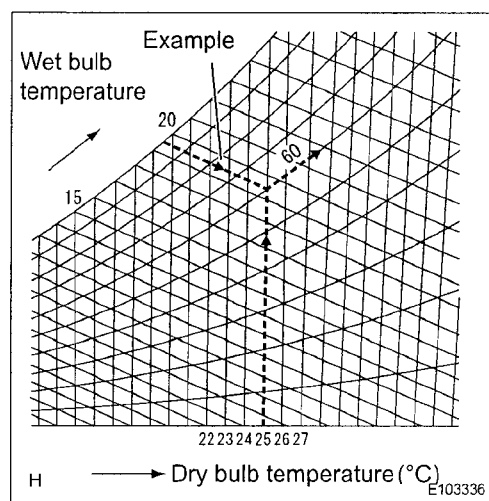
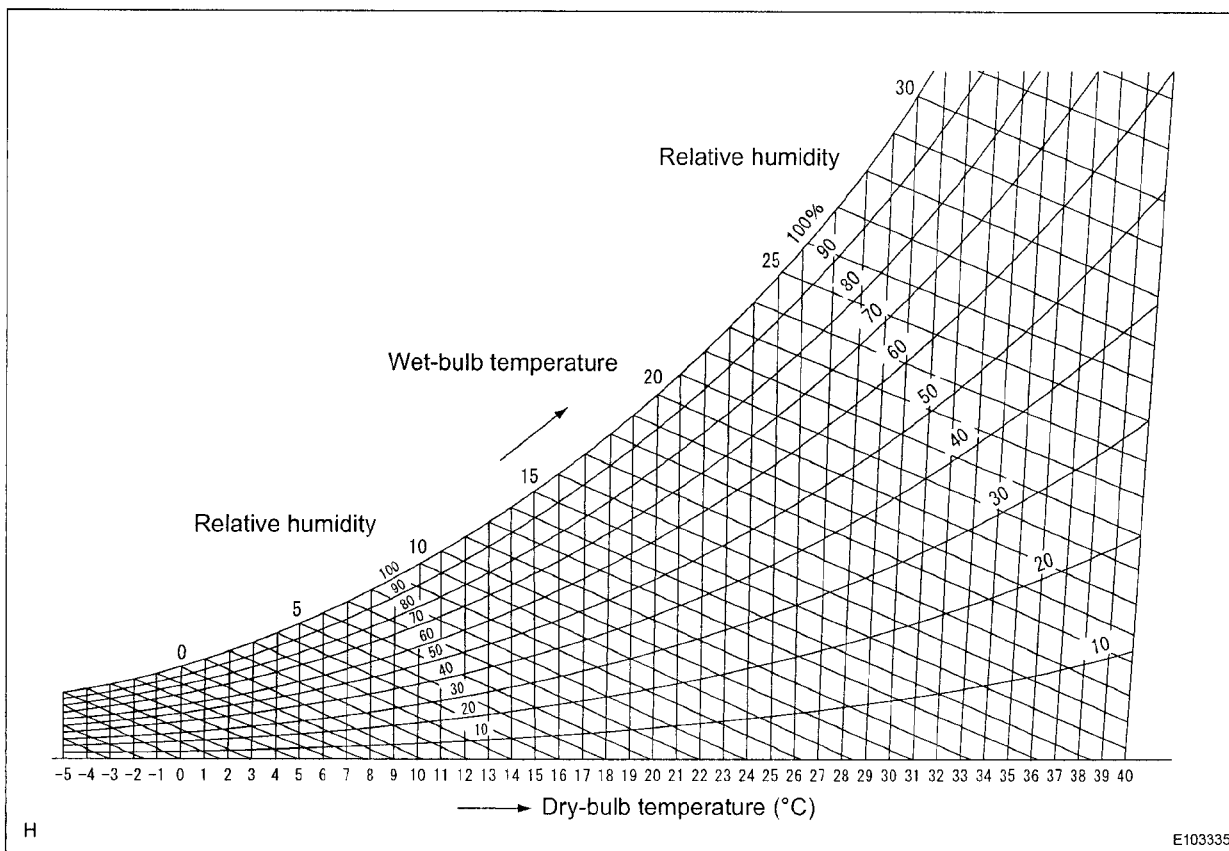
Terminal number	Terminal symbol	Input/output	Measuring item	Measuring condition	Reference
1	M1 (Motor output 1) ↔ Body earth	Output	Voltage	Steering wheel left turn ↔ right turn	Voltage drop ↔ Voltage rise
2	M2 (Motor output 2) ↔ Body earth	Output	Voltage	Steering wheel left turn ↔ right turn	Voltage rise ↔ Voltage drop

Connector C

Terminal number	Terminal symbol	Input/output	Measuring item	Measuring condition	Reference
2	SIO (Diagnosis communication signal) ↔ Body earth	Input/output	Waveform	Communication is established by connecting DS-II to DLC.	Pulse generation (Waveform 1)
4	T (Diagnosis signal) ↔ Body earth	Input	Voltage	IG ON Short-circuit between ECU-T ↔ E terminals in DLC	2 V or less
				IG ON Open-circuit between ECU-T ↔ E terminals in DLC	9 - 16 V
5	SPD (Vehicle speed signal) ↔ Body earth	Input	Waveform	When the vehicle is driving	Pulse generation (Waveform 2)
6	IG (IG power) ↔ Body earth	Input	Voltage	IG ON	10 - 16 V
8	IDUP (Idle-up request signal) ↔ Body earth	Output	Voltage	EPS is in operation No steering → Steering with vehicle at rest	9 - 16 V → 2 V or less
9	W (EPS warning lamp lights up Signal) ↔ Body earth	Output	Voltage	IG OFF → IG ON	When lamp is on: 2 V or less When lamp is off: 9 - 16 V
11	TEST (Test mode terminal) ↔ Body earth	Input	Voltage	IG ON Short-circuit between EPS-TS ↔ E terminals of DLC	2 V or less
				IG ON Open-circuit between EPS-TS ↔ E terminals of DLC	9-16 V
12	REV (Engine revolution signal) ↔ Body earth	Input	Waveform	Engine is in rotation	Pulse generation (Waveform 3)

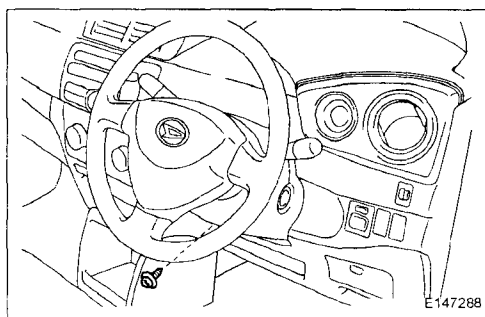
Connector D

Terminal number	Terminal symbol	Input/output	Measuring item	Measuring condition	Reference
5	TRQ1 (Torque sensor signal 1) ↔ Body earth	Input	Voltage	1. Steering neutral position 2. Steering right turn 3. Steering left turn	1. 2.2 - 2.8 V 2. 2.2 - 4.85 V 3. 0.15 - 2.8 V
6	TRQV (Torque sensor power) ↔ Body earth	Input	Voltage	IG ON	7.5 - 8.5 V

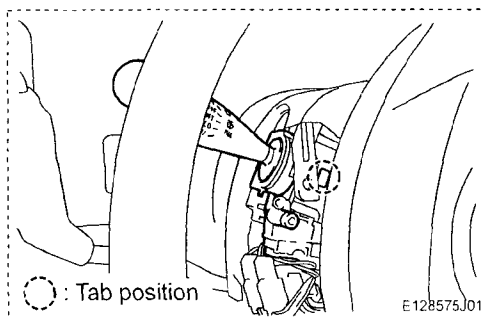


(a) As an example of how to calculate the relative humidity, take a case where the dry-bulb temperature of the thermometer placed at the air inlet is 25 °C and the wet-bulb temperature is 19.5 °C. In this case, the intersection of the dotted lines in the diagram is the relative humidity, which stands at 60%.

- (7) Check the cooling performance by applying the difference between the measured inlet temperature and outlet temperature and the relative humidity to the standard performance table.



3. Steering gear column lower cover removal
 - (1) Remove the screw at the lower portion, and remove the steering column lower cover.



4. Remove the windshield wiper switch assembly.
 - (1) Disconnect the connector.

<HINT>

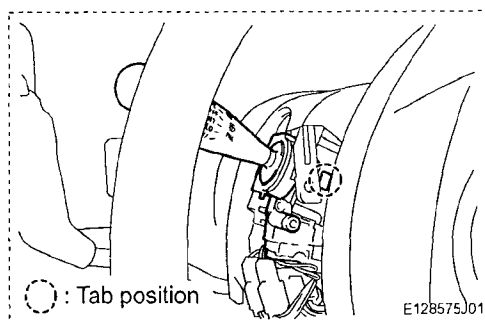
For LHD vehicles and RHD vehicles for Europe, remove the one at the right side.
 - (2) As shown in the figure, push the tab to release the fit. Remove the windshield wiper switch assembly.

61

INSTALLATION

<HINT>

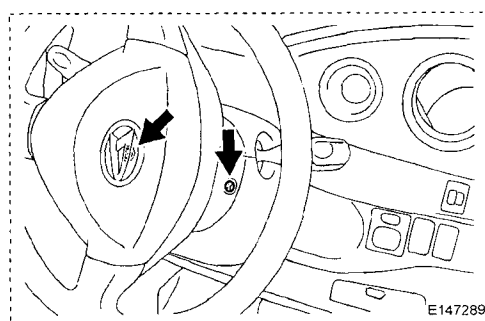
This procedure is for RHD vehicles for regions other than Europe. The same procedure is applied to LHD vehicles and RHD vehicles for Europe except specifically noted otherwise.



1. Windshield wiper switch assembly installation
 - (1) Insert the windshield wiper switch assembly until the tab fits.

<HINT>

For LHD vehicles and RHD vehicles for Europe, attach the one at the left side.
 - (2) Connect the connector.



2. Steering column lower cover installation
 - (1) Attach the steering column lower cover with a screw.

REMOVAL

1. Battery minus terminal disconnection

<HINT>

Before disconnecting the battery minus terminal, set the parking brake and shift to neutral position.

2. Instrument panel finish panel LWR CTR removal (RHD) (See page 78-17)

3. Instrument cluster finish panel LWR CTR removal (RHD) (See page 52-44)

4. Air mix damper control cable disconnection (RHD) (See page 52-44)

5. Defroster damper control cable disconnection (RHD) (See page 52-44)

6. Air inlet damper control cable disconnection (RHD) (See page 52-45)

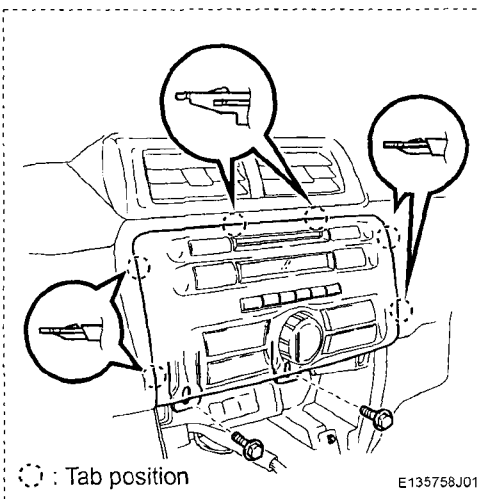
7. Instrument cluster finish panel LWR CTR removal (LHD) (See page 52-51)

8. Stereo component tuner assembly removal

(1) Remove the 2 bolts.

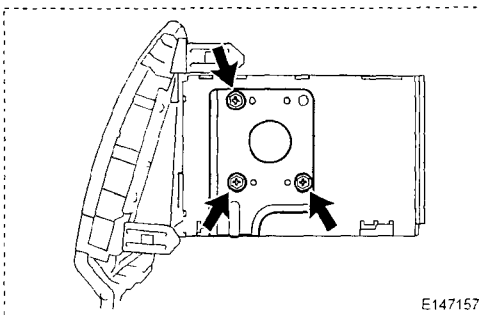
(2) Remove the 6 tab fittings.

(3) Detach the connector and remove the stereo component tuner assembly.



9. Radio bracket No. 2 removal

(1) Remove the 3 screws and then the radio bracket No. 2.



10. Radio bracket No. 2 removal

(1) Remove the 3 screws and then the radio bracket No. 2.

