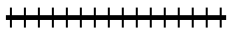
A GENERAL INFORMATION

1 HOW TO READ BODY REPAIR MANUAL

1-1 HOW TO READ SYMBOLS

The following symbols are used in the section of the body panel replacement of this body repair manual.

Symbol	Contents of operation
	Cut
	Removal of brazing or arc brazing
	Spot welding position
	Plug welding position
	Butt welding or fillet welding
	Brazing

1-2 RANGE OF EXPLANATION OF REPAIR WORK

This manual explains the body panel replacing procedure for vehicles having a white body.

In this manual, no explanation is made for the removal/installation procedure for equipment which will be necessary before the vehicle has the white body as well as assembling, check and adjustment for equipment after the body panel has been replaced.

1-3 ARTICLES TO BE PREPARED

When SST, tool, measuring instrument, a sort of fat and oil to be prepared before operation are necessary, those are described by compiling in the table as preparation tools at the beginning of each item. However, the general tools, jacks, fixtures as considered being equipped always at the service shop are usually omitted.

1-4 CONTENTS NOT DESCRIBED IN THIS MANUAL

The description of the next elemental operation may omit in this service manual, but please perform in an actual operation.

1. Jacking operation and lifting operation.
2. Cleaning and cleansing of removed parts to perform at need.
3. Visual inspection.
4. Basic check and adjustment after installation

1-5 DEFINITION OF TERMS

SPECIFIED VALUE	This refers to the allowable range at the time of checks and adjustments.
ALLOWABLE LIMIT	This refers to the maximum or minimum value that should not be exceeded at the time of checks and adjustments.
DEVIATION	This refers to the difference between the maximum gap and minimum gap.
WARNING	This section describes an operation procedure that could cause human injuries.
CAUTION	This section describes an operation procedure that could damage the vehicle and parts if adequate care is not paid.
NOTES	This section describes supplementary information that facilitates the operation. This section is separated from the text. This section may also indicate specified values in a simple measurement, in which the measurement to determine the specified value is difficult and most likely no malfunction may take place.

2 ABBREVIATION CODES

The abbreviation codes that appear in this manual stand for the following, respectively.

ABBREVIATION CODE	ORIGINAL WORD	ABBREVIATION CODE	ORIGINAL WORD
2WD	Two Wheel Drive	LHD	Left Hand Drive
4WD	Four Wheel Drive	LIN	Local Interconnect Netwark
ABS	Anti-lock Brake System	LSPV	Load Sensing Proportioning Valve
ABV	Air Bypass Valve	LWR	Lower
A/C	Air Conditioner	MIL	Malfunction Indicator Lamp
ACC	Accessory	MP	Multipurpose
API	American Petroleum Institute	M/T	Manual Transmission
A/T	Automatic Transmission	N/A	Natural Aspiration
ATDC	After Top Dead Center	NOx	Nitrogen Oxides
ATF	Automatic Transmission Fluid	OPT	Option
Ay	Assembly	O/D	Overdrive
BDC	Bottom Dead Center	O/S	Oversize
BTDC	Before Top Dead Center	PCV	Positive Crankcase Ventilation
BVSV	Bimetal Vacuum Switching Valve	PR	Ply Rating
CAN	Controller Area Network	PTO	Power Take Off
CD	Compact Disc	RH	Right Hand
CO	Carbon Monoxide	RHD	Right Hand Drive
DLC	Data Link Connector	RR	Rear
DLI	Distributor Less Ignition	S/A	Sub-Assembly
DTC	Diagnostic Trouble Code	SAE	Society of Automotive Engineers
DVVT	Dynamic Variable Valve Timing	SRS	Supplemental Restraint System
EBD	Electronic Brake force Distribution	SST	Special Service Tool
ECU	Electronic Control Unit	STD	Standard
EFI	Electronic Fuel Injection	SW	Switch
EGR	Exhaust Gas Recirculation System	T	Torque
EPS	Electronic controlled Power Steering	T/C	Turbocharger
ESA	Electronic Spark Advance	TDC	Top Dead Center
EX	Exhaust	UPR	Upper
F/L	Fusible Link	U/S	Undersize
FR	Front	VCV	Vacuum Control Valve
GND	Ground	VSV	Vacuum Switching Valve
HC	Hydro Carbon	VTV	Vacuum Transmitting Valve
IG	Ignition	W/	With
IN	Intake	WVTA	Whole Vehicle Type Approval
ISC	Idle Speed Control	Ⓑ	Bolt
ISO	International Organization for Standardization	Ⓢ	Screw
ITC	Integrated timing controller	Ⓝ	Nut
LCD	Liquid Crystal Display	Ⓦ	Washer
LED	Light Emitting Diode	Ⓒ	Clip
LH	Left Hand		

3 UNIT

As for the units, the SI units (international unit system) have been posted. (The hitherto employed units, too, are posted.)

Example: 33.25±13.25N·m{340±135kgf·cm}

3-1 NEW UNIT BECAUSE OF THE INTRODUCTION OF THE SI UNIT

SI unit is the international unit system established by aiming to proceed the communication in technology smoothly by unifying the former unit system which were different internationally each other into one value by one unit. The specification value is described in accordance with SI unit system in this service manual.

Item	SI unit	Conventional units	Conversion table
Force	N	kgf	1 kgf = 9.80665N
Torque	N·m	kgf·cm	1 kgf·cm = 0.0980665N·m
Spring constant	N/mm	kgf/mm	1 kgf/mm = 9.80665N/mm
Pressure	Pa	kgf/cm^2	1 kgf/cm^2 = 98.0665kPa
		mmHg	1 mmHg = 0.133322kPa

3-2 PREFIX USED IN SI UNIT

The following are typical prefixes used in SI unit. (10 to the power of n)

M	10^6
K	10^3
h	10^2
da	10^1
d	$10^{-1}=0.1$
c	$10^{-2}=0.01$
m	$10^{-3}=0.001$
μ	$10^{-6}=0.000001$

4 TIGHTENING TORQUE

4-1 DETERMINING PROCEDURE FOR TIGHTENING TORQUE FOR GENERAL STANDARD BOLTS AND NUTS

4-1-1 DETERMINING PROCEDURE FOR TIGHTENING TORQUE FOR BOLTS

First, determine the strength division of the bolt from the table below. Then, find out the tightening torque for that bolt, using the tightening torque table.

4-1-2 DETERMINING PROCEDURE FOR TIGHTENING TORQUE FOR NUTS

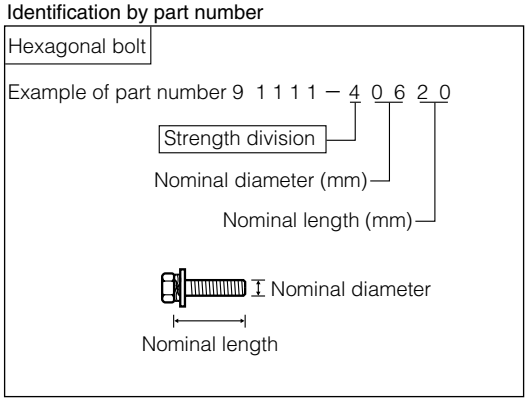
Find out the tightening torque for nuts in the same way as with the procedure given above, based on the mating bolts.

4-1-3 IDENTIFICATION

Identification of strength division by checking bolts themselves

Classification (Strength division)	Shape of head (how to know strength division)	
	Bolt without collar	Bolt with collar
4 T		
5 T		——
6 T	—— ——	
7 T		——

Identification by part number



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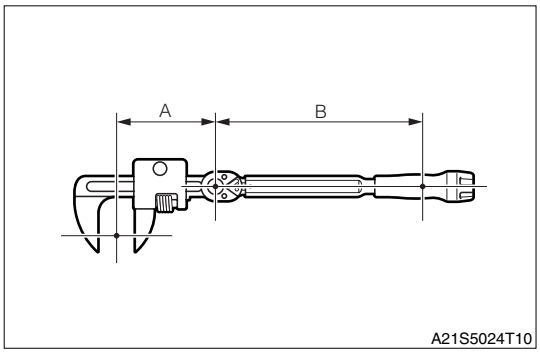
4-1-4 TIGHTENING TORQUE TABLE FOR GENERAL STANDARD BOLTS

Strength division	Nominal diameter (mm)	Pitch (mm)	Standard tightening torque (N·m{kgf·cm})	
			Bolt without collar	Bolt with collar
4 T	6	1.0	5.4 {55}	5.9 {60}
	8	1.25	13 {130}	14 {145}
	10	1.25	25 {260}	28 {290}
	12	1.25	47 {480}	53 {540}
	14	1.5	74 {760}	83 {850}
	16	1.5	113 {1150}	—
5 T	6	1.0	6.4 {65}	—
	8	1.25	16 {160}	—
	10	1.25	32 {330}	—
	12	1.25	59 {600}	—
	14	1.5	91 {930}	—
	16	1.5	137 {1400}	—
6 T	6	1.0	7.8 {80}	8.8 {90}
	8	1.25	19 {195}	20.5 {210}
	10	1.25	39 {400}	43 {440}
	12	1.25	72 {730}	79 {810}
	14	1.5	109 {1100}	123 {1250}
7 T	6	1.0	11 {110}	12 {120}
	8	1.25	25 {260}	28 {290}
	10	1.25	52 {530}	58 {590}
	12	1.25	95 {970}	103 {1050}
	14	1.5	147 {1500}	167 {1700}
	16	1.5	225 {2300}	—

4-1-5 WHEN AN EXTENSION TOOL IS USED

1. When tightening with the SST or a tool connected to the torque wrench for a drive-end extension, a higher tightening torque will result, if tightened until the reading on the torque wrench indicates the specified torque.
2. This manual contains specified torques only. When using the SST or an extension tool, the torque wrench reading must be computed using the following formula.
3. Calculation formula: $T' = T \times B / (A + B)$

Codes	Meaning	Unit
T′	Torque wrench reading	N·m{kgf·cm}
T	Specified tightening torque	N·m{kgf·cm}
A	Length of the SST or a tool	cm
B	Torque wrench length	cm



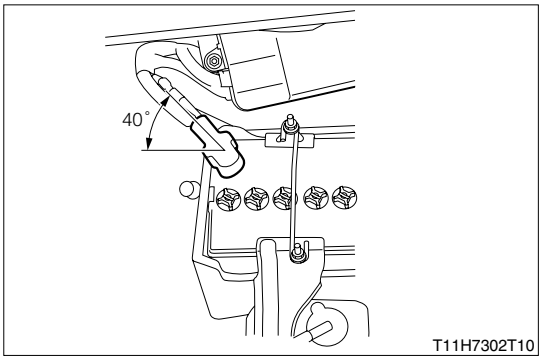
5 GENERAL SERVICE INSTRUCTION

5-1 JACK UP OR LIFT UP

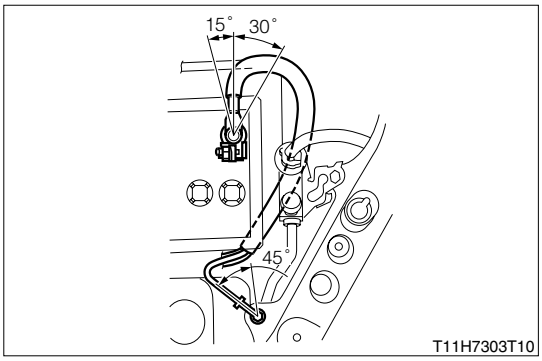
1. When only front section or rear section of a vehicle is jacked up, be sure to place chocks at the wheels so as to insure safe operations.
2. When the vehicle has been jacked up, be sure to support the vehicle at the specified section using the safety stands.
3. When the vehicle has been lifted up, be sure to set the cradle of the lift at the specified location, and lift it up. And after the jacking up, ensure to apply the protective safety device. And after the jacking up, ensure to apply the protective safety device.

5-2 INSTALLATION AND REMOVAL OF BATTERY TERMINAL

1. Disconnect the battery negative (-) terminal prior to repairing the electrical system, mounting/dismounting the engine, etc.
2. When connecting/disconnecting the battery terminal, turn the IG switch to "OFF" (LOCK position), and loosen the terminal nut completely. Do not pry the battery terminal off.
3. When the battery terminal is removed, clock, radio setup and the memory of diagnosis will be erased. Record the contents of the memory before disconnecting the battery terminal so that it can be restored as required after the work is complete.
4. When connecting the battery terminal, connect the positive (+) terminal first so that that the terminal wire will be placed in the marked area of the illustration, and tighten to the specified torque.
   TIGHTENING TORQUE: 6.35±1.45N·m
   {65±15kgf·cm}



5. When connecting the battery negative (-) terminal, connect the terminal so that that the terminal wire will be placed in the marked area of the illustration, and tighten to the specified torque.
   TIGHTENING TORQUE: 6.35±1.45N·m
   {65±15kgf·cm}
6. Securely install the cover, etc. on the terminal after work is complete.



5-3 CONNECTING/DISCONNECTING THE EARTH

1. When the earth was removed, check that the earth is securely in place and then turn "ON" the IG switch.

5-4 REPAIRING OF FUEL SYSTEM

1. Do not work near open flames.
2. Be certain to place a suitable container, a cloth, etc. under the connected section of the fuel line before disconnecting the fuel line.
3. Before the fuel line is disconnected, be sure to release the inner pressure of the fuel tank by detaching the fuel filler cap.
4. Be sure to prevent the fuel from splashing with a cloth or the like, when the union bolt or other connected section of the fuel line is loosened or slackened.
5. Tighten each connecting section to the specified torque.
6. Attach the specified clips to each connecting section.

5-5 USE OF THE SST

1. Utilize the SST (Special service tool) effectively in order to improve efficiency and accuracy of work operation.

5-6 REMOVAL, DISASSEMBLY

1. In case for the operation at the complicate place, the stamping and mating mark shall be put at the place where there is no influence to the function, so that the assembling operation becomes easy.
2. At every time when each parts are removed, check the condition when it was assembled, deformation, breakage, roughness and existence of scratch.
3. Arrange the removed parts in order, and divide them to the parts to replace and parts to reuse.
4. Each parts to be reused shall be performed enough cleaning and cleansing operation.

5-7 CHECK AND MEASUREMENT OF PARTS

1. As regards those parts to be used again, perform thorough checks and measurements, as required.

5-8 INSTALLATION, ASSEMBLING

1. Assemble the good parts with correct procedure following the specified standard (Value for the adjusting, tightening torque).
2. Use the genuine parts when replace the parts.
3. Ensure to apply the seal packing and grease by a place.
4. Ensure to use new packing, gasket or the like, cotter pin etc.
5. When use the seal bolt, apply the specified liquid gasket and seal lock agent on.
6. As for bolts and nuts, use the specified ones. Unless otherwise specified, the side for which the torque is indicated should be tightened to the specified torque, using a torque wrench. If there is no means to prevent the turning at the opposite side, be sure to prevent turning with box wrenches, spanners or the like.

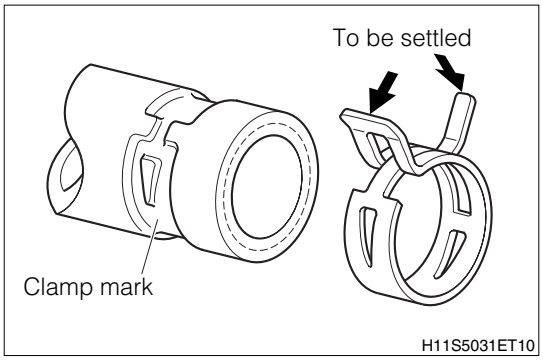
5-9 ADJUSTMENT, OPERATION CONFIRMATION

1. Adjust with the specified service standard value by using the gauge and the tester.

5-10 HANDLING OF HOSE OR THE LIKE

1. Check the plug depth and clamp position before removing the hose.
2. When re-using the hose, install the clamps so that they match the clamp marks remaining on the hose.

   CAUTION
   - Replace the clamps if they are deformed or flattened.
   - Replace the hose a new one if the hose has a loose fitting with the joint.
3. Ensure that the spring type clamp is properly seated after installation.
4. Ensure to insert the fuel hose, water hose or the like without coming out or leakage.
5. Be careful that fuel shall not splash on the parts near by when remove the fuel hose. (Deep care shall be paid for engine mount rubber or the like, as there may be possibility to get material deterioration for liquid of gasoline series.)



5-11 TOUCH UP

1. When removed the bolt or the like during body fitting operation and others, the scratch of the paint finishing surface on the body and bolt shall be repaired by the body color.

6 SUPPORTING POINTS FOR JACKS AND SAFETY STANDS

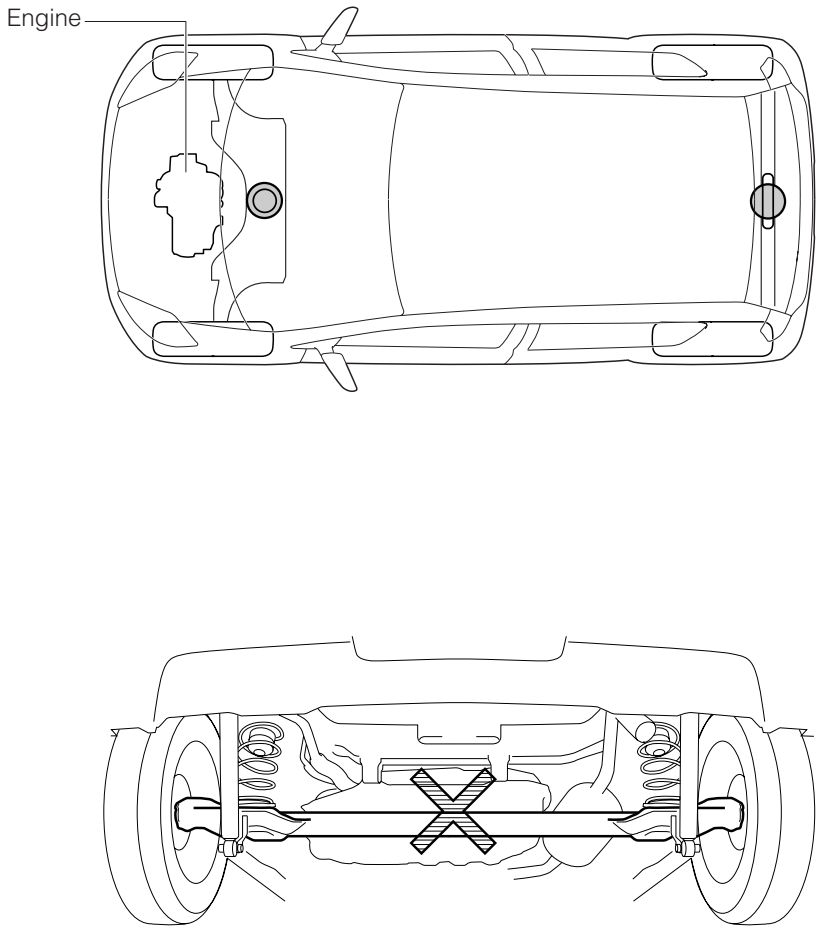
● Jack supporting point

Front side: Front suspension member center protruding section

Rear side: Rear floor cross member center section

CAUTION

- Do not jack up the rear suspension center beam portion.
  Deformation and/or damage to the beam might cause controllability problems.



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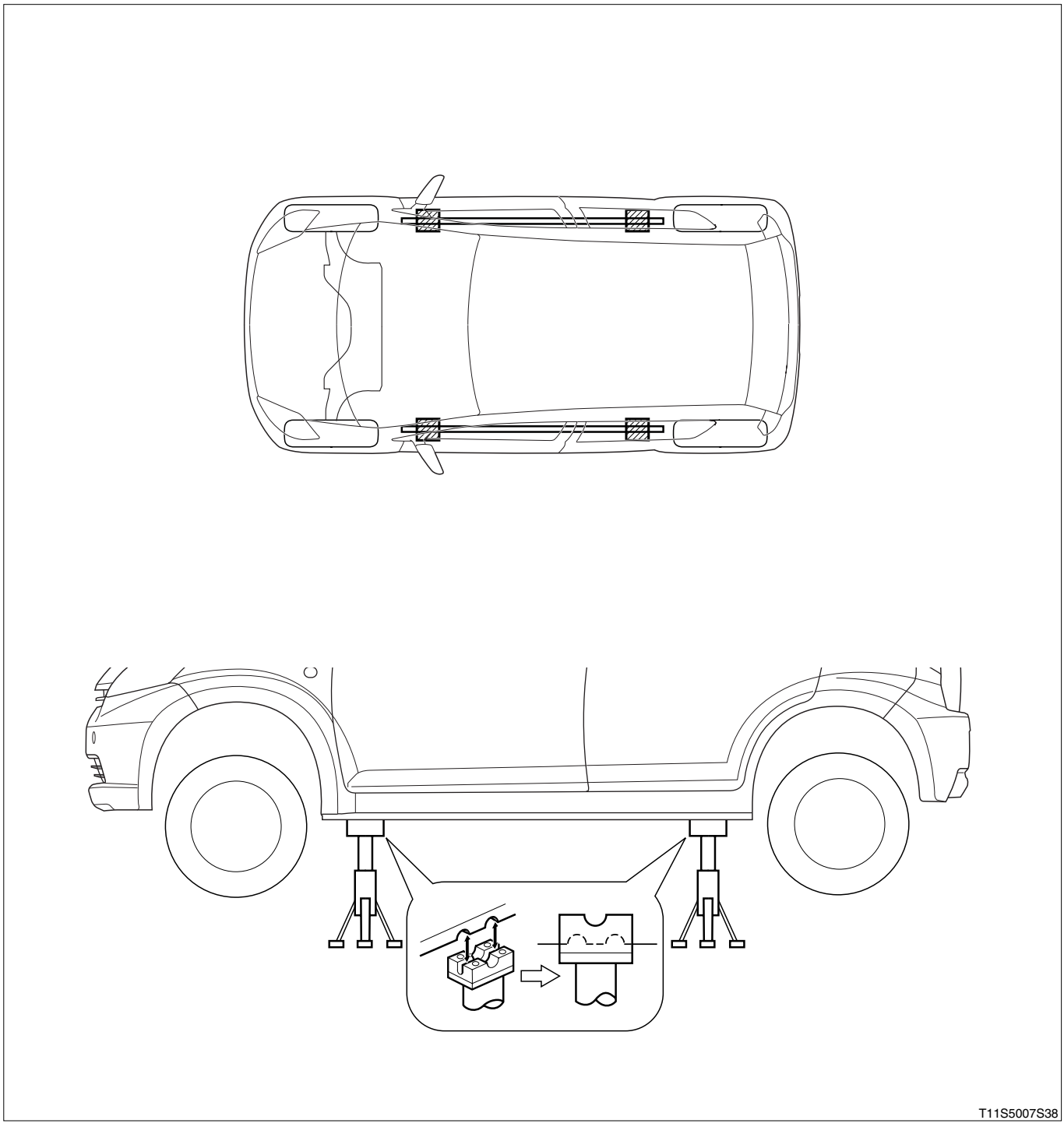
- Rigid rack supporting points

Support 4 locations, namely front, rear, right and left as shown in the illustration below.

CAUTION

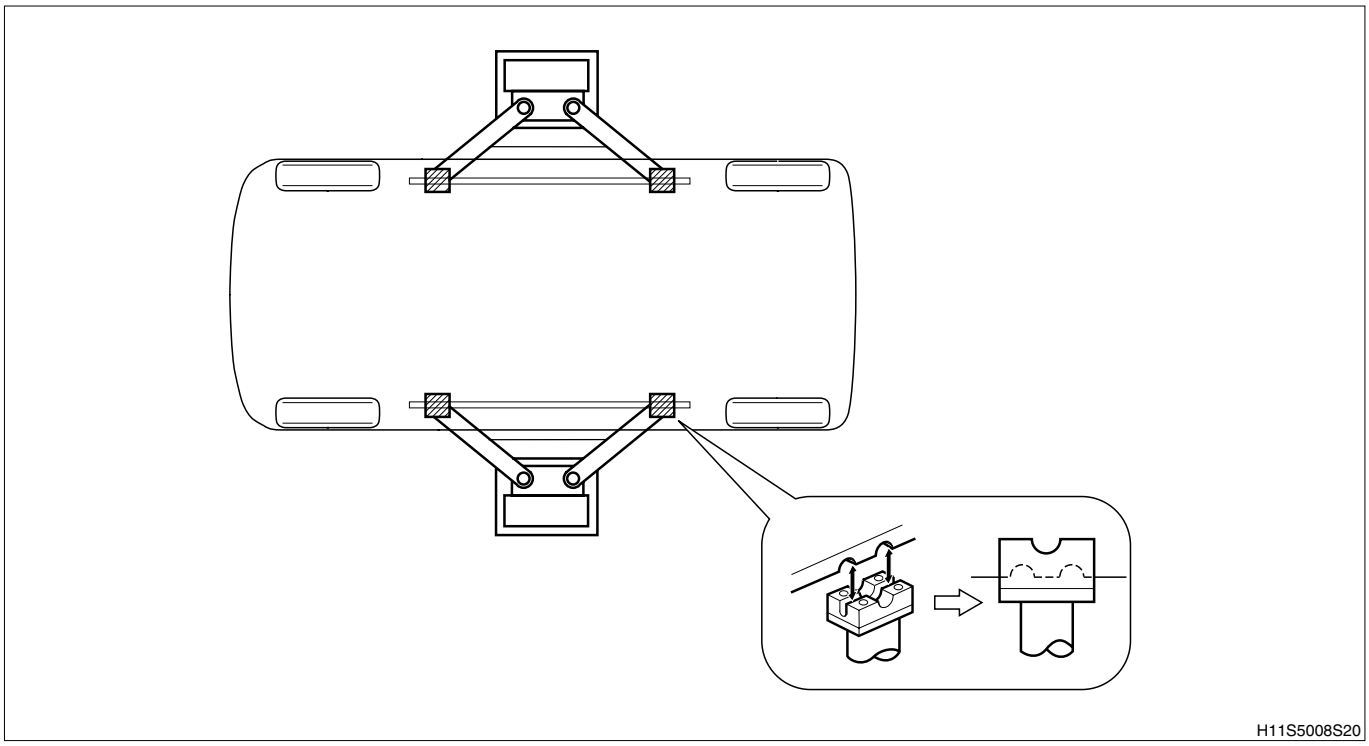
- The spot welded reinforcement plate provides adequate strength to the supporting points. Therefore, do not support the vehicle at points other than these supporting points.



7 SUPPORTING POINTS OF LIFTS

● Swing Arm Type

Match the lift supports with the rigid rack supporting points.



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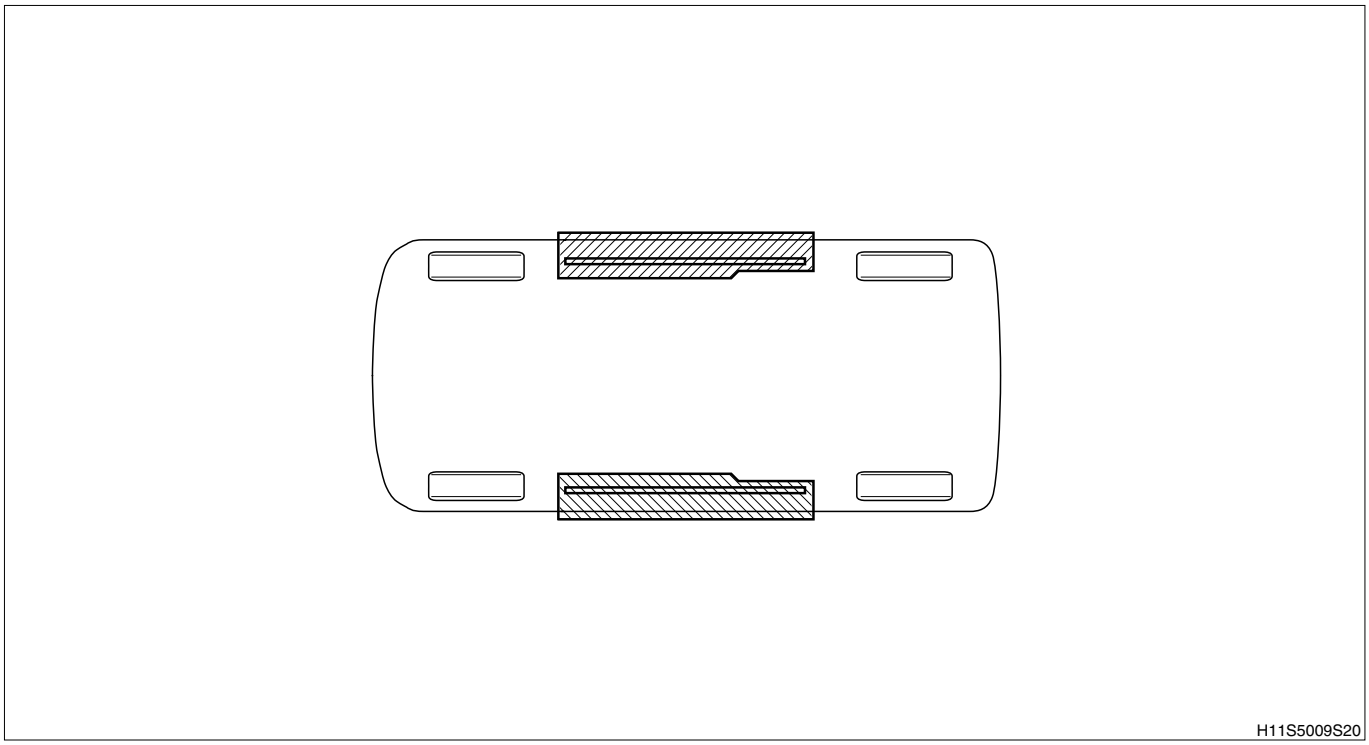
● Plate type

Drive the vehicle onto the center of the right and left supports.

Since the front part is heavier, lift up the vehicle at the front wherever possible.



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8 TOWING INSTRUCTIONS

1. Be certain to transfer the vehicle by using the flat deck truck when the running system and/or driving system seems to be abnormal.
2. Do not tow with the rope for an automatic transmission vehicle.

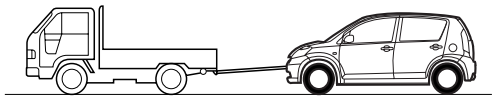
8-1 TOWING WITH ROPE(ONLY FOR EMERGENCY)

Release parking brake, and turn IG switch to "ACC" position, and then put the shift lever into neutral range.

CAUTION

- Do not tow with the rope for an automatic transmission vehicle.
- Do not tow with the rope when the running system and/or driving system seems to be abnormal.
- When drive with engine stopping, brake efficiency become less due to no functioning of the brake servo system. Depress the brake pedal more powerfully than the usual.

Towing by means of a rope



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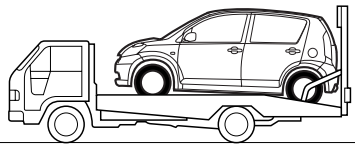
8-2 USING FLAT BED TRUCK

1. Transfer the vehicle with applying parking brake and fixing the vehicle firmly.

Transport on a track



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8-3 WHEEL LIFT TYPE

CAUTION

- Do not allow anyone to be in the vehicle being towed.

8-3-1 TO TOW WITH REAR WHEELS ON GROUND

1. Release the parking brake.

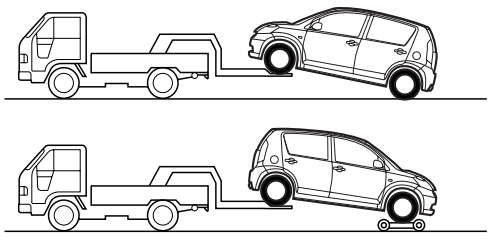
8-3-2 TO TOW WITH FRONT WHEELS ON GROUND

1. Use a towing dolly.
2. If a towing dolly is not available, and turn IG switch to "ACC" position, and then put the shift lever into neutral range (for manual transmission vehicle).

CAUTION

- For an automatic transmission vehicle, be sure to always use a towing dolly.

Wheel lift type



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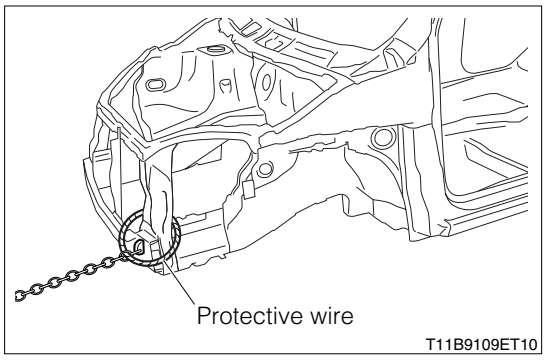
9 NOTES ON BODY REPAIRS

9-1 GENERAL INSTRUCTIONS ON OPERATION

9-1-1 SAFETY MEASURES

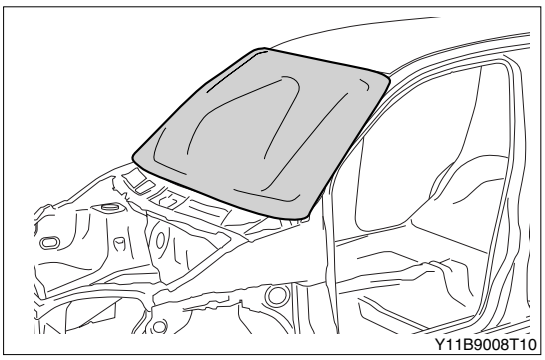
When you perform such an operation during which a body frame straighter is employed, be sure not to enter in the pulling direction. Moreover, make sure to use protective wire or chain.

Ensure that all of clamps and pullers are installed accurately.



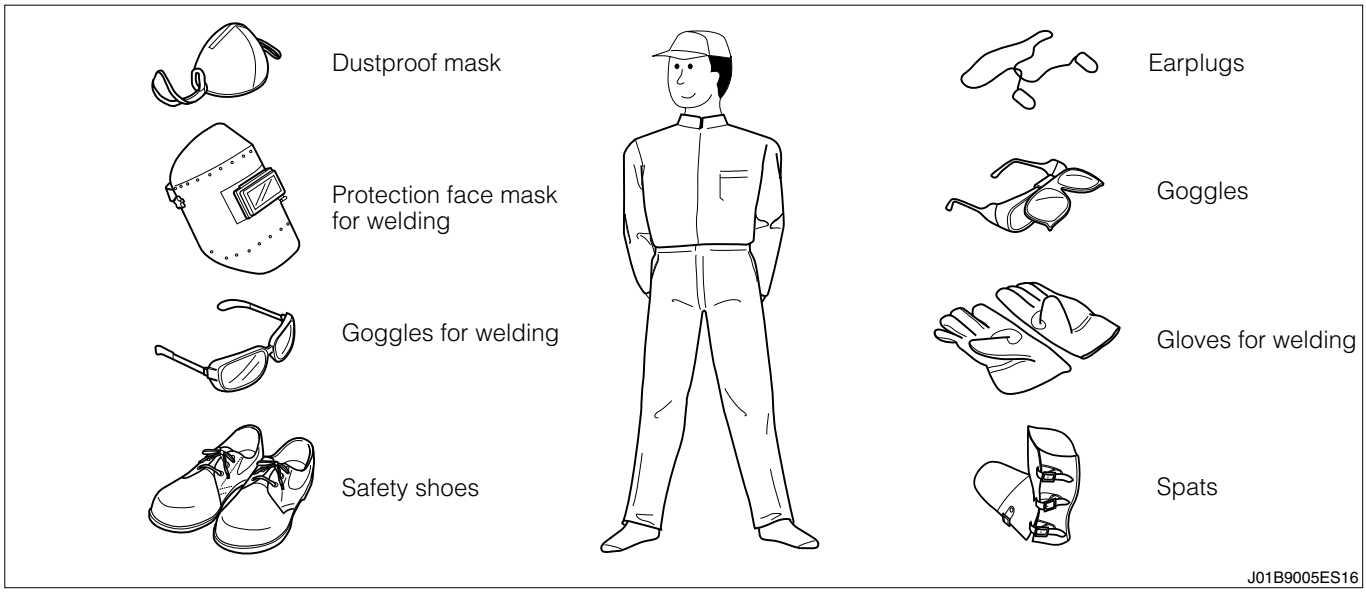
9-1-2 PROTECTION OF MOTOR VEHICLE

Be sure to use protective covers so that the motor vehicle may be protected from getting dirt. Make certain to employ heat resistant protective covers especially during welding operation so as to protect glass, seat and so forth.



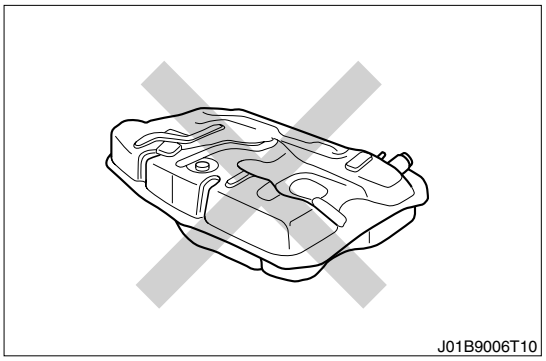
9-1-3 WEARING OF PROTECTIVE EQUIPMENT

Make sure to wear long-sleeved working dress, safety shoes and so forth. Also, correctly use protectors suitable to the operation.



9-1-4 REMOVAL OF DANGEROUS ARTICLES

When fire is used, for example, during welding in the vicinity of the fuel tank, make sure to remove the fuel tank. Moreover, be sure to plug the disconnected pipes of the removed fuel tank side so as to prevent fuel leakage. Prior to the operation, make certain to remove any residual fuel, etc. completely from the vehicle side pipe disconnected from the fuel tank.



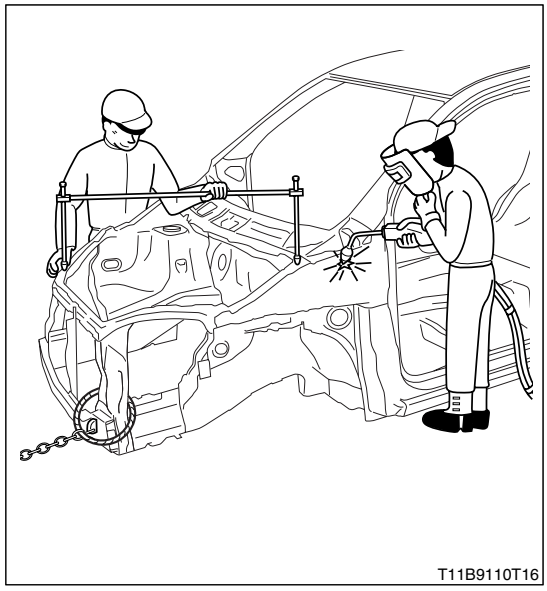
9-2 REMOVAL OPERATION

WARNING

- During the operation, make sure to wear protectors suitable to the operation. Moreover, utmost care must be exercised to ensure that your fingers or hands may not be pinched.

9-2-1 DIMENSION MEASUREMENT PRIOR TO OPERATION

Prior to operations such as removal and cutting, be sure to measure the related-sections in accordance with the body dimensional diagrams so as to evaluate the extent of damage. Then, proceed to carry out rough straightening by means of a body frame straighter.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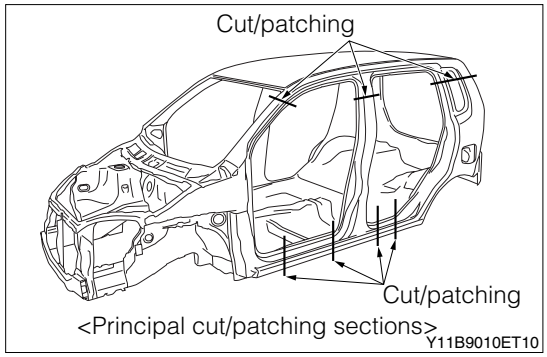
9-2-2 SELECTION OF CUT/PATCHING SECTION

As a cut/patching section of the panel, be sure to select adequate areas where strain due to welding is small, taking into consideration the strength of the body construction.

CAUTION

- Be sure to confirm the relationship with the part to be replaced. For example, ensure that the inside reinforcements, etc. have not been cut.



<Principal cut/patching sections>
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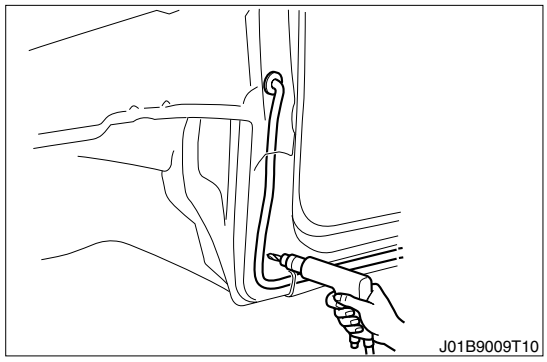
9-2-3 DRILLING AND CUTTING OPERATION OF DAMAGED PANEL

When you perform drilling or cutting operations, make sure that no wire harness or hose, etc. is located at the backside.

CAUTION

- Be very careful not to damage any panel not to be replaced.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9-2-4 REMOVAL OF RELATED-PARTS

Prior to removal of related parts such as molding, be sure to affix protective tape to the body and tools so that no damage is made to the body and parts to be removed.

CAUTION

- If paint film is damaged, be sure to perform repairing painting.

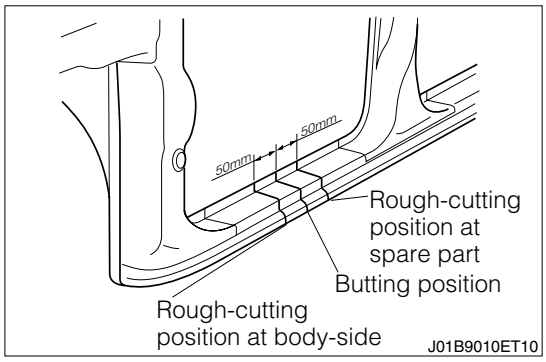
9-3 PREPARATION OF INSTALLATION

WARNING

- During the operation, make sure to wear protectors suitable to the operation. Moreover, utmost care must be exercised to ensure that your fingers or hands may not be pinched.
- Never use fires, such as welding operations, at those places where dangerous articles are stored.

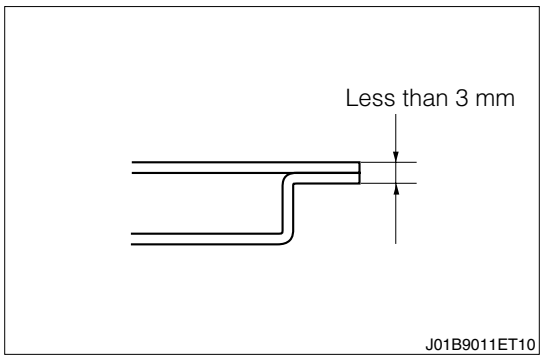
9-3-1 ROUGH CUTTING OF CUT/PATCHING SECTION

When performing rough cutting of a panel, be sure to take into consideration the overlapping width (approx 30-50 mm) for the butting welding section.



9-3-2 SPOT WELDING SECTION

If the sum of the sheet thickness at the welding section is less than 3 mm, perform spot welding. Conversely, if the sum of the sheet thickness is 3 mm or more, perform plug welding.



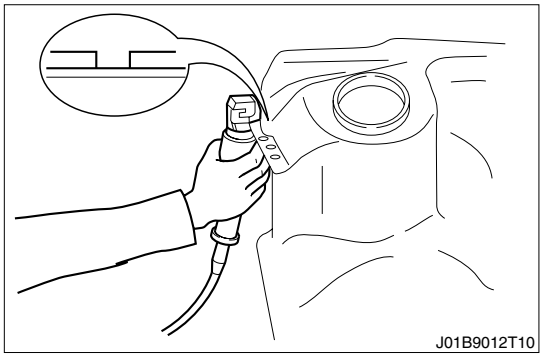
9-3-3 PLUG WELDING SECTION

At areas where spot welding can not be performed, make holes with a pin punch or a drill. Then, perform a plug welding.

NOTE

- BORE DIAMETER TABLE FOR PLUG WELDING

Sheet thickness of welded parts (mm)	Bore for plug welding (mm)
Less than 1.0	5.0 or more
1.0 or more to less than 1.5	6.5 or more
1.5 or more	8.0 or more



CAUTION

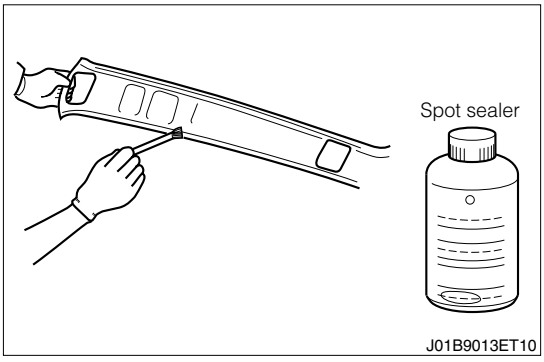
- As for the two steel sheets to be used at plug welding sections, they must be contacted closely each other. This is a rule to be observed to assure adequate welding strength.

9-3-4 SPOT SEALER APPLICATION

As for the mating surfaces of the spot welding points, be sure to completely remove the paint films so as to assure better flow of electricity. Also, apply spot sealer as a rust-preventive treatment.

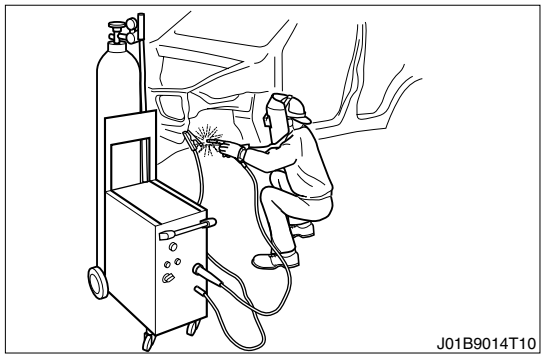
CAUTION

- Do not apply spot sealer to the surface to be painted.



9-3-5 **PROTECTION OF ELECTRIC PRODUCTS**

Prior to the welding operation, be sure to disconnect the cable from the battery negative (-) terminal. Then, make sure to connect the earth of the welder to a position near the body welding point.



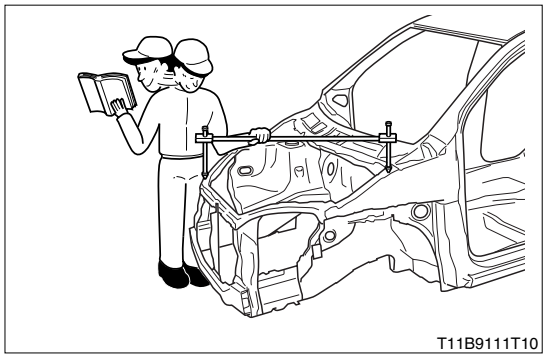
9-4 INSTALLATION OPERATION

WARNING

- During the operation, make sure to wear protectors suitable to the operation. Moreover, utmost care must be exercised to ensure that your fingers or hands may not be pinched.
- Never use fires, such as welding operations, at those places where dangerous articles are stored.

9-4-1 DIMENSION MEASUREMENT PRIOR TO OPERATION

1. When installing the main components of the underbody and engine compartment, perform the operations correctly, referring to the body dimensional diagram.
2. In the case of the door installation section (opening), etc., temporarily assemble the actual parts and confirm the gap, difference in height, etc.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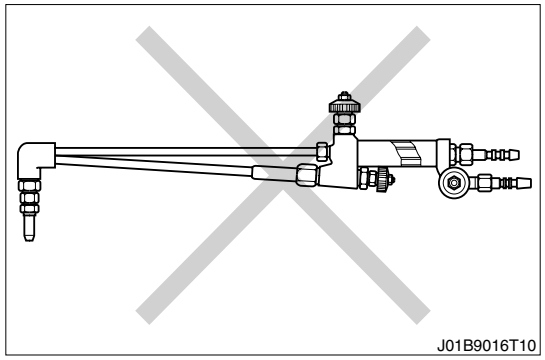
9-4-2 INSTRUCTIONS DURING WELDING

1. Perform welding at more points than performed by the manufacturer.
   SPECIFIED VALUE: Spot welding: At least 1.3 times as many as number performed by the manufacturer
   Plug welding: At least the same number as that performed by the manufacturer
   The distance between spot welding points should be at least 13 mm.
2. When welding the panel, gas welding or brazing is not allowed on areas except for those specified.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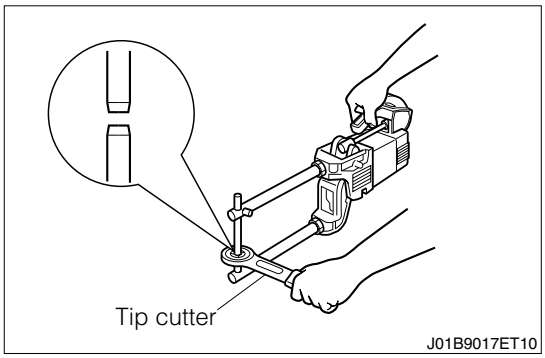
9-4-3 INSTRUCTIONS DURING SPOT WELDING

1. Be sure to keep the correct shape of the tip end of a spot welder at all times, for this will affect the welding strength. Install the arm and tip properly.



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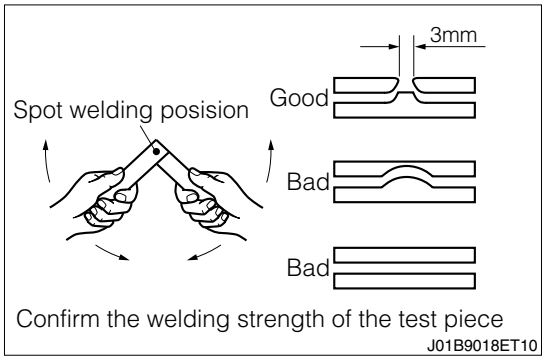
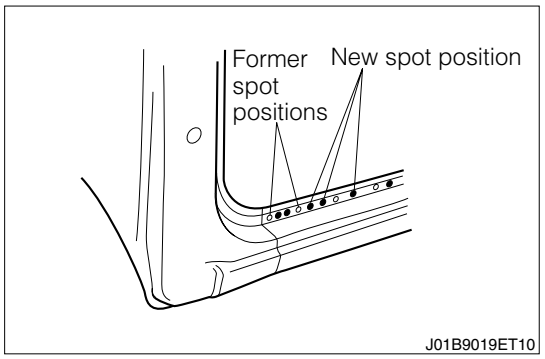
2. Prior to spot welding, perform trial run of spot welding on a test piece having the same thickness as the sheet. Confirm the strength of the test piece.



3. When selecting spot welding positions, avoid former spot positions.



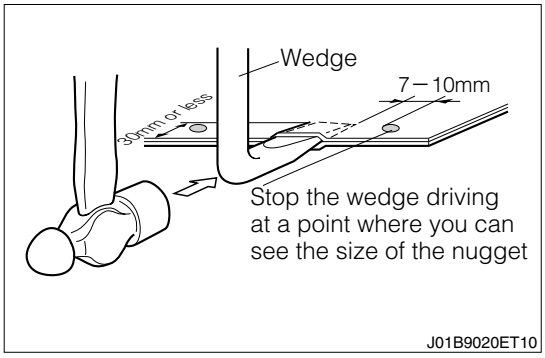
9-4-4 NONDESTRUCTIVE TEST

1. In order to inspect the welding conditions, drive a wedge as indicated in the right figure into the side of the nugget, according to the procedure indicated in the figure.

CAUTION

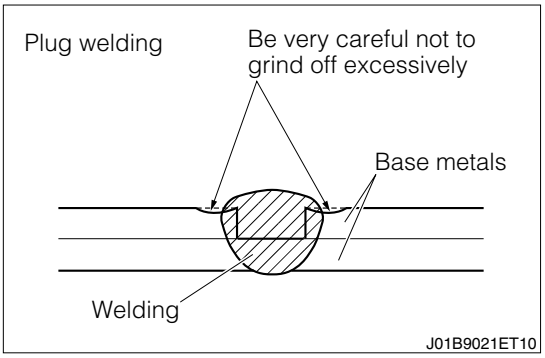
- Be sure to stop the wedge driving at a point where you can evaluate the deposit conditions. Do not drive the wedge more than 30 mm.
- After completion of the inspection, remedy the opened section properly.

2. In the case of spot welding of three-fold or four-fold sheet, carefully confirm the deposit conditions.



9-4-5 FINISH AFTER WELDING

When you use a sander to finish the welded zone after completion of the welding operation, be very careful not to grind off excessively.

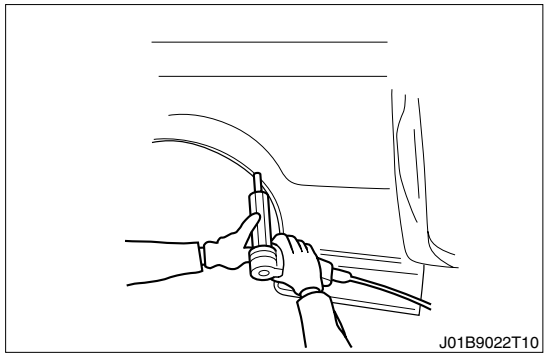


9-5 RUST PREVENTIVE TREATMENT

9-5-1 BODY SEALER APPLICATION

The body sealer prevents water or mud from entering through a panel joint section, thus preventing rust formation at the joint section. Therefore, this work should be done carefully. Also, it is necessary to apply the body sealer neatly where the finish state is important, such as an external panel.

RefCD= BD0_0001



9-5-2 UNDERCOAT APPLICATION

Since the inside of the wheel house and back of the floor are sections where rust formation takes place due to damage by flying stones, apply undercoats to those sections for rust prevention.

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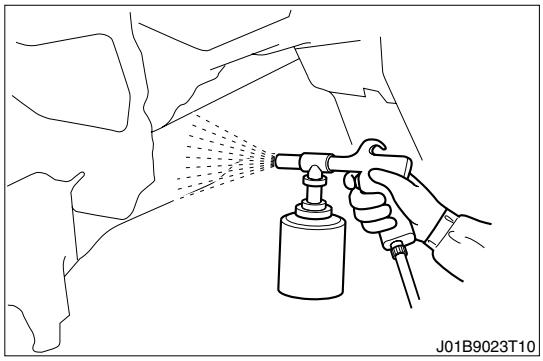
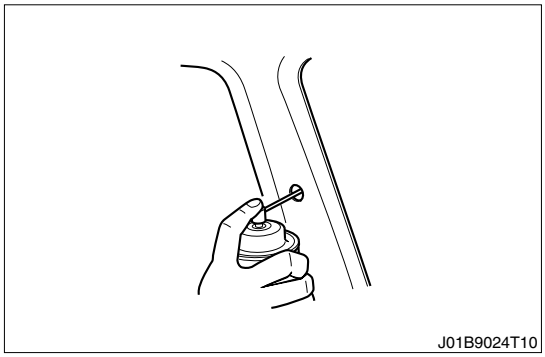


9-5-3 RUST PREVENTION OF ENCLOSED CONSTRUCTION

In the case where the welding section is of enclosed construction, perform the rust preventive treatment, using an aerosol type rust preventive agent through machined holes, etc.



10 INSTRUCTIONS ON HANDLING AND OPERATION OF SRS AIR-BAG

10-1 INSTRUCTIONS FOR SERVICE OPERATION

Be sure to perform the service operation for the vehicle equipped with the airbag and seat belt pretensioner according to the correct procedure and method, otherwise, the airbag or pretensioner may occur the malfunction and lead serious accidents during the service operation. Be sure to perform the service operation according to the correct procedure and method described in this manual.

10-1-1 DISCONNECTING THE POWER SUPPLY

1. Check the diagnosis code, and then disconnect the battery negative (-) terminal with the IG switch in "LOCK" position. Wait for 60 seconds to start work operation.
   (1) The SRS airbag system is provided with a backup condenser (for the squib). Therefore, allow approx. 60 seconds for the backup condenser to discharge after the battery negative (-) terminal is removed. (Natural discharge)
   (2) If work is started within 60 seconds, the air bag and the pretensioner may be activated.
   (3) The memory of some systems will be erased when the battery negative (-) terminal is removed. Therefore, record memory contents of each system, as required, and input them after the work operation is complete.
2. Turn the IG switch to "LOCK" and connect the battery negative (-) terminal.

10-1-2 CAUTION TIPS BEFORE SERVICING

1. For electrical checks, ensure that a digital circuit tester is used that meets the following standard.

WARNING

- If the tester to be used exceeds the specified value, the airbag and the pretensioner may be activated or damaged.

SPECIFIED VALUE: About 50 mA (0.05A) or less

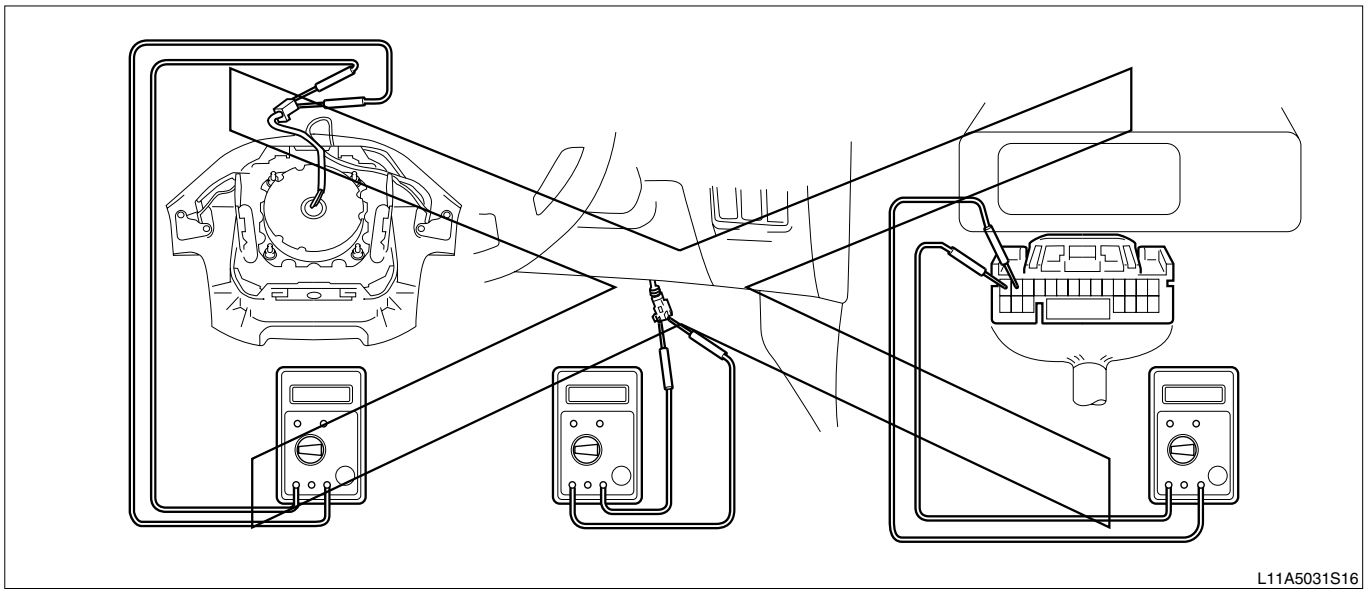
NOTE

- Always measure the current value of the tester to be used before starting work operation to ensure that the tester satisfies the specified value.
- When performing the current measurement for the tester, use the minimum range of the resistance (Ω).

2. When any of the components is removed from the air bag system (including disconnection of the connector), ensure that the connector is removed in advance so that no accident will be caused inadvertently.
3. Follow instructions given on the label. Replace a stained or damaged label with a new one.
4. Never disassemble.
5. If the part has been dropped or exhibits a crack, dent or chips, replace with a new part.
6. Never use the parts from other vehicles. Always install a new part for replacement.
7. Do not expose parts directly to high temperatures or fire.
8. Even if the airbag and/or the pretensioner have not been activated in a collision, always perform diagnostic checks.
9. Do not apply grease. Prevent detergent, oil, water, etc. from adhering. If this happens, wipe it off immediately with dry cloth.
10. Store in places which are less likely to be exposed to electrical noise, and are not exposed to high temperatures (85℃ or higher atmospheric temperatures), or high humidity.
11. Ensure that the airbag is activated with the SST, when the vehicle or the single part is discarded.
12. Never measure the resistance of the air bag components.

WARNING

- This is very dangerous, for the tester's current may activate the air bag and the pretensioner.



10-1-3 **CAUTIONS WHEN DISCARDING THE AIR BAG AND THE PRETENSIONER**

(1) **Before deployment**

1. Never scrap the system before activated and deployed.
2. The activation and deployment should be performed at an outdoor flat place where safety can be ensured. Avoid performing this operation in a residential area whenever possible.
3. Since the activating and deploying sound is fairly large, inform persons in the vicinity of the event before those devices are activated.
4. Use the SST and keep at least 5m away from the airbag and the pretensioner to perform a deployment operation.
5. Static electricity may activate deployment. Therefore touch steel frame, vehicle body, etc. that creates earth with bare hands to remove static electricity.
6. During deployment operation, carefully prevent the deployment side from facing down.

(2) **After operation**

1. The temperatures of some portions exceed a few hundred ℃. Therefore, leave them at least 30 minutes after they are deployed.
2. Do not splash water.
3. Wear dust protective goggles and gloves during operation.
4. Place in a clear durable plastic bag and seal the bag to be scrapped.
5. After completion of the operation, be sure to wash your hands with water.

10-1-4 CAUTION TIPS FOR BODY REPAIR AND PAINT

1. When repairing components located close to the airbag system, ensure that the system will not be exposed to a strong hammering shock or high heat.
2. When using an electric welder, remove the air bag system before starting work.
3. When the system is expected to be exposed to a shock or high heat, remove the components from the airbag system before starting work.
4. When coating near the airbag system components is to be dried, ensure that temperature will not exceed 85℃.
5. If the airbag system components have external damage or deformation, replace with new ones.

10-1-5 CASES WHERE THE AIRBAG AND THE PRETENSIONER NEED CHECKING

1. When the vehicle is damaged in a collision, including cases where no deployment or activation has occurred
2. When the diagnostic code is outputted:

10-1-6 CAUTIONS FOR THE AIRBAG AND THE PRETENSIONER

When temporarily placing the airbag during repair work, ensure that the deployment side faces upward. Do not put something on the airbag or lay one airbag on another.

WARNING

- If the airbag should be deployed with the metal side facing upward, a serious accident may result.

10-1-7 CAUTIONS FOR SPIRAL CABLE

When the spiral cable is installed, or the steering wheel is installed/removed, be sure to perform centering.

CAUTION

- If the steering wheel is operated without centering, the spiral cable may be cut.

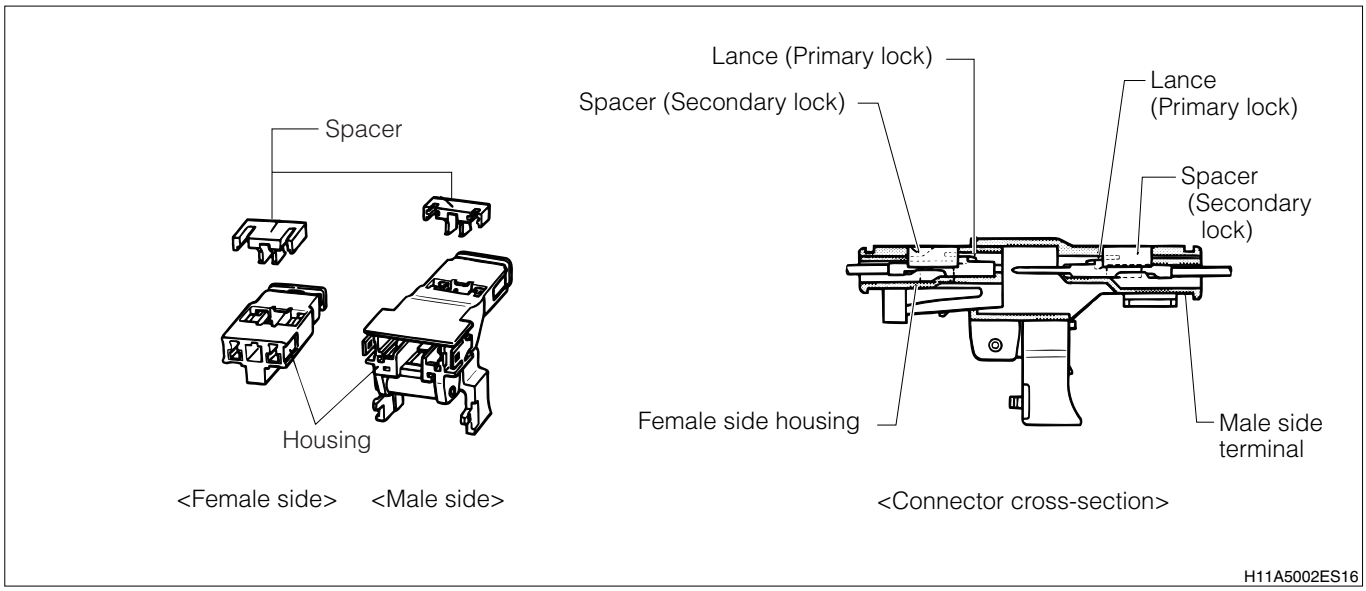
10-1-8 CAUTIONS FOR WIRE HARNESS AND CONNECTOR

All the connectors and the dedicated branch harnesses of the airbag system are colored in yellow, with the exception of exposed portions in the engine compartment. These connectors are special and require special care in handling in order to prevent any damage.

(1) **Connector mechanism**

① **Terminal double lock mechanism**

1. The mechanism provides better gripping force of the terminal so as to prevent the terminal from falling.
2. The connector has a two-piece construction consisting of a housing and a spacer, which doubly secures the terminal with the use of the lance (primary lock) and the spacer (secondary lock).

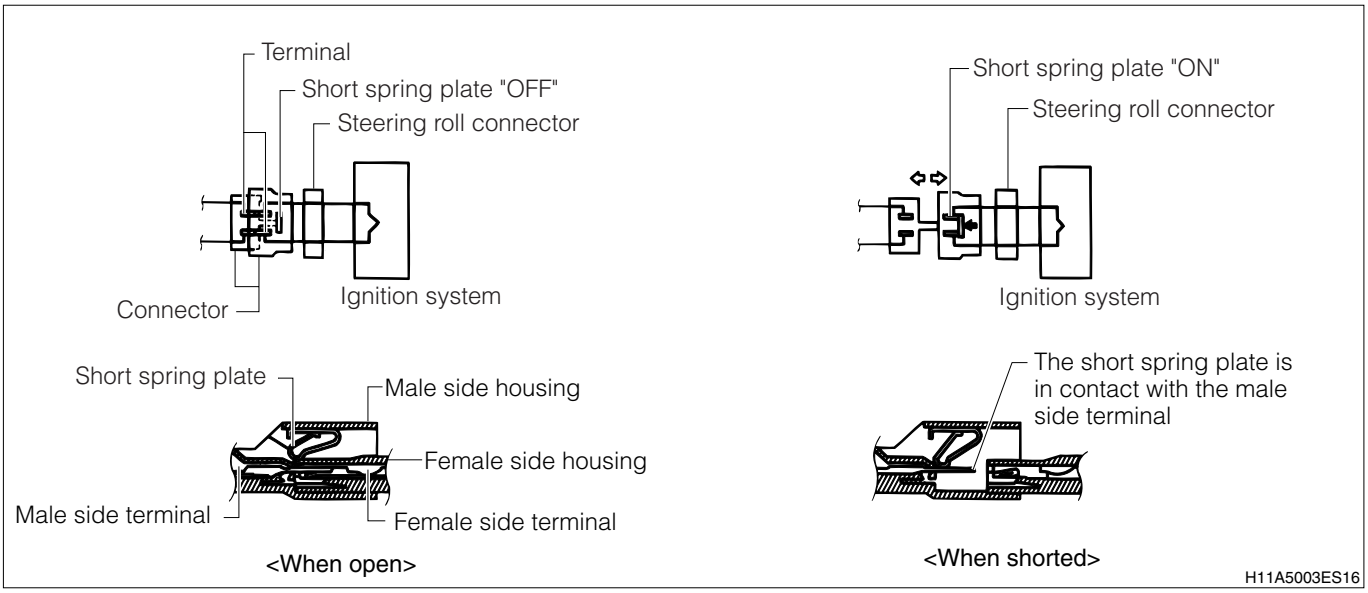


② **Terminal short mechanism**

1. The mechanism that automatically creates a short-circuit between the terminal on power supply side of the airbag and the terminal on the earth side, when the connector is removed.
2. The short spring plate is installed inside the connector, which creates a closed circuit on the airbag side (potential difference between the terminals is not created), thereby preventing wrong operation during servicing.

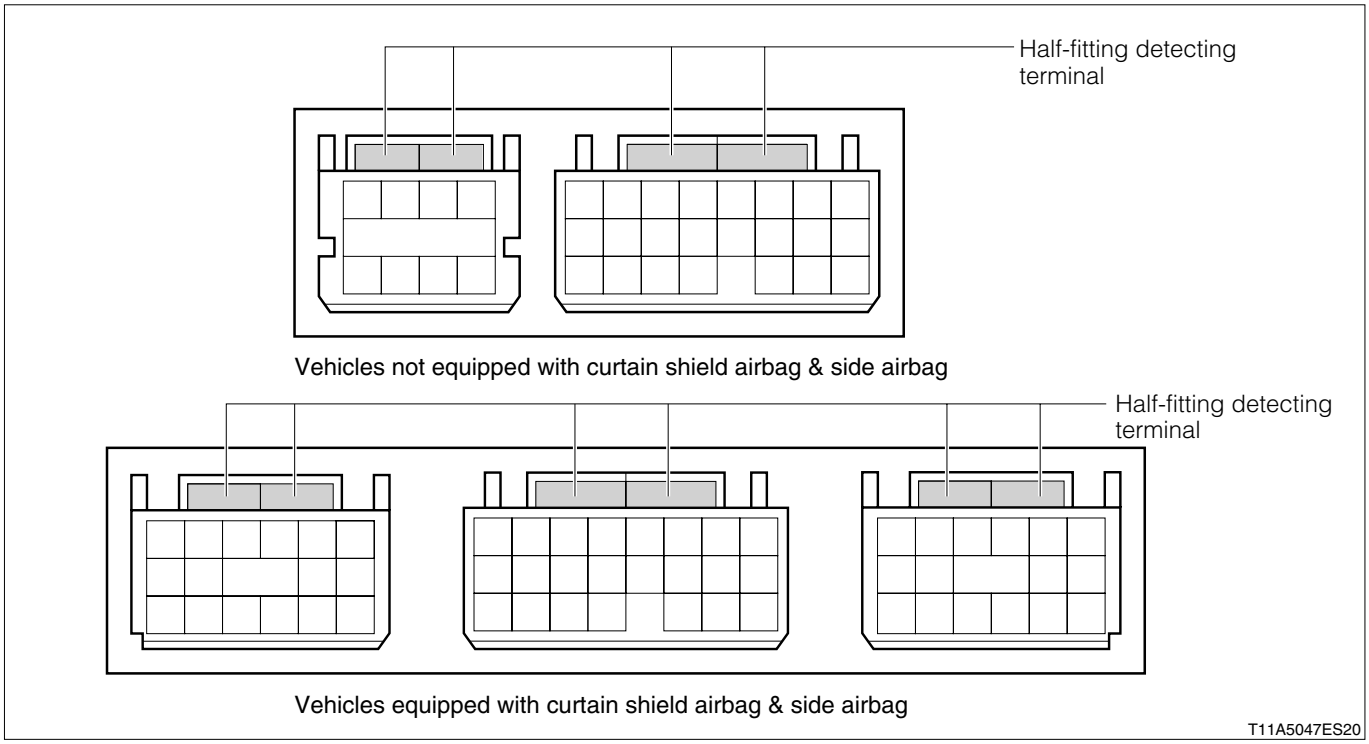
CAUTION

- When checking the harness, the terminal's short-circuit mechanism might lead to incorrect diagnosis, such as a short-circuit condition between the harnesses. When checking the harness, insert the airbag deployment SST (Part number: 09082-87710-000, 09082-00760-000) into the connector to be checked, and check the harness while the SST is connected. If this checking finds faulty condition in the harness, insert an insulator between the short spring plate and the terminal, or remove the short spring plate, and then proceed to checking.



③ Half fit detecting mechanism

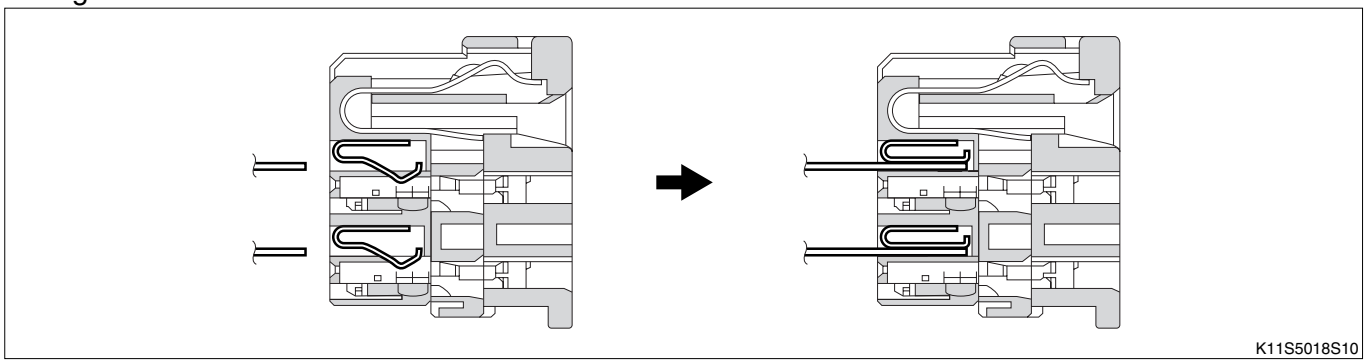
1. This is a mechanism which detects whether the airbag ECU is firmly connected with the vehicle side harness connector.
2. When the IG SW is turned "ON" with the connector half-fit, the airbag warning lamp will remain illuminated.
3. When the airbag system is normal and the connector is firmly connected, the airbag warning lamp is turned off.



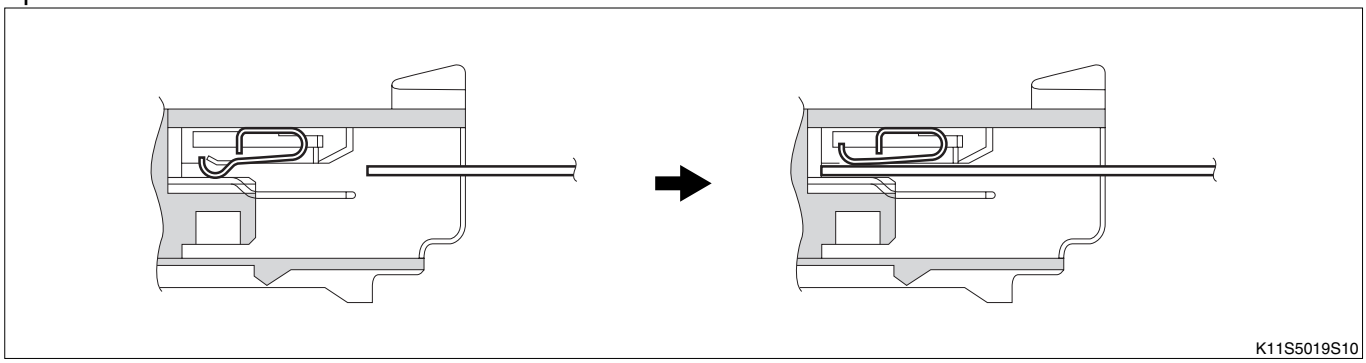
10-1-9

- Do not release the terminal short mechanism unless specified by the trouble shooting instruction.

Airbag ECU vehicle harness side connector



Spiral cable side connector

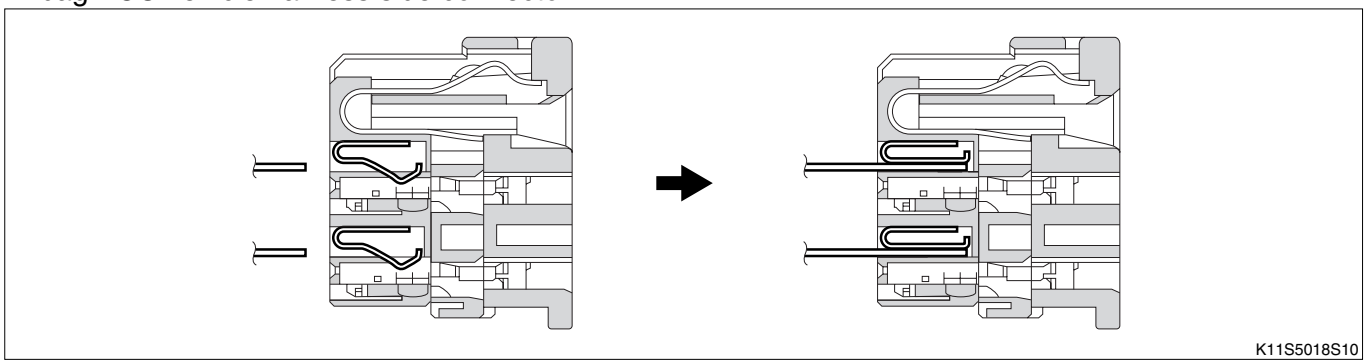


1. Release the terminal short mechanism by using an insulator (paper, laminate film) having the same thickness as the terminal.

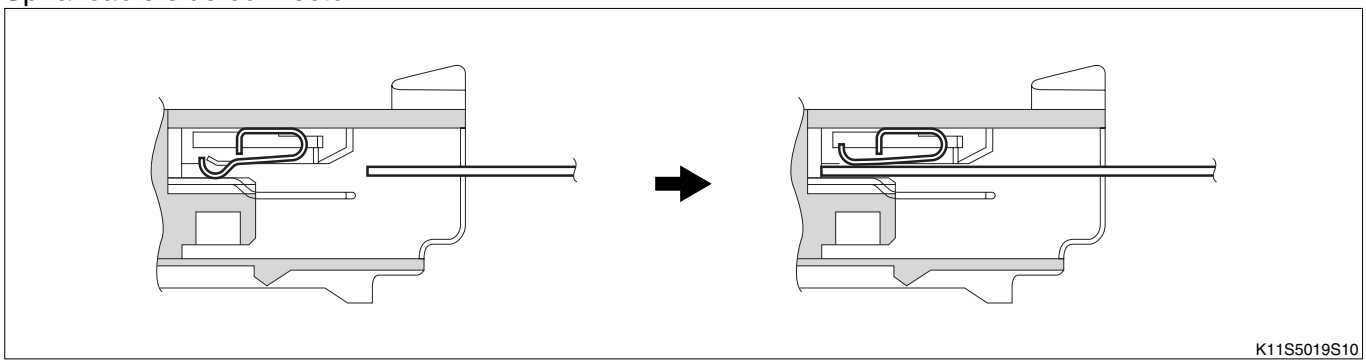
CAUTION

- Do not use an insulator having a thickness different from that of the terminal lest that the terminal or short spring may be damaged.
- Do not release the terminal short mechanism unless specified by the trouble shooting instruction.

Airbag ECU vehicle harness side connector



Spiral cable side connector



11 CAUTIONS ON PLASTIC COMPONENTS

Heat generated during work operations may cause deformation. Therefore check the characteristics of plastic and remove the components prior to starting work as required.

Table of the plastic characteristics

Symbol	Plastic name	* Allowable temperature limit (℃)	Resistance to solvents	Caution
AAS	Acrylonitrile-acrylic rubber styrene copolymer	80	Small amount of alcohol can be applied for a short time. (Such as wipe-off degreasing)	No organic solvents such as gasoline. No air freshener.
ABS	Acrylonitrile-butadiene styrene copolymer	80	Small amount of alcohol can be applied for a short time. (Such as wipe-off degreasing)	No organic solvents such as gasoline. No air freshener.
AES	Acrylonitrile-ethylene rubber styrene copolymer	80	Small amount of alcohol can be applied for a short time. (Such as wipe-off degreasing)	No organic solvents such as gasoline. No air freshener.
ASA	Acrylonitrile-styrene acrylate	80	Small amount of alcohol can be applied for a short time. (Such as wipe-off degreasing)	No organic solvents such as gasoline. No air freshener.
CAB	Cellulose acetate butyrate	80	Small amount of alcohol can be applied for a short time. (Such as wipe-off degreasing)	No organic solvents such as gasoline. No air freshener.
EPDM	Ethylene-propylene rubber	100	Small amount of alcohol can be applied for a short time. Gasoline possible. (Such as wipe-off degreasing)	Do not soak in organic solvents, such as gasoline and alcohol. Do not allow organic solvents to come into contact. Thoroughly rinse the remover in water.
EVA	Ethylene-viny acetate copolymer	70	Small amount of alcohol can be applied for a short time. (Such as wipe-off degreasing)	No organic solvents such as gasoline. No air freshener.
FRP	Fiber reinforced plastics	150	Alcohol or gasoline can be applied.	Most solvents may be applied.
PA	Polyamide	80	Alcohol or gasoline can be applied.	No battery fluid (sulfuric acid)
PBT	Polybutylene terephthalate	160	Alcohol or gasoline can be applied.	Most solvents may be applied.
PC	Polycarbonate	120	Small amount of alcohol can be applied for a short time.	No organic solvents such as brake fluid, wax, wax remover and gasoline can be used.
PE	Polyethylene	80	Alcohol or gasoline can be applied.	Most solvents may be applied.
PET	Polyethylene terephthalate	75	Alcohol or gasoline can be applied.	Do not soak in water.
PGM	Polypropylene glass fiber pulp	80	Alcohol or gasoline can be applied.	Most solvents may be applied.
PMMA	Polymethyl methacrylate (acryl)	80	Small amount of alcohol can be applied for a short time. (Such as wipe-off degreasing)	Do not soak in organic solvents, such as gasoline and alcohol. Do not allow organic solvents to come into contact. Thoroughly rinse the remover in water.

Symbol	Plastic name	* Allowable temperature limit (℃)	Solvent resistance	Caution
POM	Polyacetal	100	Alcohol or gasoline can be applied.	Most solvents may be applied.
PP	Polypropylene	80	Alcohol or gasoline can be applied.	Most solvents may be applied.
Degen-eration PPO	Polyphenylene oxide	100	Small amount of alcohol can be applied for a short time.	Do not soak in organic solvents, such as gasoline and alcohol. Do not allow organic solvents to come into contact.
PS	Polystyrene (styrol)	60	Small amount of alcohol can be applied for a short time.	Do not soak in organic solvents, such as gasoline and alcohol. Do not allow organic solvents to come into contact.
PUR	Thermosetting polyurethane	80	Small amount of alcohol can be applied for a very short time. (Such as wipe-off degreasing)	Do not soak in organic solvents, such as gasoline and alcohol. Do not allow organic solvents to come into contact.
PVC	Polyvinyl chloride	80	Small amount of alcohol or gasoline can be applied for a short time. (Such as wipe-off degreasing)	Do not soak in organic solvents, such as gasoline and alcohol. Do not allow organic solvents to come into contact.
SAN	Styrene-acrylonitrile copolymer	80	Alcohol can be applied to wipe-off for a short time.	Do not soak in organic solvents, such as gasoline and alcohol. Do not allow organic solvents to come into contact.
TPO	Olefin-based thermoplastic elastomer	80	Alcohol can be applied. Gaso-line can be applied for a short time. (Such as wipe-off degreasing)	Do not soak in organic solvents, such as gasoline. Do not allow organic solvents to come into contact. Thoroughly rinse the remover in water.
TPU	Urethane-based thermo-plastic elastomer	80	Small amount of alcohol or gasoline can be applied for a short time. (Such as wipe-off degreasing)	Do not soak in organic solvents, such as gasoline. Do not allow organic solvents to come into contact. Thoroughly rinse the remover in water.
UP	Unsaturated polyester	110	Alcohol or gasoline can be applied.	No alkalies.
E/VAC	Ethylene-vinyl acetate vinyl copolymer	70	Small amount of alcohol can be applied for a short time. (Such as wipe-off degreasing.)	No organic solvents such as gasoline No air refresher.
PPF	Composite reinforced polypropylene	80	Alcohol or gasoline can be applied.	Most solvents may be applied.

*Allowable temperature limit here means "the temperatures that may cause deformation due to heat during work operations."

Material list for plastic components

Part name	Material
Front bumper cover	PP
Radiator grille	PP
Headlight	PP/PC
Side turn-signal lamp	PMMA/ABS
Outer rear view mirror	ABS/PBT
Door outer handle	PC/PBT
Side stone guard	PP
Rear bumper cover	PP
Rear combination lamp	PC/ASA/PMMA
LICENSE PLATE LAMP	PC/PBT

B BODY CONSTRUCTION

1 OUTLINE

1. The vehicle features compatibility body frame structure to enhance passive safety, offering protection in all directions in a collision with a vehicle weighing more.

   NOTE

   - Compatibility body: This refers to the body structure that is designed to pursue compatibility in a collision between two vehicles of different weights and offer optimum protection for both vehicles, through an improvement in passive safety for the lighter vehicle and a reduction in aggressiveness of the heavier vehicle.

2. The vehicle features Total Advanced Function "TAF" to secure cabin space for survival in the event of a collision and to protect the occupants. TAF meets the Japan's passive safety standard (50 km/h frontal, side, and rear collisions) and the European passive safety standard (40% offset frontal collision at 56 km/h, side collision at 50 km/h). Moreover, Subaru Motor sets up our own stricter target levels to provide a highest level of protection for occupants in this class of the vehicles.

   NOTE

   - "TAF"(Total Advanced Function body) refers to a collision safety body that has been evolved totally.

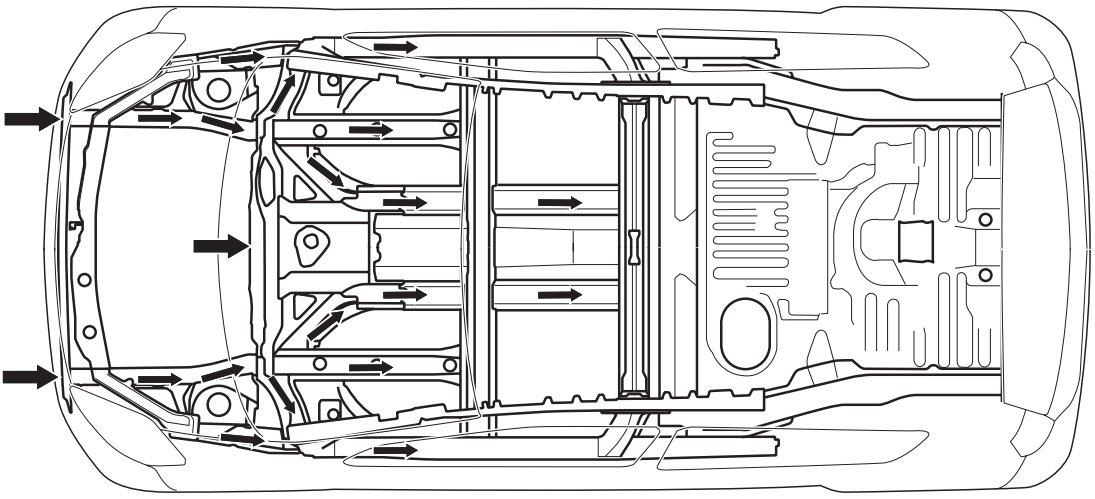
3. High-tension steel sheets have been employed on principal structure, thereby realizing a body that features light weight and high rigidity.

2 CONSTRUCTION AND OPERATION

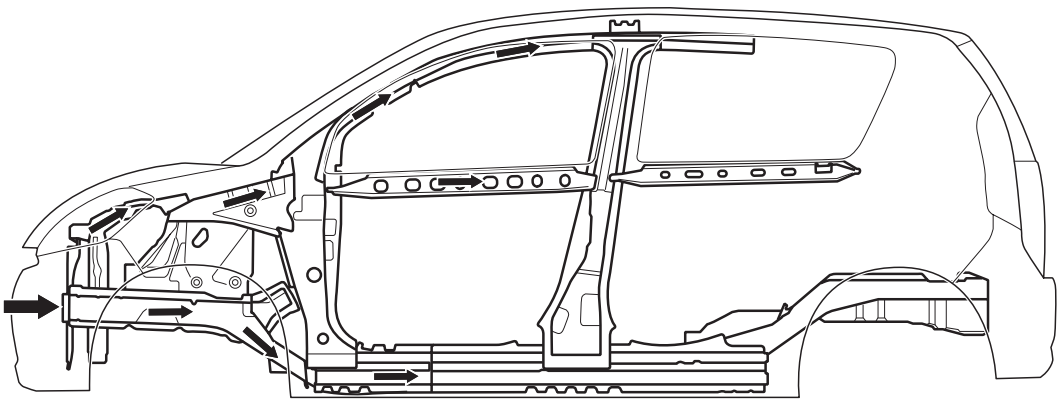
2-1 SAFETY PERFORMANCE

2-1-1 FRONT ENERGY ABSORPTION CONSTRUCTION

The vehicle features body frame structure that efficiently dissipates energy in a frontal impact from the front side member front to the front side member rear, front body pillar, locker panel, side door belt line, etc., to secure cabin space for occupant protection.



<Top view>



<Side view>

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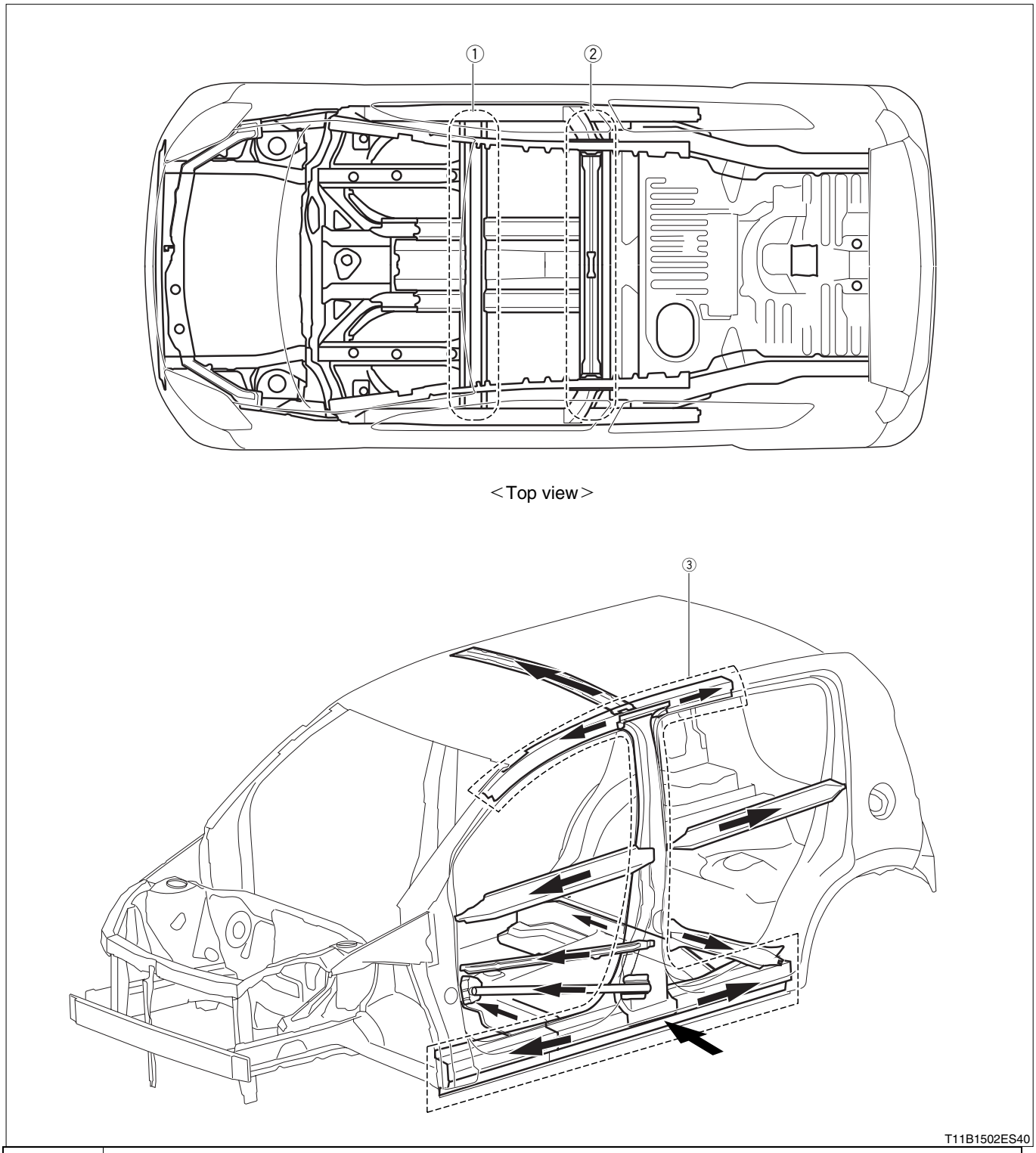
2-1-2 SIDE ENERGY ABSORPTION CONSTRUCTION

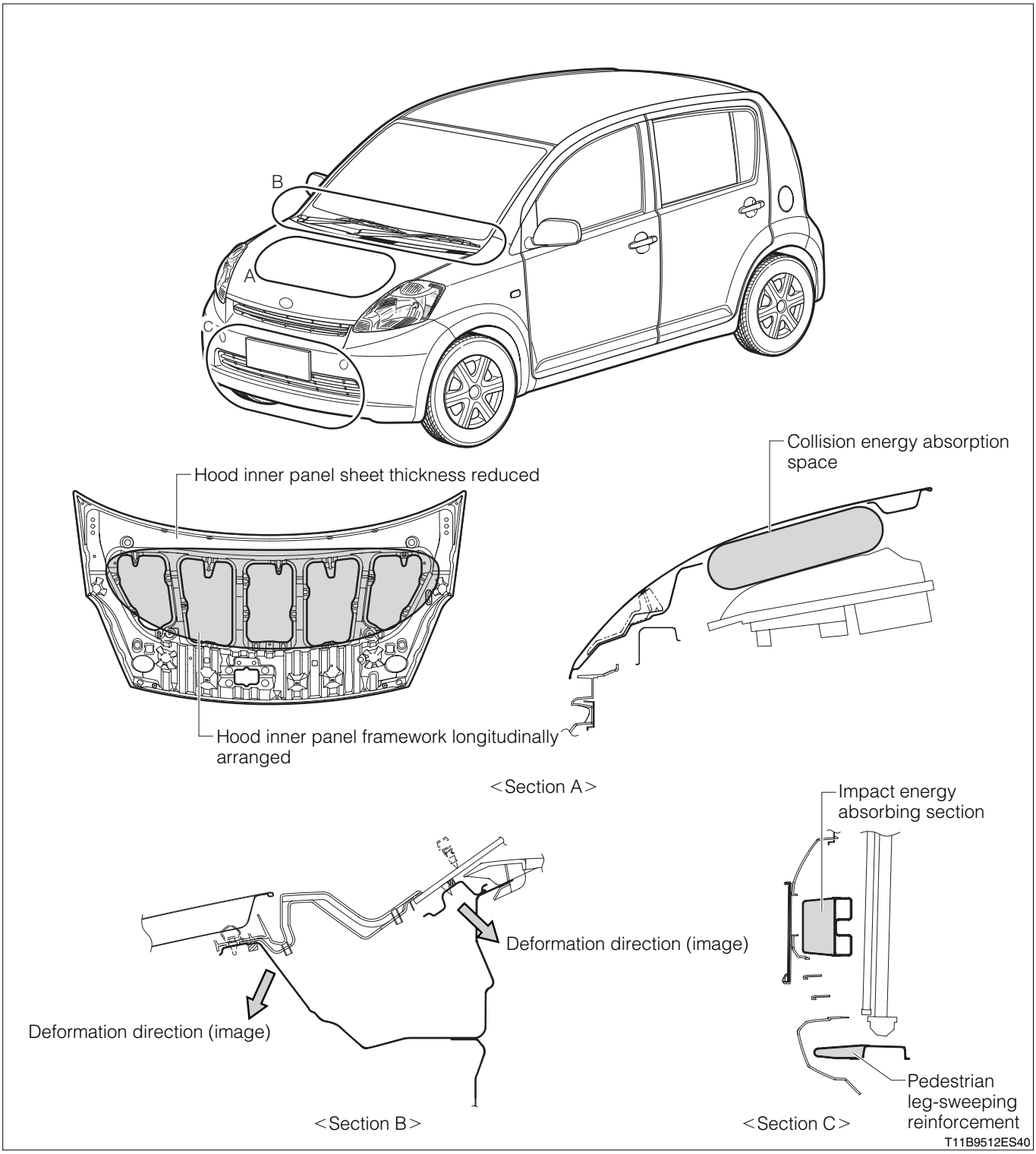
The collision energy from the side can be dispersed effectively to the center body pillars, roof side rails and locker panels. Consequently, the passenger compartment space for protecting occupants has been assured.



①	The front seat body mounting area (the joint section of the front floor cross member to the front floor tunnel, and the joint section of the front floor cross member to the rocker inner panel) has been reinforced in order to secure the cabin space for survival of the occupants in the event of a collision.
②	The rear floor cross member has been straightened to absorb side impact forces.
③	The bearing forces of the rocker panel, center pillar, and roof side rail are optimized to reduce the amount of body deformation and to secure survival space for occupants.

2-1-3 PEDESTRIAN INJURY REDUCTION BODY CONSTRUCTION

1. The vehicle features body structure to reduce the injuries to pedestrians in the event of a collision involving a pedestrian.
2. Regarding the hood panel, the thickness of the inner panel is reduced and the frame is arranged longitudinally, while allowing space to the components in the engine compartment so that the injuries to pedestrians can be reduced.
3. A crushable structure has been adopted for the cowl panel to reduce the injuries to pedestrians.
4. In order to reduce injury to the pedestrian legs, an impact energy absorbing section is provided on the upper reinforcement of the front bumper of certain specifications and a pedestrian leg-sweeping reinforcement is provided at the lower section.



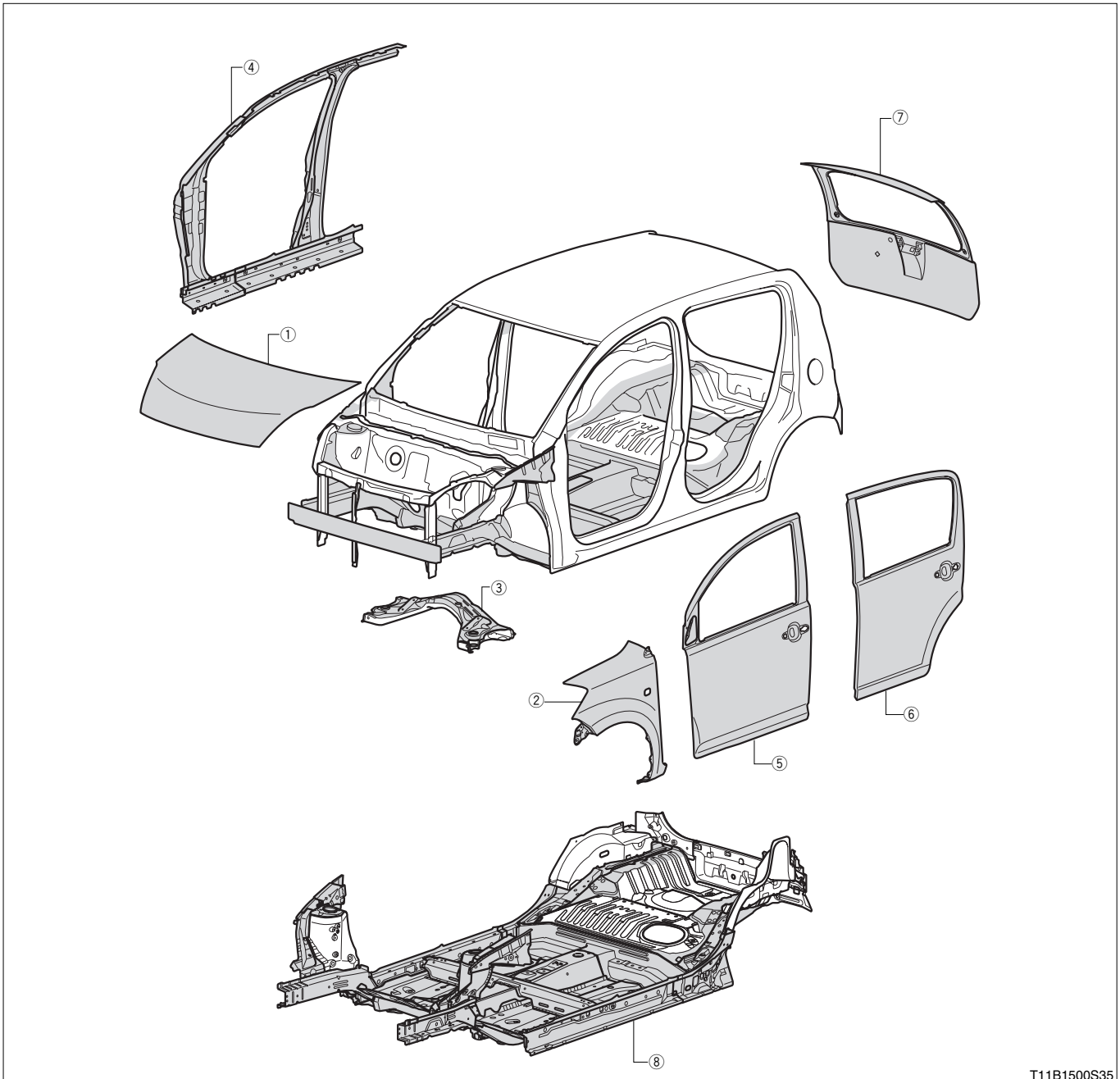
2-2 BODY SHELL

2-2-1 PARTS WHERE HIGH-TENSILE STEEL SHEETS ARE USED

High-tension steel sheets that features light weight and dent-resistance for local external forces have been employed at various sections so that weight reduction and high rigidity may be attained.

NOTE

- Dent-resistance properties: When external forces (e.g. finger pressure during door opening or closing periods or flying stones) are locally applied to outer panels of motor vehicles, very small dents may be formed (Dentability). Properties that have resistance to these dents are called dent-resistance properties.

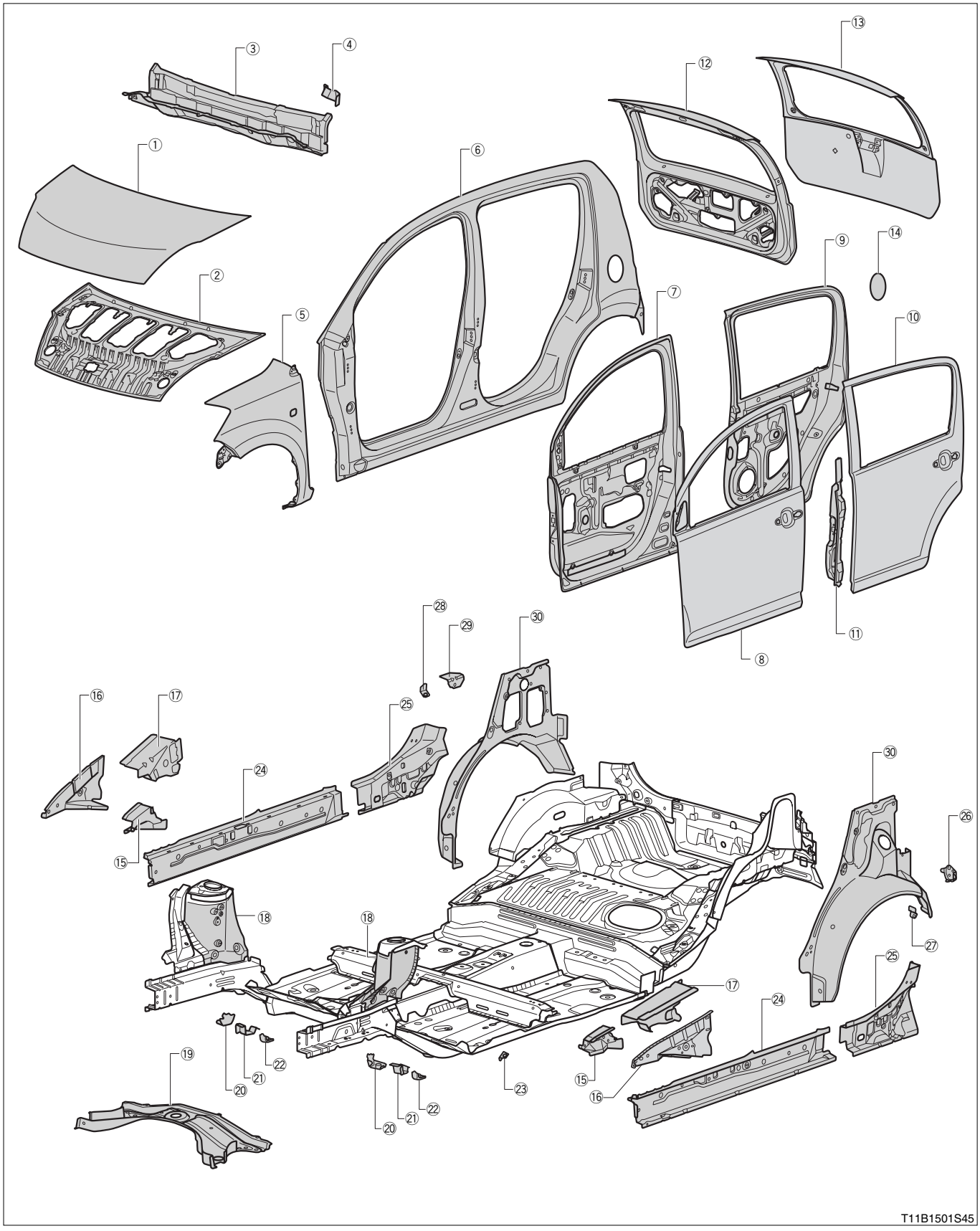


T11B1500S35

	Applicable components		Applicable components
①	Hood panel	⑤	Front door outside panel RH/LH
②	Front fender panel	⑥	Rear door outside panel RH/LH
③	Suspension Member	⑦	Back door outside panel
④	Reinforcement around front door	⑧	Front floor side member

2-2-2 PARTS WHERE ANTI-RUST STEEL SHEETS ARE USED

For better anti-rust effect, the corrosion-resistant steel plate has been adopted for components that require more stringent conditions concerning rust formation.



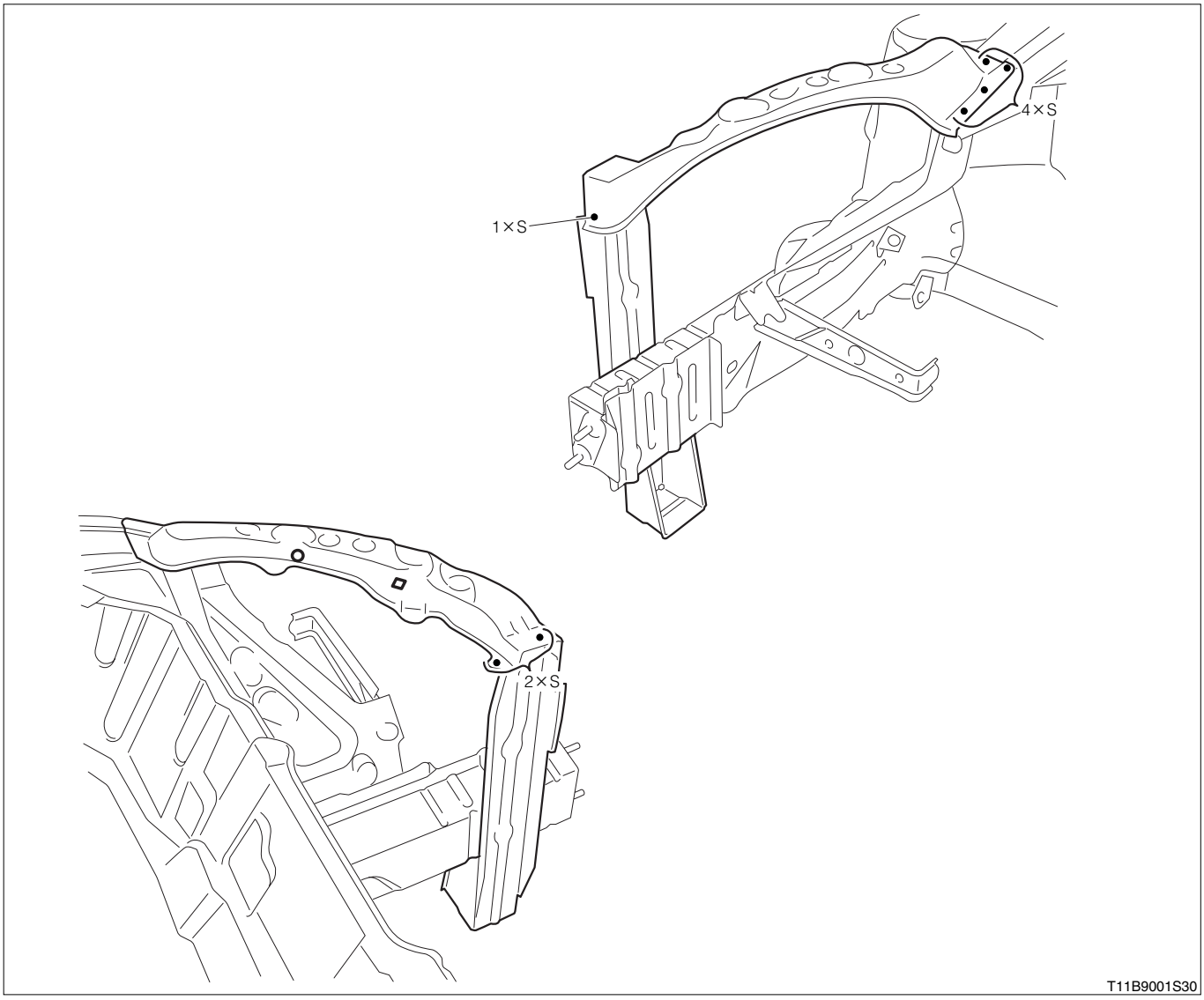
	Part name		Part name
①	Hood panel	⑯	Cowl top side panel RH/LH
②	Hood inner panel	⑰	Cowl top side inner panel RH/LH
③	Cowl top inner panel	⑱	Front fender apron RH/LH
④	Wiper shaft side retainer	⑲	Front suspension lower
⑤	Front fender panel RH/LH	⑳	Brake actuator mounting reinforcement No.1 RH/LH
⑥	Side outer panel RH/LH	㉑	Front suspension member mounting bracket RH/LH
⑦	Front door inside panel RH/LH	㉒	Suspension member spacer reinforcement RH/LH
⑧	Front door outside panel RH/LH	㉓	Flexible hose bracket No.1
⑨	Rear door inside panel RH/LH	㉔	Floor side inner member RH/LH
⑩	Rear door outside panel RH/LH	㉕	Floor side inner rear member RH/LH
⑪	Rear door hinge side panel RH/LH	㉖	Parking brake cable guide bracket No.2 LH
⑫	Back door inside panel	㉗	Parking brake cable guide bracket No.4
⑬	Back door outside panel	㉘	Floor brake hose rear bracket RH
⑭	Fuel filler opening outer lid	㉙	Rear absorber mounting reinforcement
⑮	Front apron to cowl side upper member RH/LH	㉚	Quarter inner panel lower RH/LH

C REPLACEMENT PROCEDURE FOR BODY PANELS

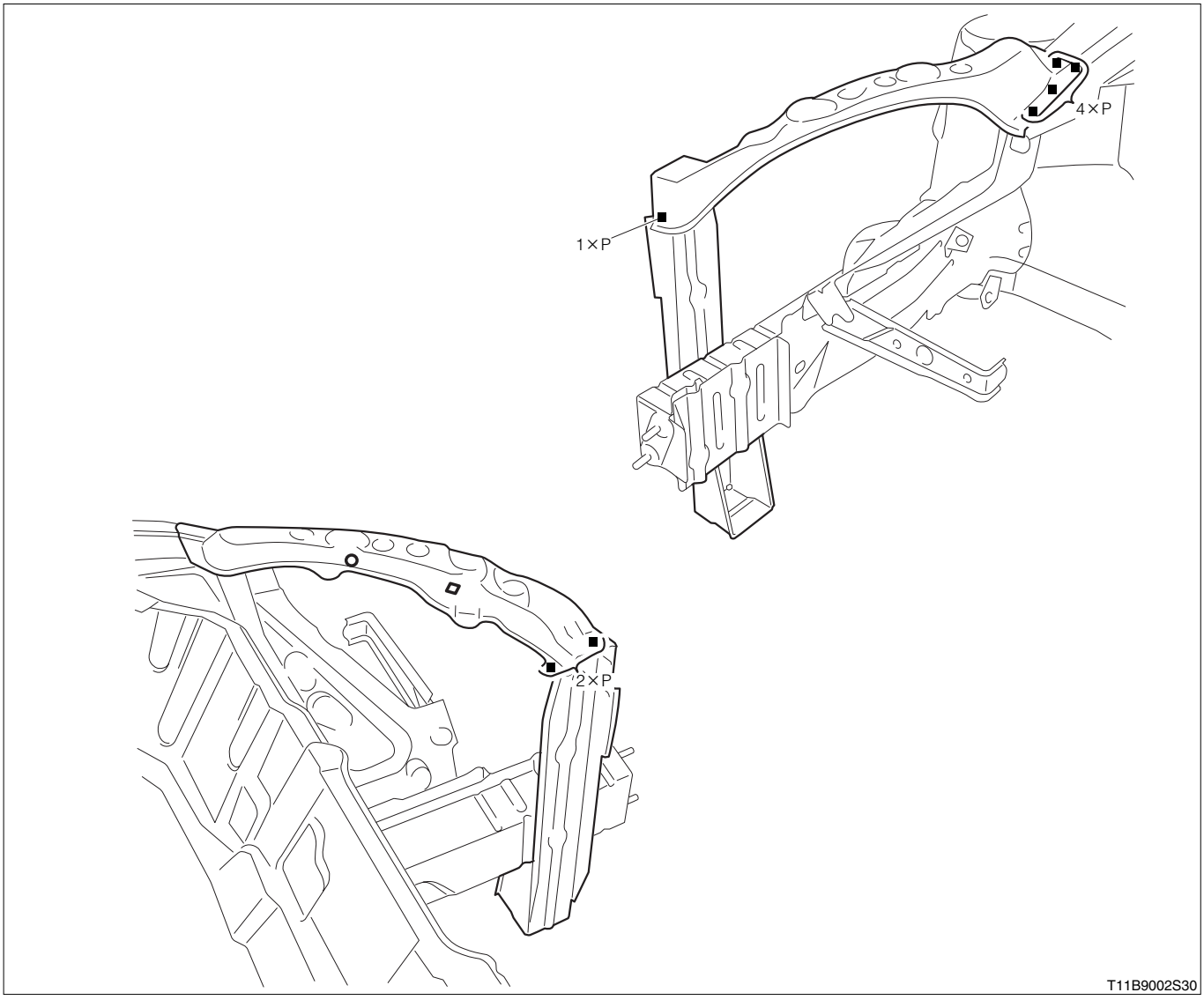
1 RADIATOR SUPPORT UPPER

1-1 REPLACEMENT

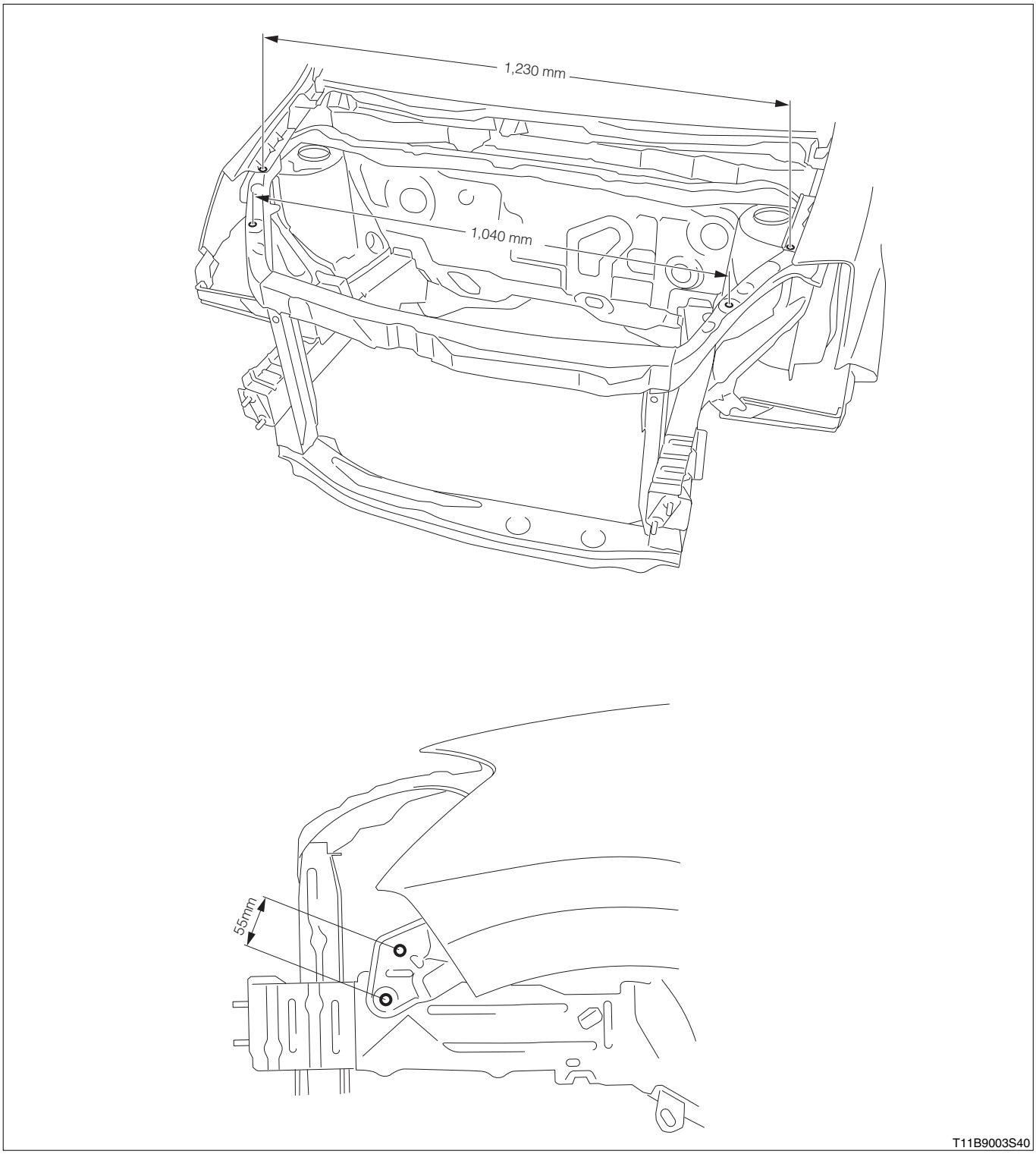
1-1-1 REMOVAL PROCEDURES



1-1-2 **INSTALLATION PROCEDURES**



1. Remove the part or component to be exchanged from the service parts and install to the vehicle.



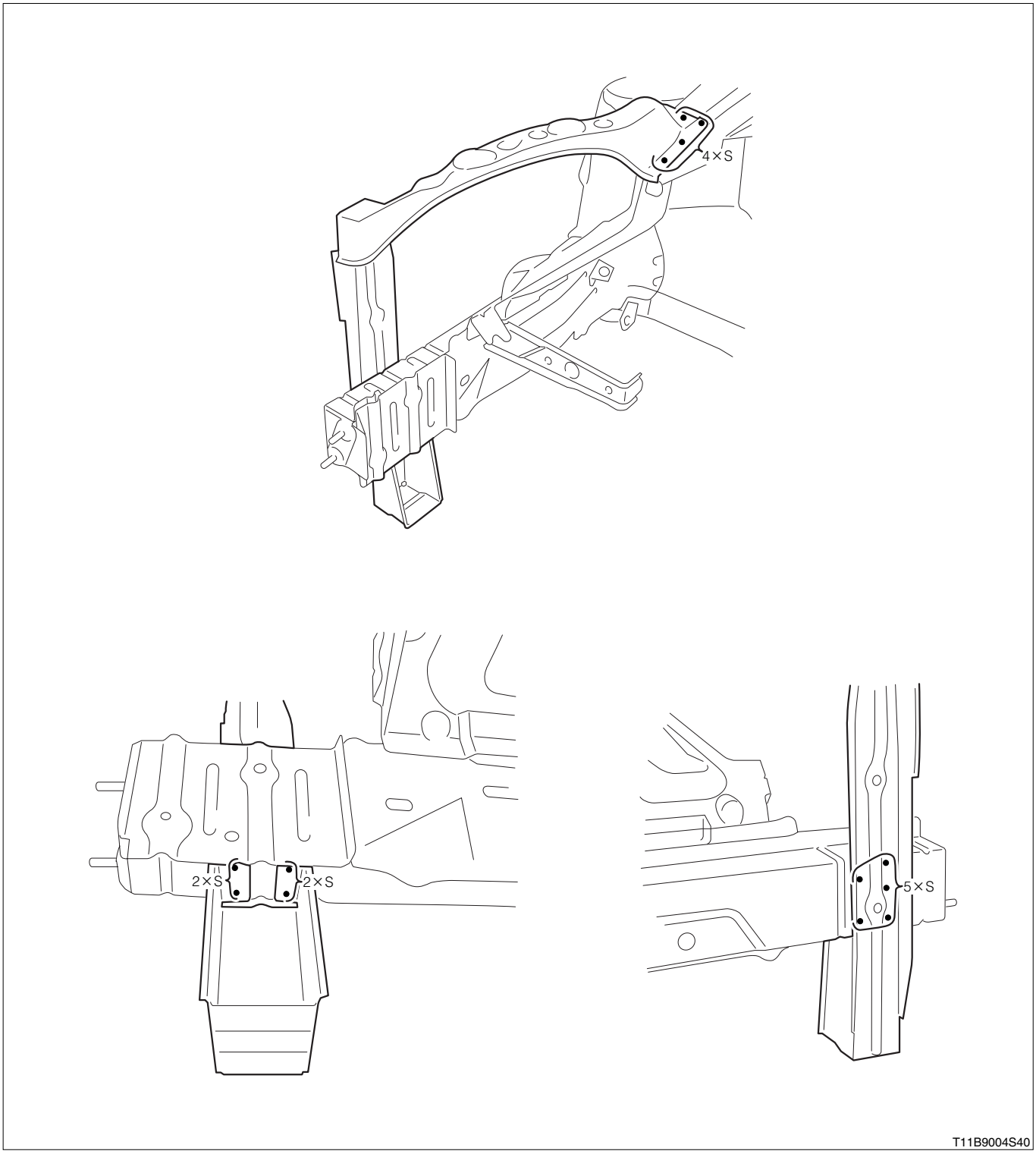
The figures are reference values.

2. Measure dimensions of the head lamp mounting hole before installing replacement parts.

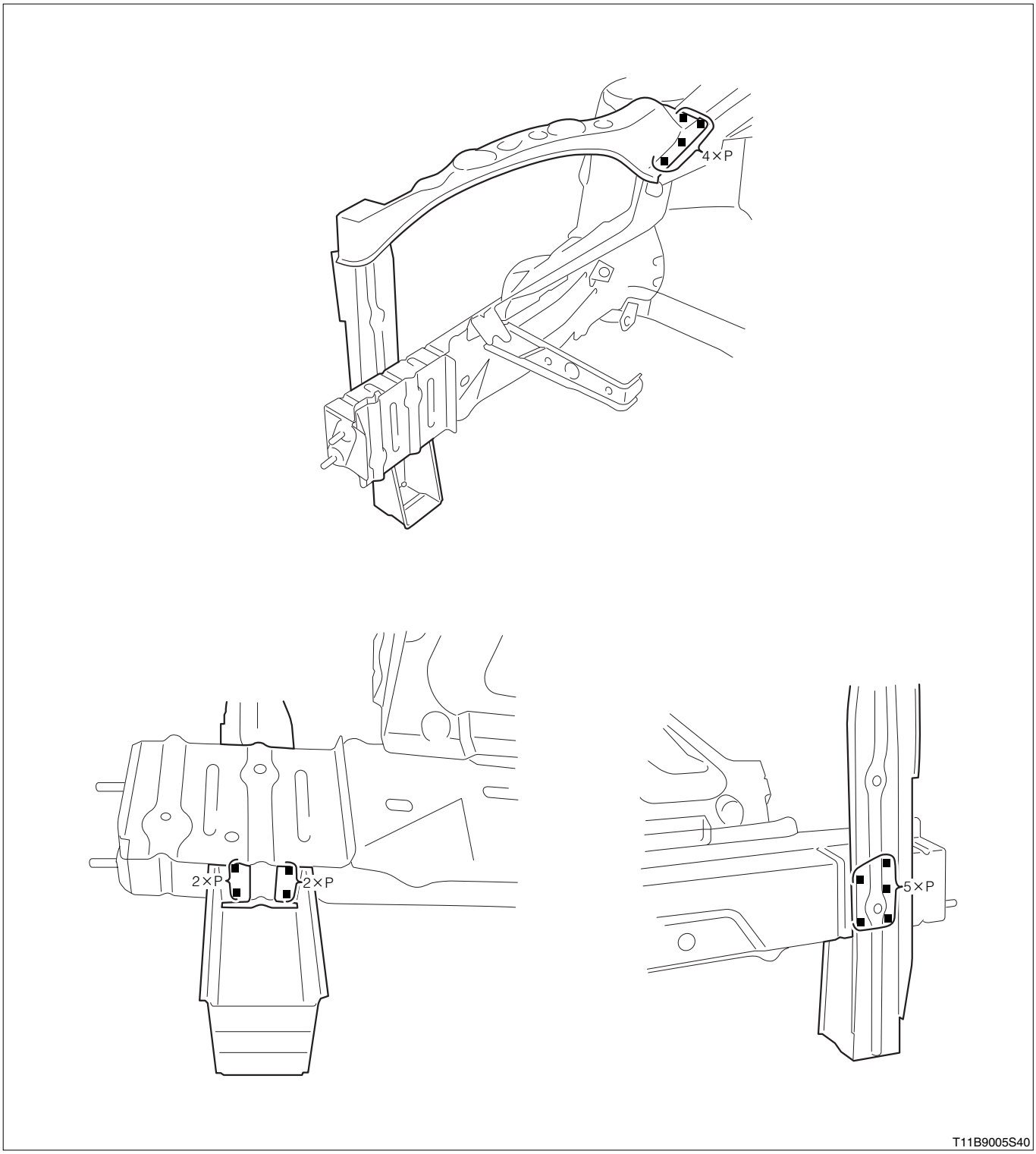
2 RADIATOR SUPPORT SIDE

2-1 REPLACEMENT

2-1-1 REMOVAL PROCEDURES



2-1-2 INSTALLATION PROCEDURES



3 FRONT FENDER APRON FRONT

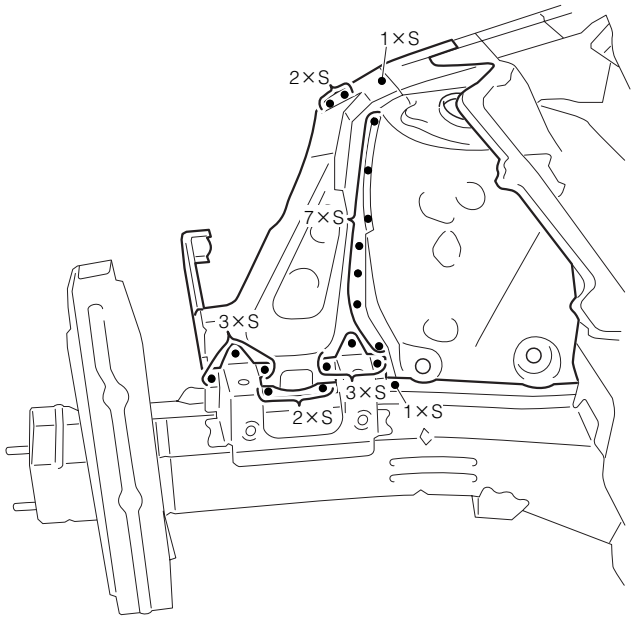
3-1 REPLACEMENT

3-1-1 OPERATION BEFORE REMOVAL

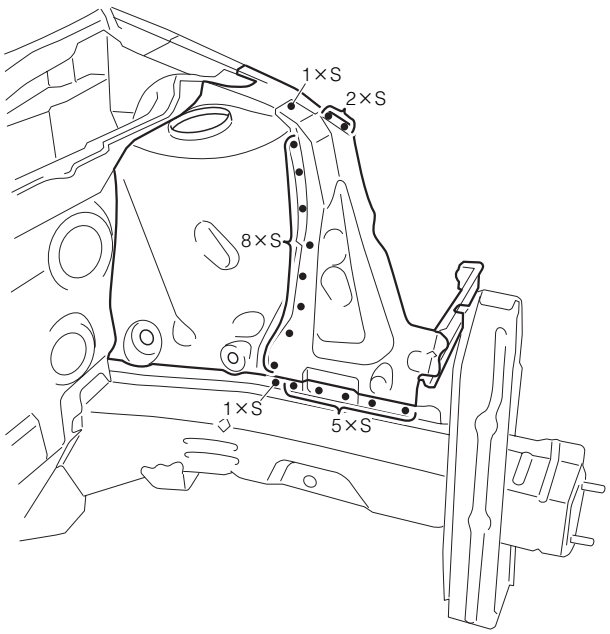
1. Remove the part or component to be exchanged from the radiator support upper.

3-1-2 REMOVAL PROCEDURES

[RH]



[LH]



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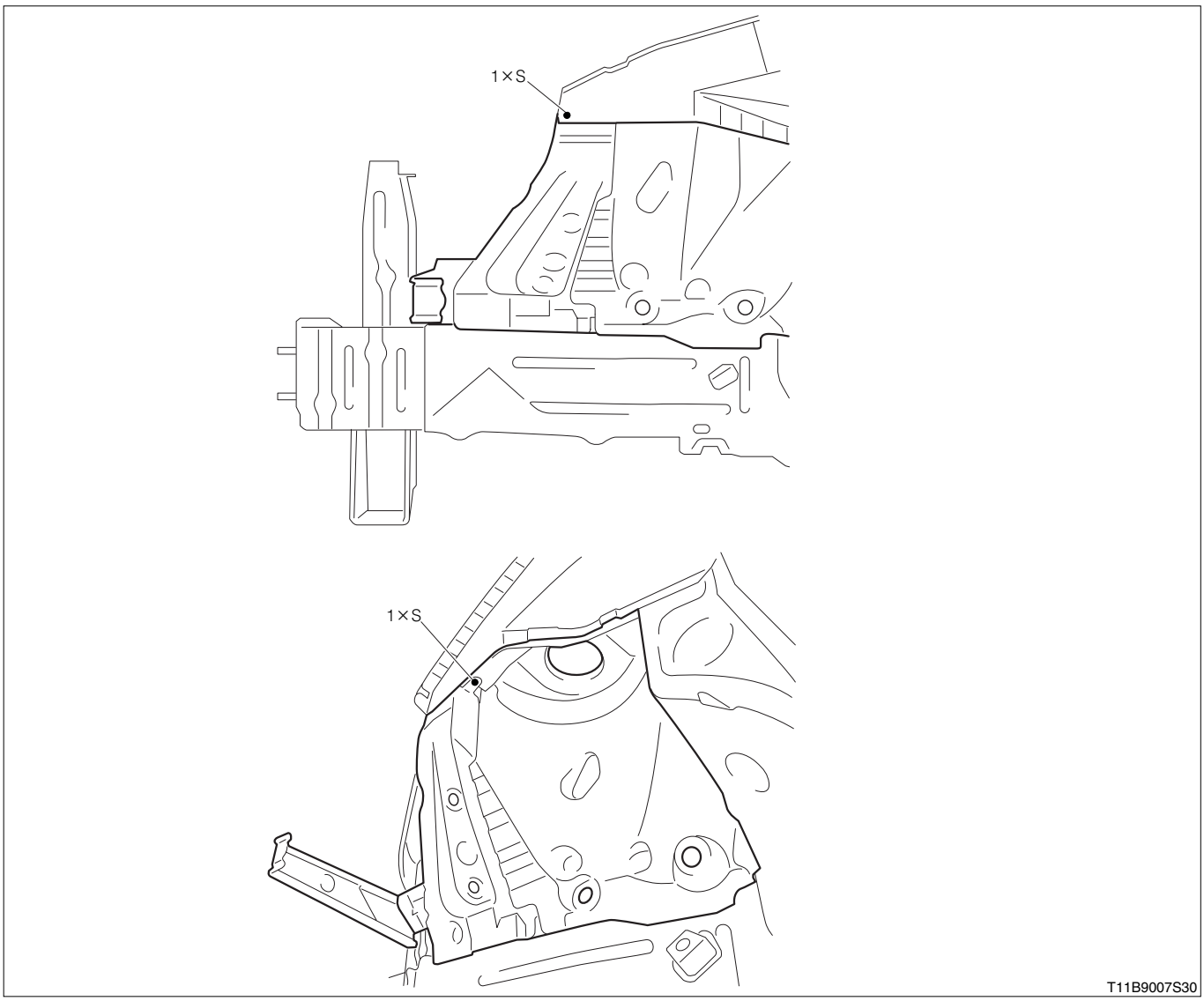
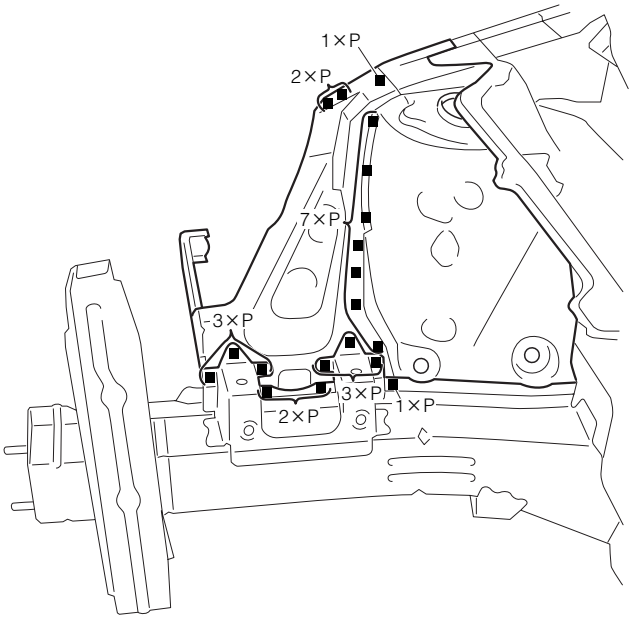
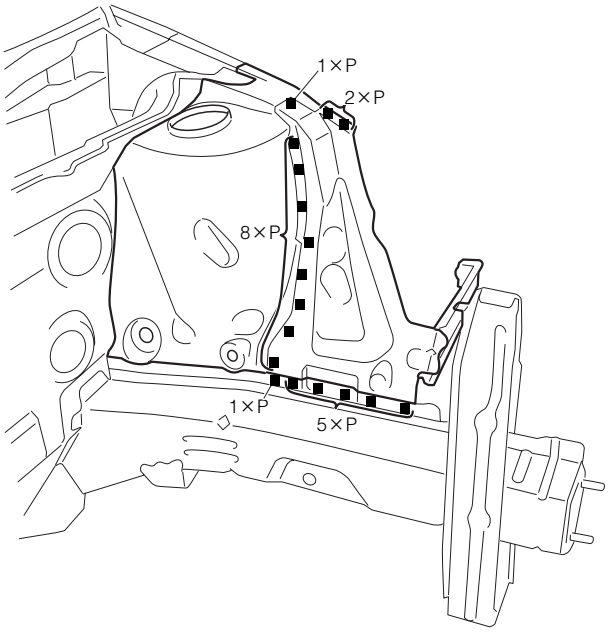

1×S
1×S
T11B9007S30

3-1-3 **INSTALLATION PROCEDURES**

[RH]

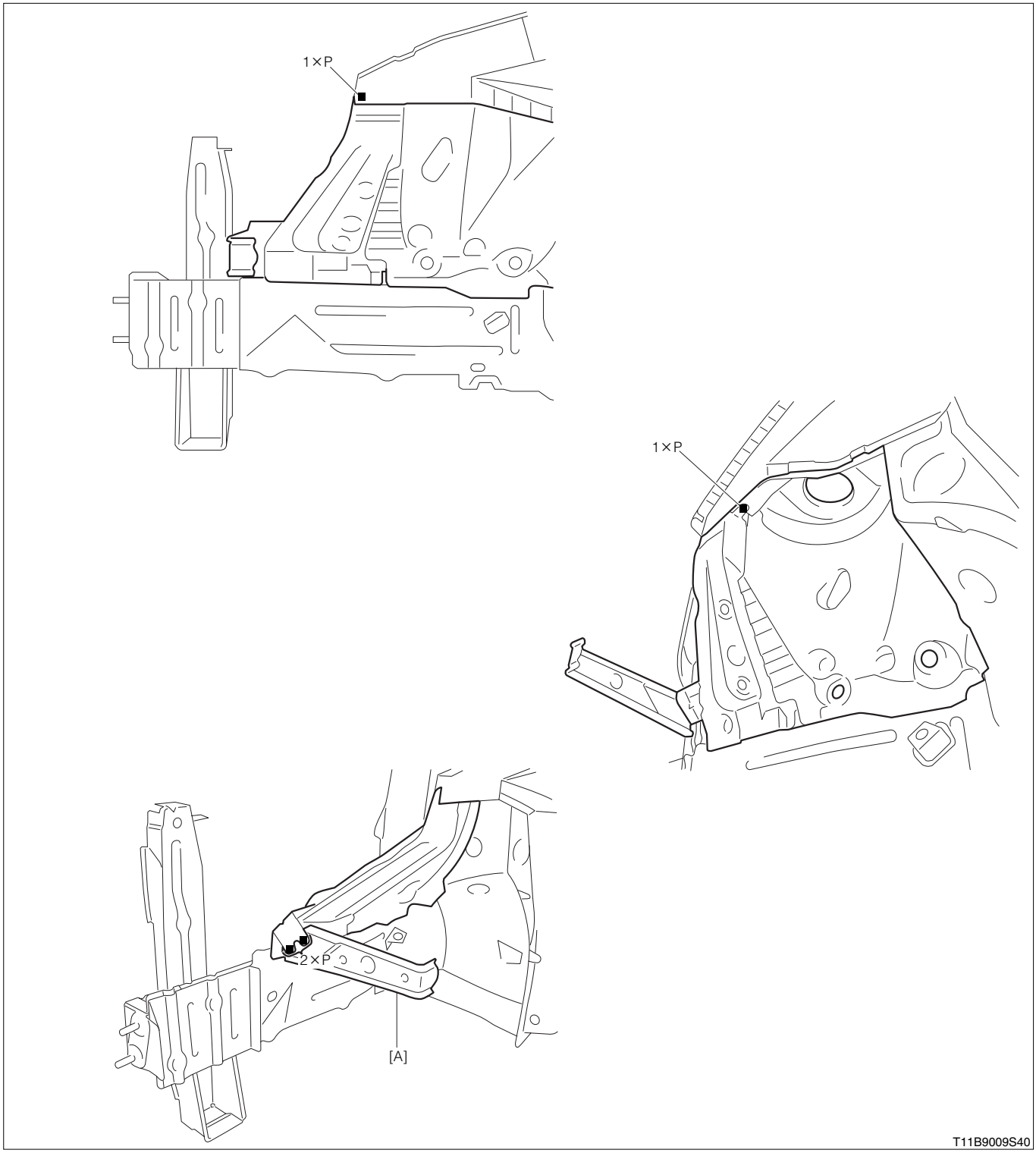


[LH]



T11B9008S40

1. Remove the part or component to be exchanged from the service parts and install to the vehicle.



[A] Front fender mounting bracket

3-1-4 **OPERATION AFTER INSTALLATION**

1. Install the radiator support upper.

4 FRONT FENDER APRON

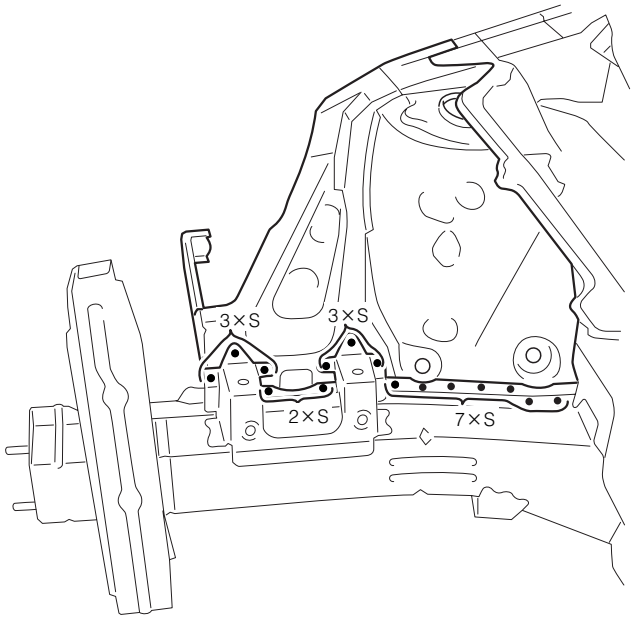
4-1 REPLACEMENT

4-1-1 OPERATION BEFORE REMOVAL

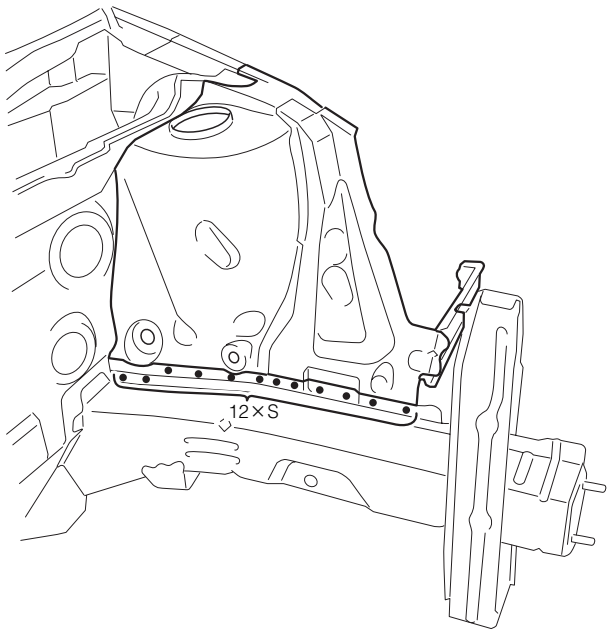
1. Remove the part or component necessary to remove the radiator support upper.
2. Remove the part or component necessary to remove the cowl top side panel.

4-1-2 REMOVAL PROCEDURES

[RH]



[LH]



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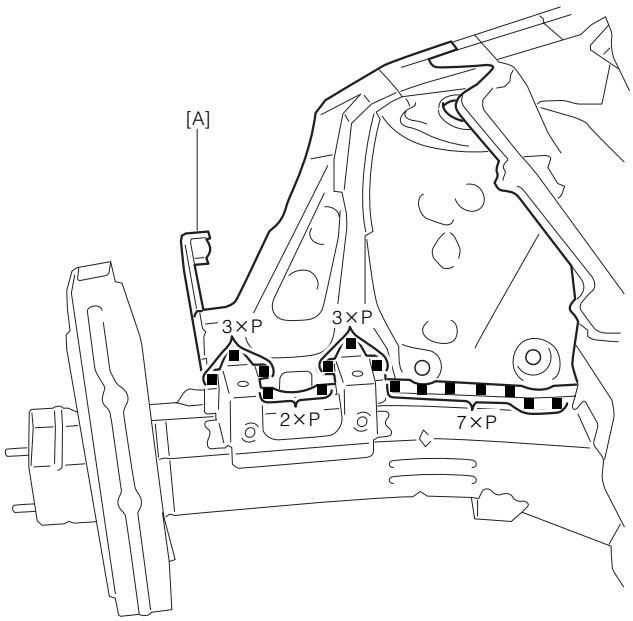
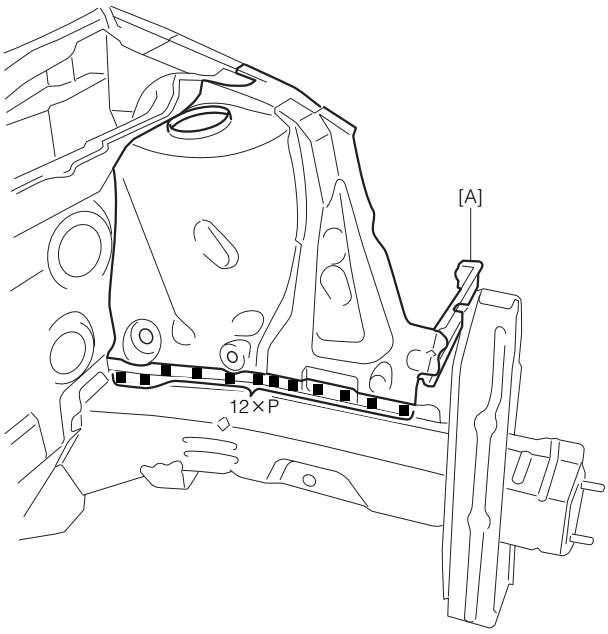
4×S
5×S
1×S
2×S
1×S
7×S
T11B9011S40

4-1-3 **INSTALLATION PROCEDURES**

[RH]



[LH]



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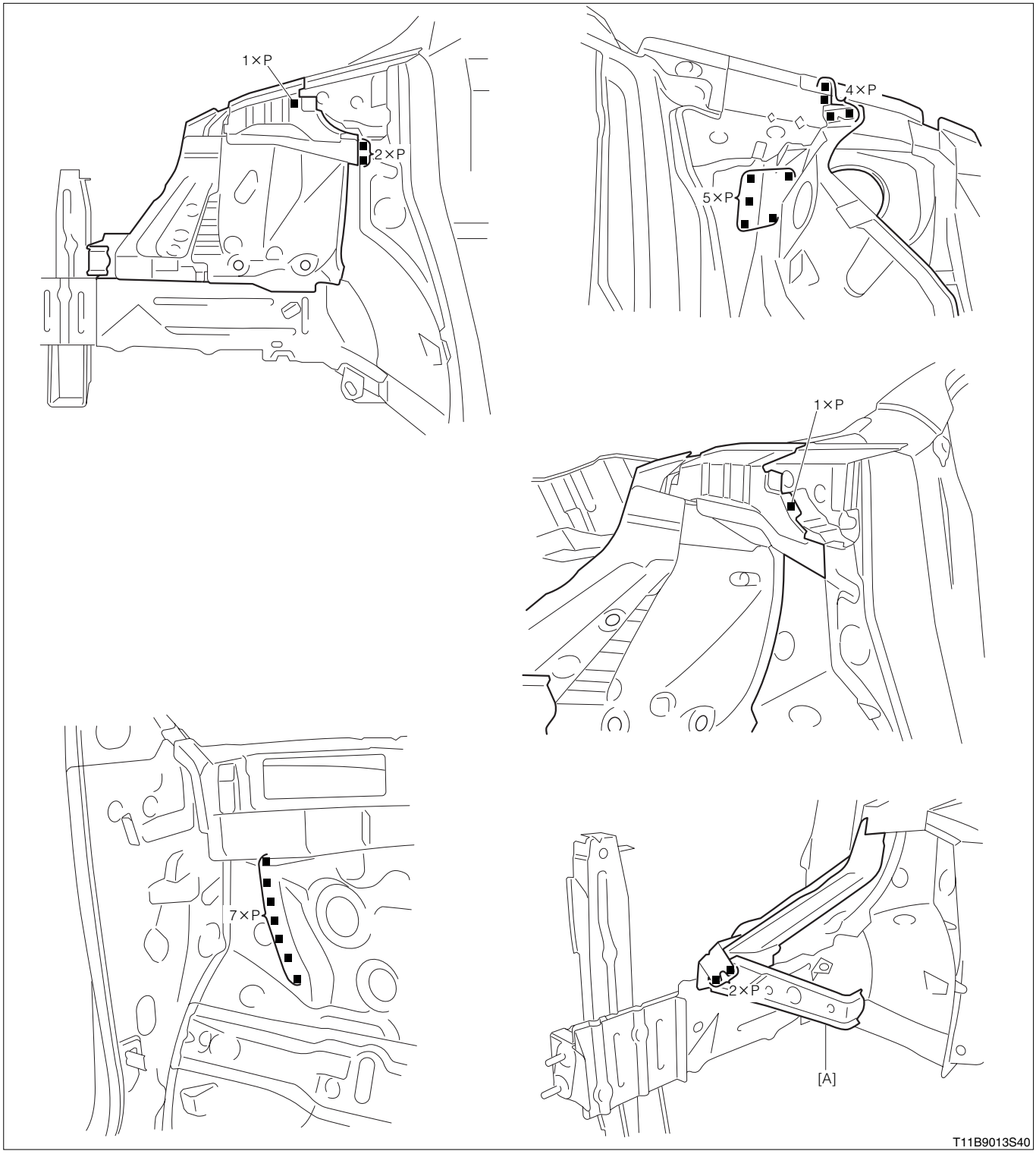
[A] Front fender mounting bracket



[A] Front fender mounting bracket

4-1-4 **OPERATION AFTER INSTALLATION**

1. Install the cowl top side panel.
2. Install the radiator support upper.

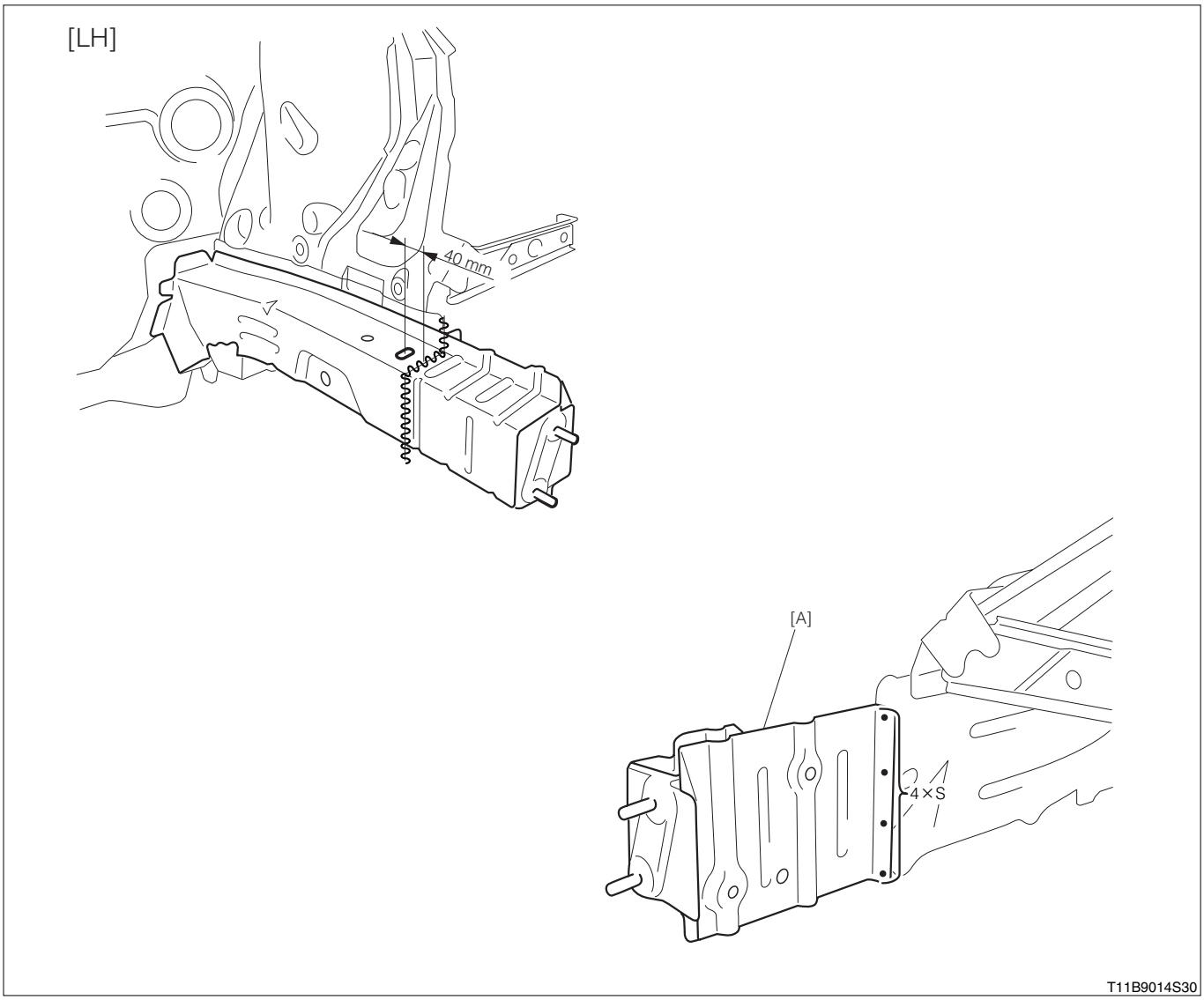
5 FRONT SIDE MEMBER

5-1 REPLACEMENT(CUTTING)

5-1-1 OPERATION BEFORE REMOVAL

1. Remove the necessary part or component of the radiator support side.

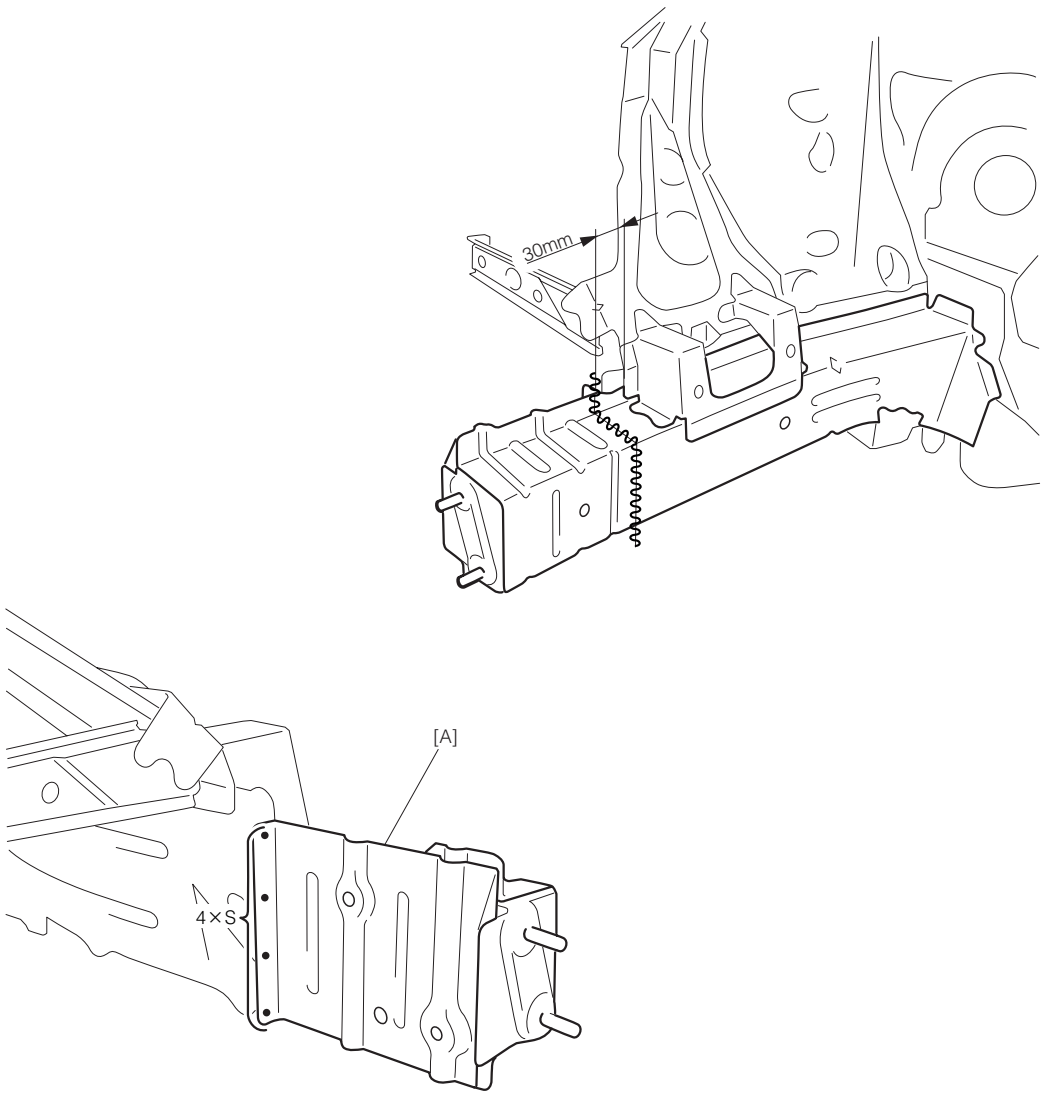
5-1-2 REMOVAL PROCEDURES



[A] Front side member plate No.2

1. Remove [A] together.

[RH]

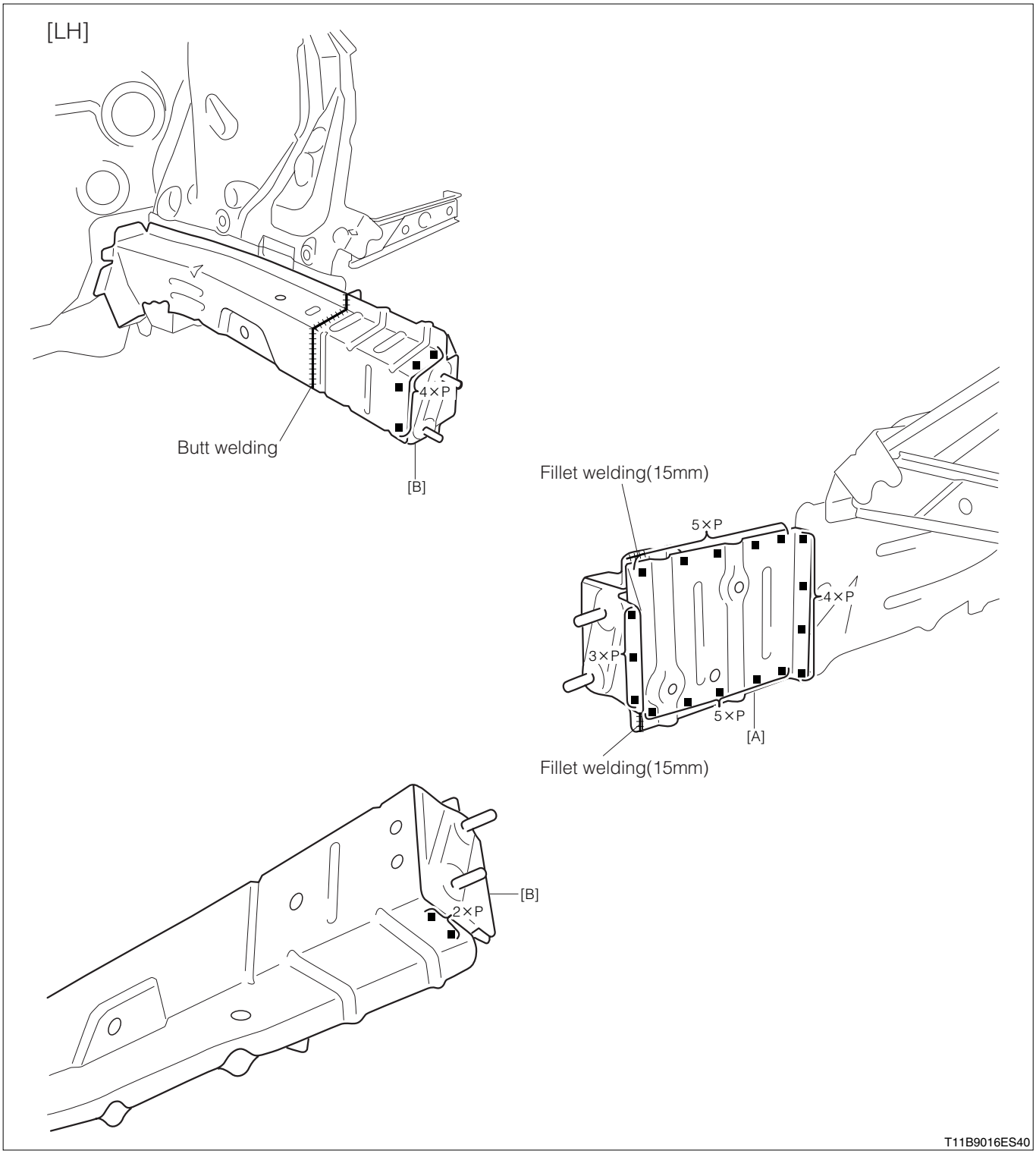


T11B9015S30

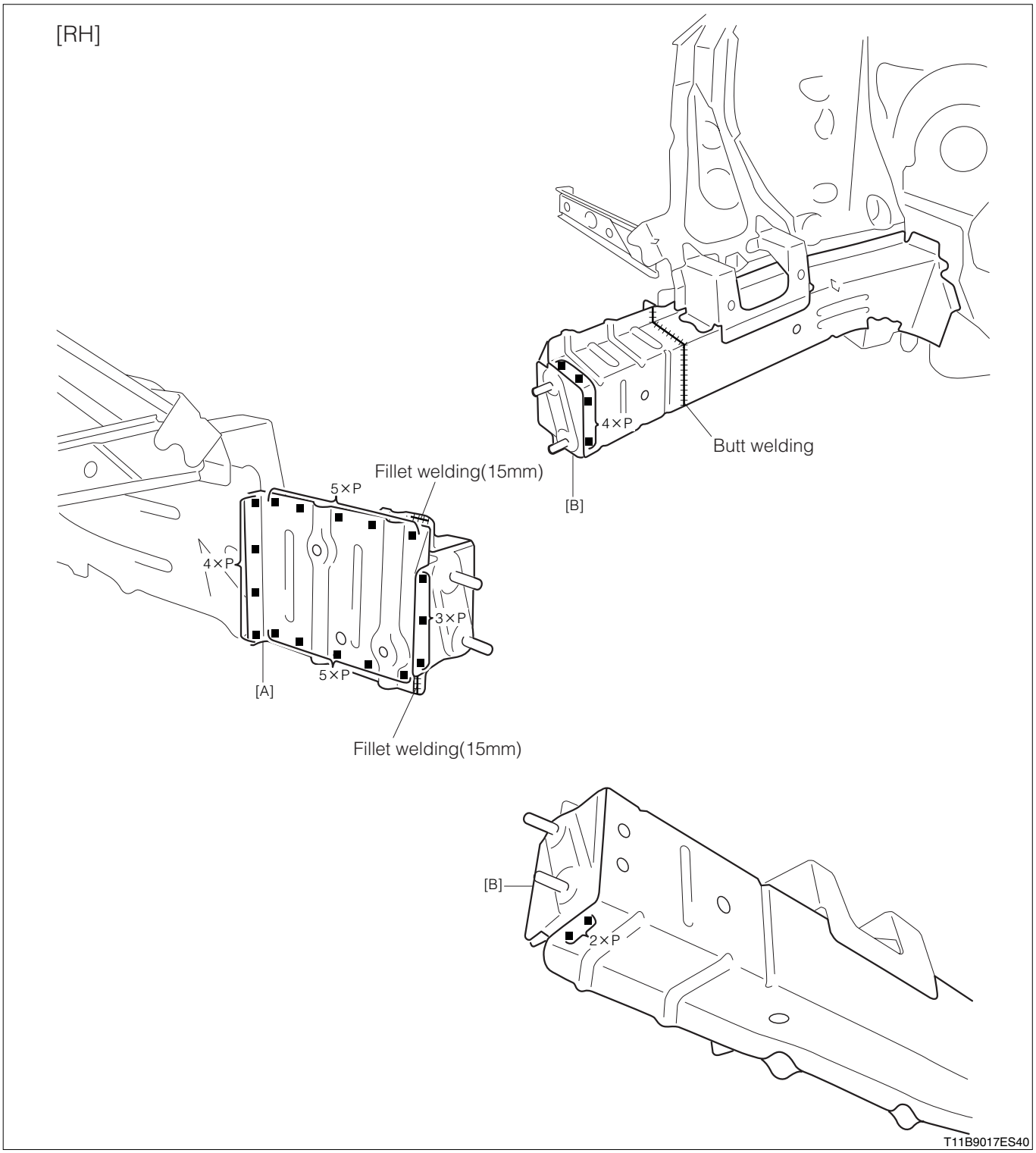
[A] Front side member plate No.2

2. Remove [A] together.

5-1-3 **INSTALLATION PROCEDURES**



[A] Front side member plate No.2
[B] Front bumper arm



[A] Front side member plate No.2
[B] Front bumper arm

5-1-4 **OPERATION AFTER INSTALLATION**

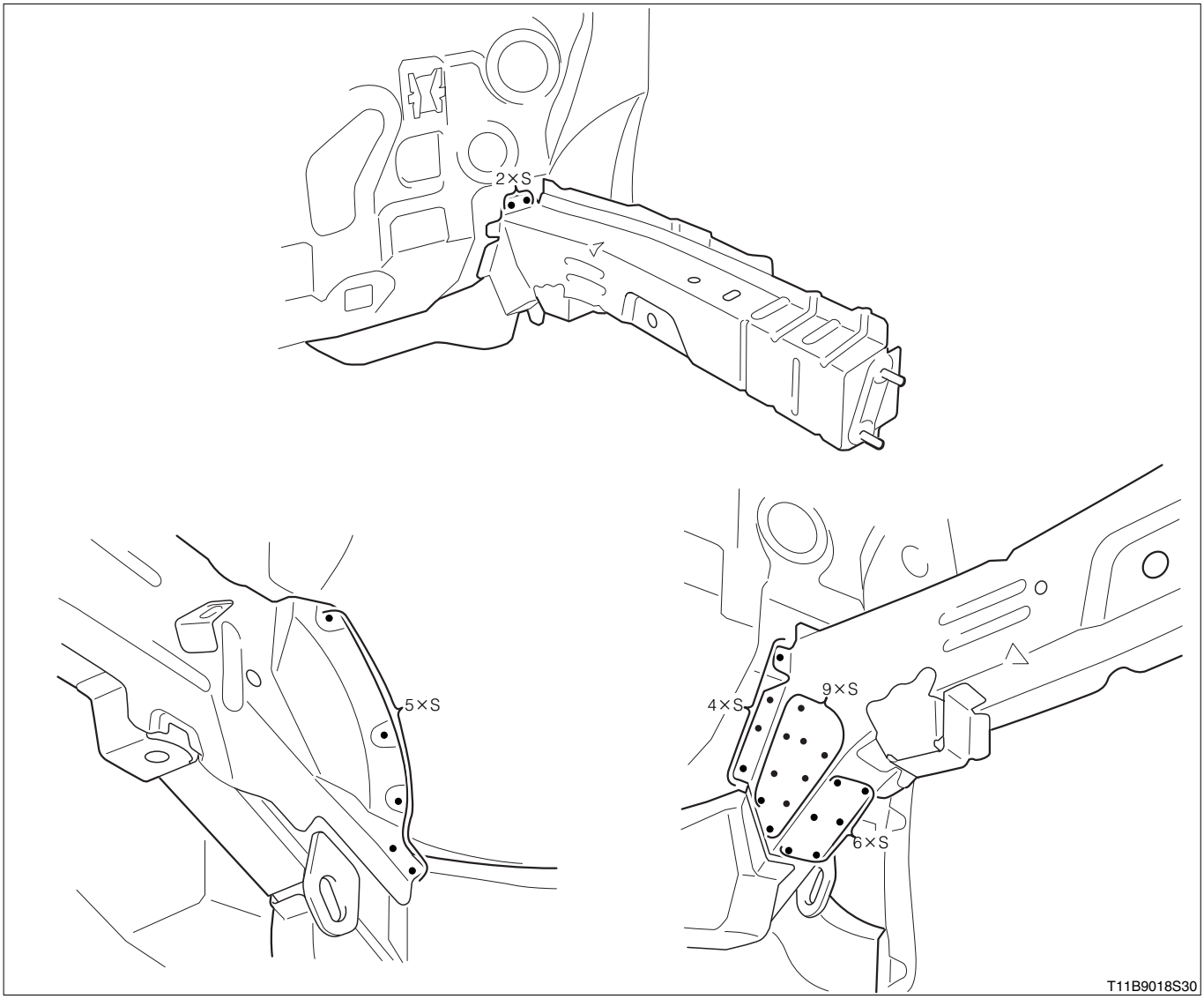
1. Install the radiator support side.

5-2 REPLACEMENT

5-2-1 OPERATION BEFORE REMOVAL

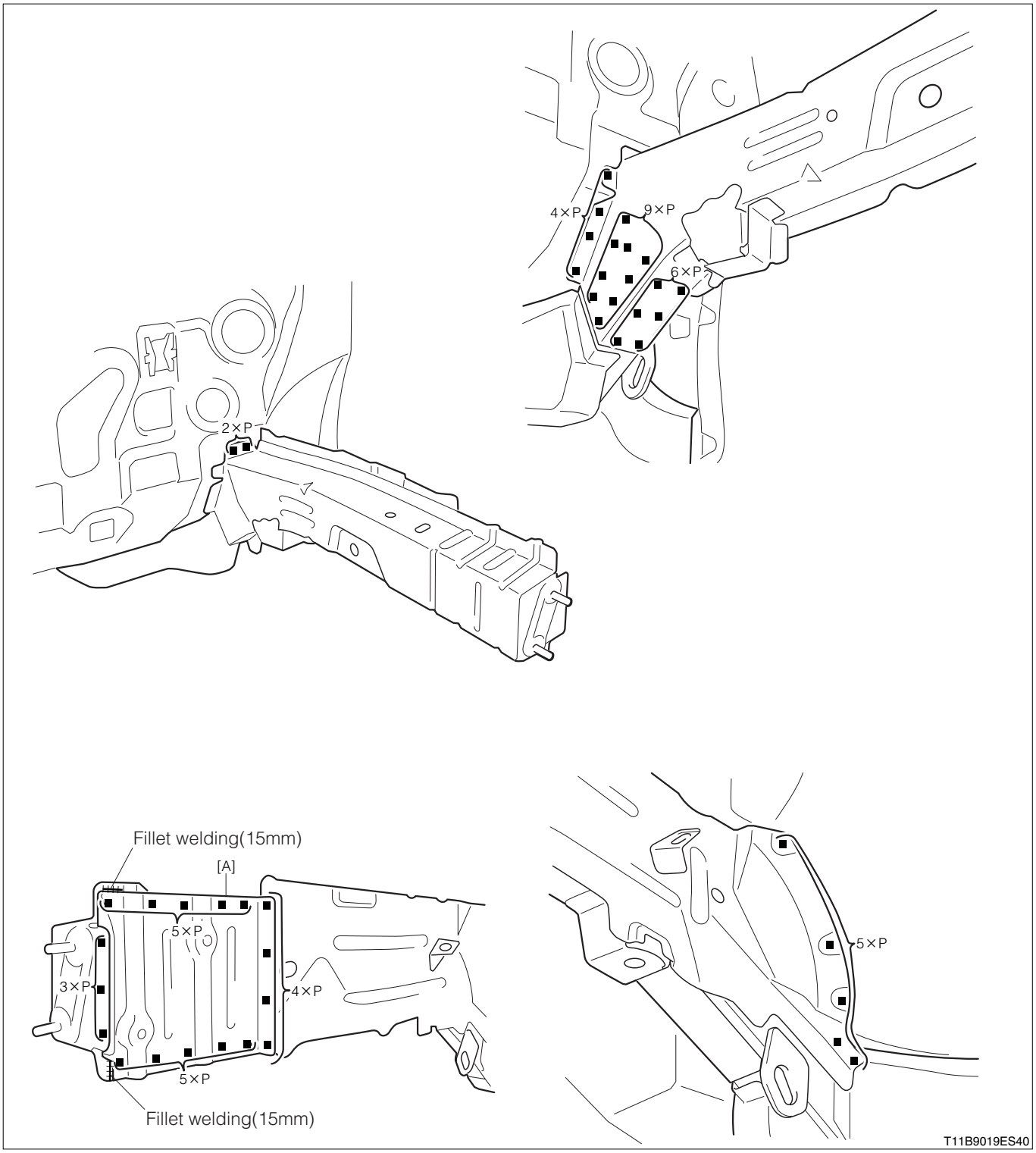
1. Remove the necessary part or component of the radiator support side.
2. Remove the necessary part or component of the front fender apron.

5-2-2 REMOVAL PROCEDURES



1. Replace the front side member while retaining the rear section of it on the vehicle side.

5-2-3 INSTALLATION PROCEDURES



[A] Front side member plate No.2

1. Remove the part or component to be exchanged from the replacement parts and install to the vehicle.

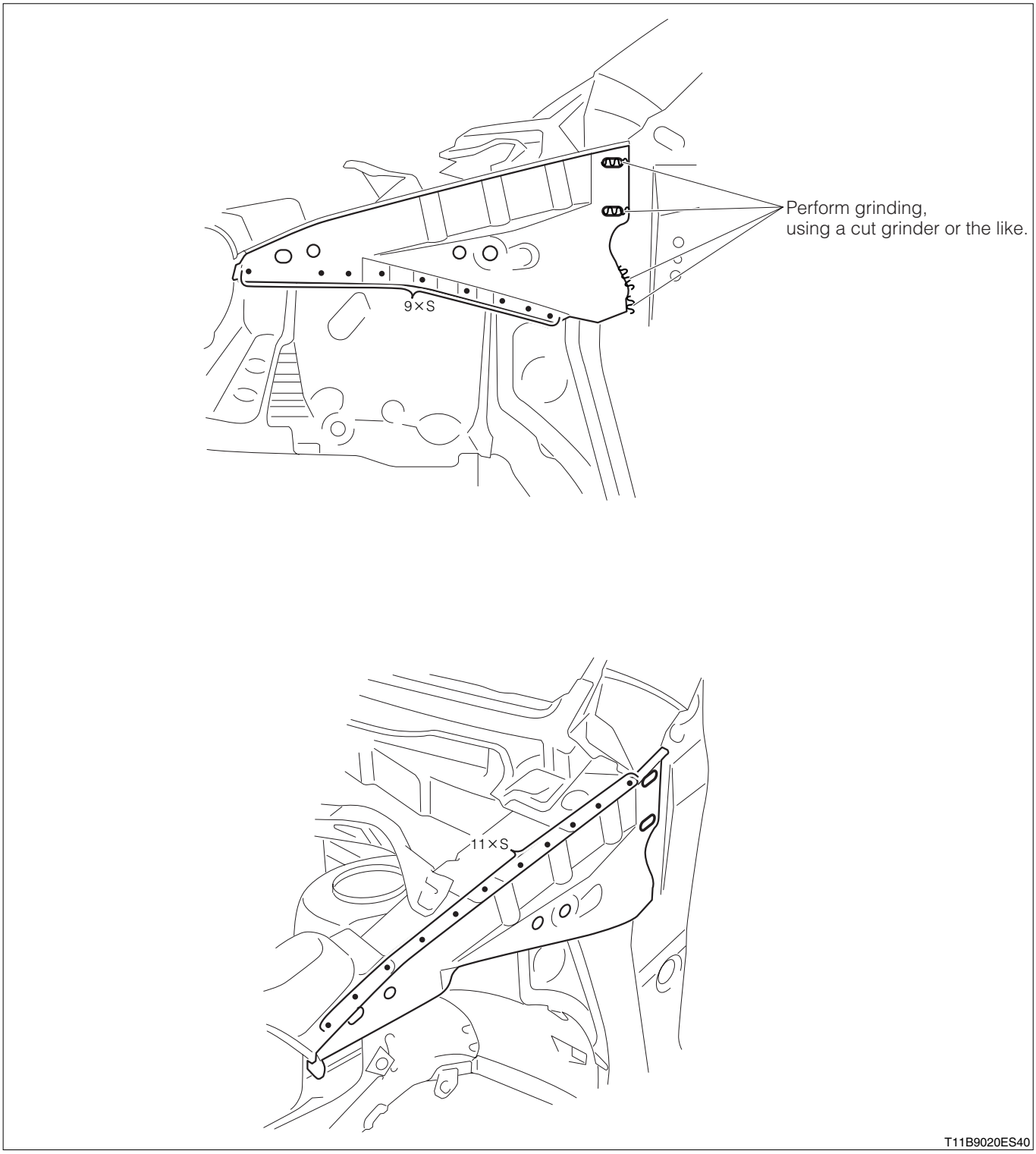
5-2-4 OPERATION AFTER INSTALLATION

1. Install the front fender apron.
2. Install the radiator support side.

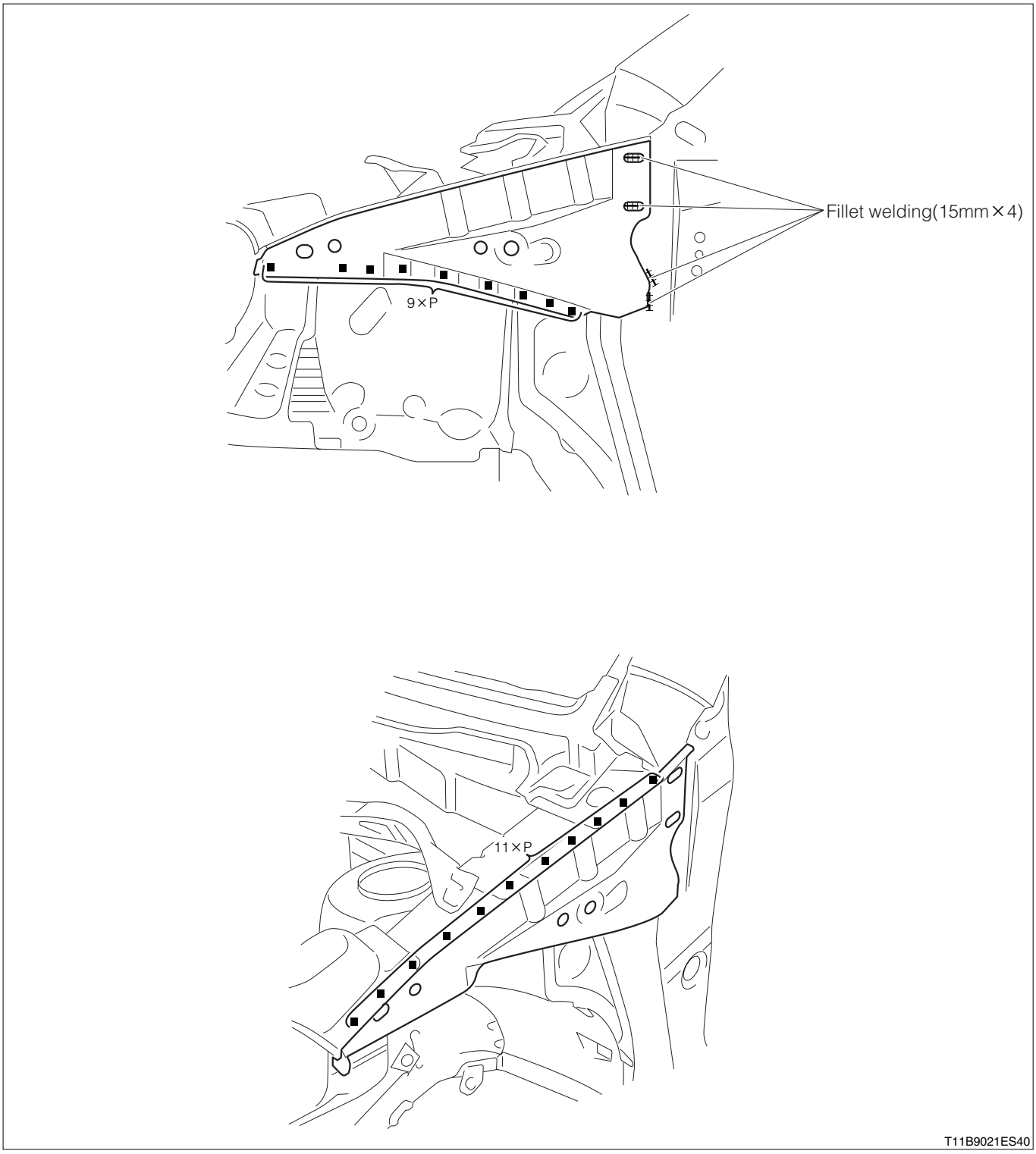
6 COWL TOP SIDE PANEL

6-1 REPLACEMENT

6-1-1 REMOVAL PROCEDURES



6-1-2 **INSTALLATION PROCEDURES**



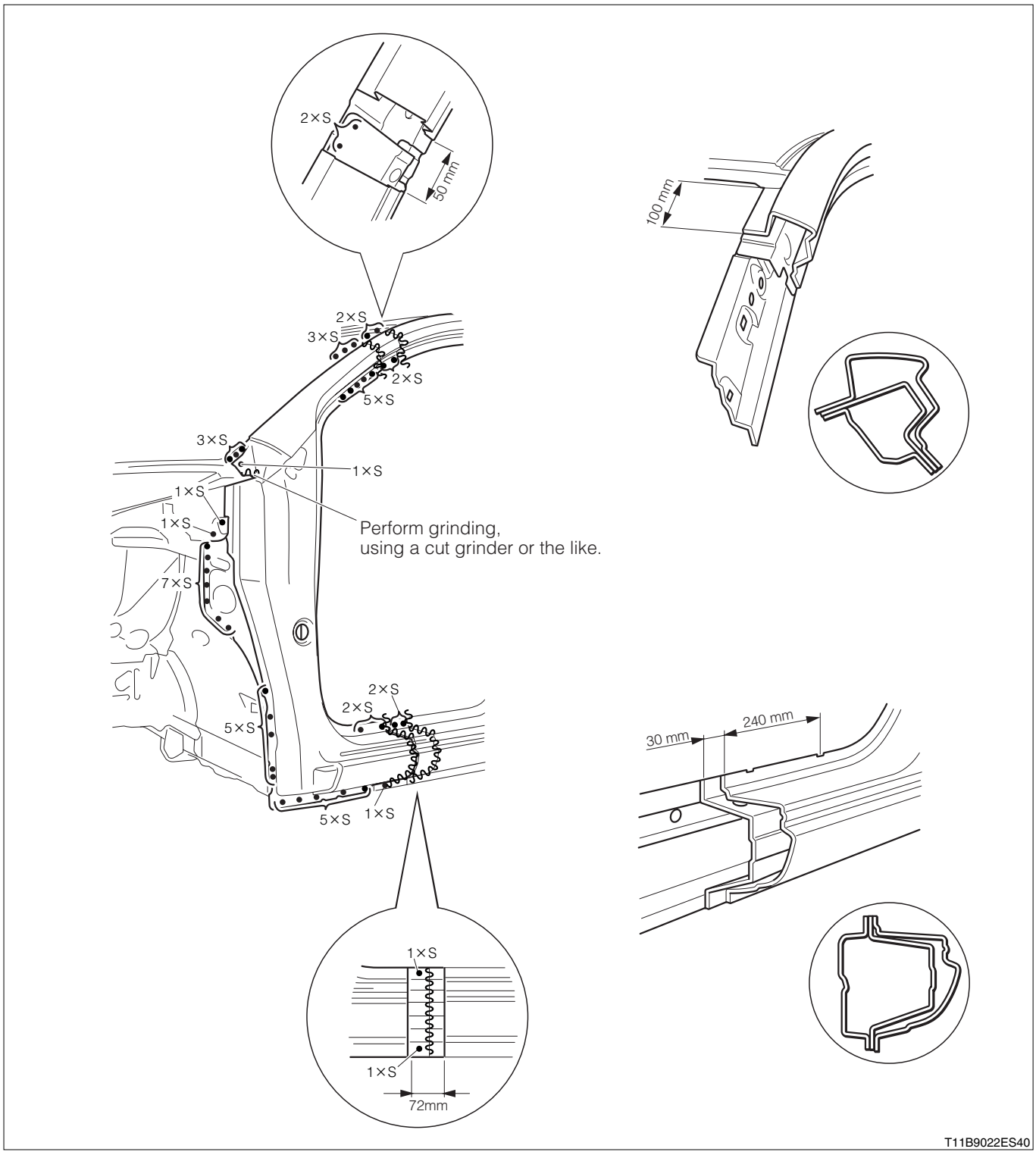
7 FRONT BODY PILLAR

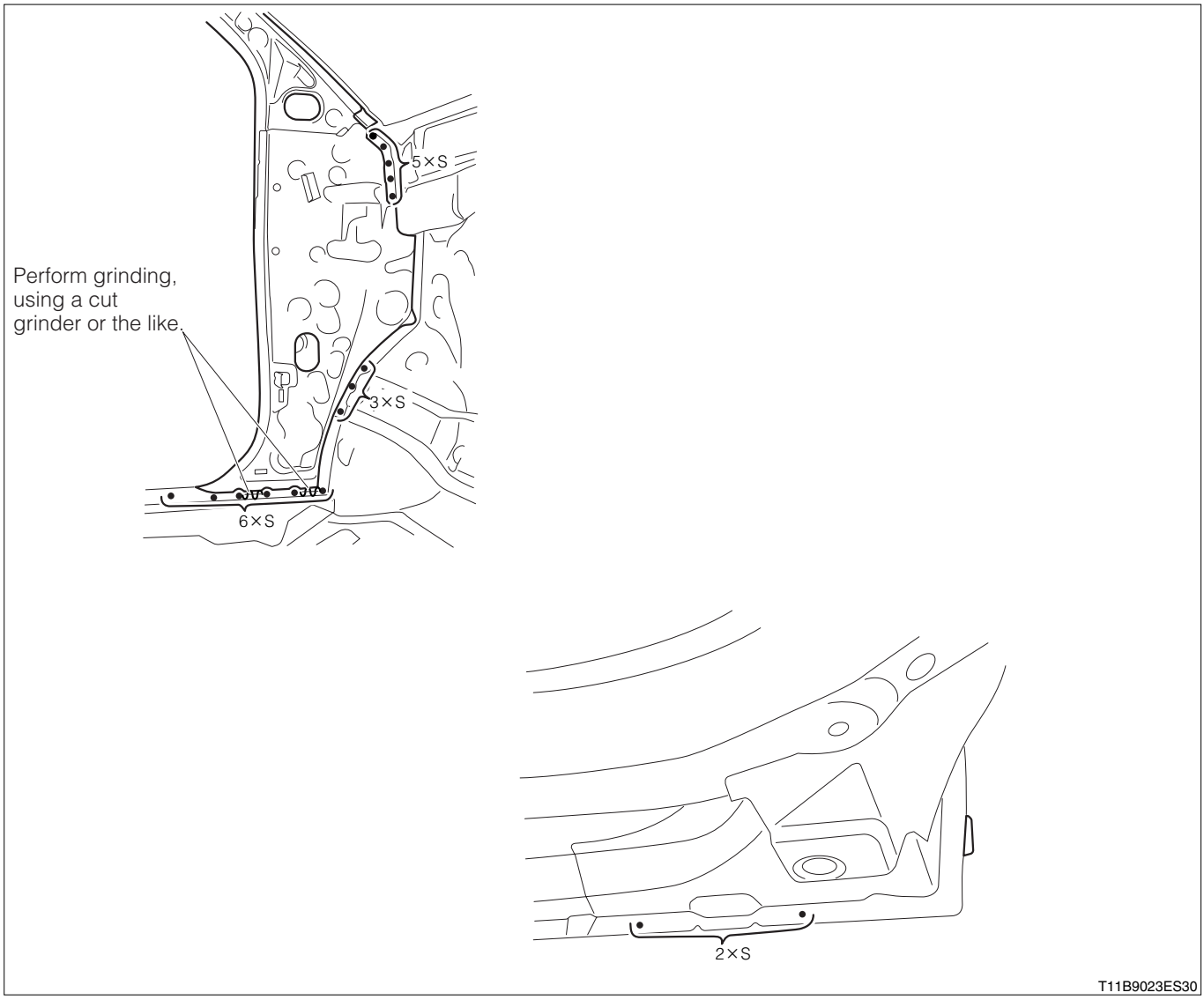
7-1 REPLACEMENT

7-1-1 OPERATION BEFORE REMOVAL

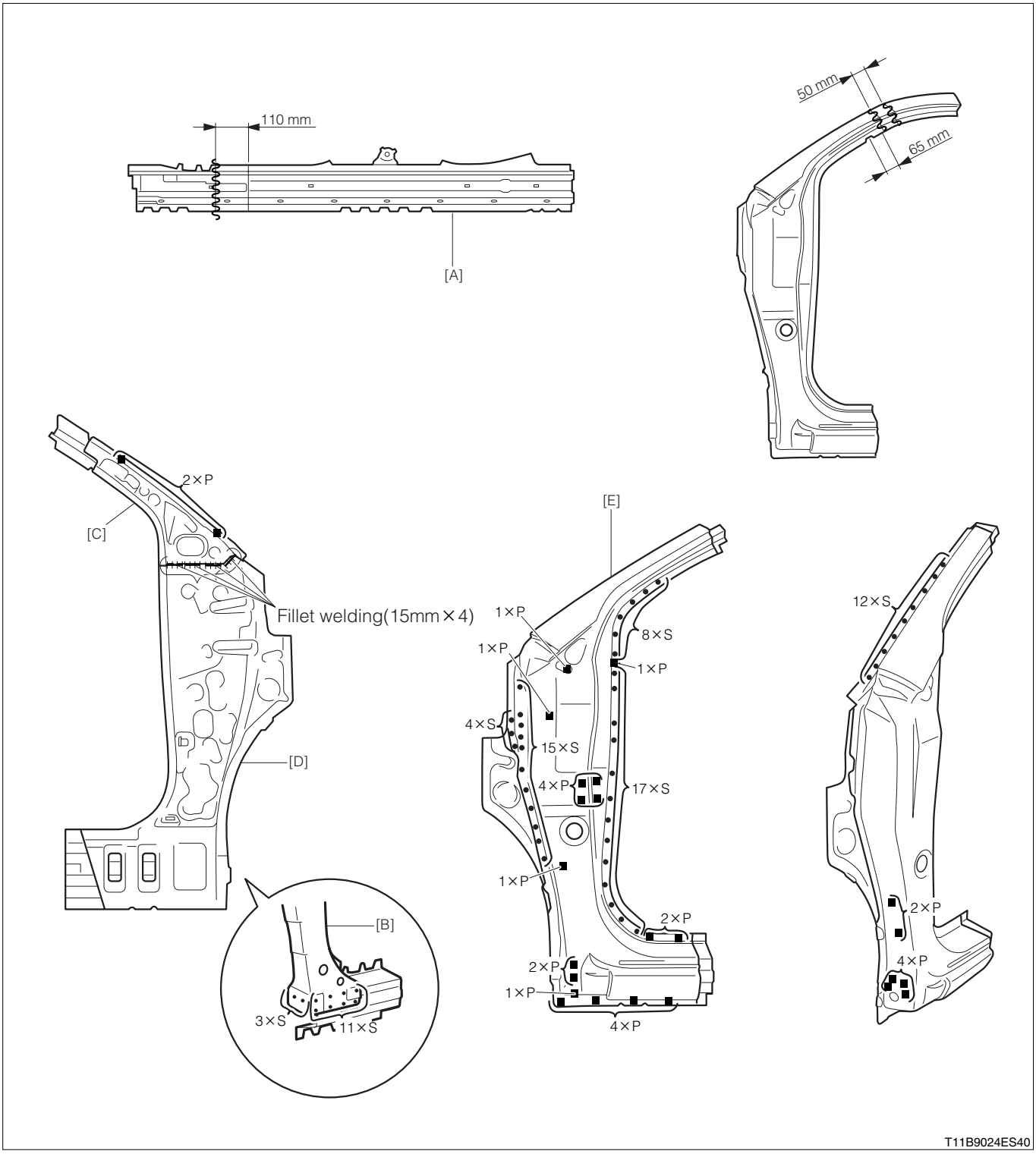
1. Remove the necessary part or component of the cowl top side panel.

7-1-2 REMOVAL PROCEDURES



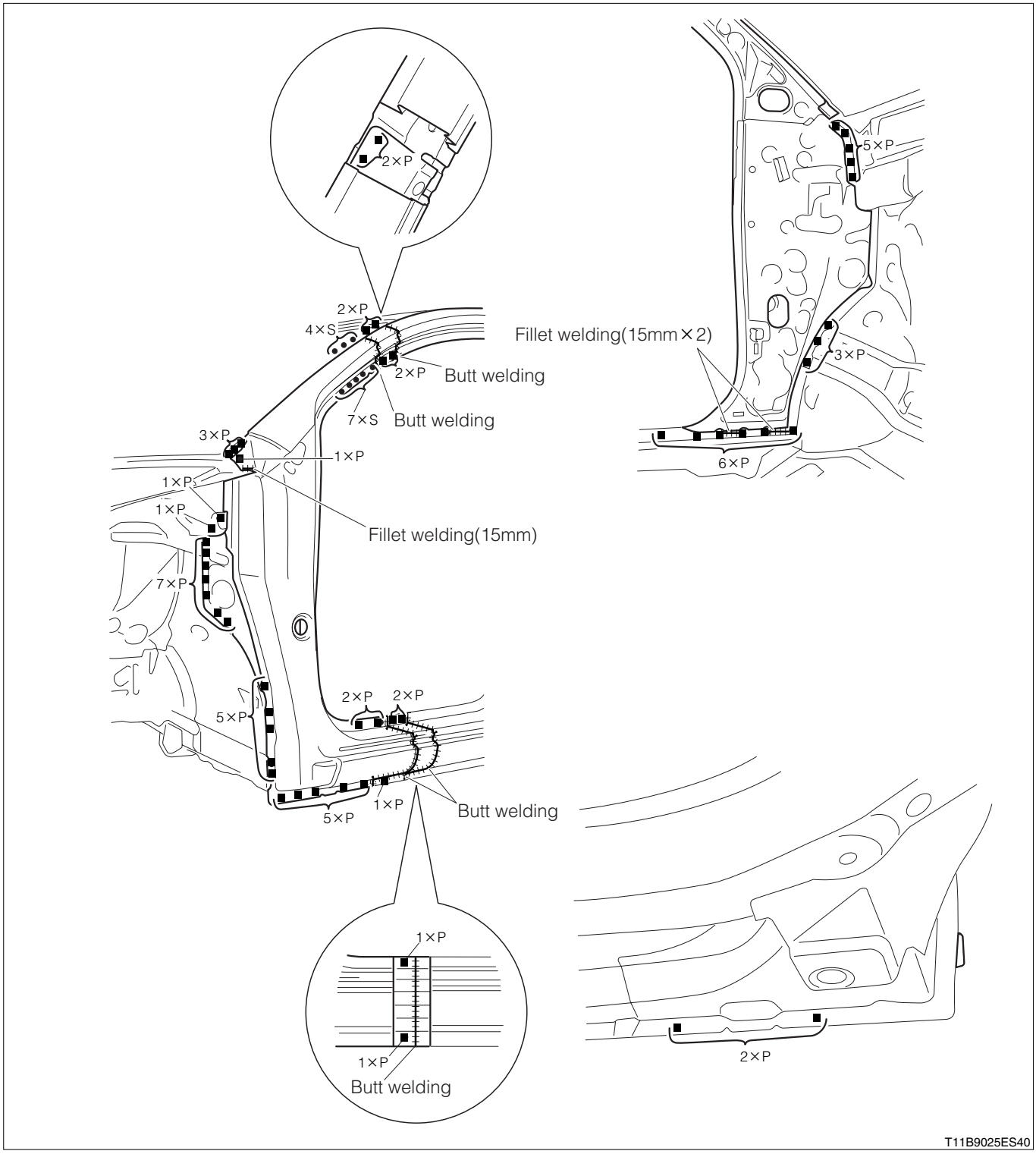

Perform grinding, using a cut grinder or the like.
5×S
3×S
6×S
2×S
T11B9023ES30

7-1-3 INSTALLATION PROCEDURES



[A] Rocker panel reinforcement
[B] Front pillar reinforcement lower
[C] Front pillar upper inner
[D] Front pillar inner
[E] Outer panel

1. Provide the specified number of welds to [A], [B], [C], [D], and [E] before the replacement parts are temporarily installed.



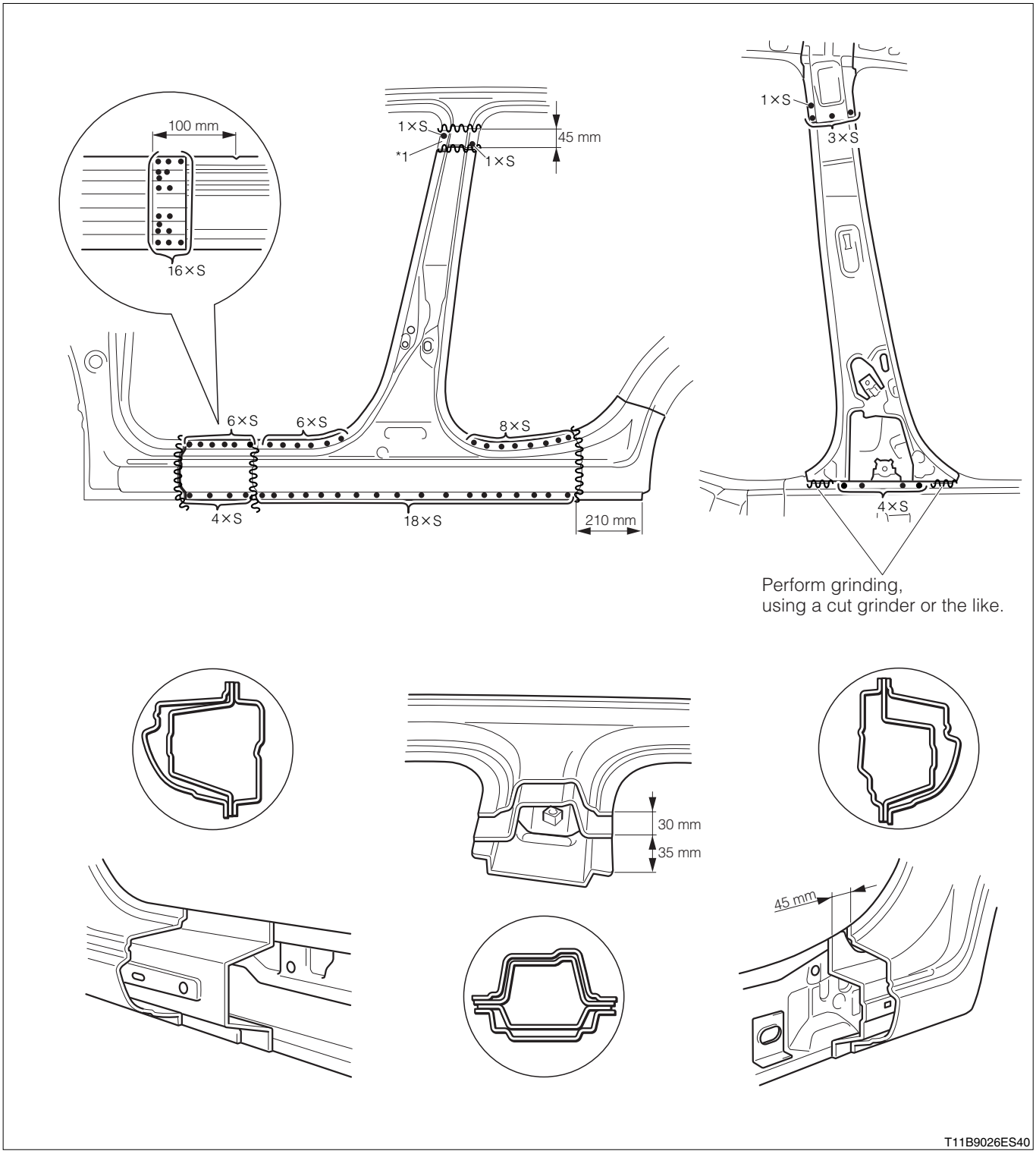
7-1-4 **OPERATION AFTER INSTALLATION**

1. Install the cowl top side panel.

8 CENTER BODY PILLAR

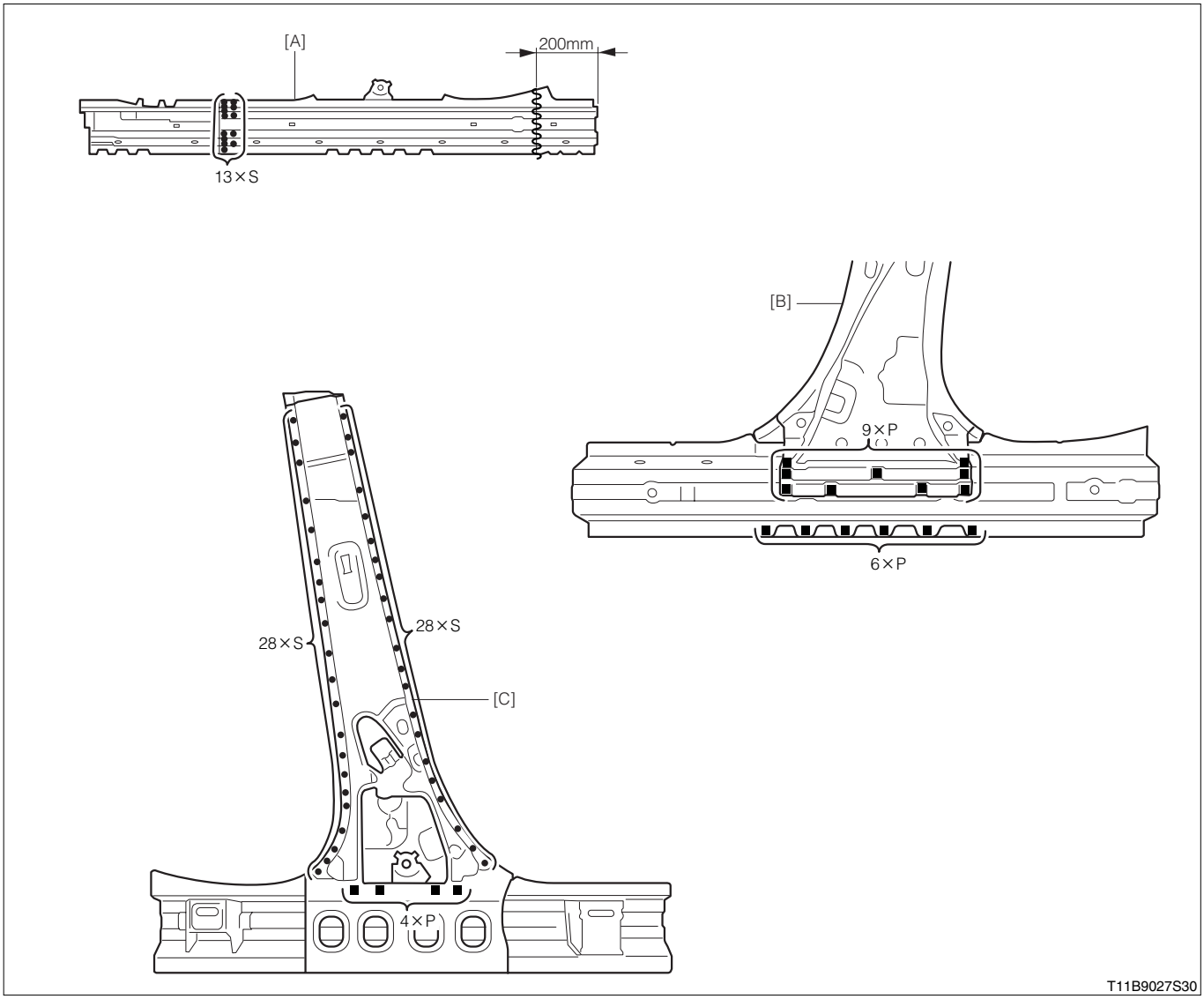
8-1 REPLACEMENT

8-1-1 REMOVAL PROCEDURES



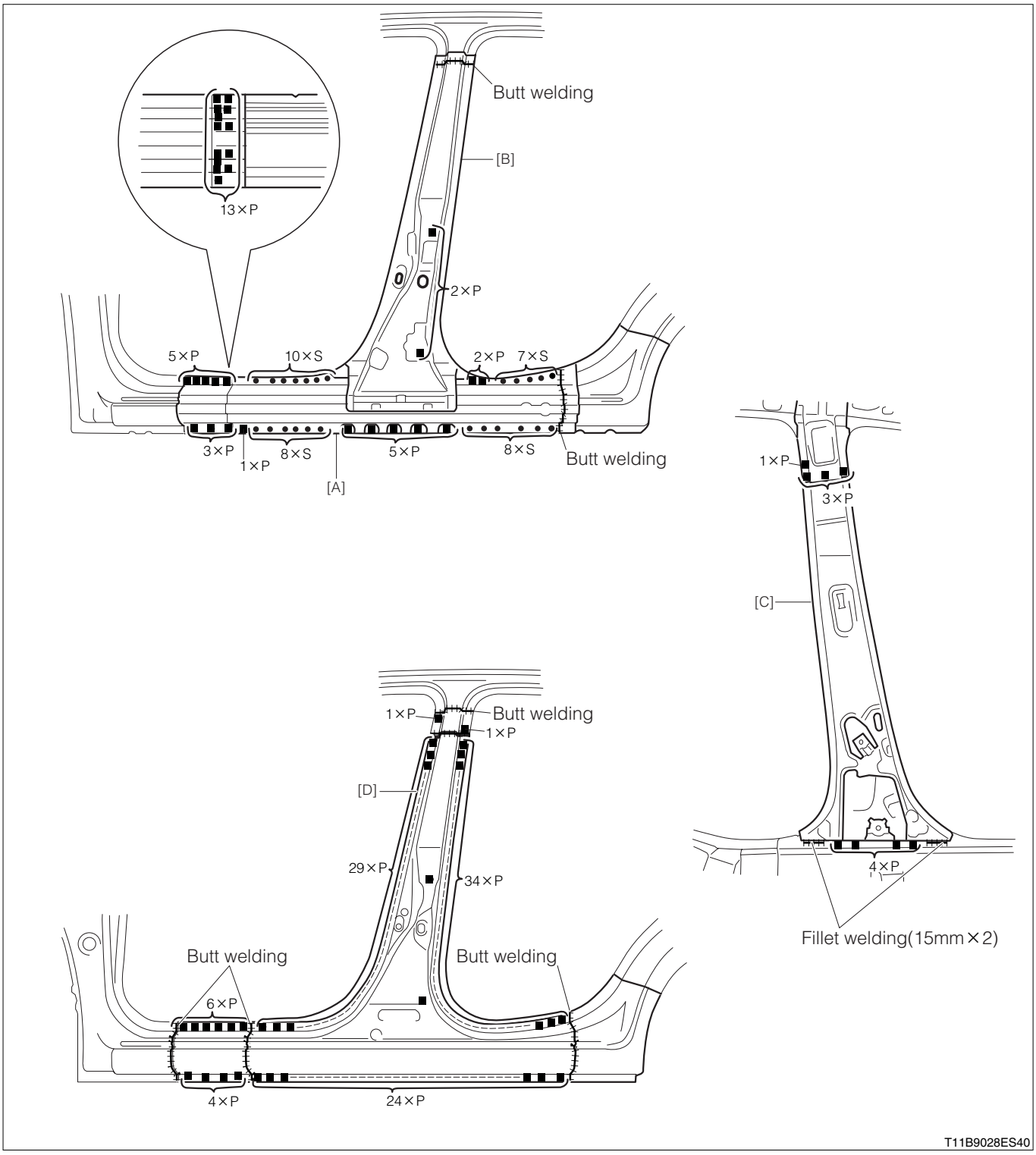
*1 is reused.

8-1-2 INSTALLATION PROCEDURES



[A] Rocker panel reinforcement
[B] Center pillar reinforcement
[C] Center pillar inner

1. Provide the specified number of welds to [A], [B], and [C] before the replacement parts are temporarily installed.



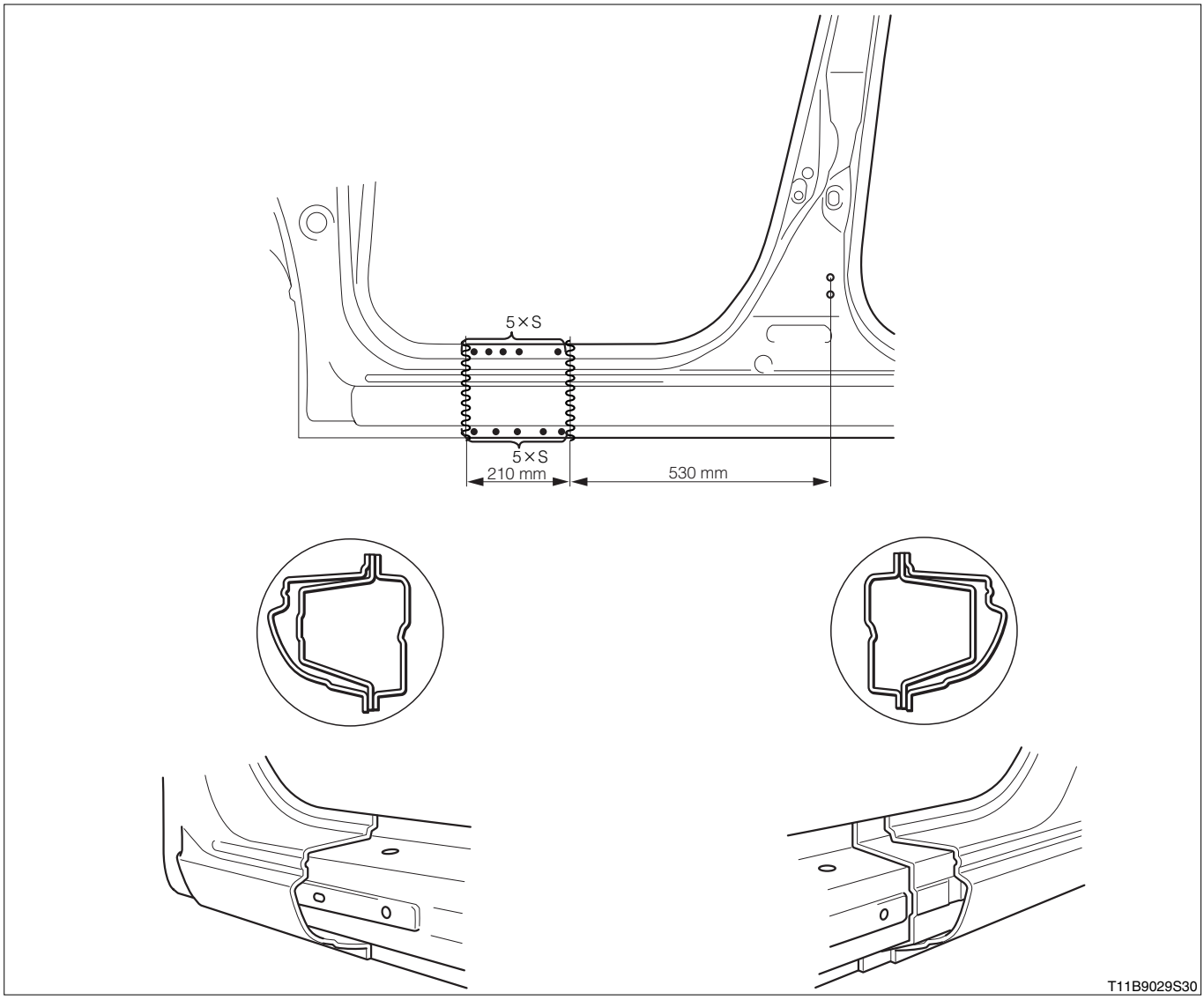
[A] Rocker panel reinforcement
[B] Center pillar reinforcement
[C] Center pillar inner
[D] Outer panel

2. Weld [A], [B], and [C] to the vehicle and then install [D].

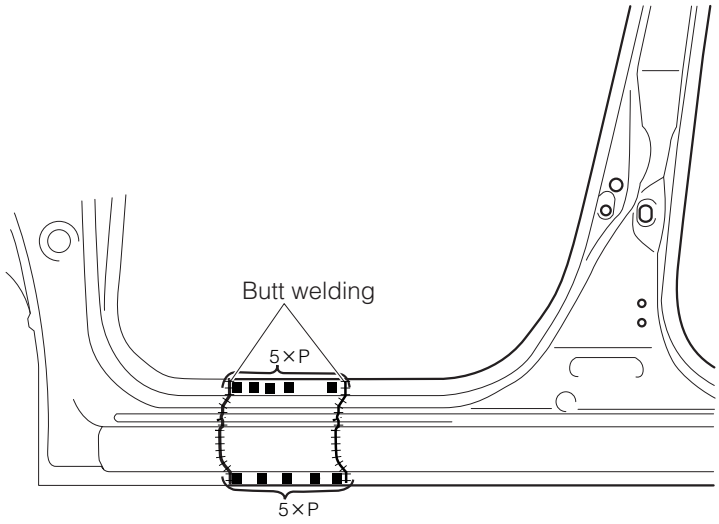
9 ROCKER PANEL OUTER

9-1 REPLACEMENT(CUTTING)

9-1-1 REMOVAL PROCEDURES



9-1-2 **INSTALLATION PROCEDURES**



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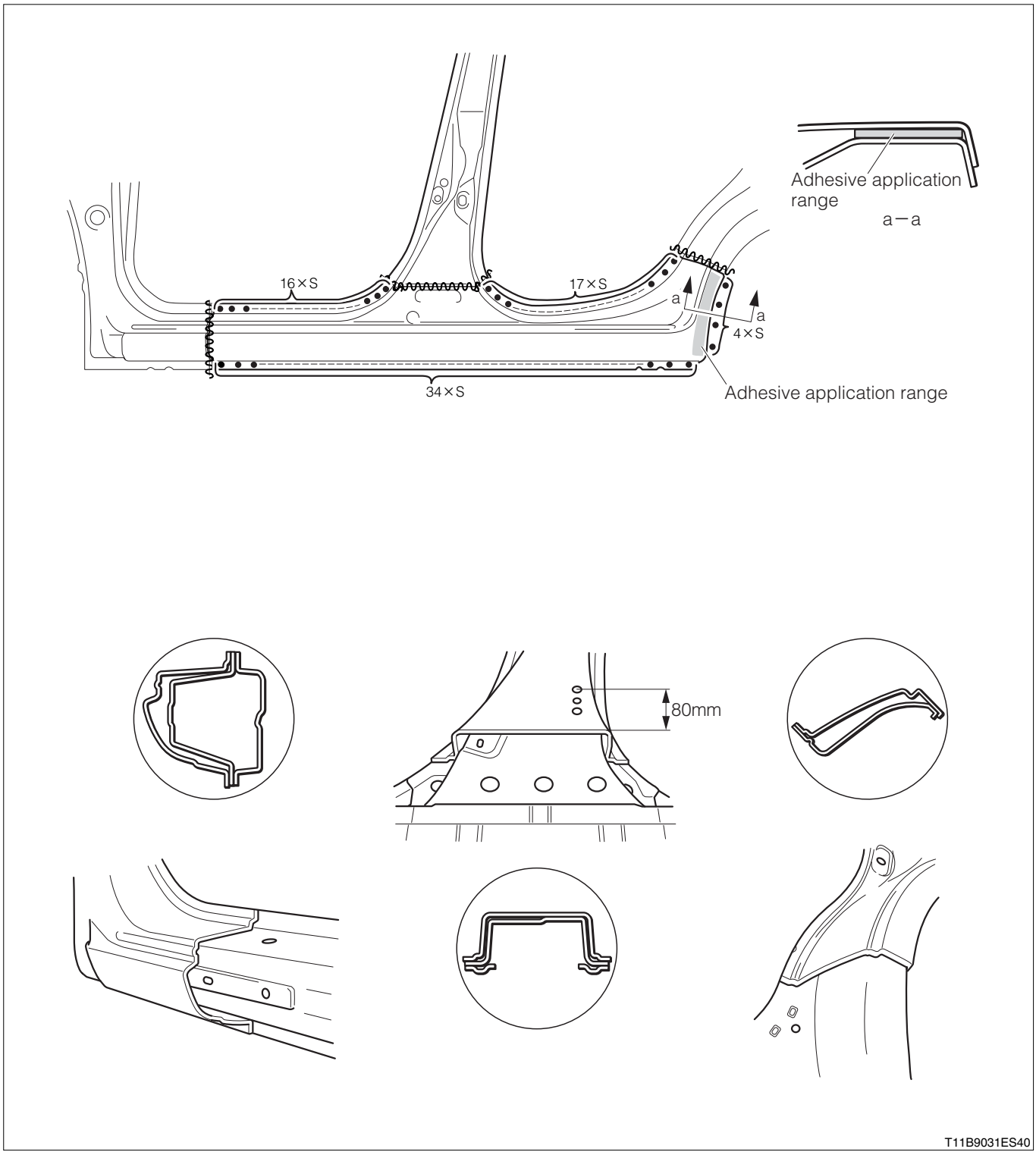
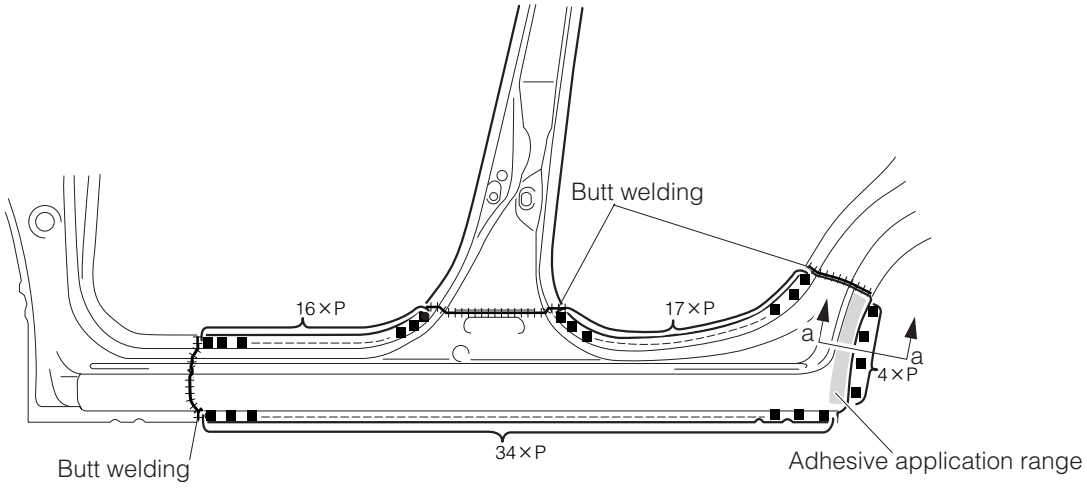
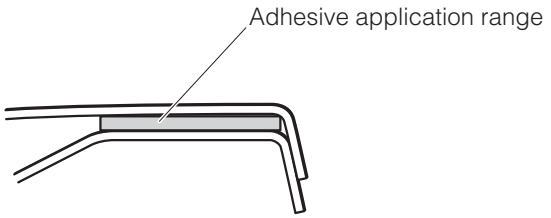
9-2 REPLACEMENT

9-2-1 REMOVAL PROCEDURES



9-2-2 INSTALLATION PROCEDURES





a—a

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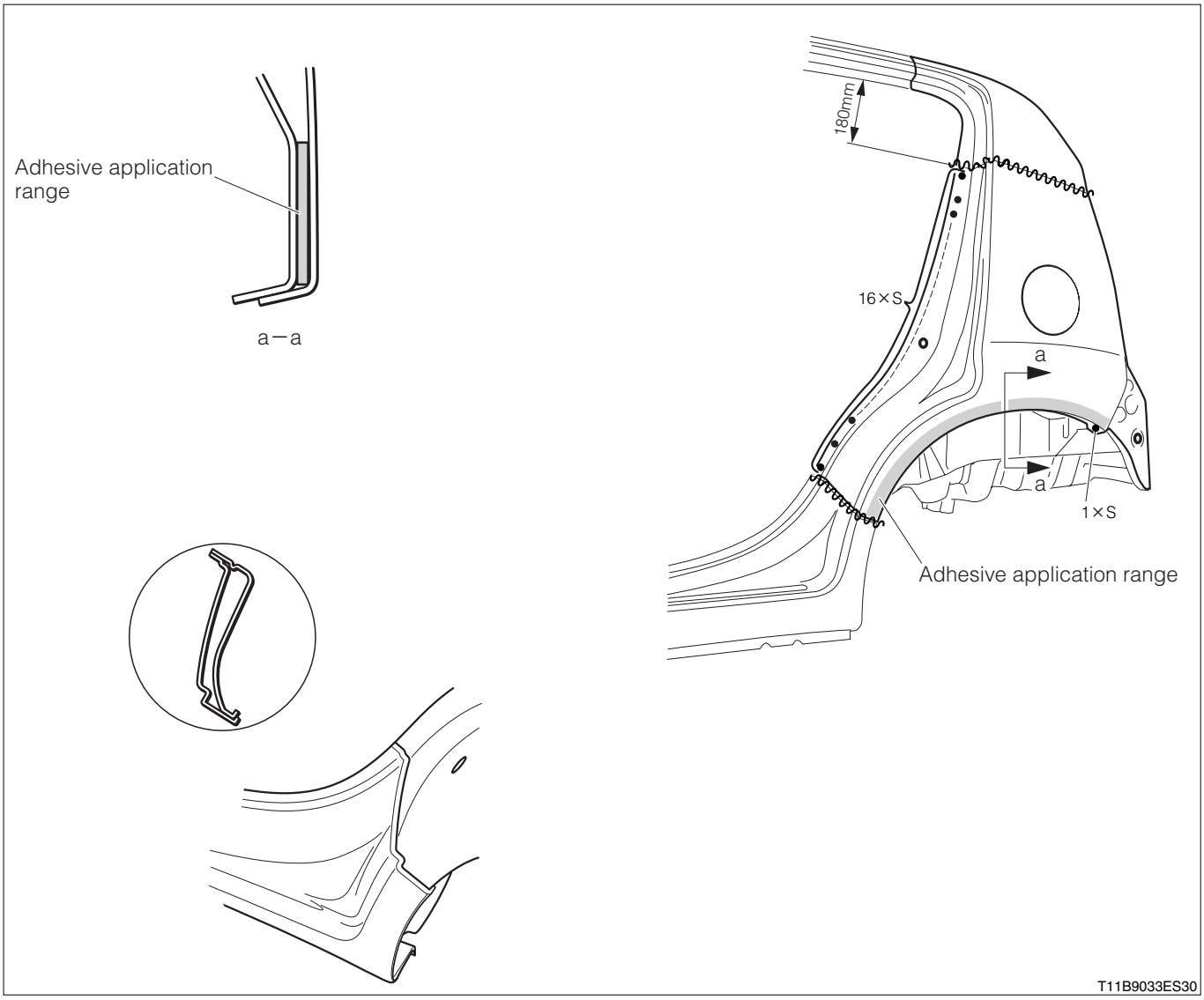
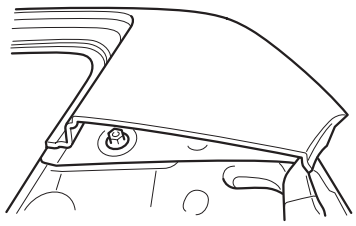
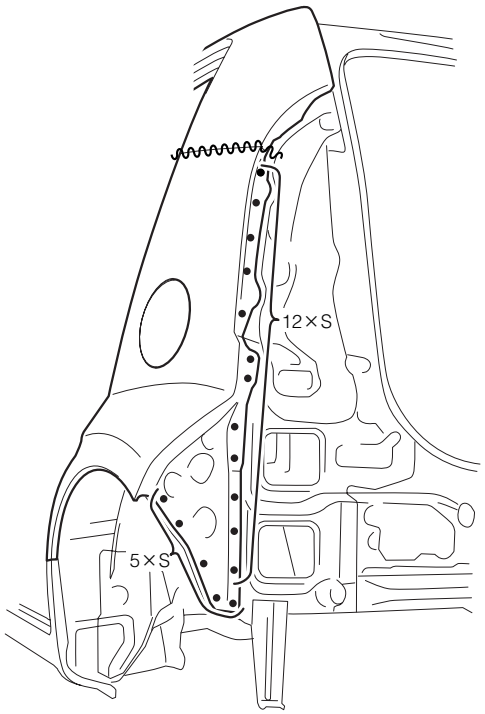
10 QUARTER PANEL

10-1 REPLACEMENT

10-1-1 REMOVAL PROCEDURES







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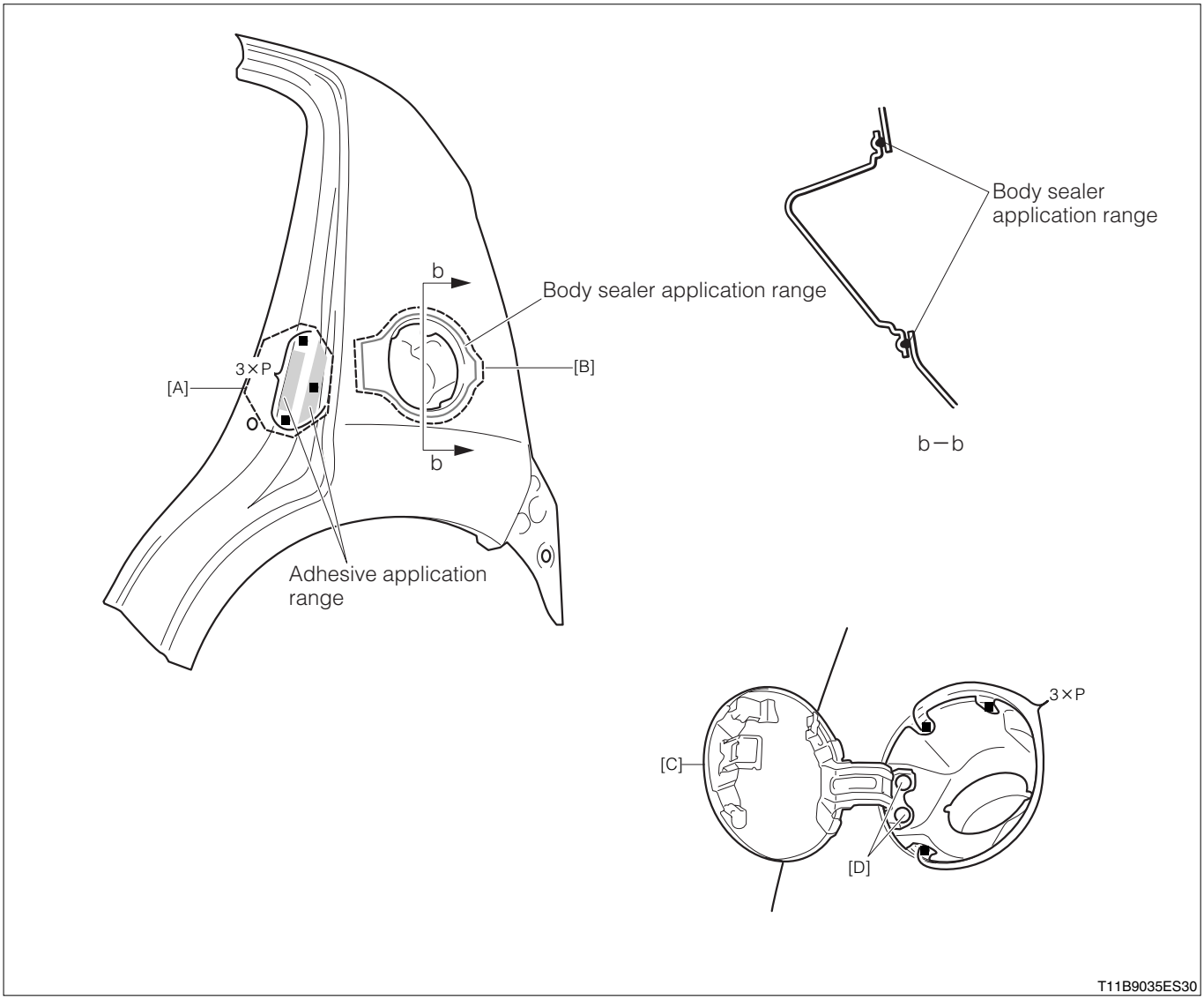
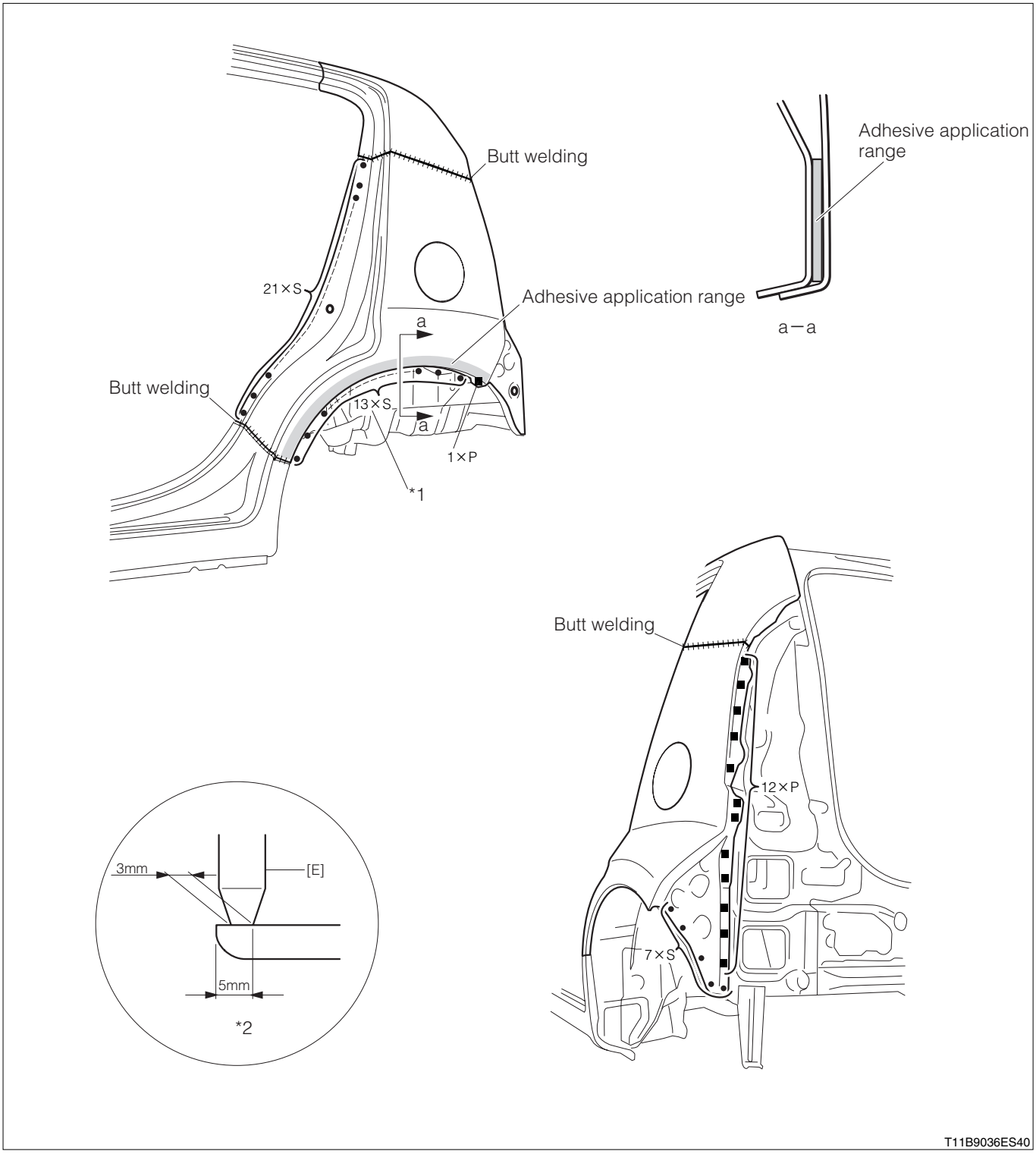
10-1-2 **INSTALLATION PROCEDURES**



[A] Quarter lock pillar reinforcement
[B] Fuel inlet box
[C] Fuel filler opening lid
[D] Waterproofing rivet

1. Apply the body sealer before the replacement parts are temporarily installed.



[E] Spot tip

2. As the flange width is narrow, work and adjust the end portion of [E] as in *2 when spot welding the section *1.

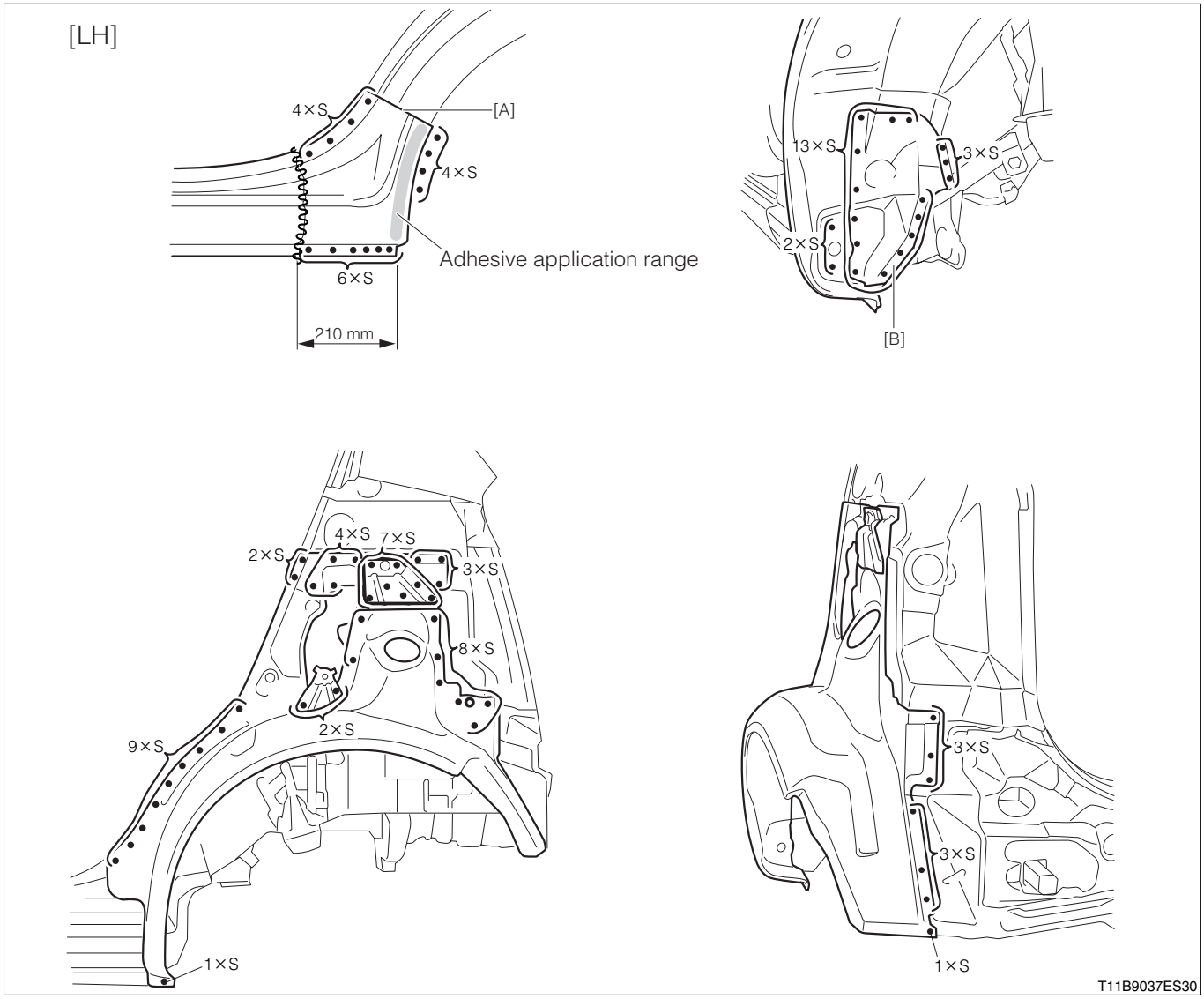
11 QUARTER WHEEL HOUSE PANEL OUTER

11-1 REPLACEMENT

11-1-1 OPERATION BEFORE REMOVAL

1. Remove the necessary part or component of the quarter panel.
2. Remove the necessary part or component of the quarter panel extension rear.

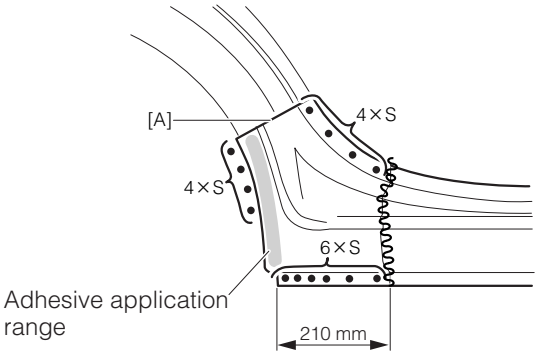
11-1-2 REMOVAL PROCEDURES

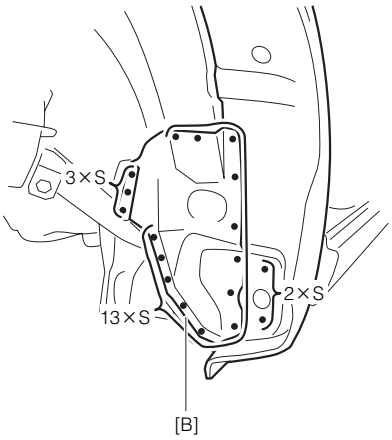


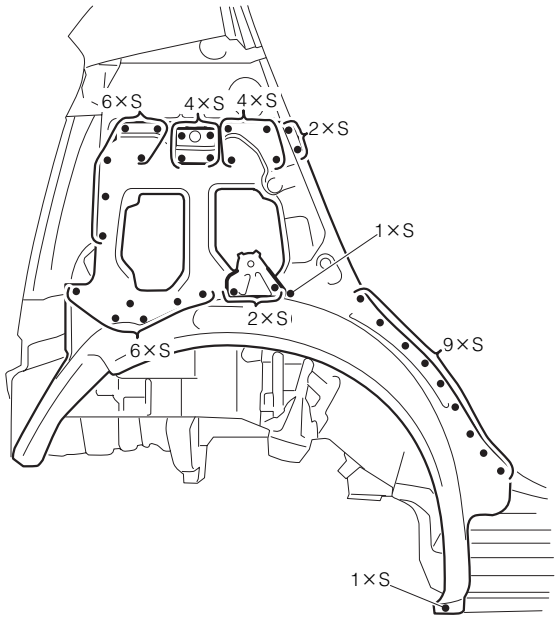
[A] Rocker panel outer
[B] Quarter wheel house gusset inner

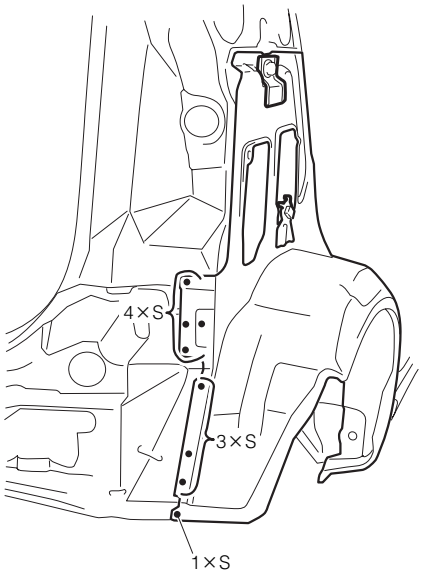
1. Remove [A] and [B] to remove the replacement parts.

[RH]









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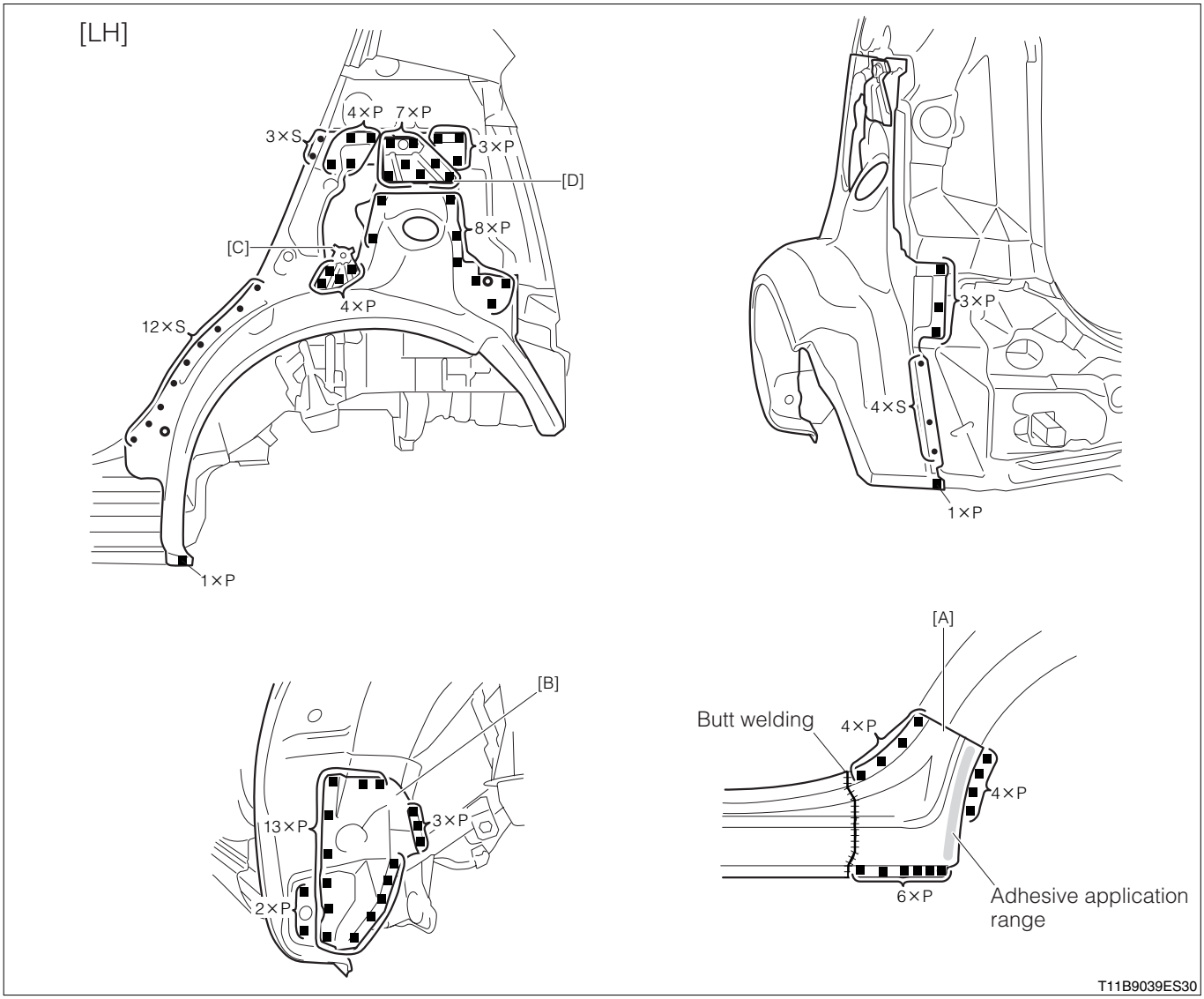
[A] Rocker panel outer
[B] Quarter wheel house gusset inner

2. Remove [A] and [B] to remove the replacement parts.

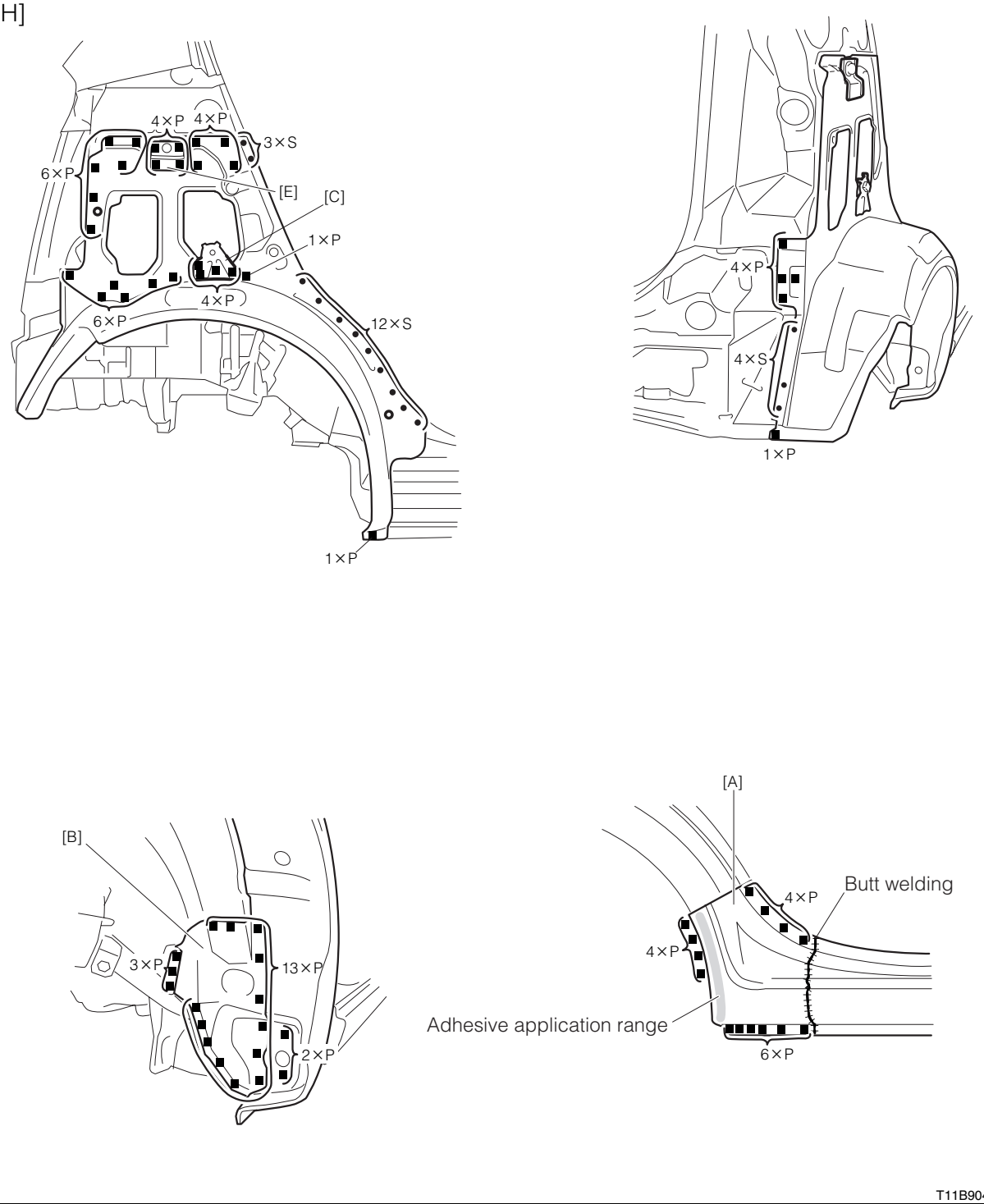
11-1-3 **INSTALLATION PROCEDURES**



[A] Rocker panel outer
[B] Quarter wheel house gusset inner
[C] Belt anchor to quarter reinforcement inner lower
[D] Rear seat back set retainer

1. Install the replacement parts, and then install [A] and [B].

[RH]



[A] Rocker panel outer
[B] Quarter wheel house gusset inner
[C] Belt anchor to quarter reinforcement inner lower
[E] Rear seat back set retainer

2. Install the replacement parts, and then install [A] and [B].

11-1-4 OPERATION AFTER INSTALLATION

1. Install the quarter panel extension rear.
2. Install the quarter panel.

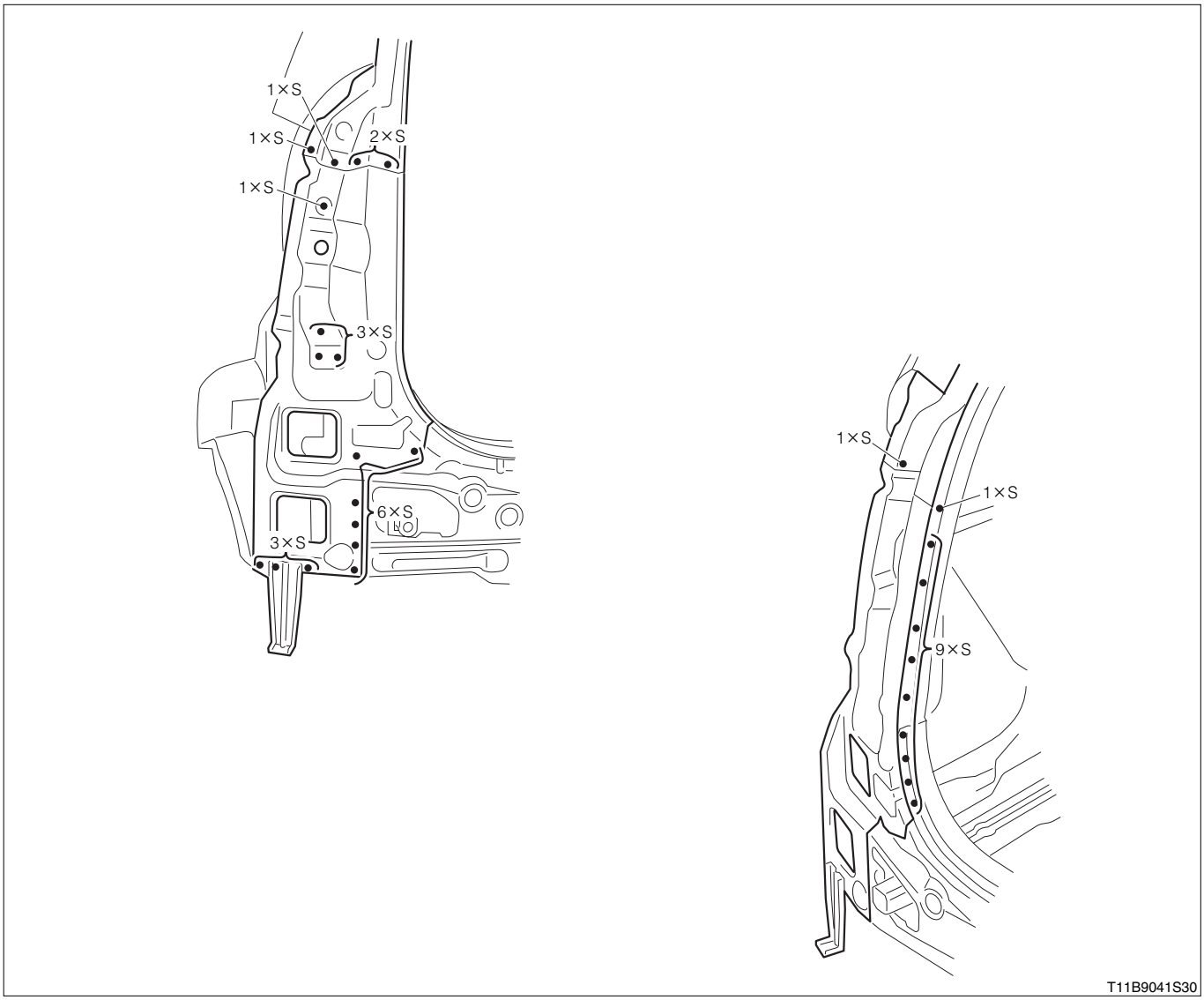
12 QUARTER PANEL EXTENSION REAR

12-1 REPLACEMENT

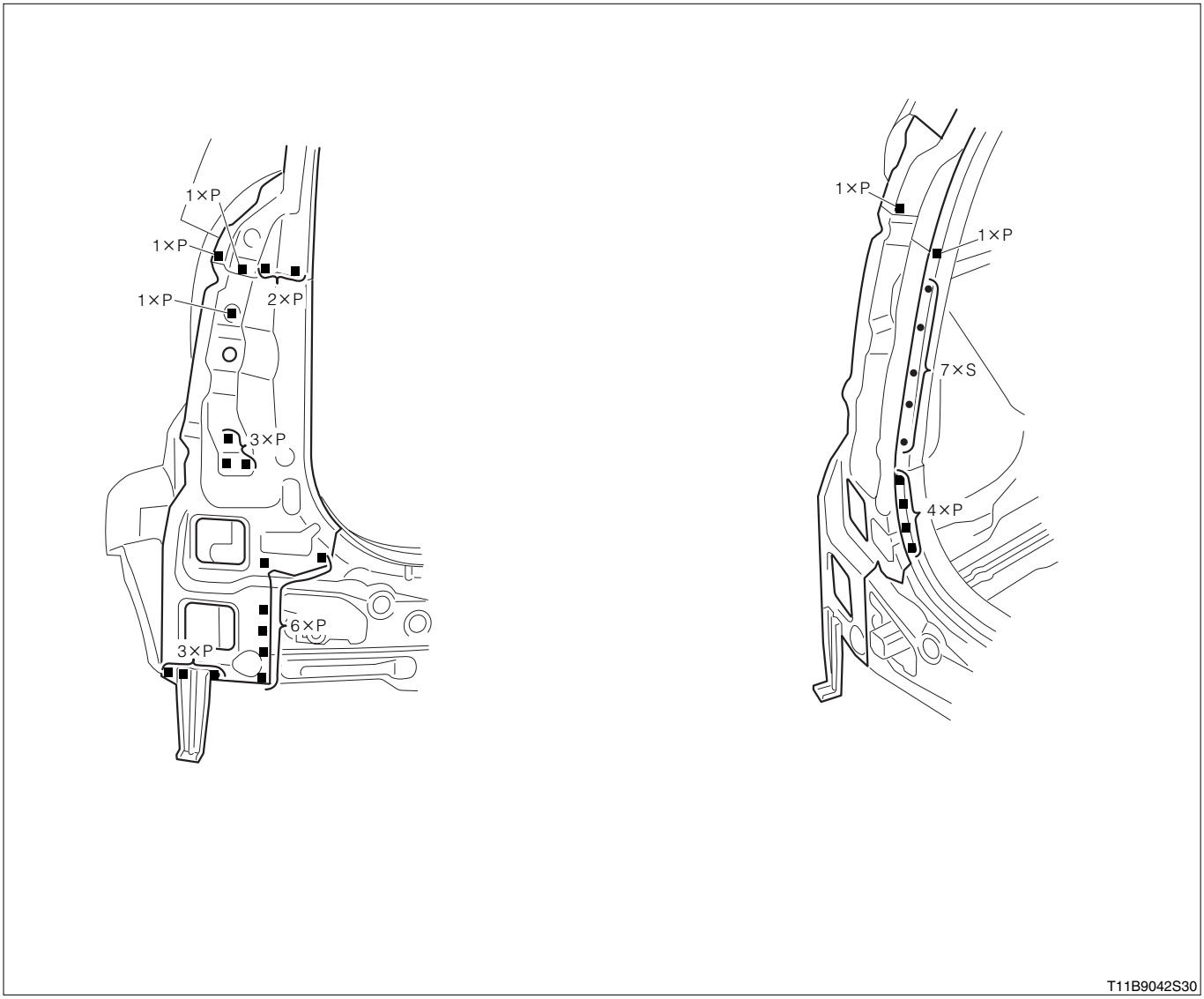
12-1-1 OPERATION BEFORE REMOVAL

1. Remove the necessary part or component of the quarter panel.

12-1-2 REMOVAL PROCEDURES



12-1-3 **INSTALLATION PROCEDURES**



1. Remove the part or component to be exchanged from the replacement parts and install to the vehicle.

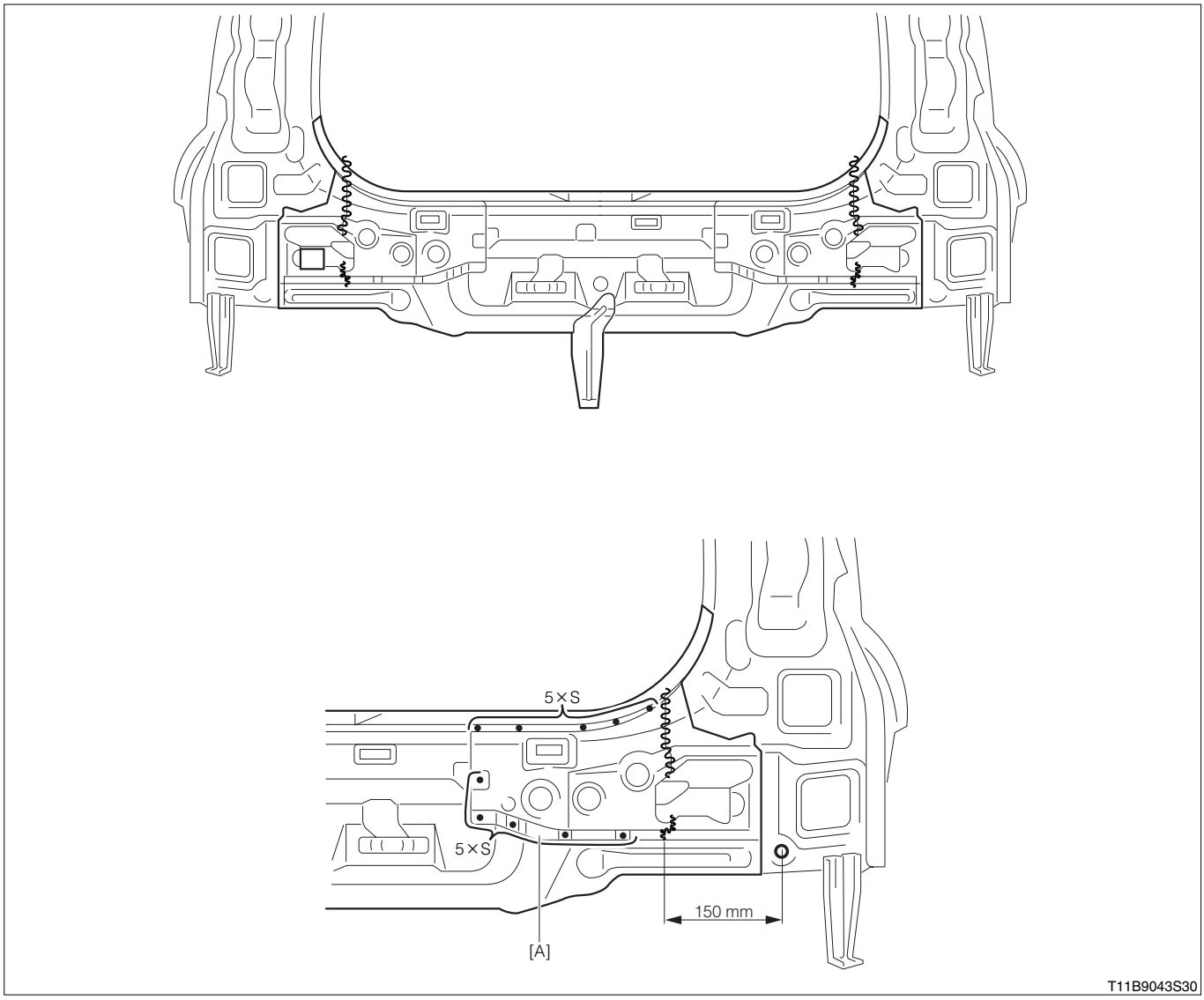
12-1-4 **OPERATION AFTER INSTALLATION**

1. Install the quarter panel.

13 BODY LOWER BACK PANEL

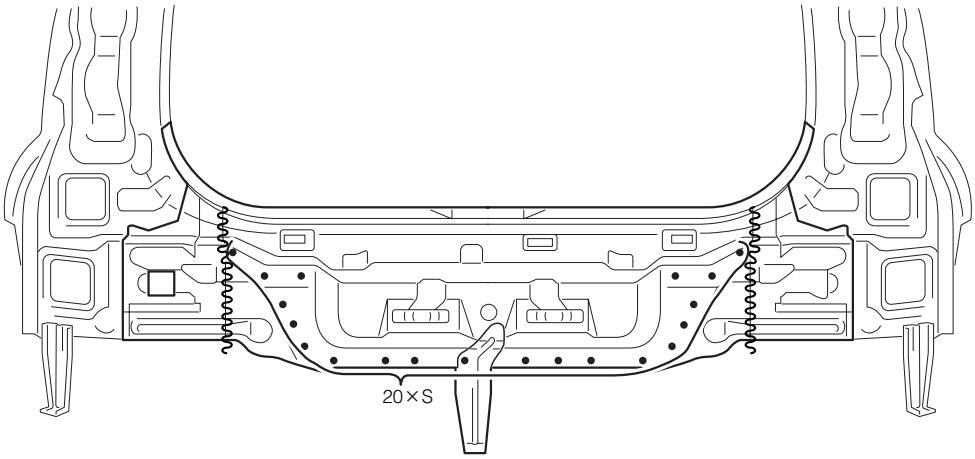
13-1 REPLACEMENT(CUTTING)

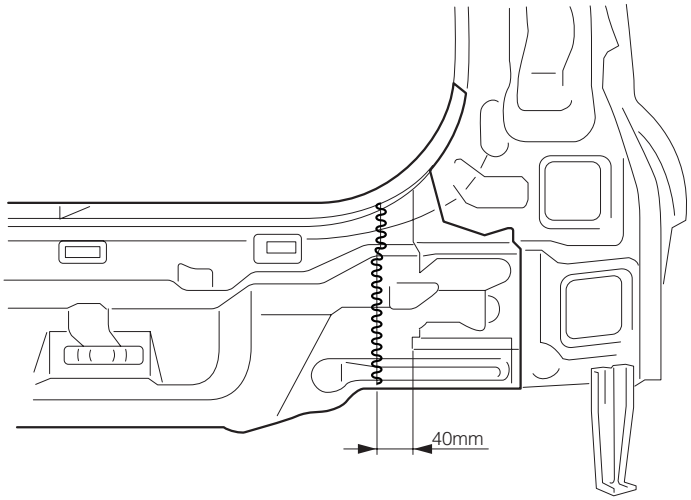
13-1-1 REMOVAL PROCEDURES

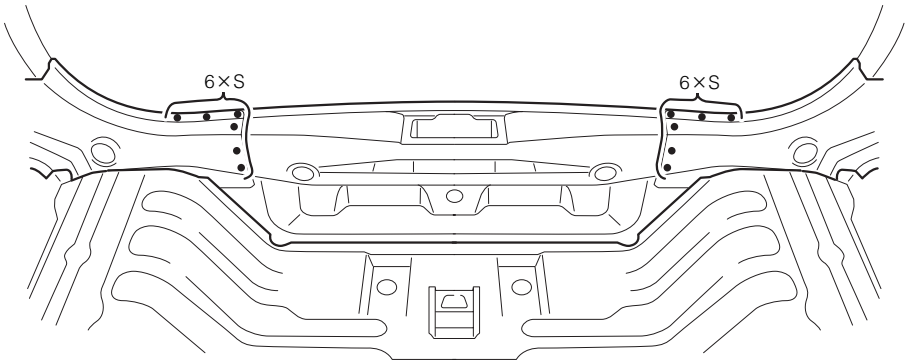


[A] Body lower back reinforcement

1. Remove [A] before starting the work.







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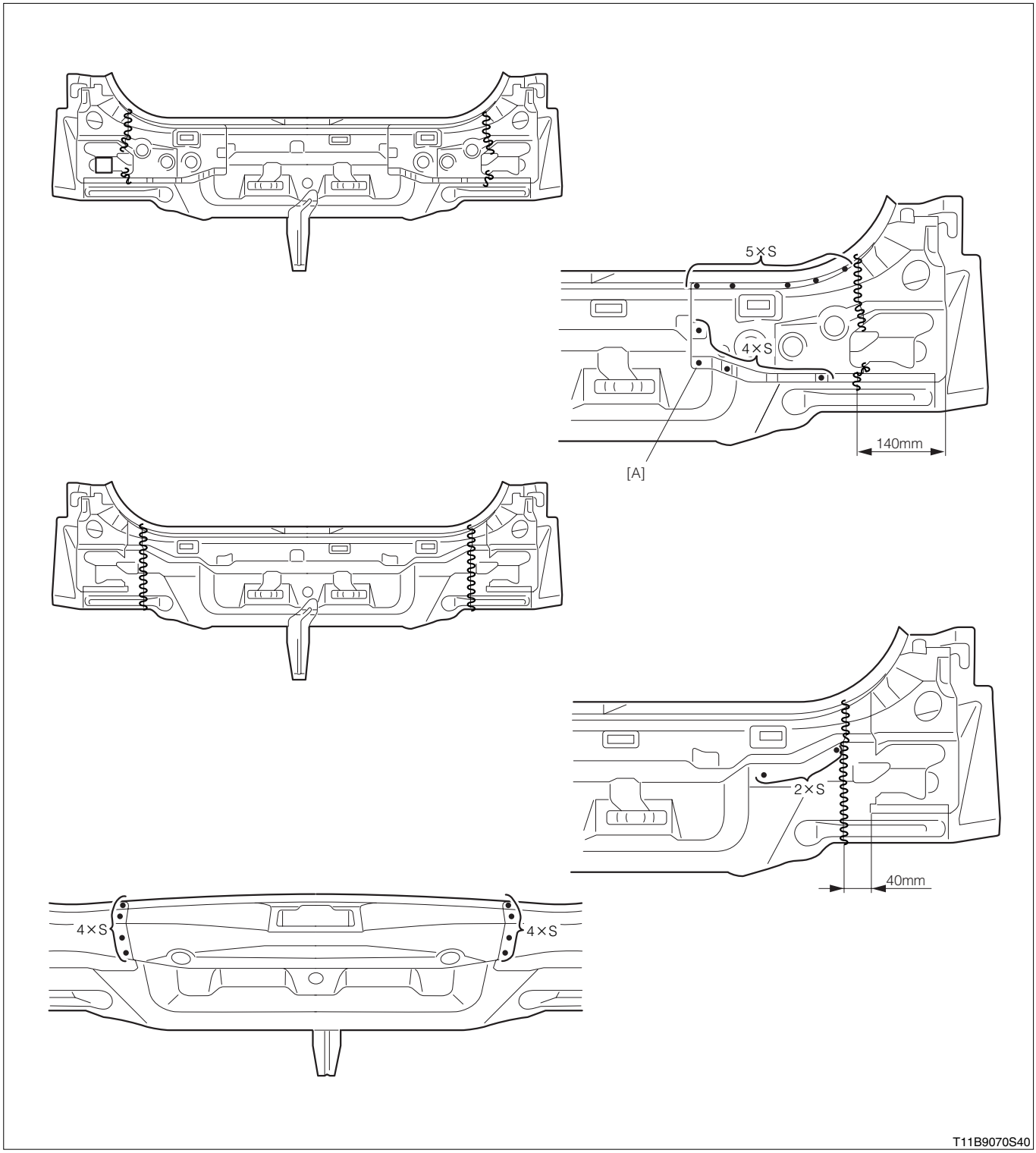
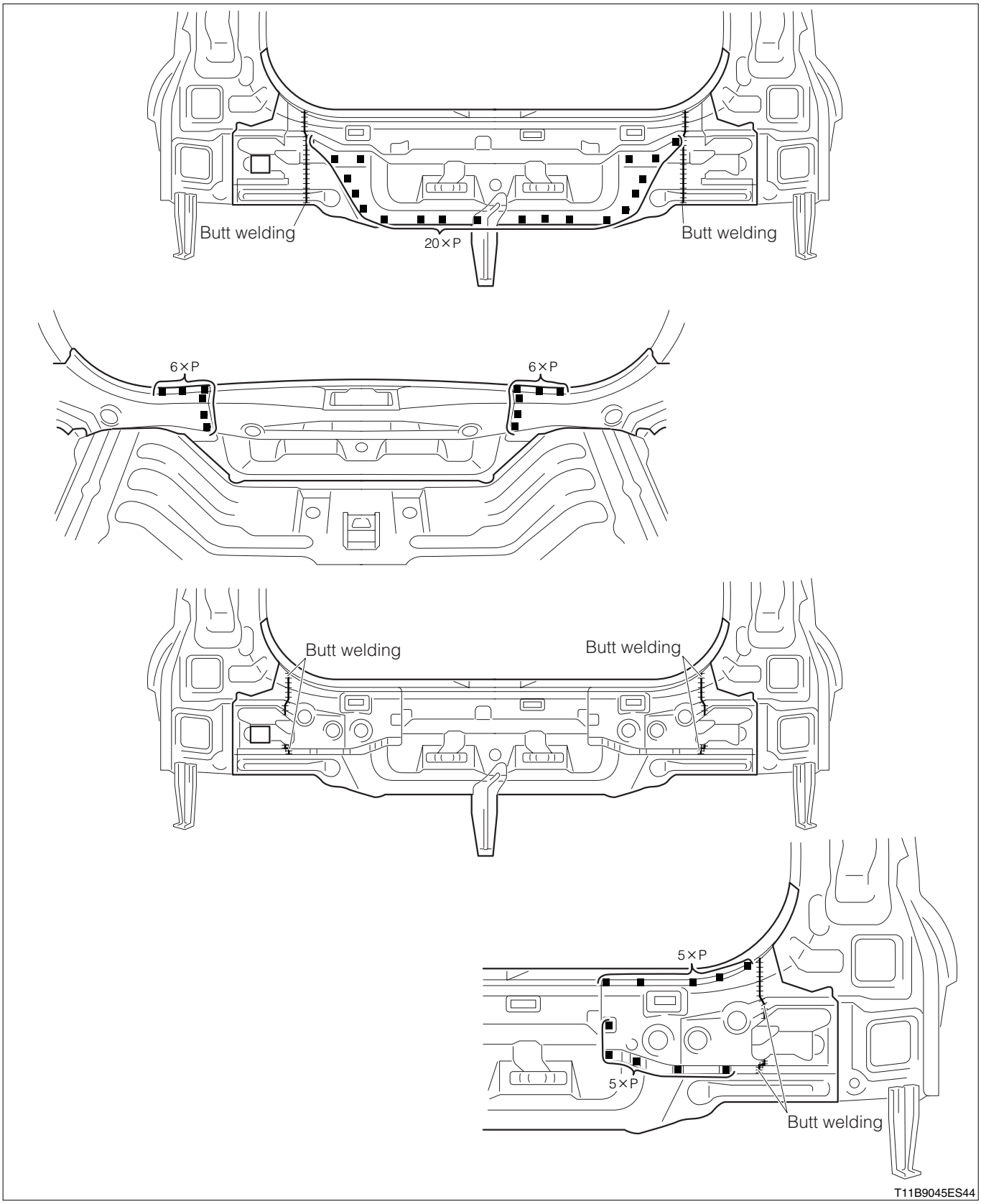
13-1-2 **INSTALLATION PROCEDURES**



[A] Body lower back reinforcement

1. Remove the part or component to be exchanged from the replacement parts and install to the vehicle.
2. Remove [A] before starting the work.

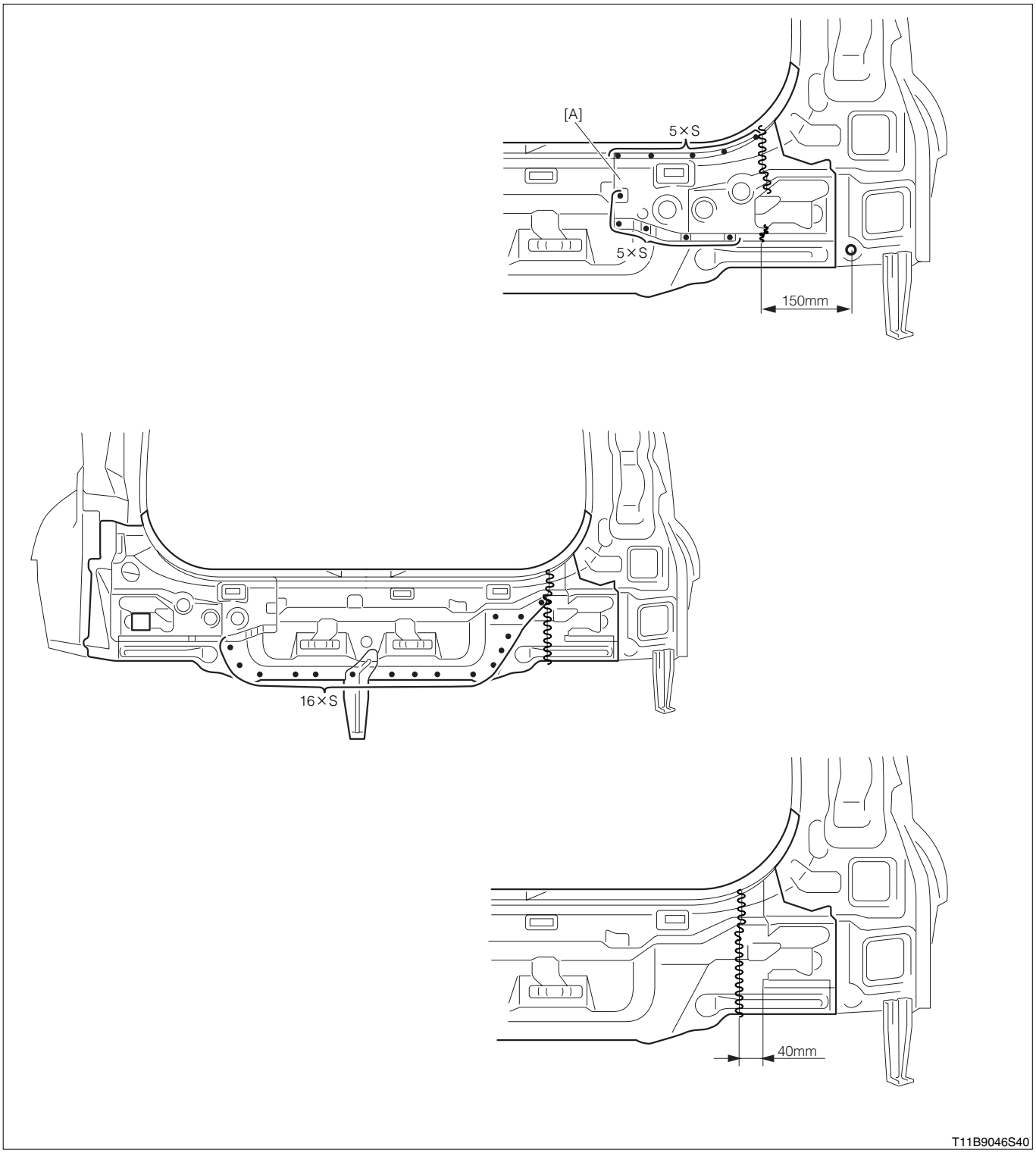

Butt welding
20×P
Butt welding
6×P
6×P
Butt welding
Butt welding
5×P
5×P
Butt welding
T11B9045ES44

13-2 REPLACEMENT(CUTTING ON ONE SIDE)

13-2-1 OPERATION BEFORE REMOVAL

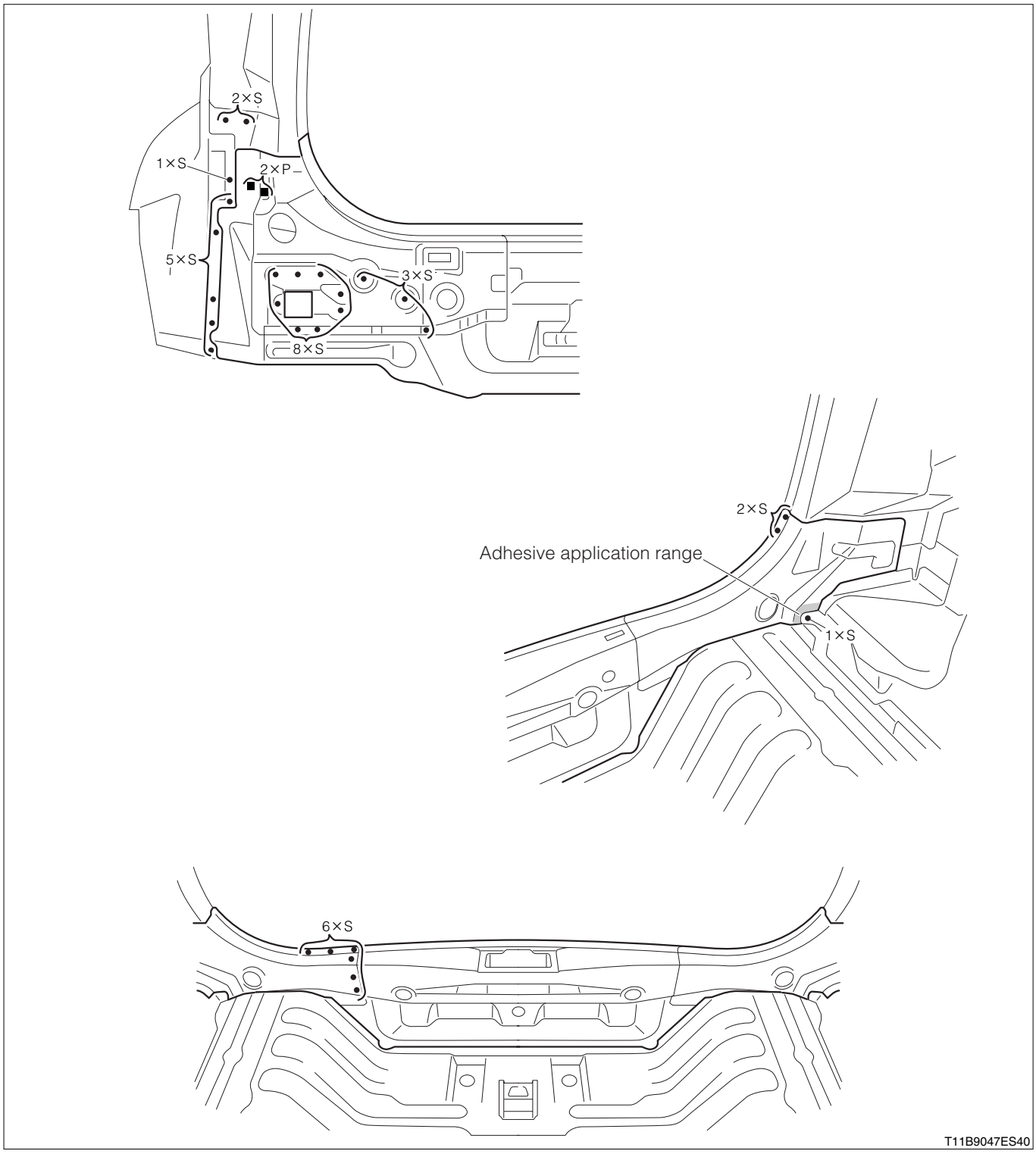
1. Remove the necessary part or component of the quarter panel extension rear.

13-2-2 REMOVAL PROCEDURES

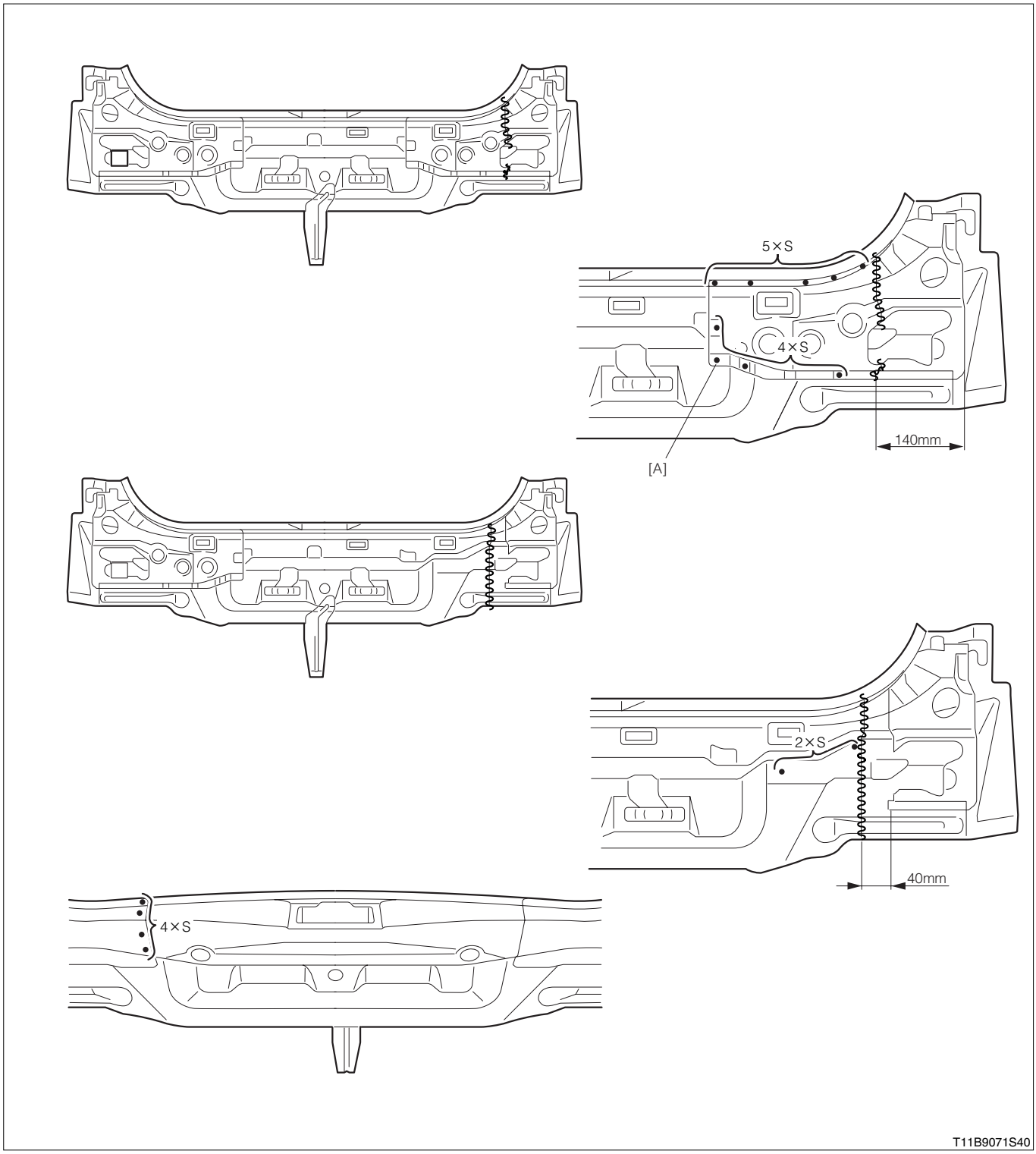


[A] Body lower back reinforcement

1. Remove [A] before starting the work.

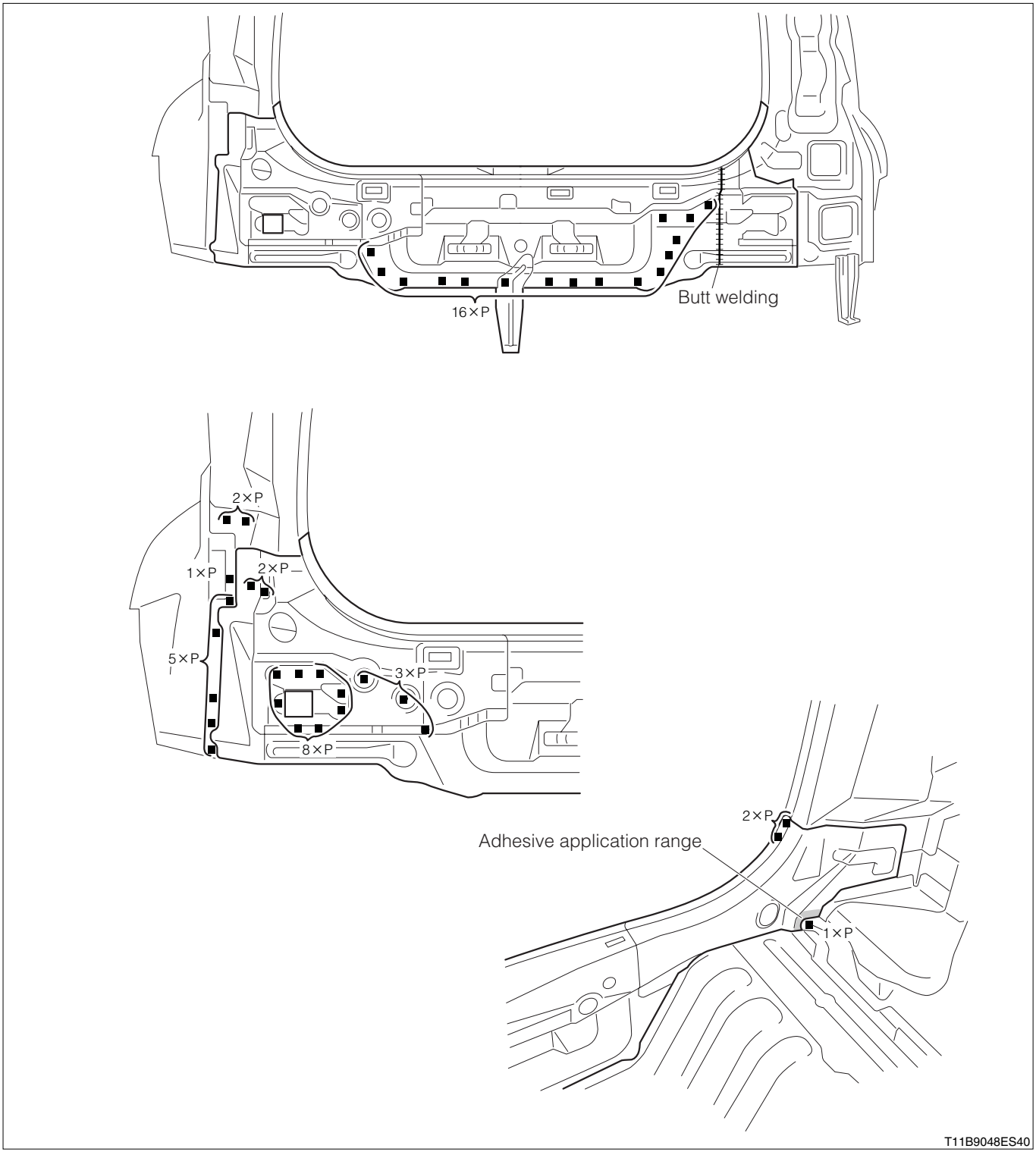

2×S
1×S
2×P
5×S
3×S
8×S
2×S
Adhesive application range
1×S
6×S
T11B9047ES40

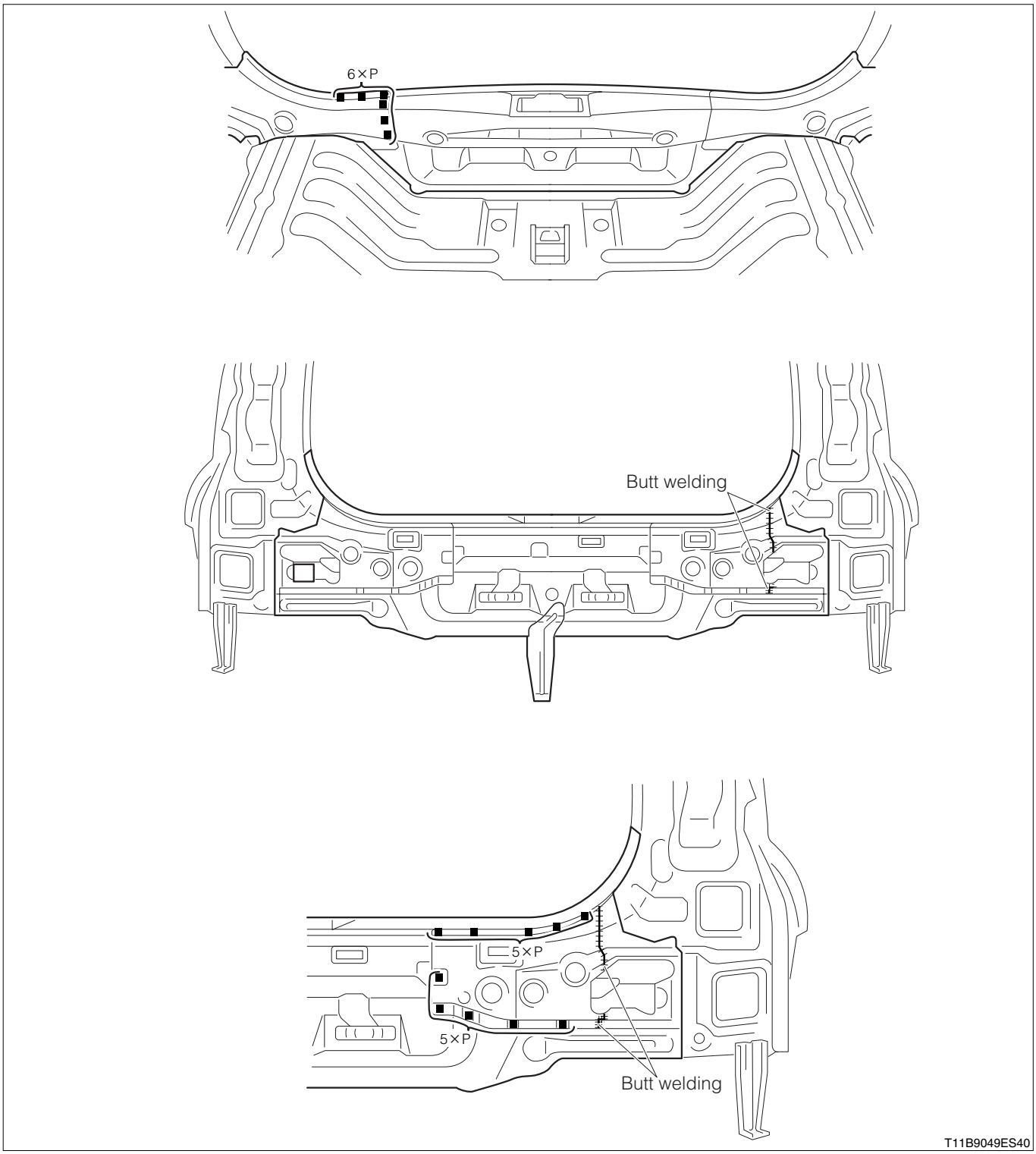
13-2-3 INSTALLATION PROCEDURES



[A] Body lower back reinforcement

1. Remove the part or component to be exchanged from the replacement parts and install to the vehicle.
2. Remove [A] before starting the work.


16×P
Butt welding
2×P
1×P
2×P
5×P
3×P
8×P
2×P
Adhesive application range
1×P
T11B9048ES40



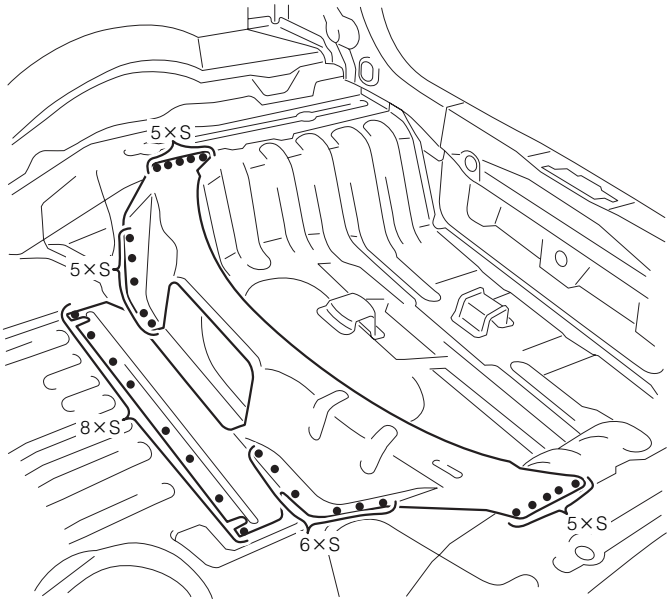
13-2-4 **OPERATION AFTER INSTALLATION**

1. Install the quarter panel extension rear.

14 REAR FLOOR CROSS MEMBER REINFORCEMENT NO.2

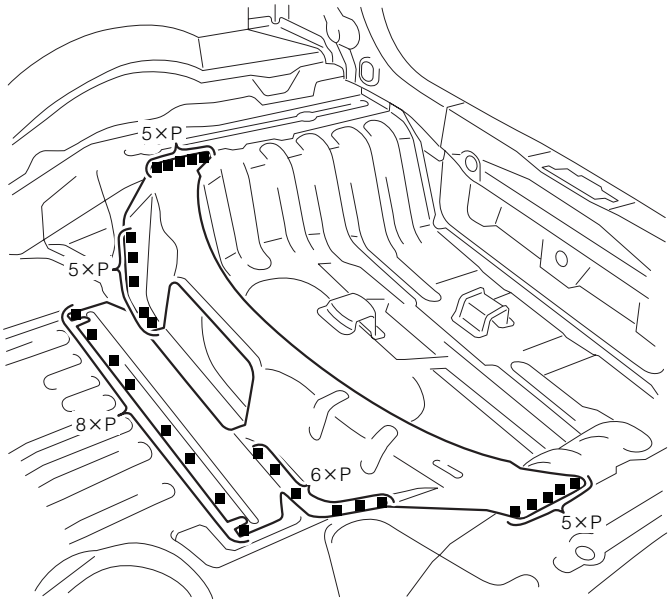
14-1 REPLACEMENT

14-1-1 REMOVAL PROCEDURES



T11B9050S30

14-1-2 **INSTALLATION PROCEDURES**



T11B9051S30

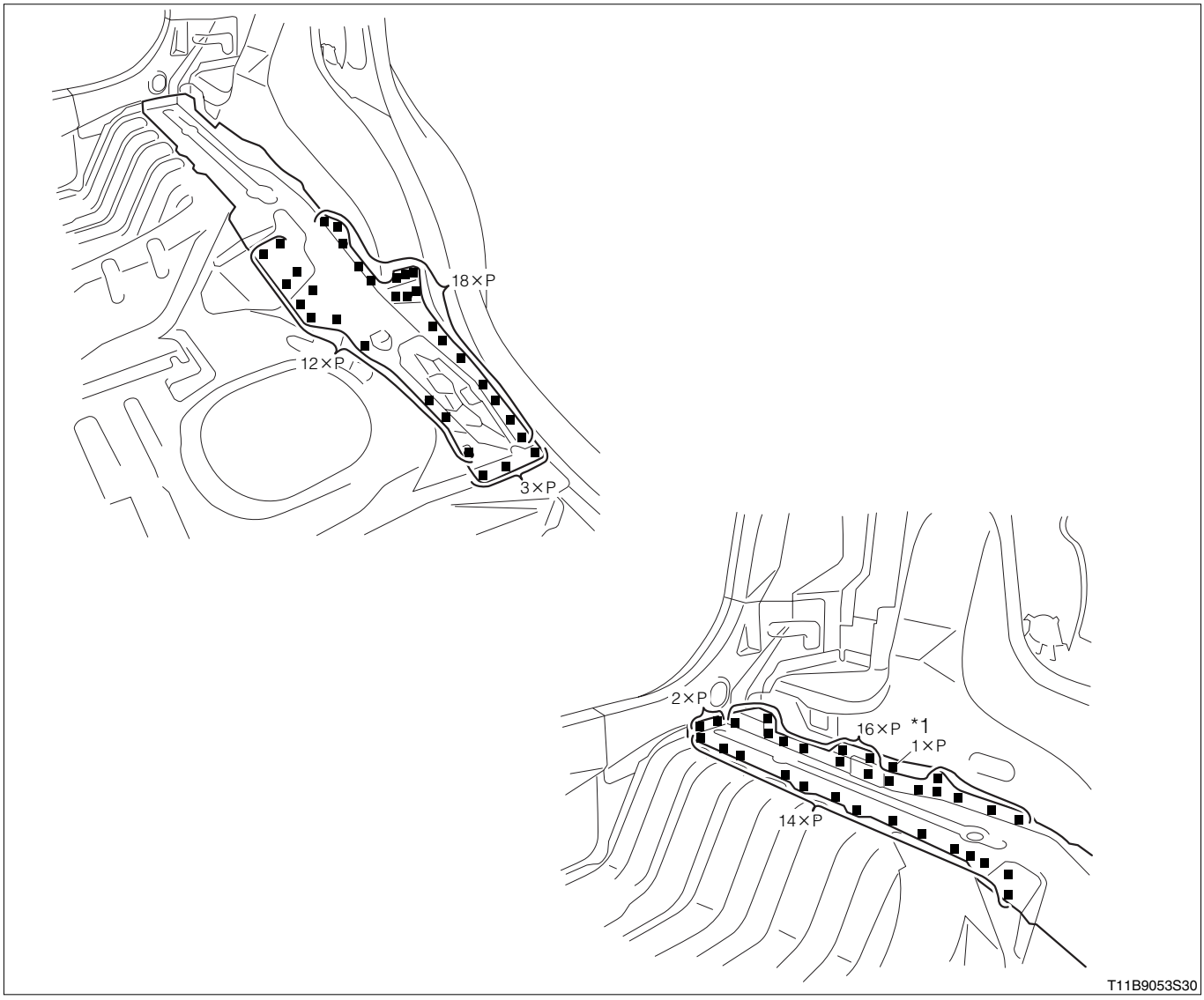
15 REAR FLOOR SIDE PANEL EXTENSION FRONT

15-1 REPLACEMENT

15-1-1 REMOVAL PROCEDURES

*1 is LH only.

15-1-2 **INSTALLATION PROCEDURES**



*1 is LH only.

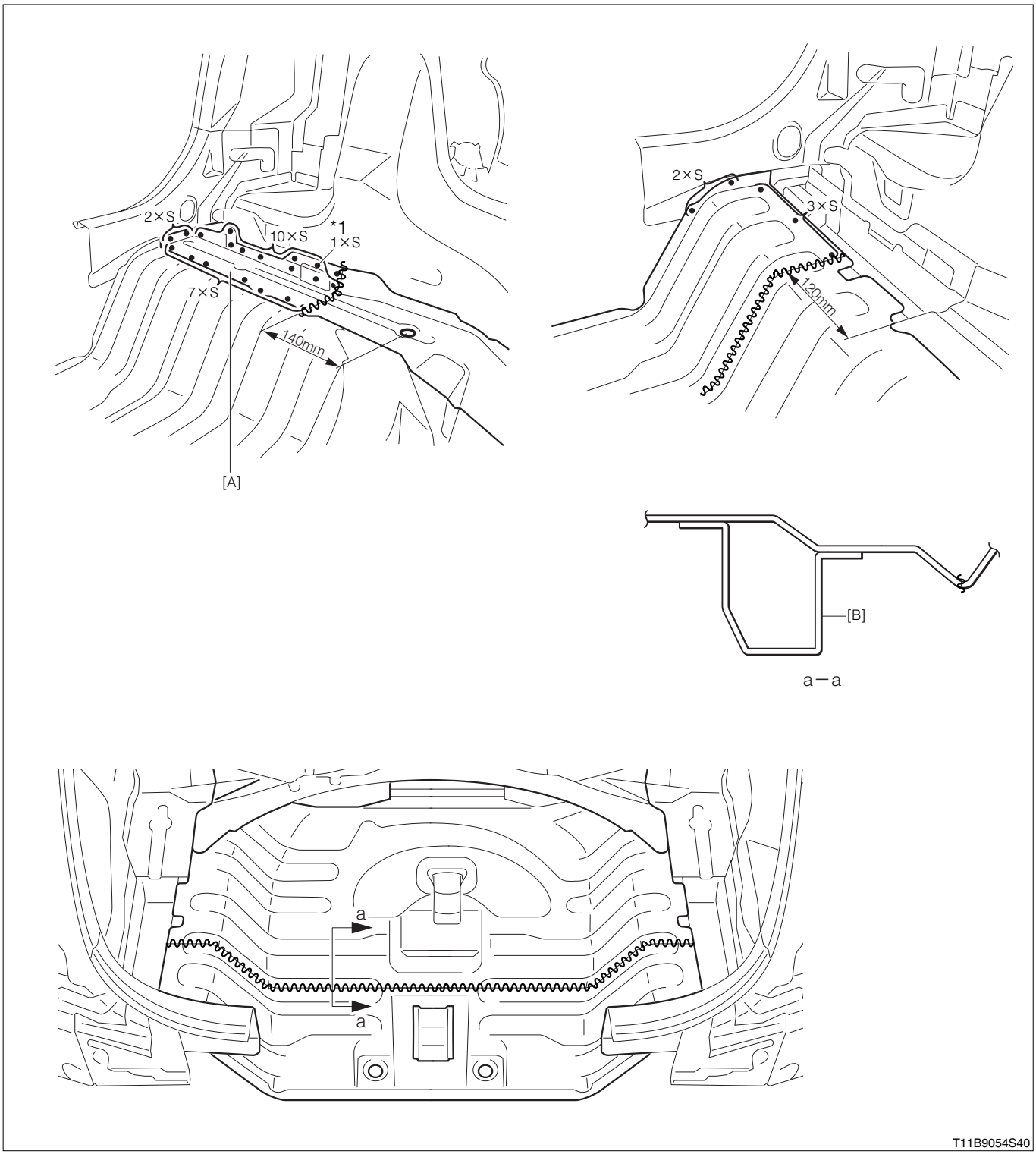
16 REAR FLOOR PAN

16-1 REPLACEMENT(CUTTING)

16-1-1 OPERATION BEFORE REMOVAL

1. Remove the necessary part or component of the body lower back panel.

16-1-2 REMOVAL PROCEDURES

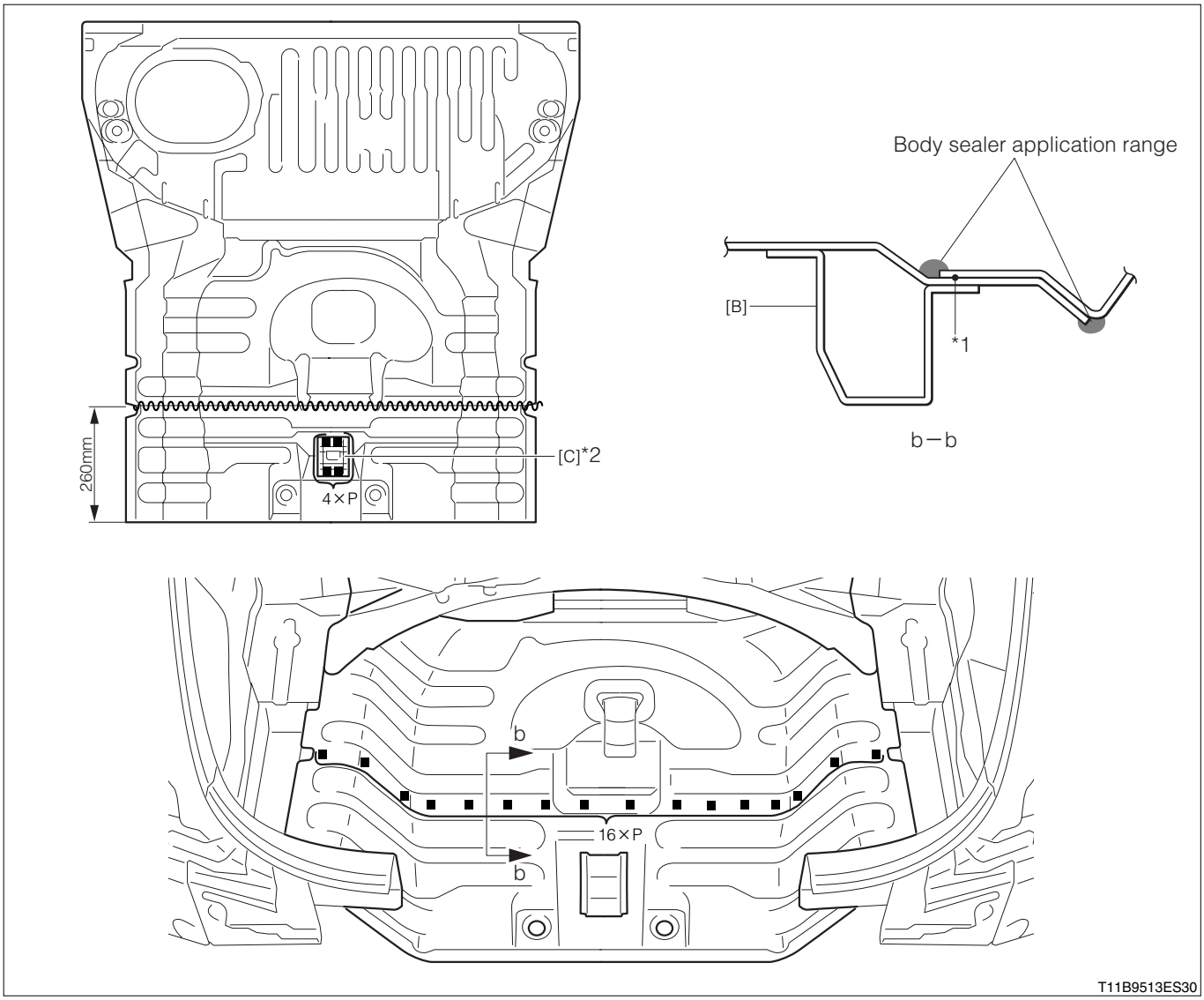


*1is LH only.

[A] Rear floor side panel extension front

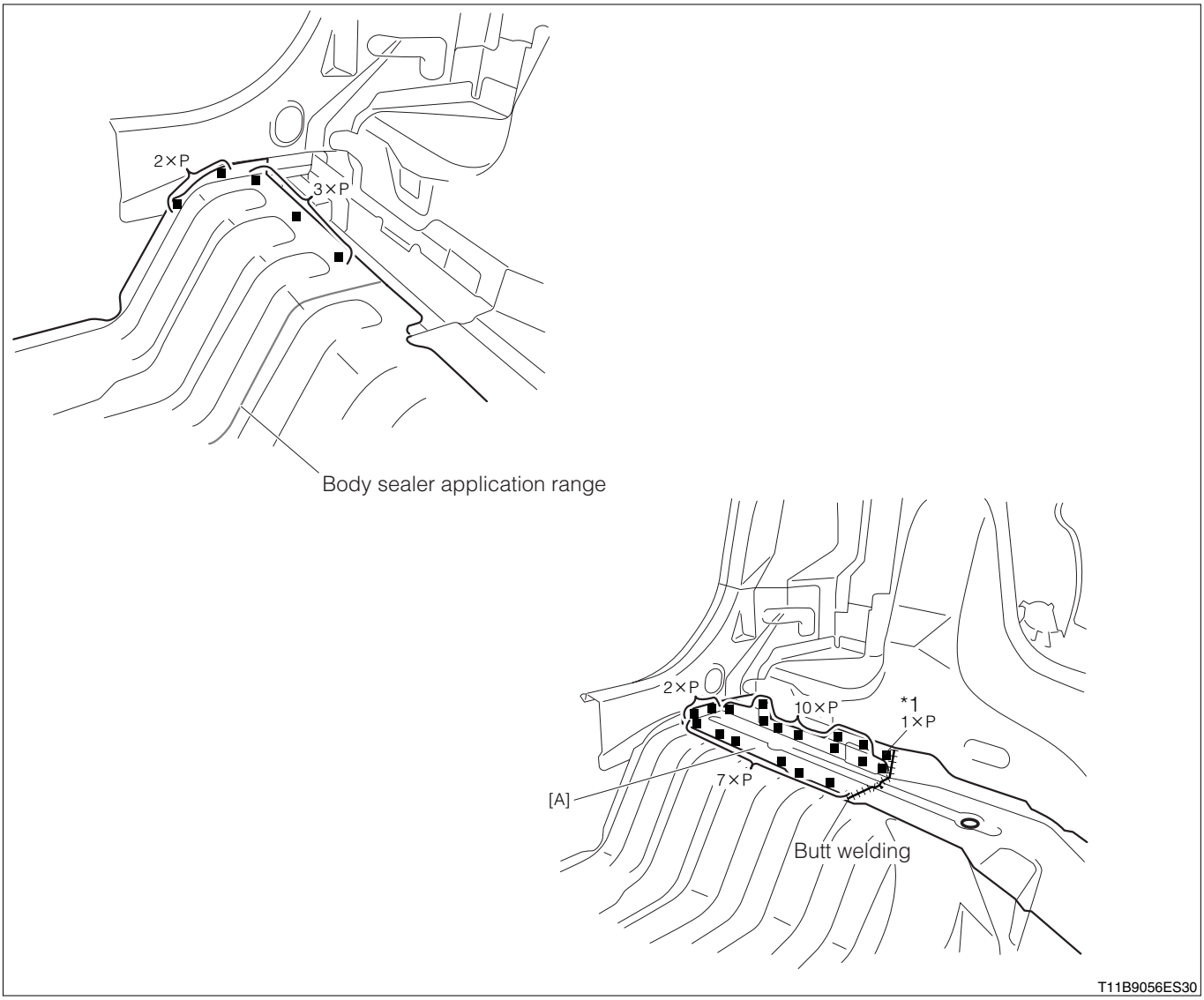
[B] Rear floor cross member No.2

16-1-3 **INSTALLATION PROCEDURES**



*2 is only for vehicles that have a compact tire as the spare tire.
[B] Rear floor cross member No.2
[C] Jack support bracket

1. Remove the part or component to be exchanged from the replacement parts and install to the vehicle.
2. Cut off the replacement part where it overlaps with the cut end by approx. 30mm.
3. Plug weld the overlapped portions of *1, and apply the body sealer on both sides.



*1 is LH only.

[A] Rear floor side panel extension front

16-1-4 OPERATION AFTER INSTALLATION

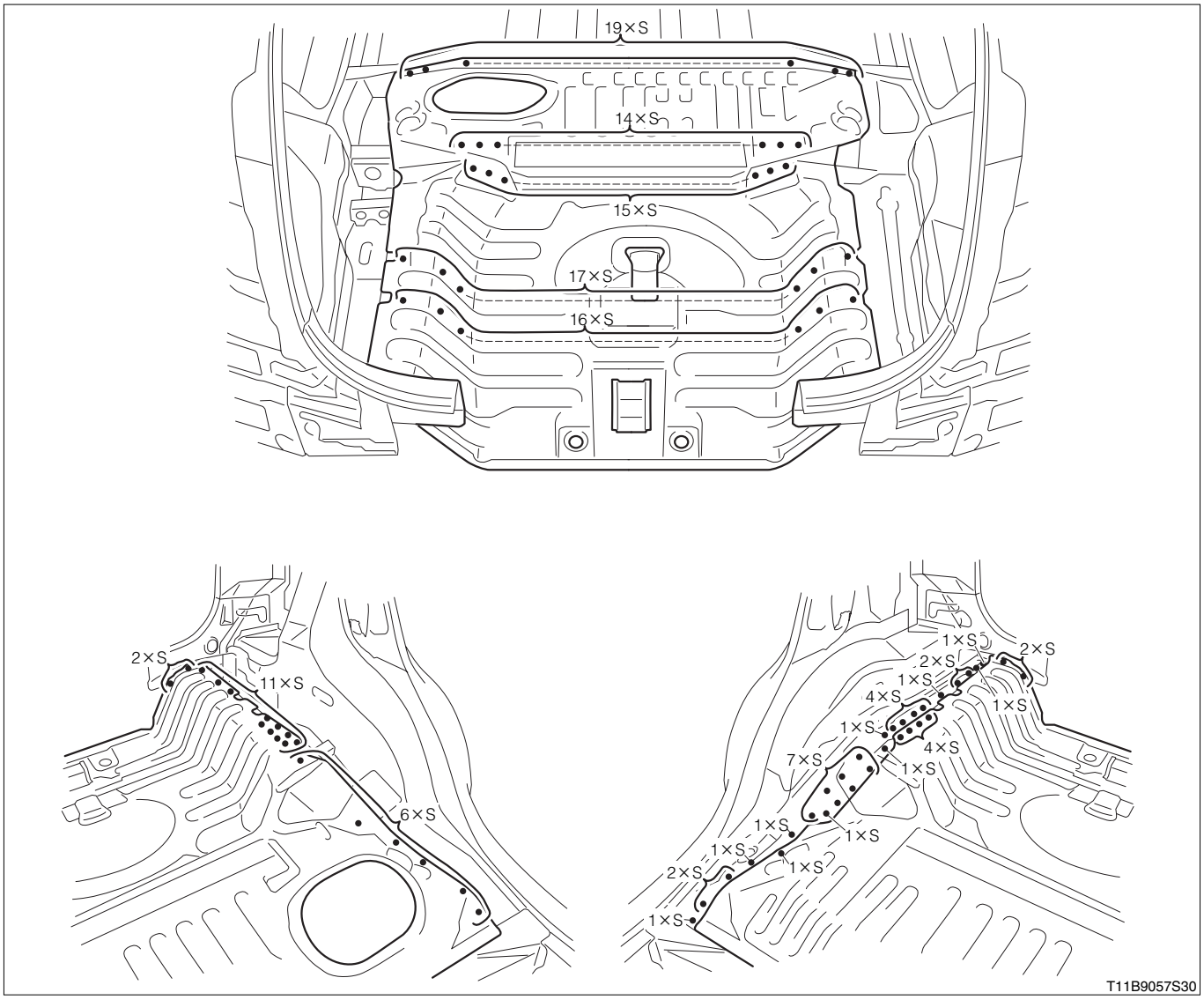
1. Install the body lower back panel.

16-2 REPLACEMENT

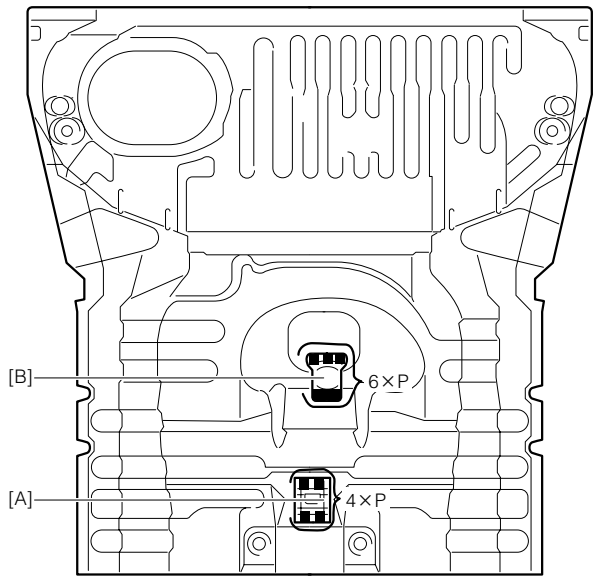
16-2-1 OPERATION BEFORE REMOVAL

1. Remove the necessary part or component of the body lower back panel.
2. Remove the necessary part or component of the rear floor cross member reinforcement No.2.
3. Remove the necessary part or component of the rear floor side panel extension front.

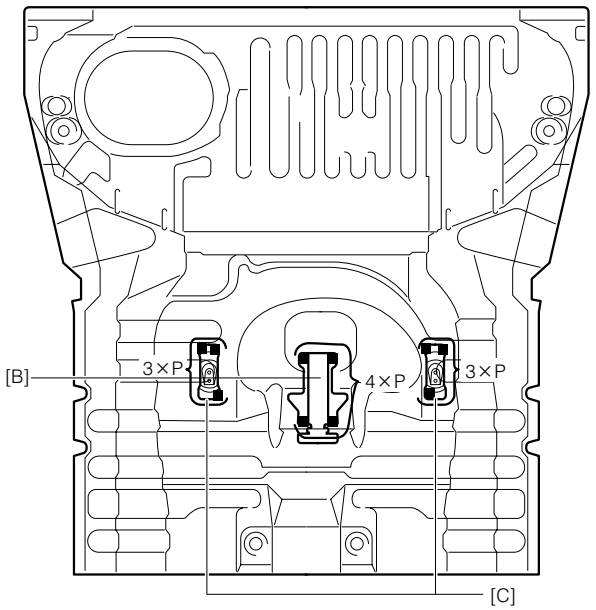
16-2-2 REMOVAL PROCEDURES



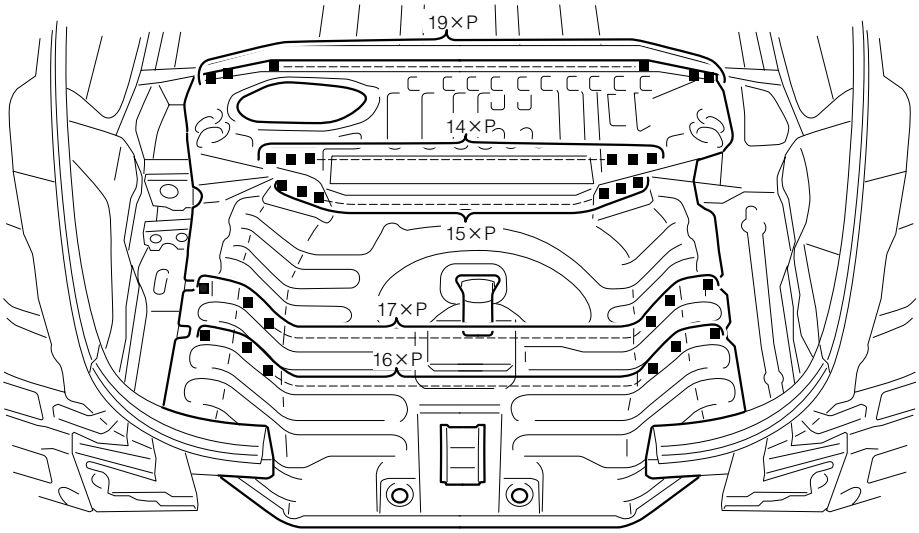
16-2-3 **INSTALLATION PROCEDURES**



＜Vehicles that have a compact tire as the spare tire＞



＜Vehicles that have a standard tire as the spare tire＞



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[A] Jack support bracket
[B] Spare wheel clamp bracket
[C] Spare wheel carrier bracket No.1

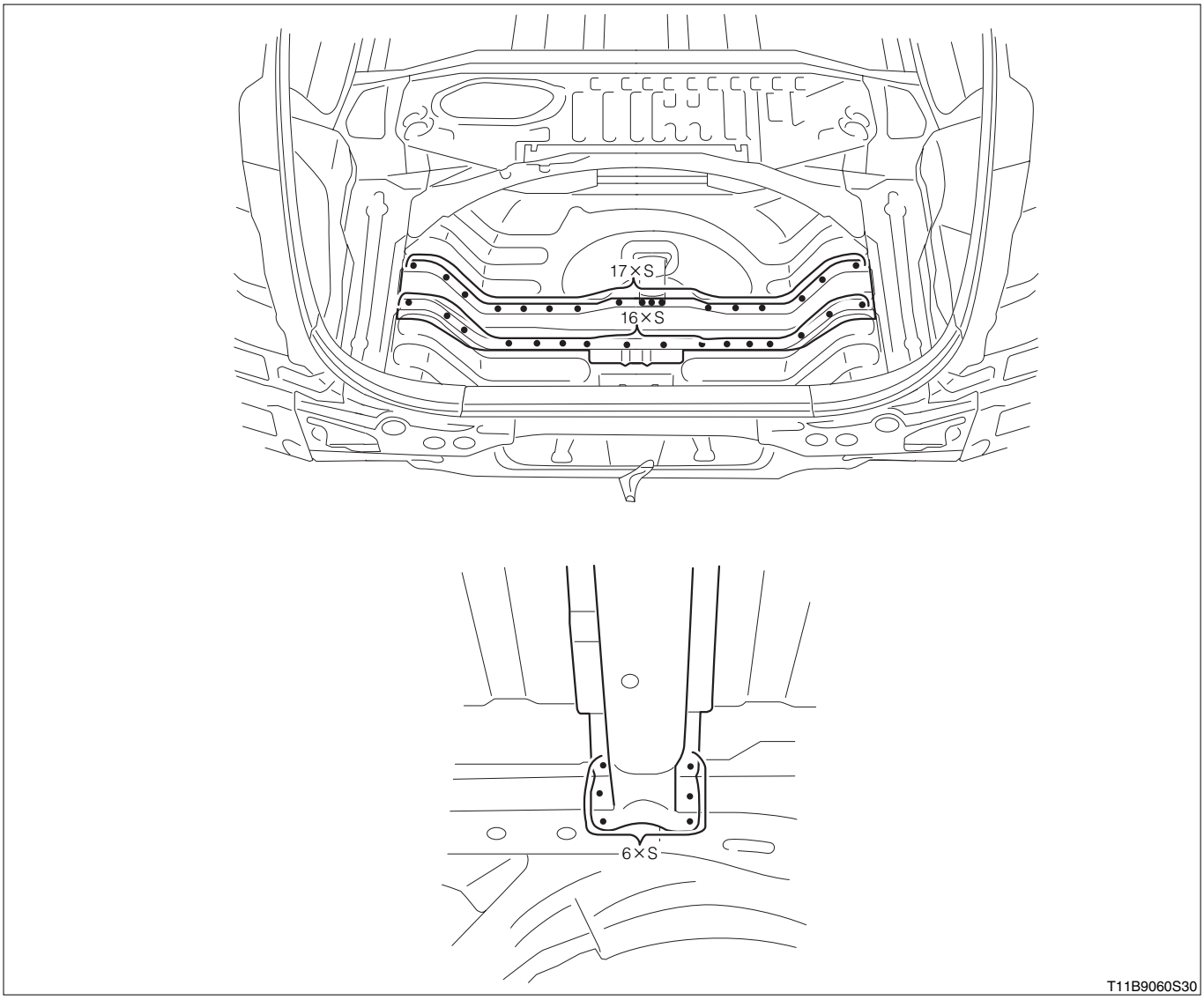
16-2-4 **OPERATION AFTER INSTALLATION**

1. Install the rear floor side panel extension front.
2. Install the rear floor cross member reinforcement No.2.
3. Install the body lower back panel.

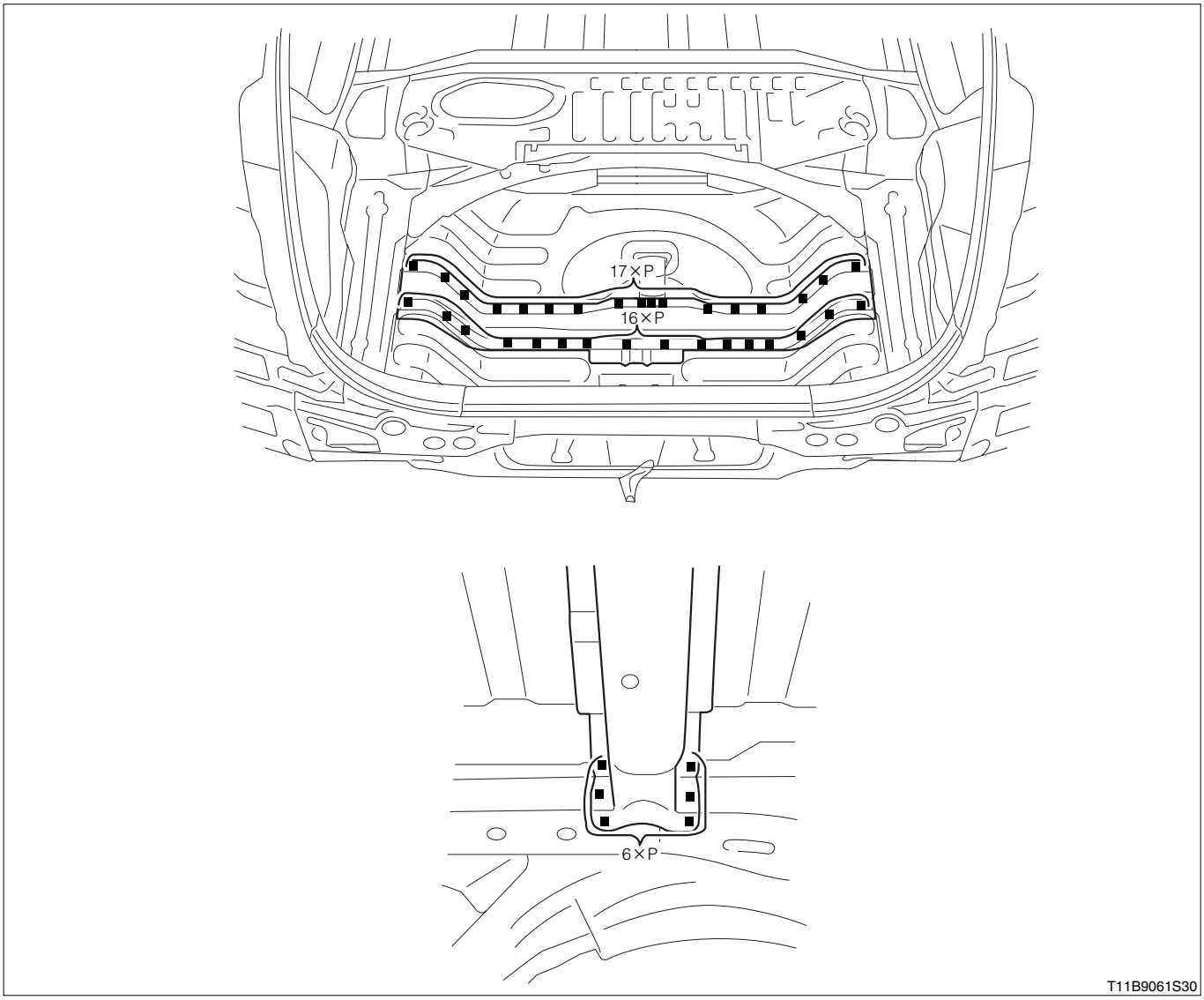
17 REAR FLOOR CROSS MEMBER NO.2

17-1 REPLACEMENT

17-1-1 REMOVAL PROCEDURES



17-1-2 **INSTALLATION PROCEDURES**



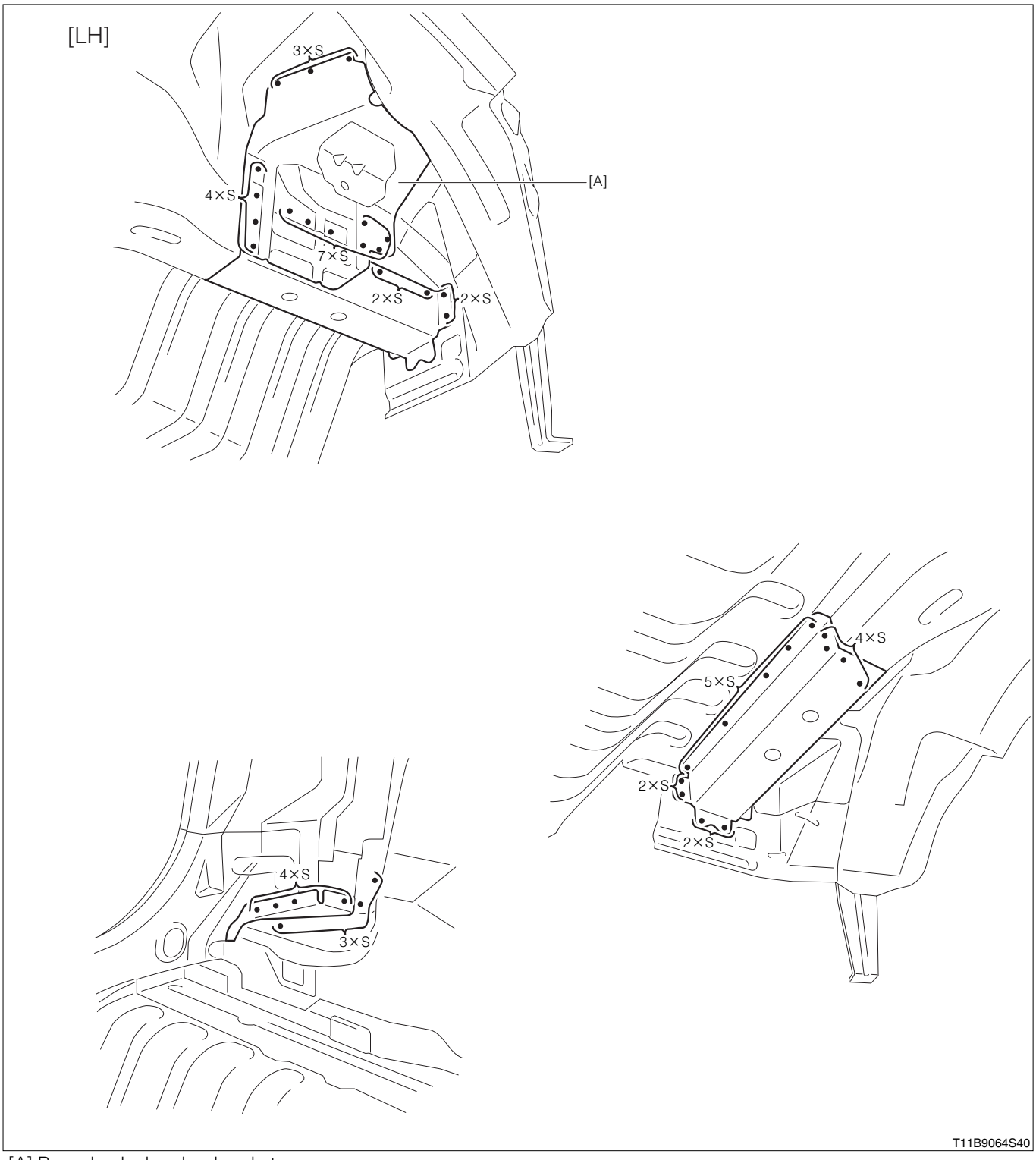
18 REAR FLOOR MOUNTING BRACKET NO.2

18-1 REPLACEMENT

18-1-1 OPERATION BEFORE REMOVAL

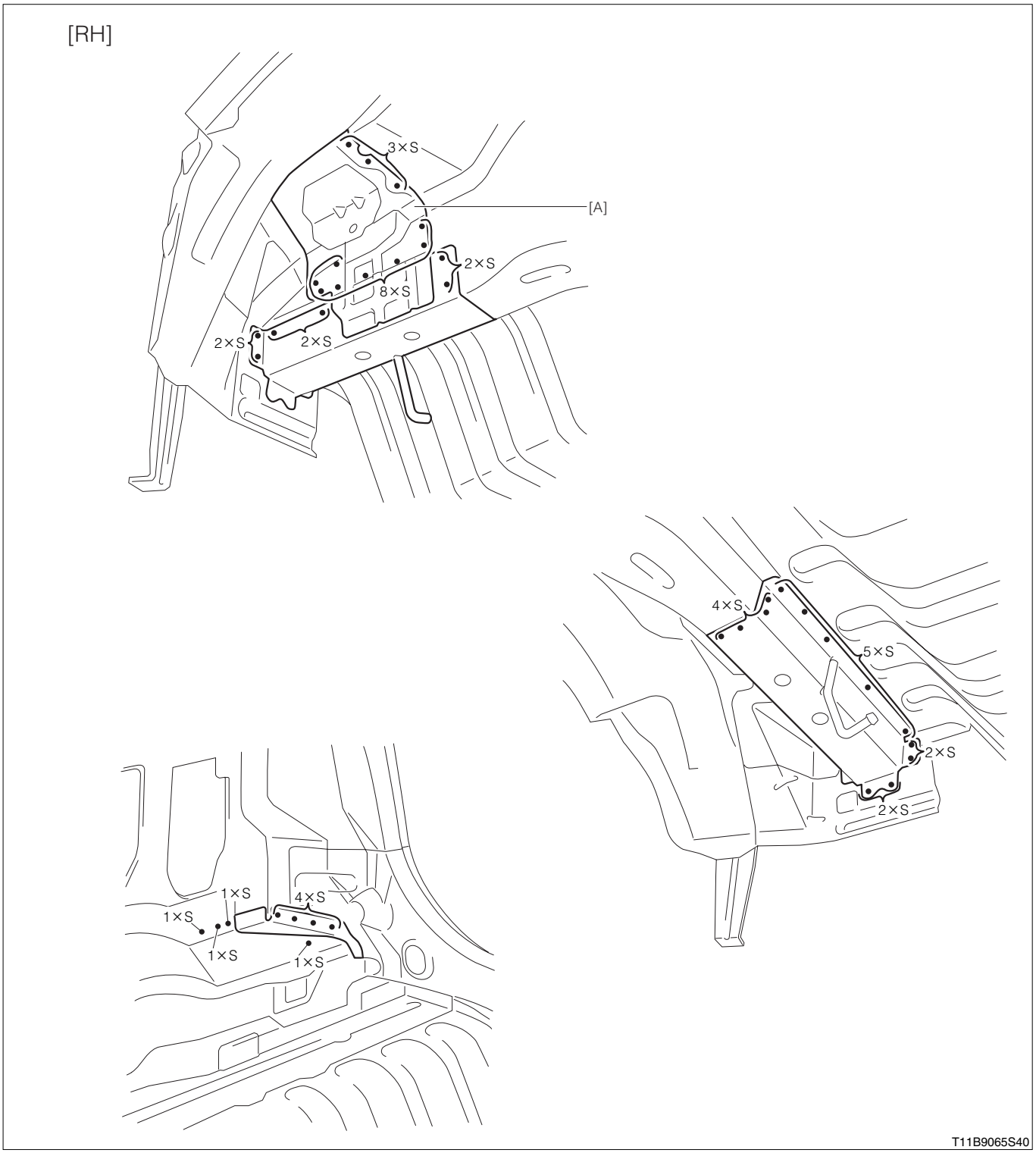
1. Remove the necessary part or component of the body lower back panel.
2. Remove the necessary part or component of the rear floor cross member No.2.

18-1-2 REMOVAL PROCEDURES



[A] Rear shock absorber bracket

1. Remove [A] together.

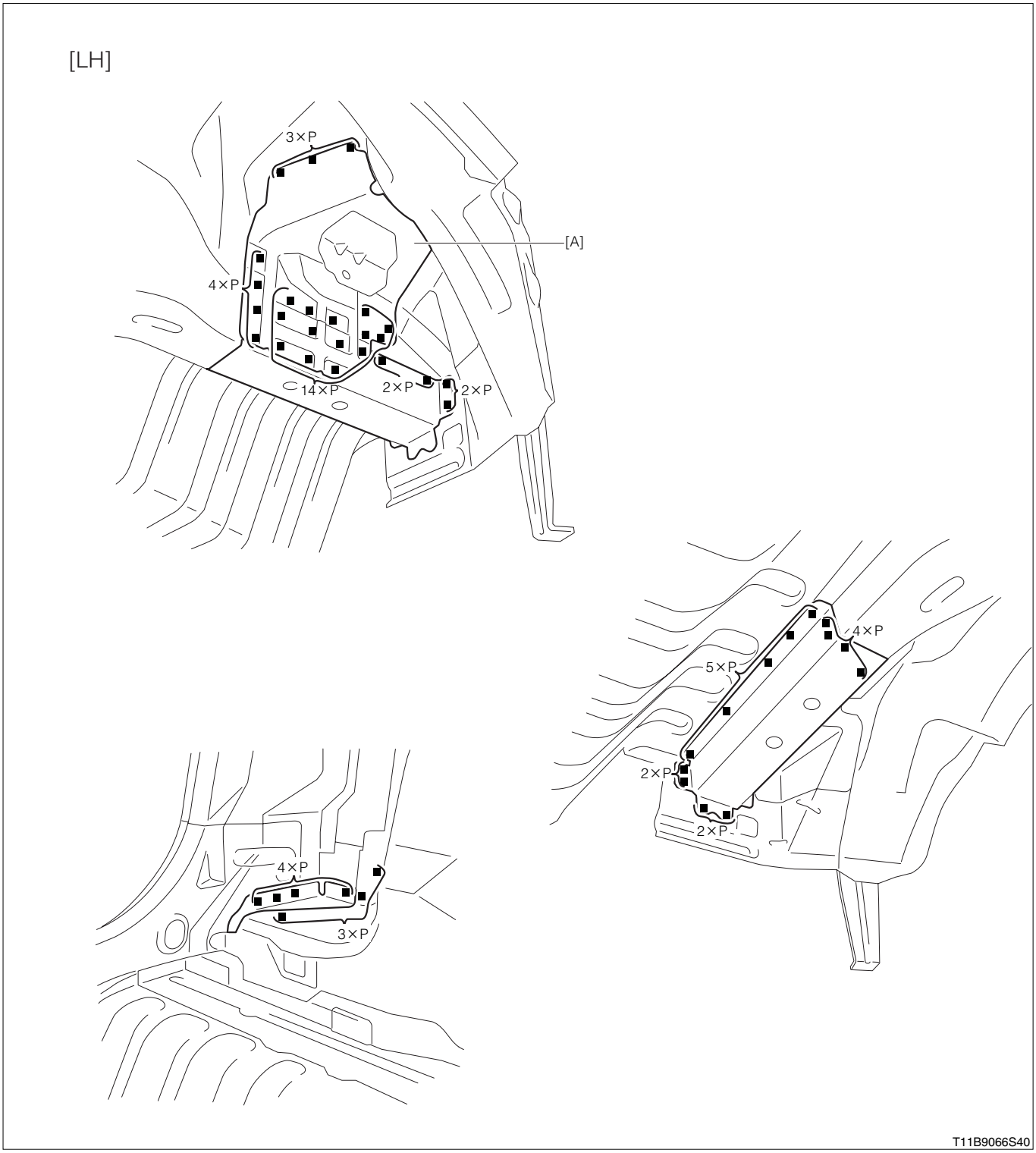


[A] Rear shock absorber bracket

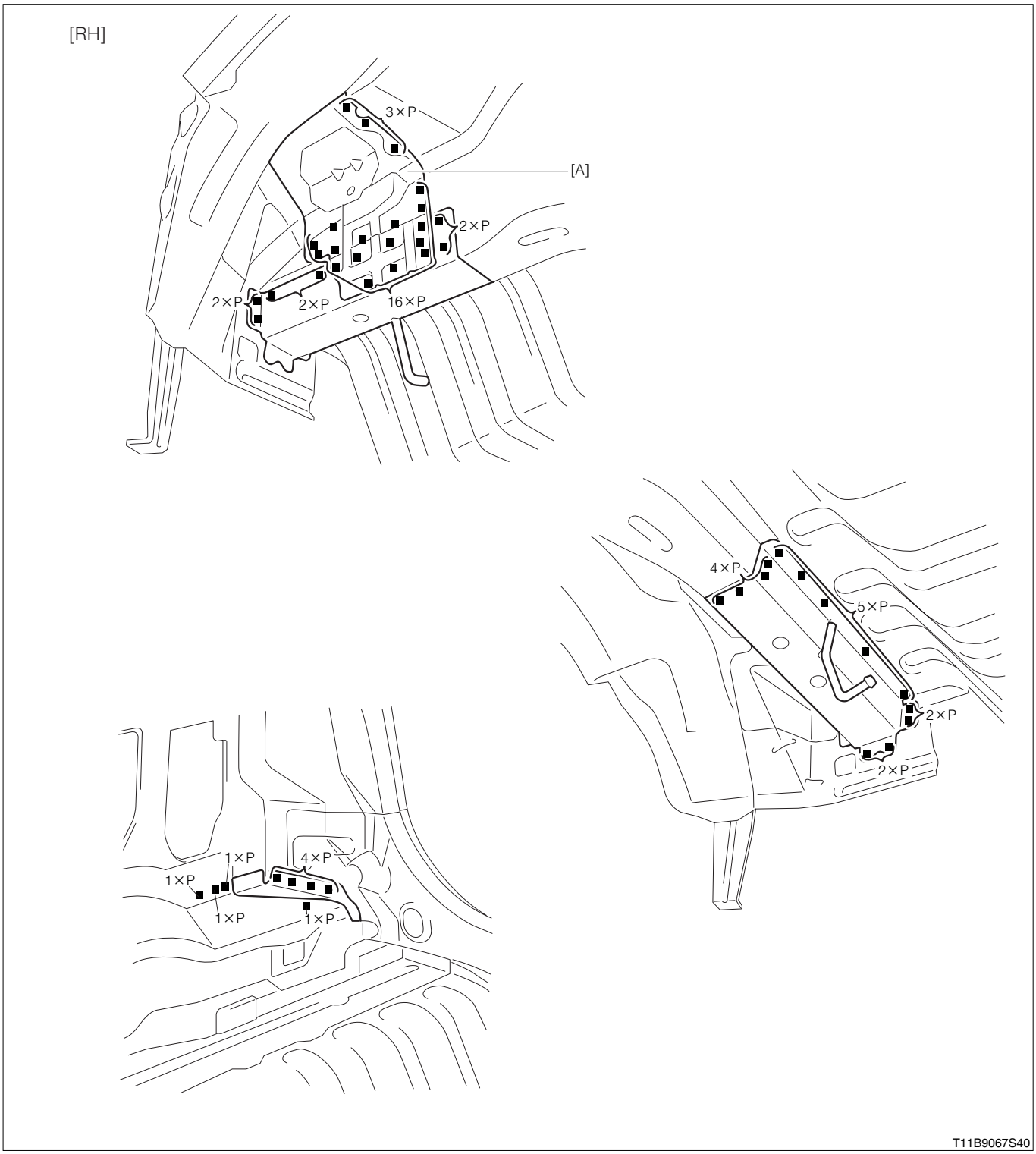
2. Remove [A] together.

18-1-3 **INSTALLATION PROCEDURES**

[LH]



[A] Rear shock absorber bracket



[A] Rear shock absorber bracket

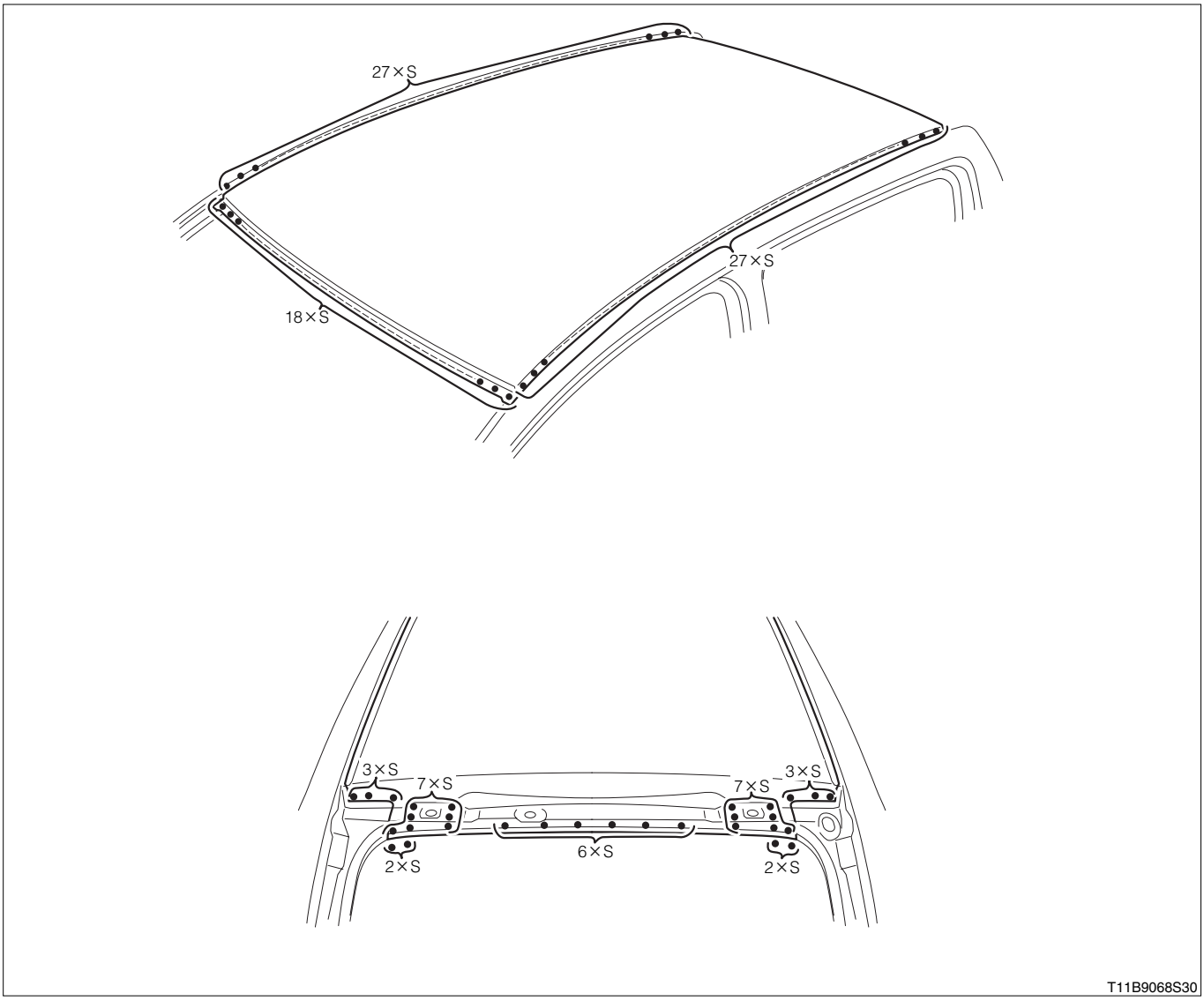
18-1-4 **OPERATION AFTER INSTALLATION**

1. Install the rear floor cross member No.2.
2. Install the body lower back panel.

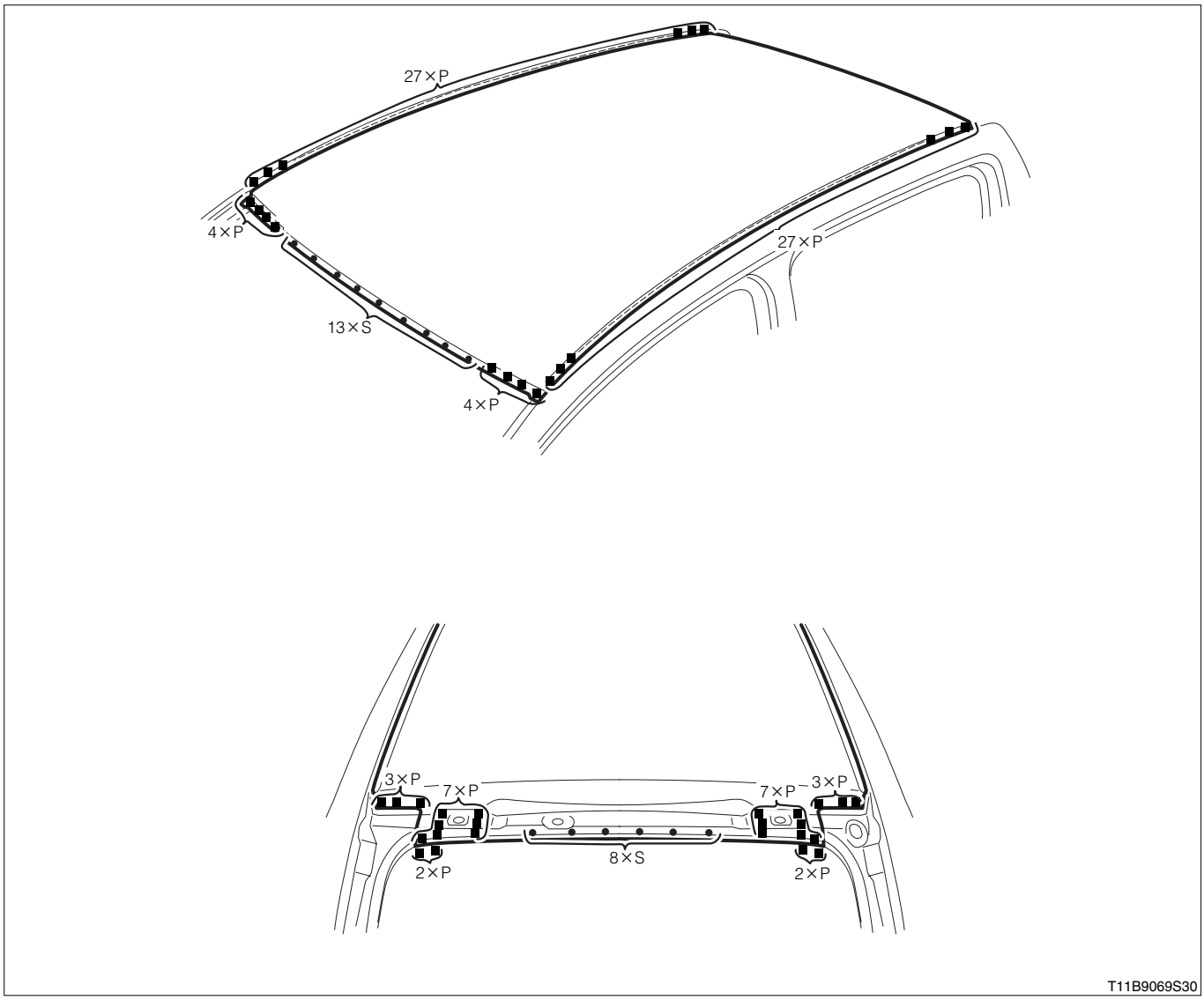
19 ROOF PANEL

19-1 REPLACEMENT

19-1-1 REMOVAL PROCEDURES



19-1-2 **INSTALLATION PROCEDURES**



D RUST PREVENTIVE TREATMENT

1 BODY SEALING

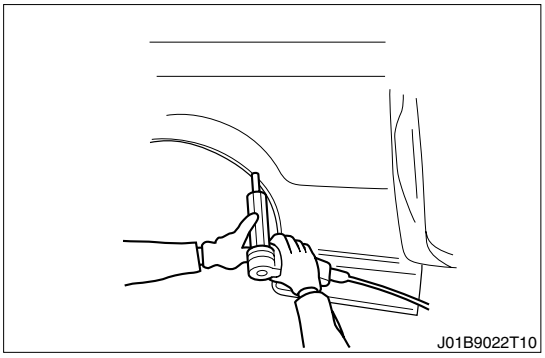
1-1 APPLICATION

1-1-1 INSTRUCTIONS FOR WORK

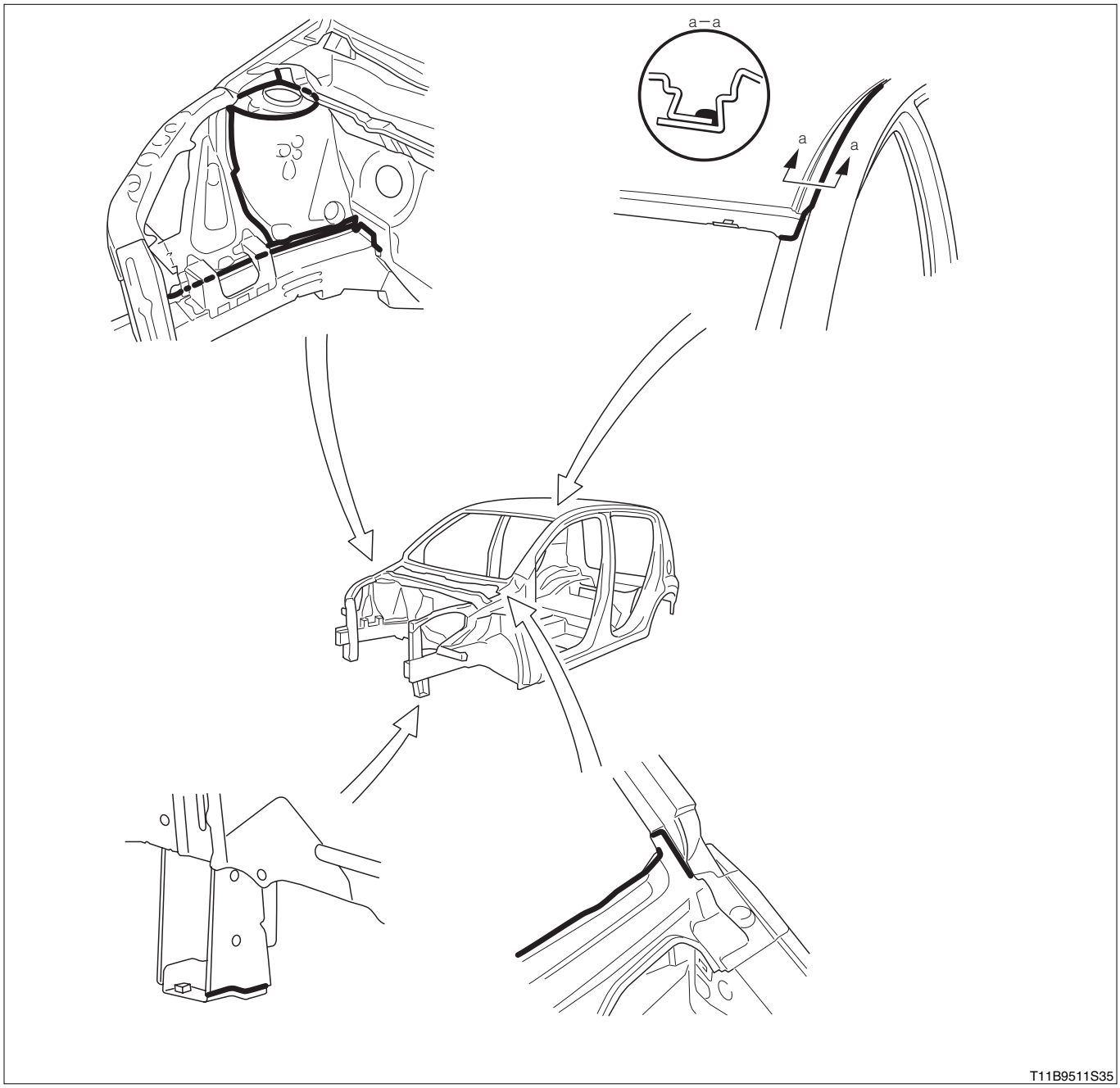
For the rust prevention and waterproofing, fill body sealer to the joint section of the body panel and panel's hemming section.

CAUTION

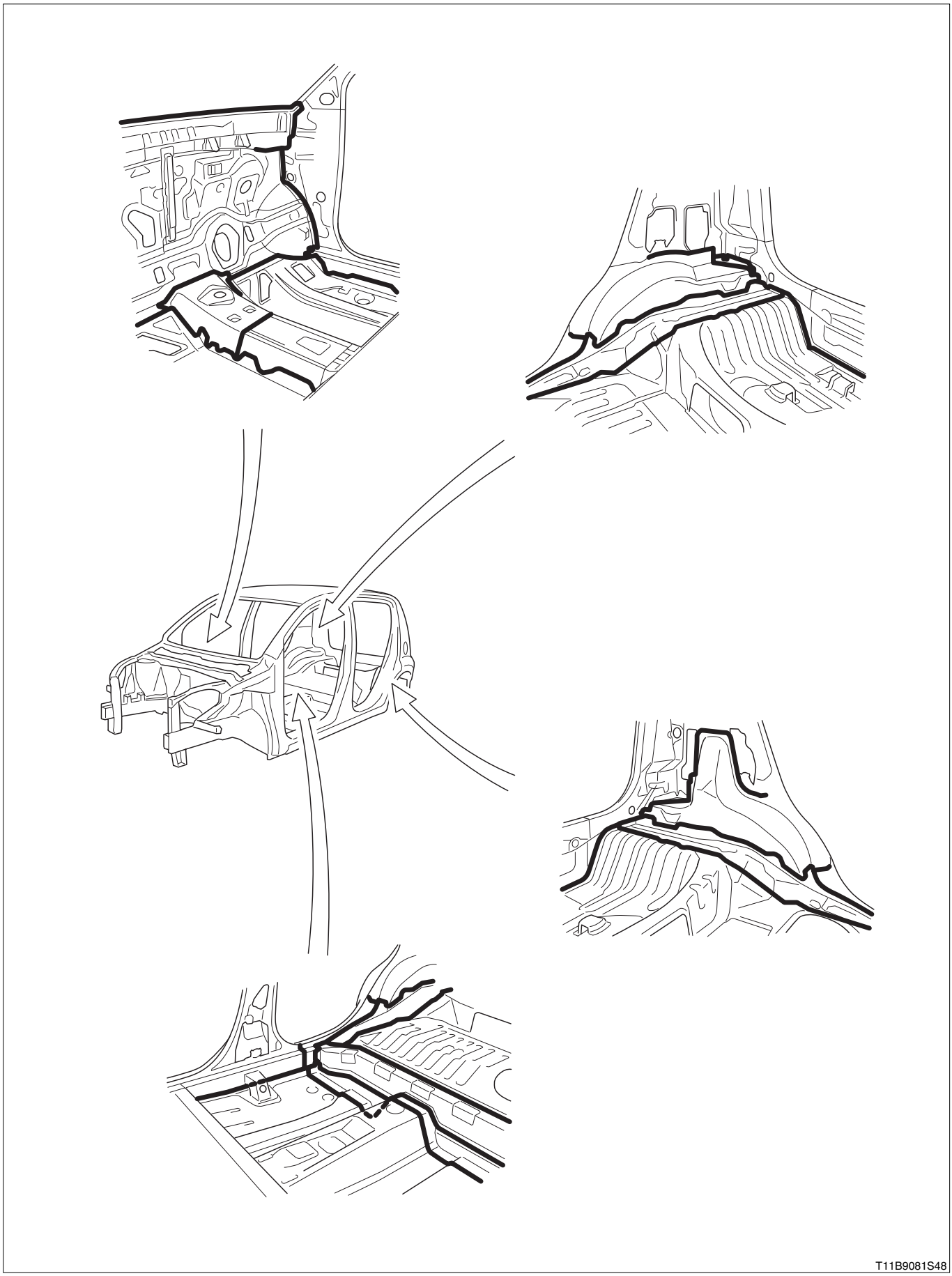
- Clean the sections to which the body sealer is applied, using a cloth dampened with white gasoline.
- Remove any body sealer adhering to those sections where such application is not required, using a cloth dampened with white gasoline.
- Remove spot sealer which adhered to the sealer applying section with thinner. Then, apply primer for rust prevention, and apply body sealer.



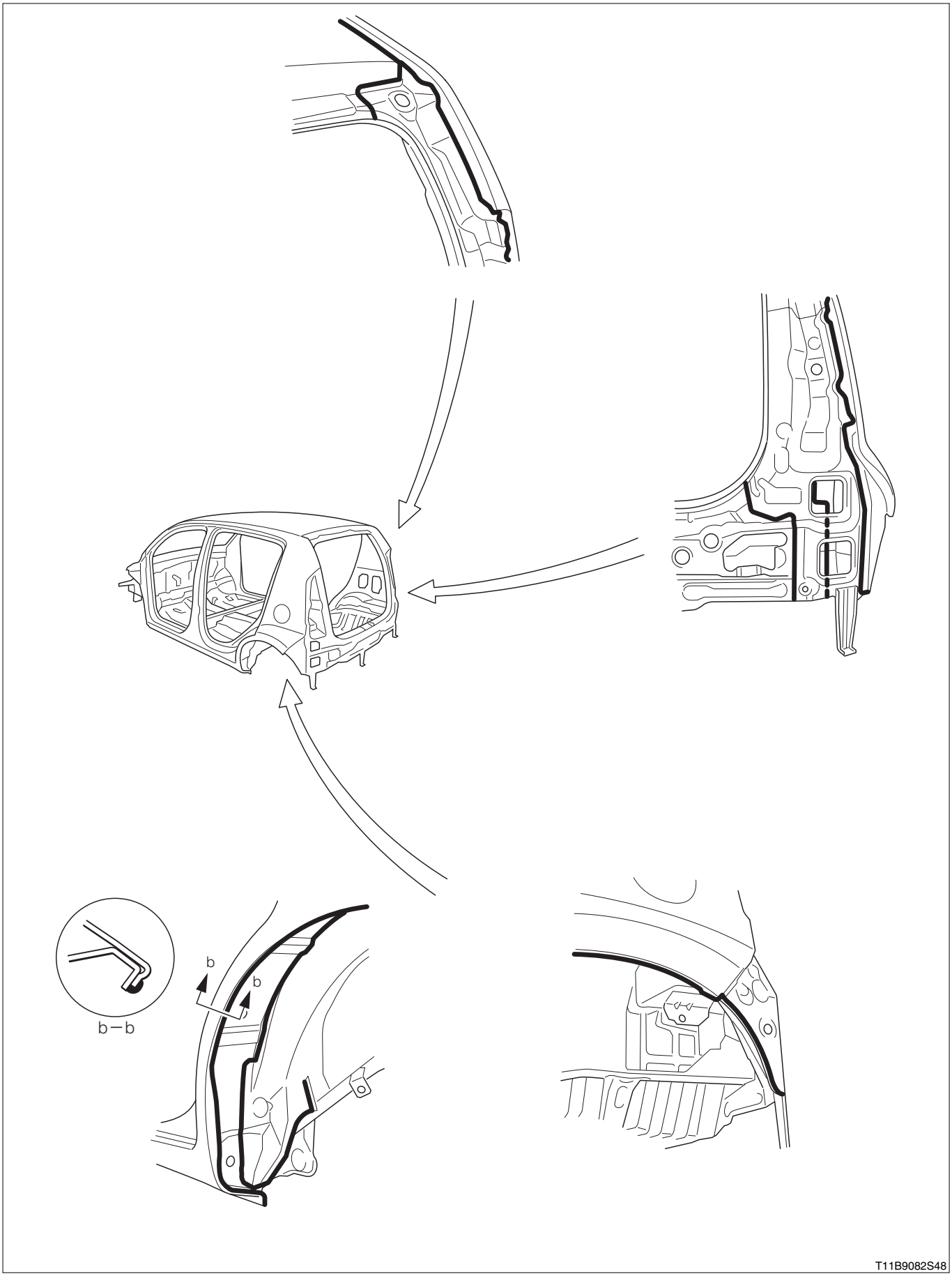
1-1-2 **APPLICATION AREAS**



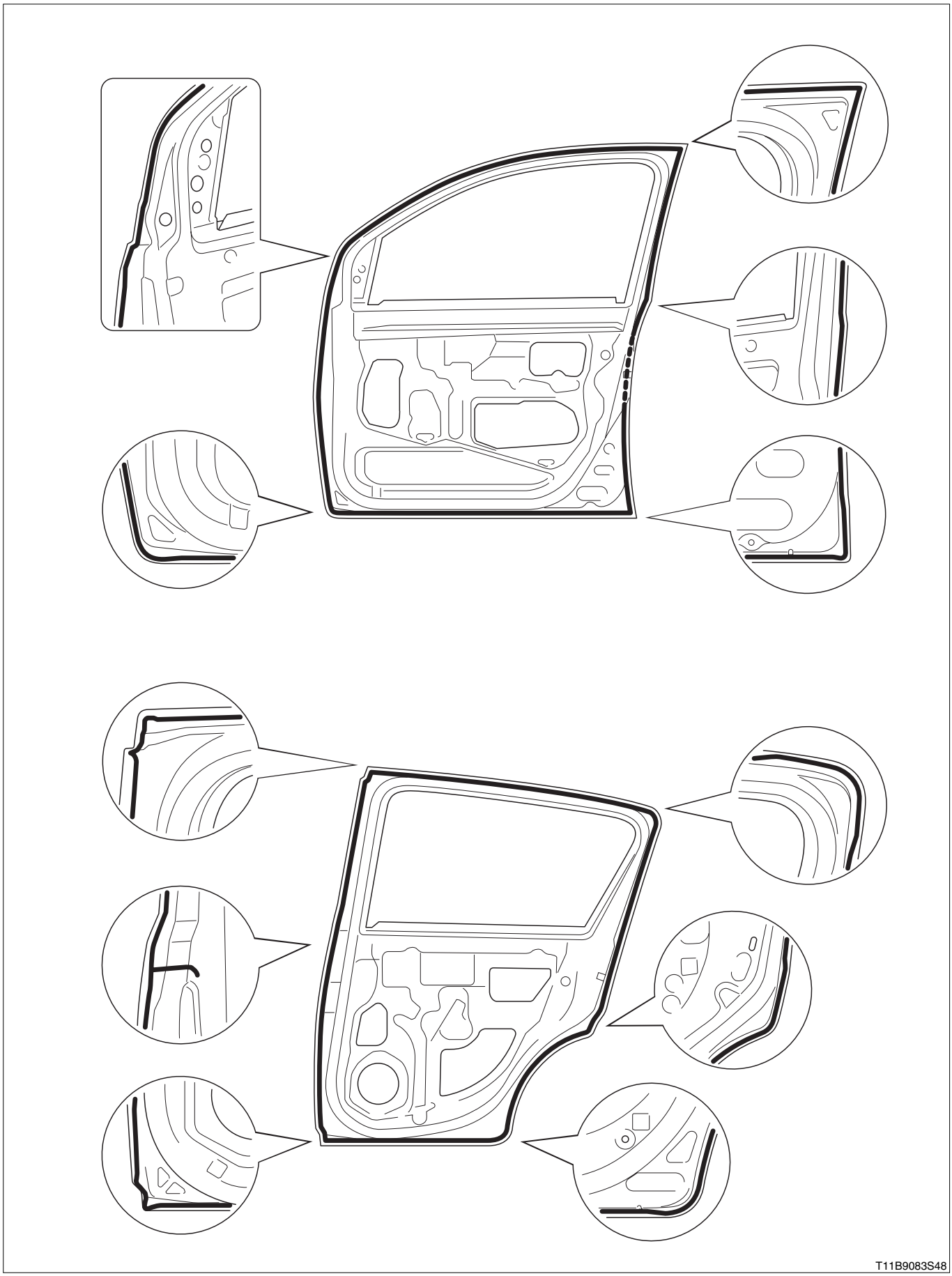
The illustration shows the applying sections for the vehicles of all specifications.



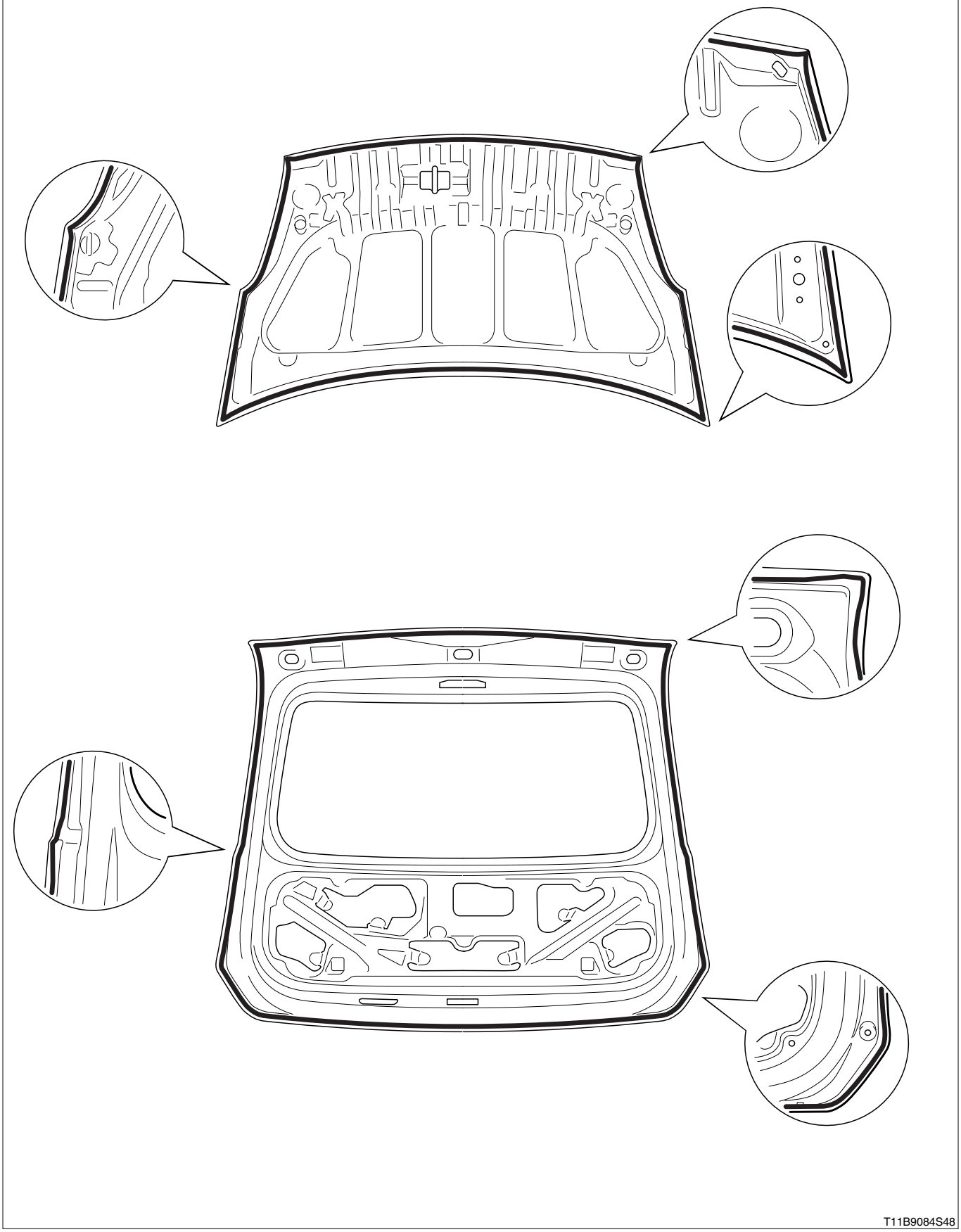
The illustration shows the applying sections for the vehicles of all specifications.



The illustration shows the applying sections for the vehicles of all specifications.



The illustration shows the applying sections for the vehicles of all specifications.



The illustration shows the applying sections for the vehicles of all specifications.

2 UNDERCOATING

2-1 APPLICATION

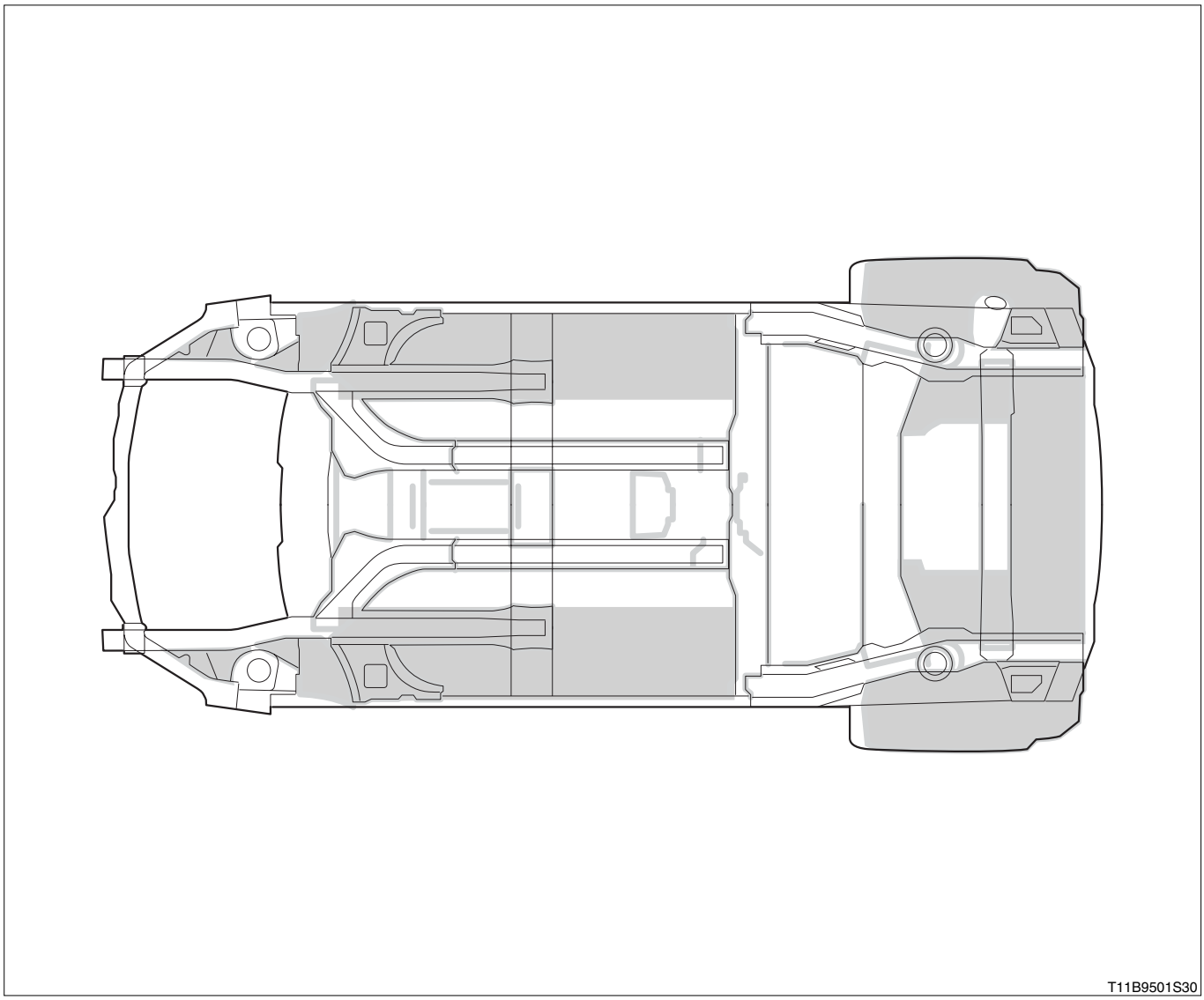
2-1-1 INSTRUCTIONS FOR WORK

For soundproof and rust prevention, apply the undercoat agent to the back side of the floor and the inside of the wheel house.

CAUTION

- Clean the sections to which the undercoat is applied, using a cloth dampened with white gasoline.
- Do not apply the undercoat to those sections where such application is not required; e.g. the muffler.
- If the back side of the floor has been welded, apply the undercoat for the purpose of rust prevention.
- Carefully close any clearance of a joint section between panels.

2-1-2 APPLICATION AREAS(UNDERCOAT)



The illustration shows the applying sections for the vehicles of all specifications.

2-1-3 APPLICATION AREAS(ANTICORROSIVE AGENT)

Apply the anticorrosive agent to the back of the floor and undercarriage parts except for the tires, driveshaft boots, exhaust pipes, brake discs, caution labels and the engine main body.

3 RUST PREVENTIVE AGENT

3-1 APPLICATION

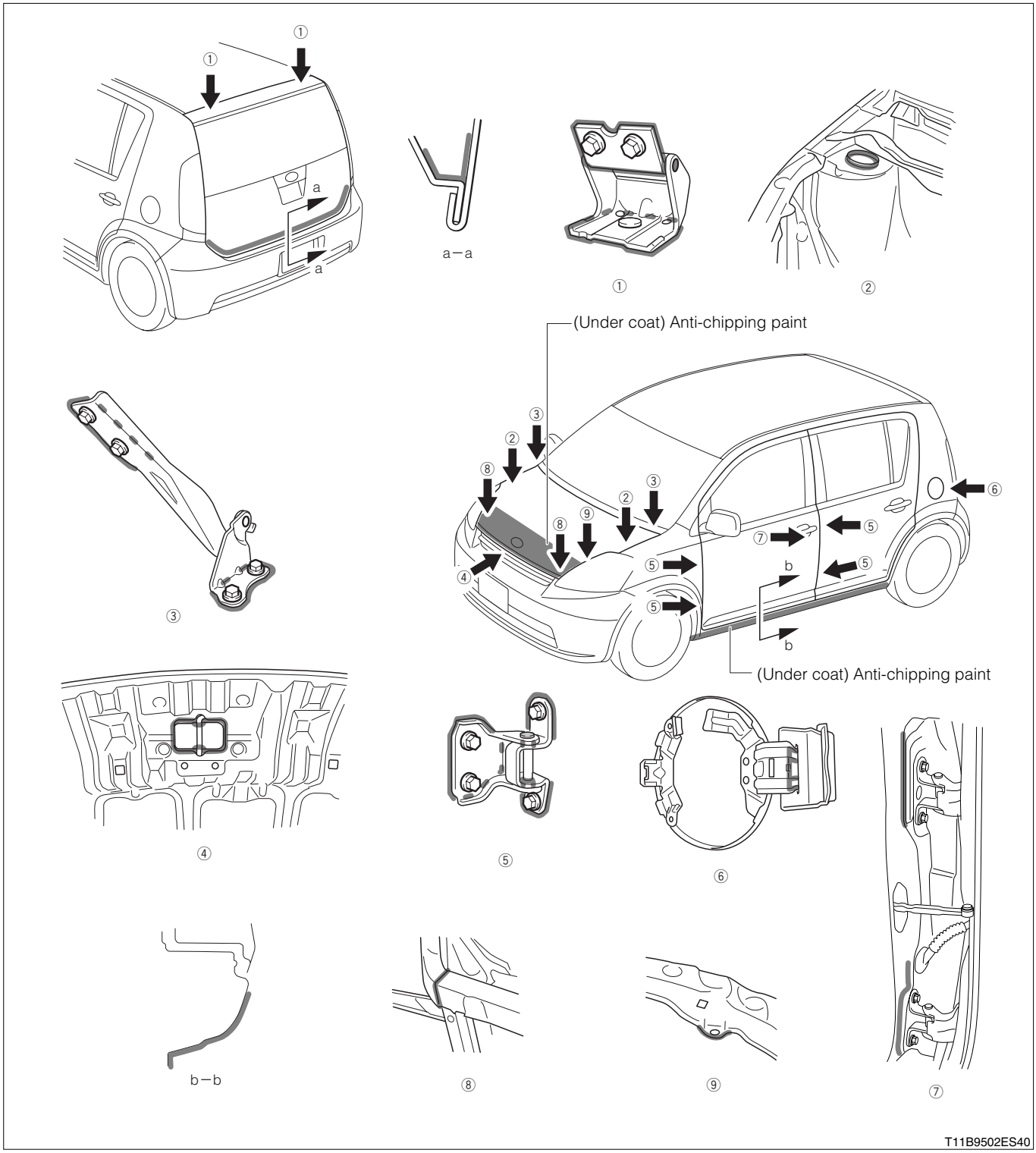
3-1-1 INSTRUCTIONS FOR WORK

Apply rust-preventive agent to the joint section of the body panel, the reverse side of the hemming section of the door and hood (the forward end of the bending section of the external sheet), and around the hinge.

CAUTION

- Remove any agent adhering to those sections where such application is not required, using a cloth dampened with white gasoline.

3-1-2 **APPLICATION AREAS**



The illustration shows the applying sections for the vehicles of all specifications.

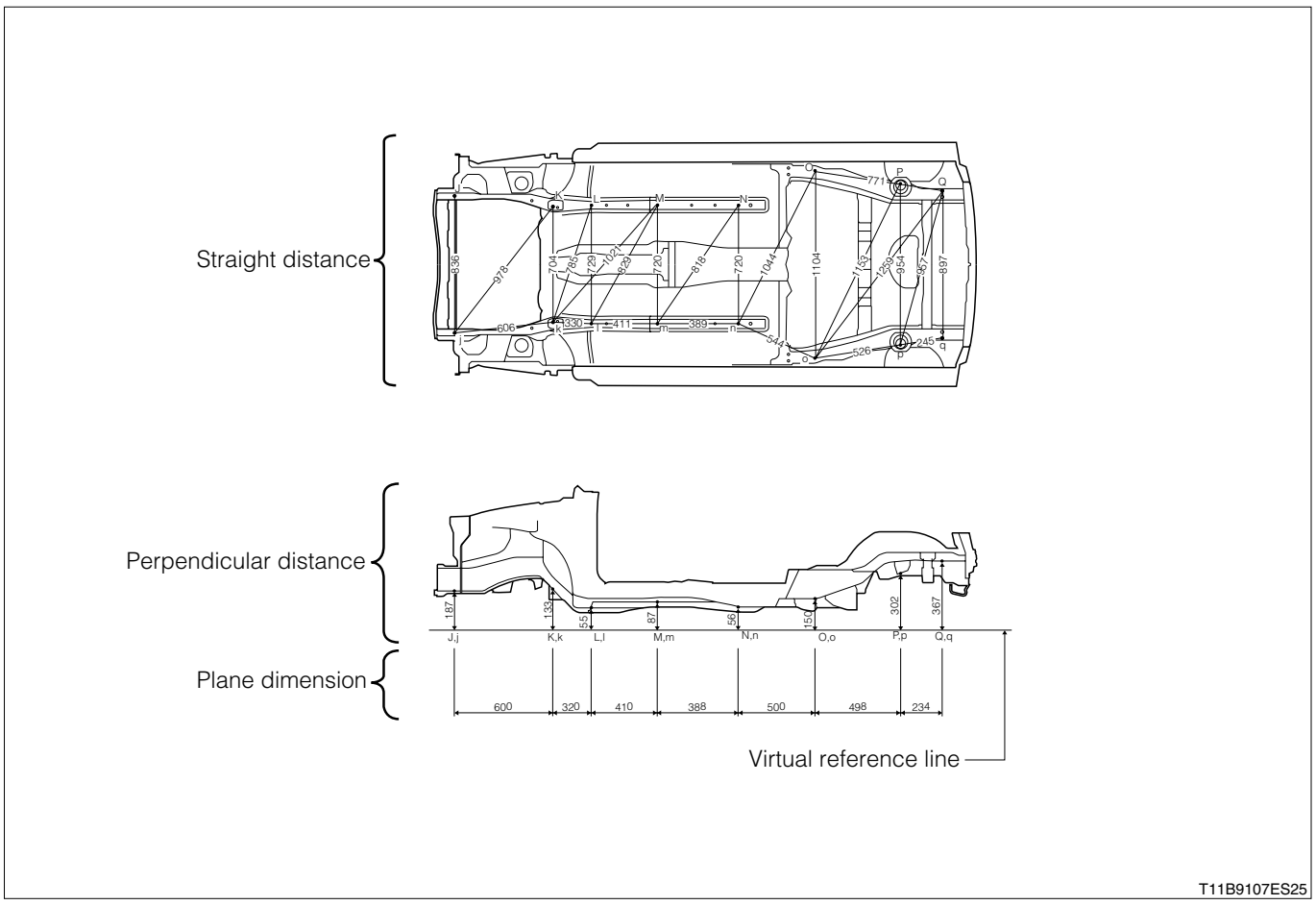
E BODY DIMENSIONAL DIAGRAM

1 HOW TO READ DIMENSIONAL DIAGRAM

1-1 INSTRUCTIONS

This body dimensional diagram is based on the measurement of the body dimensions by means of a tracking gauge for the body shell. (Condition where all pieces of equipment have been removed.)

1-2 HOW TO READ DIMENSIONAL DIAGRAM

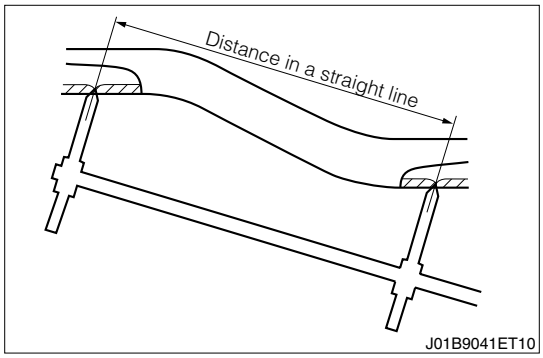


T11B9107ES25

1. Straight distance

Distance in a straight line

This indicates the distance in a straight line between the centers of the measuring points.

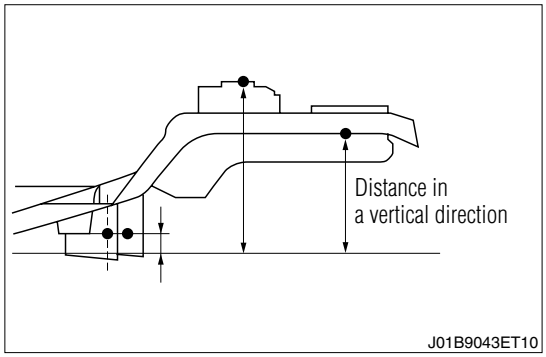


J01B9041ET10

2. Perpendicular distance

(1) Distance in a vertical direction

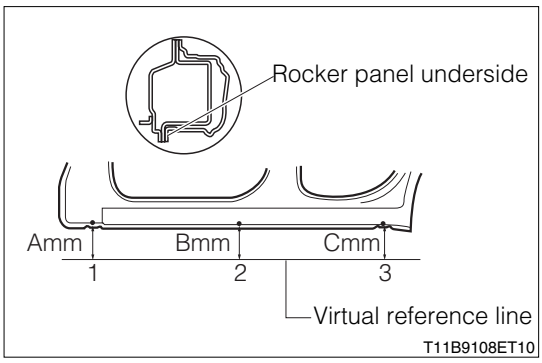
This indicates the distance in a vertical direction from the imagined line at the lower surface of the rocker panel or frame to the lower surface or center of the measuring point.



J01B9043ET10

(2) The virtual reference line used during the height measurement shall be a line connecting the following points.

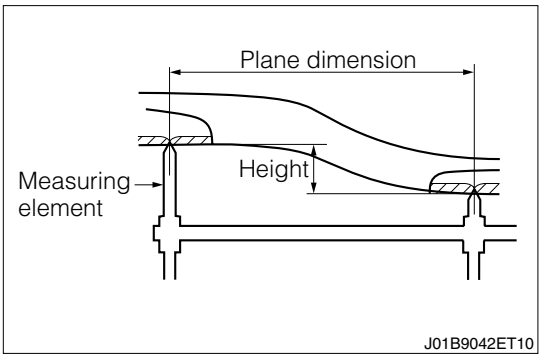
Code	Measuring point
1	Point A mm below the lower surface of the rocker panel at the center of the front jack up supporting section
2	Point B mm below the lower surface of the rocker panel at the center of points 1 and 3
3	Point C mm below the lower surface of the rocker panel at the center of the rear jack up supporting section



3. Plane dimension

Plane dimension

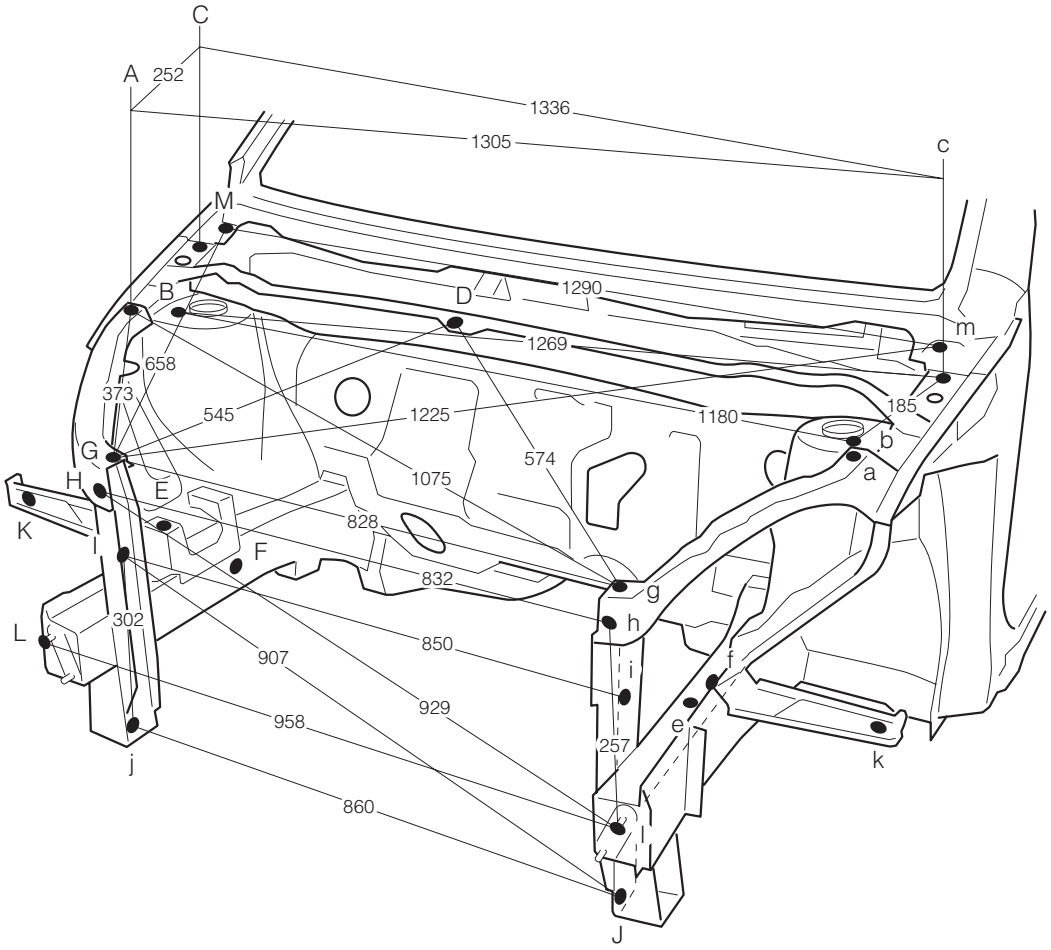
This indicates the dimension measured when the measuring points are projected on a plane.



2 INSTRUCTIONS TO BE OBSERVED DURING MEASURING OPERATION

1. The basic measuring method of the body dimensions is one which uses a tracking gauge.
2. When performing the measurement by a tracking gauge, ensure that the gauge proper and pointer, etc. exhibit no excessive looseness.
3. When performing the measurement by a tape measure, ensure that it exhibits no deflection, twist, bend and so forth.
   Especially, as for the red dimension line, it indicates the distance in a straight line. Hence, if a tape measure is interfered with the body during the measurement, use the tracking gauge to perform accurate measurements.
4. When the measuring points are covered with the undercoat, body sealer or the like, be sure to remove it completely and expose the measuring point. Then, proceed to the measurement.

3 BODY DIMENSIONS



A−a	A−D	a−D	B−D	b−D	B−E	b−e
1228	599	638	578	617	389	432

B−e	b−E	B−F	b−f	B−f	b−F	C−M,c−m
1122	1110	448	439	1095	1100	64

C−m,c−M	D−E	D−e	D−F	D−f	K−k
1315	599	635	637	633	1472

[Height above the virtual reference line]

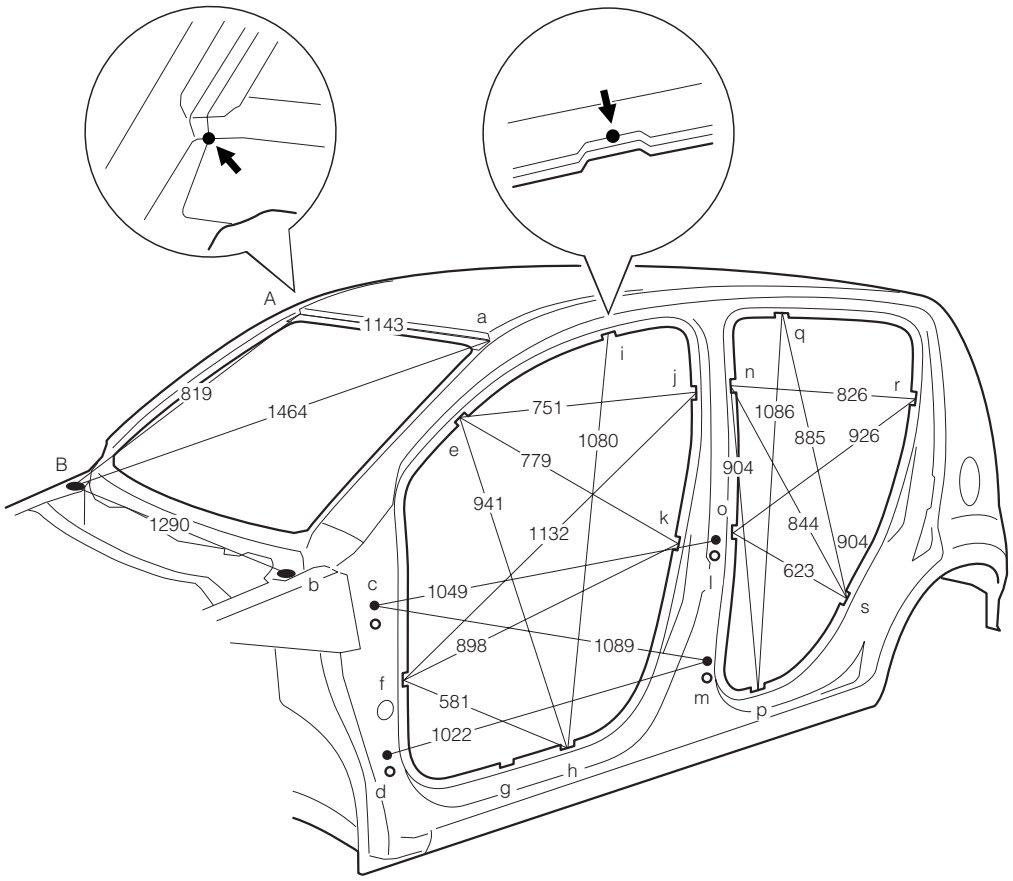
A, a	M, m	G, g
814	867	704

[Reference dimensions]

(Note) Symmetrical if dimensions are shown on either side only. Unit: mm

Point codes	Nomenclature	Bore	Point codes	Nomenclature	Bore
A, a	Front fender attaching nut	6mm dia screw	H, h	Radiator support upper center attaching nut	6mm dia screw
B, b	Front spring support hole	8.5mm dia	I, i	Radiator support reference hole	10mm dia
C, c	Hood hinge attaching nut	6mm dia screw	J, j	Stabilizer bracket attaching hole	RH:9.5mm dia LH:11×9.5
D	Cowl top ventilator louver attaching hole	5.2mm dia	K, k	Front fender mounting bracket reference hole	10mm dia
E, e	Engine mounting attaching nut, front	10mm dia screw	L, l	Front bumper reinforcement attaching bolt	10 mm dia bolt end
F, f	Front side member reference hole	10mm dia	M, m	Front fender attaching nut	6mm dia screw
G, g	Radiator support upper center attaching nut	6mm dia screw	–	–	–

T11B9503ES48



[Width dimension]

E−e	F−f	G−g	H−h	I−i	J−j	K−k
1262	1359	1364	1364	1170	1288	1354

N−n	O−o	P−p	Q−q	R−r	S−s
1287	1364	1364	1153	1289	1363

[Diagonal dimensions]

E−,e−F	E−h,e−H	E−j,e−J	F−j,f−J	F−k,f−K	G−n,g−N	H−i,h−I	G−p,g−P
1456	1615	1480	1742	1627	1777	1663	1635

I−q,i−Q	J−k,j−K	N−r,n−R	N−s,n−S	O−s,o−S	P−q,p−Q	R−s,r−S
1331	1383	1530	1570	1499	1659	1480

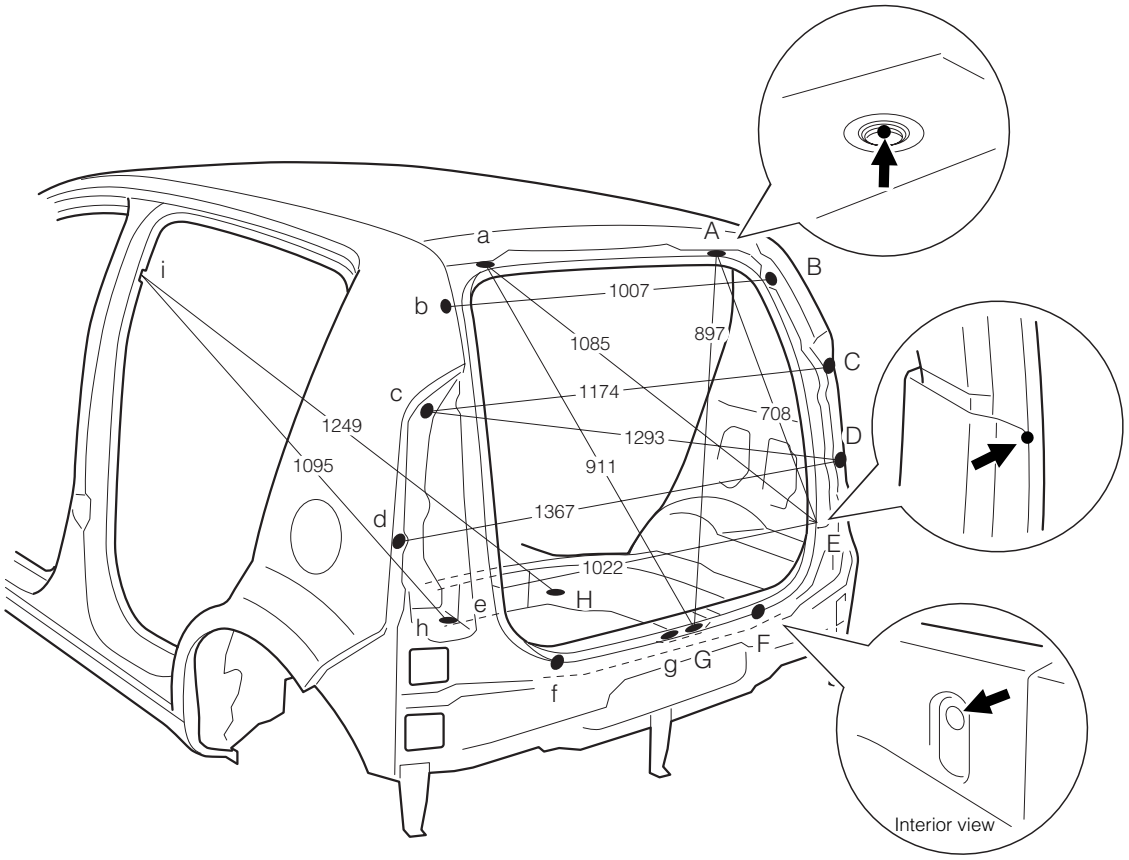
[Reference dimensions]

(Note) Symmetrical if dimensions are shown on either side only.

Unit: mm

Point codes	Nomenclature	Bore	Point codes	Nomenclature	Bore
A, a	Roof panel corner	—	K, k	Center body pillar mating mark	—
B, b	Front fender attaching nut	6mm dia screw	L, l	Rear door hinge attaching nut	8mm dia screw
C, c	Front door hinge attaching nut	8mm dia screw	M, m	Rear door hinge attaching nut	8mm dia screw
D,d	Front door hinge attaching nut	8mm dia screw	N, n	Center body pillar mating mark	—
E, e	Front body pillar mating mark	—	O, o	Center body pillar mating mark	—
F, f	Front body pillar mating mark	—	P, p	Rocker panel mating mark	—
G, g	Rocker panel mating mark	—	Q, q	Roof side rail mating mark	—
H, h	Rocker panel mating mark	—	R, r	Quarter panel mating mark	—
I, i	Roof side rail mating mark	—	S, s	Quarter panel mating mark	—
J, j	Center body pillar mating mark	—	—	—	—

T11B9504ES48



C−D,c−d	F−f	F−H,f−h	F−h,f−H
260	650	719	836

G−H,g−h	G−h,g−H	I−G,i−g	I−g,i−G
742	749	1584	1600

[Reference dimensions]

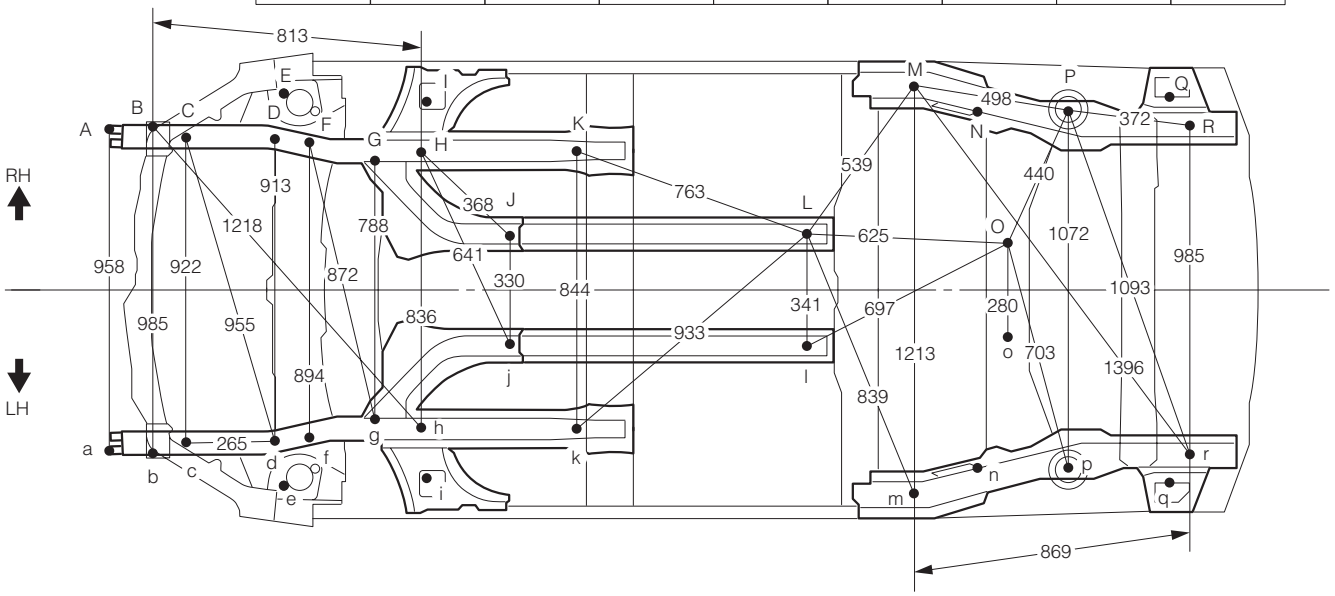
(Note) Symmetrical if dimensions are shown on either side only.

Unit: mm

Point codes	Nomenclature	Bore	Point codes	Nomenclature	Bore
A, a	Back door hinge attaching hole	RH:8.1mm dia LH:11×8.1	F, f	Quarter panel inner reference hole	12mm dia
B, b	Back door damper stay attaching nut	6mm dia screw	G, g	Back door lock striker attaching nut	6mm dia screw
C, c	Quarter panel extension outer reference hole	10mm dia	H, h	Rear seat attaching nut	8mm dia screw
D, d	Rear combination lamp attaching hole	8.5mm dia	I, i	Center body pillar mating mark	—
E, e	Roof side panel inner/quarter panel inner mating section	—	—	—	—

T11B9505ES48

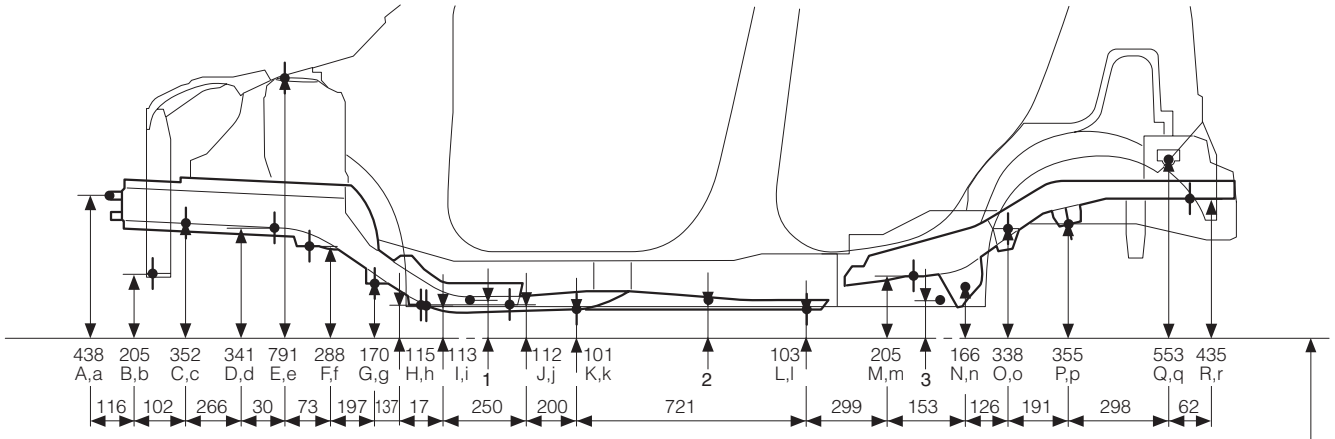
F−G,f−g	D−F,d−f	D−f,d−F	G−H,g−h	G−h,g−H	I−K,i−k	I−k,i−K	I−i	M−p,m−P
236	116	911	150	825	474	1090	1140	1244



Wheelbase	2440

1	2	3
101	100	103

Front



[Reference dimensions]
(Note) Symmetrical if dimensions are shown on either side only.

Unit: mm

Point codes	Nomenclature	Bore	Point codes	Nomenclature	Bore
A, a	Front bumper reinforcement attaching bolt	10mm dia bolt end	J, j	Front side member reference hole	10mm dia
B, b	Stabilizer attaching nut	6mm dia screw	K, k	Front side member reference hole	18mm dia
C, c	Front side member reference hole	15mm dia	L, l	Front floor under reinforcement reference hole	10mm dia
D,d	Front side member reference hole	15mm dia	M, m	Rear floor side member reference hole	15mm dia
E, e	Front shock absorber attaching nut	8.5mm dia	N, n	Trailing arm attaching hole, inner	12.5mm dia
F, f	Front suspension cross member attaching nut	12mm dia screw	O, o	Rear floor cross member reference hole	15mm dia
G, g	Front suspension cross member attaching nut	12mm dia screw	P, p	Bump stopper attaching nut	8mm dia screw
H, h	Front suspension cross member brace attaching nut	10mm dia screw	Q, q	Rear shock absorber attaching hole	14.5mm dia
I, i	Torque box reference hole	10mm dia	R, r	Rear floor side member reference hole	20mm dia

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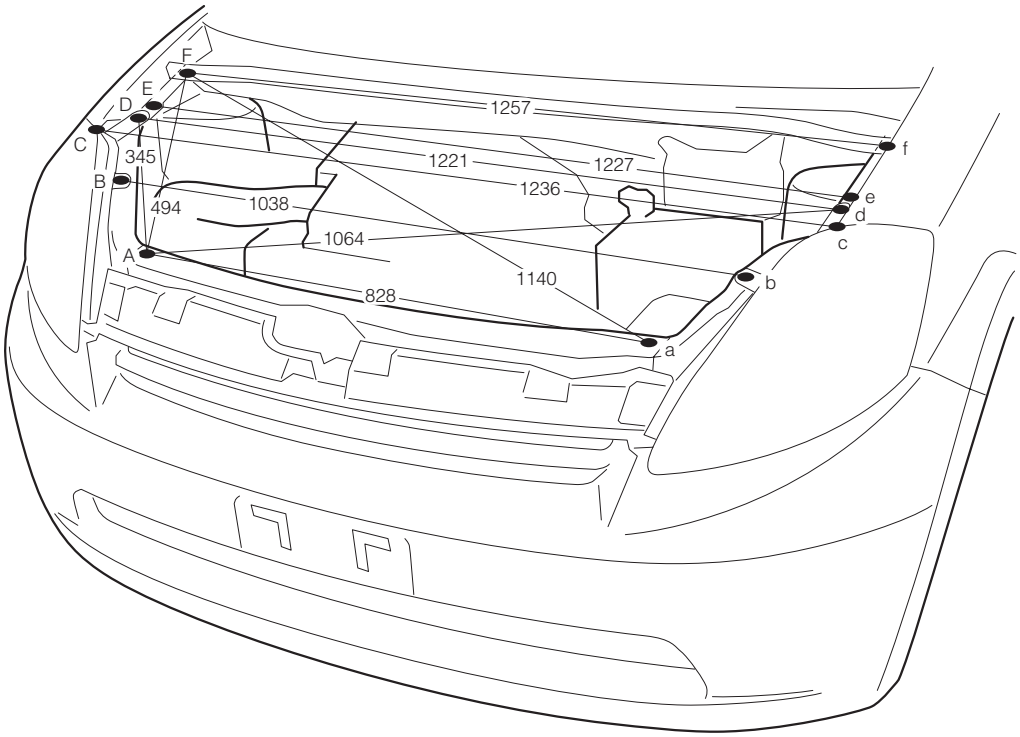
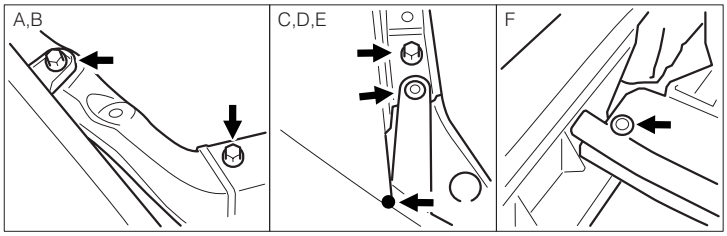




[Reference dimensions]

(Note) Symmetrical if dimensions are shown on either side only.

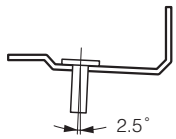
Unit: mm

Point codes	Nomenclature	Bore	Point codes	Nomenclature	Bore
A, a	Radiator support upper center attaching bolt head end	–	D, d	Headlight attaching clip end	–
B, b	Headlight attaching bolt head end	–	E, e	Front fender attaching bolt head end	–
C, c	Front fender corner end	–	F, f	Cowl top ventilator louver attaching clip end	–

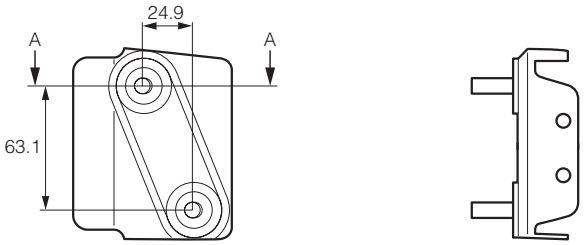
T11B9508ES48

Plane dimension

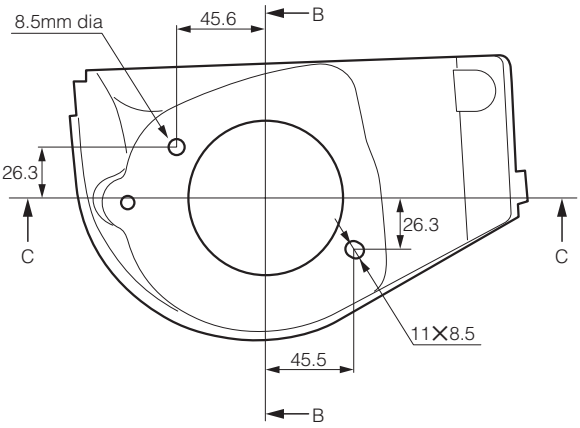
[Reference dimensions]

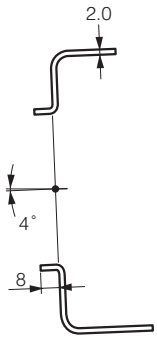


A−A

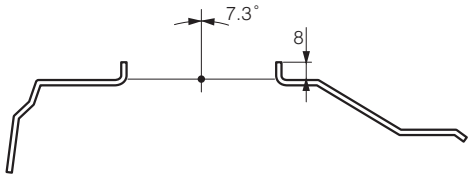


Front bumper reinforcement attaching section

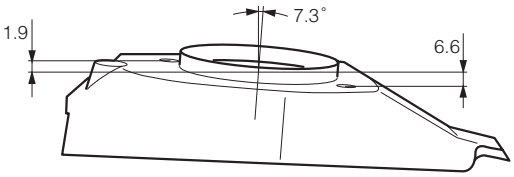




B−B



C−C



Front spring support attaching area

Unit: mm

T11B9509ES48

F SERVICE DATA

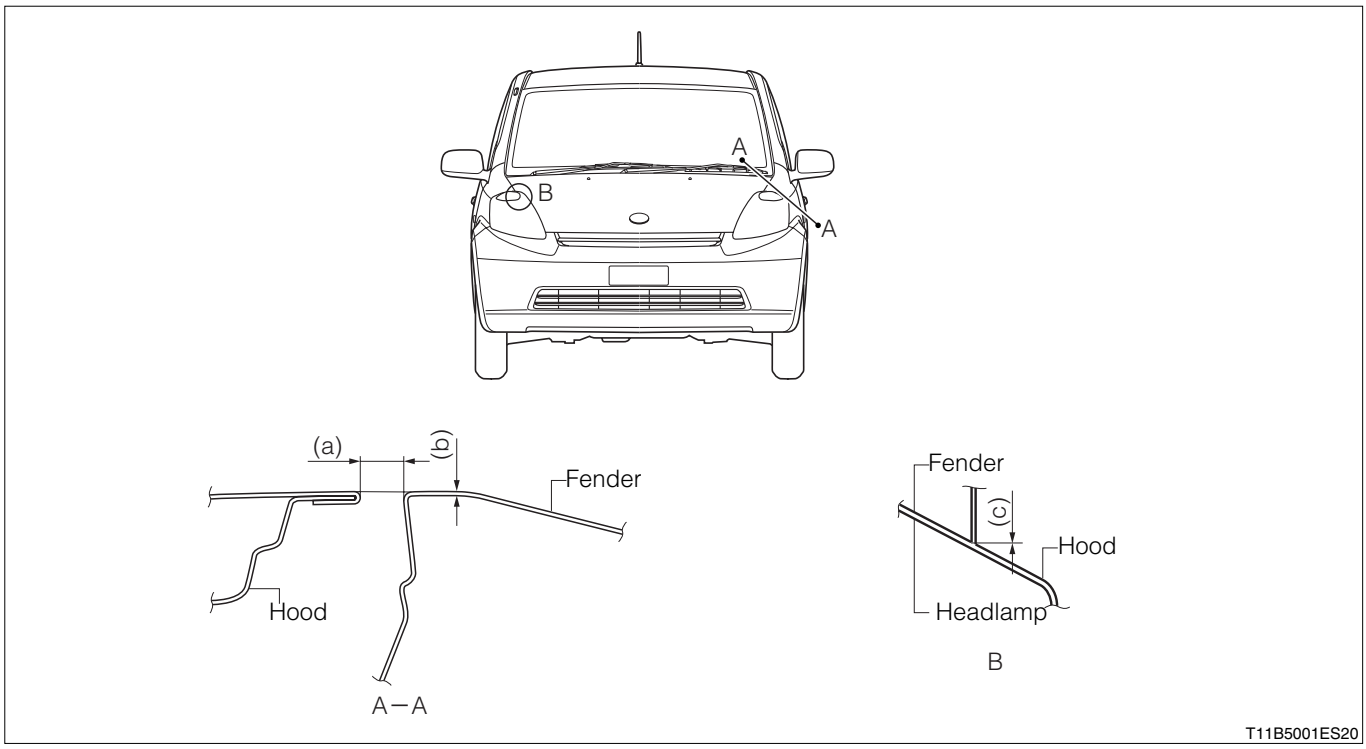
1 BODY

1-1 BASIC CHECK AND ADJUSTMENT

1-1-1 FITTING ADJUSTMENT

(1) Hood

① Fitting dimensions



Fitting dimensions of hood panel

Measuring point		Specified gap (a)	Difference in height (b)	Flatness (c)	Difference between right and left	Deviation value
A - A	Hood × Front fender	3.5 ± 1.5	0 ± 1.5	-	Not to exceed 1.5	Not to exceed 1.5
B	Hood end	-	-	0 ± 1.5	Not to exceed 1.5	-

Unit : mm

② Fitting adjustment

a. Adjustment of the hood in longitudinal direction, and in lateral direction at the rear end

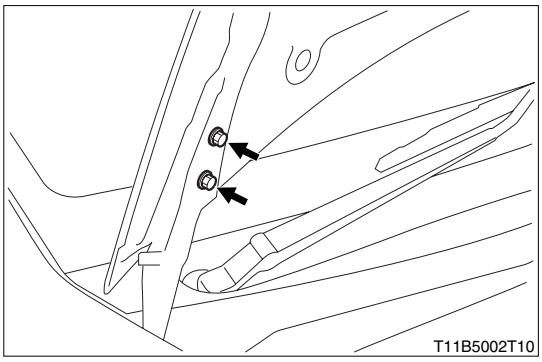
1. Loosen the hood hinge bolts to adjust.

CAUTION

- Since the centering bolt is used, adjustment must be done only after the centering bolt is replaced with the supplied bolt.

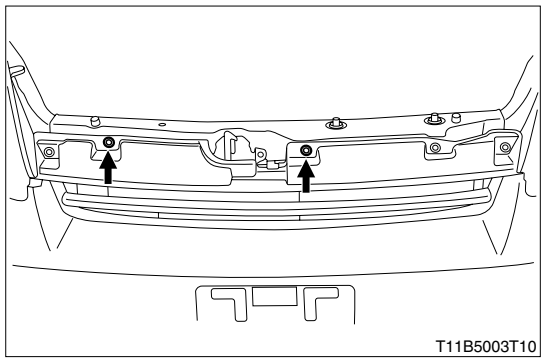
NOTE

- Part number of bolt:91631-60614-000



b. **Adjustment of the hood in vertical and lateral direction at the front end**

1. Remove two clips on the front bumper cover and pull the hood lock area of the front bumper cover to provide a gap for the tool.


T11B5003T10

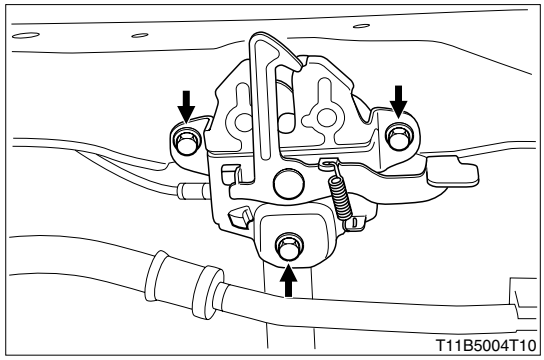
2. Loosen the hood lock bolt prior to adjustment.

CAUTION

- In cases where the centering bolt has been used, replace it with a bolt supplied for adjustment use in advance.

NOTE

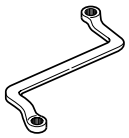
- Part number of bolt:91511-G0612-000


T11B5004T10

(2) **Front & rear door**

① **Articles to be prepared**

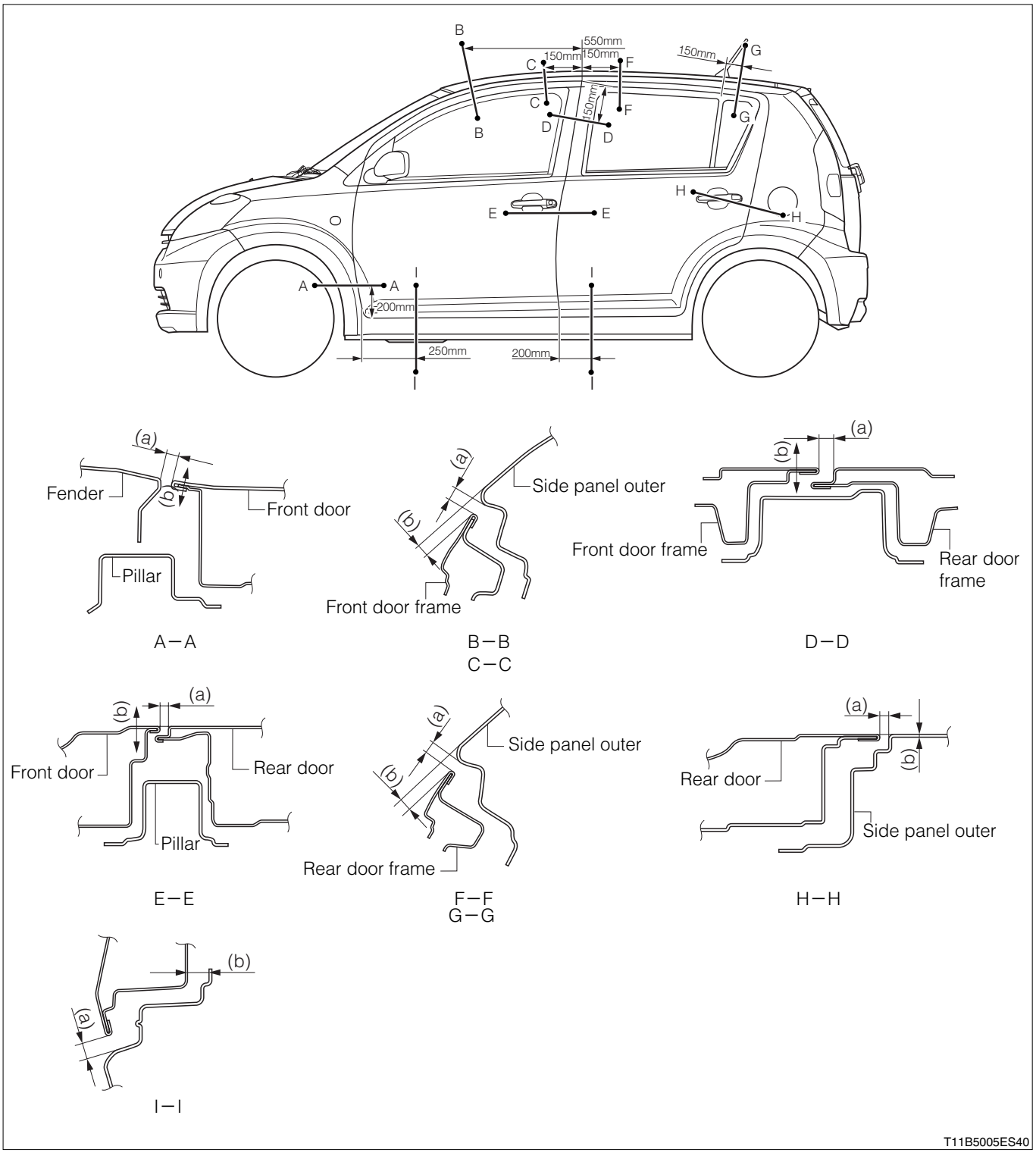
SST

Shape	Part No.	Part name
	09812-00010-000 (09812-22010-000)	Wrench,door hinge set bolt

Tool

Shape	Part No.	Part name	Use
	KTC BT3-T40L or equivalent	Long TORX® wrench T40	

② Fitting dimensions



Fitting dimensions of door

Measuring point		Specified gap (a)	Difference in height (b)	Difference between right and left	Deviation value
A - A	Front door ✕ Front fender	4.2 ± 1.2	0 ± 1.5	-	Not to exceed 1.5
B - B	Front door ✕ Side panel	4.8 ± 1.5	-3.7 ± 1.5	-	Not to exceed 1.5
C - C	Front door ✕ Side panel	4.8 ± 1.5	-3.8 ± 1.5	-	Not to exceed 1.5
D - D	Front door ✕ Rear door	4.2 ± 1.2	0 ± 1.5	Not to exceed 1.5	Not to exceed 1.5
E - E	Front door ✕ Rear door	4.2 ± 1.2	0 ± 1.5	-	Not to exceed 1.5
F - F	Rear door ✕ Side panel	4.8 ± 1.5	-3.5±1.5 (Side panel reference)	-	Not to exceed 1.5
G - G	Rear door ✕ Side panel	4.8 ± 1.5	-3.1±1.5 (Side panel reference)	-	Not to exceed 1.5
H - H	Rear door ✕ Quarter panel	4.2 ± 1.2	0±1.5 (Rear door reference)	-	Not to exceed 1.5
I - I	Front/Rear door ✕ Rocker panel	6.0 ± 1.5	-	-	Not to exceed 2.0

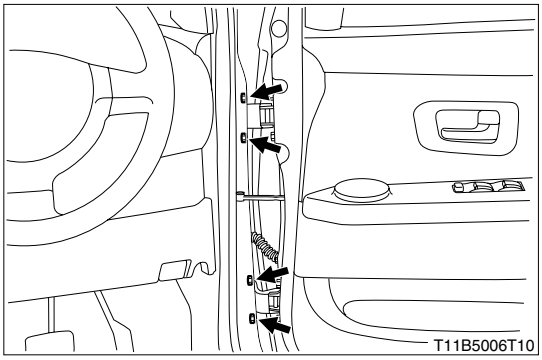
Unit : mm

③ Fitting adjustment (Front door)

a. **Adjustment of the door at the rear end, and in vertical and lateral directions**

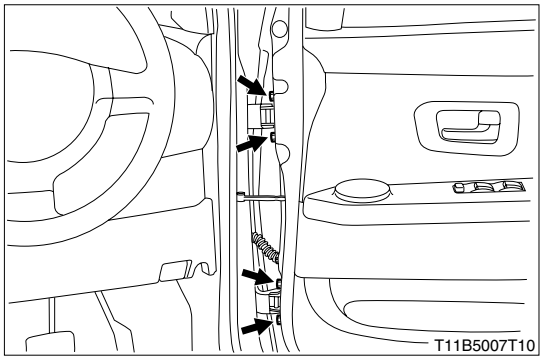
1. Loosen the bolt on the pillar side with the SST and perform adjustment.

SST: 09812-00010-000



b. **Adjustment of the door in vertical direction, and in lateral direction at the front end**

1. Loosen the bolt on the door side to adjust.

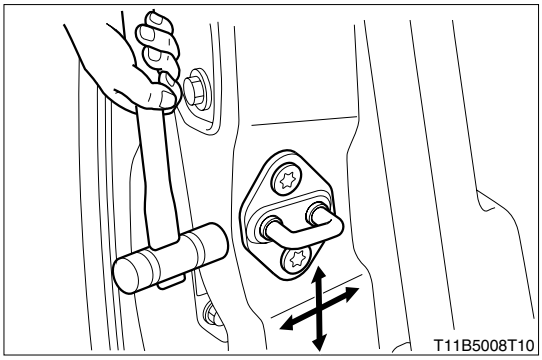


c. **Adjustment of the door in longitudinal and lateral directions and the front door lock striker**

1. Loosen the striker mounting screw until the striker gets loose.

TOOL: KTC
BT3-T40L
or equivalent
Long TORX® wrench T40

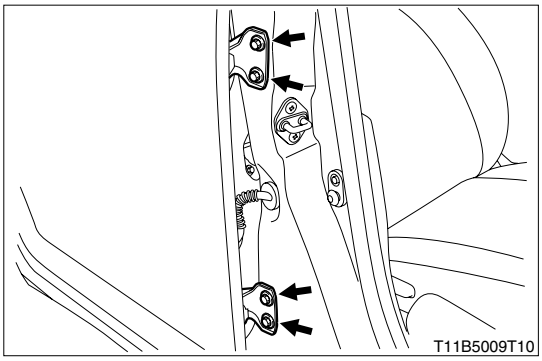
2. Adjust the striker by tapping lightly.



④ **Fitting adjustment (Rear door)**

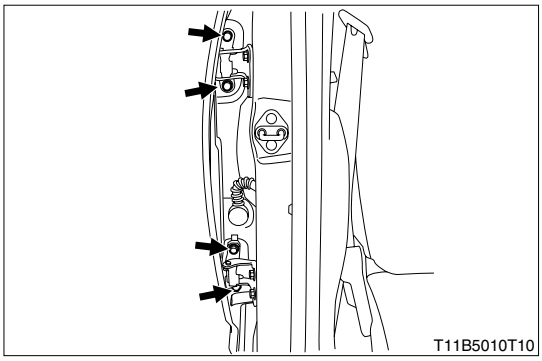
a. **Adjustment of the door at the rear end, and in vertical and lateral directions**

1. Loosen the bolt on the pillar side to adjust.



b. **Adjustment of the door in vertical direction, and lateral direction at the door front end**

1. Loosen the bolt on the door side to adjust.

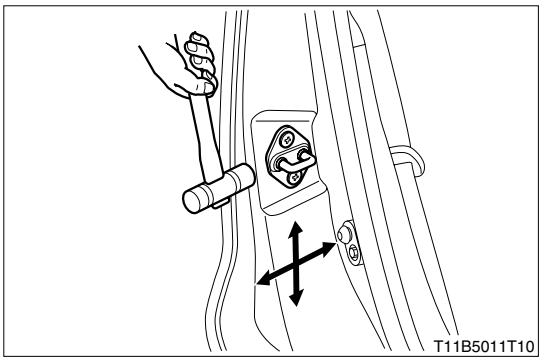


c. **Adjustment of the door in longitudinal and lateral directions and the rear door lock striker.**

1. Loosen the striker mounting screw until the striker gets loose.

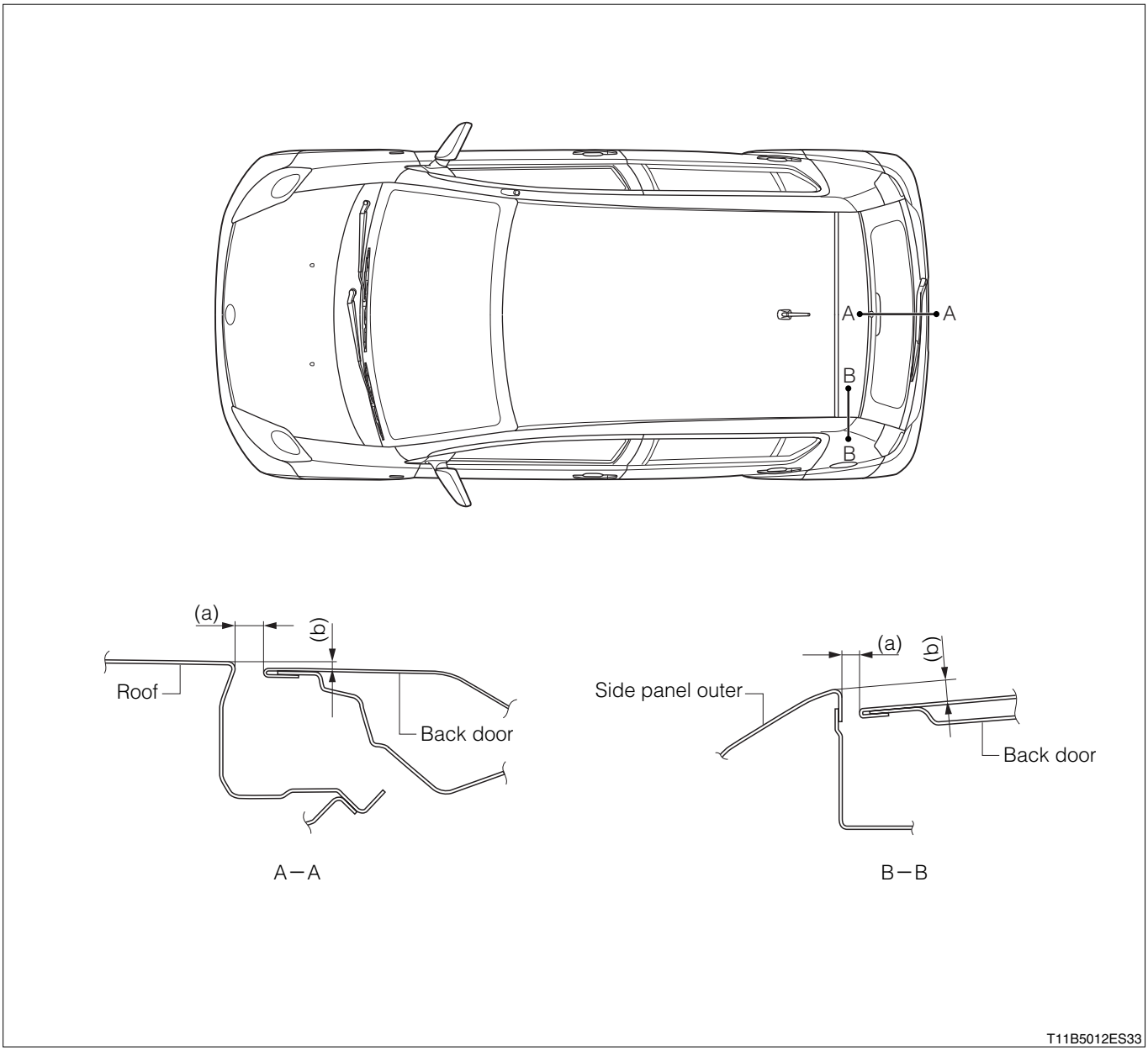
TOOL: KTC
BT3-T40L
or equivalent
Long TORX® wrench T40

2. Adjust the striker by tapping lightly.



(3) **Back door**

① **Fitting dimensions**



Fitting dimensions of back door

Measuring point		Specified gap (a)	Difference in height (b)	Difference between right and left	Deviation value
A - A	Back door × Roof	7.5 ± 1.5	-1.0 ± 1.6	-	Not to exceed 1.5
B - B	Back door × Quarter panel	5.0 ± 1.5	9.8 ± 1.5	Not to exceed 1.5	-

Unit : mm

② **Fitting adjustment**

a. **Adjustment of the back door in vertical and lateral directions at the upper end**

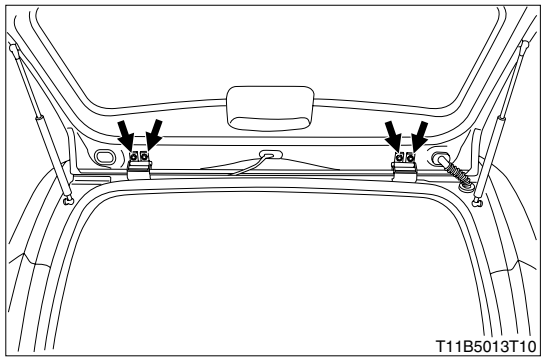
1. Loosen the hinge mounting bolt on the door side before the adjustment.

CAUTION

- Since the centering bolt is used, adjustment must be done only after the centering bolt is replaced with the supplied bolt.

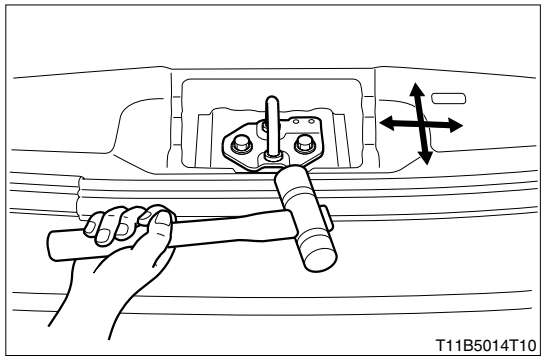
NOTE

- Part number of bolt:91651-40816-000



b. **Adjustment of the back door in longitudinal direction and the back door lock striker**

1. Loosen the striker mounting screw until the striker gets loose.
2. Adjust the striker by tapping lightly.



1-1-2 **CHECK THE FRAME AND THE BODY FOR ANY LOOSENING AND DAMAGE**

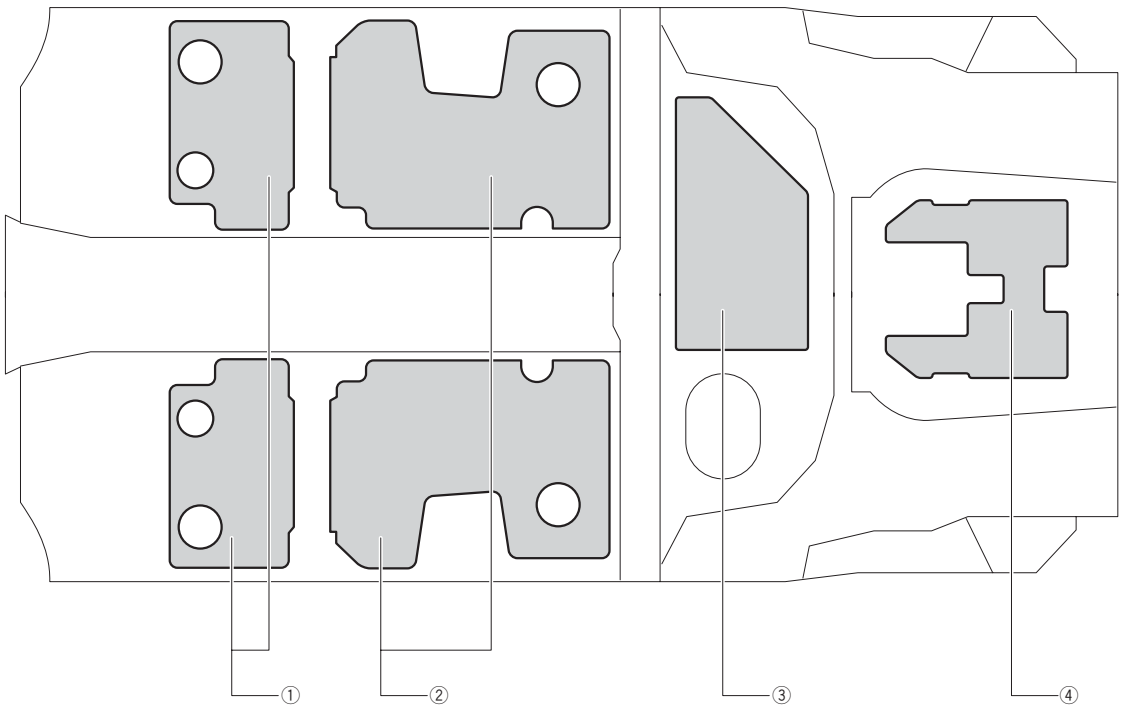
1. Check the conditions of the tightening bolts, nuts and rivets for the frames and cross members with a spanner.
   SPECIFIED VALUE: There shall be no loosening.

2. Check the body, frame and cross member for damage such as rust, crack, deformation, and peel-off of welding.
   SPECIFIED VALUE: There shall be no damage, such as rust, crack, deformation, and peel-off of welding.

3. Move the door by hand to ensure there are no loose hinges due to excessive play.
   SPECIFIED VALUE: There shall be no loosening.

2 SILENT SHEET

2-1 REPLACEMENT

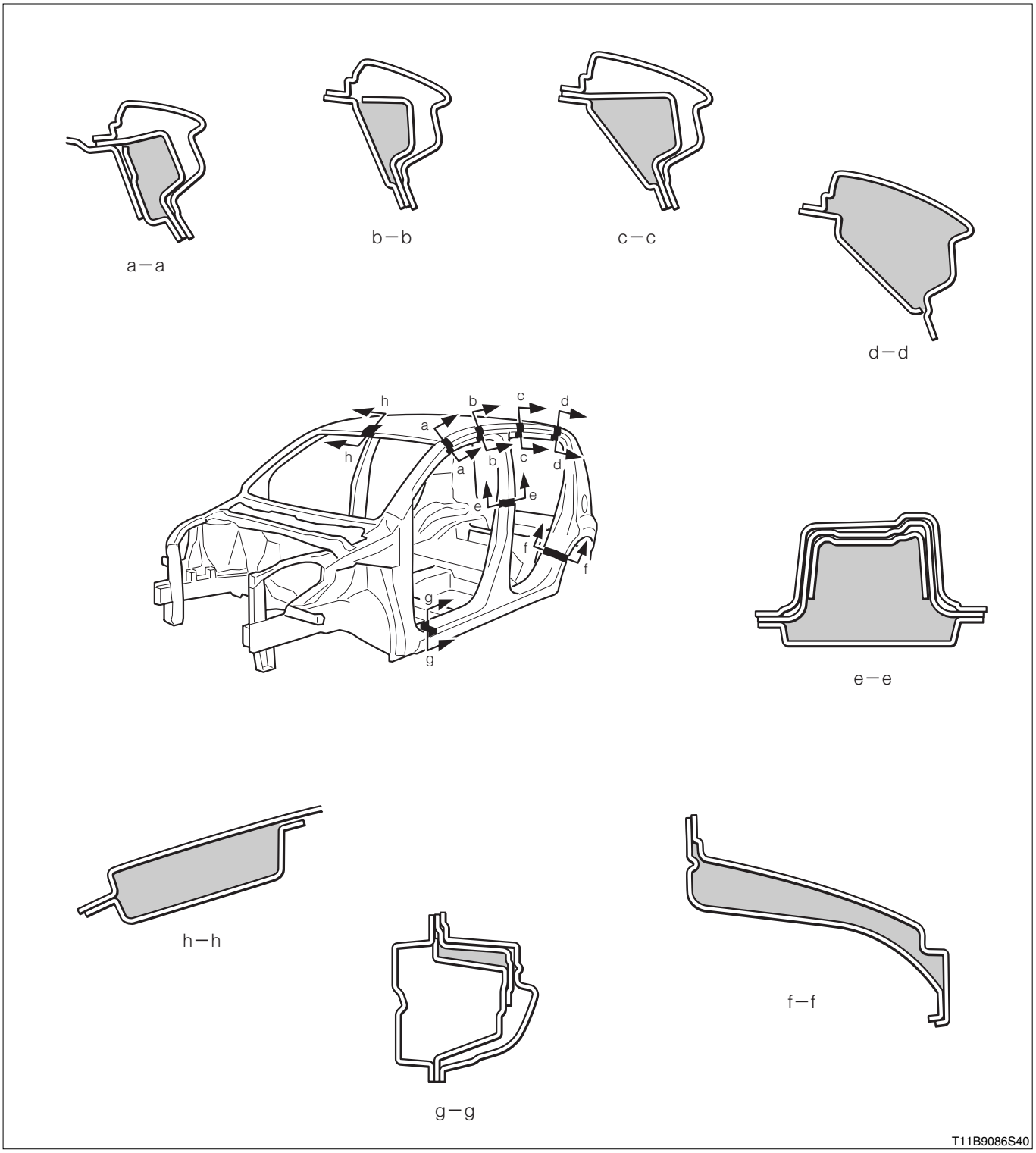


T11B9088S30

Measuring point	Part name	Thickness(mm)	Number of necessary sheets (pieces)
①	Sheet, front floor silencer, No.1	3.0	2
②	Sheet, front floor silencer, No.2	3.0	2
③	Sheet, rear floor silencer,No.1	1.5	1
④	Sheet, rear floor silencer,No.2	1.5	1

3 FORMED URETHANE

3-1 FILLING SECTION



4 FRONT SUSPENSION

4-1 FRONT WHEEL ALIGNMENT

1. As for the front wheel alignment values, refer to the [C1: Front suspension] of the repair manual.

5 REAR SUSPENSION

5-1 REAR WHEEL ALIGNMENT

1. As for the rear wheel alignment values, refer to the [C2: Rear suspension] of the repair manual.