

1 9 9 1

IMPORT SERVICE MANUAL

Body Repair

Stealth

SAFETY NOTICE

CAUTION

ALL SERVICE AND REBUILDING INSTRUCTIONS CONTAINED HEREIN ARE APPLICABLE TO, AND FOR THE CONVENIENCE OF, THE AUTOMOTIVE TRADE ONLY. All test and repair procedures on components or assemblies in non-automotive applications should be repaired in accordance with instructions supplied by the manufacturer of the total product.

Proper service and repair is important to the safe, reliable, operation of all motor vehicles. The service procedures recommended and described in this publication were developed for professional service personnel and are effective methods for performing vehicle repair. Following these procedures will help assure efficient economical vehicle performance and service reliability. Some of these service procedures require the use of special tools designed for specific procedures. These special tools should be used when recommended throughout this publication.

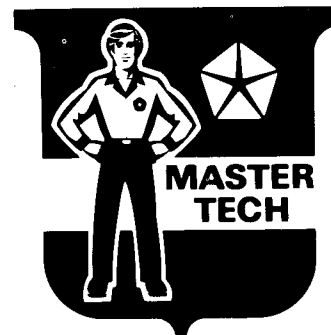
Special attention should be exercised when working with spring or tension loaded fasteners and devices such as E-Clips, Circlips, Snap rings, etc., as careless removal may cause personal injury. Always wear safety goggles whenever working on vehicles or vehicle components.

It is important to note that this publication contains various **Cautions** and **Warnings**. These should be carefully read in order to minimize the risk of personal injury, or the possibility that improper service methods may damage the vehicle or render it unsafe. It is important to note that these **Cautions** and **Warnings** cover only the situations and procedures Chrysler Corporation has encountered and recommended. Chrysler Corporation could not possibly know, evaluate, and advise the service trade of all conceivable ways that service may be performed, or of the possible hazards of each. Consequently, Chrysler Corporation has not undertaken any such broad service review. Accordingly, anyone who uses a service procedure, or tool, that is not recommended in this publication, must assure oneself thoroughly that neither personal safety, nor vehicle safety, be jeopardized by the service methods they select.

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CERTIFICATION
THROUGH



THE SERVICE PROFESSIONALS



(Backup) BODY REPAIR MANUAL

1991

FOREWORD

This manual has been prepared for the use of all service technician engaged in the body repair service.

Body dimensions, welded panel replacement procedures, body sealing application instructions, and all the other information required to provide quick and accurate body repair service are contained herein. One especially important point is the welding method. All of the vehicle's original strength and durability can be maintained by following the welding procedures contained in this manual.

Note that, in order to maximize the efficiency of the repair work, first, both the extent of the damage and the replacement parts that are needed must be calculated accurately, and then the actual work must be performed accurately and efficiently.

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MANUAL DESCRIPTION

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The first page of this manual contains a table of contents which lists the name of vehicle models and groups within each model.

TEXT

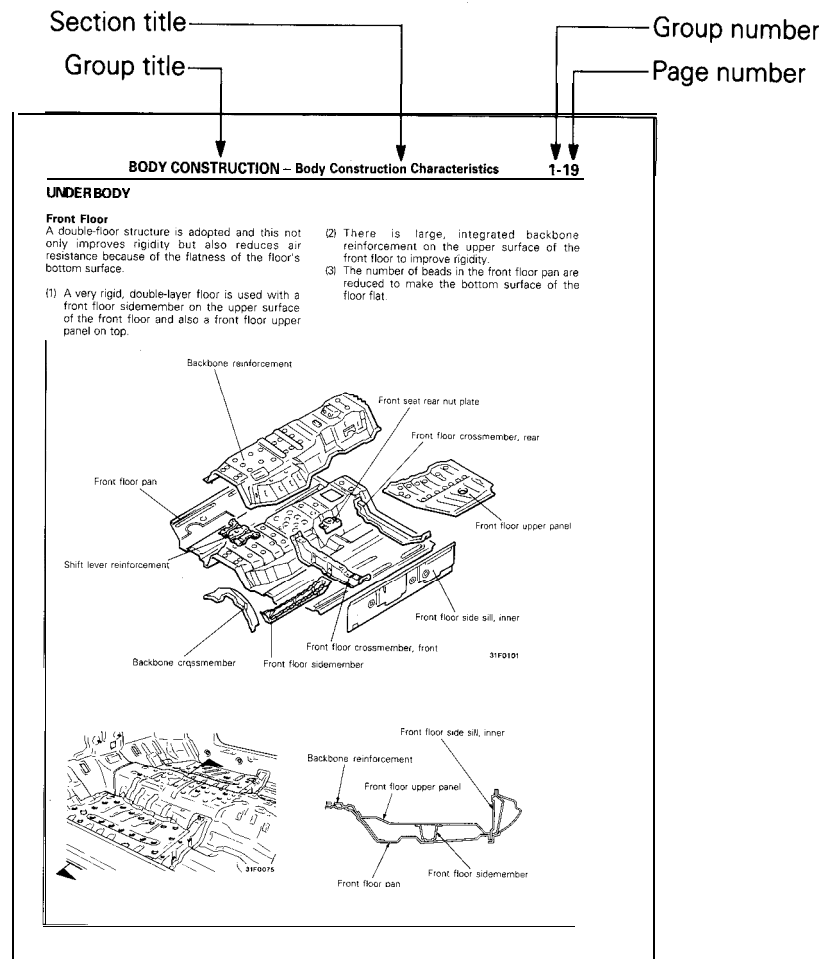
The vehicles to which the information in the text pertains are generally designated according to their body classification. In some cases, other limiting designations such as model name, type of drive system, etc., are given. If there are no such limiting designations, the information can be assumed to cover all models.

PAGE NUMBERS

All pages are numbered consecutively within each model. The page numbers can be found on the upper left or right of each page.

SECTION TITLES

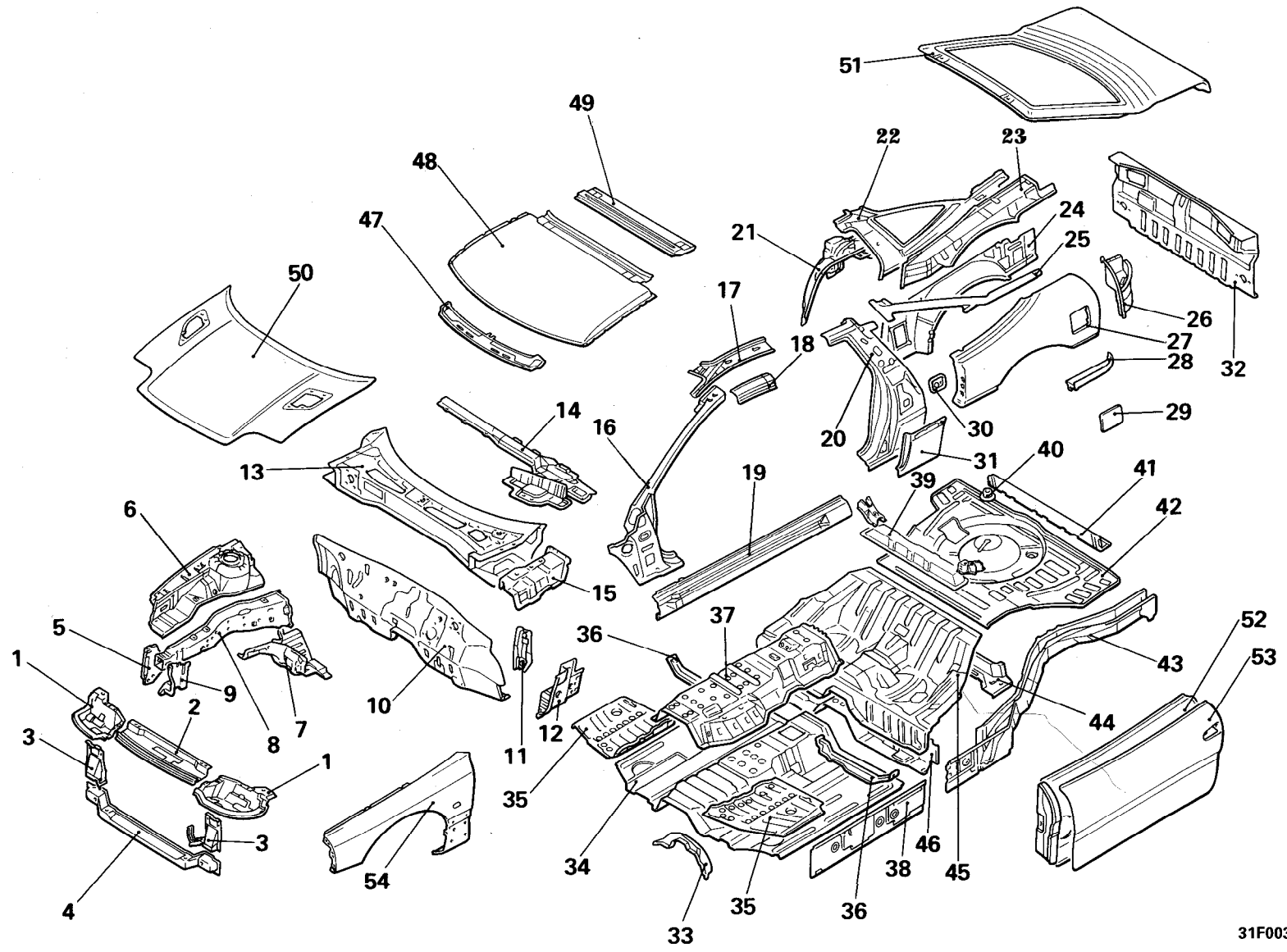
The group titles and section titles can be found at the upper center of each page.



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BODY COMPONENTS



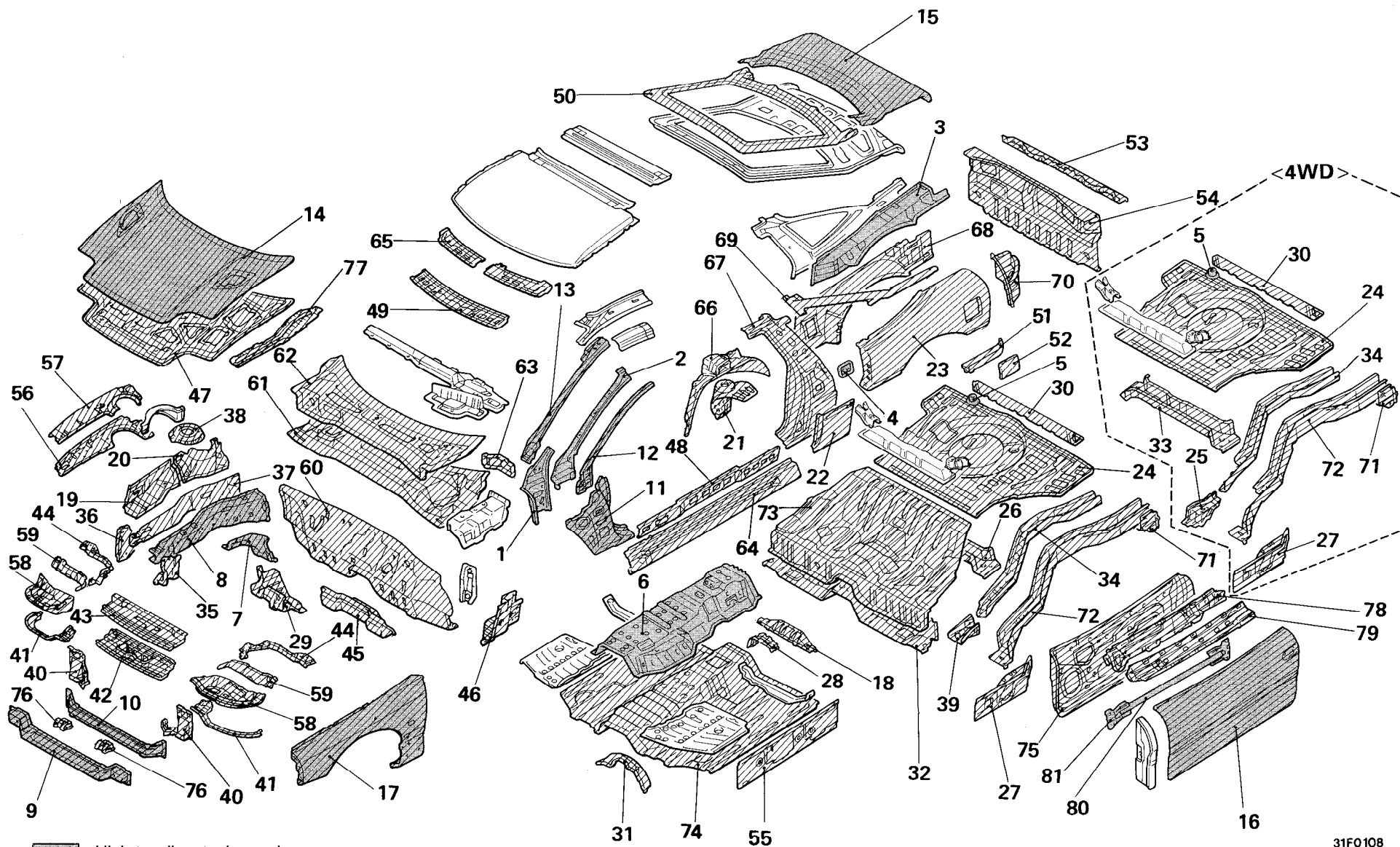
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- | | |
|---|--|
| 1. Headlamp housing | 28. Quarter outer extension, lower |
| 2. Front end upper bar | 29. Fuel filler panel |
| 3. Front end crossmember brace | 30. Seat belt reinforcement |
| 4. Front end crossmember | 31. Quarter outer extension, front (models without side garnish) |
| 5. Front end gusset, outer | 32. Rear end panel |
| 6. Front wheelhouse, inner | 33. Backbone crossmember |
| 7. Front side member, rear | 34. Front floor pan |
| 8. Front side member | 35. Front floor plate, upper |
| 9. Front end gusset, inner | 36. Front floor crossmember, rear |
| 10. Dash panel | 37. Backbone reinforcement |
| 11. Footrest bracket | 38. Front floor side sill, inner |
| 12. Front floor side sill, inner, front | 39. Rear floor crossmember, upper |
| 13. Cowl top panel | 40. Spare tire bracket |
| 14. Front deck crossmember | 41. Rear end crossmember |
| 15. Front upper frame extension | 42. Rear floor pan |
| 16. Front pillar | 43. Rear floor sidemember |
| 17. Side roof rail, inner | 44. Rear floor crossmember, lower |
| 18. Side roof rail, outer | 45. Rear seat pan |
| 19. Front floor side sill, outer | 46. Rear seat crossmember |
| 20. Center pillar, outer | 47. Front roof rail |
| 21. Rear wheelhouse, inner | 48. Roof panel |
| 22. Quarter panel, inner, upper | 49. Rear roof rail |
| 23. Beltline reinforcement | 50. Hood panel |
| 24. Quarter panel, inner, lower | 51. Tailgate panel |
| 25. Rear pillar, outer | 52. Front door panel, inner |
| 26. Rear lamp housing | 53. Front door panel, outer |
| 27. Quarter panel, outer | 54. Front fender |

BODY CONSTRUCTION CHARACTERISTICS

SPECIAL STEEL PANELS

Special steel panels (high-tensile steel and galvanized steel) are used in the illustrated positions.



 : High-tensile steel panels
 : Galvanized steel panels

31F0108

No	Part name	Material*	No	Part name	Material*	No	Part name	Material*	
1	Front pillar, inner, lower	SPRC35	29	Front sidemember, rear	SENHC	58	Headlamp housing panel	SGACE	
2	Front pillar, inner, upper (B)		30	Rear end crossmember	SENHE	59	Headlamp housing extension		
3	Beltline reinforcement		31	Backbone crossmember		60	Dash panel		
4	Front seatbelt reinforcement, upper		32	Rear seat crossmember		61	Cowl top panel, inner		
5	Spare tire bracket		33	Rear floor crossmember, lower (4WD)		62	Cowl top panel, outer		
6	Backbone reinforcement		34	Rear floor sidemember reinforcement		63	Upper frame extension silencer		
7	Front sidemember reinforcement, rear	SENC35R	35	Front end gusset, inner		SENPB	64		Front floor side sill, outer
8	Front sidemember, inner		36	Front end gusset, outer	65		Front roof rail, outer		
9	Front end crossmember, outer	SGAC35R	37	Front sidemember, outer	SGACC		66		Rear wheelhouse panel, inner
10	Front end crossmember, inner		38	Spring house bracket			67		Center pillar, outer
11	Front pillar, outer, lower		39	Trailing arm bracket (2WD)			68		Quarter inner panel, lower
12	Front pillar, outer, upper		40	Sidemember to crossmember brace			69		Rear pillar, outer
13	Front pillar, inner, upper (A)		41	Upper bar reinforcement, side		70	Rear lamp housing		
14	Hood panel, outer		42	Hood latch bracket		71	Rear floor sidemember extension, rear		
15	Liftgate outer panel, lower		43	Front end upper bar	72	Rear floor sidemember			
16	Front door panel, outer	44	Front end upper bar, side	73	Rear seat pan				
17	Front fender	45	Dash panel crossmember	74	Front floor pan				
18	Rear seat pan front reinforcement	SENGC	46	Front floor side sill, inner, front	75	Front door panel, inner			
19	Front fender shield, front	SENCE	47	Hood panel, inner	76	Radiator bracket			
20	Front fender shield		48	Side sill reinforcement	77	Hood hinge reinforcement			
21	Spring house panel, rear		49	Front roof rail, inner	78	Front door beltline reinforcement, inner			
22	Quarter outer extension, front (models without side garnish)		50	Liftgate outer panel, upper	79	Beltline reinforcement, outer			
23	Quarter panel, outer		51	Quarter outer extension, lower	80	Front door side impact bar			
24	Rear floor pan		52	Fuel filler panel	81	Front bracket			
25	Rear floor sidemember extension, front (4WD)		53	Rear fascia bracket, upper					
26	Rear floor crossmember, lower (2WD)		54	Rear end panel, outer					
27	Rear floor side sill, inner		55	Front floor side sill, inner					
28	Propeller shaft bracket, rear		56	Front upper frame, lower	SGACD				
		57	Front upper frame, upper						

* SPRC: Phosphorus added
 SENC35R: SPRC plated with an electrical zinc-nickel alloy
 SGAC35R: Phosphorus added (also galvanized)
 SENCC: SPCC plated with an electrical zinc-nickel alloy
 SENCE: SPCE plated with an electrical zinc-nickel alloy
 SENHC: SPHC plated with an electrical zinc-nickel alloy
 SENHE: SPHE plated with an electrical zinc-nickel alloy
 SENPH: SAPH plated with an electrical zinc-nickel alloy

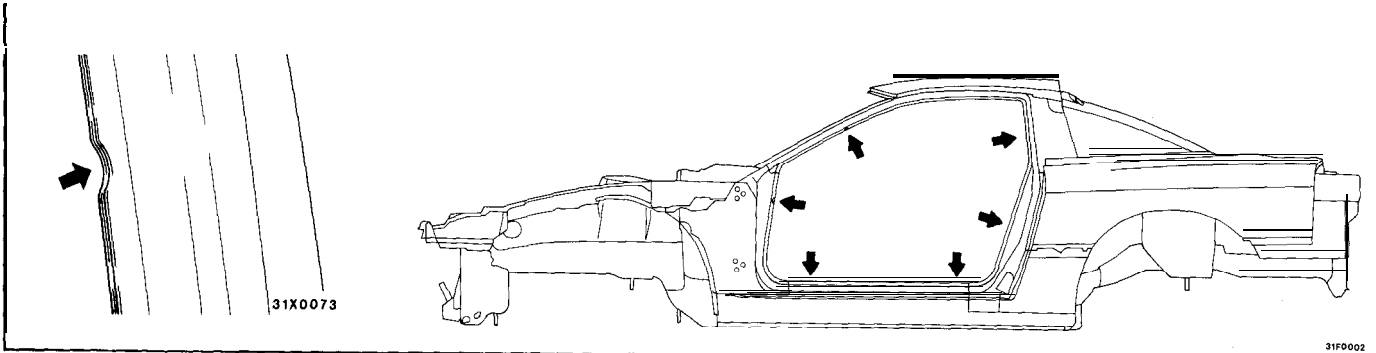
SGACC
 SGACD
 SGACE
 SGAHC
 STAM: High tensile steel pipe with solution strengthening using carbon, manganese and molybdenum and separation strengthening using niobium.

SPDH: High tensile steel plate with dual-phase composition strengthening.

The numbers in the material codes indicate the tensile strength (kg/mm).

MAINTENANCE, SERVICEABILITY**Side Structure**

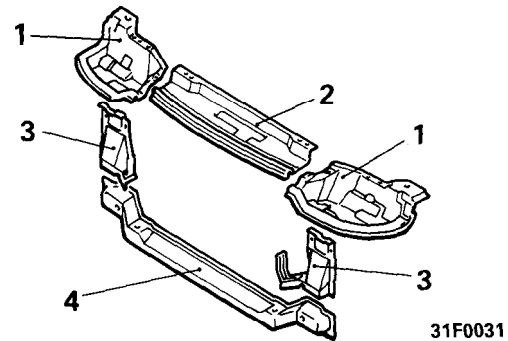
Notches are provided in the door openings for use in aligning panel positions, thus facilitating the assembly of new parts.

**Headlamp Support**

The following supplied shapes are designed to cope with various types of damage.

- Supplied with the assembly
Front end crossmember
3+4
- Supplied as single parts
1, 2, 3

1. Headlamp housing
2. Front end bar, upper
3. Front end brace crossmember



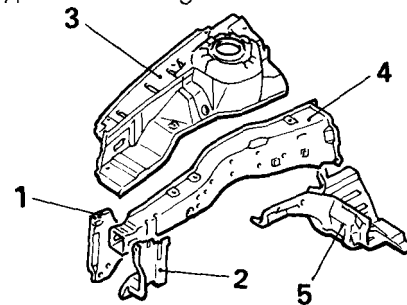
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Fender Shield

The following supplied shapes are designed to cope with various types of damage.

- Supplied with the assembly
Fender shield
1+2+3+4+5
- Supplied as single parts
1, 2, 3, 5

1. Front end gusset, outer
2. Front end gusset, inner
3. Front wheelhouse, inner
4. Front sidemember
5. Front sidemember, rear



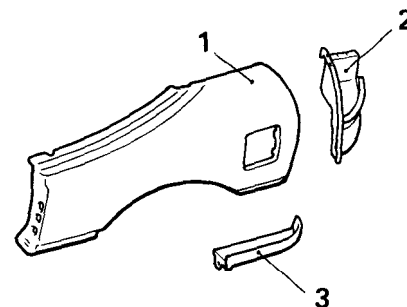
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Quarter Panel, Outer

The following supplied shapes are designed to cope with various types of damage

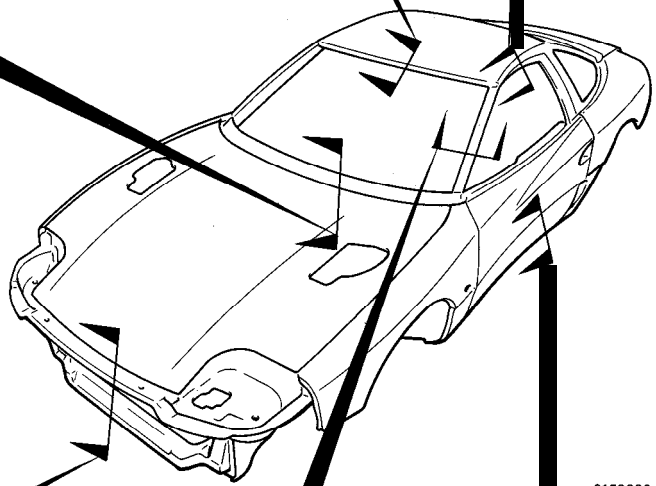
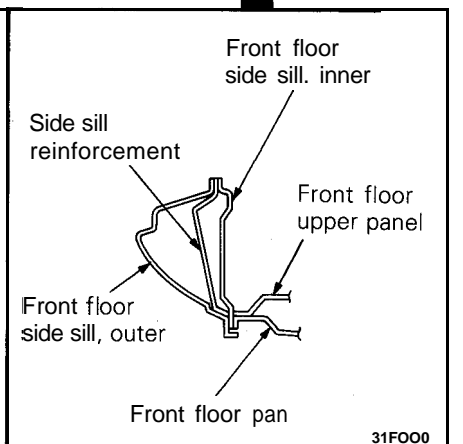
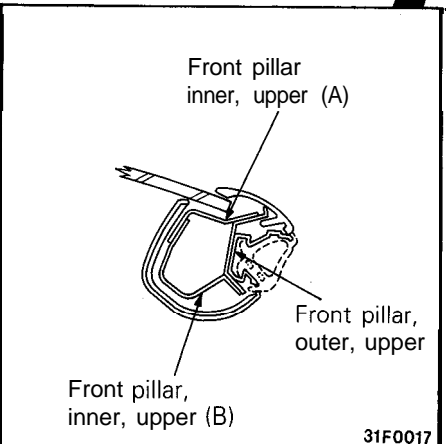
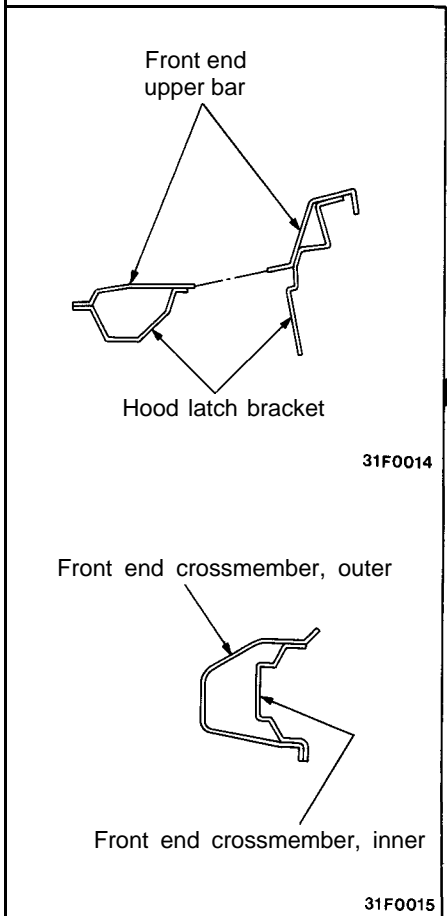
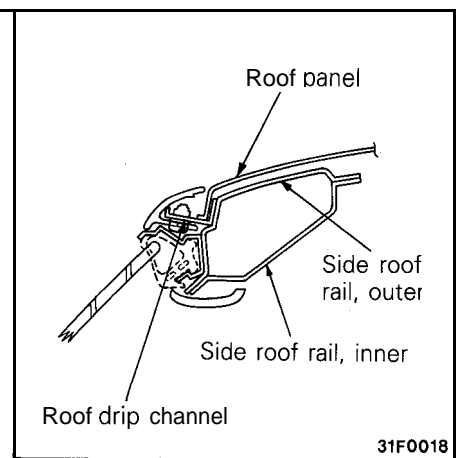
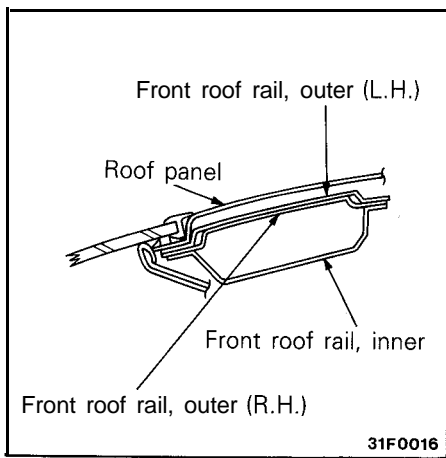
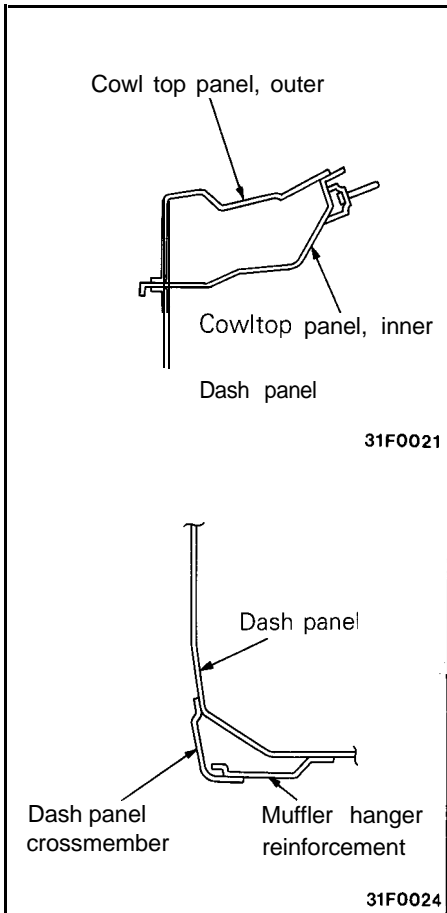
- Supplied with the assembly
Quarter panel, outer
1+2+3
- Supplied as single parts
2, 3

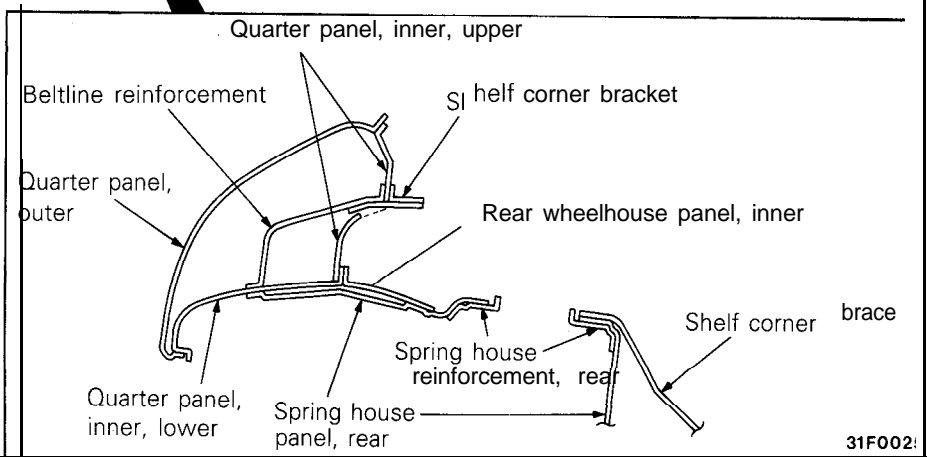
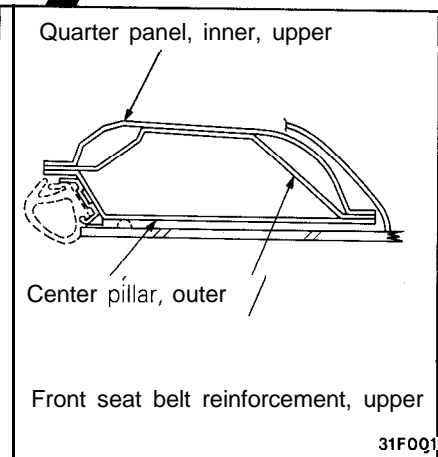
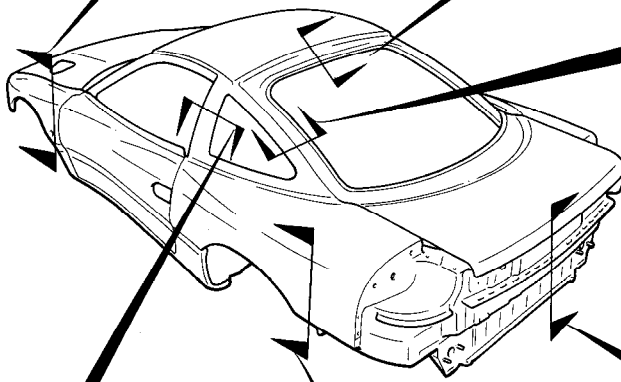
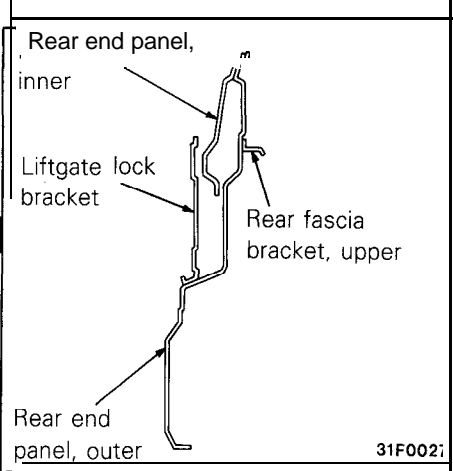
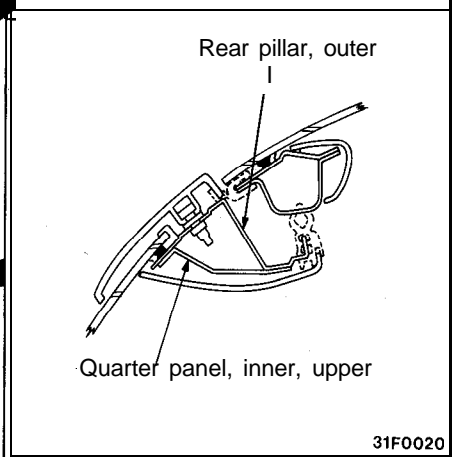
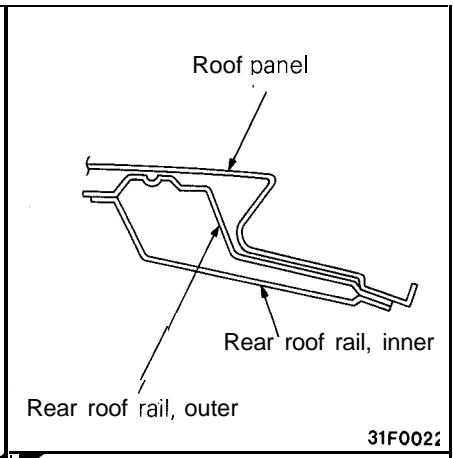
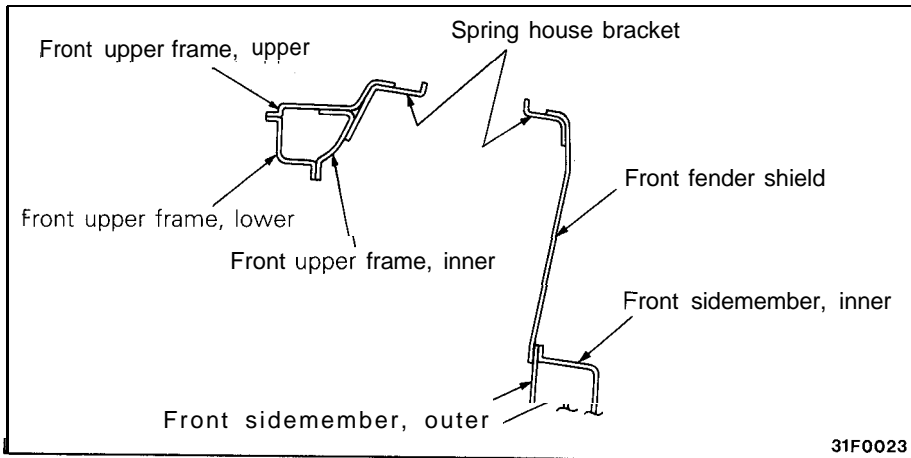
1. Quarter panel, outer
2. Rear lamp housing
3. Quarter outer extension, lower



31F0031

BODY MAIN CROSS-SECTIONAL VIEWS





FRONT BODY

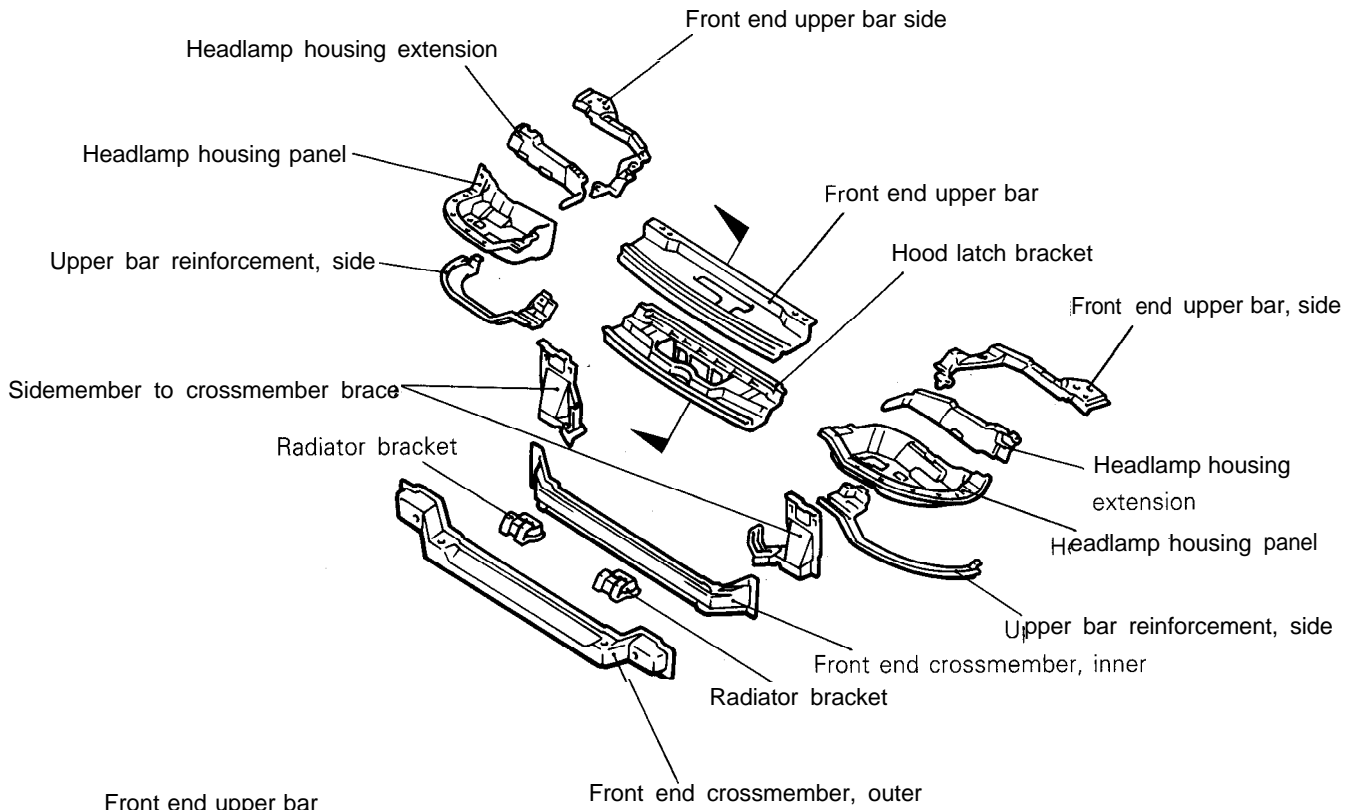
Headlamp Support

A structure as shown below is used with the large soft fascia which consists of the front bumper, skirt panel and header panel molded into one unit.

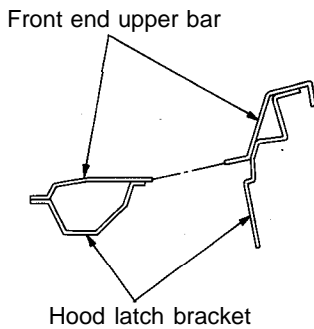
Furthermore, the hood latch opening has a closed cross section to improve strength.

(1) A large and very rigid front end upper bar is used.

(2) A large headlamp housing is used to improve strength.

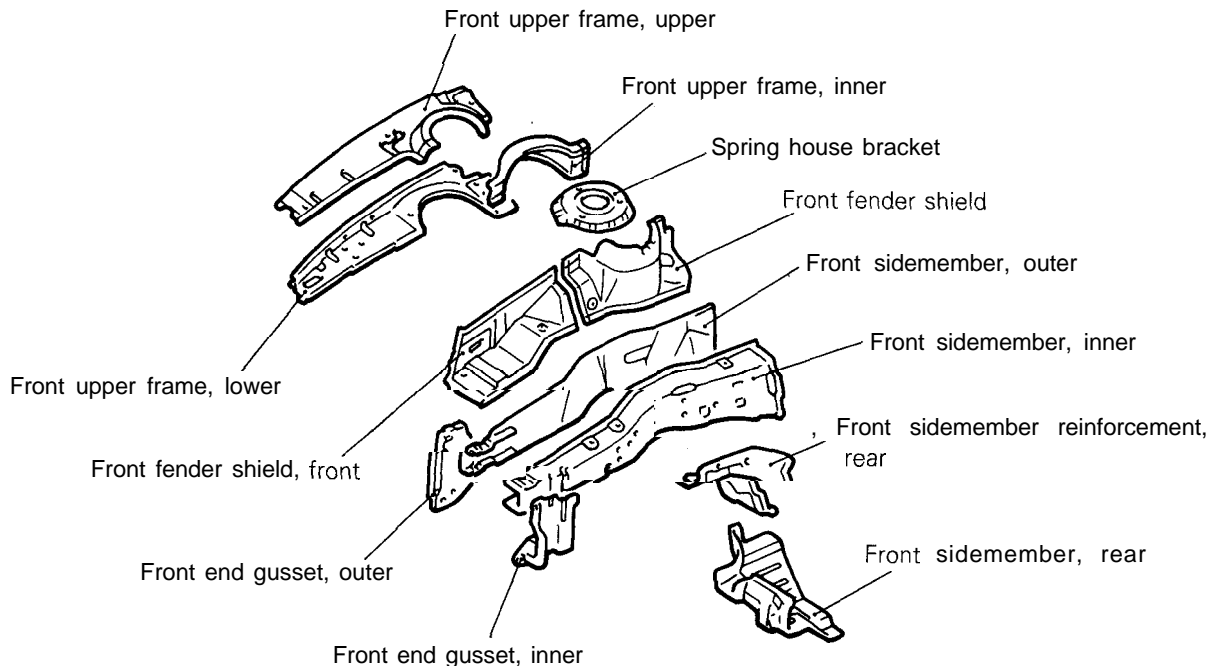


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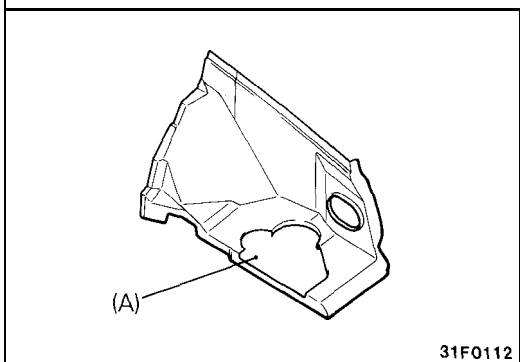


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Fender Shield

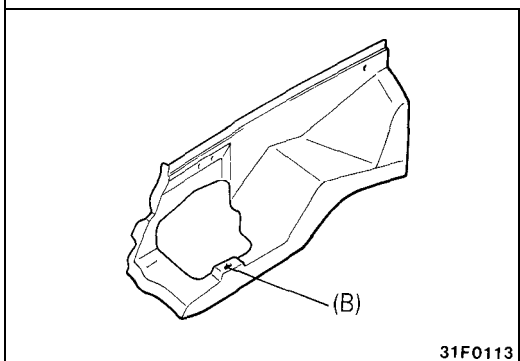


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- (1) <Models with turbocharger>
There is a piping opening(A) for the inter-cooler on the left side of the front fender shield (front).



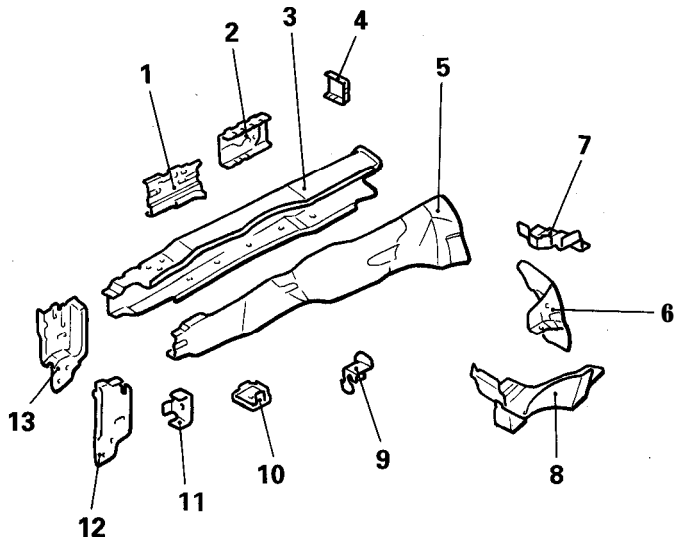
31F0113

- (2) <Models with ABS>
There is a hydraulic unit mounting opening (B) on the right side of the front fender shield (front).

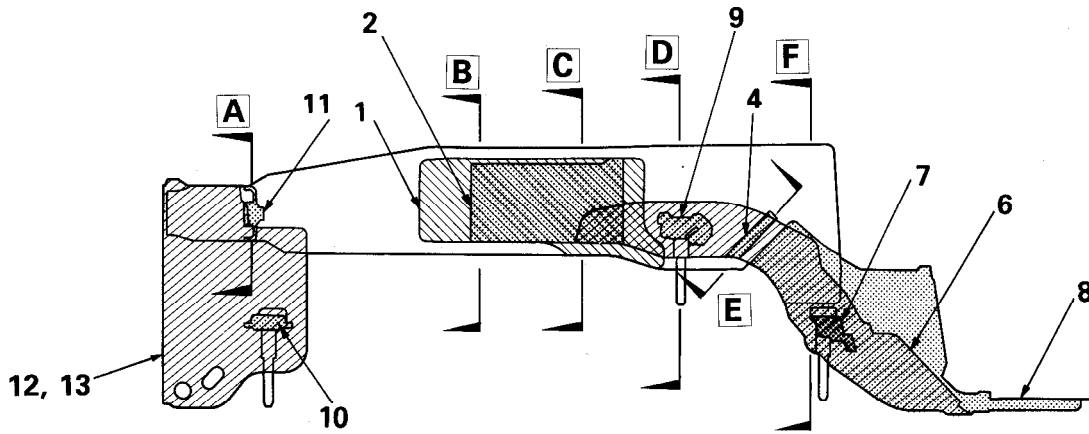
(3) Front sidemember (Left side)

The following reinforcements have been installed to the front sidemember (Left side)

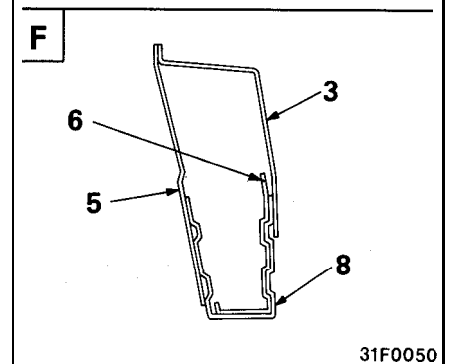
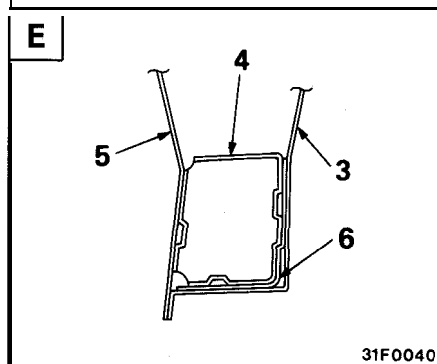
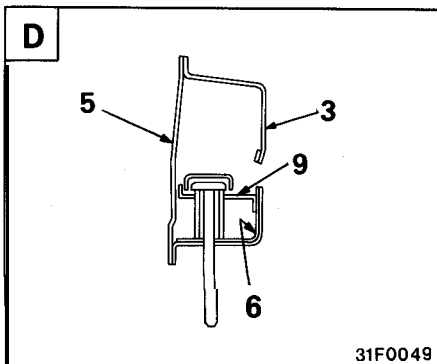
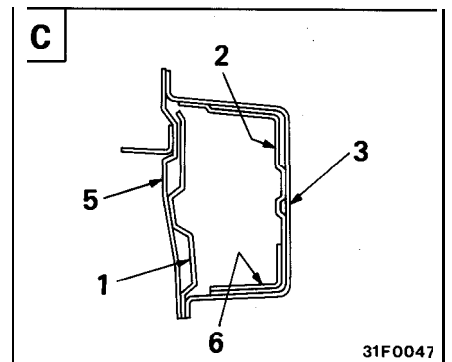
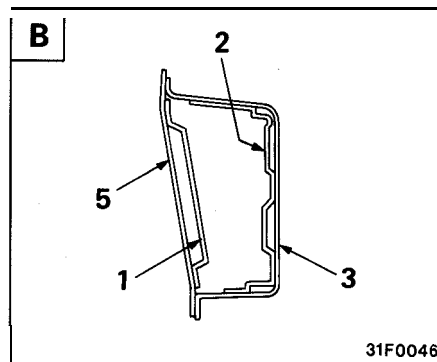
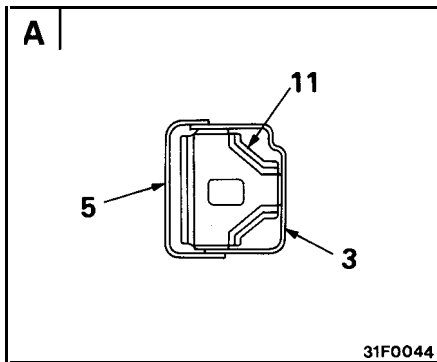
1. Front sidemember reinforcement, outer
2. Front sidemember reinforcement, front
3. Front sidemember, inner
4. Front sidemember bulkhead'
5. Front sidemember, outer
6. Front sidemember reinforcement, rear
7. Pipe support, rear
8. Front sidemember, rear
9. Pipe support, front
10. Pipe support
11. Absorber bracket
12. Front end gusset, outer
13. Front end gusset, inner



31 F0099



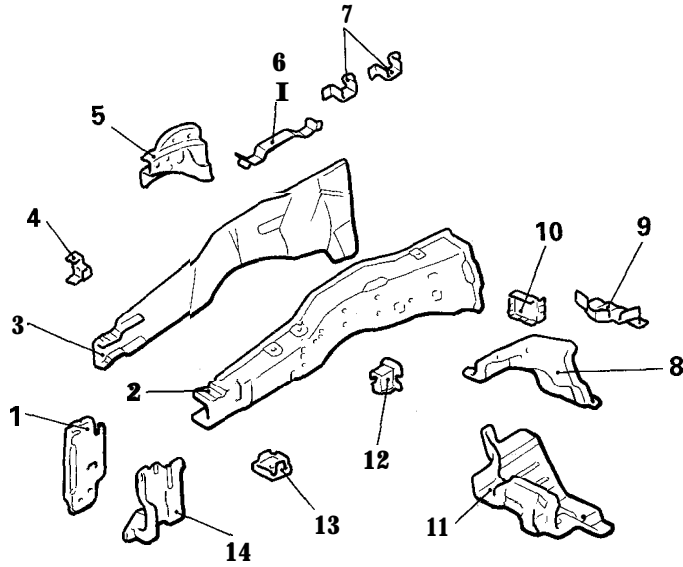
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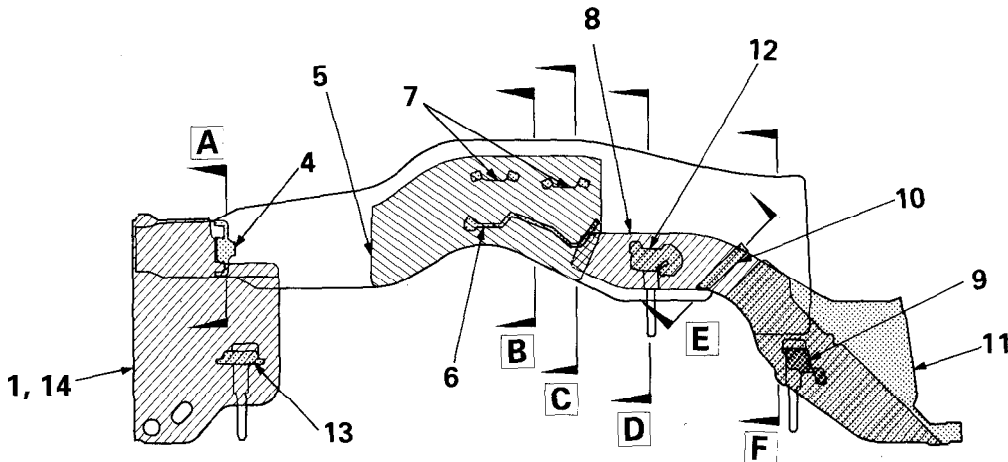
(4) Front sidemember (Right side)

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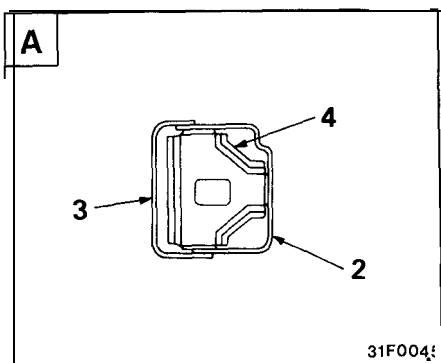
1. Front end gusset, outer
2. Front sidemember, inner
3. Front sidemember, outer
4. Absorber bracket
5. Front sidemember reinforcement, front
6. Bolt guide plate
7. Bolt guide plate, rear
8. Front sidemember reinforcement, rear
9. Pipe support, rear
10. Front sidemember bulkhead
11. Front sidemember, rear
12. Pipe support, front
13. Pipe support
14. Front end gusset, outer



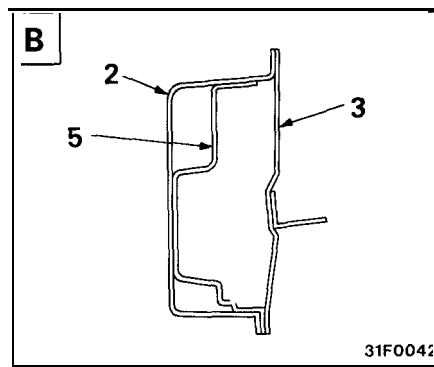
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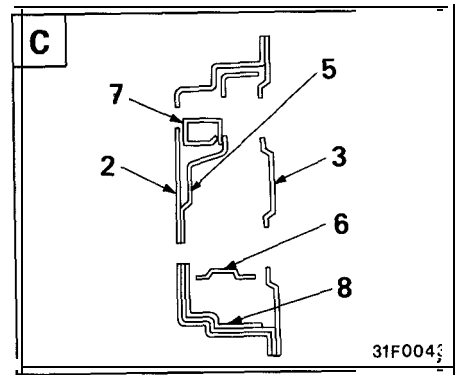
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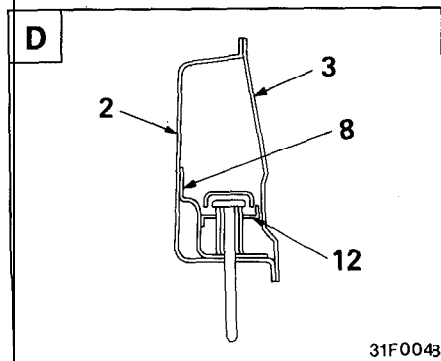
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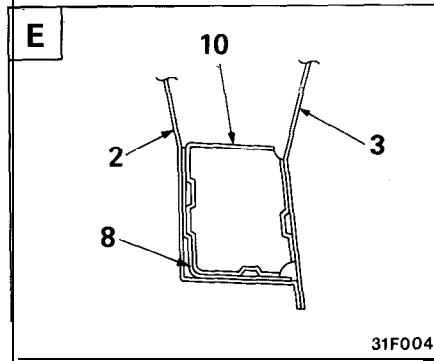
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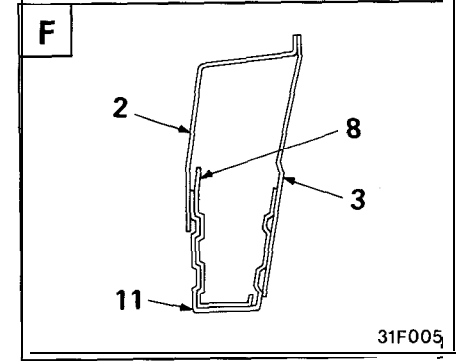
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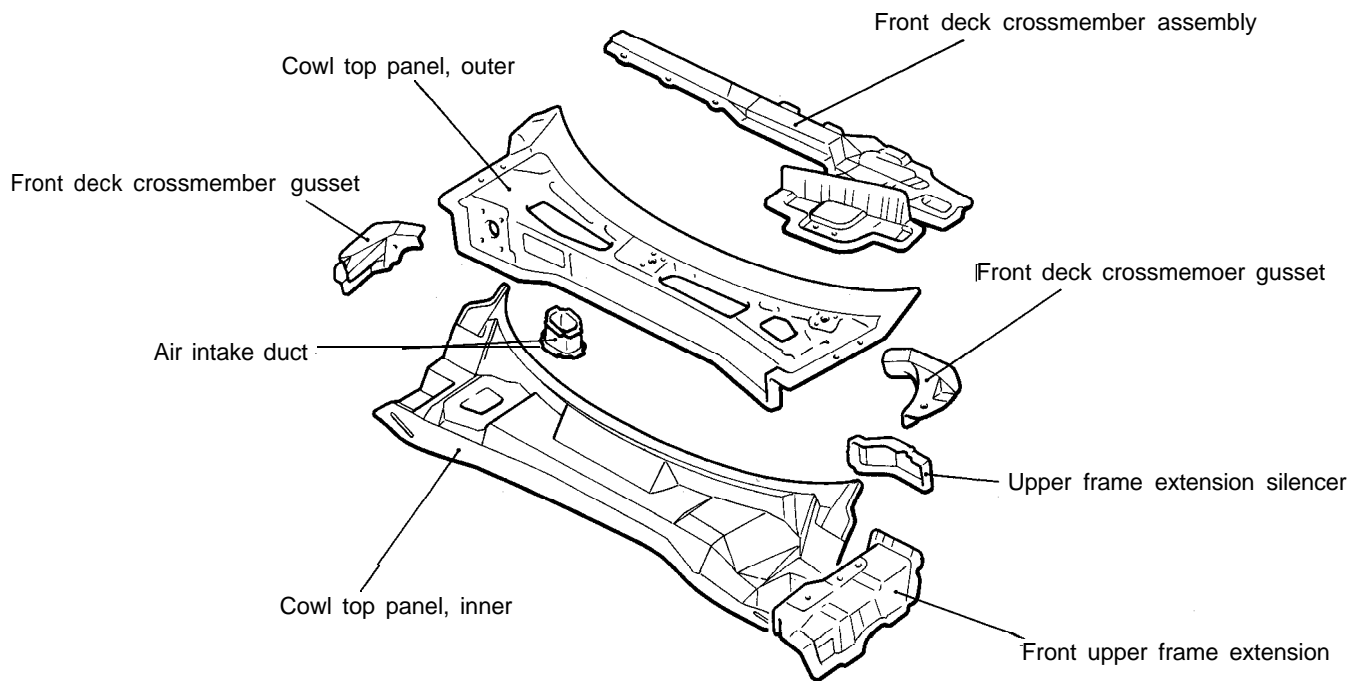


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31F005

Front Deck

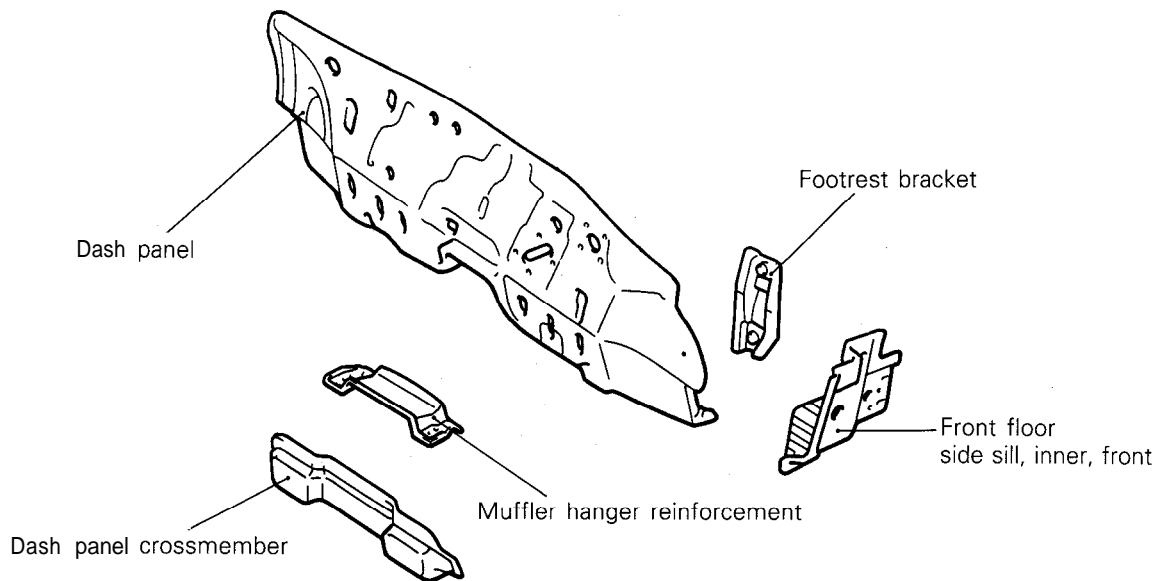


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Dash Panel

The dash panel is not a double-walled structure consisting of the dash panel and dash panel reinforcement as in former models but is made

from a single thick plate. The engine compartment has effectively expanded while preserving rigidity.

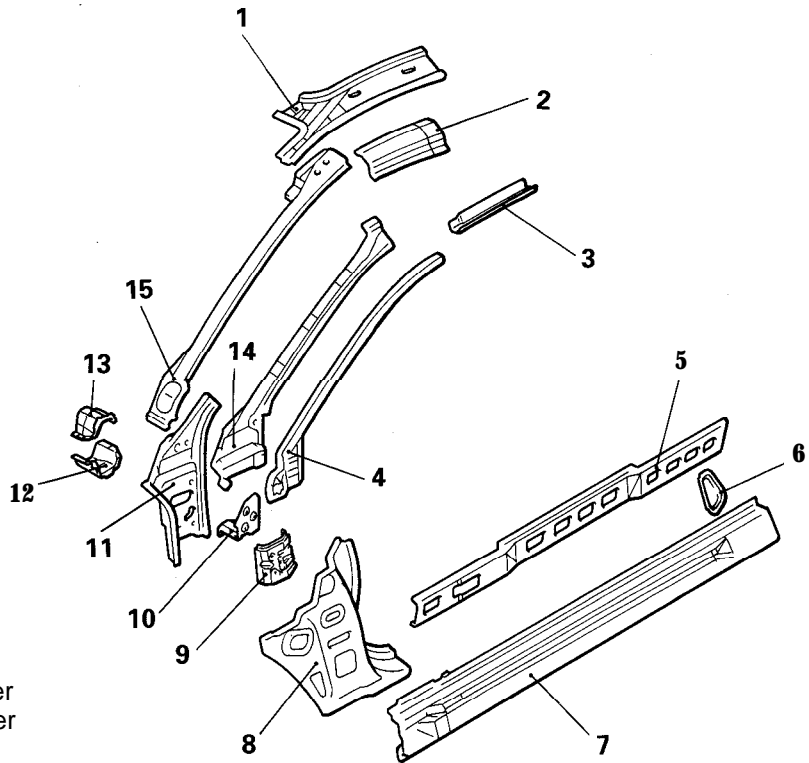


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SIDE BODY

Front Side Structure

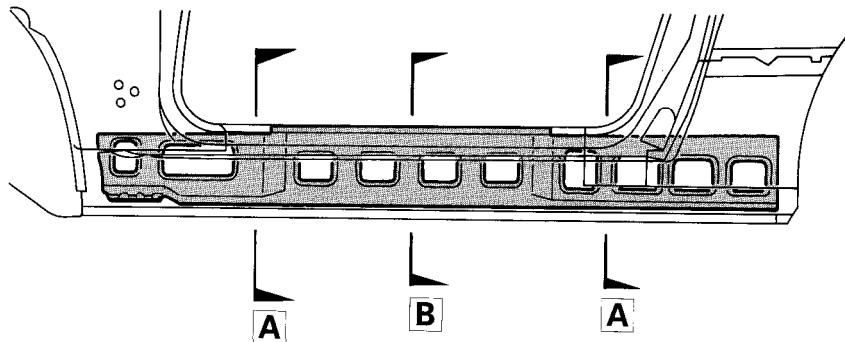
- 1. Side roof rail, inner
- 2. Side roof rail, outer
- 3. Roof drip channel
- 4. Front pillar, outer, upper
- 5. Side sill reinforcement
- 6. Side sill silencer
- 7. Front floor side sill, outer
- 8. Front pillar, outer, lower
- 9. Front door hinge reinforcement, lower
- 10. Hinge reinforcement, upper
- 11. Front pillar, inner, lower
- 12. Front deck crossmember support, lower
- 13. Front deck crossmember support, upper
- 14. Front pillar, inner, upper (B)
- 15. Front pillar, inner, upper (A)



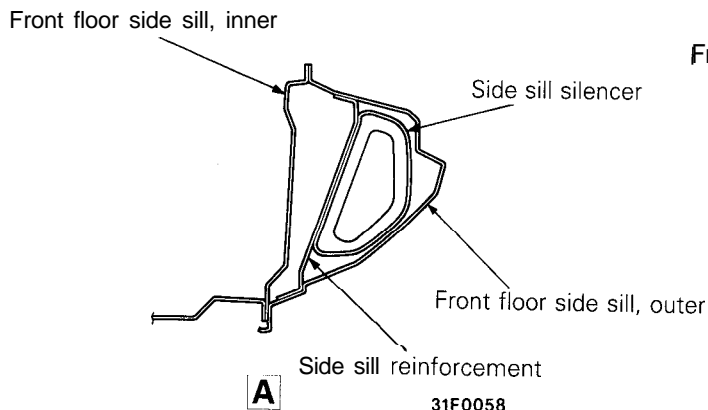
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Side Sill

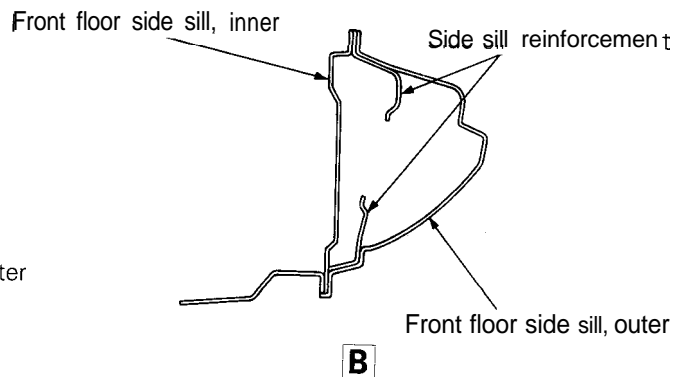
- (1) Large one-piece side sill reinforcement is used to improve body rigidity and crash characteristics.
- (2) Sound absorption is improved by the use of a side sill silencer.



31 F0081

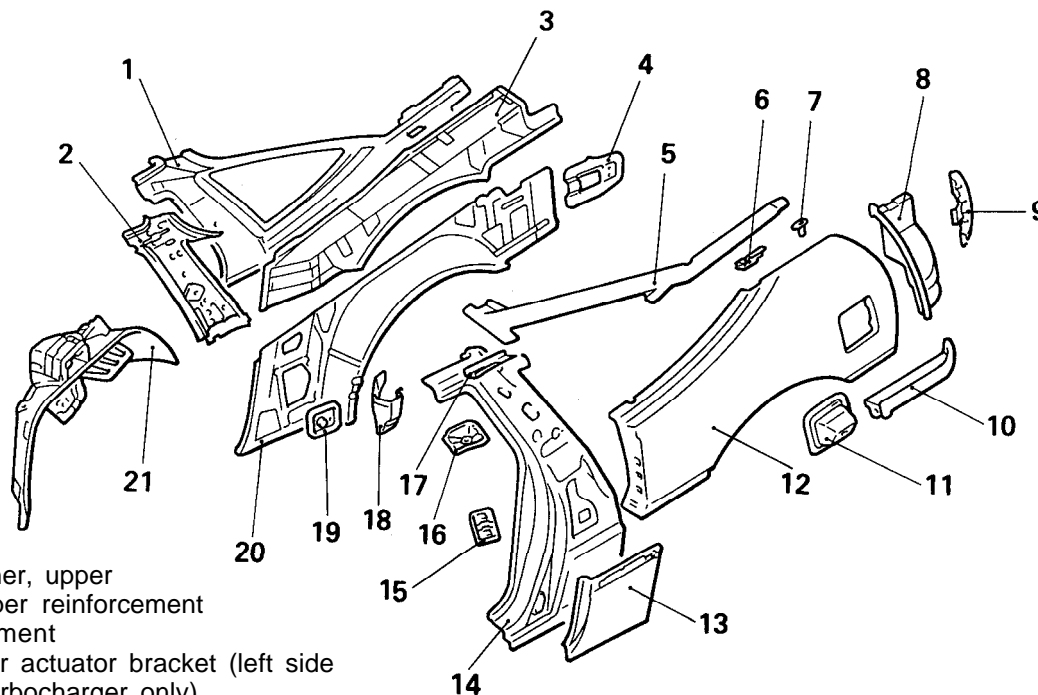


31F0058



B

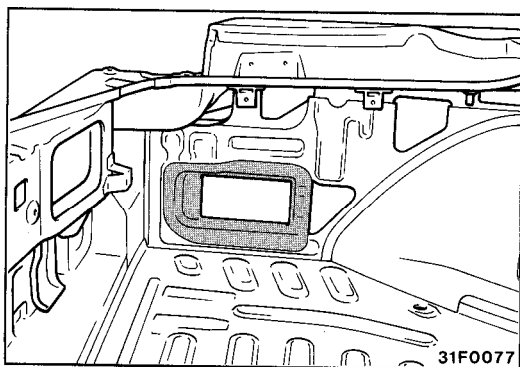
Rear Side Structure



- 1. Quarter panel, inner, upper
- 2. Quarter inner upper reinforcement
- 3. Beltline reinforcement
- 4. Dual mode muffler actuator bracket (left side of models with turbocharger only)
- 5. Rear pillar, outer
- 6. Gas spring bracket support
- 7. Drain pipe
- 8. Rear lamp housing
- 9. Rear fascia bracket
- 10. Quarter outer extension, lower
- 11. Fuel filler neck bracket
- 12. Quarter panel, outer
- 13. Quarter outer extension, front (models without side garnish)

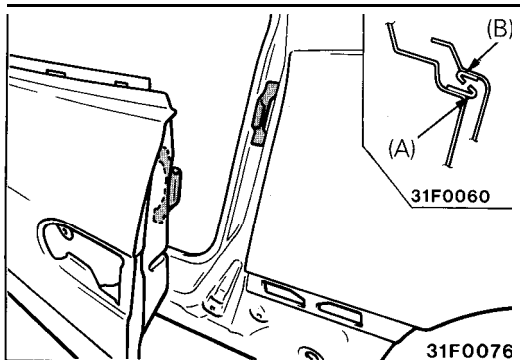
- 14. Center pillar, outer
- 15. Striker reinforcement
- 16. Front seat belt reinforcement, upper
- 17. Roof drip channel extension
- 18. Rear wheelhouse extension, front
- 19. Seat belt reinforcement
- 20. Quarter panel, inner, lower
- 21. Rear wheelhouse, inner

31 F0097



<Models with turbocharger>

Because of the active exhaust system there is a bracket on the left side as shown in the figure for the quarter panel (inner, lower).

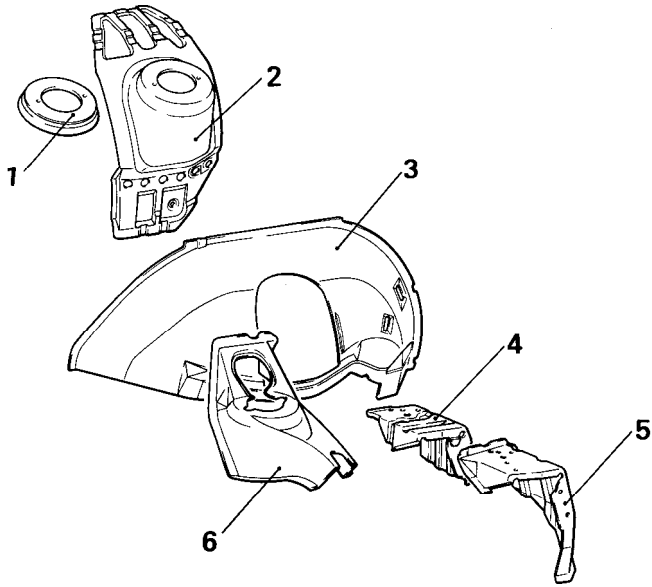


○Center pillar

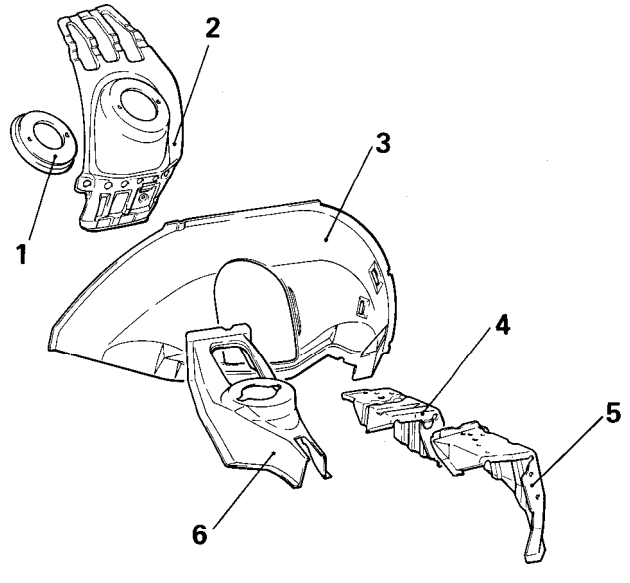
There are safety hook (B) on the center pillar and safety hook (A) on the door to prevent the door from being pushed in when there is an impact from the side. This is to protect the passengers.

Rear Wheelhouse, Inner

<2WD>

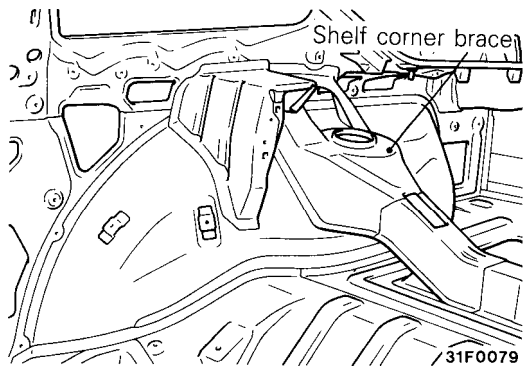


<4WD>



31F0053

31F0054



31F0079

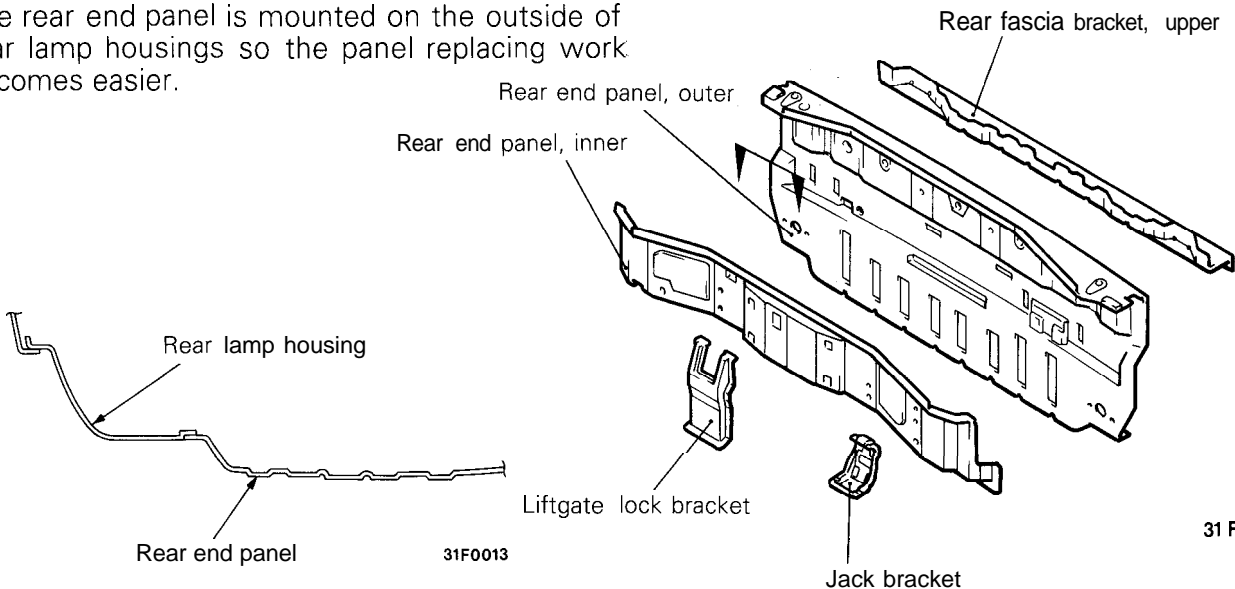
1. Spring house reinforcement, rear (for both 2WD and 4WD)
2. Spring house panel, rear
3. Rear wheelhouse panel, inner
4. Shelf corner reinforcement (for both 2WD and 4WD)
5. Shelf corner bracket (for both 2WD and 4WD)
6. Shelf corner brace

- (1) For 2WD and 4WD models, the shape of the rear wheelhouse (inner) is different because of the difference in the strut assembly mounting position.
- (2) The shelf corner brace is connected to the side body and rear floor, and held rigidly on strut assembly mounting.

REAR BODY

Rear End Panel

The rear end panel is mounted on the outside of rear lamp housings so the panel replacing work becomes easier.



31F0013

31 F0090

UNDER BODY

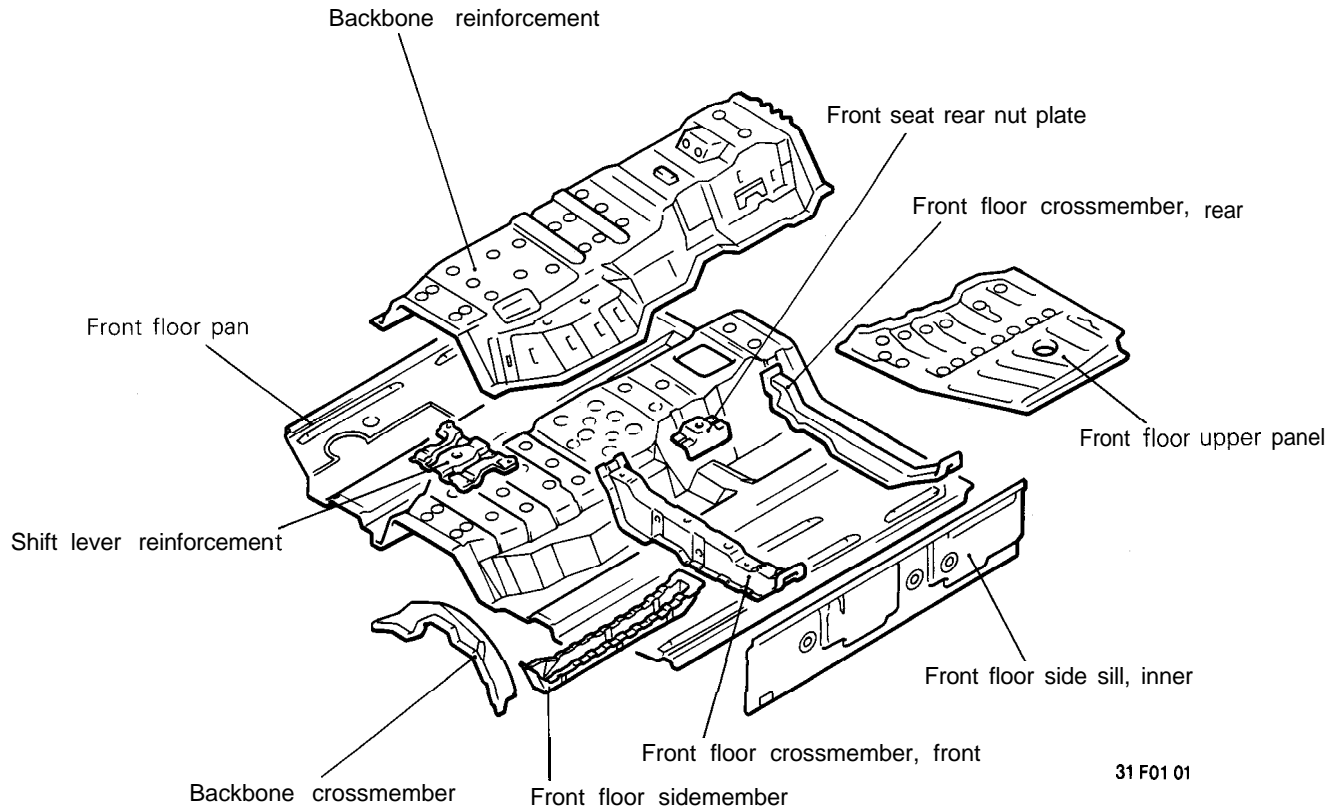
Front Floor

A double-floor structure is adopted and this not only improves rigidity but also reduces air resistance because of the flatness of the floor's bottom surface.

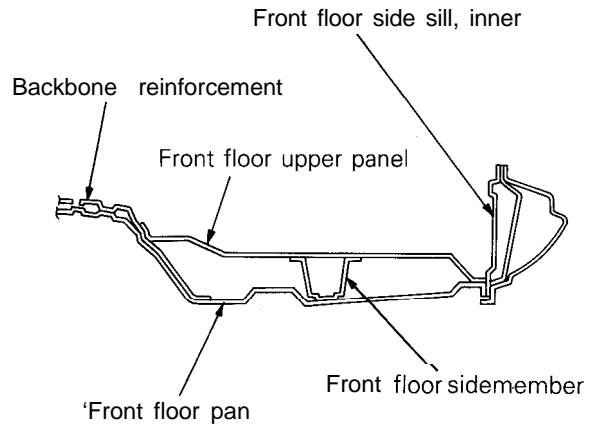
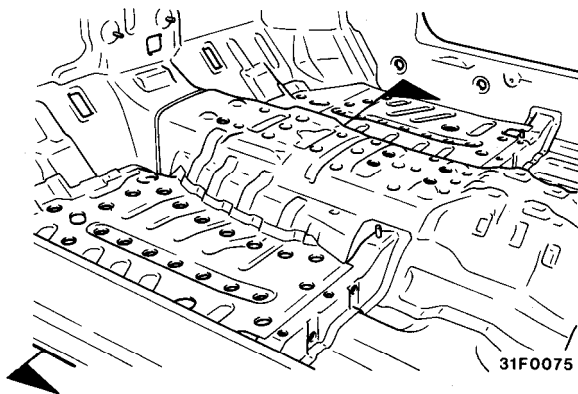
(1) A very rigid, double-layer floor is used with a front floor sidemember on the upper surface of the front floor and also a front floor upper panel on top.

(2) There is large, integrated backbone reinforcement on the upper surface of the front floor to improve rigidity.

(3) The number of beads in the front floor pan are reduced to make the bottom surface of the floor flat.



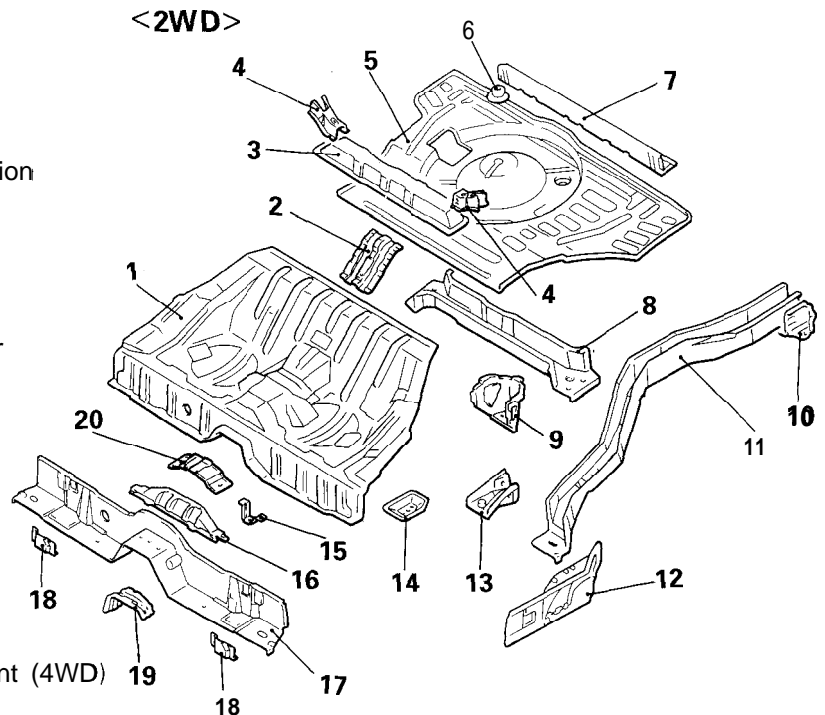
31F01 01



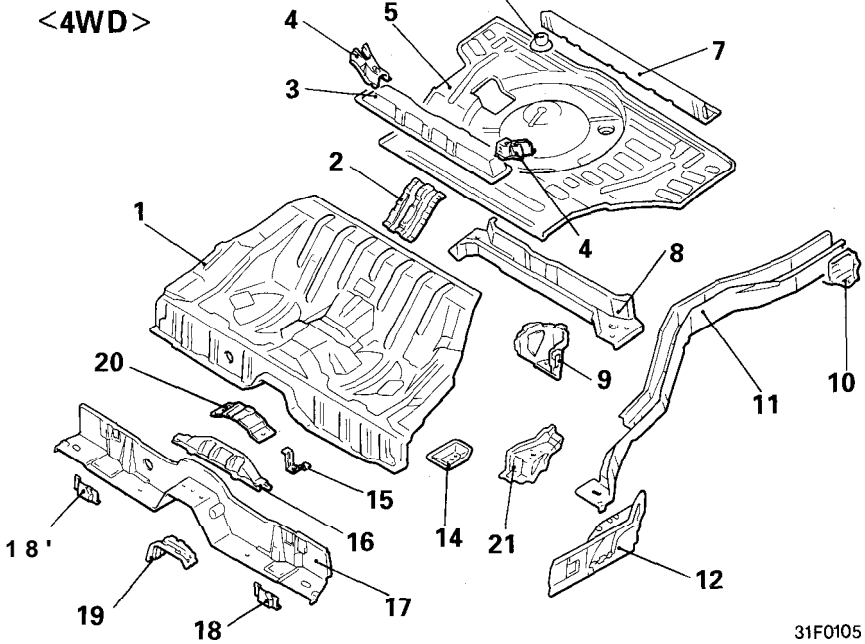
31F0012

Rear Floor

1. Rear seat pan
2. Split seat bracket
3. Rear floor crossmember, upper
4. Rear floor crossmember upper extension
5. Rear floor pan
6. Spare tire bracket
7. Rear end crossmember
8. Rear floor crossmember, lower
9. Fuel tank support, front
10. Rear floor sidemember extension, rear
11. Rear floor sidemember
12. Rear floor side sill
13. Trailing arm bracket (2WD)
14. Sidemember seat belt bracket
15. Heat protector panel bracket
16. Rear seat pan reinforcement, front
17. Rear seat crossmember
18. Tie down reinforcement
19. Propeller shaft bracket, rear
20. Rear floor seat belt reinforcement
21. Rear floor sidemember extension, front (4WD)



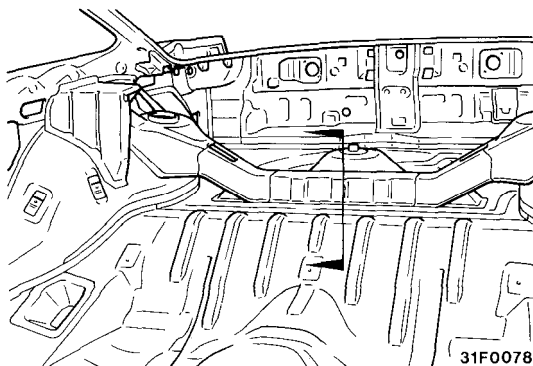
31F0104



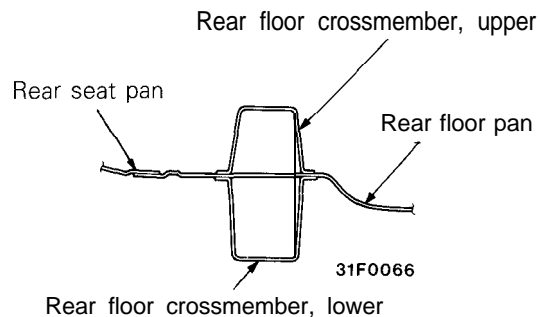
31F0105

REAR FLOOR CROSSMEMBER, UPPER

The rear floor crossmember (upper) forms a large closed section in the rear floor pan. High rigidity is assured by connecting this rear floor crossmember (upper) with the side body.



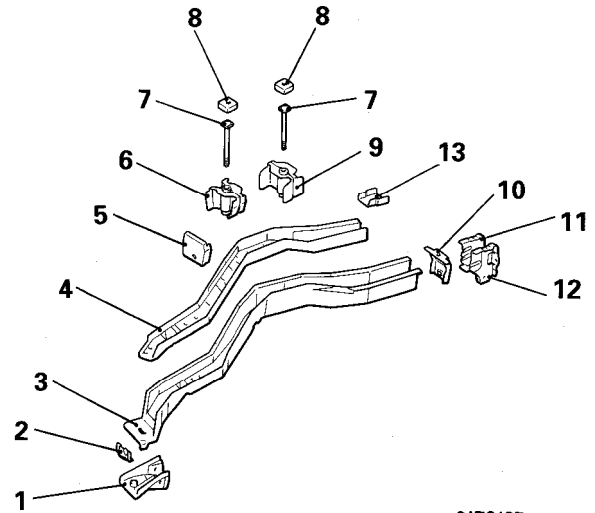
31F0078



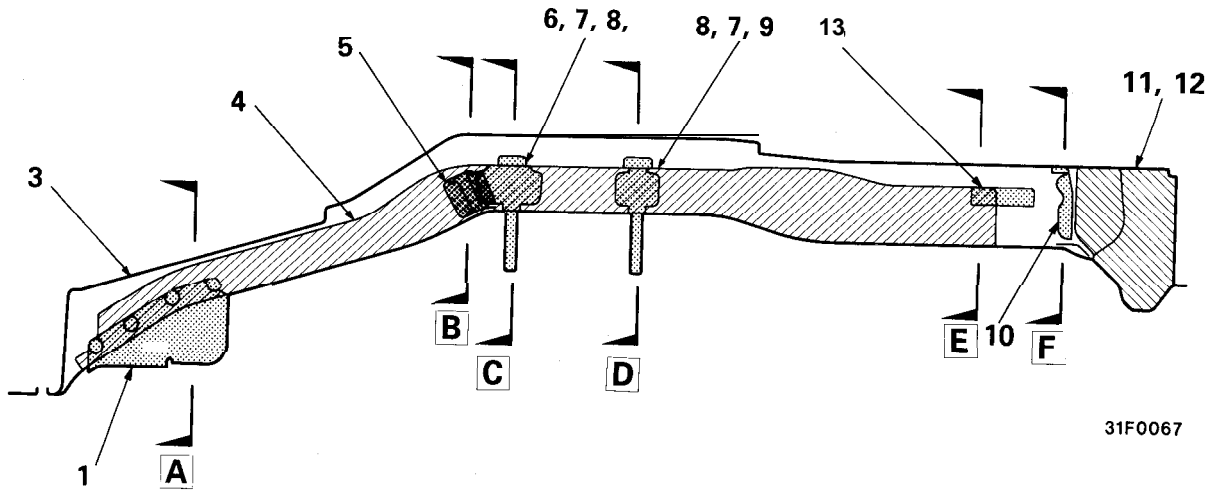
31F0066

REAR FLOOR SIDEMEMBER REINFORCEMENT
<2WD>

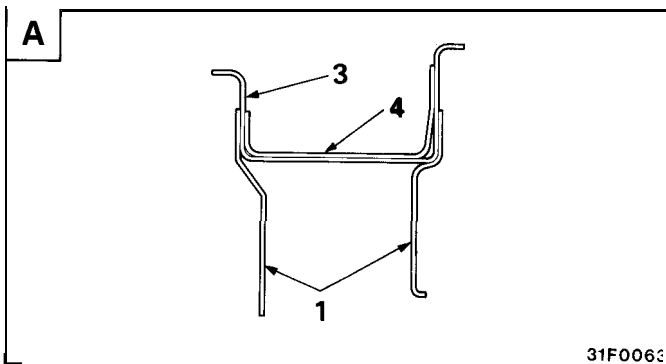
1. Trailing arm bracket
2. Tie down reinforcement
3. Rear floor sidemember
4. Rear floor sidemember reinforcement
5. Rear floor sidemember bulkhead
6. Suspension support bulkhead assembly, front
7. Square head bolt
8. Retainer
9. Suspension support bulkhead assembly, rear
10. Rear floor sidemember bulkhead, rear
11. Rear floor sidemember extension, rear, inner
12. Rear floor sidemember extension, rear, outer
13. Bulkhead



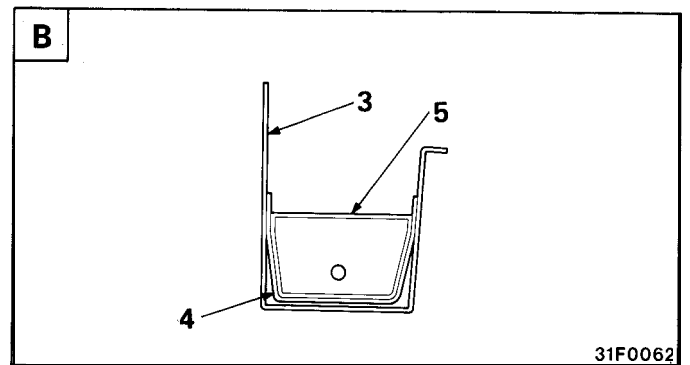
31F0107



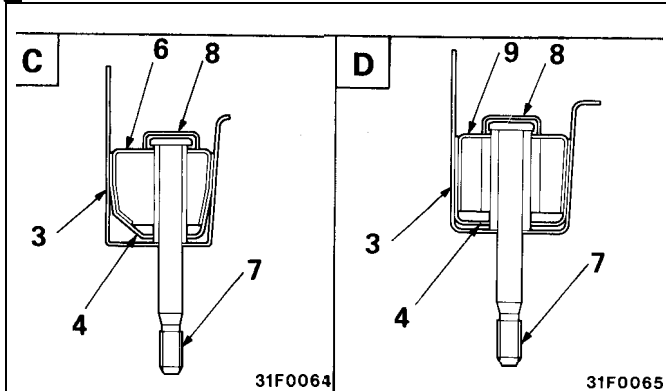
31F0067



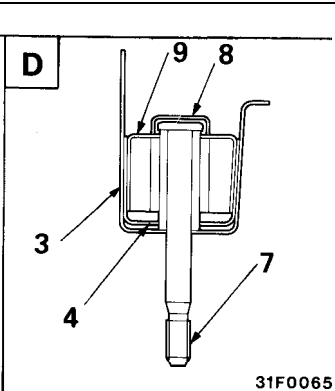
31F0063



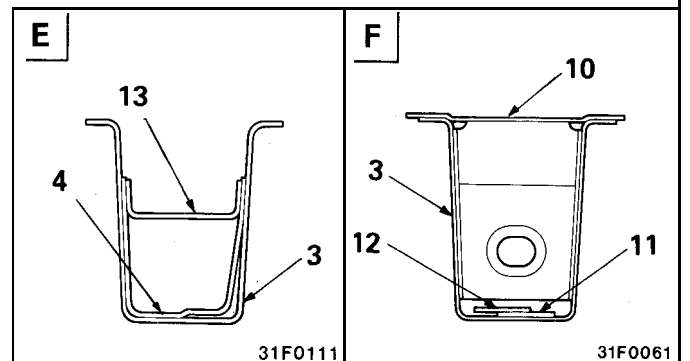
31F0062



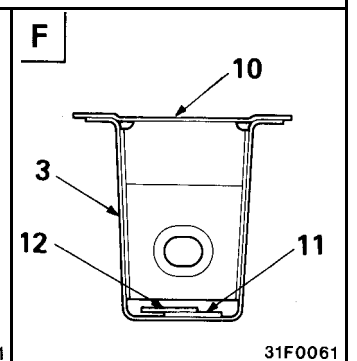
31F0064



31F0065



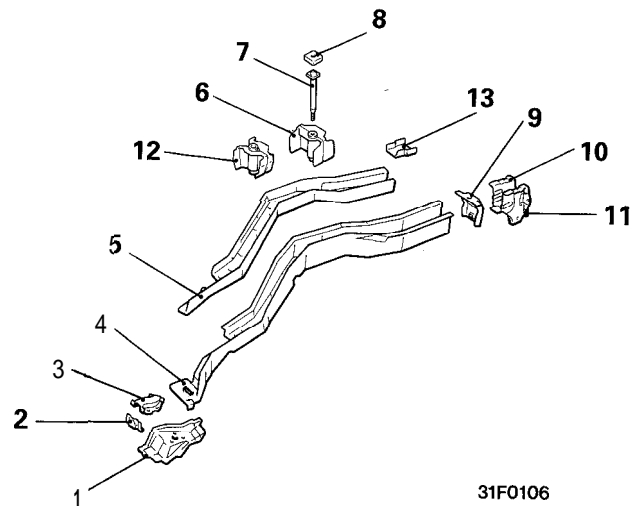
31F0111



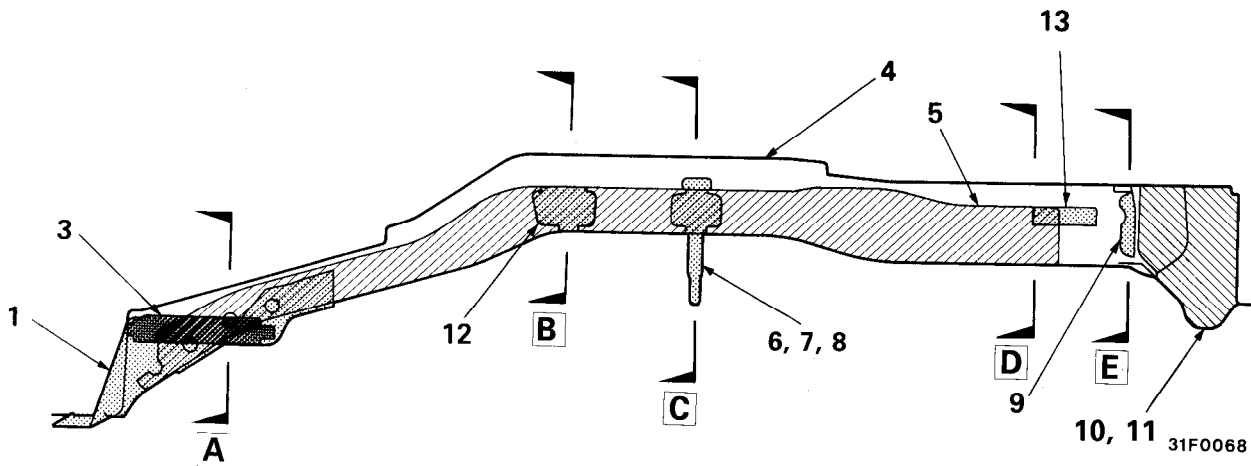
31F0061

<4WD>

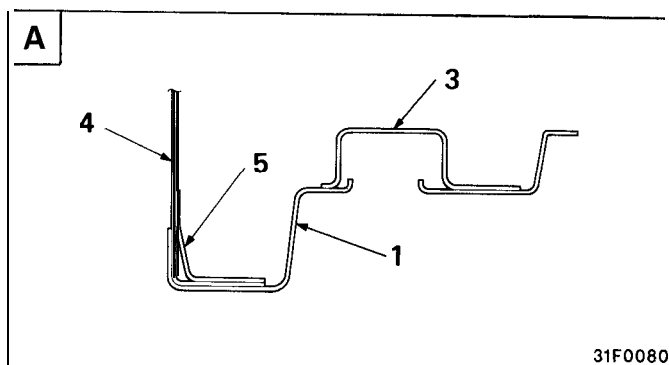
1. Rear floor sidemember extension, front
2. Tie down reinforcement
3. Rear suspension crossmember bracket
4. Rear floor sidemember
5. Rear floor sidemember reinforcement
6. Differential mount bulkhead assembly
7. Square head bolt
8. Retainer
9. Rear floor sidemember bulkhead, rear
10. Rear floor sidemember extension, rear, inner
11. Rear floor sidemember extension, rear, outer
12. Suspension support bulkhead assembly, front
13. Bulkhead



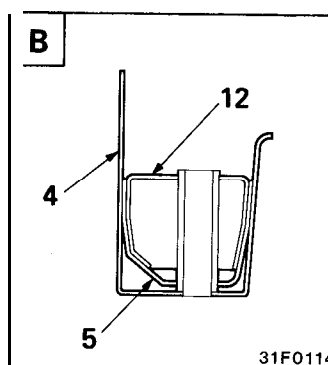
31F0106



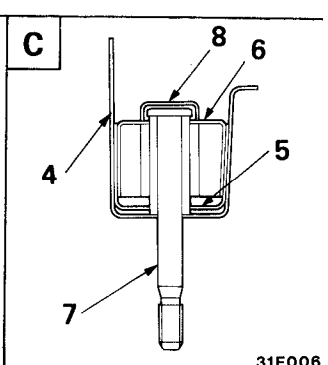
31F0068



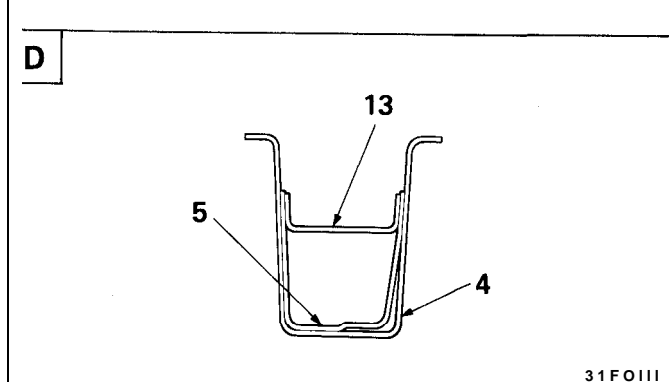
31F0080



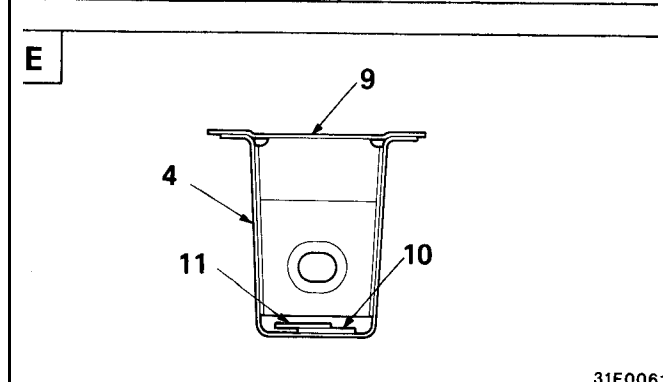
31F0114



31F006



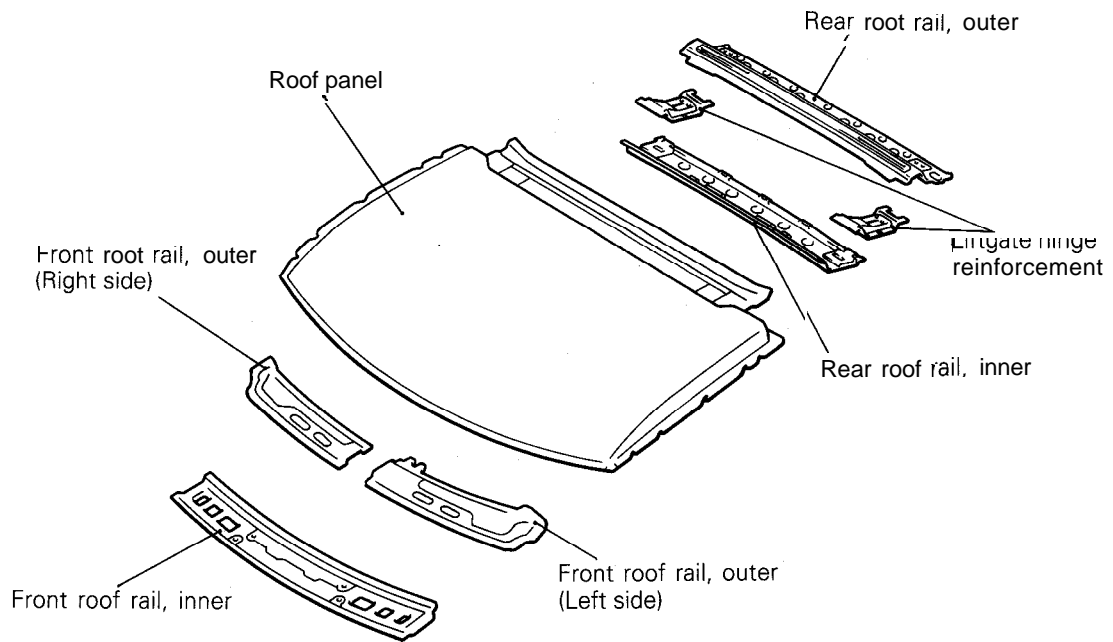
31F0111



31F0061

ROOF

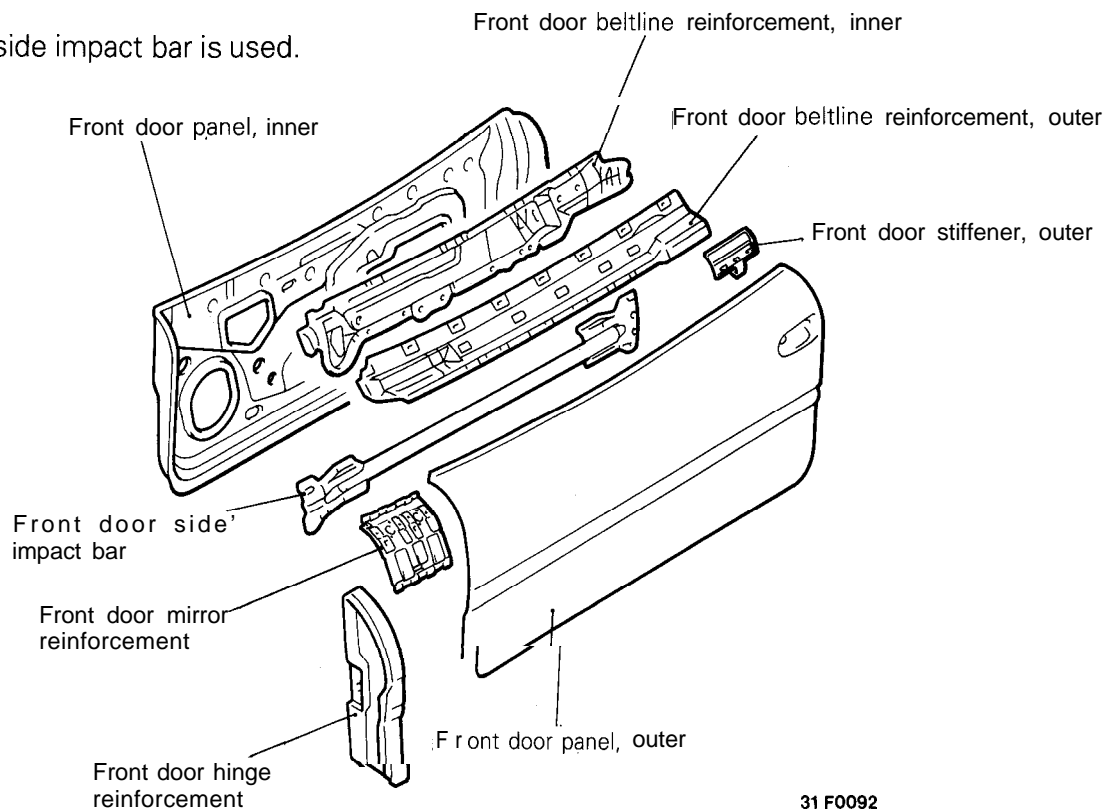
A construction without the roof bow has been achieved by making the roof surface small and increasing the camber.



31 F0091

DOOR

A pipe type side impact bar is used.



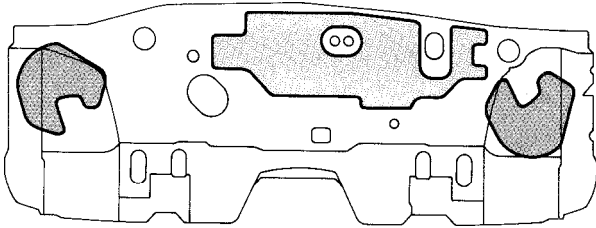
31 F0092

SILENCER APPLICATION LOCATIONS

In order to reduce vibration and screen out heat from the exhaust gas, silencers (melting sheets) are applied to the top of the floor and to the passenger compartment side of the dash panel. If

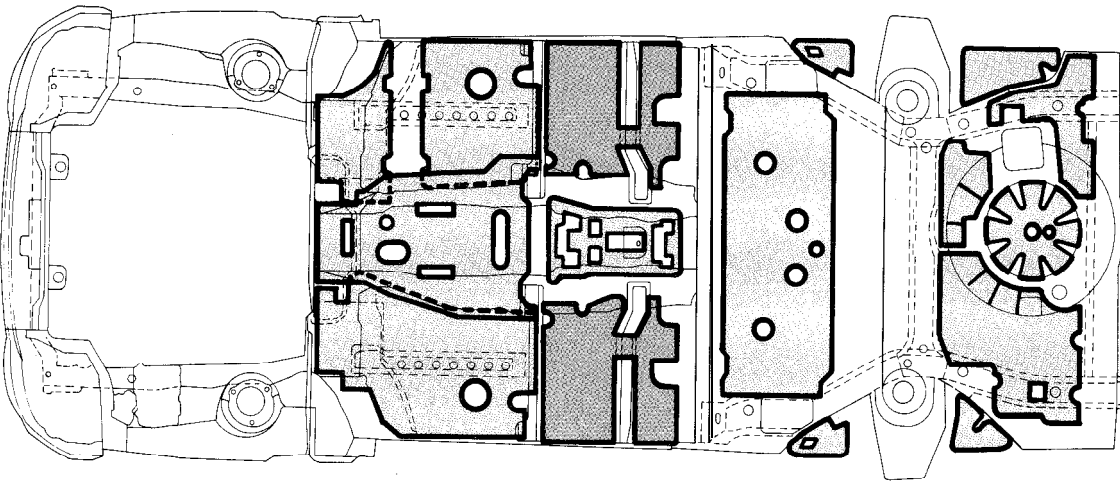
the silencers come off during welded panel replacement or other repairs, cut the replacement parts in the shapes indicated and apply them in the appropriate locations.

<2WD>



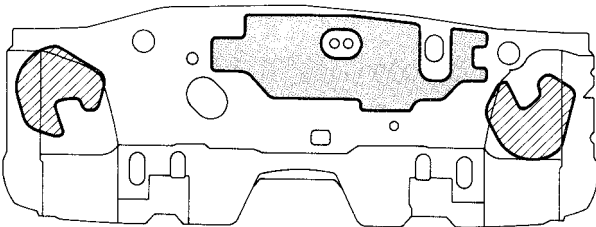
31F0056

Passenger compartment side of the dash panel!



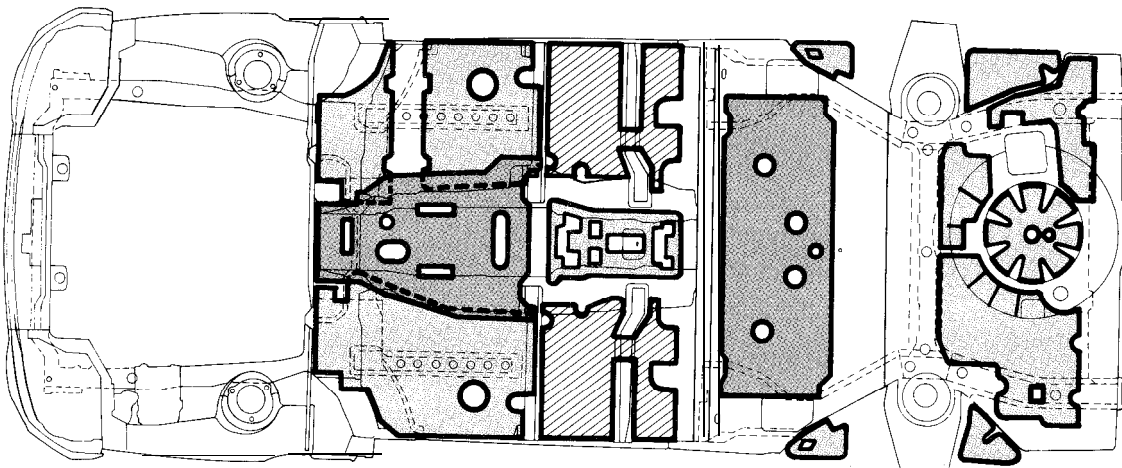
31 F0082

<4WD>



31F0057

Passenger compartment side of the dash panel

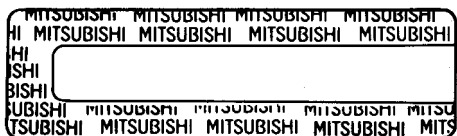


31F0084

- 1.6 mm (.06 in.) thick
- 3.2 mm (.13 in.) [two layers of 1.6 mm (.06 in.)] thick silencer
- 6.4 mm (.25 in.) [four layers of 1.6 mm (.06 in.)] thick silencer

Theft protection label

For original parts



00K619

For replacement parts



00K621

THEFT PROTECTION

In order to protect against theft, a Vehicle Identification Number (VIN) is stamped in, or attached as a label to, the following major parts of the engine and transaxle, as well as main outer panels:



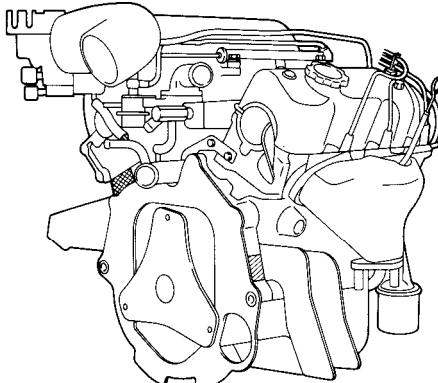
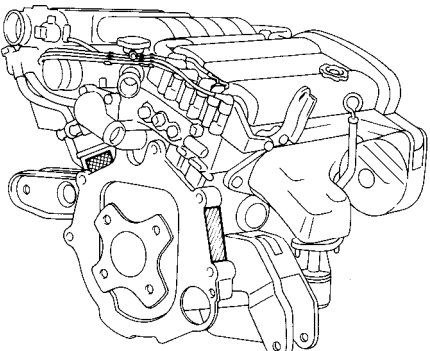
Engine cylinder block, Transaxle housing, Fender, Door, Quarter panel, Hood, Deck lid, Bumpers.

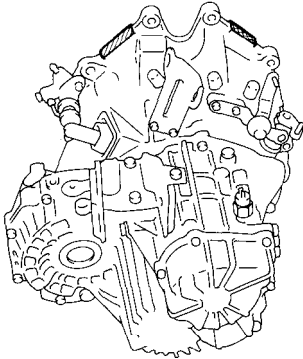
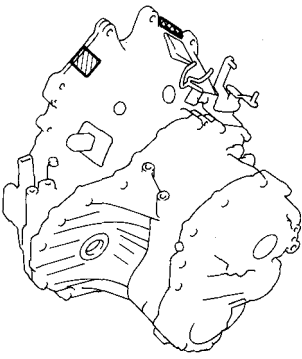
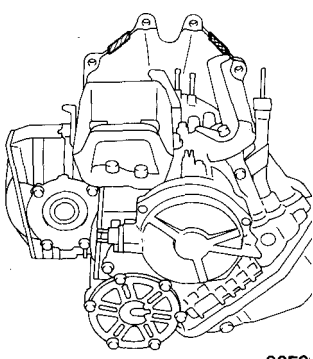
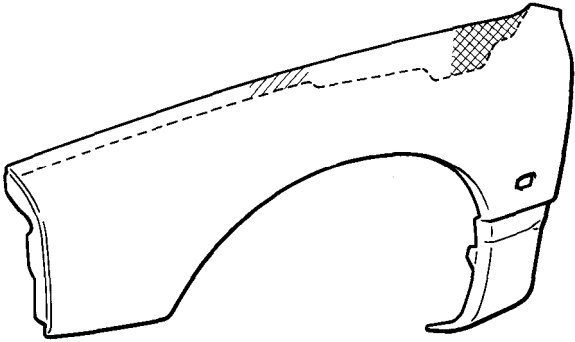
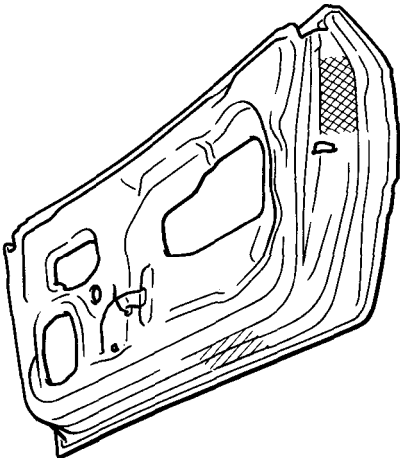
In addition, a theft-protection label is attached to replacement parts for the body outer panel main components, and the same data are stamped into replacement parts for the engine and the transaxle.



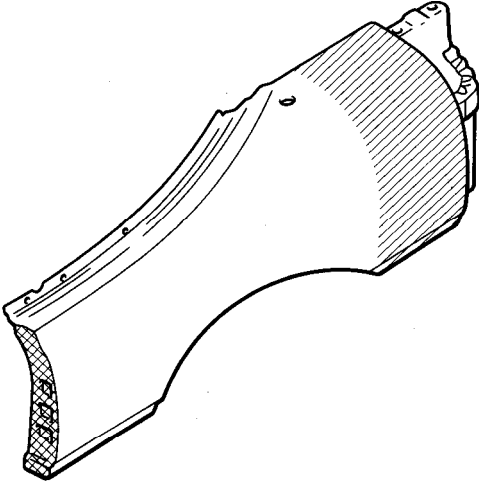
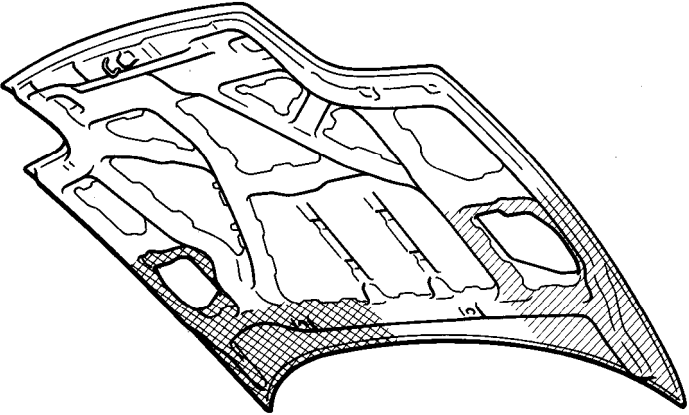
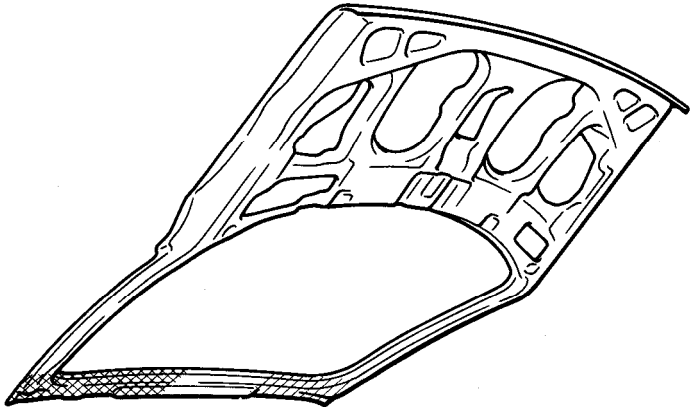
Cautions regarding panel repairs

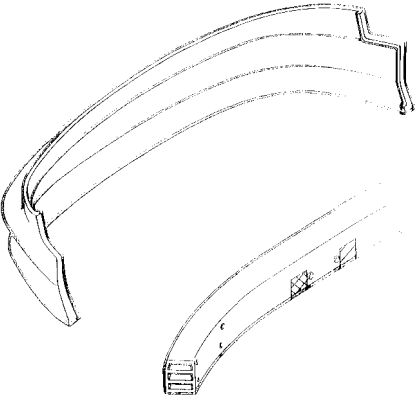
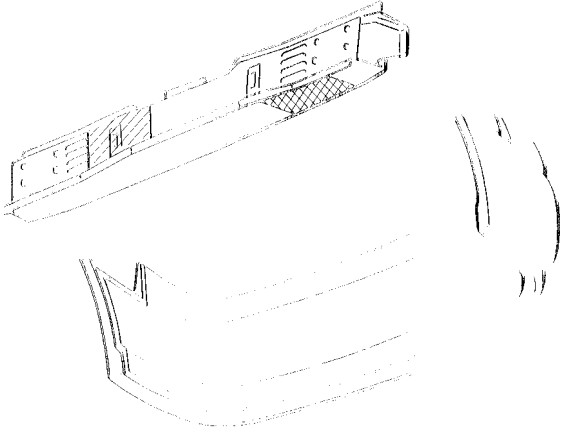
1. When repainting original parts, do so after first masking the theft-protection label, and, after painting, be sure to peel off the masking tape.
2. The theft-protection label for replacement parts is covered by masking tape, so such parts can be painted as is. The masking tape should be removed after painting is finished.
3. The theft-protection label should not be removed from original parts or replacement parts.

LOCATIONS

Part	*	Target area	 : for original equipment parts  : for replacement parts
Engine		<SOHC> 	<DOHC> 

Part	Target area
Transaxle	<div style="text-align: right; margin-bottom: 10px;"> : for original equipment parts : for replacement parts </div> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>Manual transaxle</p> <p><F5M33></p>  <p>00F0017</p> </div> <div style="text-align: center;"> <p>Automatic transaxle</p> <p><W5MG1></p>  <p>00F0016</p> </div> <div style="text-align: center;"> <p><F4A33></p>  <p>00F0</p> </div> </div>
Fender	<div style="text-align: center; margin-bottom: 20px;">  </div> <p>The illustration indicates left hand side, outer. Right hand side is symmetrically opposite.</p> <p style="text-align: right;">31FOC</p>
Door	<div style="text-align: center; margin-bottom: 20px;">  </div> <p>The illustration indicates right hand side, outer. Left hand side is symmetrically opposite.</p> <p style="text-align: right;">31FOC</p>

Part	Target area : for original equipment parts : for replacement parts
Quarter panel	<div style="text-align: right;"> <p>The label is attached at the inner side of the parts shown in the figure.</p> </div>  <p>The illustration indicates left hand side, outer. Right hand side is symmetrically opposite.</p> <p style="text-align: right;">31F007</p>
Hood	 <p style="text-align: right;">31F007:</p>
Liftgate	 <p style="text-align: right;">31F007⁴</p>

Part	Target area	: for original equipment part : for replacement part
Front bumper		
Rear bumper		001 001
		001 003

2 BODY DIMENSIONS

BODY DIMENSIONS AND MEASUREMENT	
METHODS	2-30
TYPE A	
(PROJECTED DIMENSIONS).....	2-32
TYPE B	
(ACTUAL-MEASUREMENT DIMENSIONS)	2-34
UNDER BODY.....	2-34
UPPER BODY.....	2-36
SIDE BODY.....	2-36
ENGINE COMPARTMENT.....	2-37
INTERIOR	2-38
INCLINATION OF SPRING HOUSE PANEL	2-39

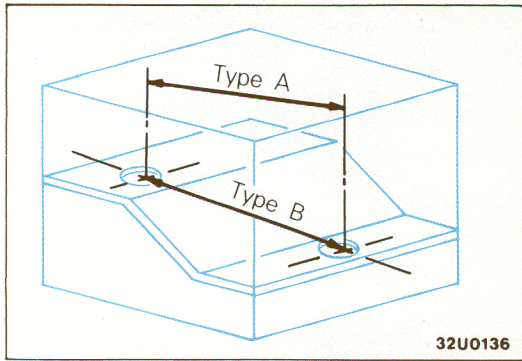
BODY DIMENSIONS AND MEASUREMENT METHODS

HOW BODY DIMENSIONS ARE INDICATED

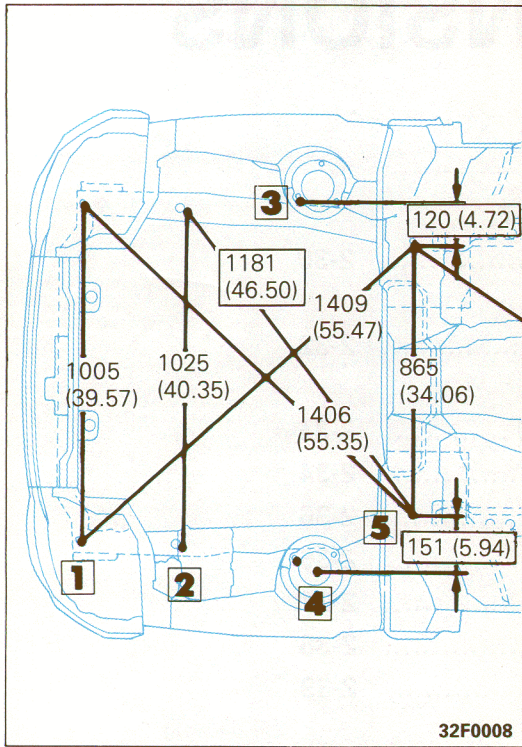
1. Type A (Projected dimensions)
These are the dimensions measured when the measurement points are projected into the reference plane, and are the reference dimensions used for body alterations.
2. Type B (Actual-measurement dimensions)
These dimensions indicate the actual linear distance between measurement points, and are the reference dimensions for use if a tracking gauge is used for measurements.
3. The units given for the dimensions of both types (A and B) are mm (in.).

INDICATION OF REFERENCE DIMENSIONS

Dimension surrounded by \square means it is the same dimension as in a relative position.



32U0136

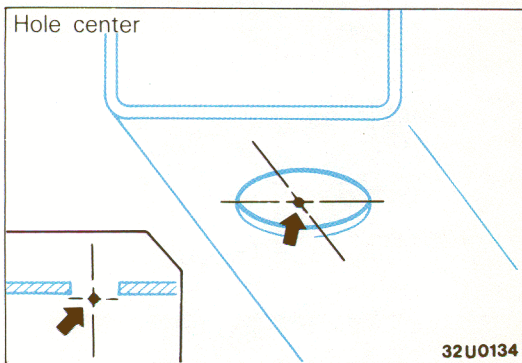


32F0008

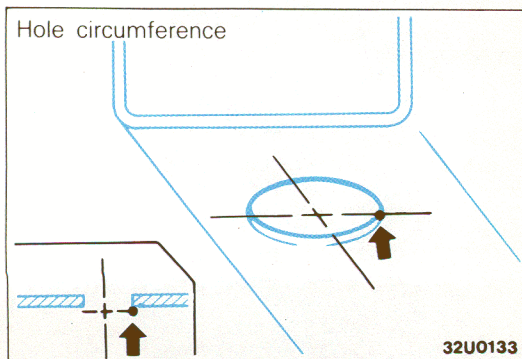
MEASUREMENT POINTS

Measurement points are used to indicate the following:

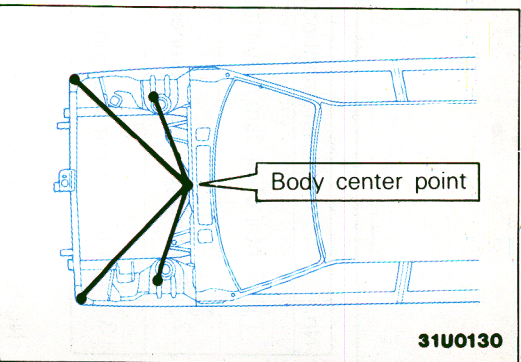
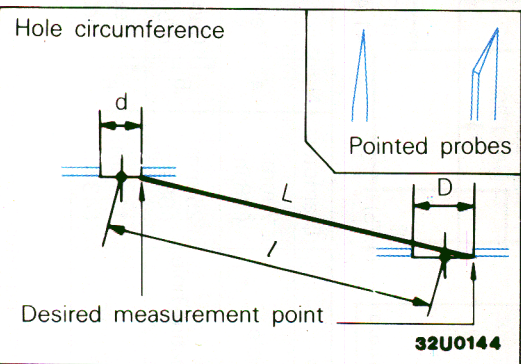
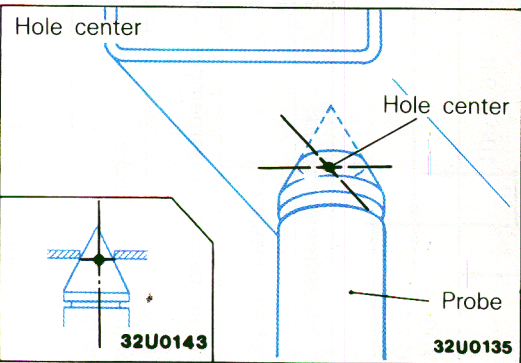
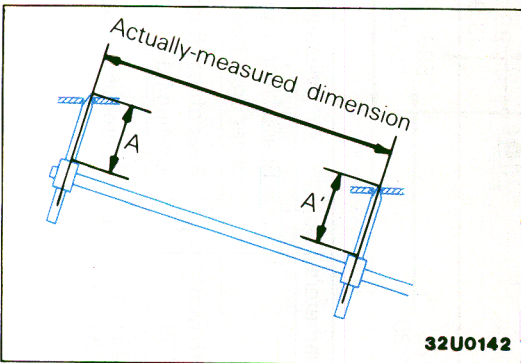
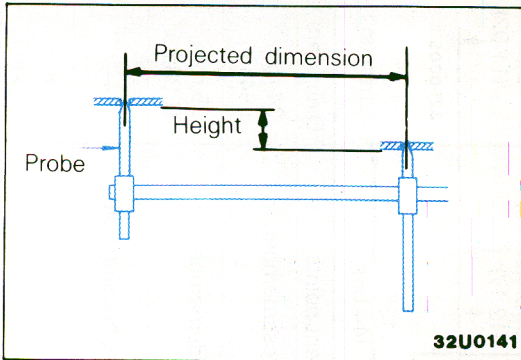
1. If a measurement is to be made at a hole center, the point of the surface from which the measuring instrument is applied is the measurement point.
2. If a measurement is to be made at the circumference of a hole, the point of the hole circumference of the surface from which the measuring instrument is applied is the measurement point.



32U0134



32U0133



MEASUREMENT METHODS

USING A TRACKING GAUGE

NOTE

Use a tracking gauge without looseness between gauge body and probes.

1. TYPE A (PROJECTED DIMENSIONS)

If the length of the tracking gauge probes are adjustable, make the measurement by lengthening one probe by the amount equivalent to the difference in height of the two surfaces.

2. TYPE B (ACTUAL-MEASUREMENT DIMENSIONS)

Measure by first adjusting both probes to the same length (A = A').

2

3. IF HOLE DIAMETERS ARE THE SAME AND THE PROBES ARE CONICAL

For both Type A and Type B, insert the probes into the holes, and then make the measurement. This method of measurement should be used if the diameters of the holes in the location to be measured are the same.

4. IF HOLE DIAMETERS ARE DIFFERENT, OR THE PROBES ARE POINTED

Because measurement at the hole centers is impossible, the circumferences must be used instead.

HOW TO DETERMINE DIMENSIONS

Desired dimensions : $L = l + \frac{D - d}{2}$

Example :

Reference dimensions : $l = 600$ (23.6)

Measured hole diameters : $D = 20\phi$ (.79),

$d = 10\phi$ (.39)

mm (in.)

Desired dimensions :

$$L = 600 (23.6) + \frac{20\phi (.79) - 10\phi (.39)}{2}$$

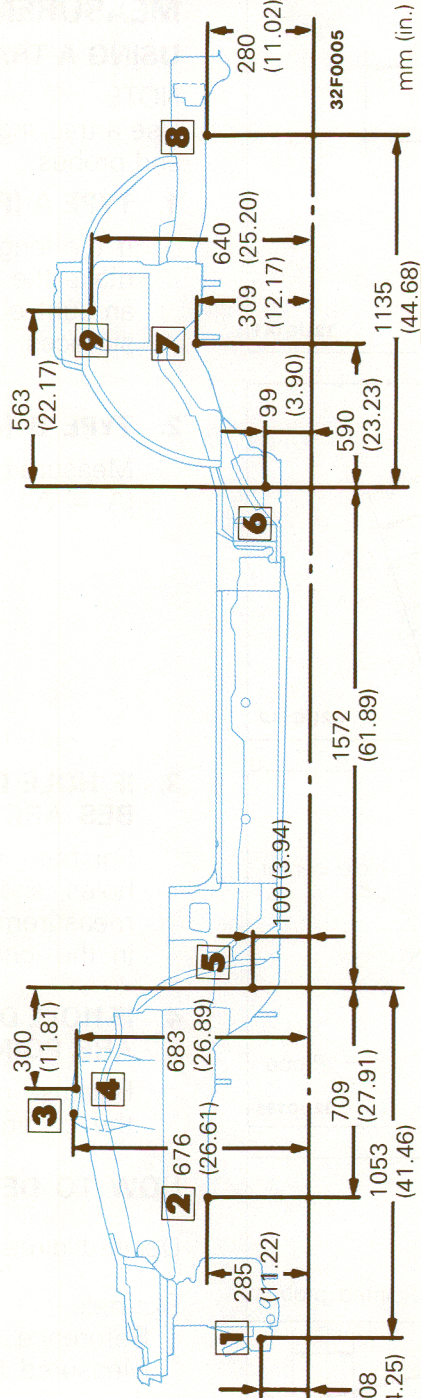
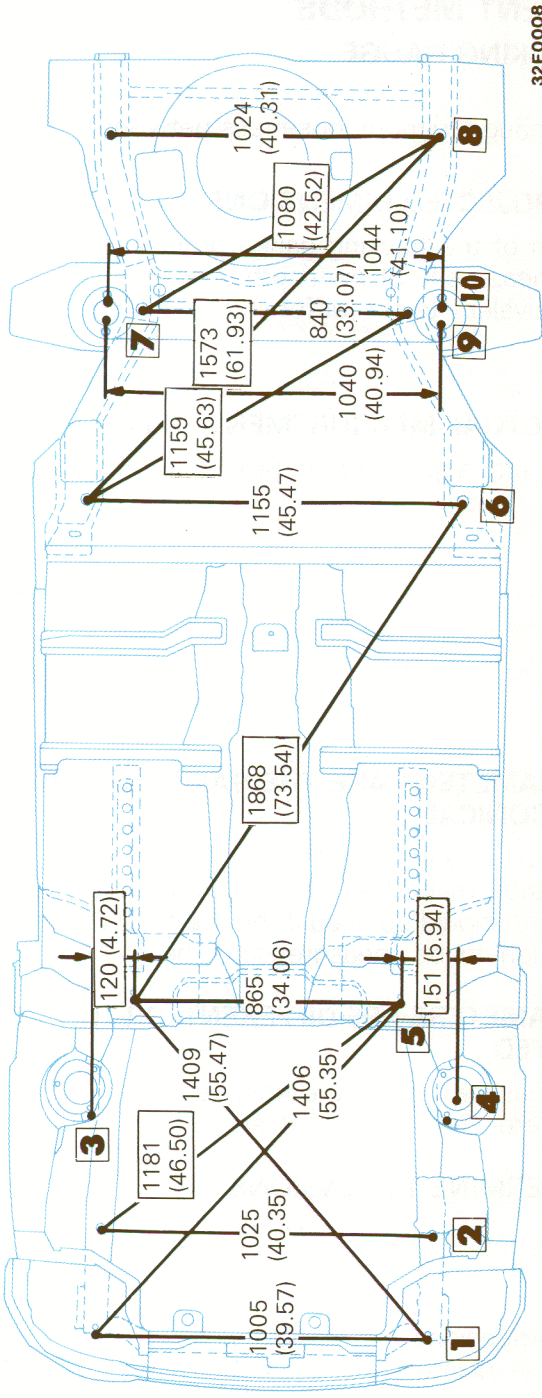
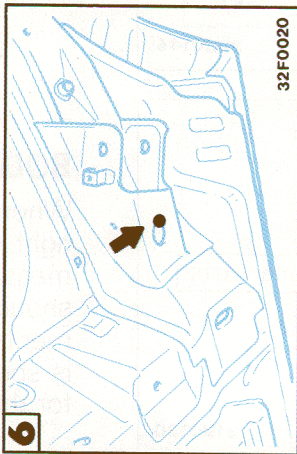
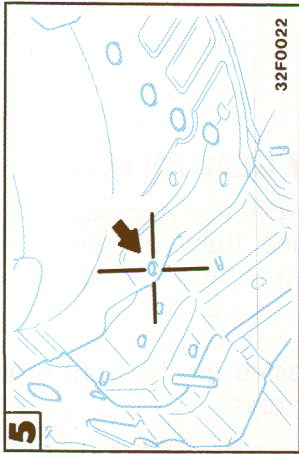
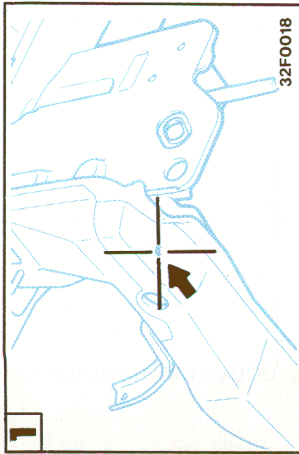
$$= 605 (23.8)$$

BODY CENTER POINTS

When measuring locations that should be symmetrical left and right and there are no specific instructions with regard to measurements in "Body Dimensions", the body center points should be used to confirm that the left and right measurements from these points are the same. One body center point is specified for the front of the body and another is specified for the rear.

TYPE A (PROJECTED DIMENSIONS)

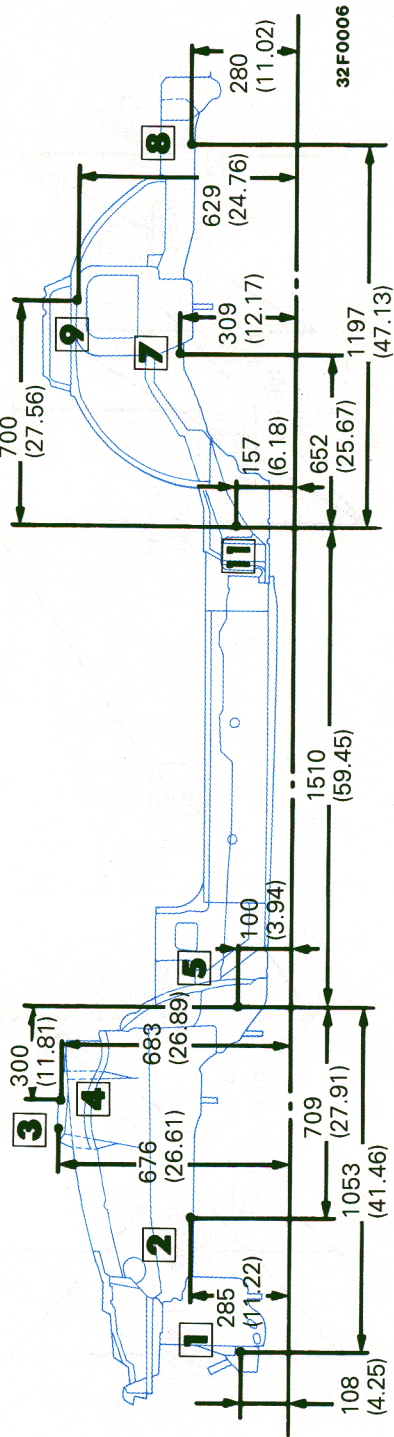
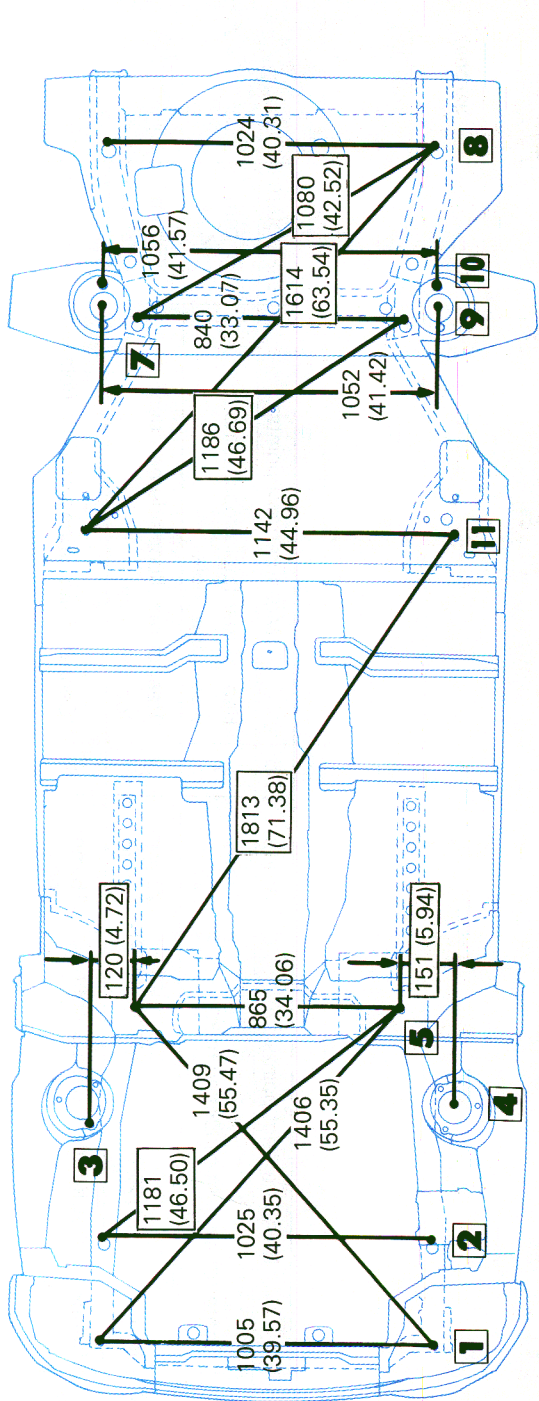
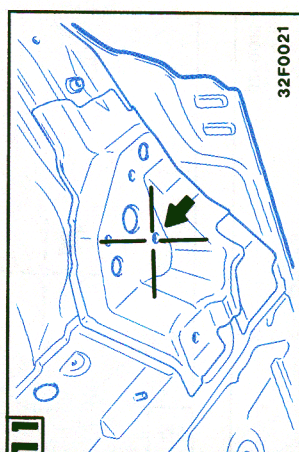
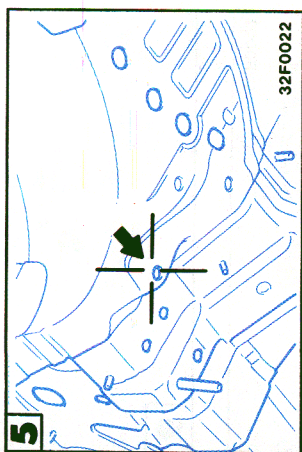
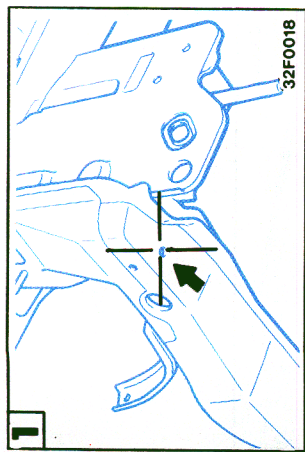
<2WD>



No.	Measurement points	Diameters	No.	Measurement points	Diameters	No.	Measurement points	Diameters
1	Center of air dam mounting hole	7 mm (.28 in.)	7	Rear of rear floor crossmember water drain hole	—	7	Rear of rear floor crossmember water drain hole	24 mm (.94 in.)
* 2	Rear of front sidemember locating hole	25 mm (.98 in.)	* 8	Rear of rear floor sidemember locating hole	15 mm (.59 in.)	* 8	Rear of rear floor sidemember locating hole	35 mm (1.38 in.)
3	Center of front strut mounting hole	11 mm (.43 in.)	9	Center of rear spring housing hole	25 mm (.98 in.)	9	Center of rear spring housing hole	—
			10	Shock absorber mounting hole	11 mm (.43 in.)	10	Shock absorber mounting hole	11 mm (.43 in.)

NOTE The * mark in the No. column indicates the frame centering gauge mounting positions.

<4WD>



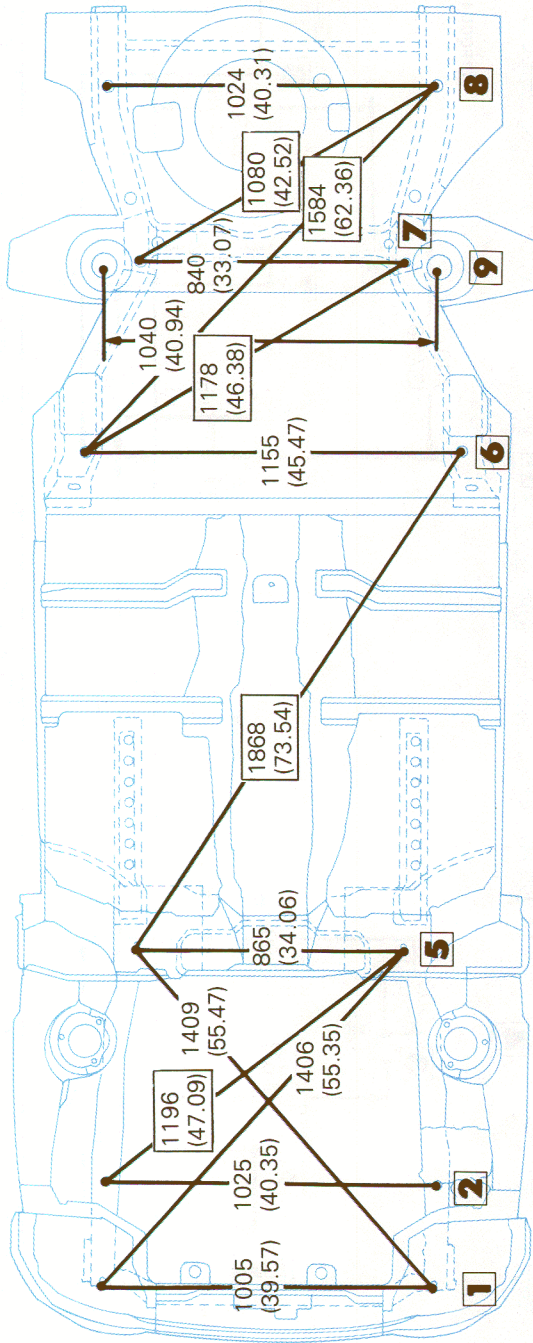
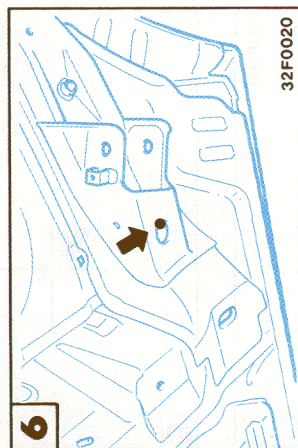
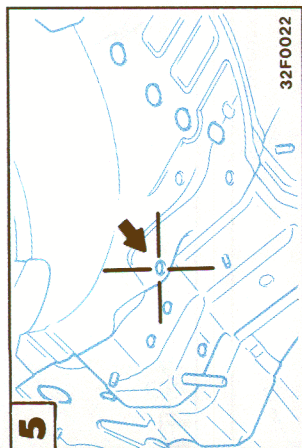
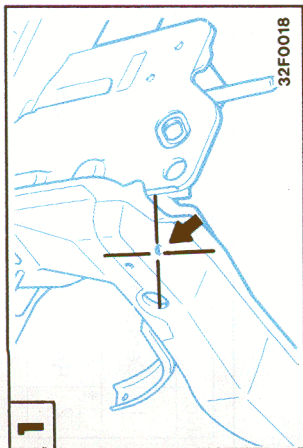
No.	Measurement points	Diameters	No.	Measurement points	Diameters	No.	Measurement points	Diameters
1	Center of air dam mounting hole	7 mm (.28 in.)	8	Rear of rear floor sidemember locating hole	—	8	Rear of rear floor sidemember locating hole	35 mm (1.38 in.)
2	Rear of front sidemember locating hole	25 mm (.98 in.)	9	Center of rear spring housing hole	15 mm (.59 in.)	9	Center of rear spring housing hole	—
3	Center of front strut mounting hole	11 mm (.43 in.)	10	Center of shock absorber mounting hole	24 mm (.94 in.)	10	Center of shock absorber mounting hole	11 mm (.43 in.)
			11	Center of crossmember mounting hole	—	11	Center of crossmember mounting hole	15 mm (.59 in.)

NOTE The * mark in the No. column indicates the frame centering gauge mounting positions.

TYPE B (ACTUAL-MEASUREMENT DIMENSIONS)

UNDER BODY

<2WD>

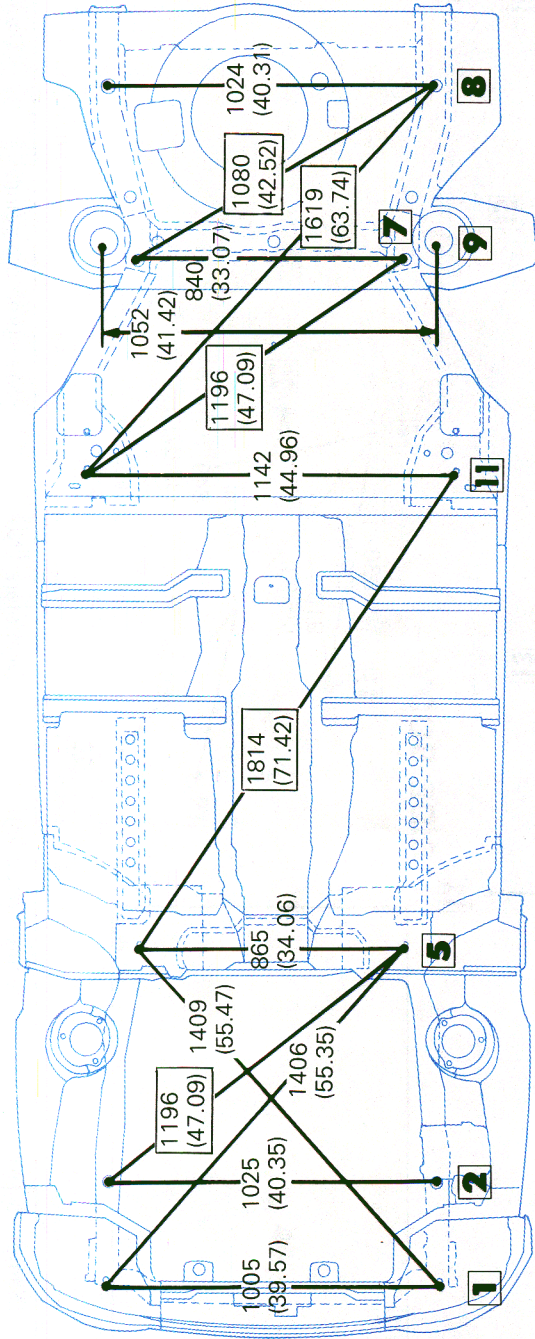
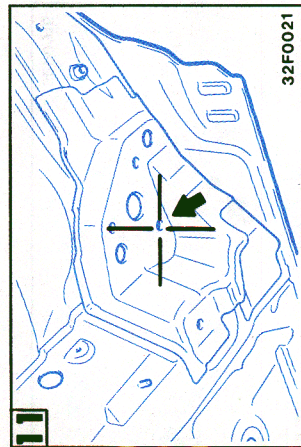
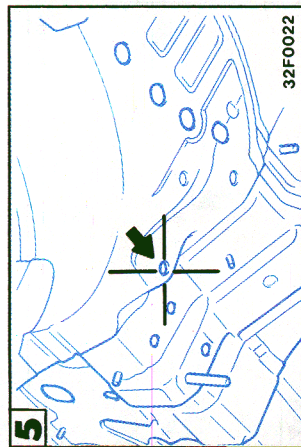
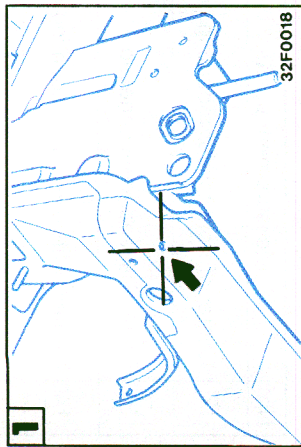


32F0007

mm (in.)

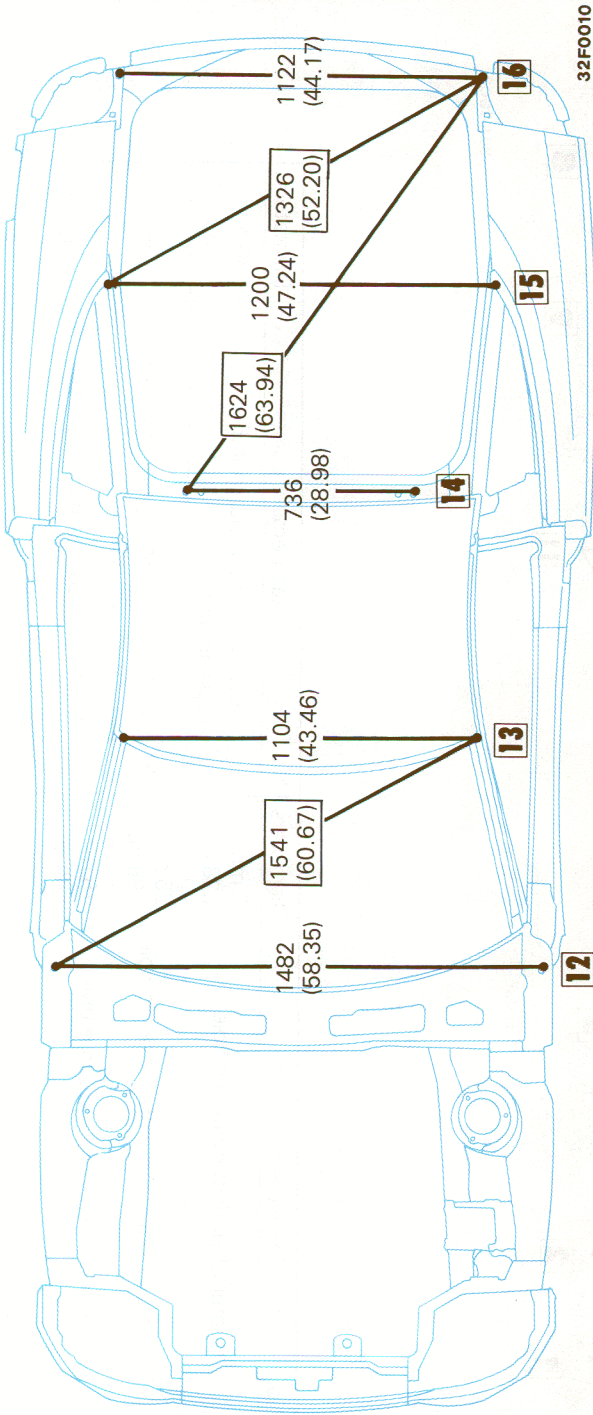
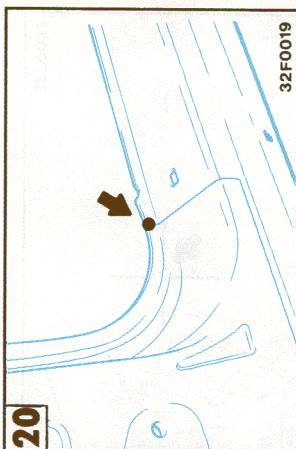
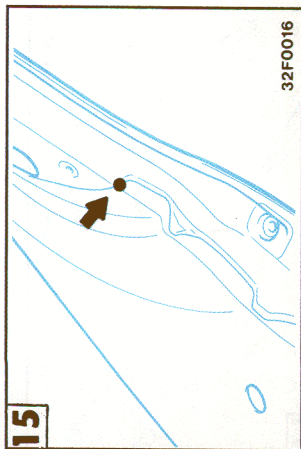
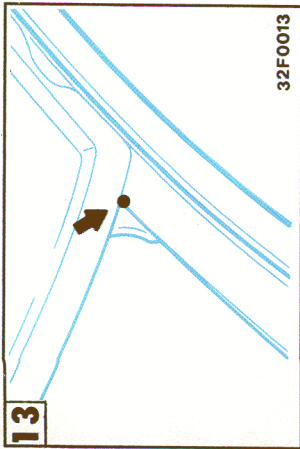
No.	Measurement points	Diameters	No.	Measurement points	Diameters
1	Center of air dam mounting hole	7 mm (.28 in.)	7	Rear of rear floor crossmember water drain hole	24 mm (.94 in.)
2	Rear of front sidemember locating hole	25 mm (.98 in.)	8	Rear of rear floor sidemember locating hole	35 mm (1.38 in.)
5	Center of suspension crossmember mounting hole	15 mm (.59 in.)	9	Center of rear spring housing hole	—
6	Rear of trailing arm bracket locating hole	25 mm (.98 in.)			

<4WD>

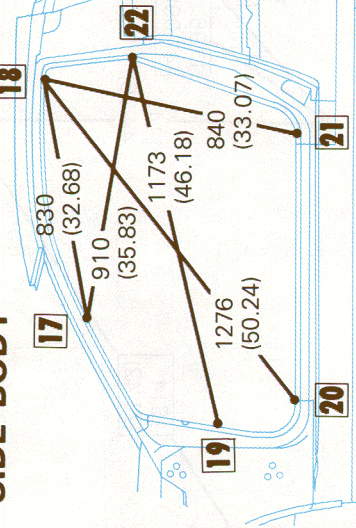
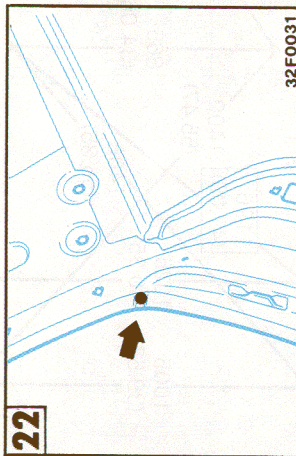


No.	Measurement points	Diameters	No.	Measurement points	Diameters
1	Center of air dam mounting hole	7 mm (.28 in.)	8	Rear of rear floor sidemember locating hole	35 mm (1.38 in.)
2	Rear of front sidemember locating hole	25 mm (.98 in.)	9	Center of rear spring housing hole	—
5	Center of suspension crossmember mounting hole	15 mm (.59 in.)	11	Center of crossmember mounting hole	15 mm (.59 in.)
7	Rear of rear floor crossmember water drain hole	24 mm (.94 in.)			

UPPER BODY

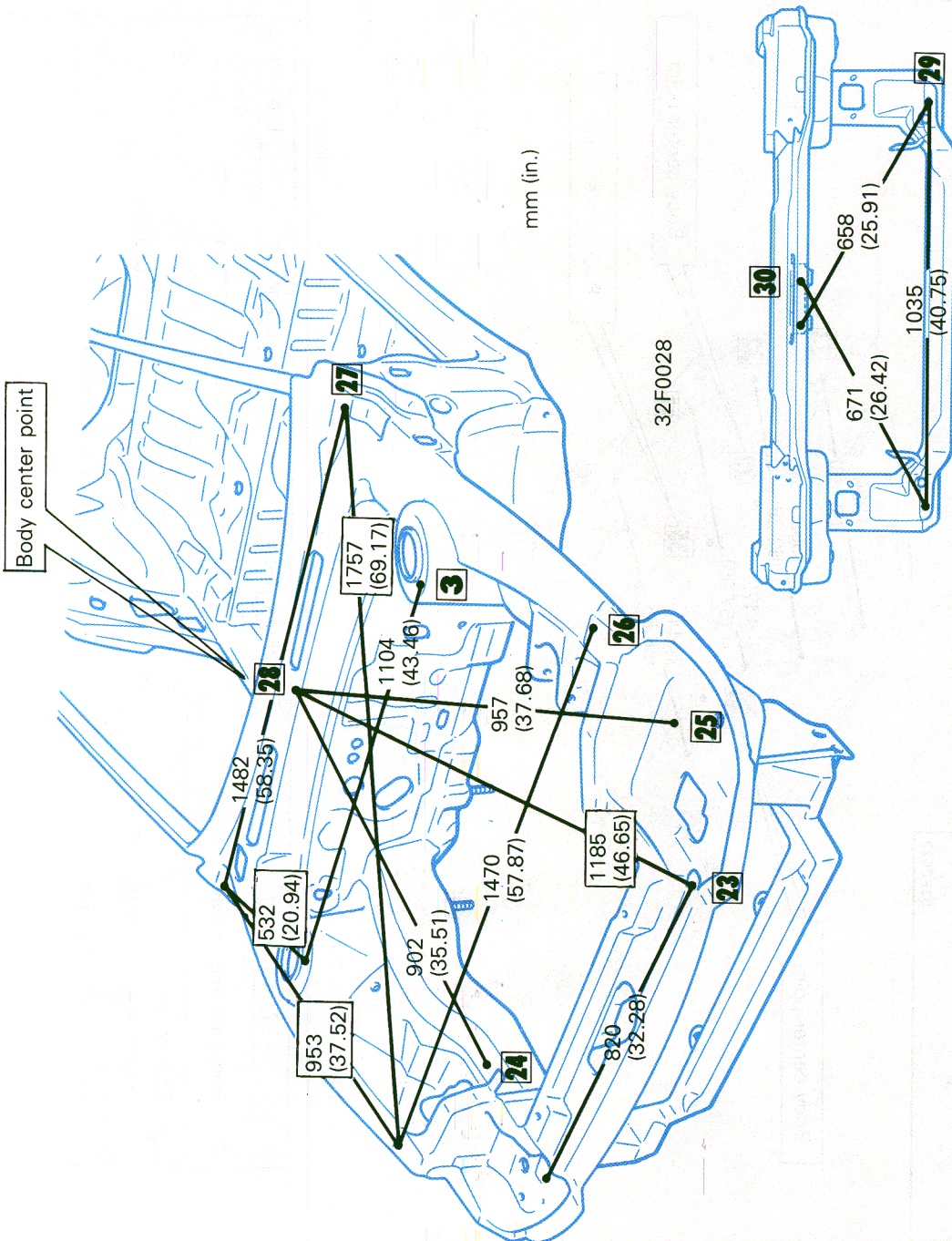
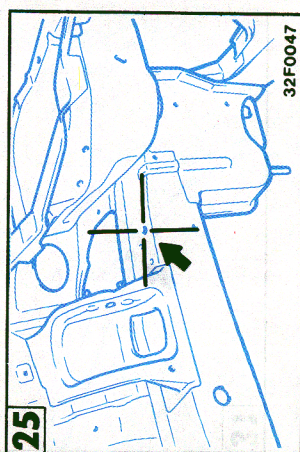
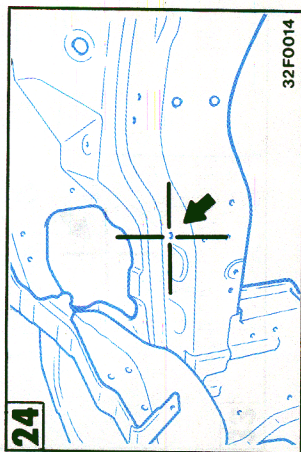
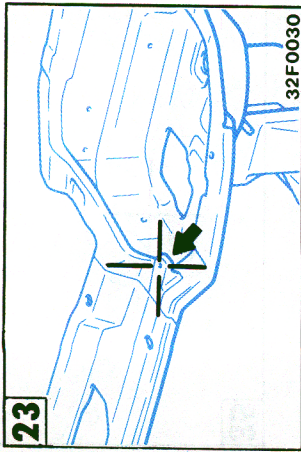


SIDE BODY



No.	Measurement points	Diameters	No.	Measurement points	Diameters	No.	Measurement points	Diameters
12	Center of front fender mounting hole	6.6 mm (.26 in.)	16	Center of rear light mounting hole	□ 8.5 mm (□.33 in.)	20	Front pillar and side sill connection	—
13	Front pillar and roof connection	—	17	Notch on front pillar (upper)	—	21	Center of center pillar reference point (lower)	8 mm (.31 in.)
14	Center of liftgate hinge mounting hole	12 mm (.47 in.)	18	Center of center pillar reference point (upper)	8 mm (.31 in.)	22	Center pillar reference point	—
15	Rear pillar and quarter panel connection	—	19	Notch on front pillar (lower)	—			

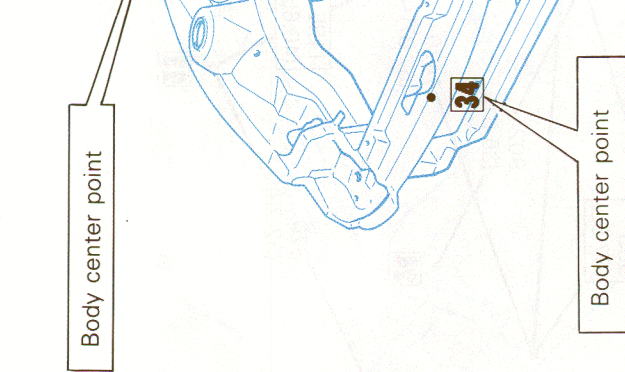
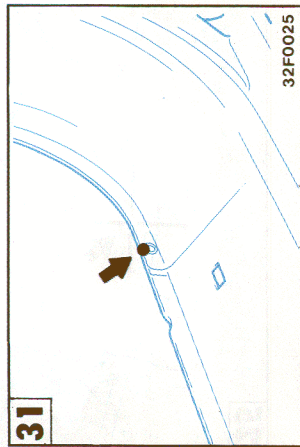
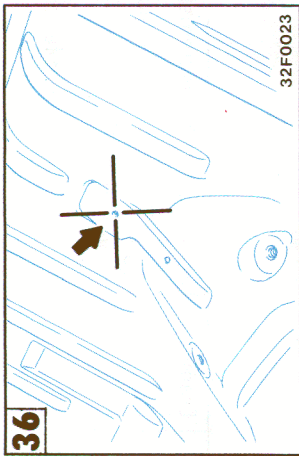
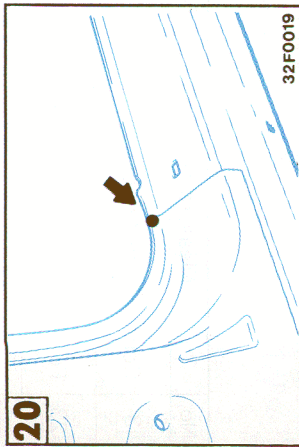
ENGINE COMPARTMENT



32F0012

No.	Measurement points	Diameters	No.	Measurement points	Diameters	No.	Measurement points	Diameters
3	Center of front strut mounting hole	11 mm (.43 in.)	25	Center of air conditioner pipe bracket mounting hole	9 mm (.35 in.)	28	Body center point (weatherstrip mounting hole)	5 mm (.20 in.)
23	Front end of front sidemember	—	26	Center of front fender mounting hole	6.6 mm (.26 in.)	29	Center of harness clip mounting hole	7 mm (.28 in.)
24	Center of harness clip mounting hole	7 mm (.28 in.)	27	Center of front fender mounting hole	6.6 mm (.26 in.)	30	Center of hood latch mounting hole	6.6 mm (.26 in.)

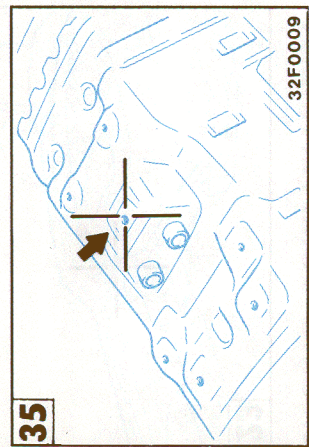
INTERIOR



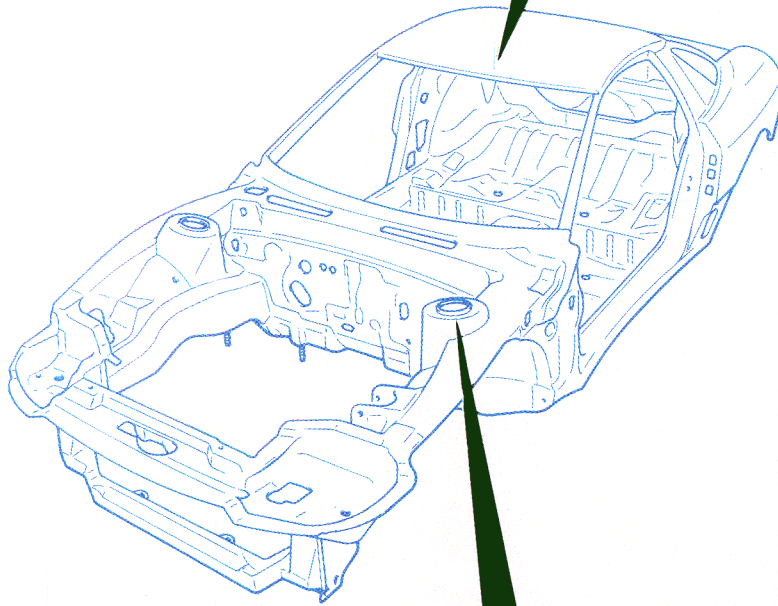
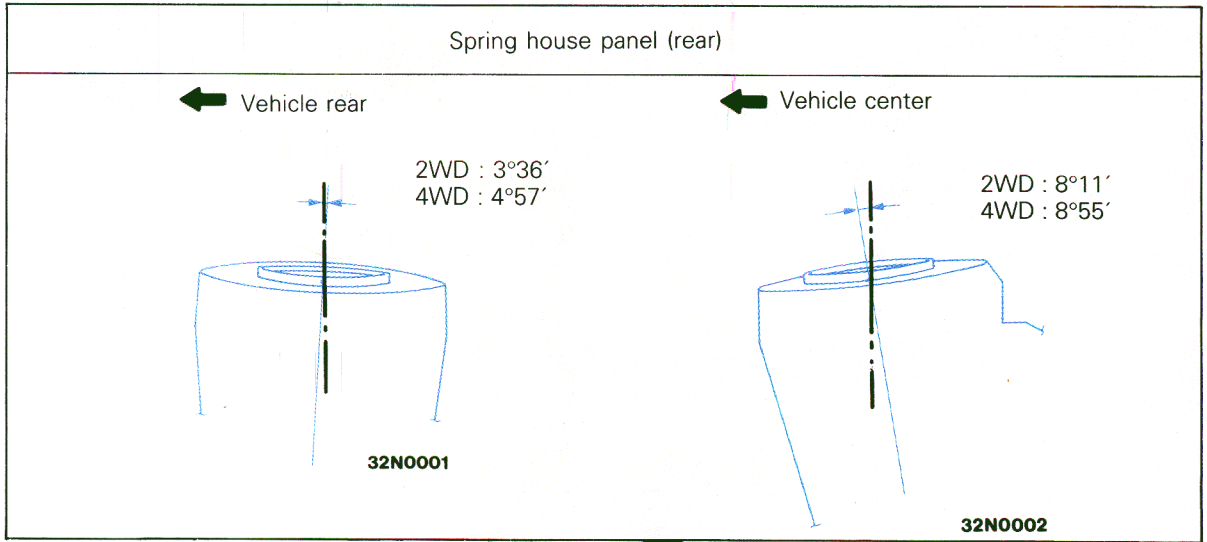
32F0027

mm (in.)

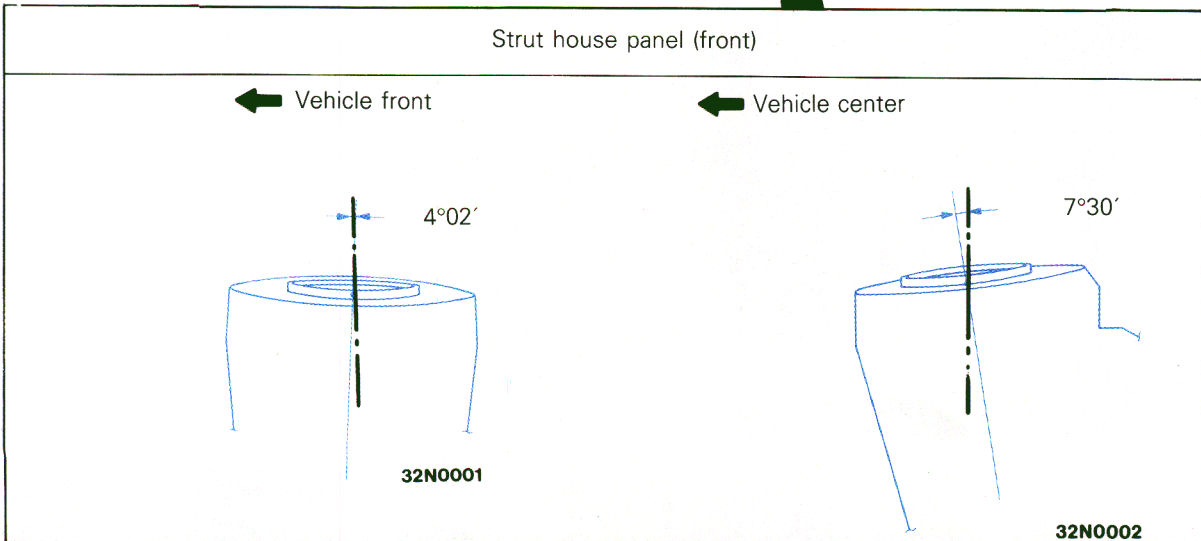
No.	Measurement points	Diameters	No.	Measurement points	Diameters
20	Front pillar and side sill connection	—	33	Center of front seat belt locating hole	8 mm (.31 in.)
28	Body center point (weatherstrip mounting hole)	5 mm (.20 in.)	34	Body center point (front bumper face mounting hole)	6.6 mm (.26 in.)
31	Top of center pillar reference point	—	35	Body center point	6.6 mm (.26 in.)
32	Center of front door striker mounting hole	14 mm (.55 in.)	36	Body center point	7 mm (.28 in.)



INCLINATION OF SPRING HOUSE PANEL



32F0026



NOTES



3 WELDED PANEL REPLACEMENT

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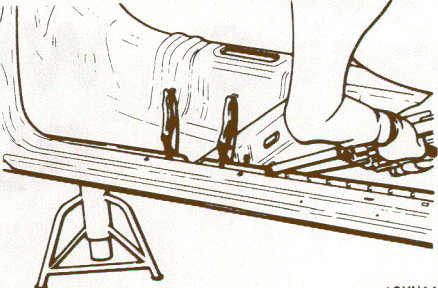

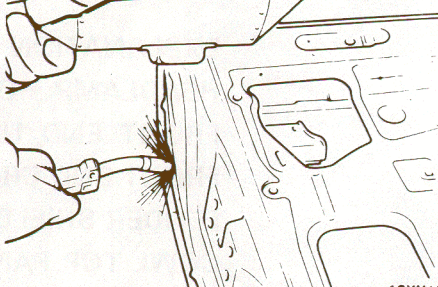

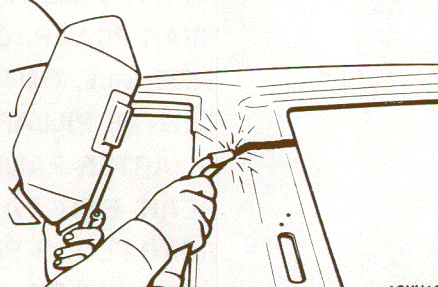

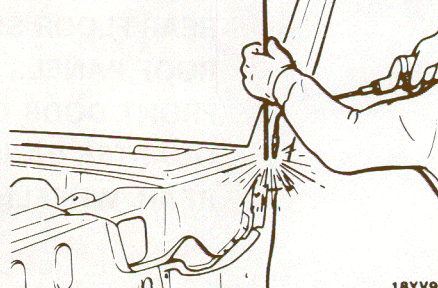
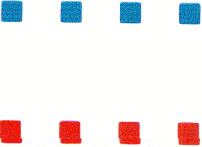
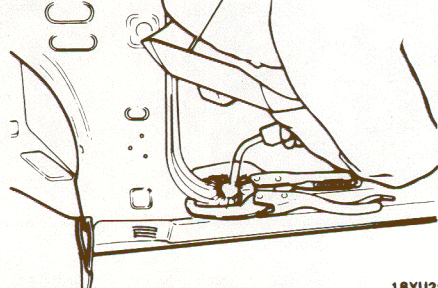
WELDED PANEL REPLACEMENT

EXPLANATION OF MANUAL CONTENTS

The basic parts supply units of the body structure are the weld-mounted outer panels. Herein are explained the procedures for replacement of these panels.

SYMBOLS

The various operations for panel replacement are designated by the following symbols.

Symbol	Operation description	Illustration
	Spot welding	 <p style="text-align: right;">18YU11</p>
	MIG spot welding	 <p style="text-align: right;">18YV17</p>
	MIG arc welding (continuous)	 <p style="text-align: right;">18YU18</p>
	Braze welding	 <p style="text-align: right;">18YV99</p>
	MIG plug welding ■ indicates two panels to be welded ■ indicates three panels to be welded	 <p style="text-align: right;">18YU29</p>

EXPLANATION OF WELDED PANEL REPLACEMENT

The replacement parts to be used in the welded panel replacement are indicated here:

- "ASSEMBLY" indicates that the assembly part (for example, **A**) is to be used without alteration.
- "CUT" indicates that the replacement panel (for example, **A**) is to be cut into easy-to-use sections and then used for replacement.
- "PART" indicates that only the damaged section of the assembly part (for example, **A**) is to be replaced by a section of the replacement panel.

Note that, in "CUT" and "PART" replacement, the location of the cutting must be selected carefully, considering both the construction of the vehicle and the level of strength following repairs.

Shows the part names keyed by symbols in the illustration.

3-62 WELDED PANEL REPLACEMENT - Side Sill, Outer

SIDE SILL, OUTER

REPLACEMENT CONFIGURATION	CUT (A B)	PART NAME
		A Side sill, outer
		B Side sill reinforcement
		C Front sidemember, rear
		D Front floor side sill, inner, front
		E Front pillar
		F Center pillar, outer
		G Rear wheelhouse, inner
		H Quarter panel, inner, lower
		I Front floor pan
		J Front floor side sill, inner
		K Rear seat crossmember
		L Rear floor sidemember
		M Quarter outer front extension

No.	Welded parts
1	A + E
2	A + B + E
3	A + D + E
4	A + C + D
5	A + D + I
6	A + D + J
7	A + B + J
8	A + I + J
9	A + J + L
10	A + B + F
11	A + F + L
12	A + I + L

The welded components are indicated by using the designations given in the illustration. For example, "**A** + **B**" indicates that component **A** and component **B** shown in the illustration are welded together.

★ This mark is used to indicate the weld of a part which is especially important to the vehicle body from a structural viewpoint: therefore, the weld must be made securely.

The weld point classification numbers are indicated:

- indicates one panel to be replaced.
- indicates two (or more) panels to be replaced.

For weld points (flange parts, etc.) on the same surface, only weld points at both ends are indicated; weld points between those end weld points are omitted.

Indicates a view as seen from the direction of the finger. "E" indicates that the view as seen from the direction of "E" is shown in figure E.

WELDED PANEL REPLACEMENT - Side Sill 3-71

Indicates cross section and its position. If arrow (↖) is directed from rear to front in drawing, cross section viewed from front side of drawing is shown at **A**.

Indicates the welding identification number and the number of welds.

Parts indicated by a light black colour are panels to be replaced.

Indicates cross section and its position. If arrow (↖) is directed from rear to front in drawing, cross section viewed from front side of drawing is shown at **A**.

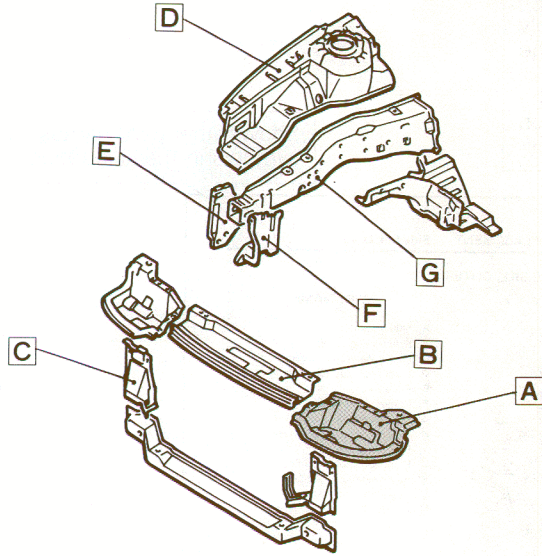
Indicates the welding identification number and the number of welds.

HEADLAMP HOUSING

REPLACEMENT CONFIGURATION

ASSEMBLY (A)

PART NAME



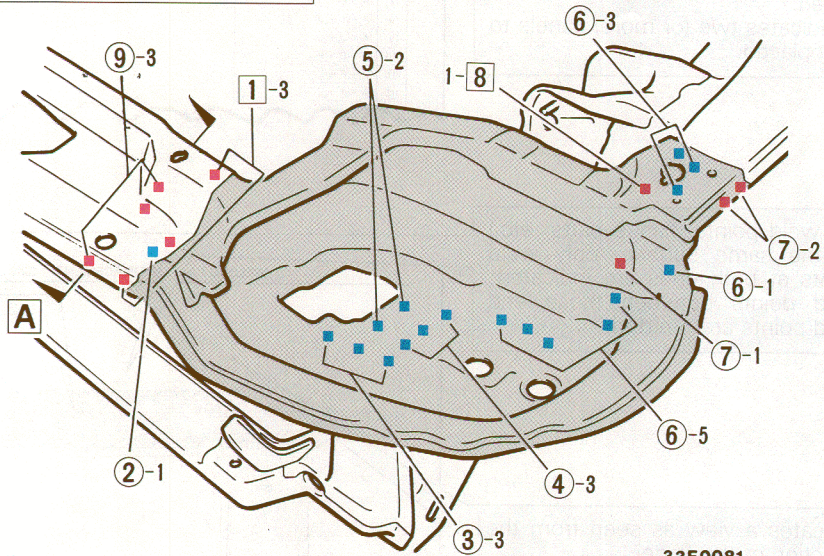
- A Headlamp housing
- B Front end upper bar
- C Front end crossmember brace
- D Front wheelhouse, inner
- E Front end gusset, outer
- F Front end gusset, inner
- G Front sidemember

31F0031

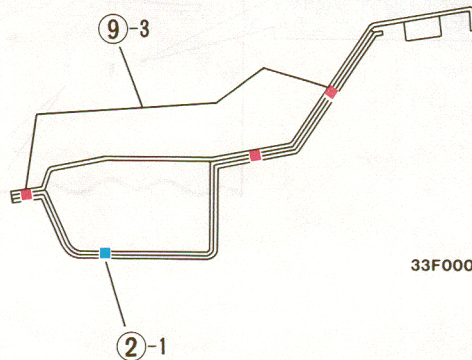
No. Welded parts

- | | |
|---|-------|
| 1 | A + B |
| 2 | A + B |
| 3 | A + C |
| 4 | A + E |
| 5 | A + G |
| 6 | A + D |
| 7 | A + D |
| 8 | A + D |
| 9 | A + B |

REPAIR WELDS

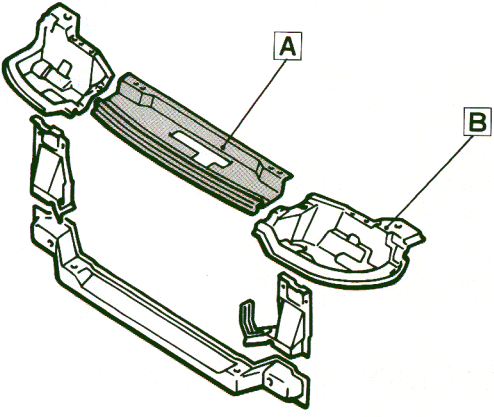


33F0081



33F0003

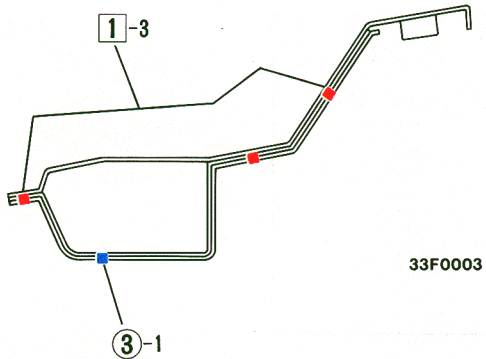
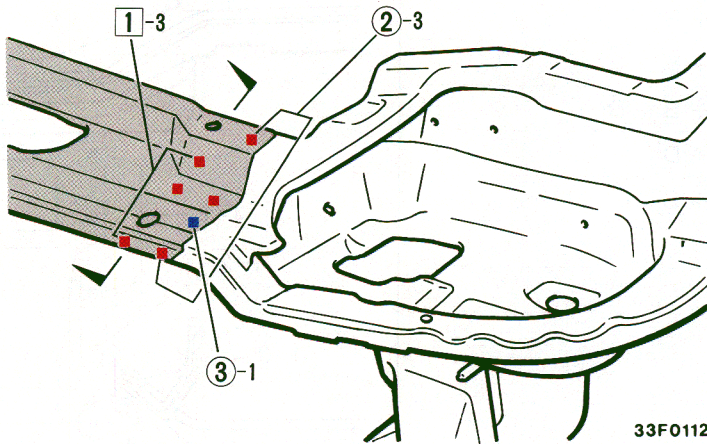
FRONT END UPPER BAR

REPLACEMENT CONFIGURATION	ASSEMBLY (A)	PART NAME
		<p>A Front end upper bar B Headlamp housing</p>
		31F0031

3

No.	Welded parts
1	A + B
2	A + B
3	A + B

REPAIR WELDS

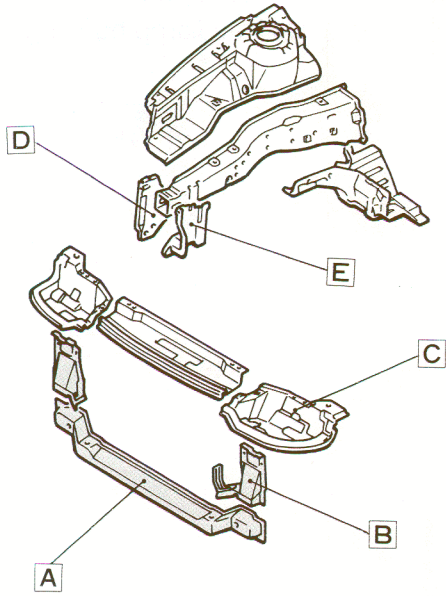


FRONT END CROSSMEMBER

REPLACEMENT CONFIGURATION

ASSEMBLY (A B)

PART NAME

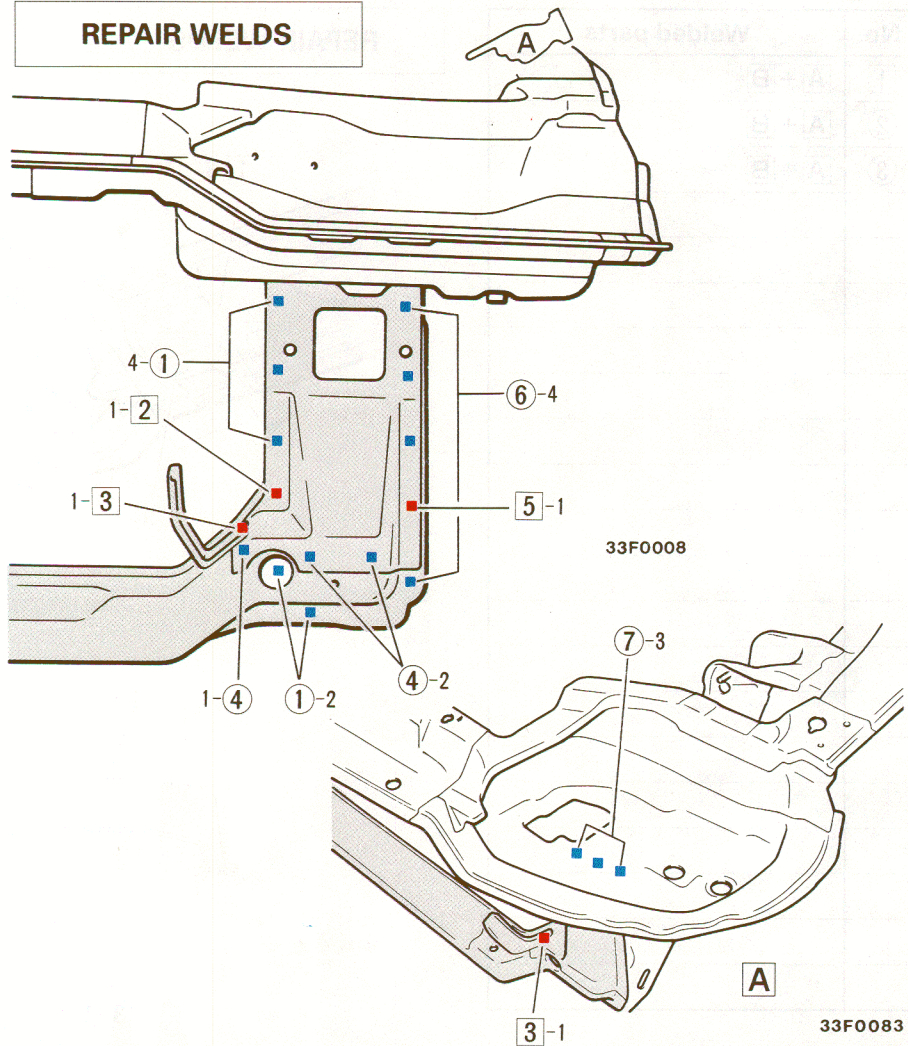


- A Front end crossmember
- B Front end crossmember brace
- C Headlamp housing
- D Front end gusset, outer
- E Front end gusset, inner

31F0031

No.	Welded parts
①	B + E
②	A + B + E
③	A + B
④	A + B
⑤	A + B + D
⑥	B + D
⑦	B + C

REPAIR WELDS

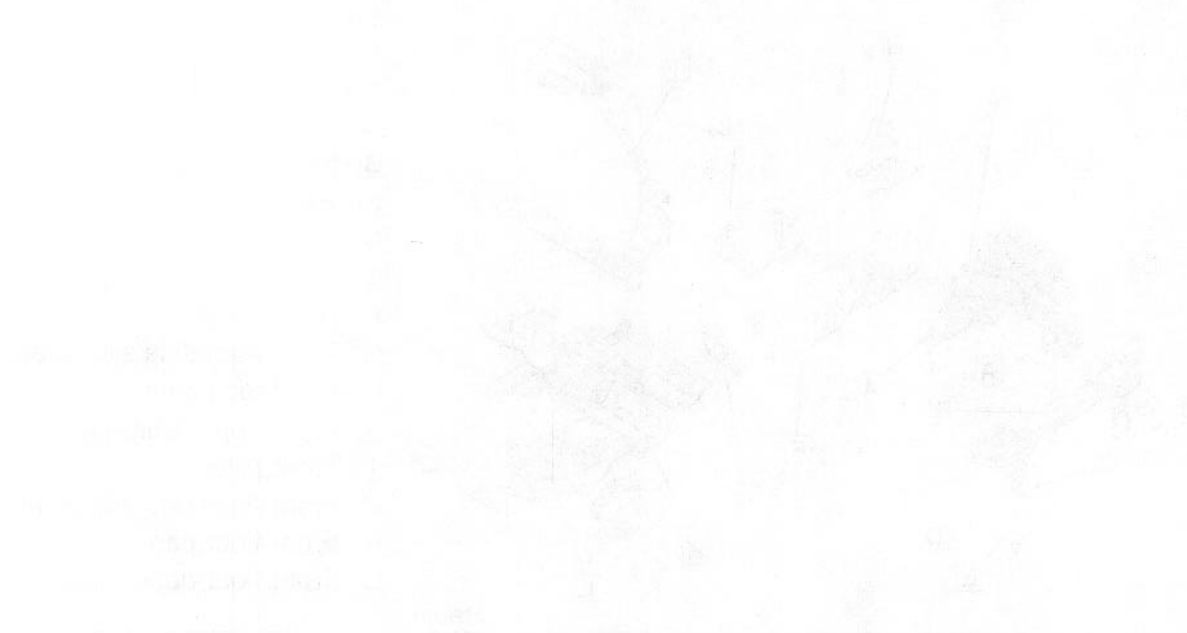


33F0008

33F0083

NOTES

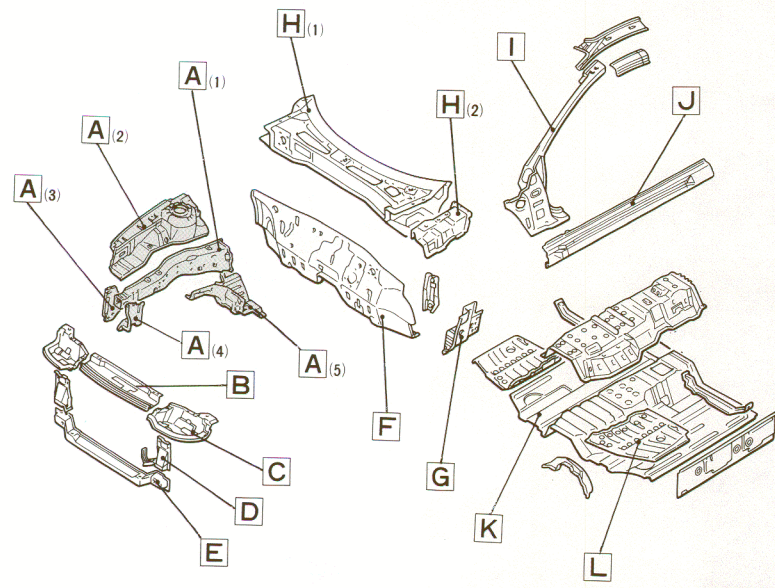
REPAIR SHIELD IN BUSHING
WAS 1/2" (1.27 cm)
REPLACEMENT
ACT 1/2" (1.27 cm)



Part No.	Description	QTY
1-2-10	BRACKET	2
1-2-11	CROSSMEMBER	1
1-2-12	BUSHING	2
1-2-13	WASHER	2
1-2-14	NUT	2

Part No.	Description	QTY
1-2-15	BRACKET	2
1-2-16	CROSSMEMBER	1
1-2-17	BUSHING	2
1-2-18	WASHER	2
1-2-19	NUT	2
1-2-20	BRACKET	2
1-2-21	CROSSMEMBER	1
1-2-22	BUSHING	2
1-2-23	WASHER	2
1-2-24	NUT	2

FENDER SHIELD (ASSEMBLY)

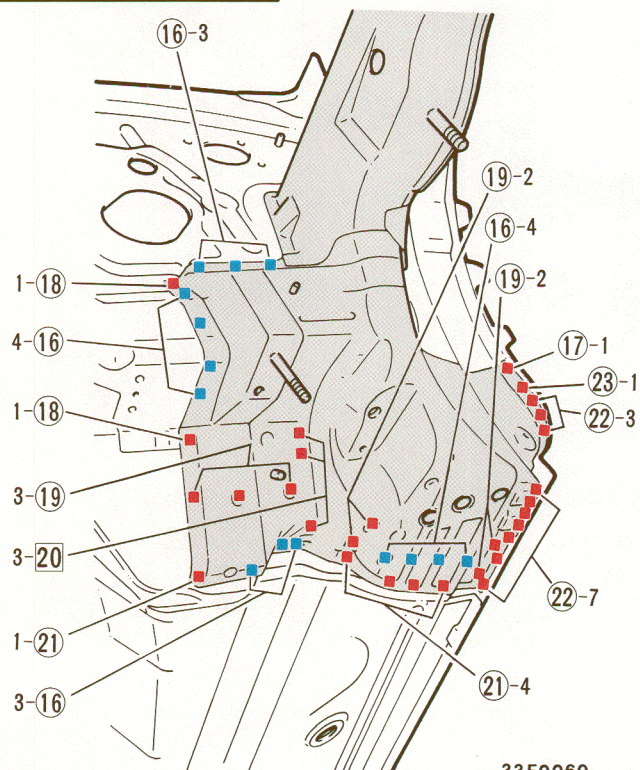
REPLACEMENT CONFIGURATION	ASSEMBLY (A ₍₁₎ — A ₍₅₎)	PART NAME
		<ul style="list-style-type: none"> A₍₁₎ Front sidemember A₍₂₎ Front wheelhouse, inner A₍₃₎ Front end gusset, outer A₍₄₎ Front end gusset, inner A₍₅₎ Front sidemember, rear B Front end upper bar C Headlamp housing D Front end crossmember brace E Front end crossmember F Dash panel G Front floor side sill, inner, front H₍₁₎ Cowl top panel H₍₂₎ Front upper frame extension I Front pillar J Front floor side sill, outer K Front floor pan L Front floor upper plate

31F0031

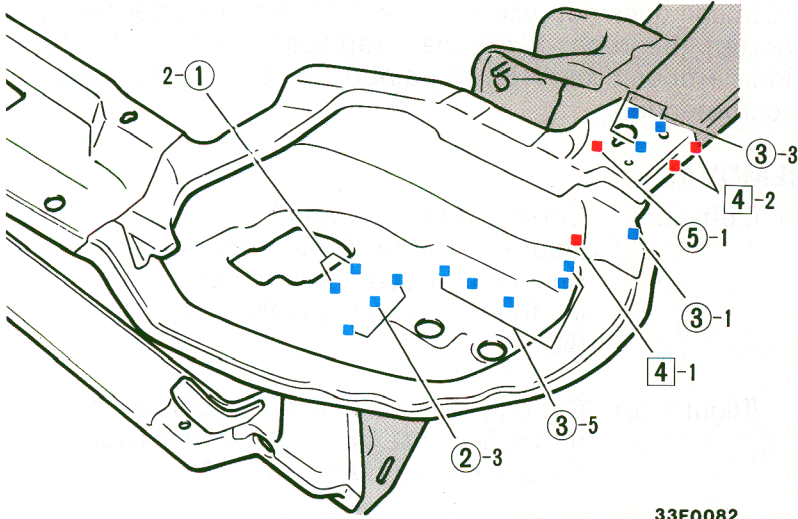
No.	Welded parts
①	A ₍₁₎ + C
②	A ₍₃₎ + C
③	A ₍₂₎ + C
4	A ₍₂₎ + C
⑤	A ₍₂₎ + C
⑥	A ₍₄₎ + D
⑦	A ₍₄₎ + D + E
⑧	A ₍₄₎ + E
⑨	A ₍₃₎ + E
⑩	A ₍₃₎ + D + E
⑪	A ₍₃₎ + D
⑫	A ₍₂₎ + H ₍₂₎
⑬	A ₍₂₎ + H ₍₂₎
⑭	A ₍₁₎ + F
⑮	A ₍₂₎ + F + H ₍₁₎
16	A ₍₁₎ + A ₍₂₎ + F
16	A ₍₅₎ + F
⑰	A ₍₅₎ + F + G
⑱	A ₍₅₎ + F
⑲	A ₍₅₎ + F + L
20	A ₍₅₎ + F

No.	Welded parts
⑳	A ₍₅₎ + F + K
㉑	A ₍₅₎ + G + J
㉒	A ₍₅₎ + G + I
㉓	A ₍₅₎ + G + I
㉔	A ₍₂₎ + F

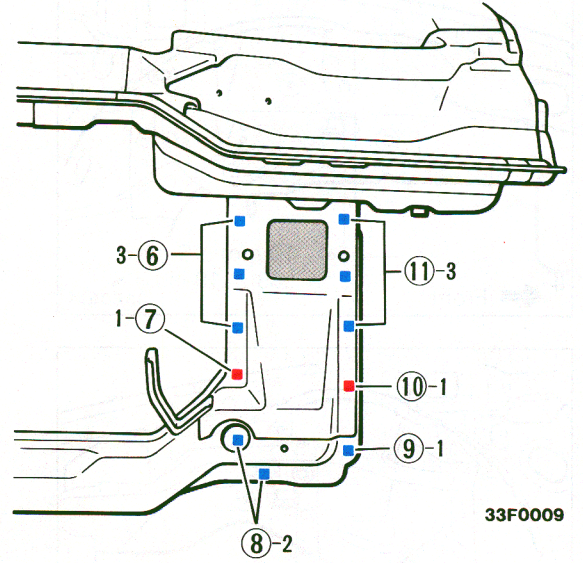
REPAIR WELDS



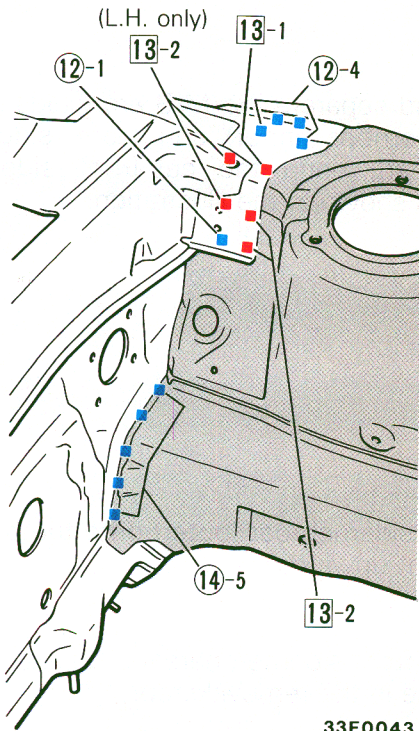
33F0060



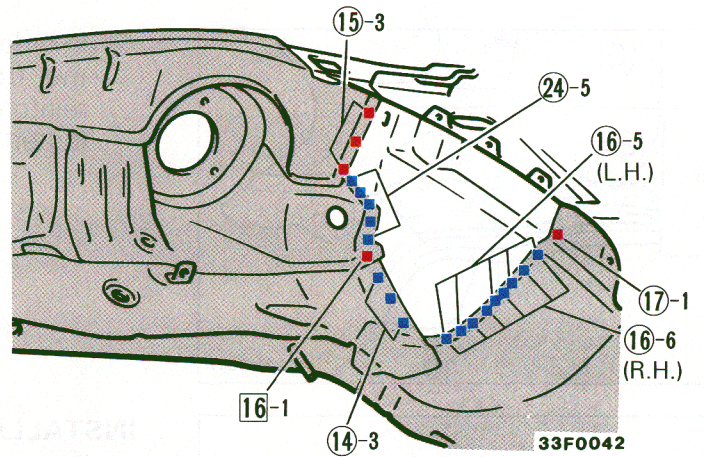
33F0082



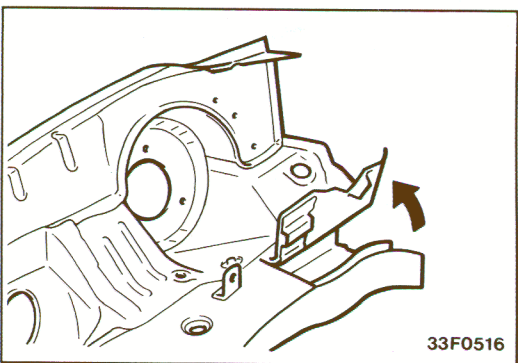
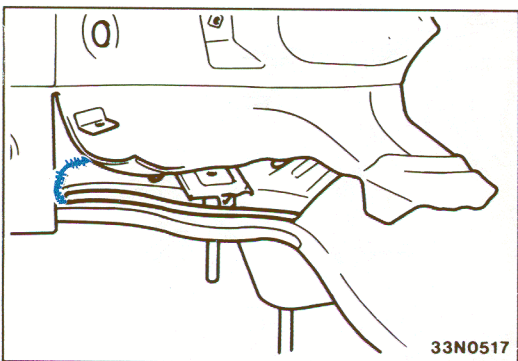
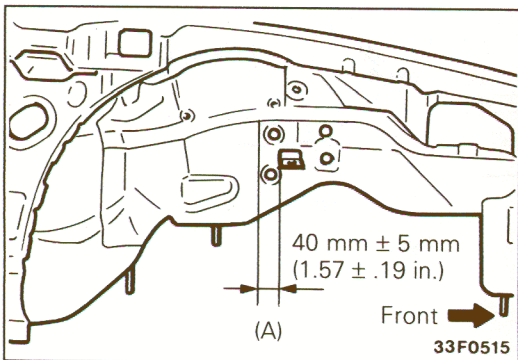
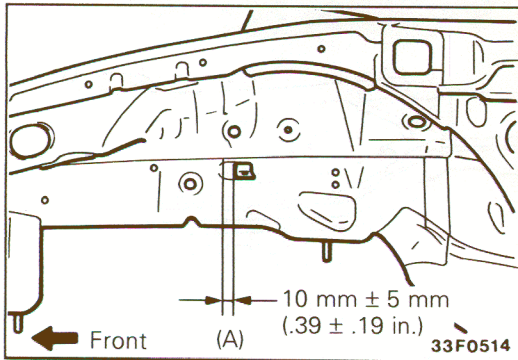
33F0009



33F0043



33F0042



NOTES WITH REGARD TO REPAIR WORK

If damage does not extend to the front sidemember (rear), to shorten the repair time, part replacement that the front sidemember (rear) is remained to the body side is recommended.

REMOVAL

- (1) (Left side): Cut the front sidemember (outer) and front sidemember reinforcement (outer) at the illustrated location. 10 mm ± 5 mm (.39 ± .19 in.) forward from the brake hose bracket end (A).
- (Right side): Cut only the front sidemember (outer). 40 mm ± 5 mm (1.57 ± .19 in.) backward from the brake hose bracket end (A).

- (2) In order to cut and separate the MIG arc welds between the front sidemember (inner) and front sidemember reinforcement (rear), bend the cut front sidemember (outer) upward as shown in the illustration.

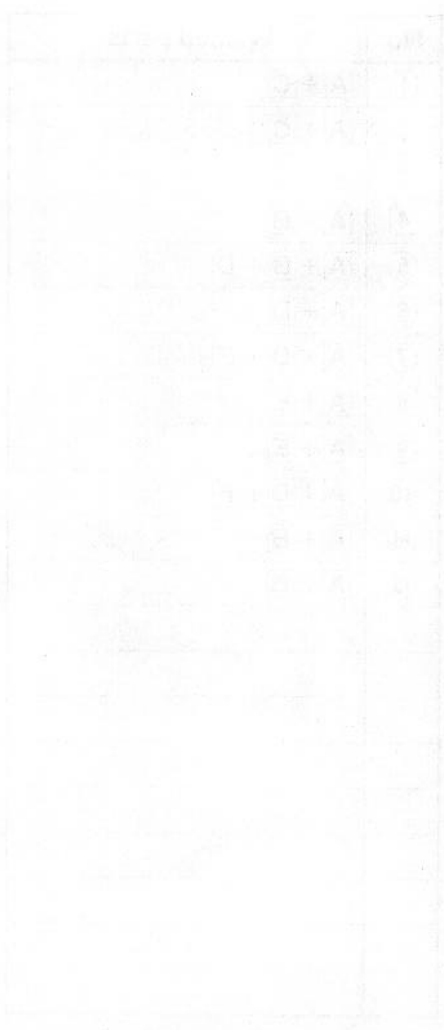
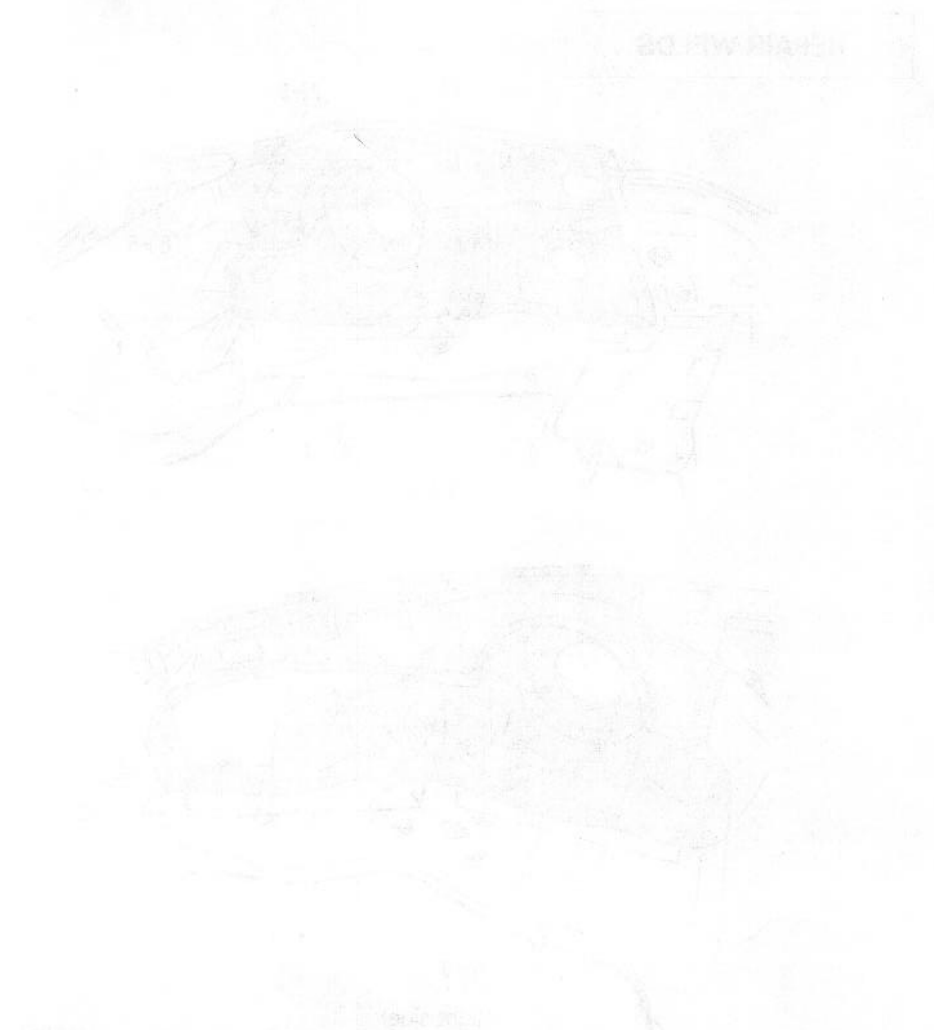
INSTALLATION

Install the new front sidemember (outer) onto the body with illustrated portion bent upward.

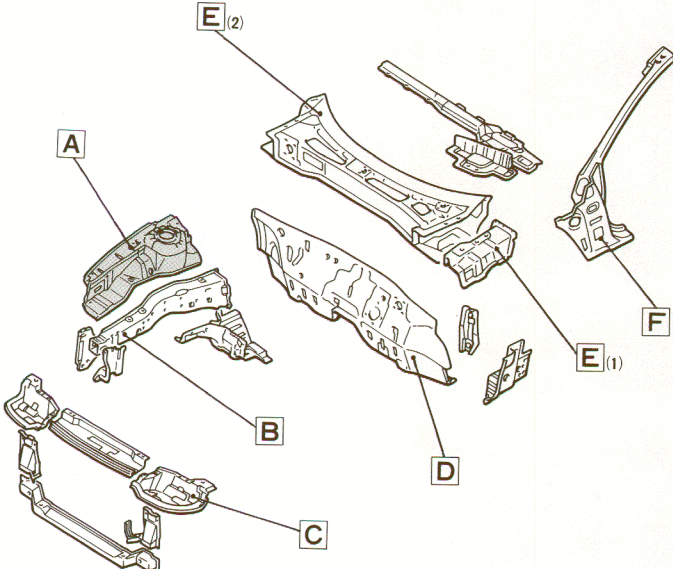
NOTE

Cut the left and right front sidemembers (outer) exactly at the same location as done in the removal step.

NOTES



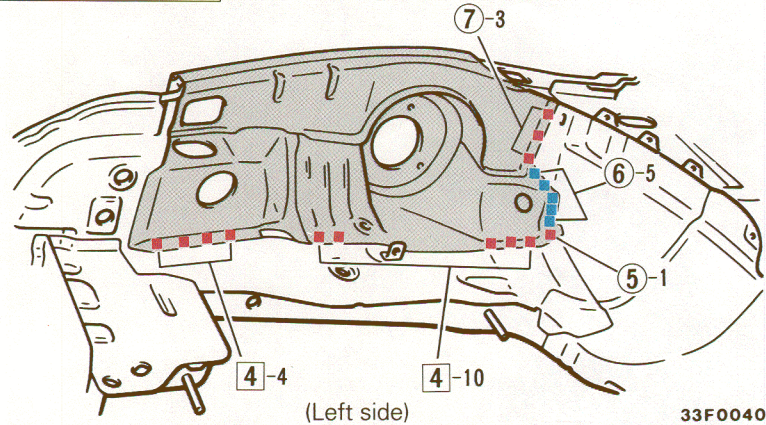
FENDER SHIELD (PART)

REPLACEMENT CONFIGURATION	PART (A)	PART NAME
		<p>A Front wheelhouse, inner B Front sidemember C Headlamp housing D Dash panel E⁽¹⁾ Front upper frame extension E⁽²⁾ Cowl top panel F Front pillar</p>

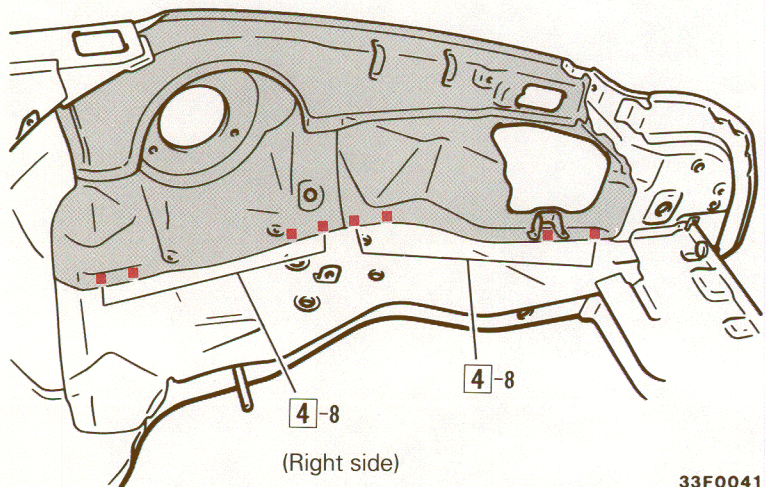
31F0031

No.	Welded parts
①	A + C
②	A + C
③	A + C
④	A + B
⑤	A + B + D
⑥	A + D
⑦	A + D + E ⁽²⁾
⑧	A + E ⁽¹⁾
⑨	A + E ⁽¹⁾
⑩	A + D + F
⑪	A + B
⑫	A + B

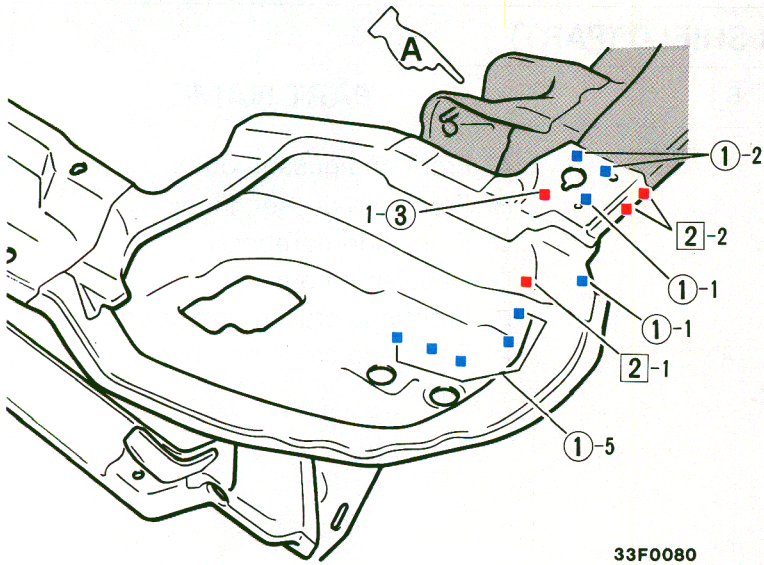
REPAIR WELDS



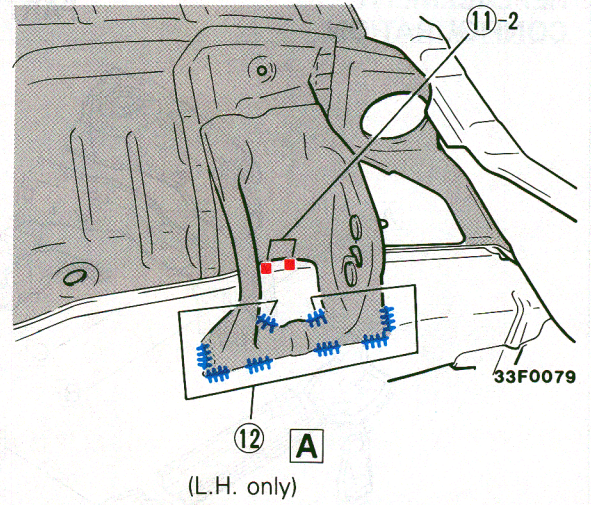
33F0040



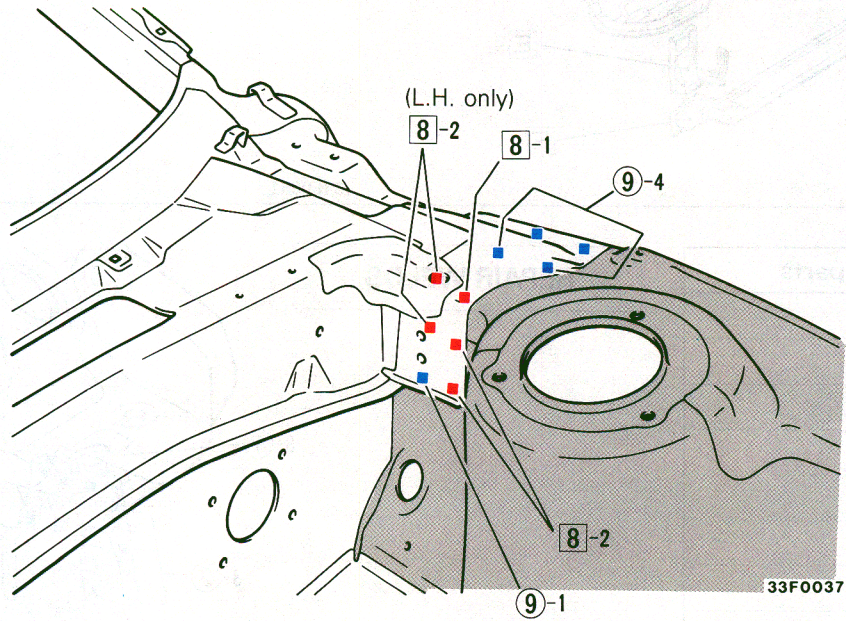
33F0041



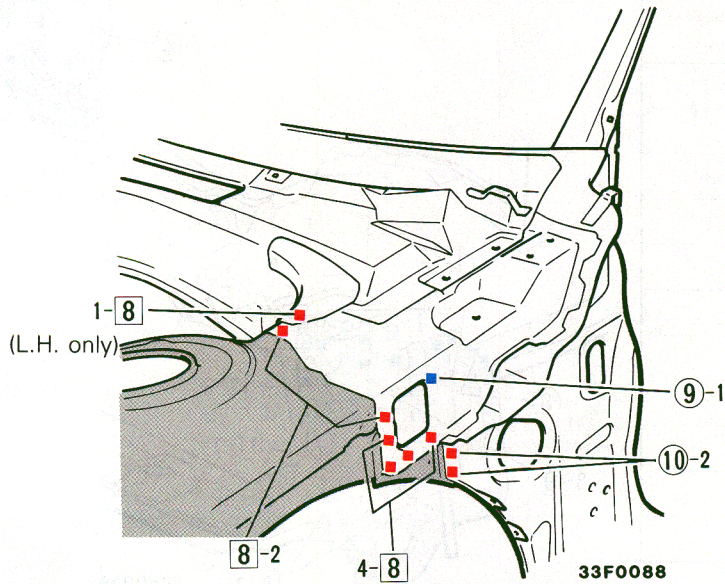
33F0080



(L.H. only)

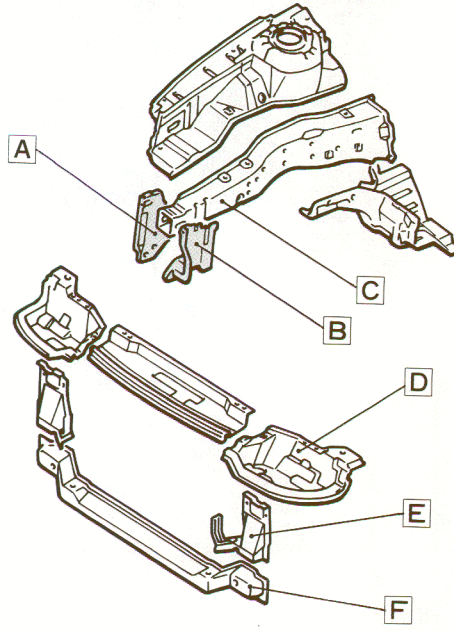


33F0037



33F0088

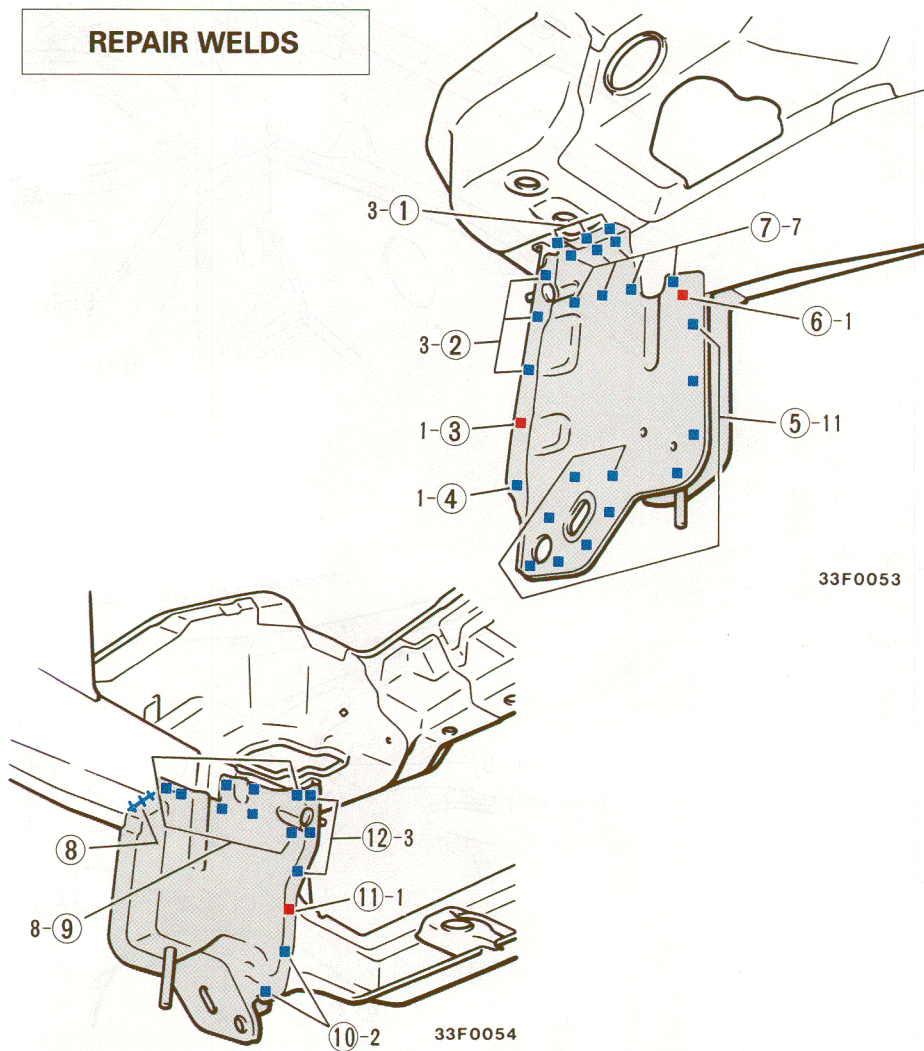
FENDER SHIELD (PART)

REPLACEMENT CONFIGURATION	PART (A B)	PART NAME
	A	Front end gusset, outer
	B	Front end gusset, inner
	C	Front sidemember
	D	Headlamp housing
	E	Front end crossmember brace
	F	Front end crossmember

31F0031

No.	Welded parts
①	A + D
②	A + E
③	A + E + F
④	A + F
⑤	A + B
⑥	A + C
⑦	A + C
⑧	B + C
⑨	B + C
⑩	B + F
⑪	B + E + F
⑫	B + E

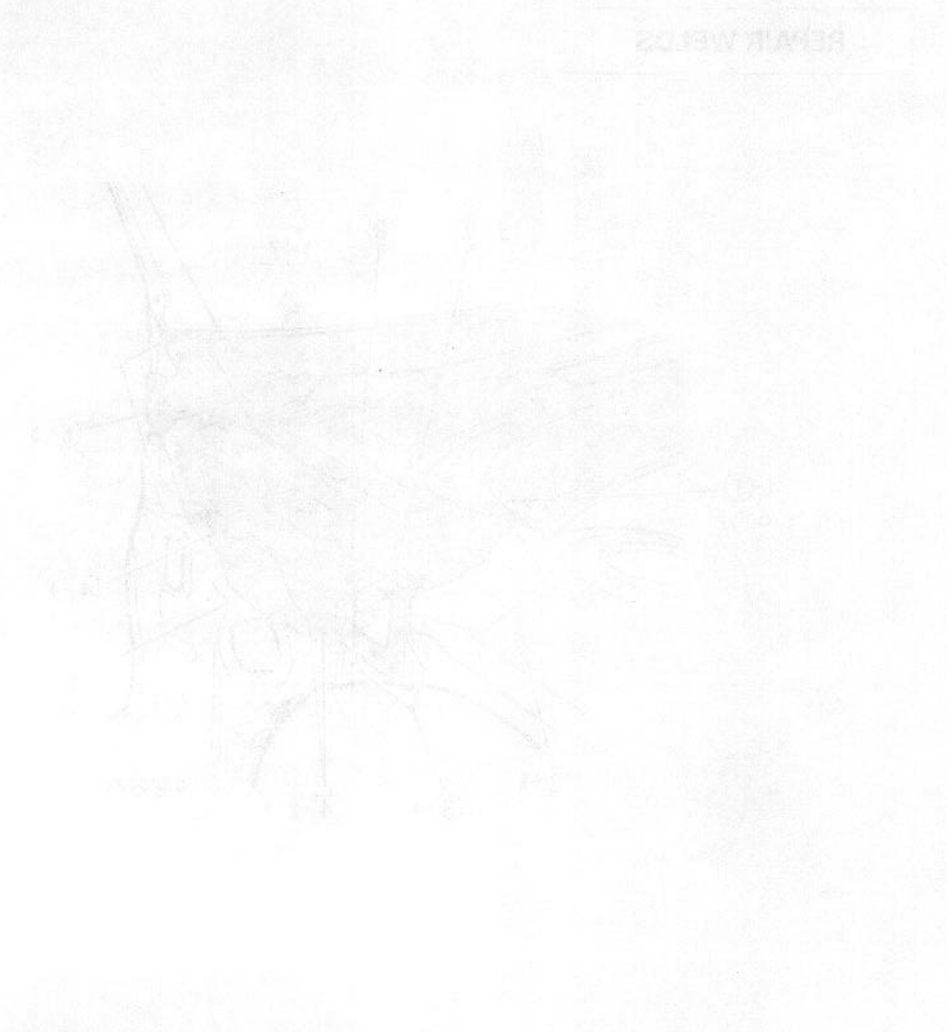
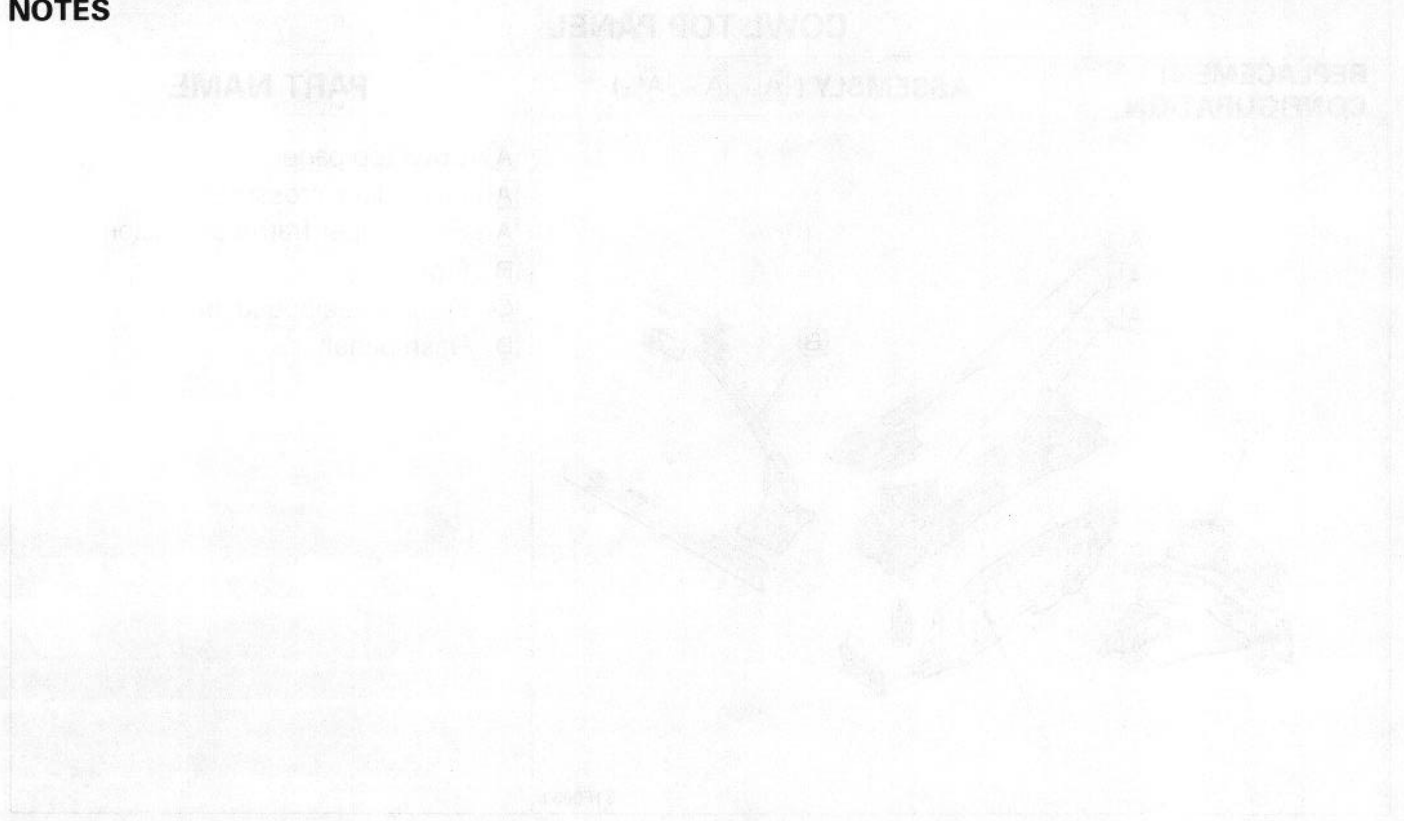
REPAIR WELDS



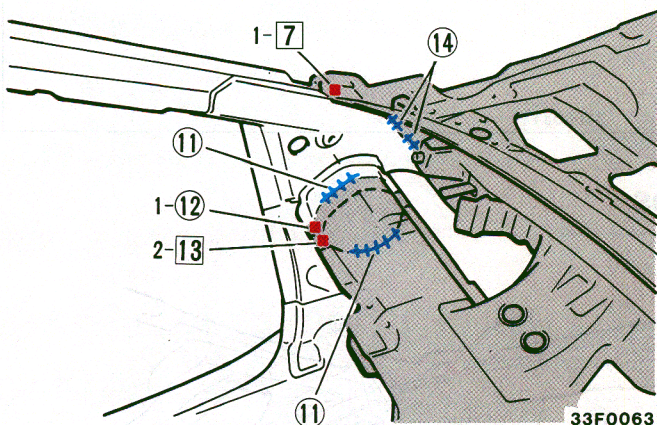
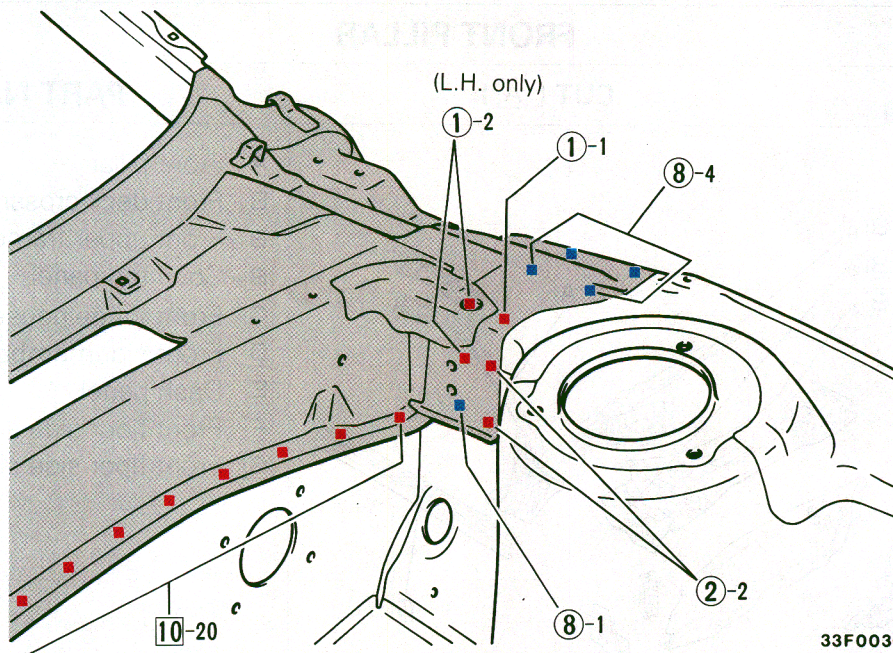
33F0053

33F0054

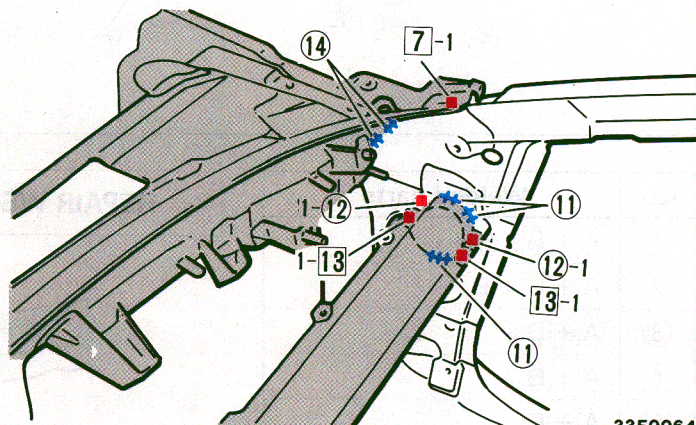
NOTES



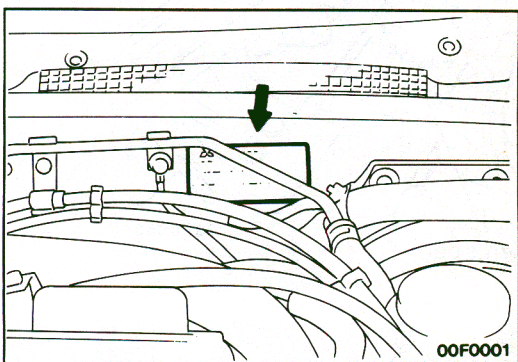
No.	Quantity	Part Name
1	1	Welded Panel
2	1	Welded Panel
3	1	Welded Panel
4	1	Welded Panel
5	1	Welded Panel
6	1	Welded Panel
7	1	Welded Panel
8	1	Welded Panel
9	1	Welded Panel
10	1	Welded Panel
11	1	Welded Panel
12	1	Welded Panel
13	1	Welded Panel
14	1	Welded Panel
15	1	Welded Panel
16	1	Welded Panel
17	1	Welded Panel
18	1	Welded Panel
19	1	Welded Panel
20	1	Welded Panel
21	1	Welded Panel
22	1	Welded Panel
23	1	Welded Panel
24	1	Welded Panel
25	1	Welded Panel
26	1	Welded Panel
27	1	Welded Panel
28	1	Welded Panel
29	1	Welded Panel
30	1	Welded Panel
31	1	Welded Panel
32	1	Welded Panel
33	1	Welded Panel
34	1	Welded Panel
35	1	Welded Panel
36	1	Welded Panel
37	1	Welded Panel
38	1	Welded Panel
39	1	Welded Panel
40	1	Welded Panel
41	1	Welded Panel
42	1	Welded Panel
43	1	Welded Panel
44	1	Welded Panel
45	1	Welded Panel
46	1	Welded Panel
47	1	Welded Panel
48	1	Welded Panel
49	1	Welded Panel
50	1	Welded Panel



(Left side)



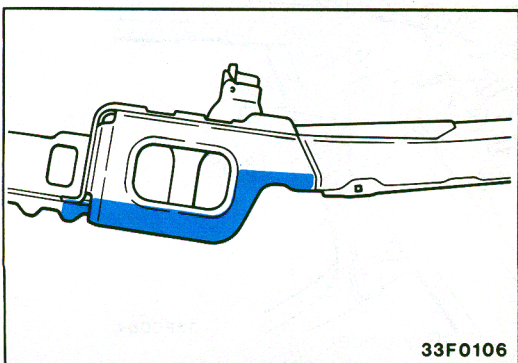
(Right side)



NOTES WITH REGARD TO REPAIR WORK

Vehicle information code plate is riveted onto the bulkhead in the engine compartment.

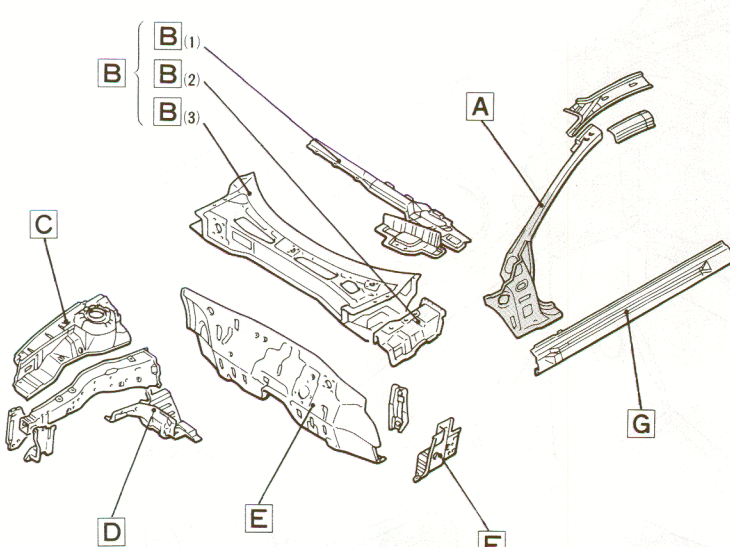
The plate shows model code, engine model, transaxle model, and body color code.



INSTALLATION

- (1) Apply a coating of silicon rubber sealer to the front pillar at the body side where shown in the illustration.

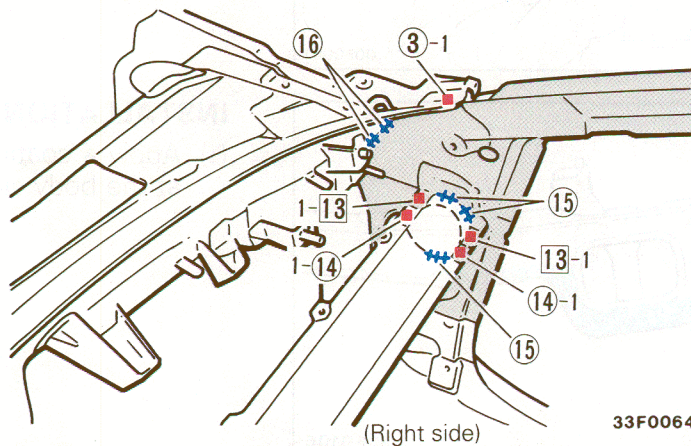
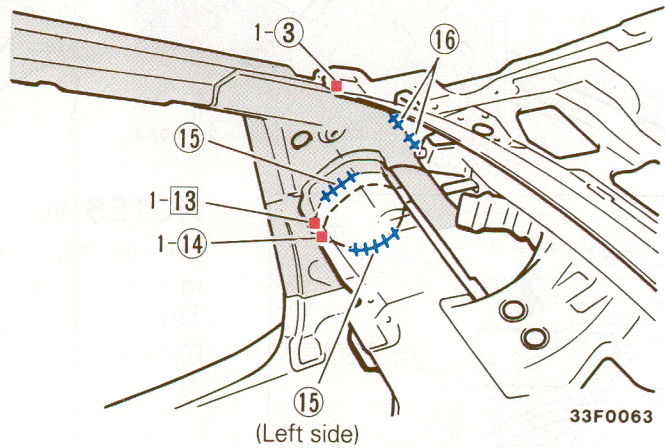
FRONT PILLAR

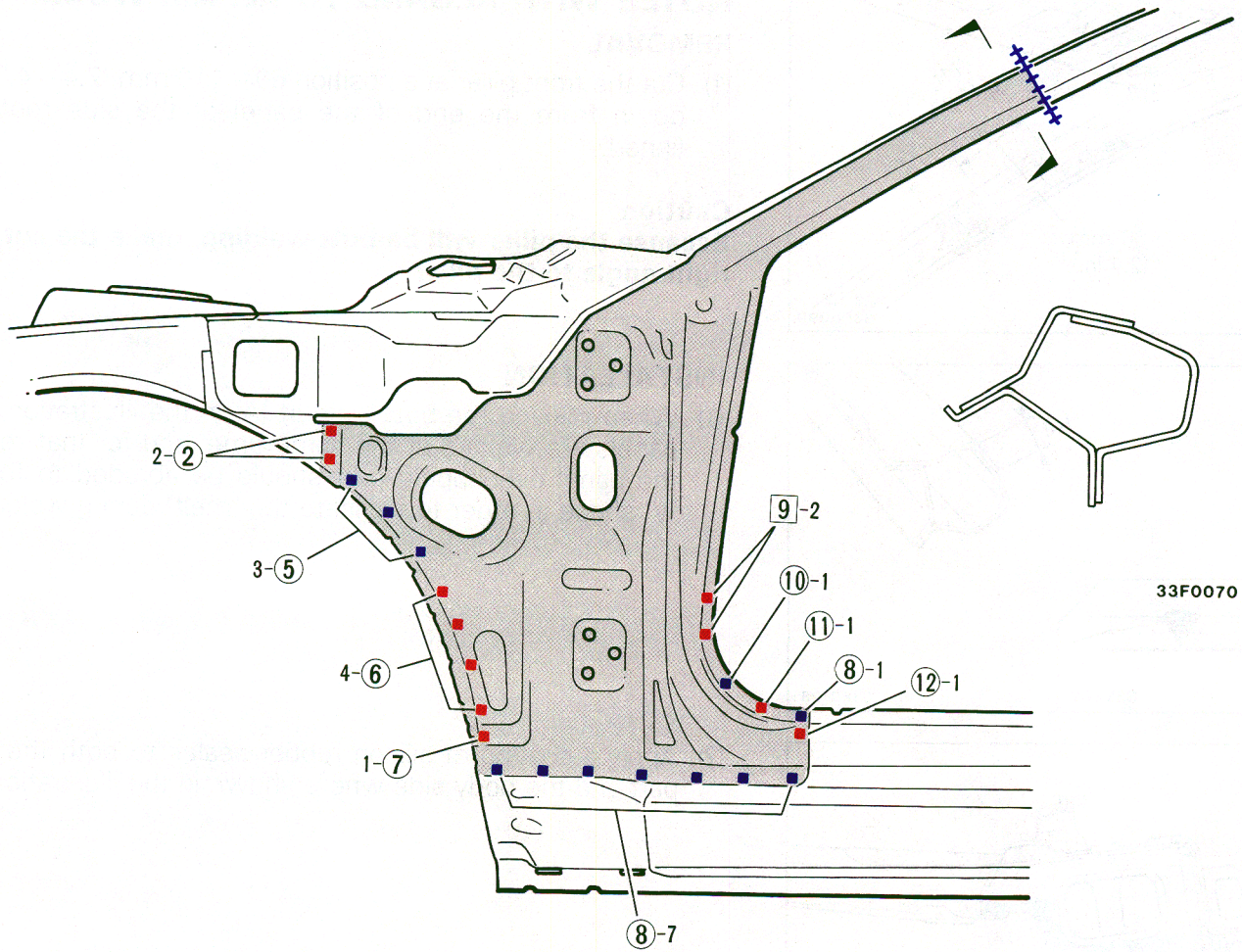
REPLACEMENT CONFIGURATION	CUT (A)	PART NAME
		<ul style="list-style-type: none"> A Front pillar B₍₁₎ Front deck crossmember B₍₂₎ Front upper frame extension B₍₃₎ Cowl top panel C Front wheelhouse, inner D Front sidemember, rear E Dash panel F Front floor side sill, inner, front G Front floor side sill, outer

31F0031

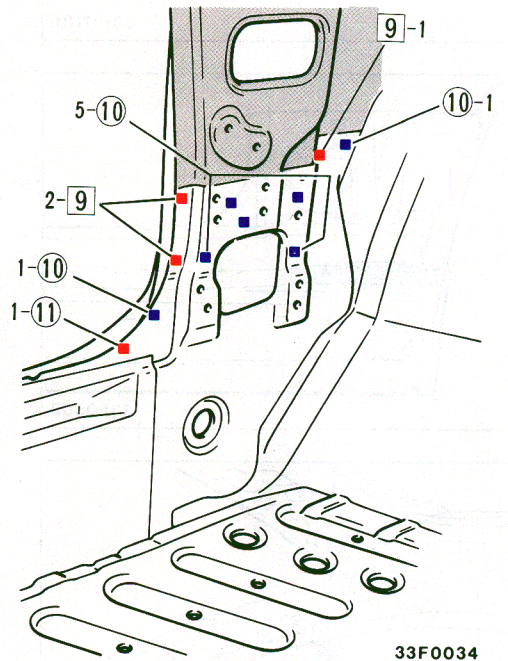
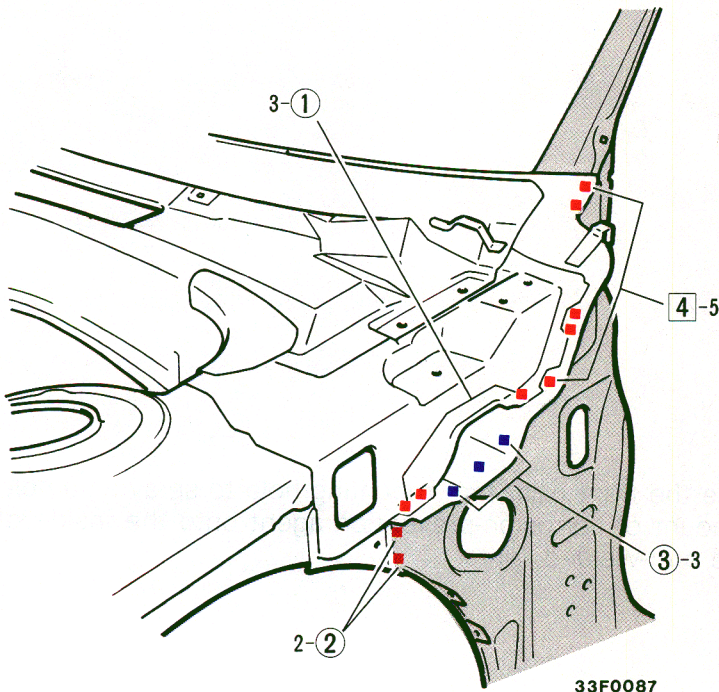
No.	Welded parts
①	A + B ₍₂₎ + B ₍₃₎
②	A + C + E
③	A + B ₍₃₎
④	A + B ₍₃₎
⑤	A + E
⑥	A + E + F
⑦	A + D + F
⑧	A + G
⑨	A + F
⑩	A + F
⑪	A + F + G
⑫	A + G
⑬	A + B ₍₁₎
⑭	A + B ₍₁₎
⑮	A + B ₍₁₎
⑯	A + B ₍₃₎

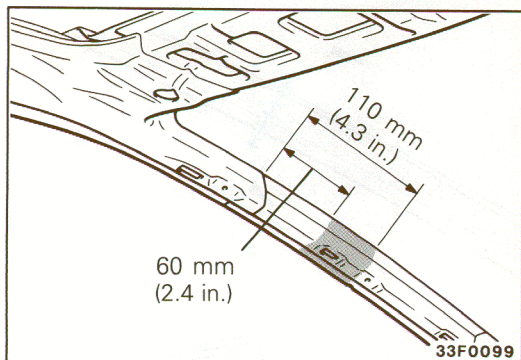
REPAIR WELDS





33F0071





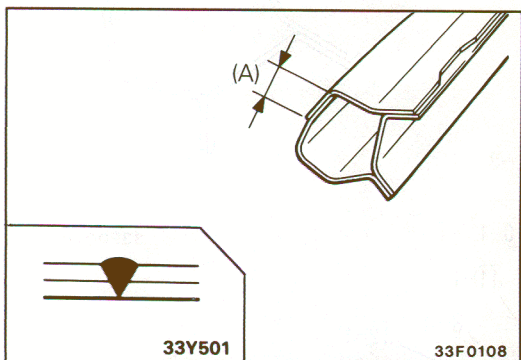
NOTES WITH REGARD TO REPAIR WORK

REMOVAL

- (1) Cut the front pillar at a position 60 – 110 mm (2.4 – 4.3 in.) down from the end of the panel of the side roof rail (inner).

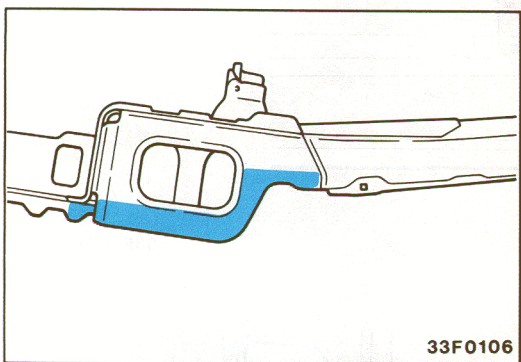
Caution

Because the pillar will be butt-welding, make the cut at a right angle to the pillar.

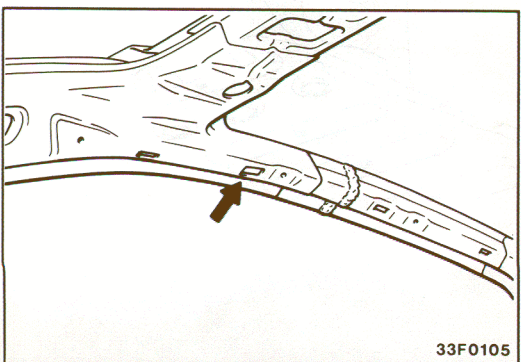
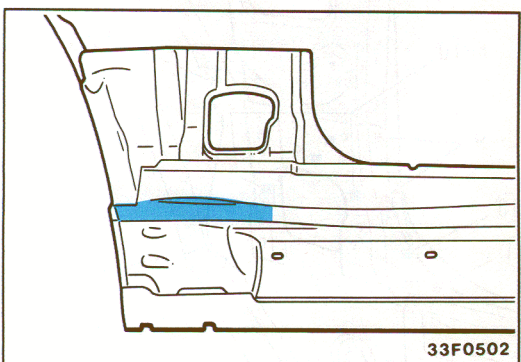


INSTALLATION

- (1) When making the butt weld at (A) in the illustration, two panels are welded at the same time, and for that reason the panel overlapping part should be abraded to form a "V" shape in order to facilitate the "melt" during welding.

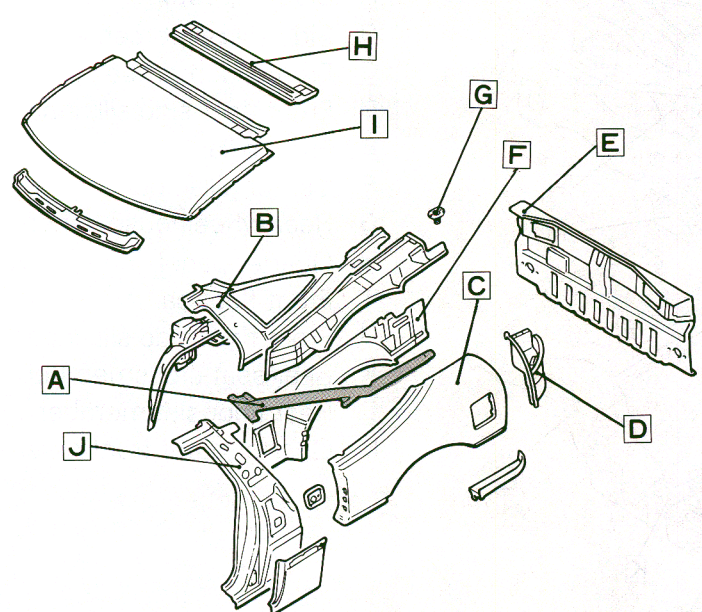


- (2) Apply a coating of silicon rubber sealer to both the new part and the body side where shown in the illustration.



- (3) Use the front pillar trim mounting hole to spray an ample amount of corrosion-prevention agent onto the inside of the butt-welded joints.

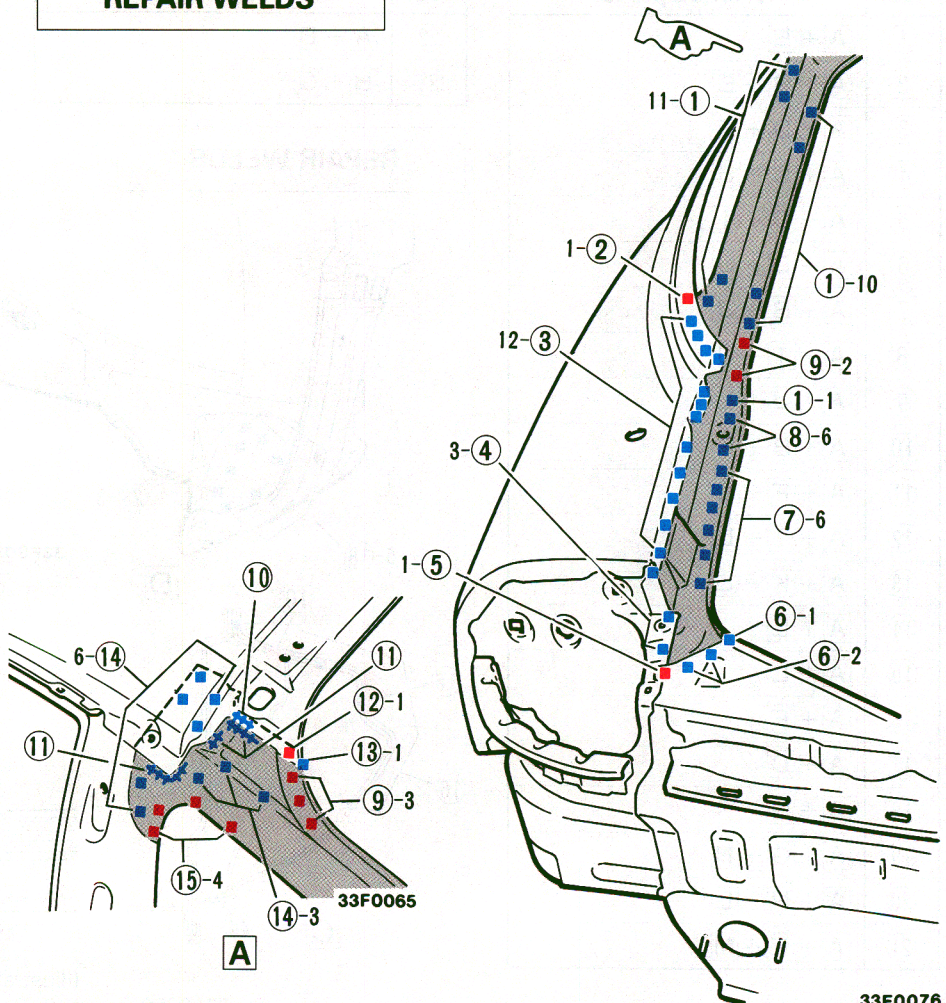
REAR PILLAR, OUTER

REPLACEMENT CONFIGURATION	ASSEMBLY (A)	PART NAME
		A Rear pillar, outer
		B Quarter panel, inner, upper
		C Quarter panel, outer
		D Rear lamp housing
		E Rear end panel
		F Quarter panel, inner, lower
		G Drain pipe
		H Rear roof rail
		I Roof panel
		J Center pillar, outer

31F0031

No.	Welded parts
①	A + B
②	A + B + C
③	A + C
④	A + D
⑤	A + D + E
⑥	A + E
⑦	A + F
⑧	A + G
⑨	A + B
⑩	A + H
⑪	A + I
⑫	A + B + I
⑬	A + I
⑭	A + J
⑮	A + B + J

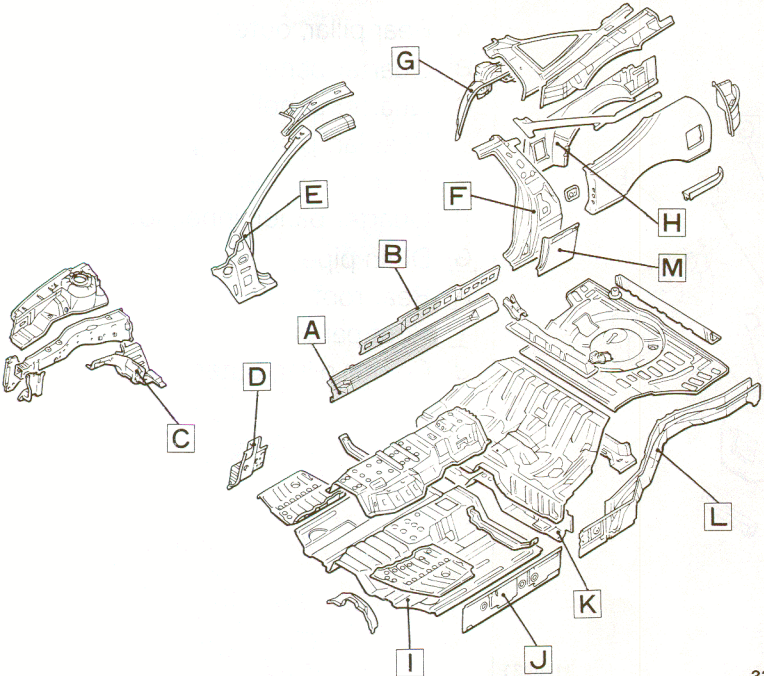
REPAIR WELDS



33F0065

33F0076

SIDE SILL, OUTER

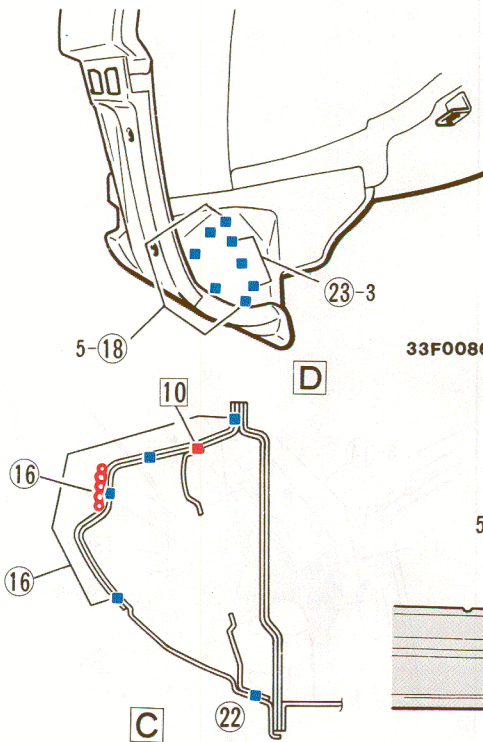
REPLACEMENT CONFIGURATION	CUT (A B)	PART NAME
		
		<ul style="list-style-type: none"> A Side sill, outer B Side sill reinforcement C Front sidemember, rear D Front floor side sill, inner, front E Front pillar F Center pillar, outer G Rear wheelhouse, inner H Quarter panel, inner, lower I Front floor pan J Front floor side sill, inner K Rear seat crossmember L Rear floor sidemember M Quarter outer front extension

33F0109

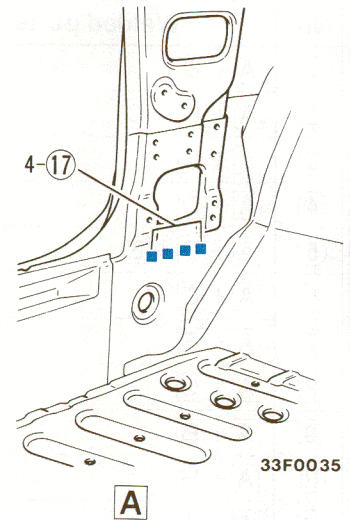
No.	Welded parts
①	A + E
②	A + B + E
③	A + D + E
④	A + C + D
⑤	A + D + I
⑥	A + D + J
⑦	A + B + J
⑧	A + I + J
⑨	A + J + L
⑩	A + B + F
⑪	A + F + L
⑫	A + I + L
⑬	A + K + L
⑭	A + L
⑮	A + L
⑯	A + F
⑰	A + D
⑱	A + G
⑲	A + G + H
⑳	A + H + L
㉑	A + F + M

No.	Welded parts
⑳	A + B
㉑	B + G

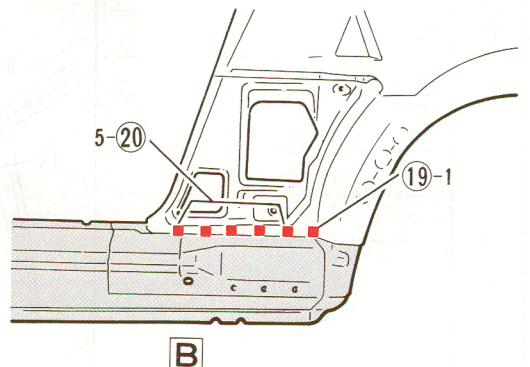
REPAIR WELDS



33F0069

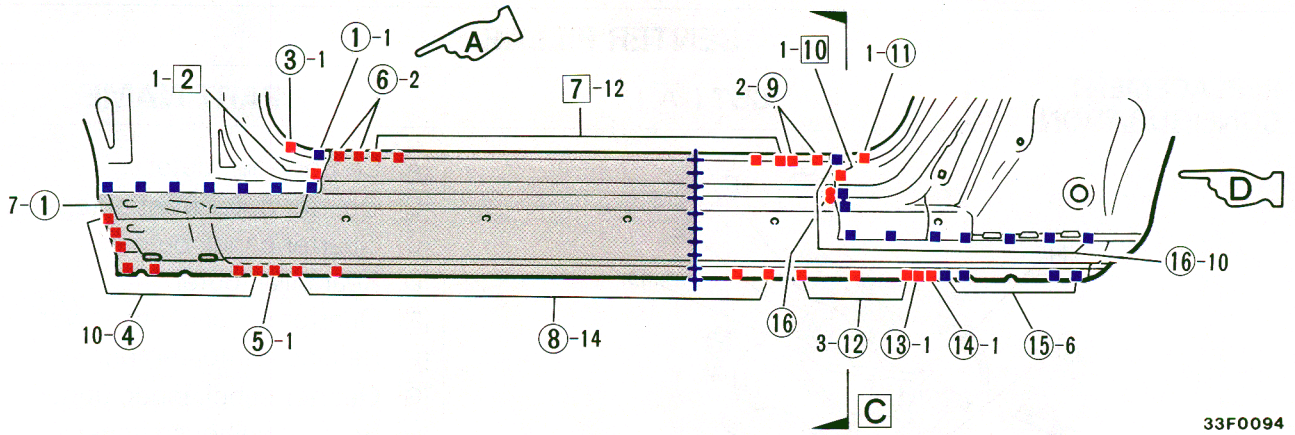


A

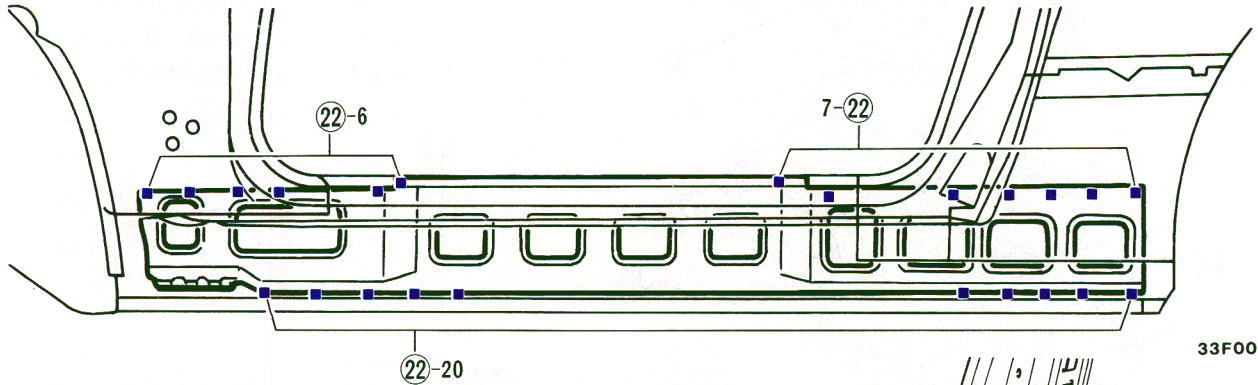


B

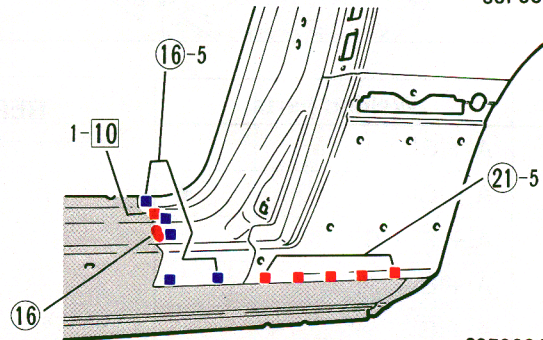
(Illustration shows the center pillar outer panel in the removed condition) 33F0068



33F0094

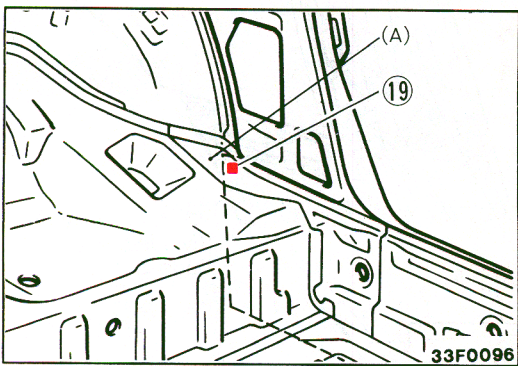


33F0095



33F0004

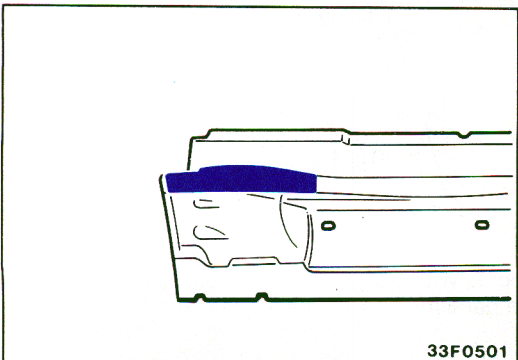
(Models without a side garnish)



33F0096

**NOTES WITH REGARD TO REPAIR WORK
REMOVAL**

- (1) Because the welded point ⑱ is located under the panel (A) and cannot be detected directly, remove the center pillar at first and cut the spot weld from the vehicle outside.

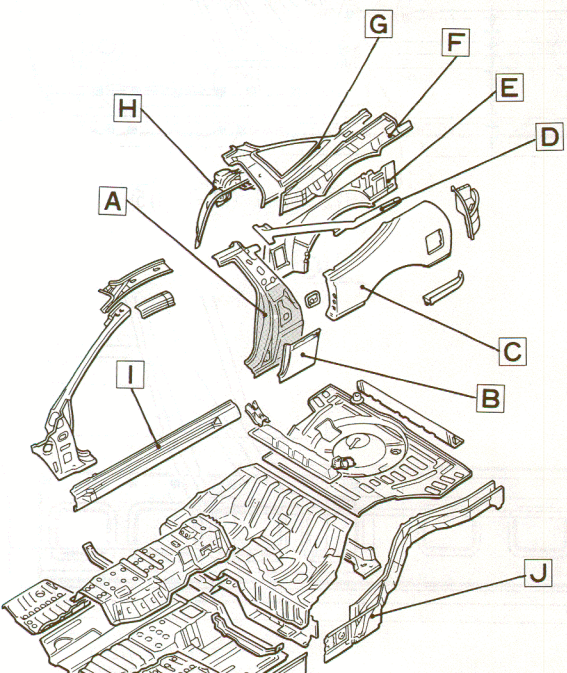


33F0501

INSTALLATION

- (1) Apply a coating of silicon rubber sealer where shown in the illustration.

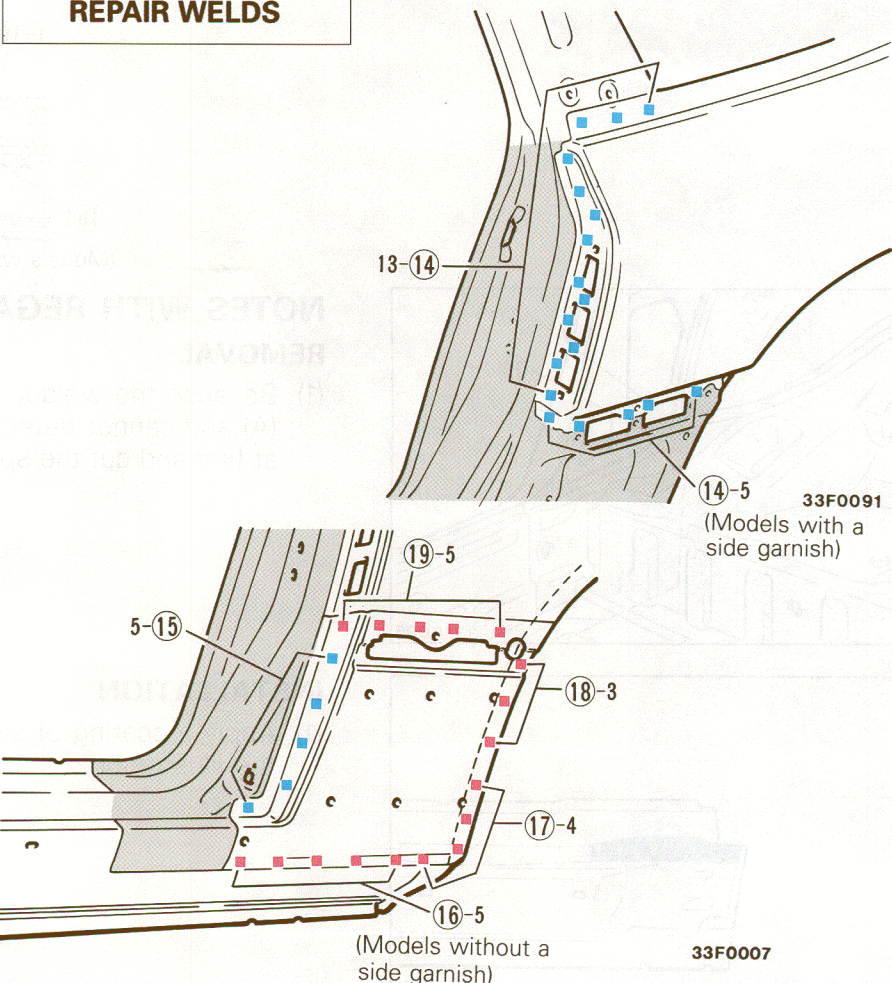
CENTER PILLAR

REPLACEMENT CONFIGURATION	CUT (A)	PART NAME
		<ul style="list-style-type: none"> A Center pillar, outer B Quarter outer front extension C Quarter panel, outer D Rear pillar, outer E Quarter panel, inner, lower F Beltline reinforcement G Quarter panel, inner, upper H Rear wheelhouse, inner I Front floor side sill, outer J Rear floor sidemember

33F0109

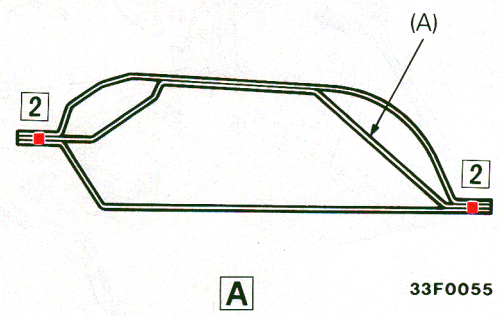
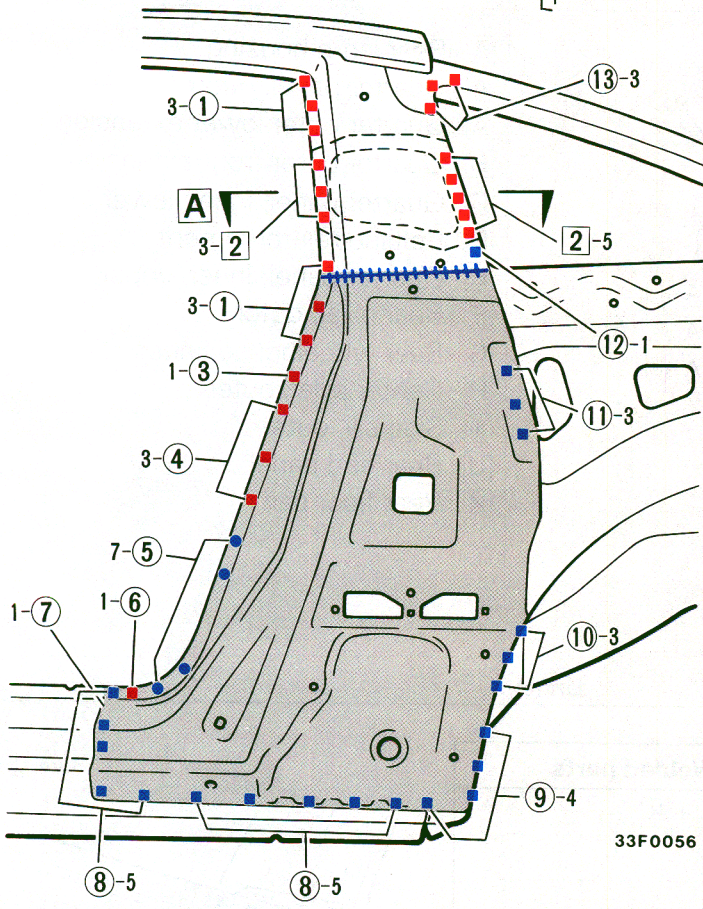
No.	Welded parts
①	A + G
②	A + G ★
③	A + F + G
④	A + E + F
⑤	A + E
⑥	A + I + J
⑦	A + I
⑧	A + I
⑨	A + H
⑩	A + E
⑪	A + F
⑫	A + G
⑬	A + D + G
⑭	A + C
⑮	A + B
⑯	A + B + I
⑰	A + B + H
⑱	A + B + E
⑲	A + B + C

REPAIR WELDS

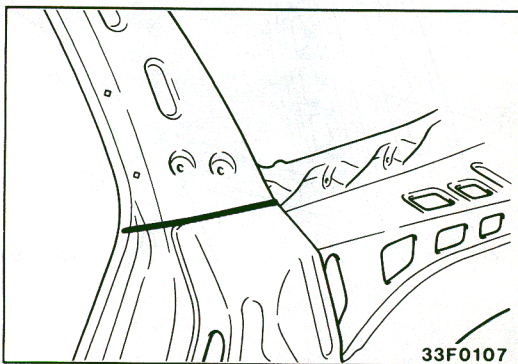


33F0007

Care should be taken not to cut the seat belt reinforcement (A) as indicated in dotted line when removing/installing the pillar.

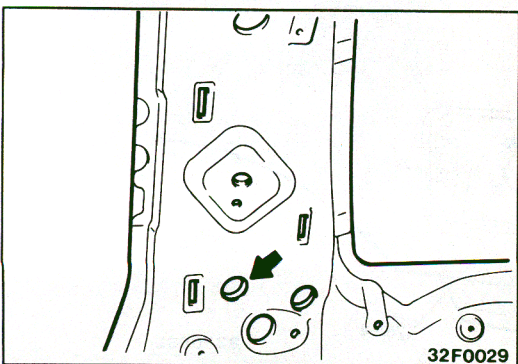


(Illustration shows the quarter outer panel in the removed condition.)



**NOTES WITH REGARD TO REPAIR WORK
REMOVAL**

- (1) Cut only the center pillar outer panel at the illustrated location, taking care not to cut the garnish mounting hole.



INSTALLATION

- (1) Apply a liberal amount of corrosion-prevention agent (using the hole indicated in the illustration) to the butt-weld locations.

QUARTER PANEL, OUTER

REPLACEMENT CONFIGURATION	ASSEMBLY (A B)	PART NAME
		<ul style="list-style-type: none"> A₍₁₎ Rear lamp housing A₍₂₎ Quarter panel, outer A₍₃₎ Quarter outer lower extension B Quarter outer front extension C Quarter panel, inner, lower D Beltline reinforcement E Quarter panel, inner, upper F Rear pillar, outer G Rear wheelhouse, inner H Center pillar, outer I Side sill, outer J Rear end panel K Rear floor pan

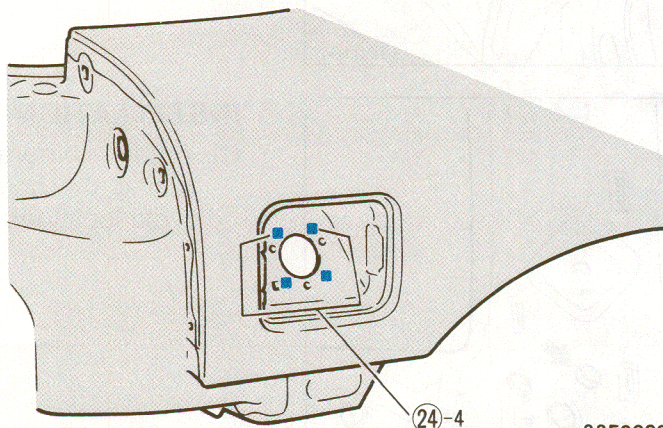
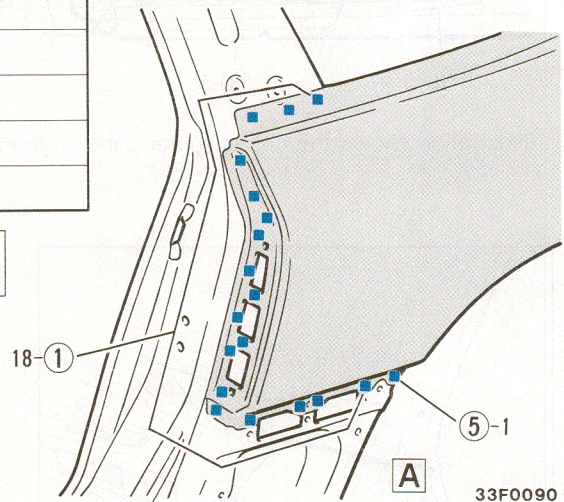
33F0109

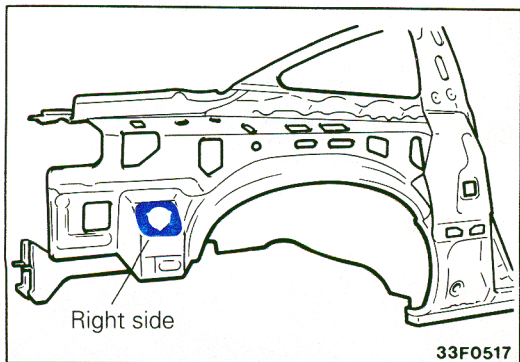
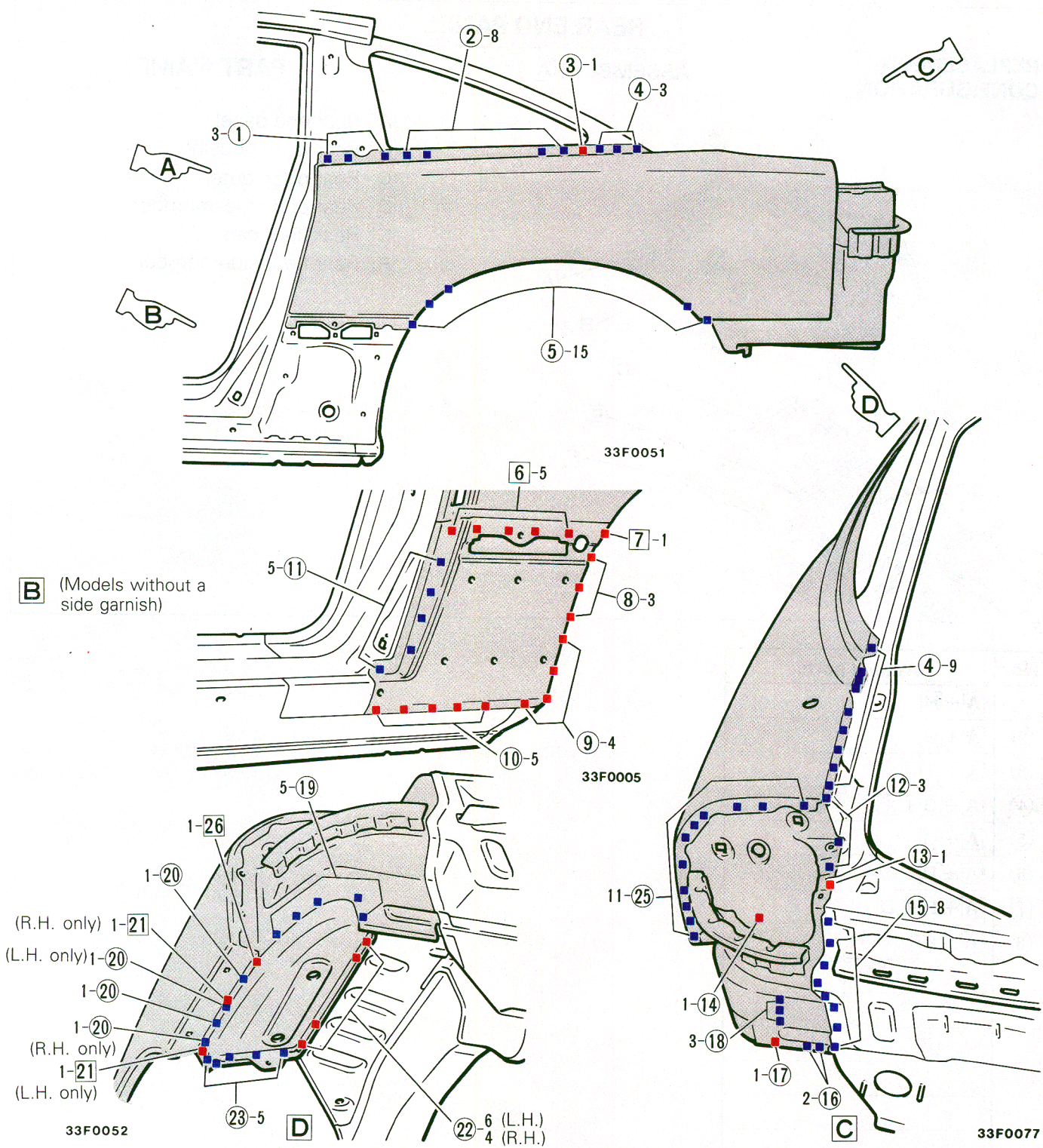
No.	Welded parts
①	A ₍₂₎ + H
②	A ₍₂₎ + E
③	A ₍₂₎ + E + F
④	A ₍₂₎ + F
⑤	A ₍₂₎ + C
⑥	A ₍₂₎ + B + H
⑦	A ₍₂₎ + B + C
⑧	B + C + H
⑨	B + G + H
⑩	B + H + I
⑪	B + C
⑫	A ₍₁₎ + F
⑬	A ₍₁₎ + F + J
⑭	A ₍₁₎ + C + D
⑮	A ₍₁₎ + J
⑯	A ₍₁₎ + K
⑰	A ₍₁₎ + C + K
⑱	A ₍₁₎ + C
⑲	A ₍₁₎ + A ₍₃₎
⑳	A ₍₂₎ + A ₍₃₎
㉑	A ₍₂₎ + A ₍₃₎ + C

No.	Welded parts
㉒	A ₍₃₎ + C + K
㉓	A ₍₃₎ + C
㉔	A ₍₂₎ + C
㉕	A ₍₁₎ + A ₍₂₎
㉖	A ₍₁₎ + A ₍₂₎ + A ₍₃₎

REPAIR WELDS

(R.H. only)

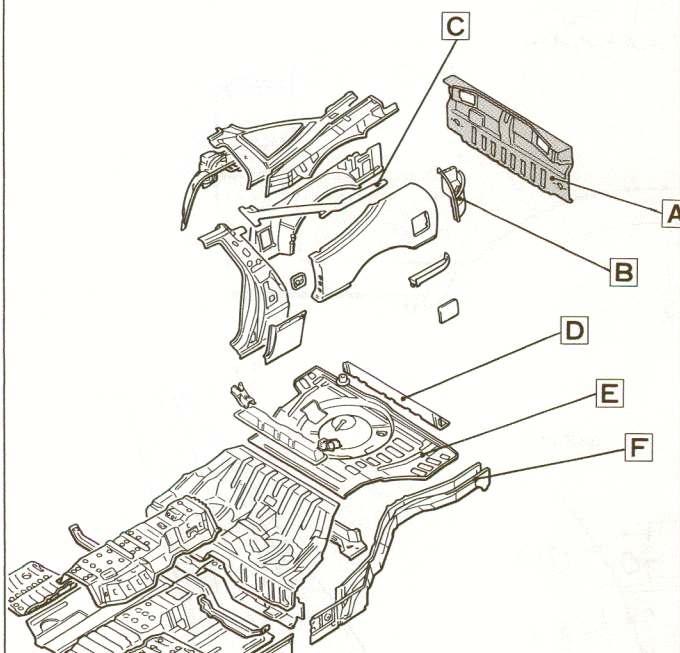




NOTES WITH REGARD TO REPAIR WORK INSTALLATION

- (1) Apply a coating of silicon rubber sealer at the body side where shown in the illustration.

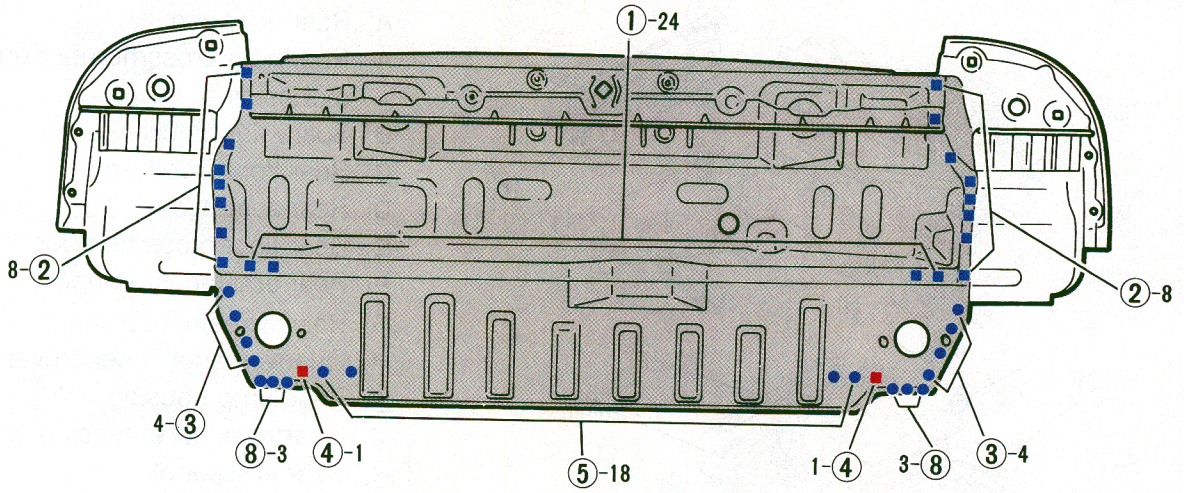
REAR END PANEL

REPLACEMENT CONFIGURATION	ASSEMBLY (A)	PART NAME
		<ul style="list-style-type: none"> A Rear end panel B Rear lamp housing C Rear pillar, outer D Rear end crossmember E Rear floor pan F Rear floor sidemember

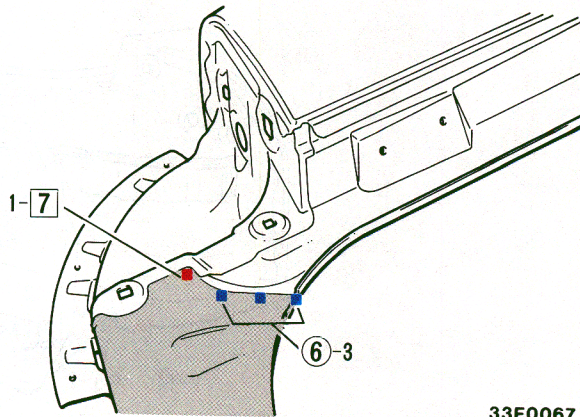
33F0109

No.	Welded parts
①	A + H
②	A + B
③	A + I
④	A + G + I
⑤	A + G
⑥	A + D
⑦	A + B + D
⑧	A + F

REPAIR WELDS

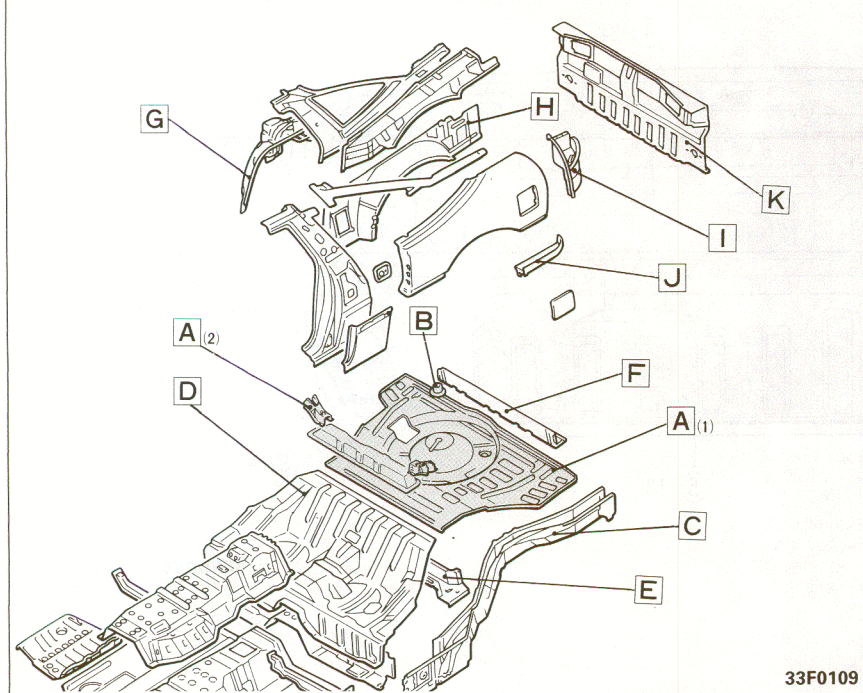


33F0066



33F0067

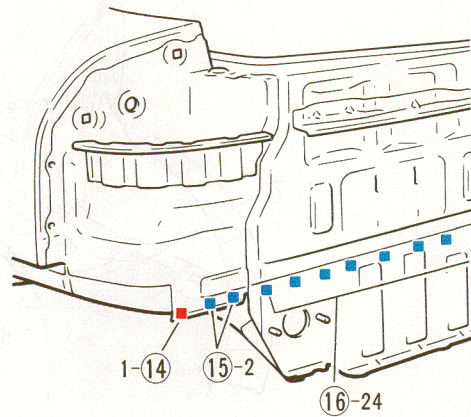
REAR FLOOR PAN

REPLACEMENT CONFIGURATION	ASSEMBLY (A ₍₁₎ A ₍₂₎ B)	PART NAME
		<ul style="list-style-type: none"> A₍₁₎ Rear floor pan A₍₂₎ Rear floor crossmember upper extension B Spare tire bracket C Rear floor sidemember D Rear seat pan E Rear floor crossmember, lower F Rear end crossmember G Rear wheelhouse, inner H Quarter panel, inner, lower I Rear lamp housing J Quarter outer extension, lower K Rear end panel

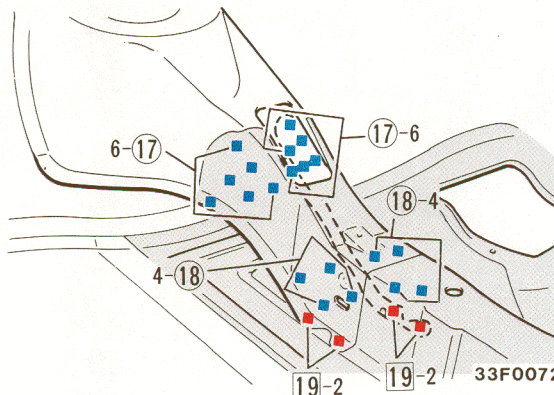
33F0109

No.	Welded parts
①	A ₍₁₎ + C + D
②	A ₍₁₎ + D
③	A ₍₁₎ + C + E
④	A ₍₁₎ + C
⑤	A ₍₁₎ + E ★
⑥	A ₍₁₎ + E
⑦	A ₍₁₎ + C
⑧	A ₍₁₎ + B
⑨	A ₍₁₎ + C
⑩	A ₍₁₎ + F
⑪	A ₍₁₎ + G
⑫	A ₍₁₎ + G + H
⑬	A ₍₁₎ + H + J
⑭	A ₍₁₎ + H + I
⑮	A ₍₁₎ + I
⑯	A ₍₁₎ + K
⑰	A ₍₂₎ + G
⑱	A ₍₁₎ + A ₍₂₎
⑲	A ₍₁₎ + A ₍₂₎

REPAIR WELDS

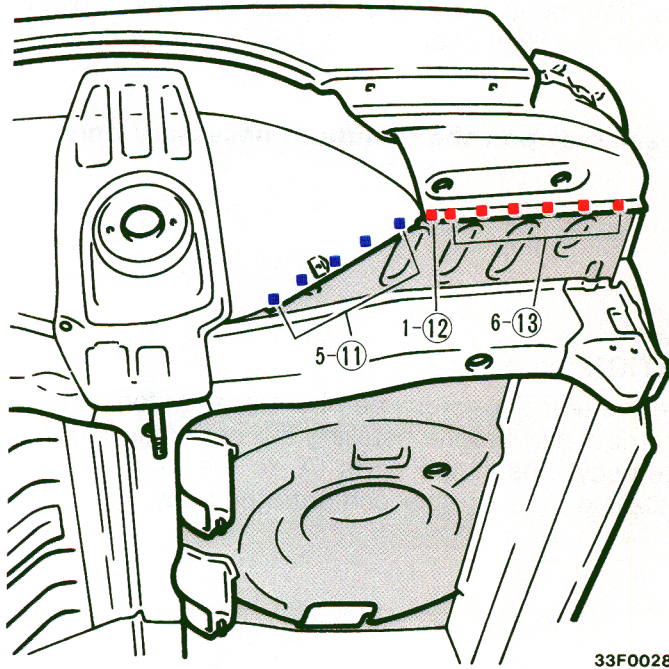
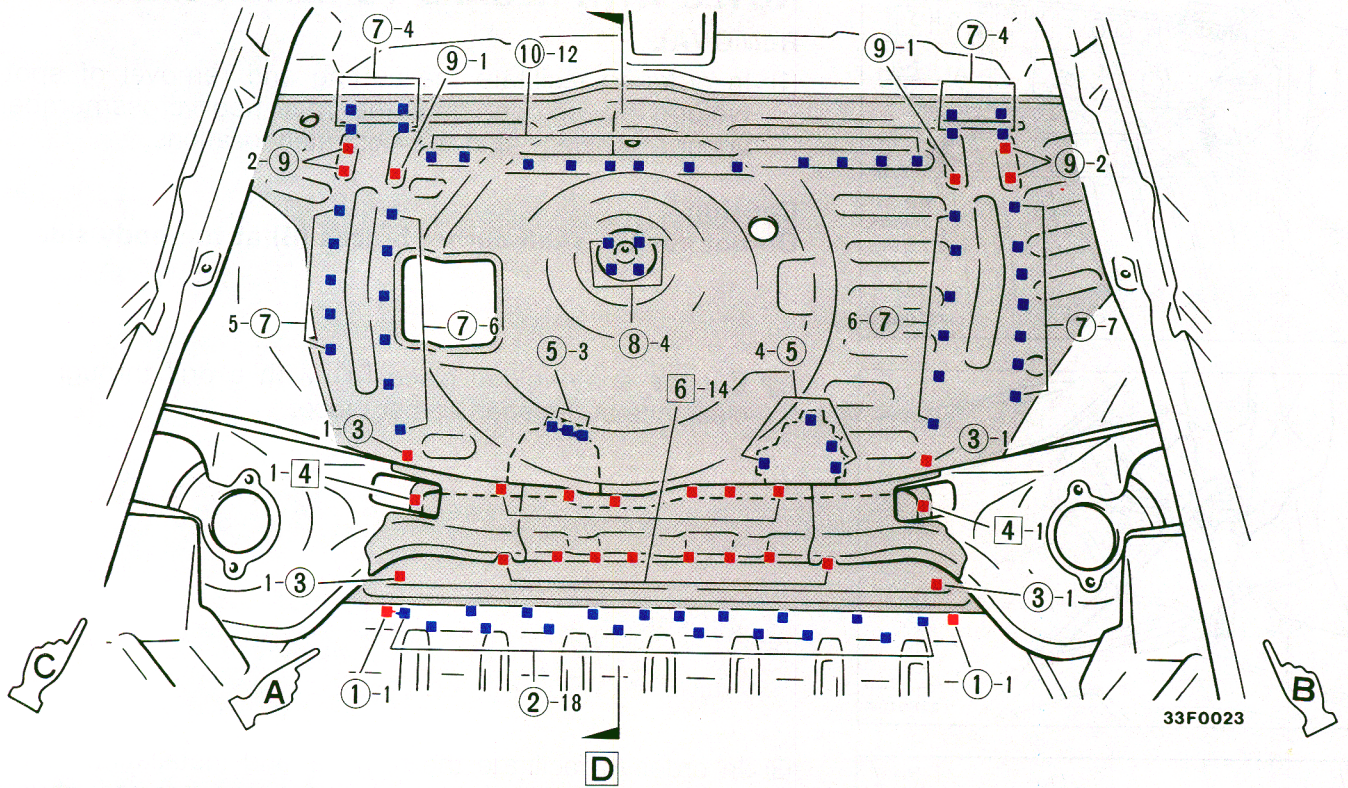


33F0039

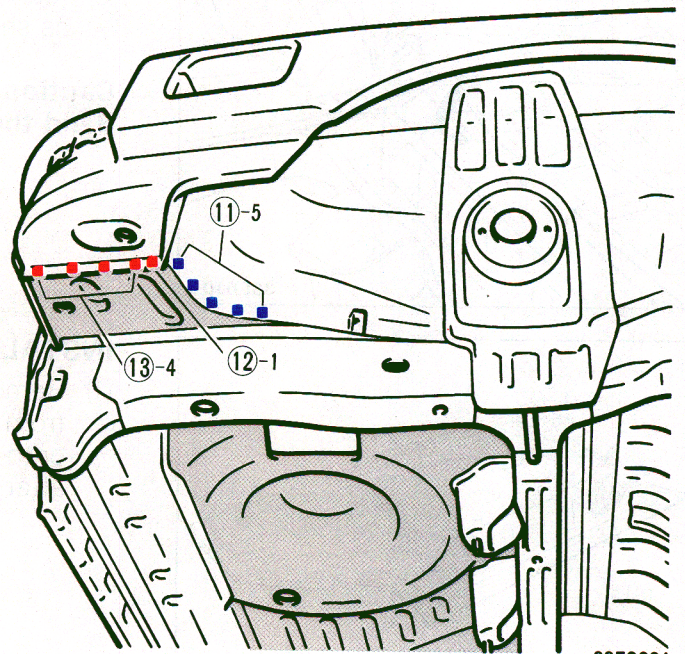


33F0072

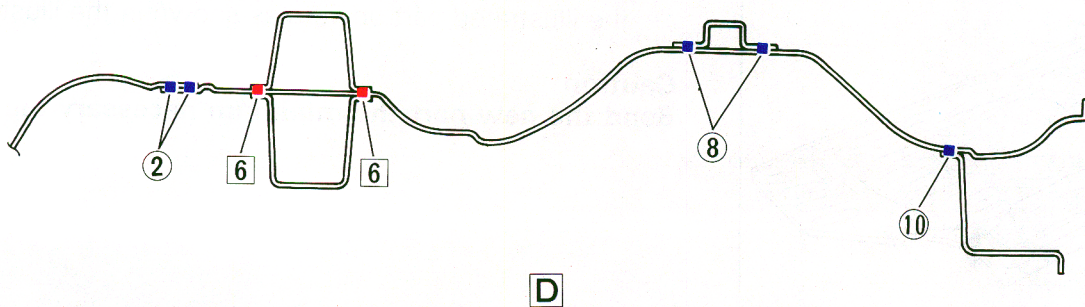
A



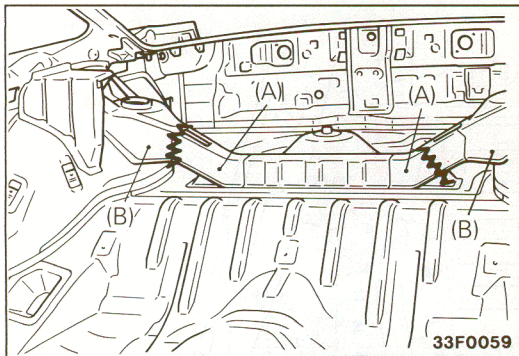
B (Left side)



C (Right side)



D

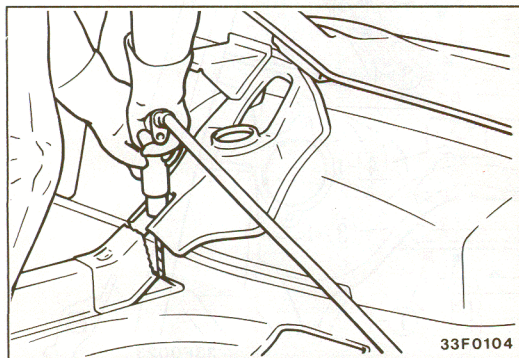


NOTES WITH REGARD TO REPAIR WORK REMOVAL

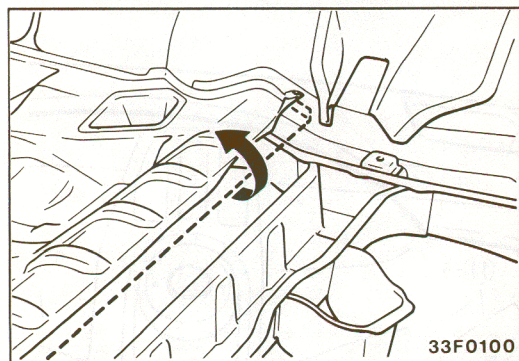
- (1) In order to facilitate the cutting and removal of spot-welded places, cut only the rear floor crossmember upper extension (A) at the illustrated locations.

Caution

Do not cut the shelf corner braces (B) at the body side.



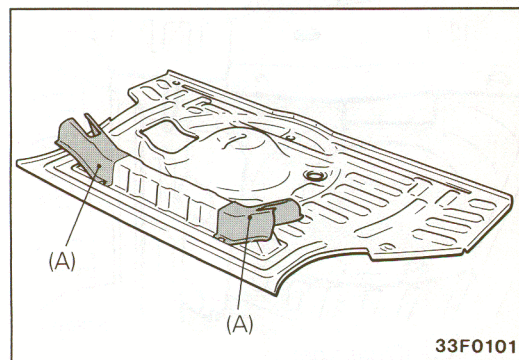
- (2) Cut the spot-welded place 4 with a drill through the clearance at the shelf corner brace.



- (3) In order to facilitate the removal and installation of the rear floor pan, bend the end of the rear seat pan upward as shown in the illustration.

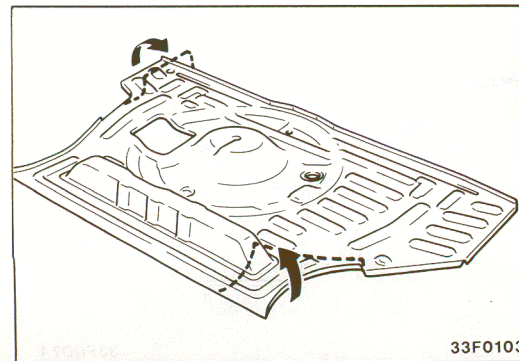
Caution

Bend the rear seat pan the minimum necessary only.



INSTALLATION

- (1) Remove the rear floor crossmember upper extensions (A) from the new part before installing the new rear floor pan onto the body. Install the parts (A) to the rear floor pan after installing the rear floor pan onto the body.



- (2) In order to facilitate the installation of the new part, bend the illustrated part upward as shown in the illustration.

Caution

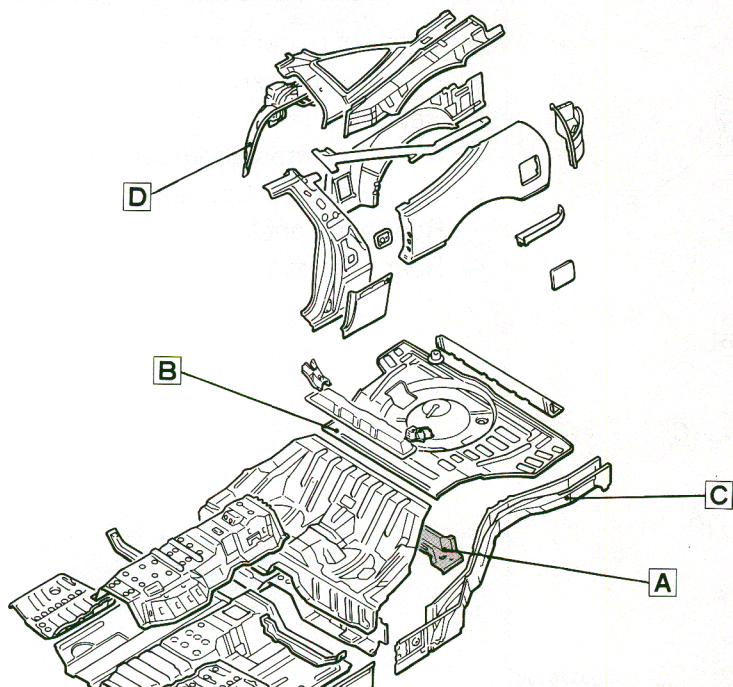
Bend the new part the minimum necessary only.

REAR FLOOR CROSSMEMBER, LOWER

REPLACEMENT CONFIGURATION

ASSEMBLY (A)

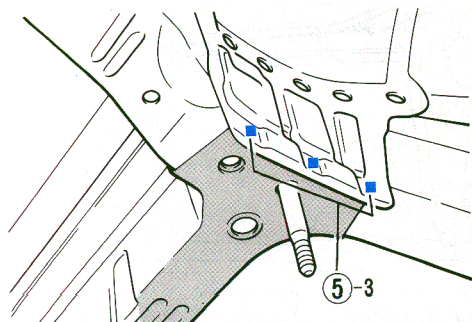
PART NAME



- A Rear floor crossmember, lower
- B Rear floor pan
- C Rear floor sidemember
- D Rear wheelhouse, inner

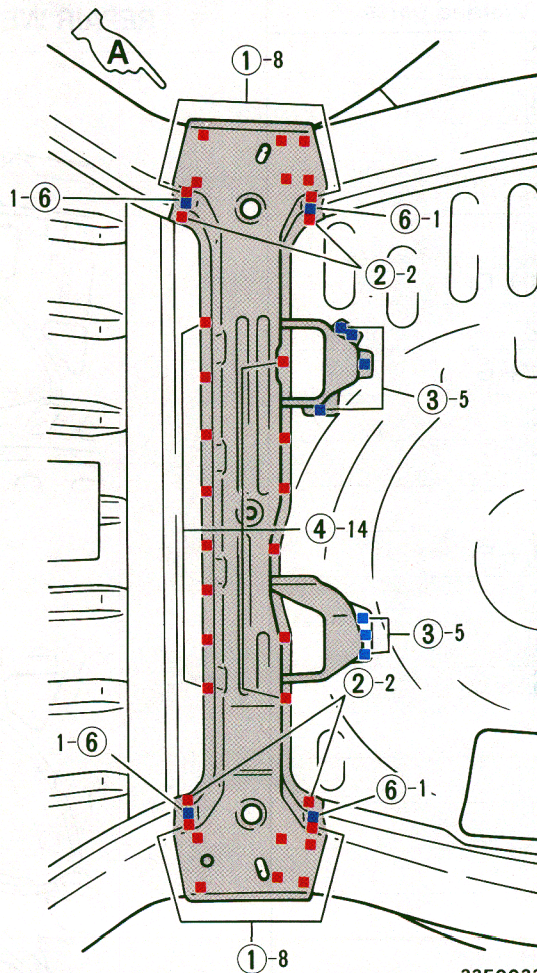
33F0109

No.	Welded parts	
①	A + C	
②	A + B + C	
③	A + B	
④	A + B	
⑤	A + D	★
⑥	A + C	



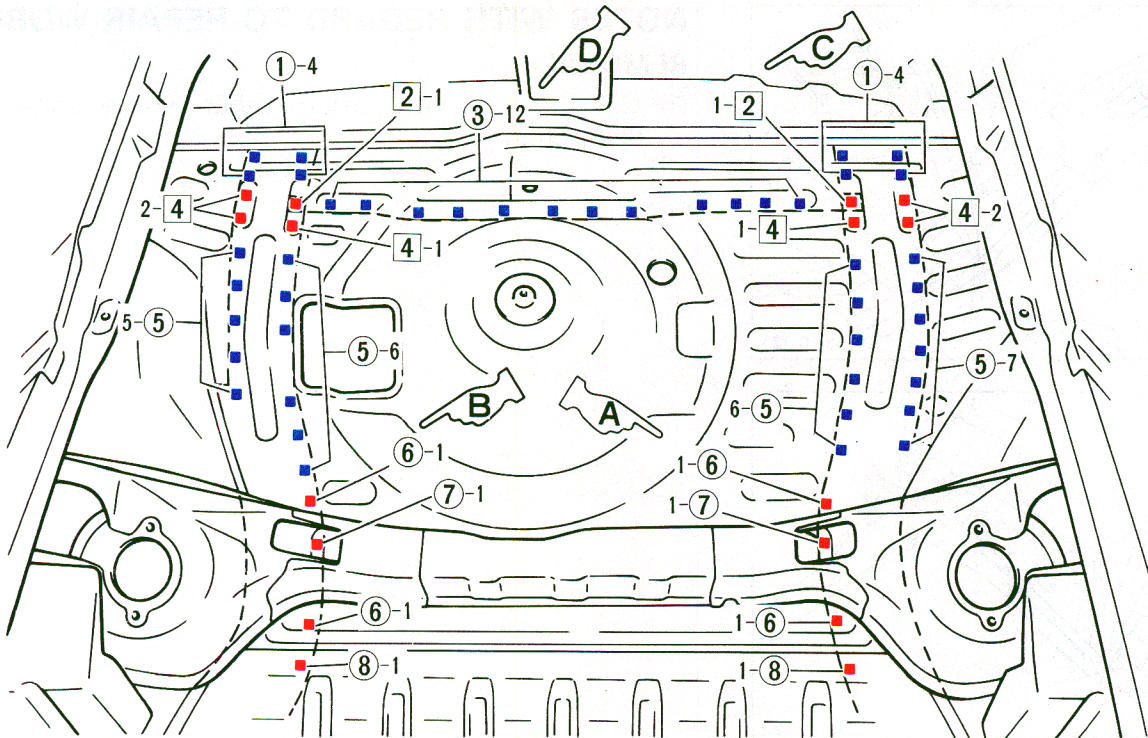
A

33F0044

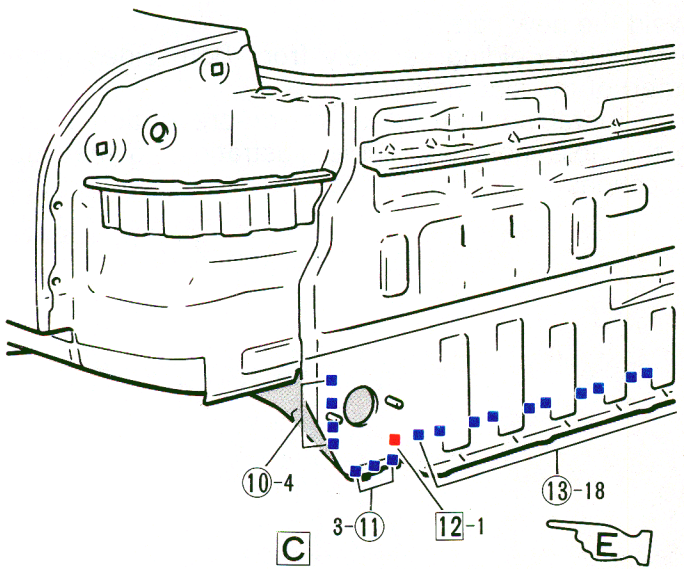


(Underside of floor)

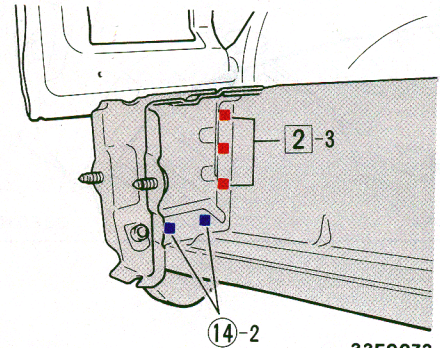
33F0033



33F0024



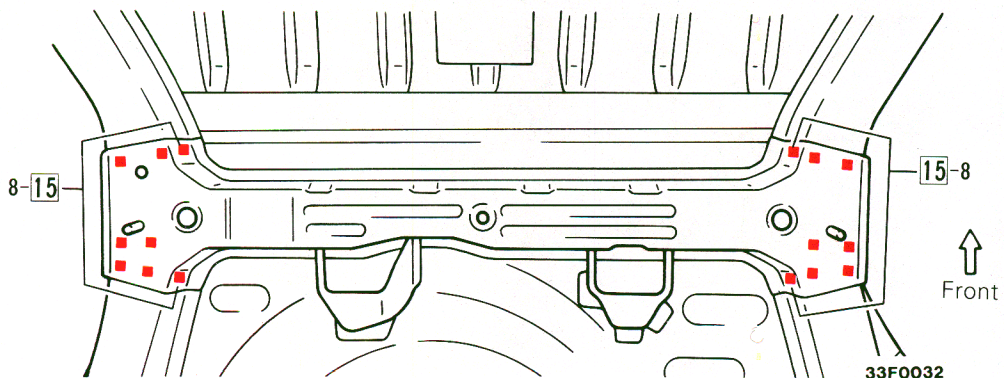
33F0038



33F0073

E

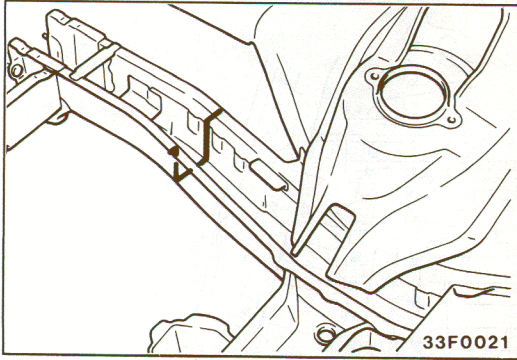
(Illustration shows the rear end panel in the removed condition.)



33F0032

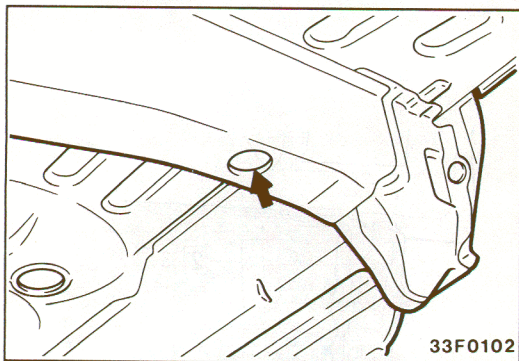
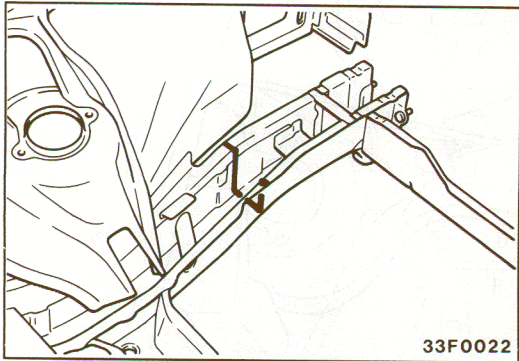
D

(Center part of floor underside)



NOTES WITH REGARD TO REPAIR WORK REMOVAL

- (1) Cut the rear floor sidemember where shown in the illustration.



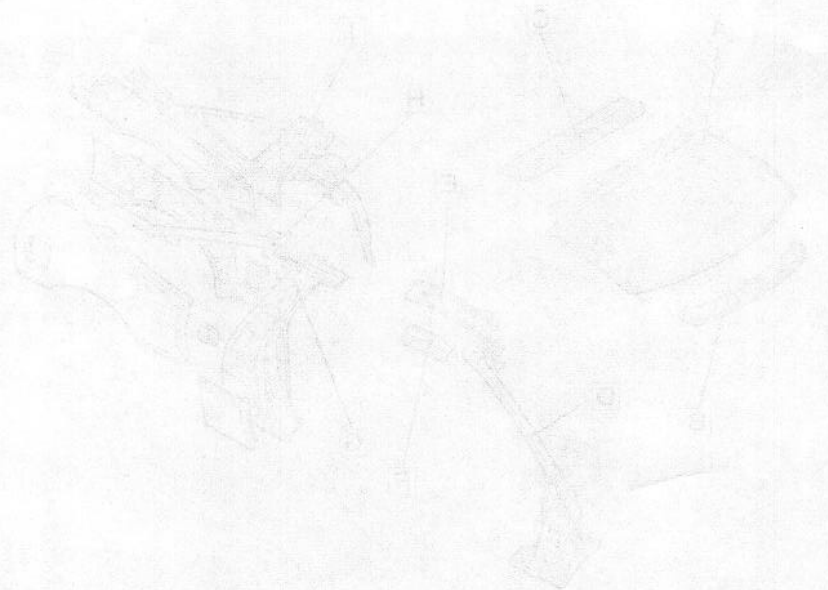
INSTALLATION

- (1) Butt-weld the new part.
Make the butt-welding securely from both sides (inner and outer) of the sidemember.
- (2) Apply a liberal amount of corrosion-prevention agent (using the hole indicated in the illustration) to the butt-weld locations.

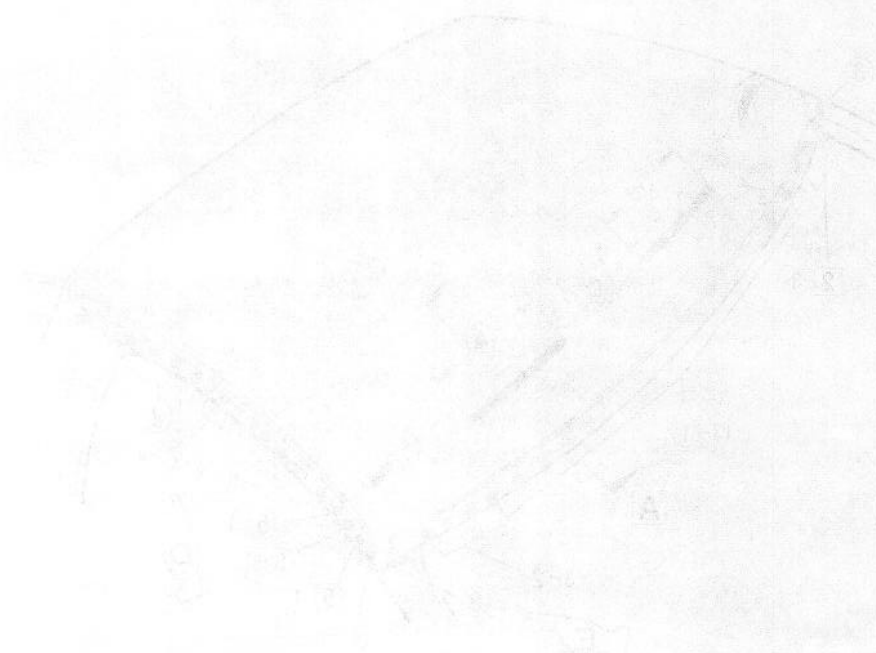
NOTES

REAR FLOOR SIDEMEMBER REPLACEMENT CONFIGURATION

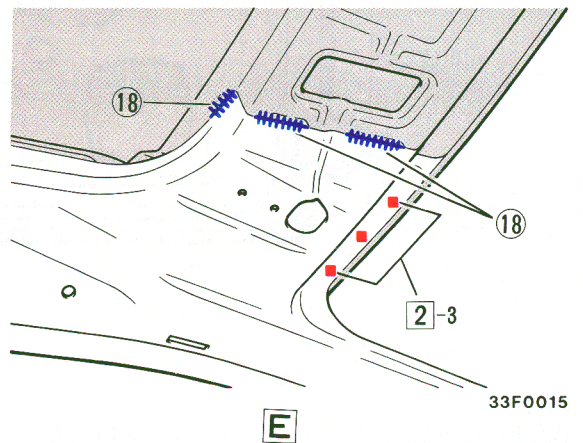
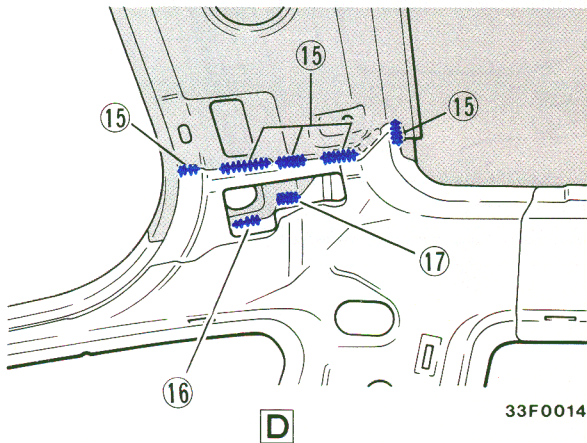
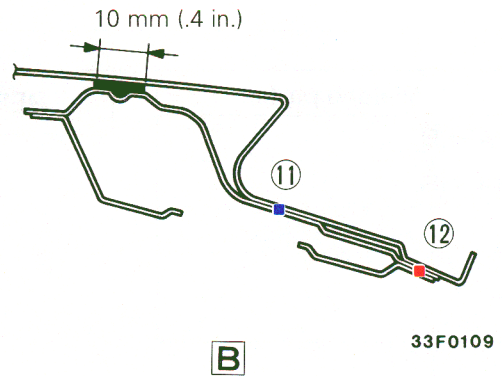
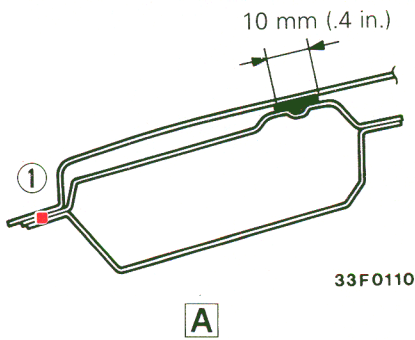
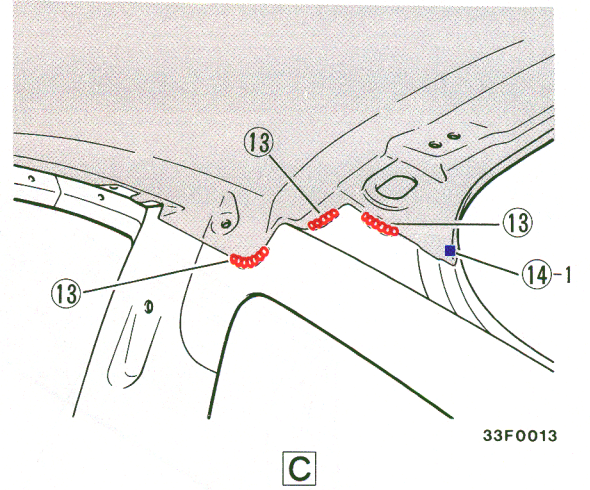
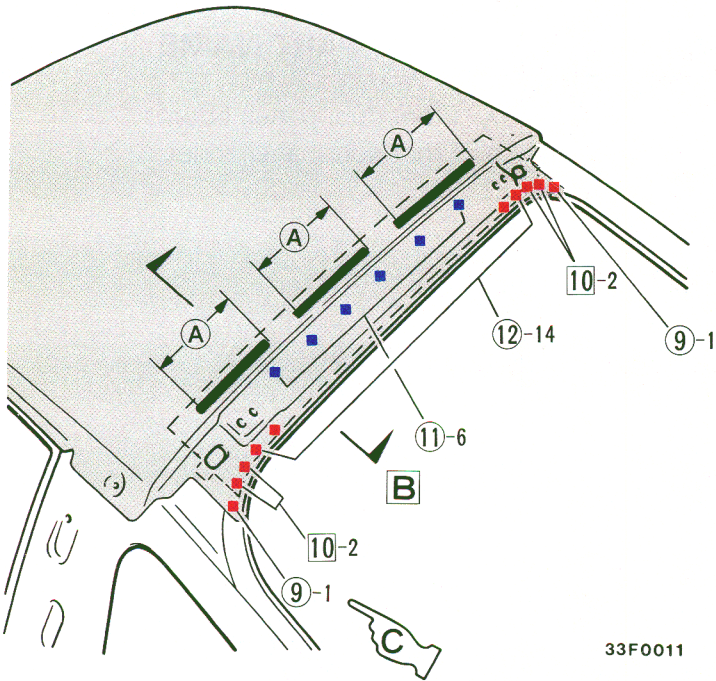
- 1. Check panel label for correct part number.
- 2. Remove old panel.
- 3. Prepare new panel.
- 4. Weld new panel.
- 5. Check for proper fit.
- 6. Paint new panel.
- 7. Reinstall panel.



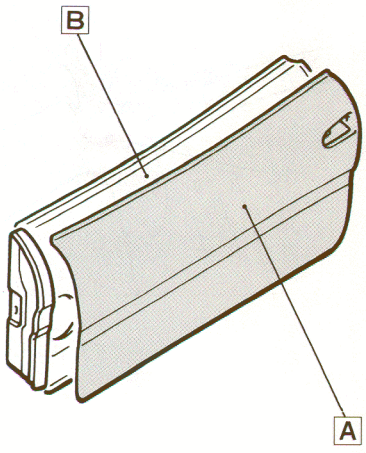
REPAIR WELDS



Weld Location	Notes
A	
B	
C	
D	
E	
F	
G	
H	
I	
J	
K	
L	
M	
N	
O	
P	
Q	
R	
S	
T	
U	
V	
W	
X	
Y	
Z	



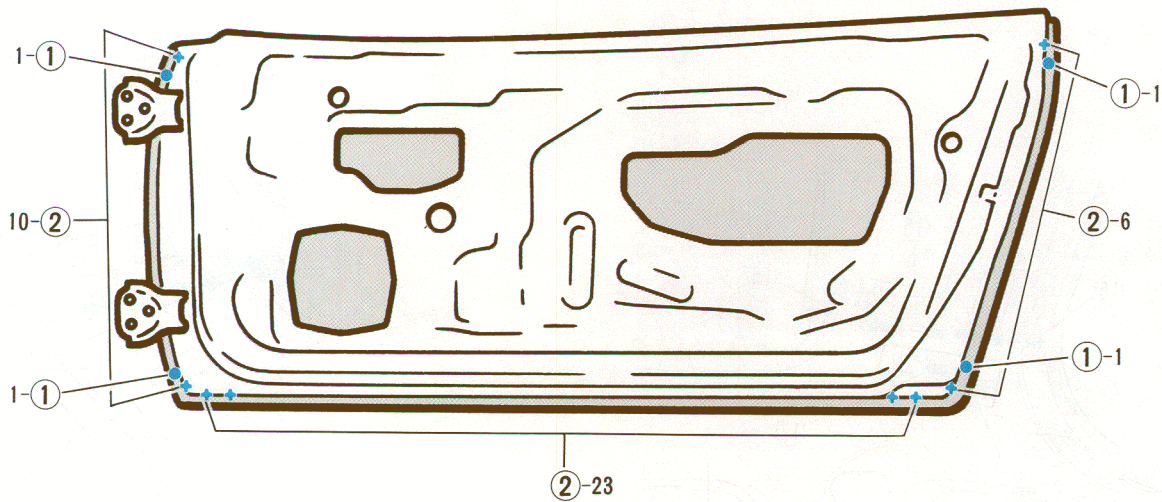
FRONT DOOR OUTER PANEL

REPLACEMENT CONFIGURATION	ASSEMBLY (A)	PART NAME
		<p> A Front door panel, outer B Front door panel, inner </p>

31F0031

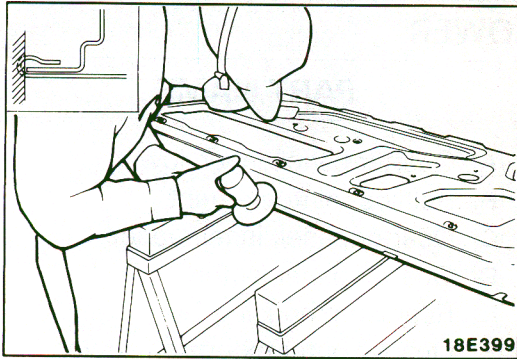
No.	Welded parts
①	A + B
②	A + B

REPAIR WELDS



NOTE
Welding points ① made at factory are not necessary during repairs.

33F0025



FRONT DOOR OUTER PANEL

NOTES WITH REGARD TO REPAIR WORK

- Do the welding of the outer panel and the inner panel by making MIG spot welds to the bent flange part of the outer panel at intervals of approximately 50 mm (2 in.).

REMOVAL

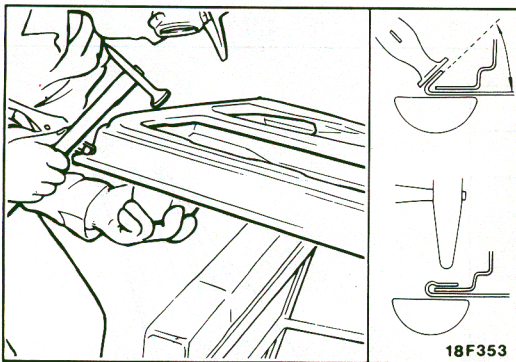
- (1) Use an air grinder to grind off the hemming edge of the perimeter of the outer panel.

INSTALLATION

- (1) Install the outer panel to the inner panel.

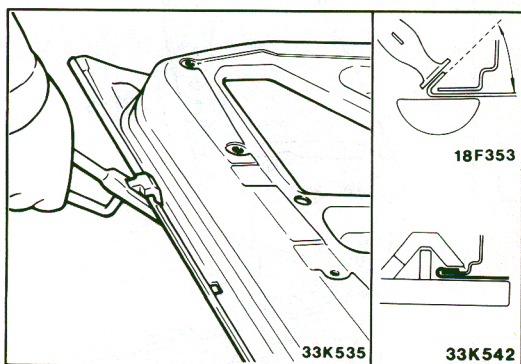
Caution

- **Clamp backings onto the outside of the outer panel in order to prevent scratching it.**



- (2) Using either a hammer and dolly or a hammer and hemming tool, do the hemming work for the entire circumference of the outer panel.

- Using a hammer and dolly.



- Using a hammer and hemming tool

NOTE

Do the hemming work by folding the edge in two stages. When completed, the outer perimeter edge should be well rounded.

QUARTER PANEL, INNER, LOWER

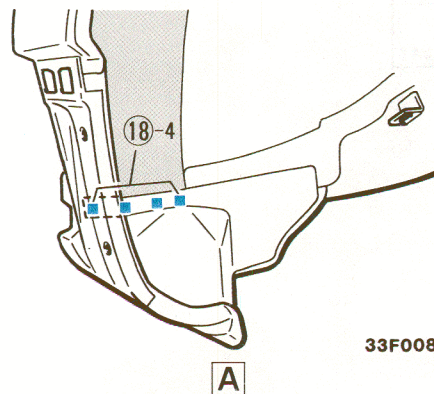
REPLACEMENT CONFIGURATION	ASSEMBLY (A B)	PART NAME
		<ul style="list-style-type: none"> A Quarter panel, inner, lower B Beltline reinforcement C Quarter panel, inner, upper D Quarter panel, outer E Rear lamp housing F Quarter outer extension, lower G Rear pillar, outer H Rear wheelhouse, inner I Center pillar, outer J Seat belt reinforcement K Front floor side sill, outer L Rear end panel M Rear floor pan N Rear floor sidemember O Quarter outer extension, front (Models without a side garnish)

33F0109

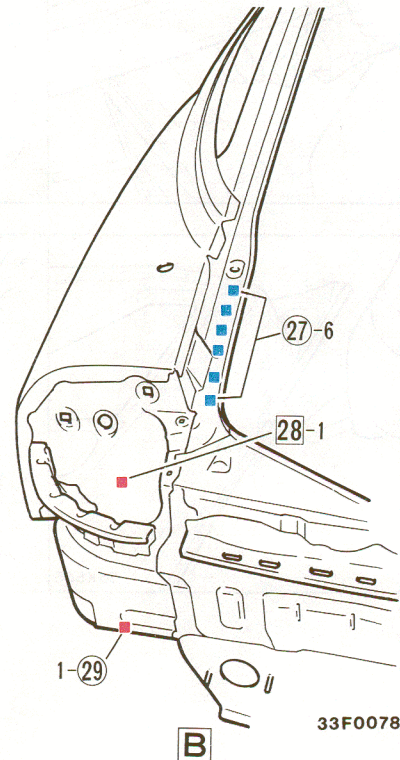
No.	Welded parts
①	B + C
②	B + I
③	B + C + I
④	A + B + C
⑤	A + B + I
⑥	A + B
⑦	B + C
⑧	B + C + H
⑨	B + C + H
⑩	A + B
⑪	A + C
⑫	A + C
⑬	A + J
⑭	A + I
⑮	A + K + N
⑯	A + H + K
⑰	A + H + N
⑱	A + H
⑲	A + C + H
⑳	A + E
㉑	A + D

No.	Welded parts
22	A + B + H
23	A + D + F
24	A + F
25	A + H + M
26	A + F + M
27	A + G
28	A + B + E
29	A + E + M
30	A + D + O
31	A + I + O

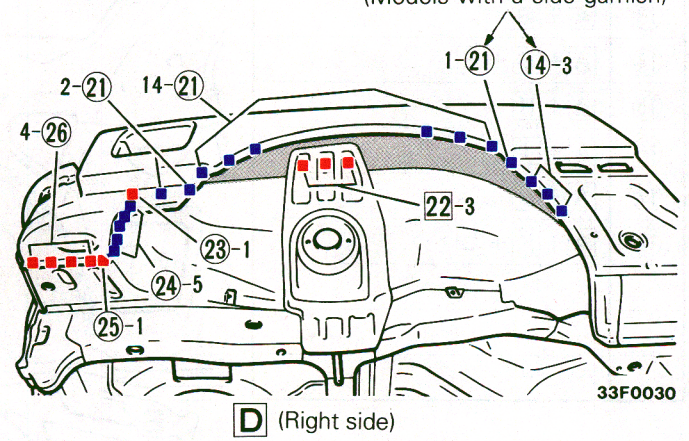
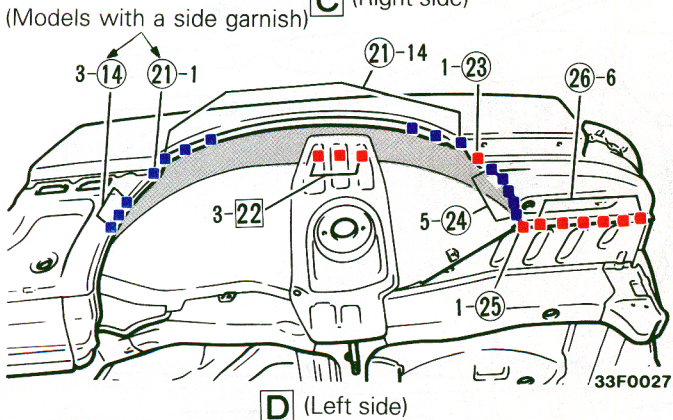
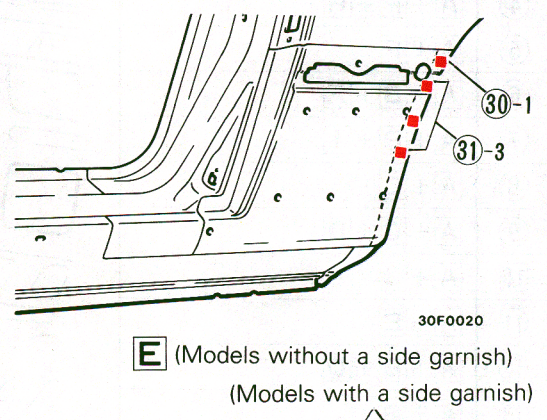
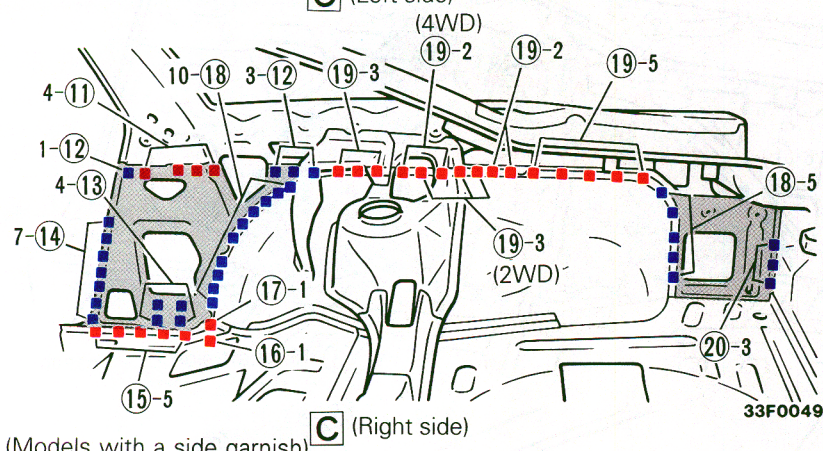
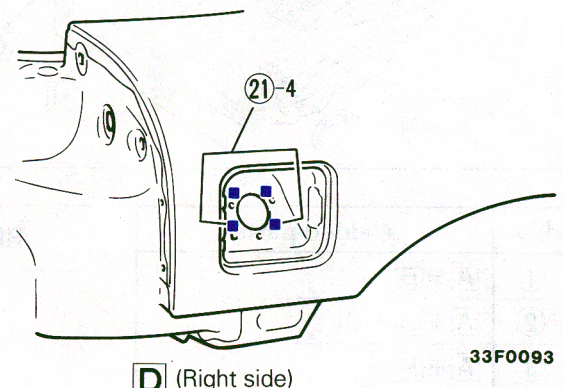
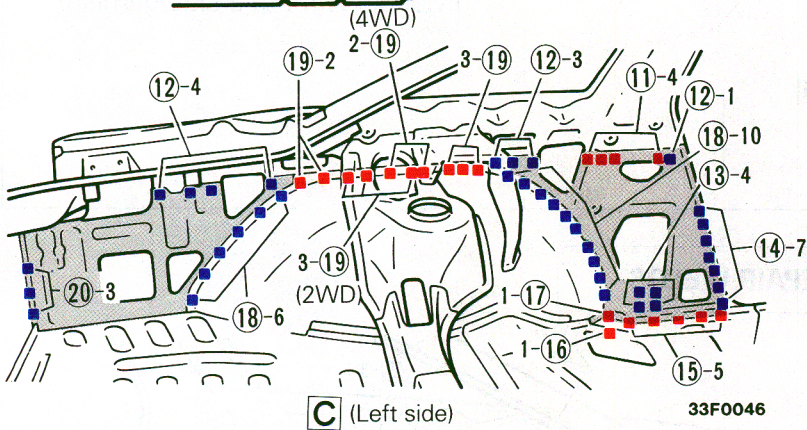
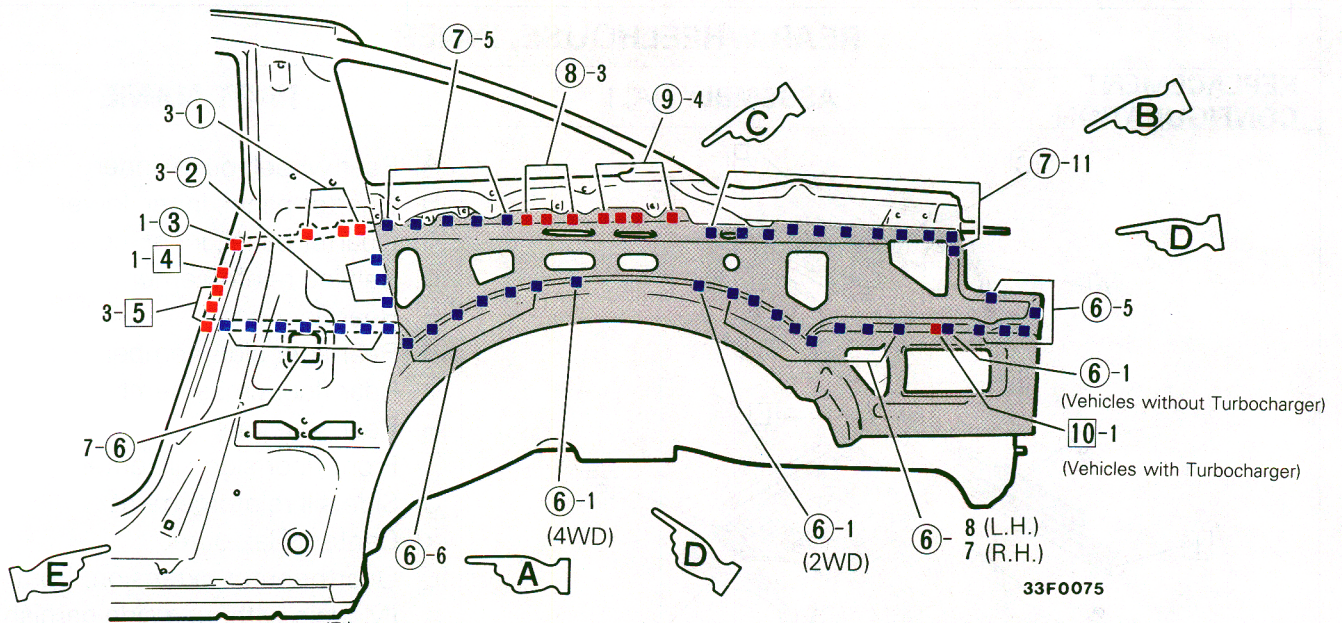
REPAIR WELDS



33F0084



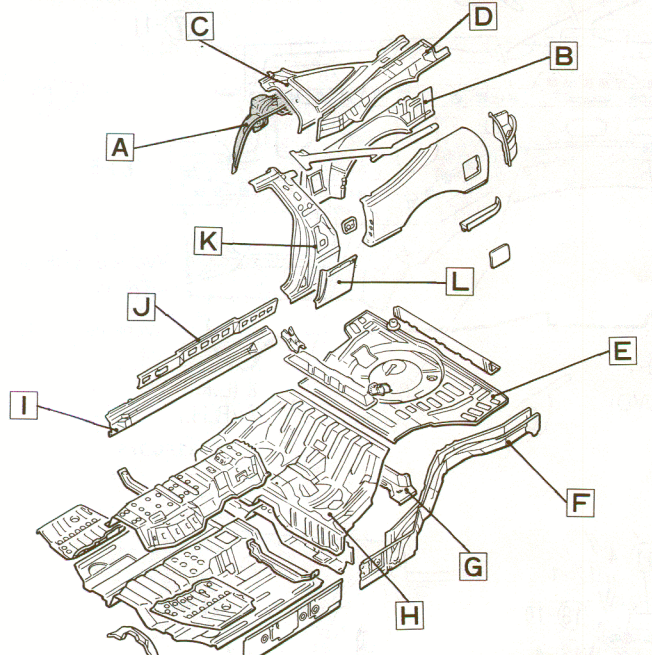
33F0078



(Models with a side garnish)

(Models without a side garnish)

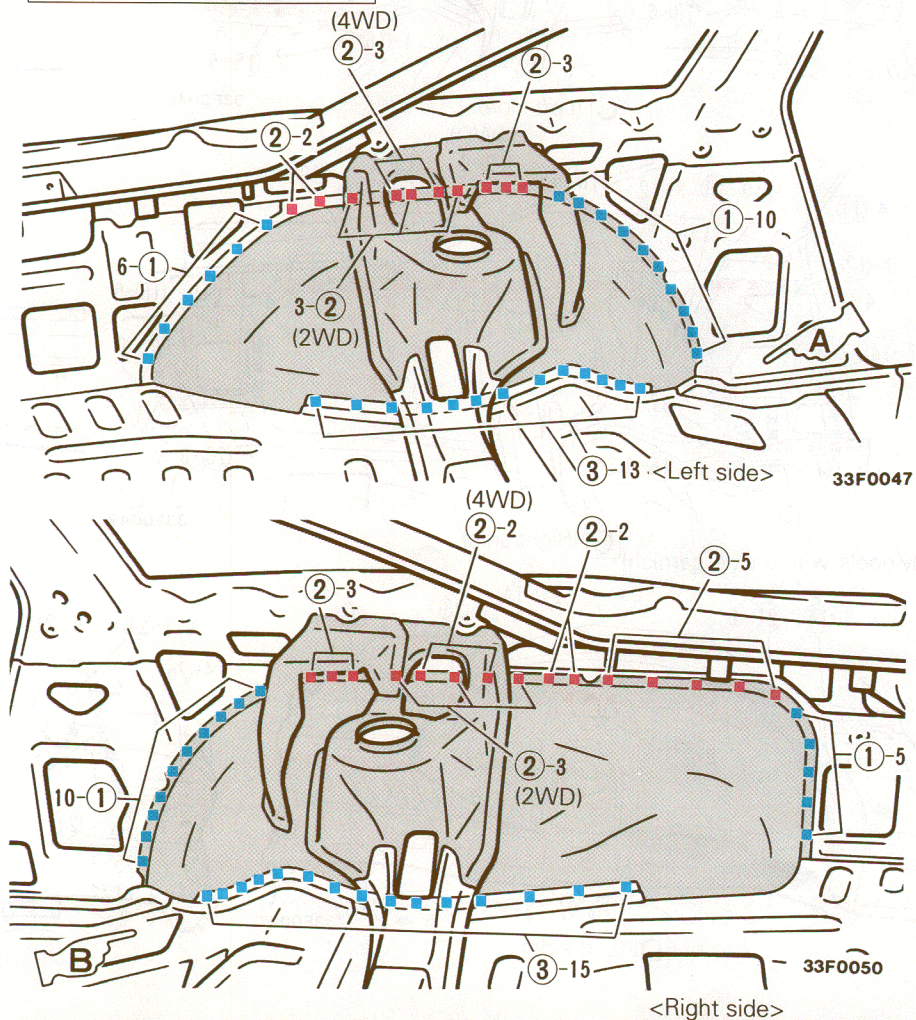
REAR WHEELHOUSE, INNER

REPLACEMENT CONFIGURATION	ASSEMBLY (A)	PART NAME
		<ul style="list-style-type: none"> A Rear wheelhouse, inner B Quarter panel, inner, lower C Quarter panel, inner, upper D Beltline reinforcement E Rear floor pan F Rear floor sidemember G Rear floor crossmember, lower H Rear seat pan I Front floor side sill, outer J Side sill reinforcement K Center pillar, outer L Quarter outer extension, front (Models without a side garnish)

33F0109

No.	Welded parts
①	A + B
②	A + B + C
③	A + F
④	A + F + H
⑤	A + F
⑥	A + B + F
⑦	A + B + I
⑧	A + C
⑨	A + C + D
⑩	A + C
⑪	A + E
⑫	A + B + D
⑬	A + G
⑭	A + B + E
⑮	A + K
⑯	A + I
⑰	A + J
⑱	A + K + L

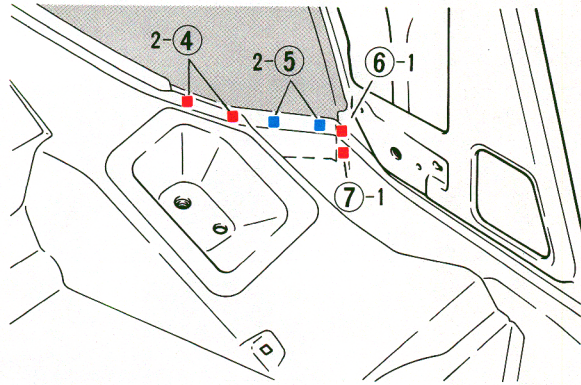
REPAIR WELDS



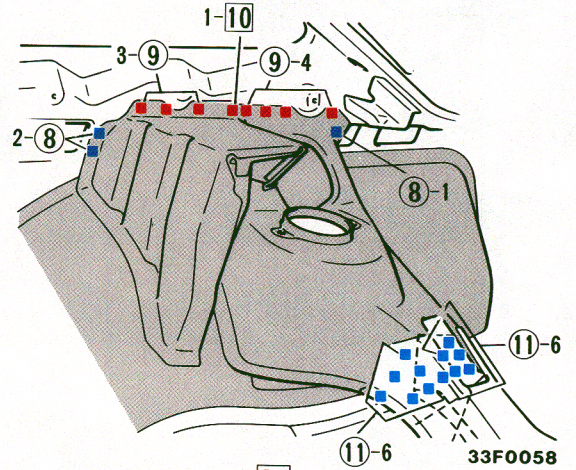
33F0047

33F0050

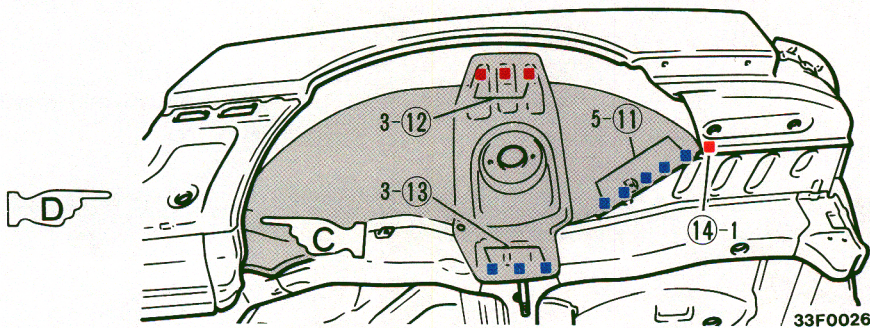
<Right side>



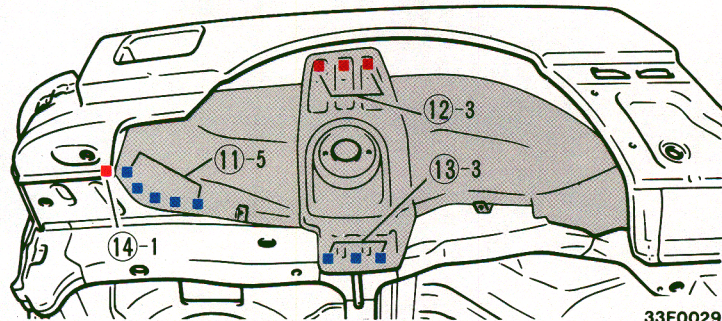
A



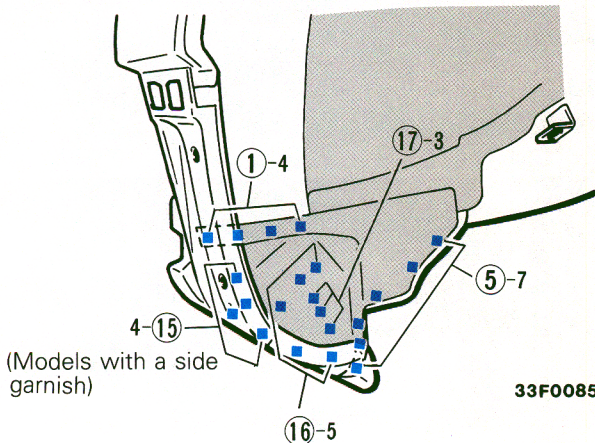
B



<Left side>

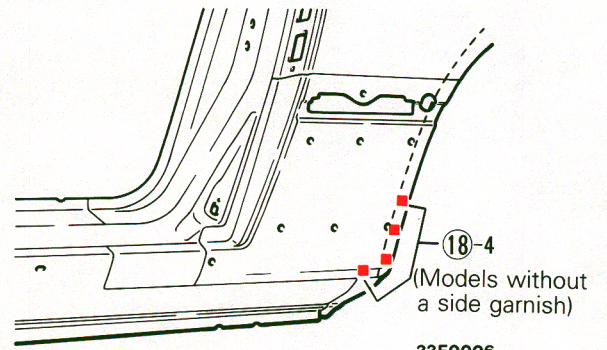


<Right side>



(Models with a side garnish)

C



(Models without a side garnish)

33F0006

D

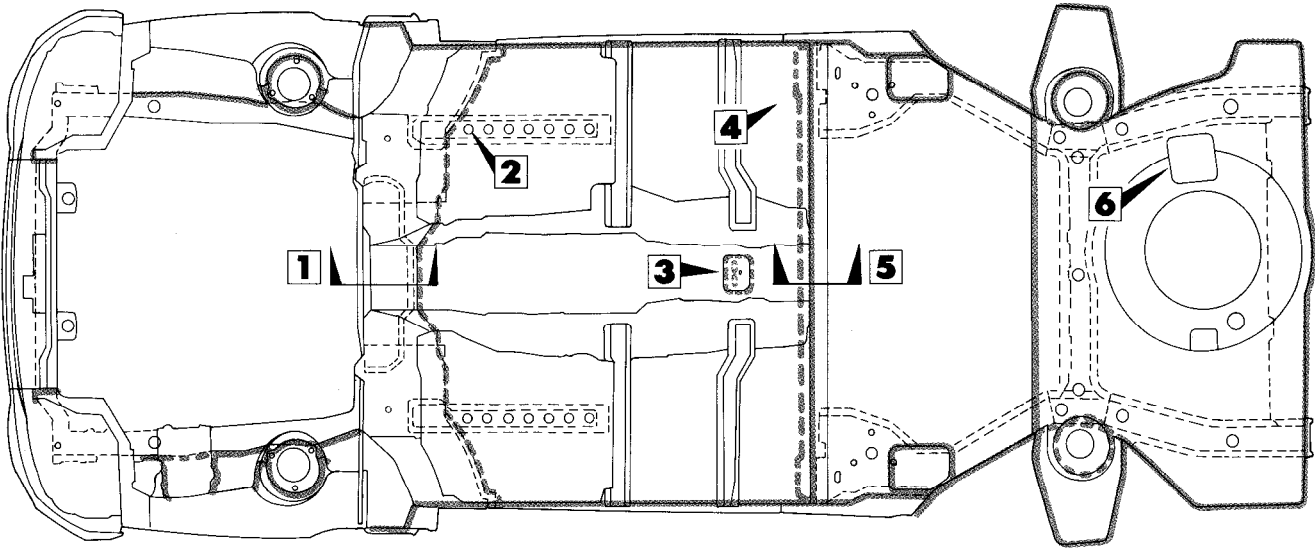
NOTES

4 CORROSION PROTECTION

BODY SEALING LOCATIONS	4-88
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HOOD, DOOR, LIFTGATE AND FUEL FILLER DOOR.....	4-89
UNDERCOAT APPLICATION LOCATIONS.....	4-94
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UNDERBODY ANTICORROSION AGENT LOCATIONS	4-97

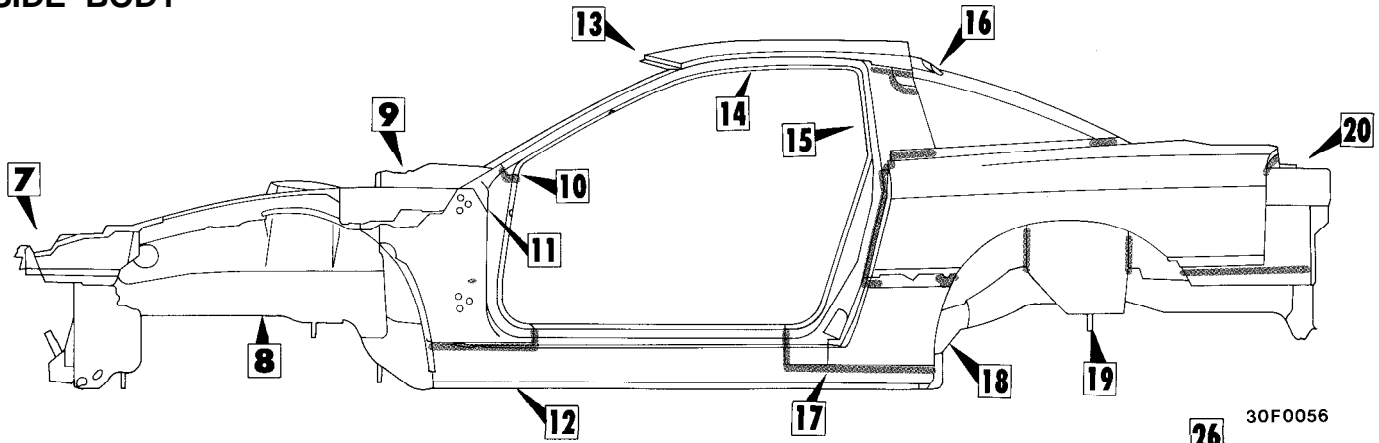
BODY SEALING LOCATIONS

FLOOR



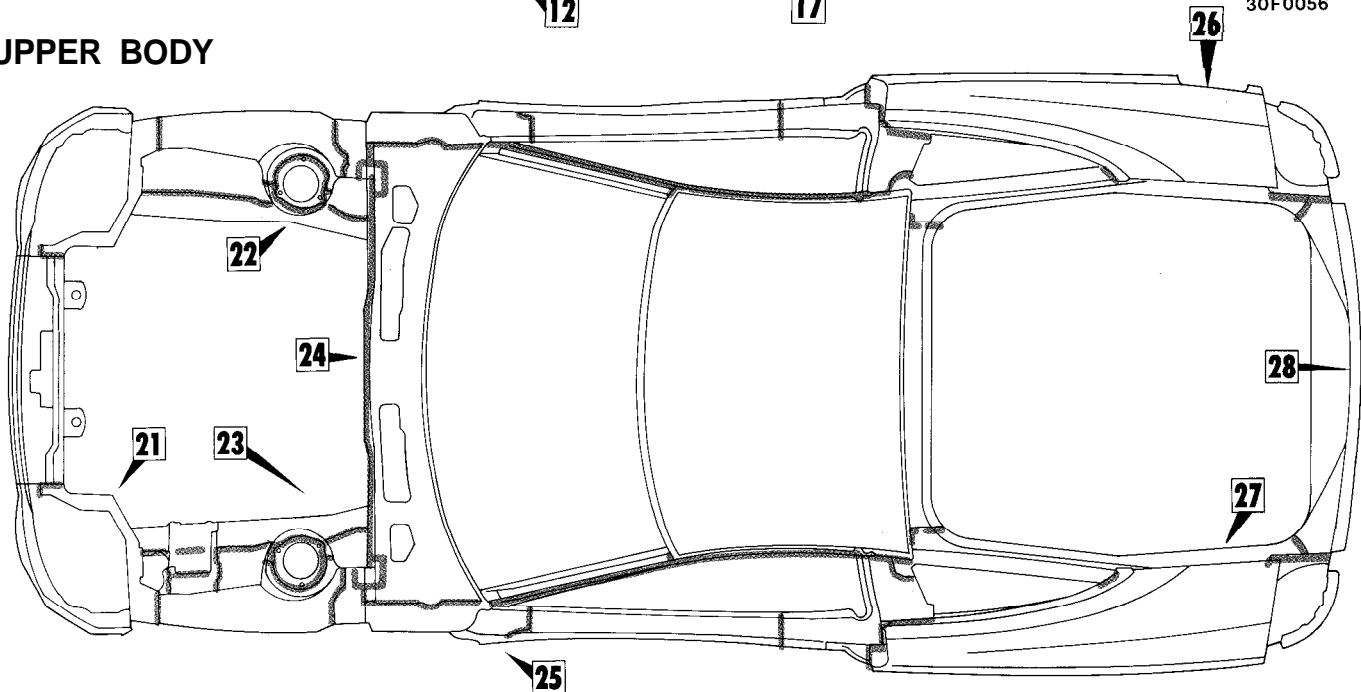
30F0053

SIDE BODY



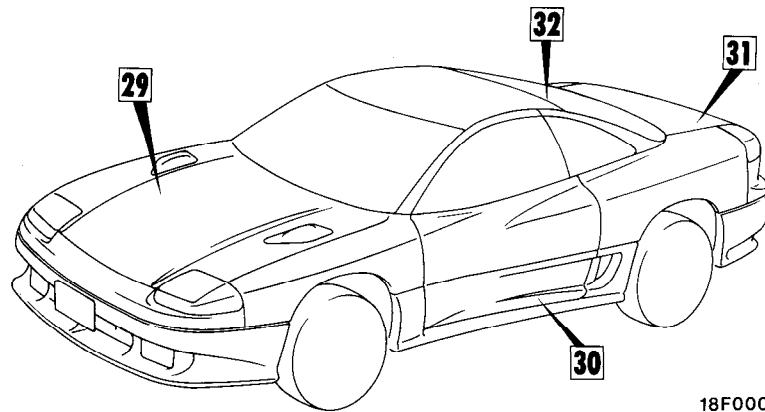
30F0056

UPPER BODY



30F0054

HOOD, DOOR, LIFTGATE AND FUEL FILLER DOOR

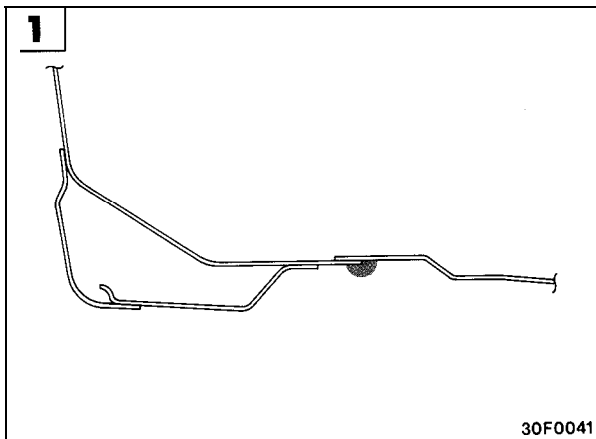


18F0007

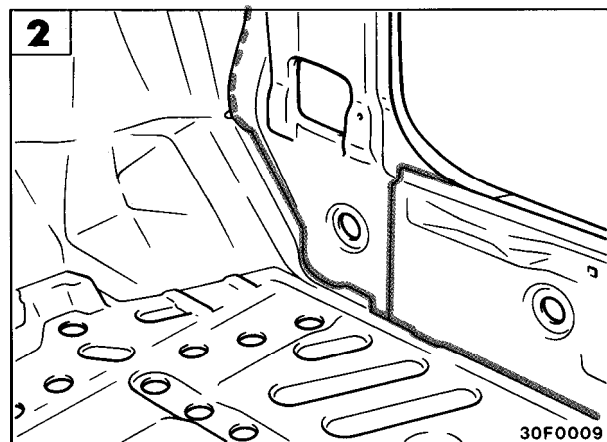
NOTE

For external surfaces such as the drip channels, pillars, clinches, etc., where the sealant application can be seen directly, and where it will be necessary that the appearance of the application be attractive, apply the sealant so that it is smooth and level, or wipe the surface after applying the sealant.

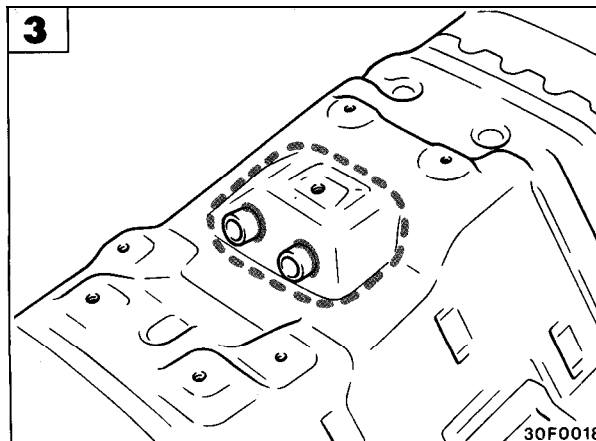
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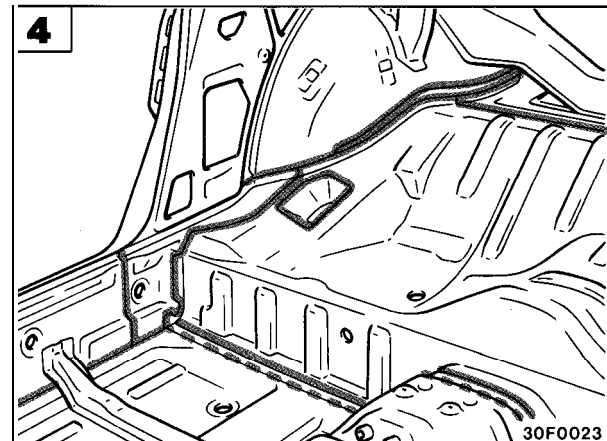
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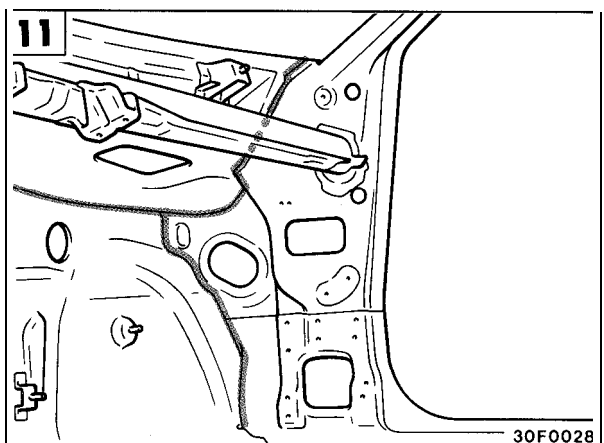
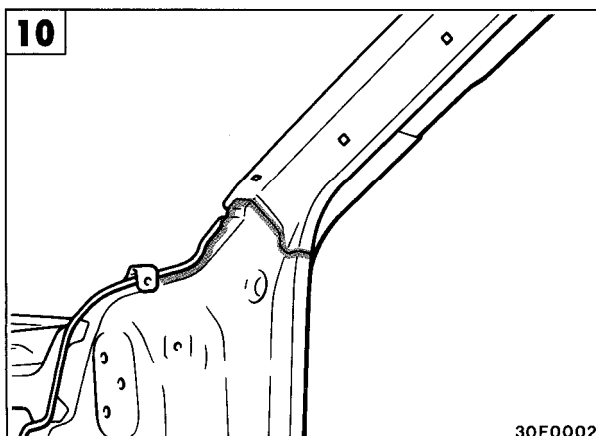
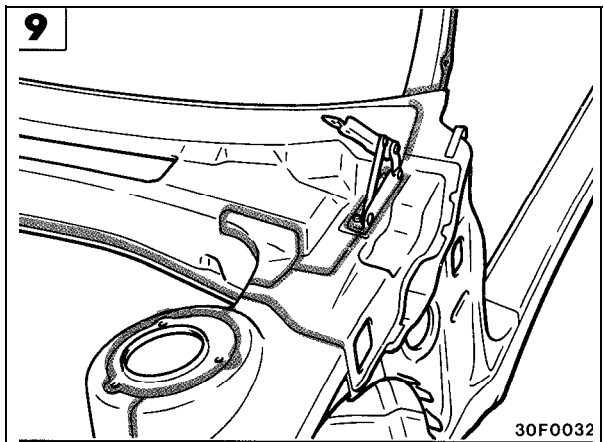
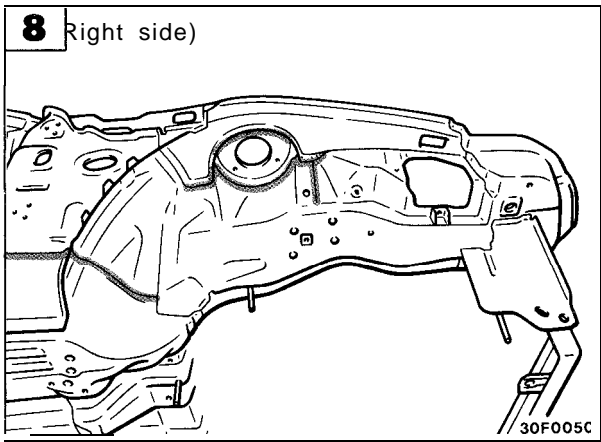
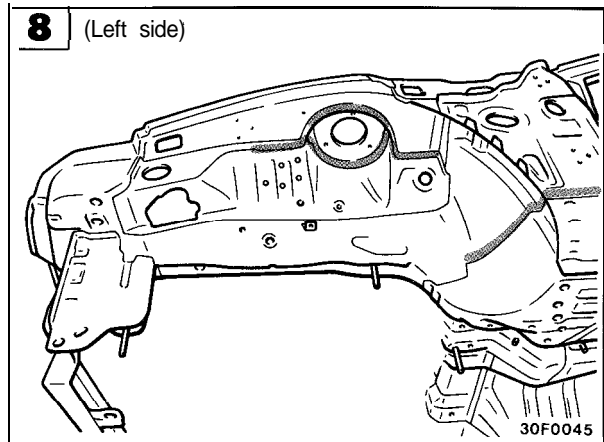
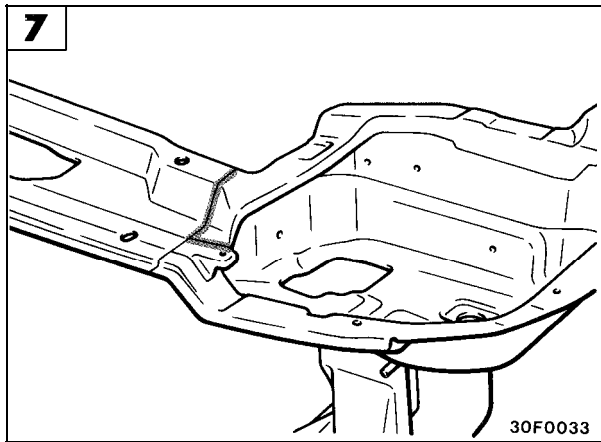
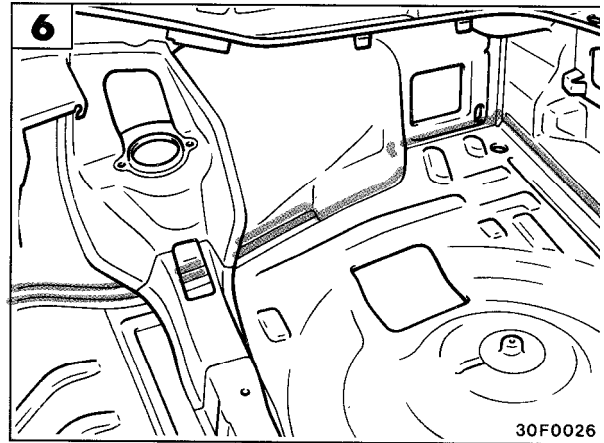
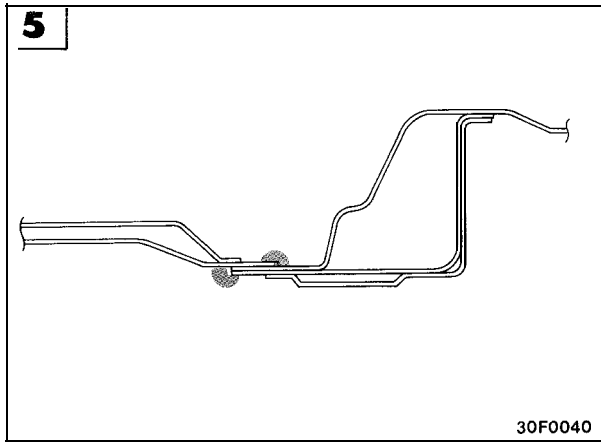
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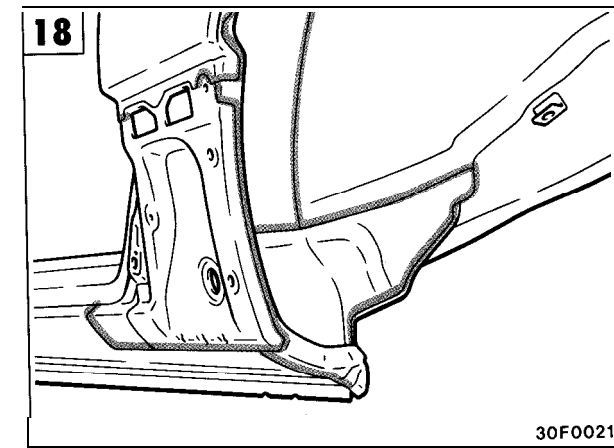
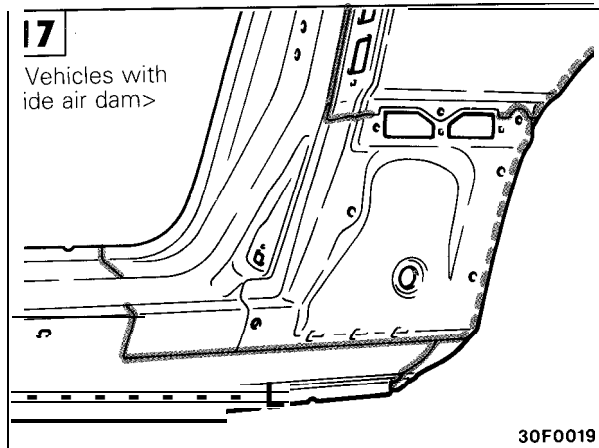
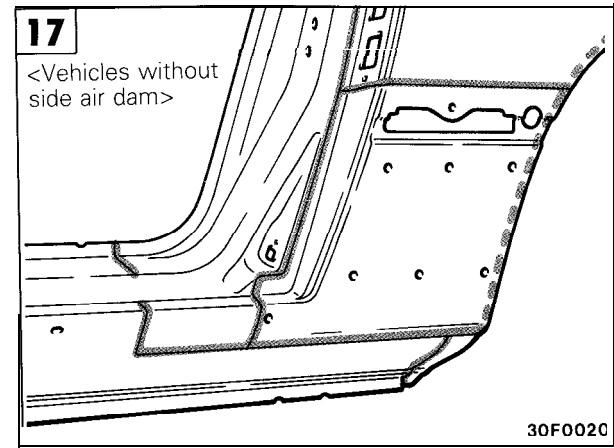
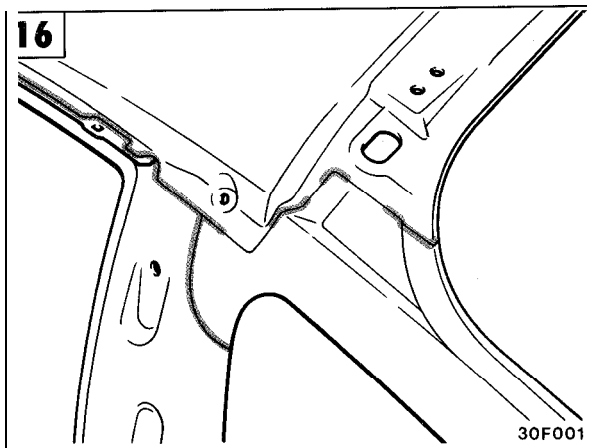
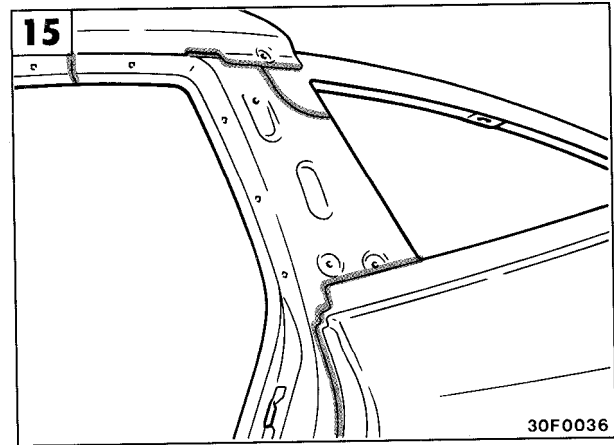
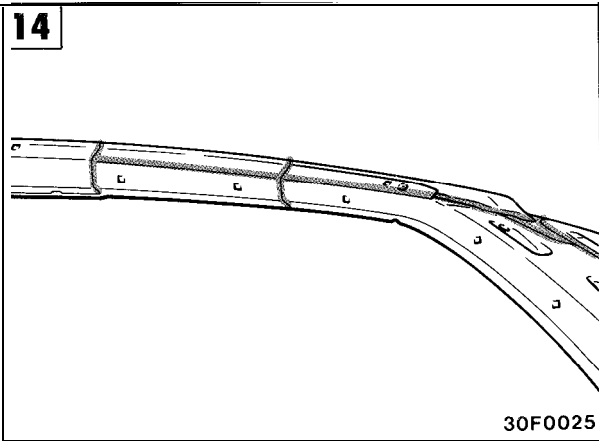
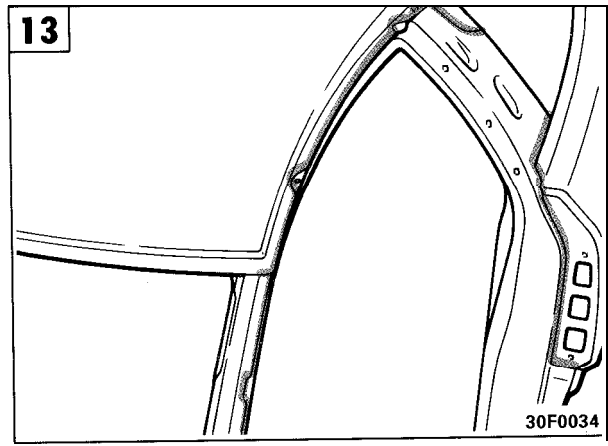
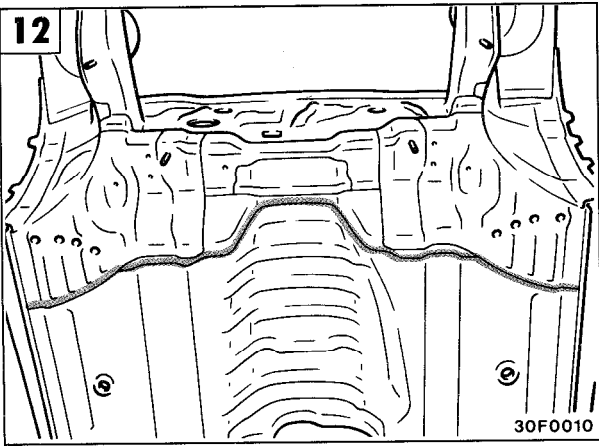


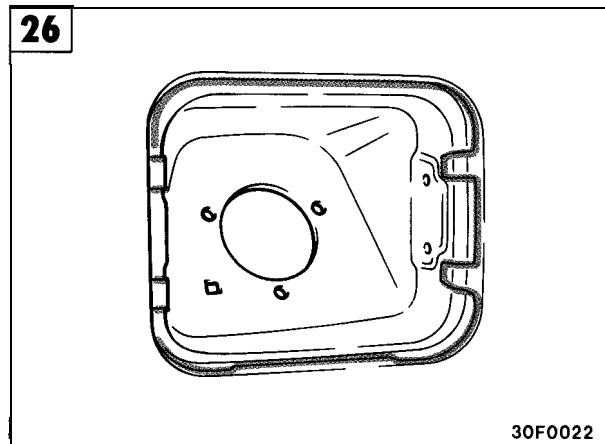
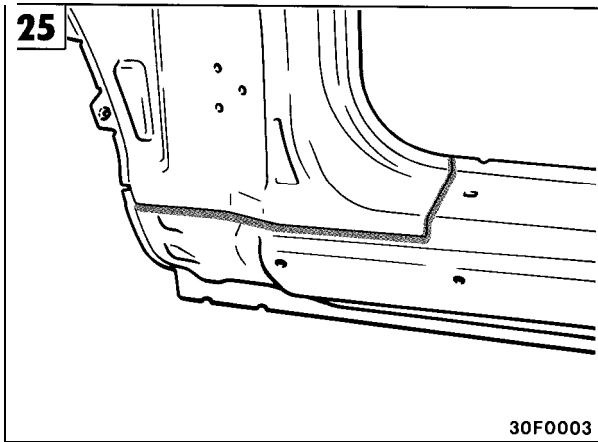
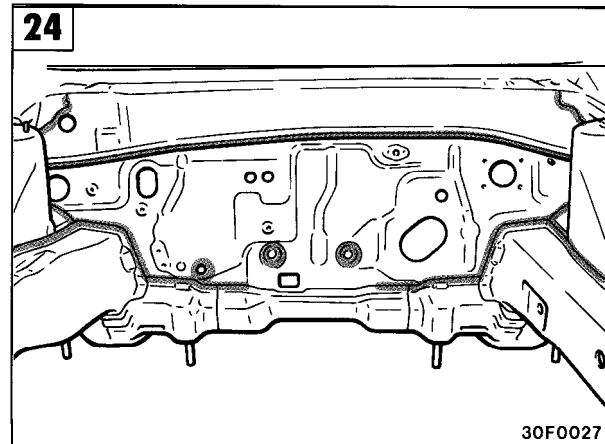
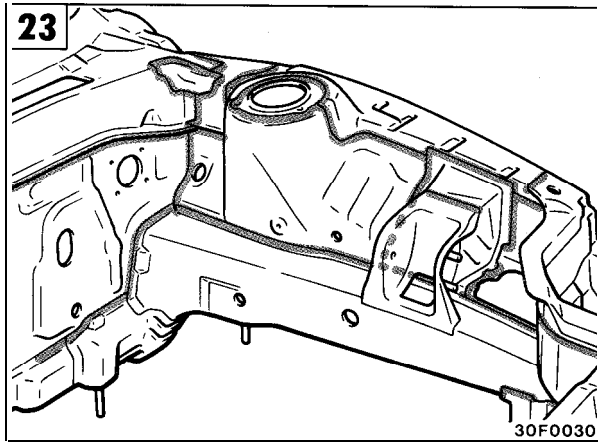
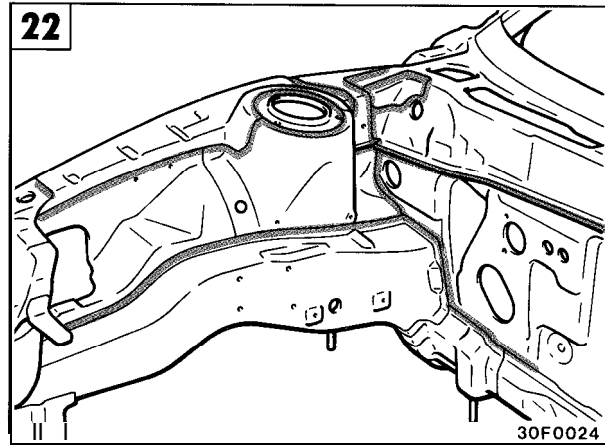
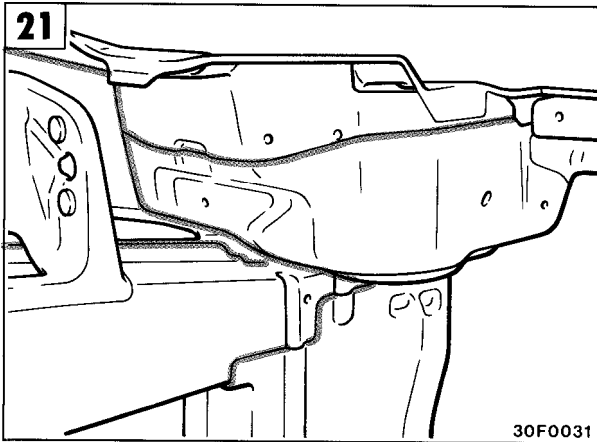
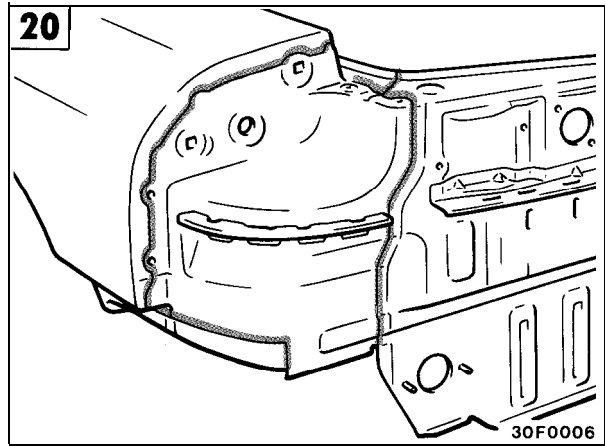
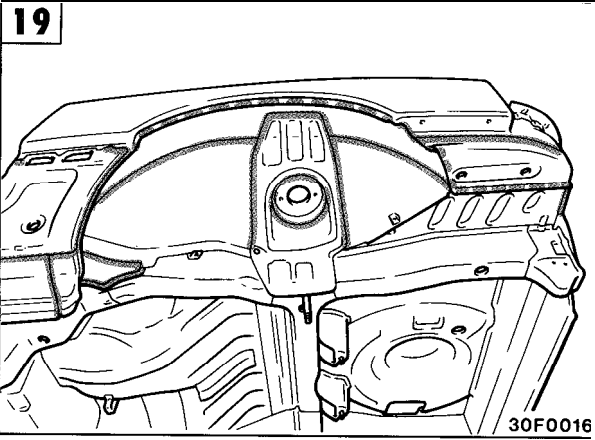
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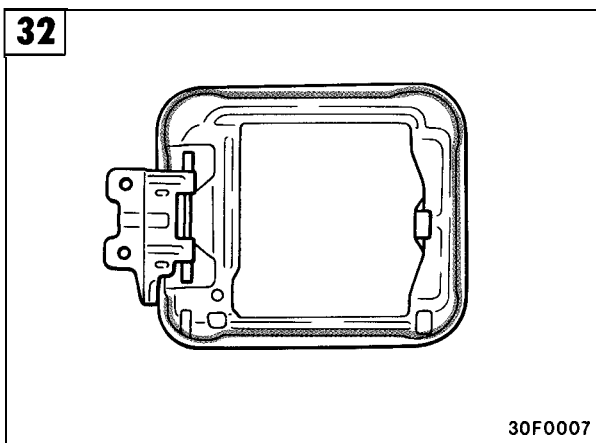
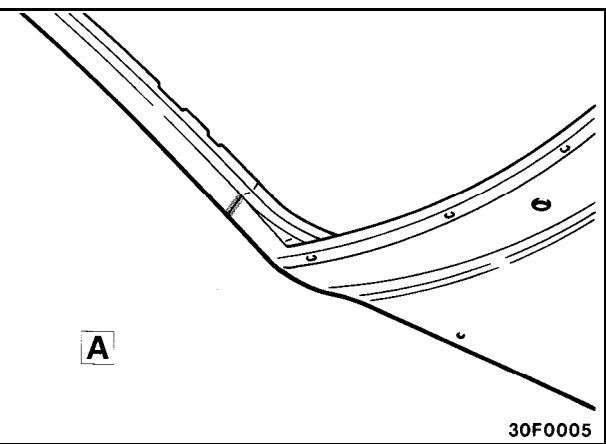
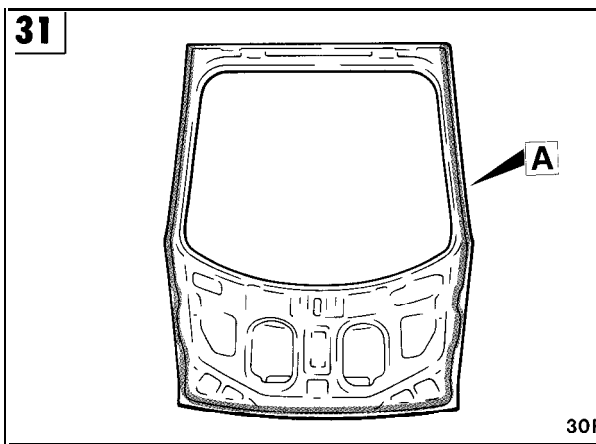
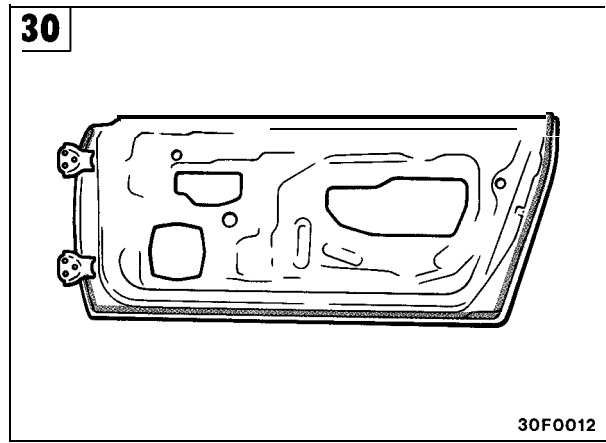
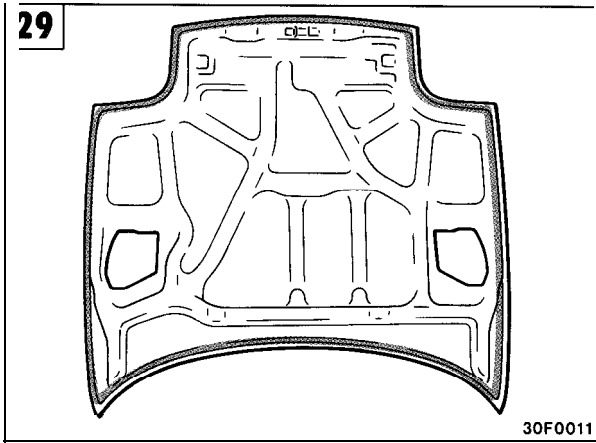
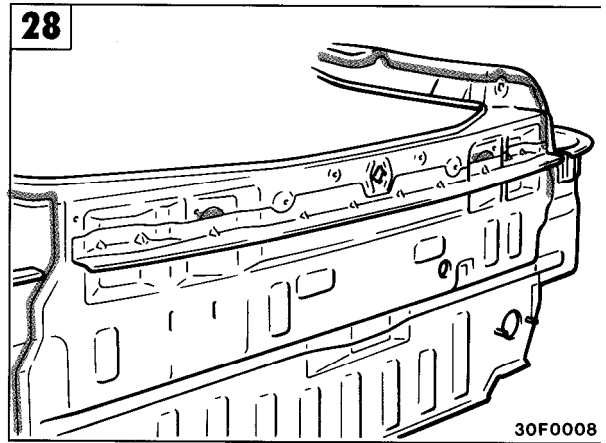
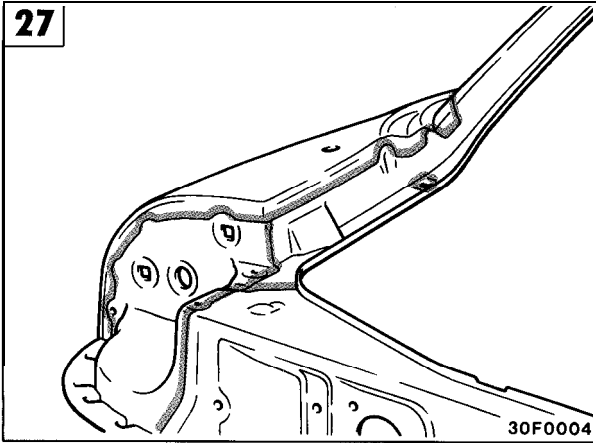


30F0023



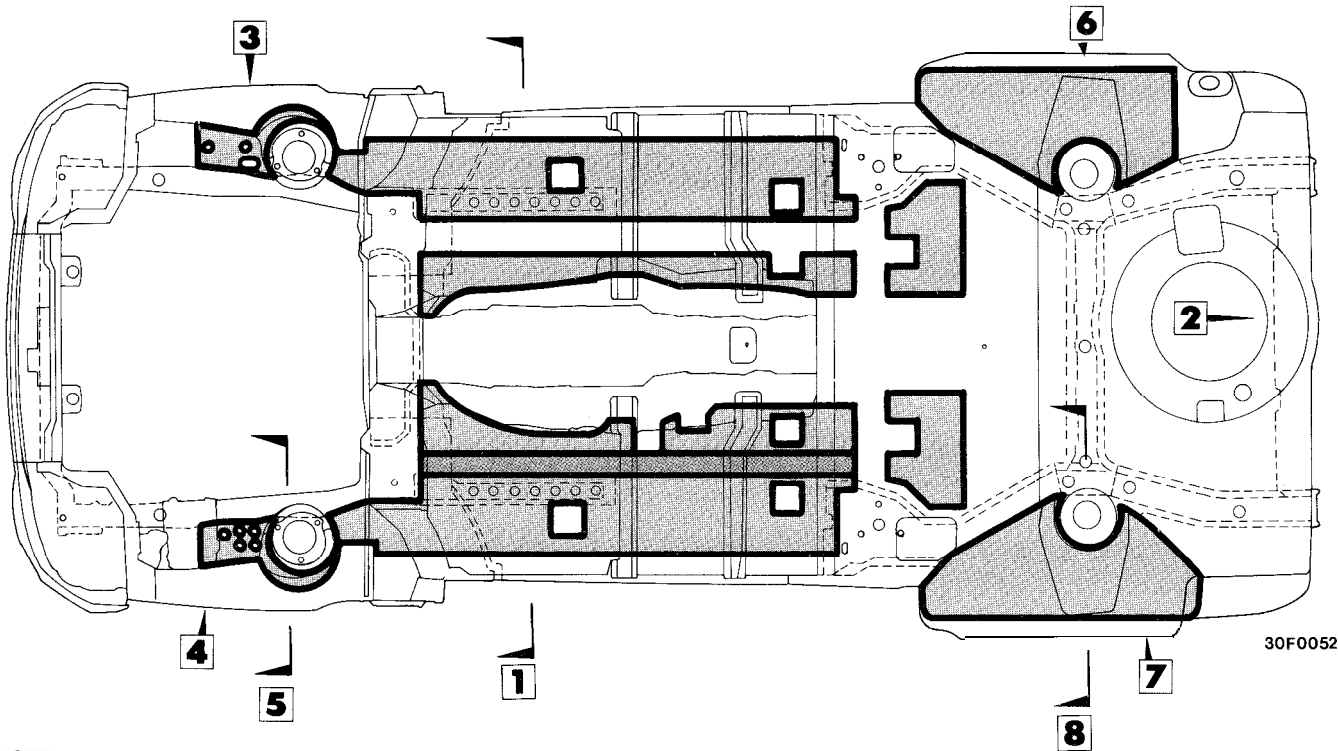






UNDERCOAT APPLICATION LOCATIONS

In order to provide rust, corrosion, chipping, and vibration resistance, an undercoat is applied to certain areas of the underbody. After completing body repairs, restore this undercoat if necessary.

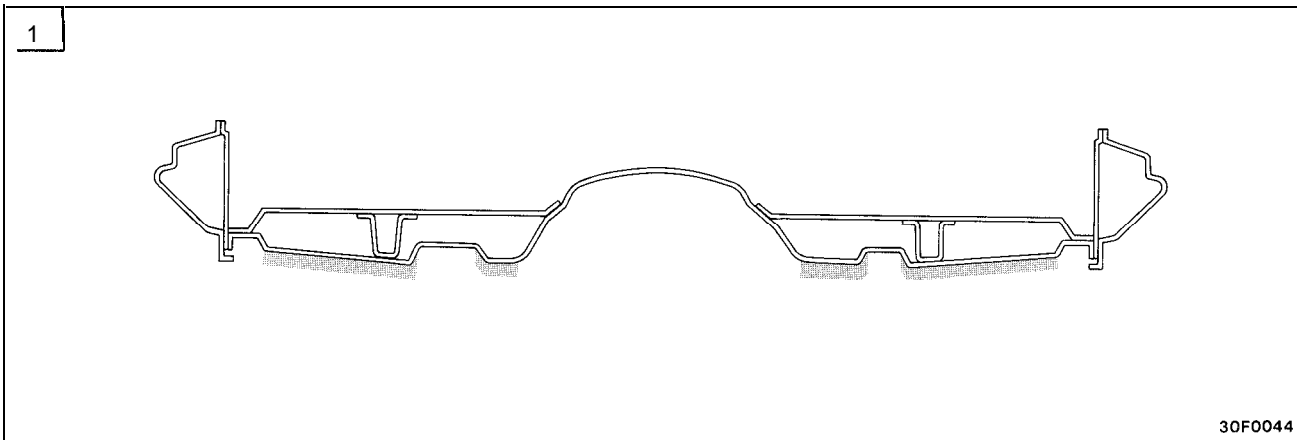


30F0052

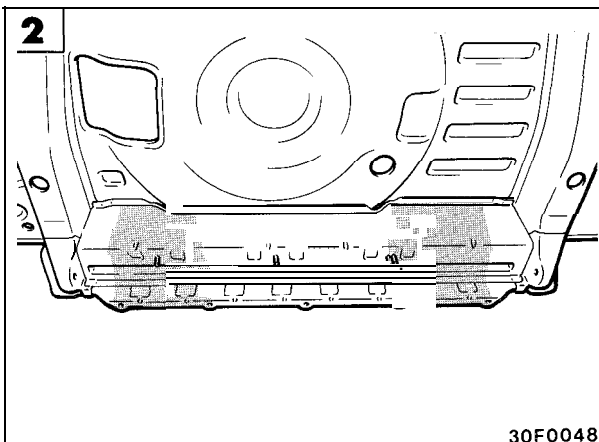
NOTE

* Because parts are to be mounted in these locations, mask the location before applying the undercoat.

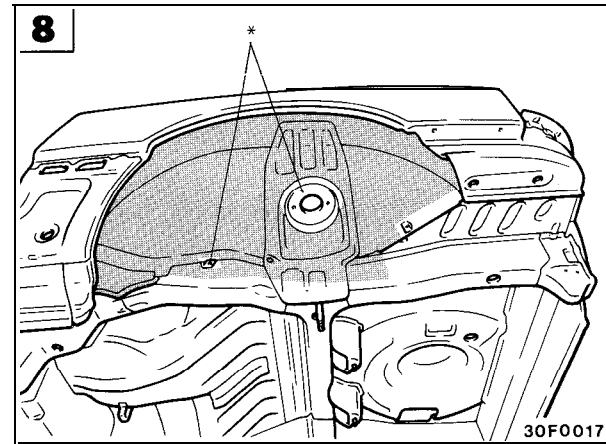
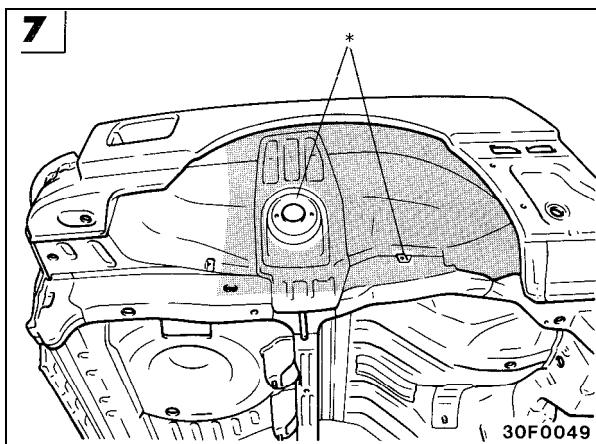
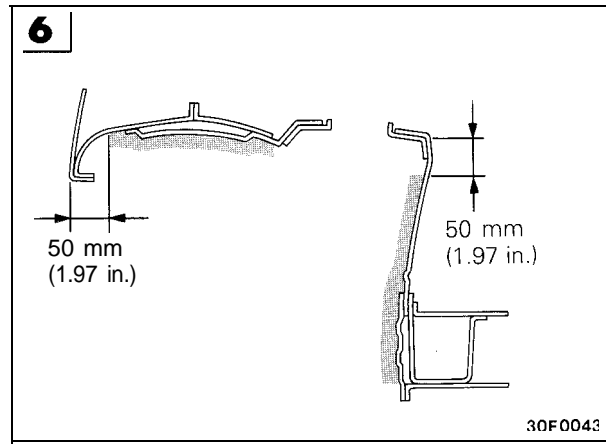
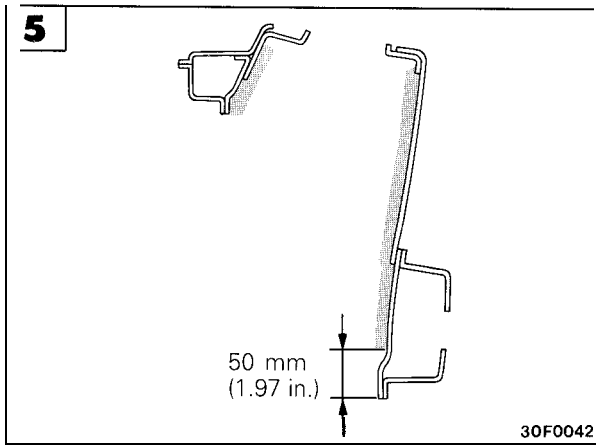
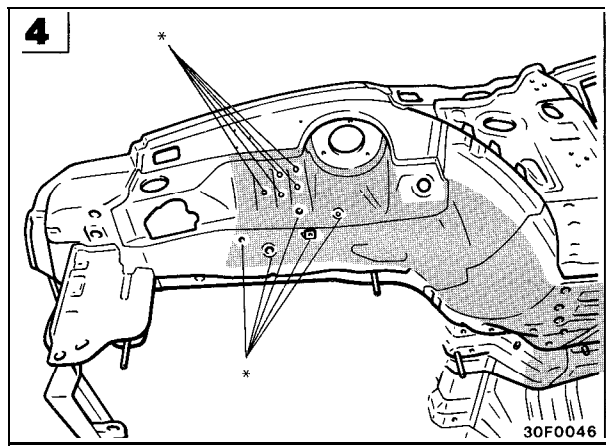
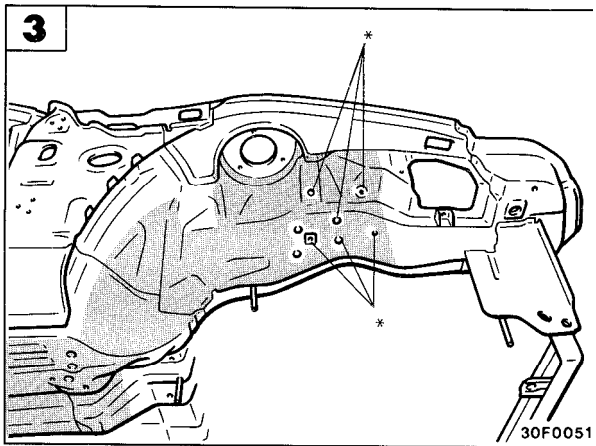
- : Undercoat is applied on models without 4WS only.
- : Undercoating [film thickness of at least 0.8 mm (03 in.)]



30F0044



30F0048



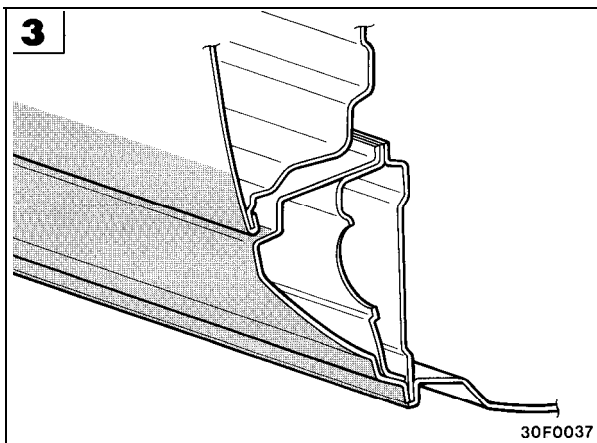
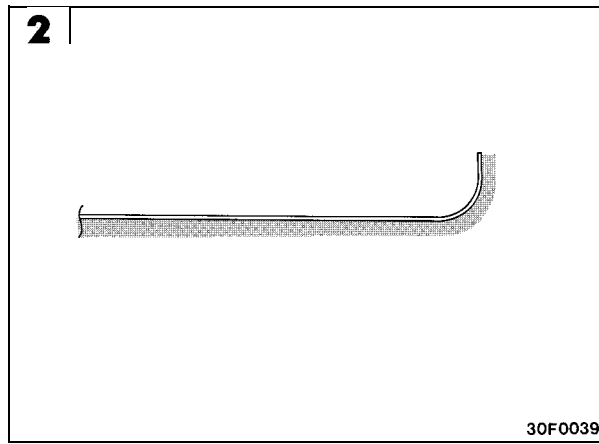
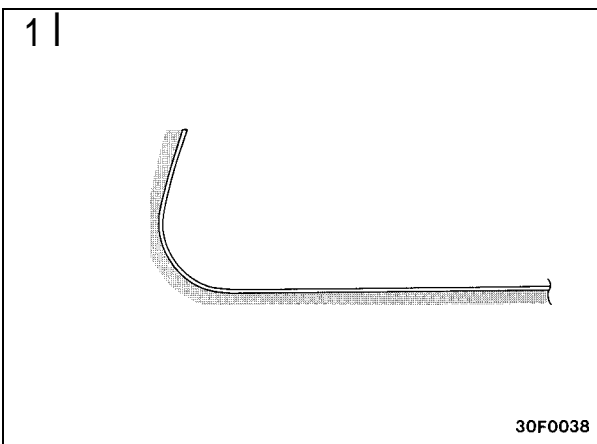
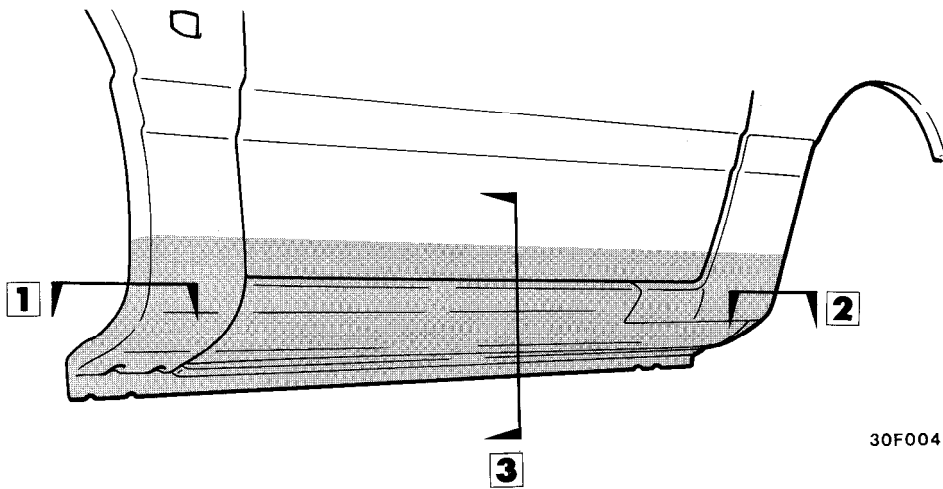
ANTICORROSION PRIMER LOCATIONS

(Vehicles without side air dam)

An anticorrosion primer has been applied to the side sill outer panel, the lower edge of the front fender and the lower edge of the outer quarter panel for the purposes of corrosion prevention

and abrasion protection. If any of these panels are replaced, apply an anticorrosion primer between the under coat and the second coat, as shown in the following illustrations.

Rocker panel primer	Recommended primer	Coating thickness
Primer name	Glasurit FX89-7330 (polyester basis) or FT90-7103 (water basis) or equivalent	350 μ or more.

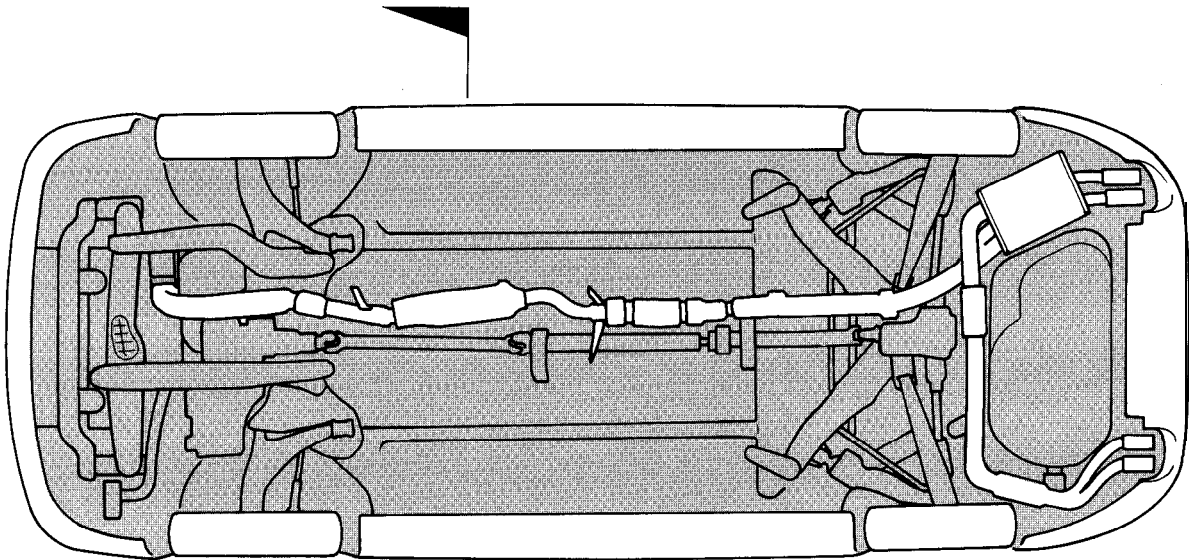


UNDERBODY ANTICORROSION AGENT LOCATIONS

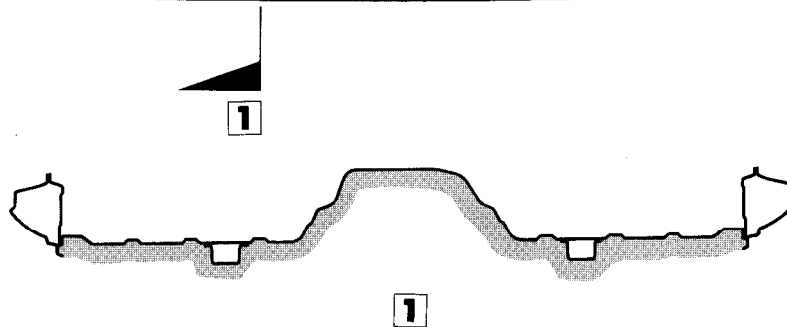
In order to provide a greater corrosion resistance, underbody corrosion prevention treatment should be performed after undercoat application. After completing body repairs, restore this underbody corrosion prevention treatment as indicated in the illustration if necessary.


Recommended agent:

- Tectyl 506T, 506 or S
- Waxoyl



00F0019



 : 100µ or more

30A0154

NOTE

- (1) Take care not to permit the anticorrosion agent to come in contact with brake discs or tires, exhaust pipes and mufflers.
- (2) Underbody parts which are not easily accessible because of the installation location and/or other parts should as far as possible be coated with the anticorrosion agent.

NOTES

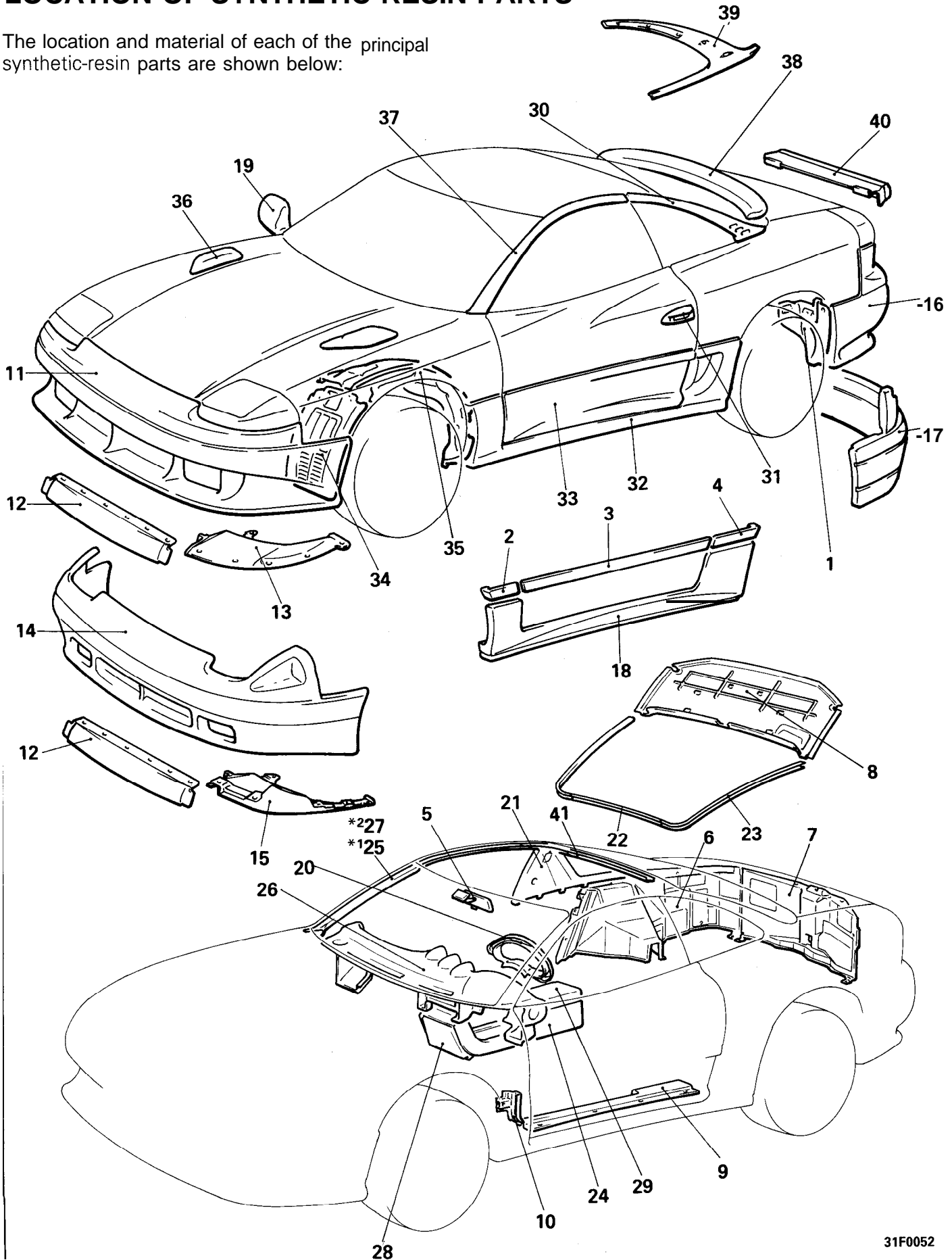


5 SYNTHETIC-RESIN PARTS

LOCATION OF SYNTHETIC-RESIN PARTS..... 5-100

LOCATION OF SYNTHETIC-RESIN PARTS

The location and material of each of the principal synthetic-resin parts are shown below:



No.	Part name	Name of resin	Abbreviation
1	Rear splash shield	Polypropylene	PP
2	Fender moulding		
3	Front door moulding		
4	Quarter moulding		
5	Room mirror		
6	Rear side trim		
7	Rear end trim		
8	Liftgate trim, lower		
9	Scuff plate		
10	Cowl side trim		
11	Front bumper fascia (P&U Line)	Thermoplastic elastomer	TPO
12	Front air spoiler, center		
13	Front air spoiler, side (P&U Line)		
14	Front bumper fascia (H&S Line)		
15	Front air spoiler, side (H&S Line)		
16	Rear bumper fascia (P&U Line)		
17	Rear bumper fascia (H&S Line)		
18	Side air dam (H&S Line)		
19	Door mirror	ABS resin	ABS
20	Meter bezel		
21	Quarter trim, upper		
22	Liftgate trim, upper		
23	Liftgate trim, side		
24	Rear console		
*125	Front pillar trim		
26	Instrument panel	Polyvinyl chloride/urethane	PVC/U
*227	Front pillar trim		
28	Front console		
29	Console lid		
30	Rear pillar garnish		
31	Door outside handle	Polyamide	PA
32	Side air dam (P&U Line)	Polyurethane	PUR
33	Door side garnish		
34	Front splash shield extension	Polyethylene	PE
35	Front splash shield		
36	Hood garnish	Nylon	—
37	Drip moulding	Unsaturated polyester	UP
38	Air spoiler	Polyphenylene oxide/polyamide	PPO/PA
39	Flow through garnish	Fiber reinforced plastic	FRP
40	Rear panel garnish	Polyacrylate/ABS resin	PMMA/ABS
41	Rear roof rail trim	Polyvinyl chloride	PVC

NOTE: *1 indicates H&S line

*2 indicates P&U line

The "/" symbol indicates manufacture from two types of materials.

NOTES

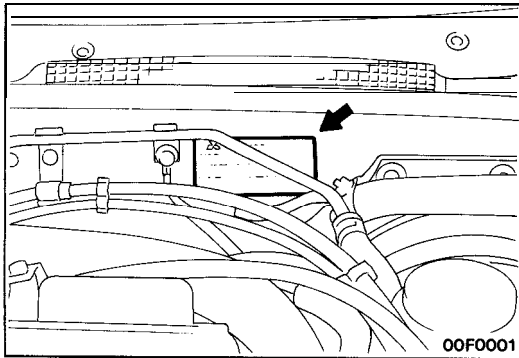
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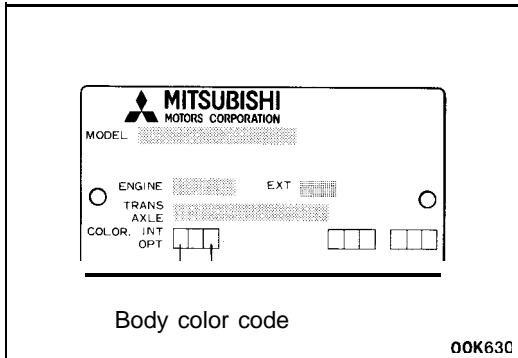
6 BODY COLOR

BODY COLOR CODE	6-104
BODY COLOR CODE INTERPRETATION	6-104
HIGH-LUSTER COATING	6-105
PEARL-TONE COATING	6-107
COLORED PEARL COATING	6-110
BODY COLORING	6-111



BODY COLOR CODE

The body color code is imprinted on the vehicle information code plate, which is mounted on the front deck.



BODY COLOR CODE INTERPRETATION

The information contained in the body color code is explained in the body color charts.

BODY COLOR TYPES

Check the vehicle's body color code, and then use this body color chart to determine the refinishing paint supplier from which the color can be purchased.

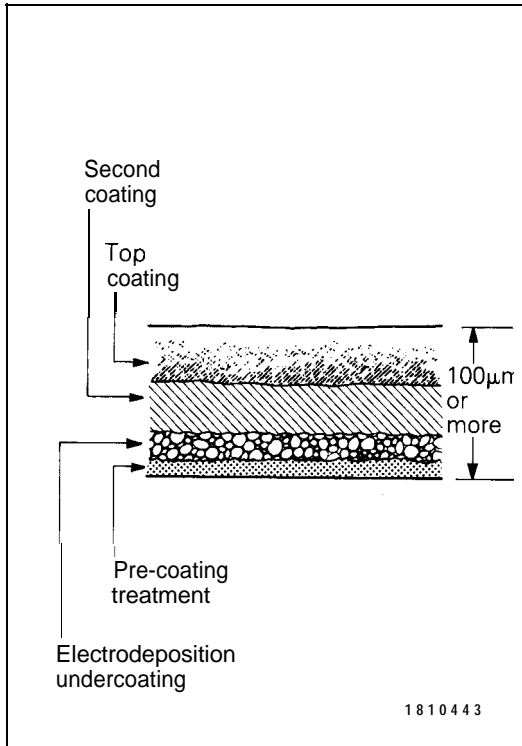
(M): Metallic paint
(P): Pearl tone paint

Paint used by manufacturer	Body color	Body color code	Color number	Body color name	Engine compartment and luggage compartment color	
					Color number	Color name
WHITE		W20	AC10920	Super Pure White	AC10955	WHITE
		W75	AC10875	Galaxy White (P)	AC10863	WHITE
LAMP BLACK		X94	AC10894	Lamp Black	AC10539	DARK GRAY
RED		R25	AC10925	Kutani Red (P)	AC10632	MAROON
		R38	AC10938	Passion Red	AC10795	RED
LIGHT BEIGE		s22	AC10922	Wheat Beige (M)	AC10956	LIGHT BEIGE
TURQUOISE		T72	AC10872	Napier Blue (M)	AC10898	TURQUOISE
BRIGHT BLUE		T87	AC10887	Fiji Blue (M)	AC10823	BLUE

HIGH-LUSTER COATING (AC10920)

For the top coating, a clear layer is formed on the coating surface by mixing a clear component of low surface tension with the paint, so the amount of paint becomes gradually greater closer to the second coating. The second coating improves the flow performance of the top coating before the film hardens, thus also improving the smoothness of the top coating.

Note that the second coating is the approximate color of the top coating, because the top coating is semi-transparent.



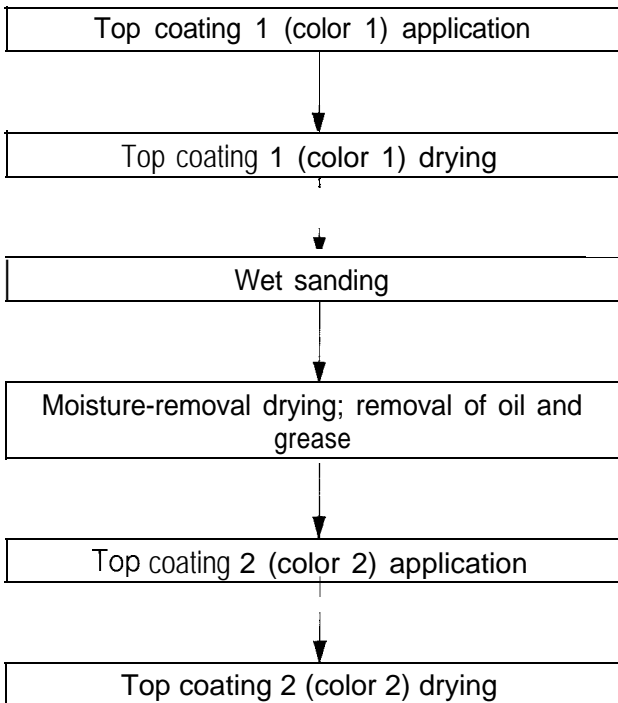
HIGH-LUSTER COATING REPAIR STEPS

BAKED-ON COATING

The above are processes following under-coating repair.

NOTE: Three paint coatings are applied on the production line, but for repairs four coatings are to be applied.

6



Color 1 is applied in proportion to the ordinary coating. Apply top coating 1 (color 1) to several test pieces.

Wet sand by using #800–#1200 waterproof sandpaper. Do not sand down to the undercoating.

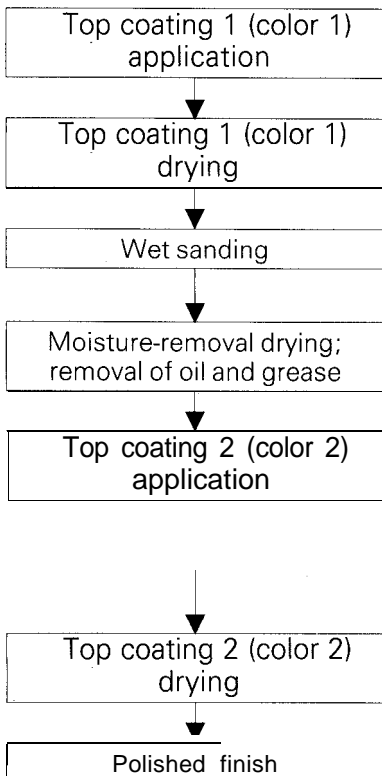
Apply top coating 2 (color 2) to the test pieces coated with top coating 1 (color 1) so as to check the color tone and the number of coatings.

Apply to coating while checking the previous paint film's color tone, depth and surface.

SELF-DRYING PAINT

TYPE 1

TYPE 2
(cloudy coating)



Apply a paint color-matched with color 1. Apply color 1 to several test pieces.

Apply the color-matched coating to color 1.

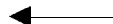
Wet sand by using #800–#1200 waterproof sandpaper. Do not sand down to the undercoating.



Apply the paint color-matched with color 1 to a test piece so as to check the color tone and number of coatings.

Prepare color 2 as a mixture of color 1 and clear at a ratio of from 20:80 to 50:50.

Apply the coating while checking the previous paint film's color tone, depth and surface.



Use compound polishing if necessary.

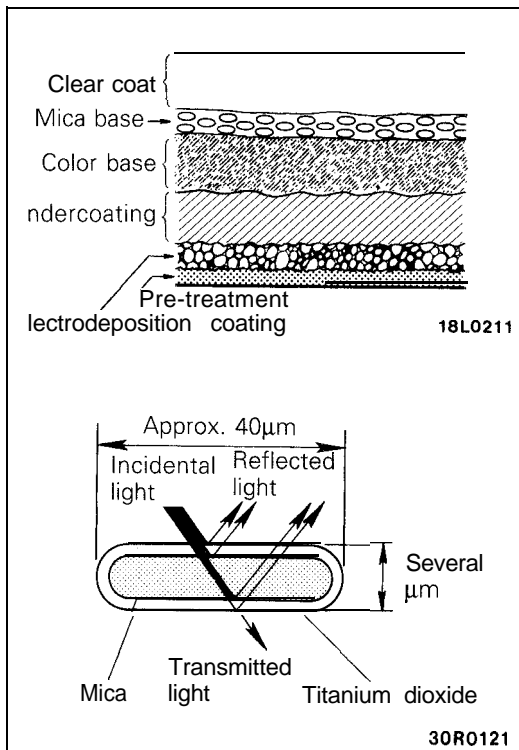


PEARL-TONE COATING (AC10875)

The pearl-tone coating is a coating in which mica particles coated with titanium dioxide are used instead of the aluminium particles used in metallic coatings.

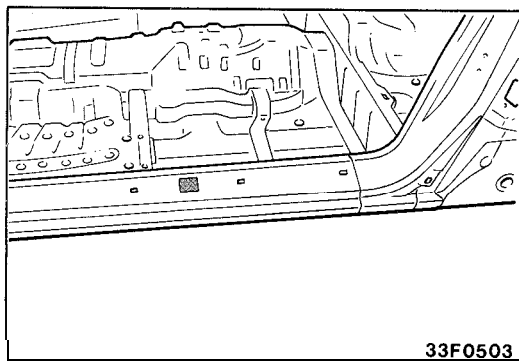
Because the mica particles are transparent, a color base is coated between the mica base and the undercoating, and three top coatings are applied.

The color tone of a pearl-tone coating is a combination of the mica base and the color base, and the result is a film coating that has a pearl-like lustrous glossiness because of the complex reflections provided by the mica base.



REPAIR NOTES

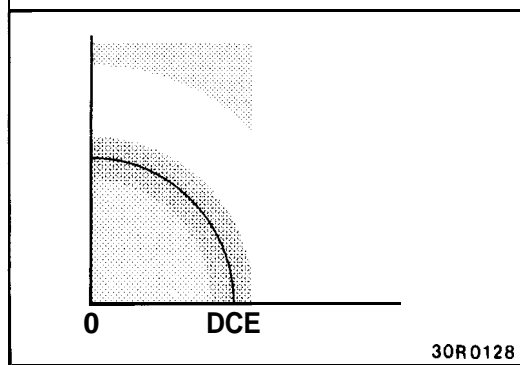
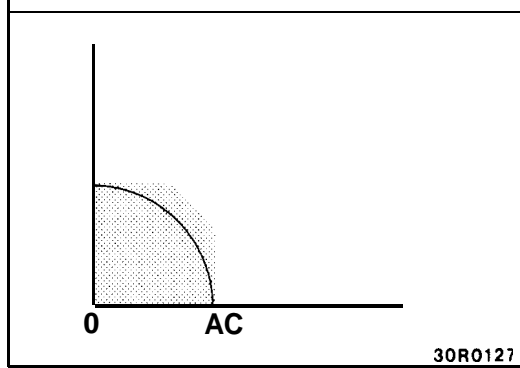
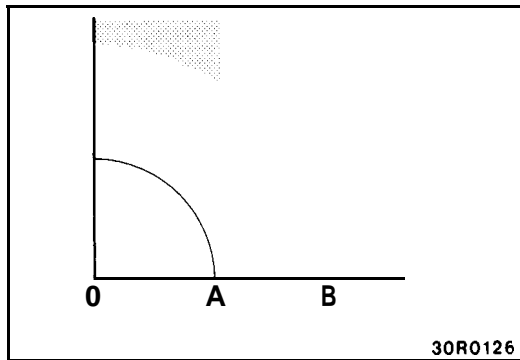
1. Color base exposure places are provided at the side sills (both left and right); these can be used for accurate color matching of the color base.
2. Because the mica base is semi-transparent and cloudy, it will become whitish if the film thickness is increased, and, if the film thickness is insufficient, the color tone of the color base will become strong.
3. No repairs can be made if the mica base does not adhere well; therefore, a drying interval must be taken after each mica base application. (The drying interval should be long enough so that the paint does not adhere to a finger when touched.)
4. The finished condition can be better judged in direct sunlight.



PEARL-TONE COATING REPAIR STEPS

Spot repairs	Block repairs
Grinding of the problem area	
Repair coating of the primer coating and undercoating	
Color base coating	
Color base gradation coating	
Drying	

	Grinding	
	Mica base	
	Clear coat	
Clear coat gradation		
	Drying	
	Polished finish	



PEARL-TONE COATING REPAIR PROCEDURES

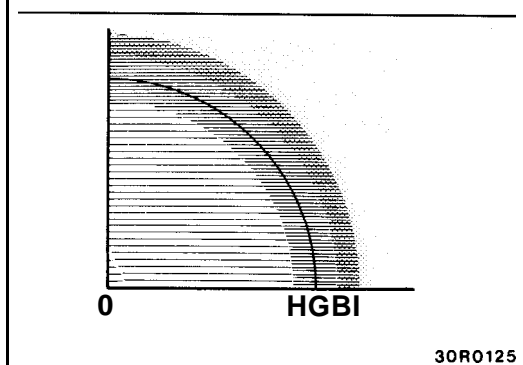
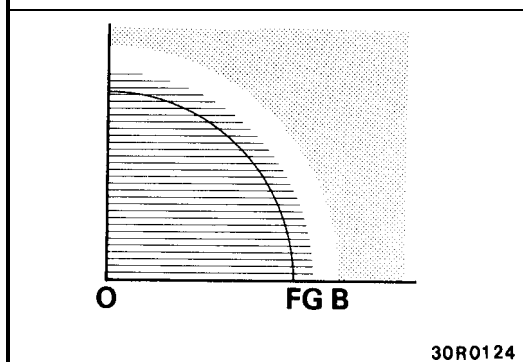
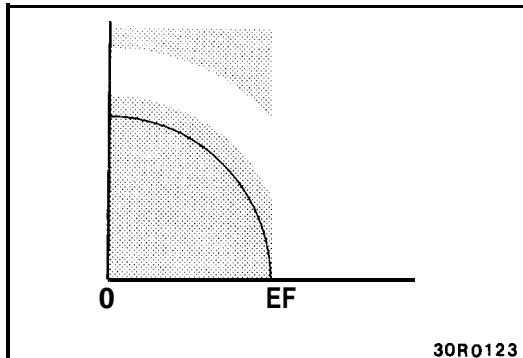
The following are the processes following (for spot repairs) the primer coating and undercoating repair coating applications.

- (1) Use sandpaper (#320 or higher for dry sanding, #400 or higher for wet sanding) uniformly on the problem area (O-N).
In addition use sandpaper (#1000 or higher) or a rough compound at the periphery (A-B) to be sure that there are no uneven or "stepped" places.
- (2) Use unleaded petrol or a similar product to remove oils and greases.
- (3) Apply the color base over a range (O-C) slightly greater than the problem area.

(4) In addition, apply a gradation coating (using the color base diluted by paint thinner) at the outer periphery (D-E).

(5) Dry the color base.

- (6) Use sandpaper (#1000 or higher) gently over a range slightly greater than the area to which the color base was applied.
Sanding need only be to the extent that dust remains at the gradation place.
- (7) Use unleaded petrol or a similar product to remove oils and greases.



- (8) Apply the mica base coating (dividing the application into a few times) over a range (O-F) slightly greater than the area of color base application.

Caution

- The colour tone of the pearl-tone coating is determined by the thickness of the mica base, so the application should be made while noting the nearby colour tone.
- The mica base will not adhere well if all applied in one thick coating; apply it in several thinner coatings.

- (9) Allow about ten minutes for self-drying.
- (10) Apply the clear coat over a range (O-G) that is slightly less than the range (O-B) of grinding in step (1).

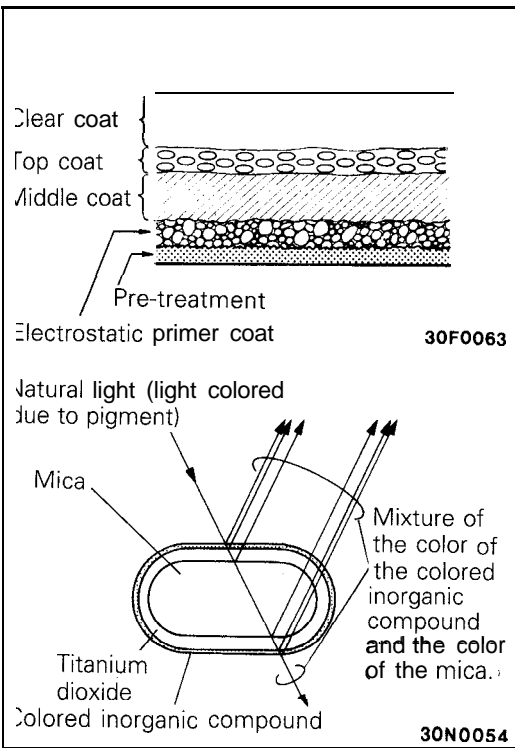
- (11) Apply a gradation coating (by using paint thinner) over a range (H-I) slightly greater than the range of grinding in step (1).
- (12) Dry the paint.
- (13) Make the final polishing.

NOTE

The conditions for paint mixing, spraying and drying should be as appropriate for the application procedures of the paint being used.

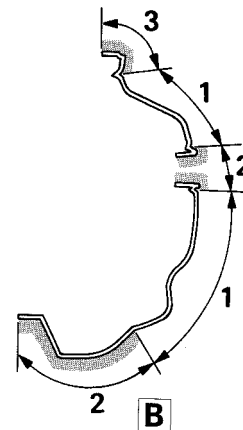
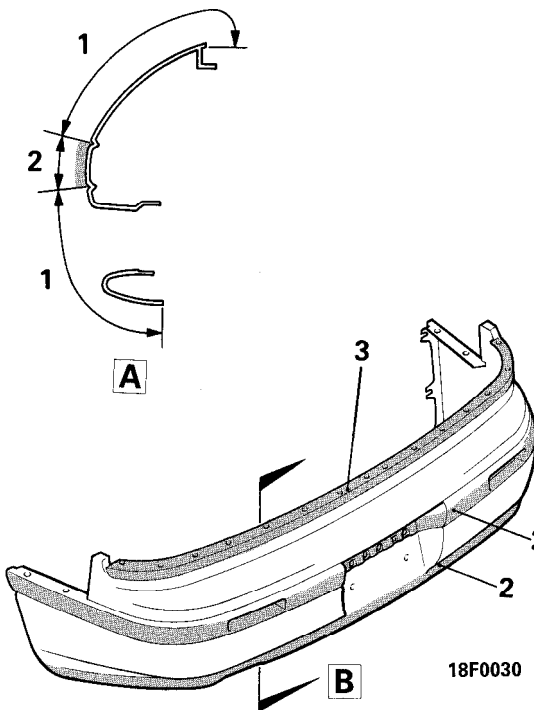
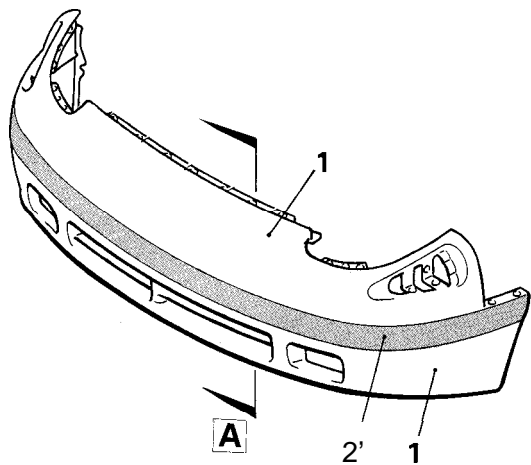
COLORED PEARL COATING (AC10925)

The colored inorganic compound is coated on the surface of the mica powder coated with titanium dioxide and the coloring mixed into the color base. The hue of the mica powder that forms the base and the colored inorganic compound are mixed. For Kutani Red (R25), coat bright red iron oxide on the white based mica powder. Refinishing paint is the same as for normal metallic painting.



BODY COLORING

BUMPER (Small type)

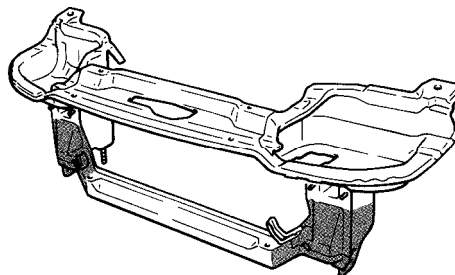


- 1. Body color
- 2. AC10724 (Dark Gray)
- 3. AC10894 (Lamp Black)

18F0019

18F0030

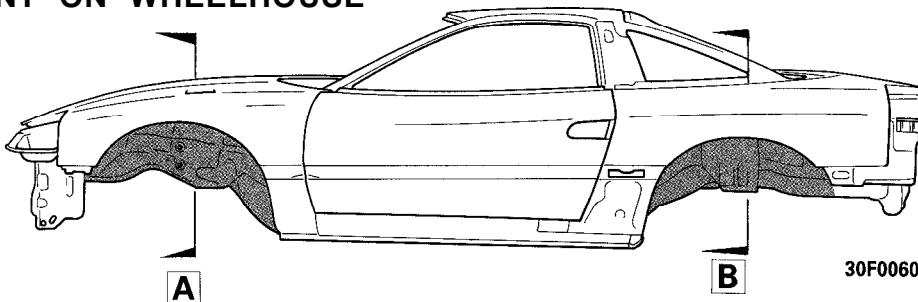
BLACK PAINT ON HEADLIGHT SUPPORT



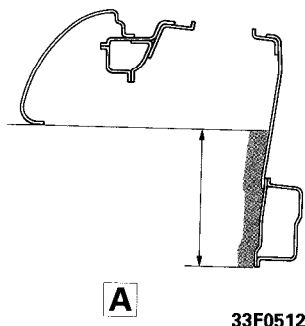
AC10657 (Black)

30F0064

BLACK PAINT ON WHEELHOUSE

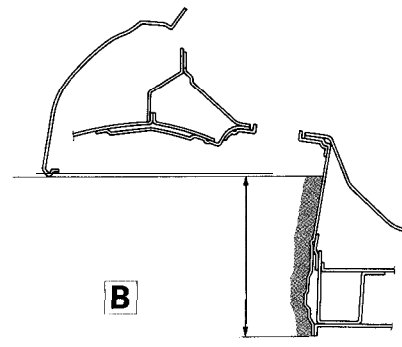


30F0060



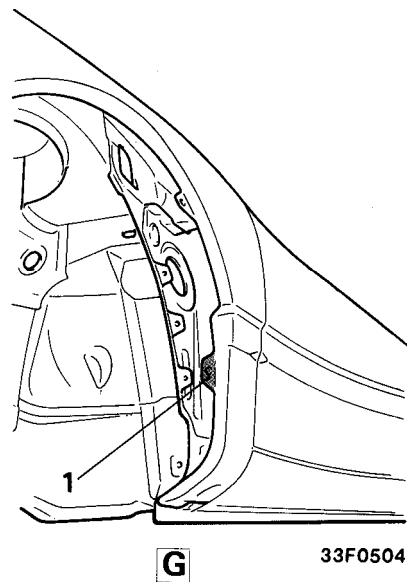
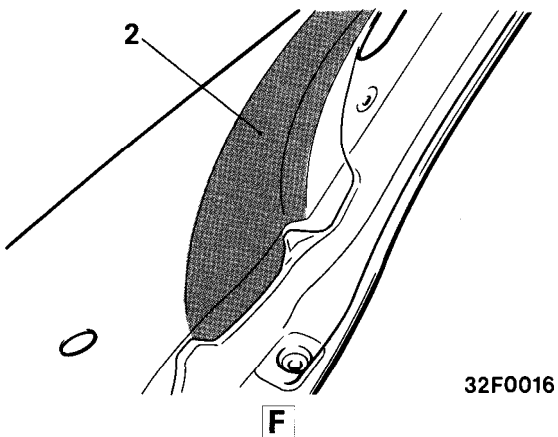
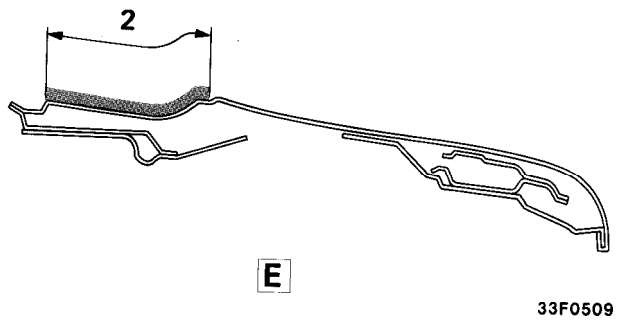
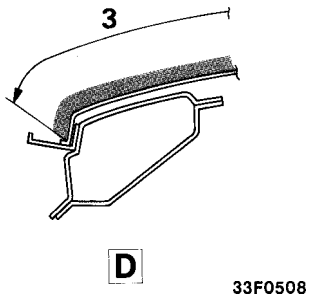
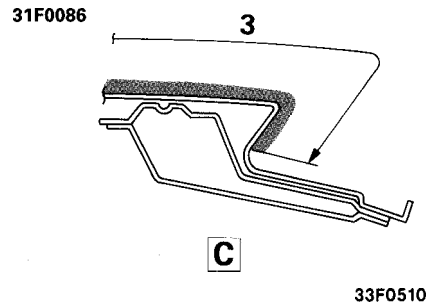
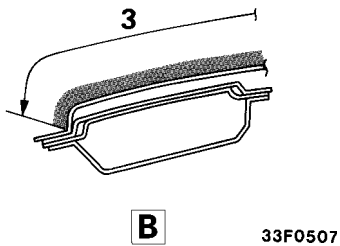
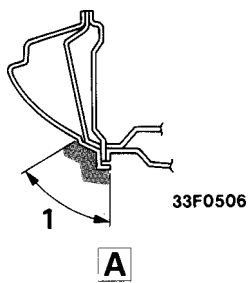
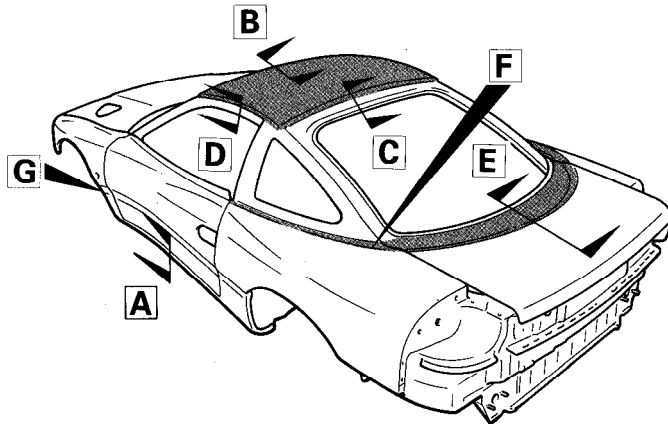
AC 10657

33F0512



33F0511

BLACK PAINT ON SIDE SILL, ROOF, LIFTGATE, FRONT FENDER AND QUARTER, OUTER



- 1. AC1 0657 (Black)
- 2. AC1 0724 (Dark Gray)
- 3. AC10894 (Lamp Black)

* The black coating on the roof is only on models with large bumpers.

8 REFERENCE MATERIAL

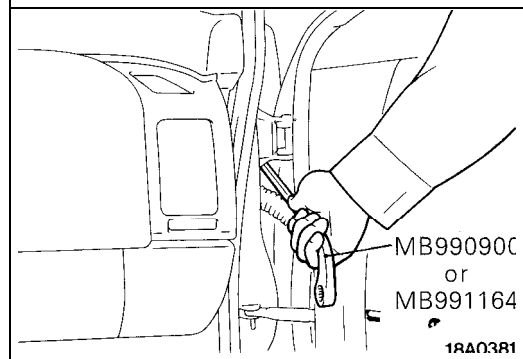
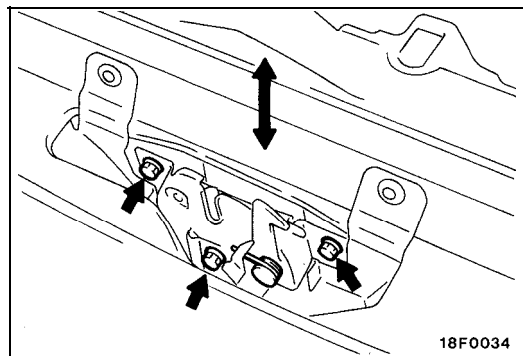
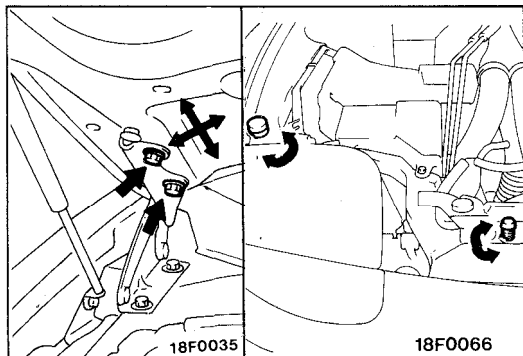
BOLTED PANEL FIT AND ADJUSTMENT	8-114
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BOLTED PANEL FIT AND ADJUSTMENT HOOD

ADJUSTMENT OF HOOD FIT

- (1) If the gap between hood and body is not even, loosen the hood mounting bolts and move the hood to the front and rear, right and left until the gap around the hood is even.
- (2) If the height of the hood and body is not the same, turn the hood bumper and adjust the height of the hood.
- (3) If the hood is not flush or if it is difficult to lock and unlock, first check the release cable and then loosen the hood latch mounting bolts and move the hood latch to adjust the way it catches on the hood striker.

Hood mounting bolt tightening torque 9 Nm
(7 ft.lbs.)
Hood latch mounting bolt tightening torque . . 12 Nm
(9 ft.lbs.)



DOOR

ADJUSTMENT OF DOOR FIT

- (1) If the gap between the door and body is not even, put protective tape on the fender near the hinge installation section and on the door edge and, using the special tool, loosen the door hinge mounting bolts on the body side and move the door front and rear, up and down until the gap around the door is even.
- (2) When making the door flush when replacing a door, loosen the door hinge mounting bolts on the door side with the special tool and move the door front and rear, up and down to adjust the gap around the door. Note that this adjustment is not necessary if a door is not replaced.

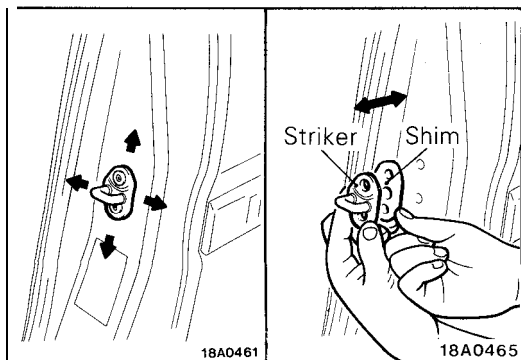
Door hinge bolt tightening torque
Body side . . . 44 Nm (33 ft.lbs.)
Door side . . . 22 Nm (16 ft.lbs.)

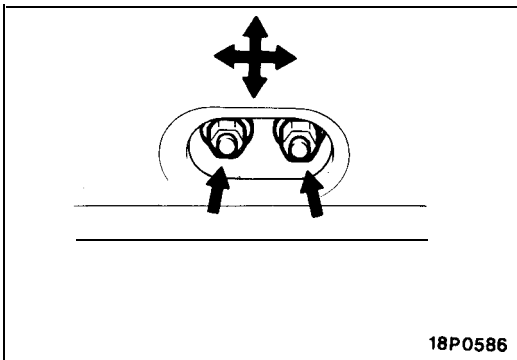
NOTE

Do not apply torque greater than 100 Nm (72 ft.lbs.) with the special tool (MB991 164).

- (3) If it is difficult to open and close the door, adjust the striker and door latch (moving to front and rear) catches using a shim in the striker mounting part and also move the striker up and down, right and left.

Striker mounting screw tightening torque . . 12 Nm
(9 ft.lbs.)

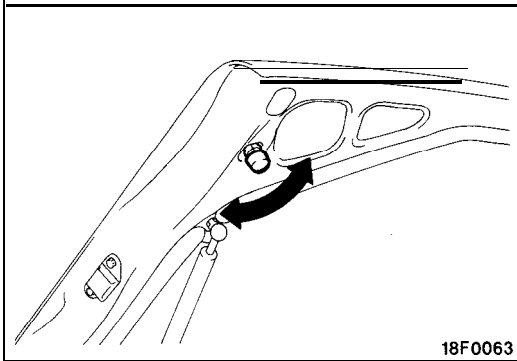




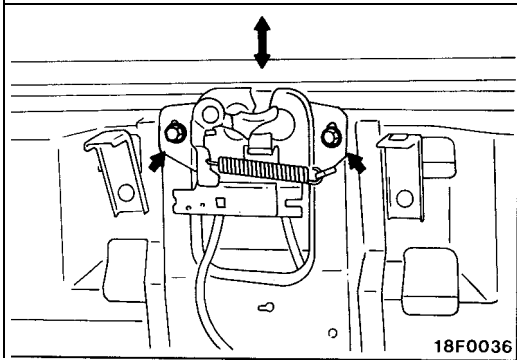
LIFTGATE

ADJUSTMENT OF LIFTGATE FIT

(1) If the gap between the liftgate and body is not even, loosen the liftgate mounting bolts and adjust the liftgate by moving it so the gap around the liftgate is even.



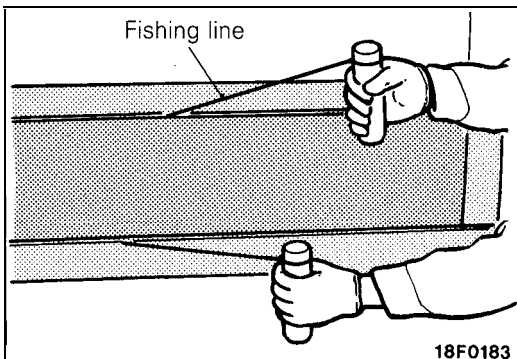
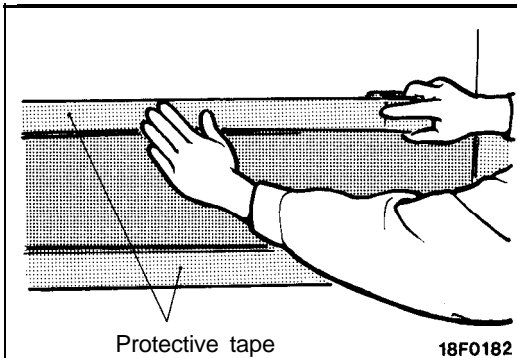
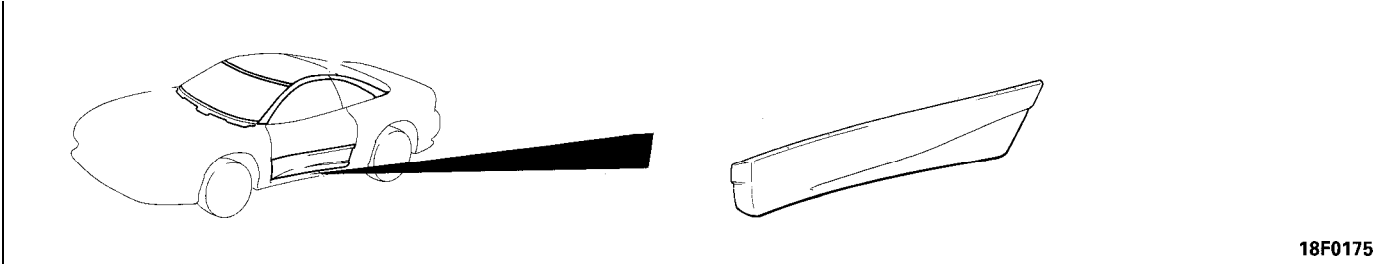
(2) If the height of the liftgate and body is not the same, turn the liftgate bumper and adjust the height of the liftgate.



(3) If the liftgate is not flush and if it is difficult to lock and unlock, first check the release cable and then loosen the liftgate striker mounting bolts and move the striker to adjust the way it catches with the liftgate latch.

INSTALLATION AND REMOVAL OF ADHESIVE COMPONENTS

SIDE GARNISH



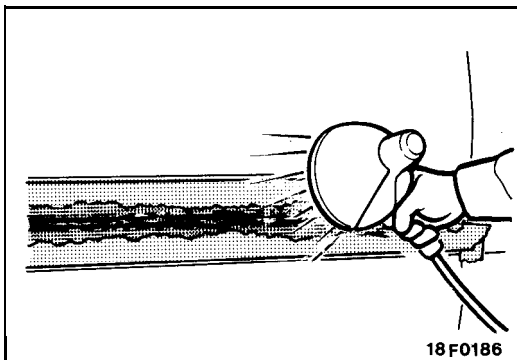
REMOVAL

- (1) Remove the side garnish mounting nut.
- (2) Stick protective tape around the outside of the side garnish

- (3) Insert fishing line [ø 0.8 mm (.03 in.)] between the body and the side garnish, pull both sides alternately to cut the glued parts and remove the side garnish.
- (4) For the sections where there are clips or bolts, remove them by pulling the side garnish toward yourself.

Caution

- (1) If the side garnish is to be reused, pull the fishing line along the body to remove it so the ends of the side garnish are not scratched.
- (2) If it is difficult to cut the glued parts, heat them to about 40°C (104°F).

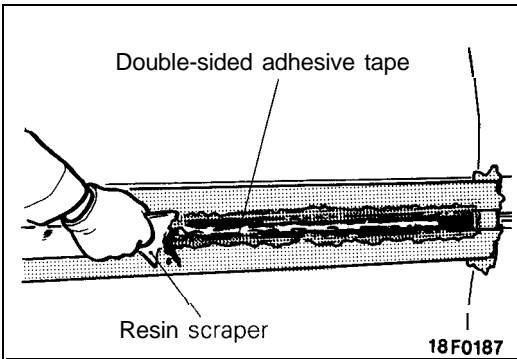


REMOVAL OF DOUBLE-SIDED ADHESIVE TAPE

- (1) Use an infra-red lamp, etc. to heat at 40 – 60°C (104 – 140°F) the double-sided adhesive tape for 5 – 10 minutes that remains on the body.

Caution

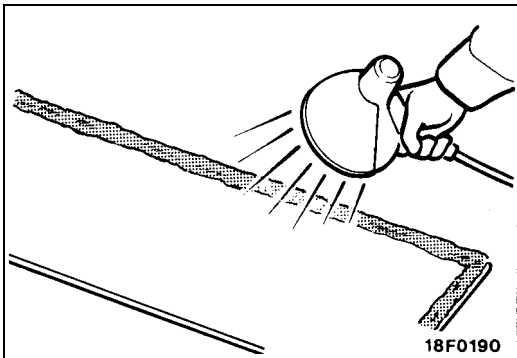
Do not heat it so much that the surface becomes white and dry.



- (2) Scrape away the double-sided tape with a resin scraper or similar instrument.
- (3) Wipe off application surface of body with clean cloth dampened with degreaser (MOPAR SUPER KLEEN or equivalent).

NOTE

After wiping surface, leave surface as it is to volatilize degreaser.

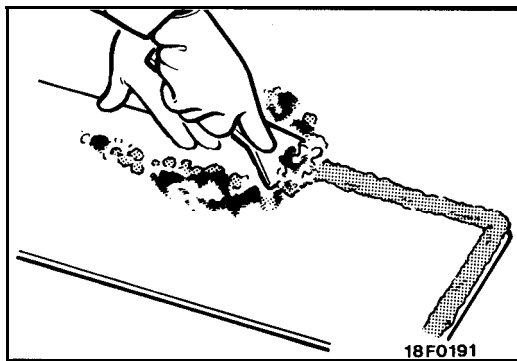


STICKING ON DOUBLE-SIDED ADHESIVE TAPE (WHEN REUSED)

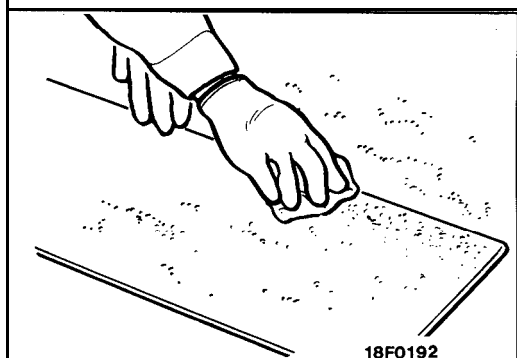
- (1) Use an infra-red lamp, etc. to heat the double-sided adhesive tape for 5 - 10 minutes at 40 - 60°C (104 - 140°F).

Caution

Do not heat it so much that the surface becomes white and dry.



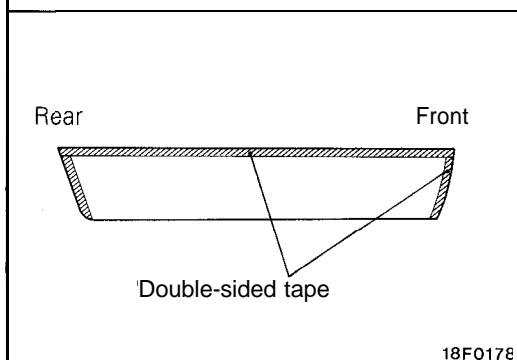
- (2) Remove the double-sided adhesive tape with a resin scraper or gasket scraper.
- (3) If some double-sided adhesive tape still remains, repeat the work in steps (1) and (2).



- (4) Wipe it clean with a rag containing a cleaning agent (MOPAR SUPER KLEEN or equivalent).
- (5) Remove a little of the old adhesive agent.

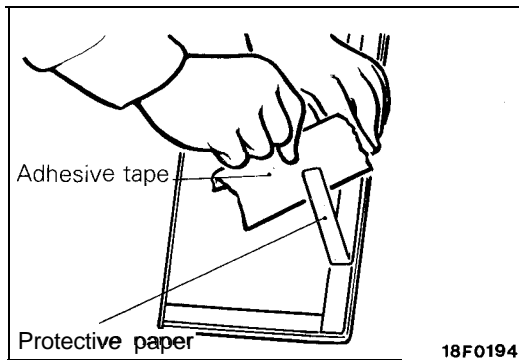
Caution

Do not remove all the old adhesive agent.



- (6) Stick the double-sided adhesive tape on side garnish as indicated.

Specified adhesive tape: 3M ATD Part No. 6382 or equivalent

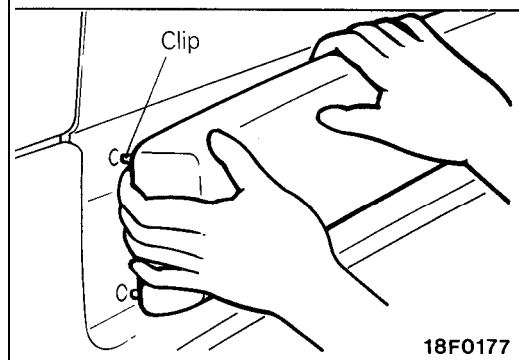


INSTALLATION

(1) Remove the protective paper from the double-sided tape.

NOTE

If the adhesive tape is stuck to the end of the protective paper, it is easy to remove it.



(2) Align the clips and bolts in the body holes and attach the side garnish.

NOTE

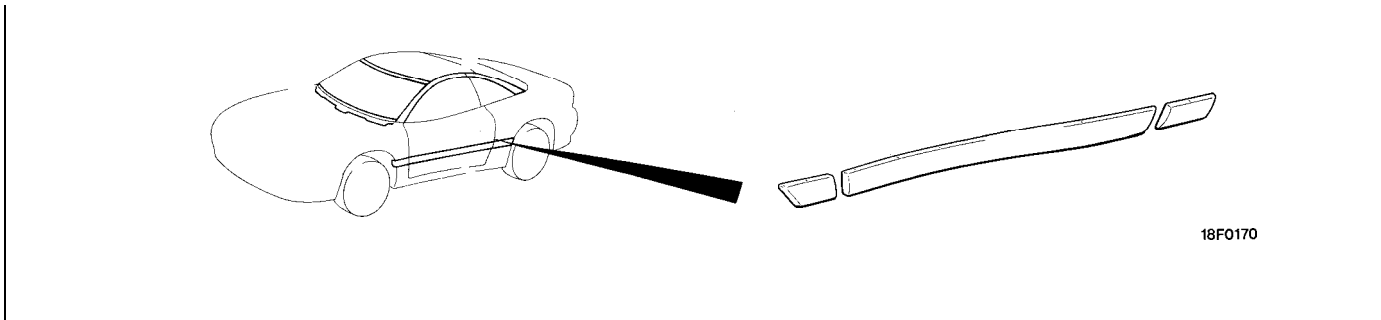
If it is difficult to stick on the double-sided tape during the cold season, first heat up the body adhesive surface and side garnish adhesive surface.

Body 40 – 60°C (104 – 140°F)

Side garnish 20 – 30°C (68 – 86°F)

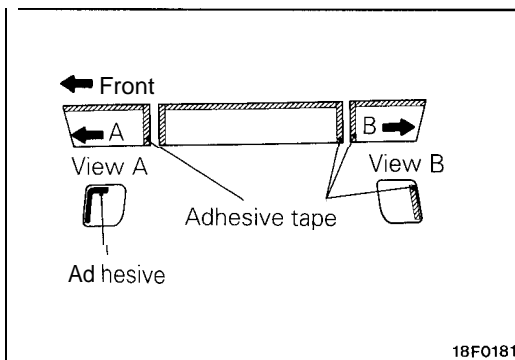
(3) Stick on the side garnish so it adheres firmly.

SIDE PROTECT MOULDING



REMOVAL

Remove it in the same way as the side garnish is removed.



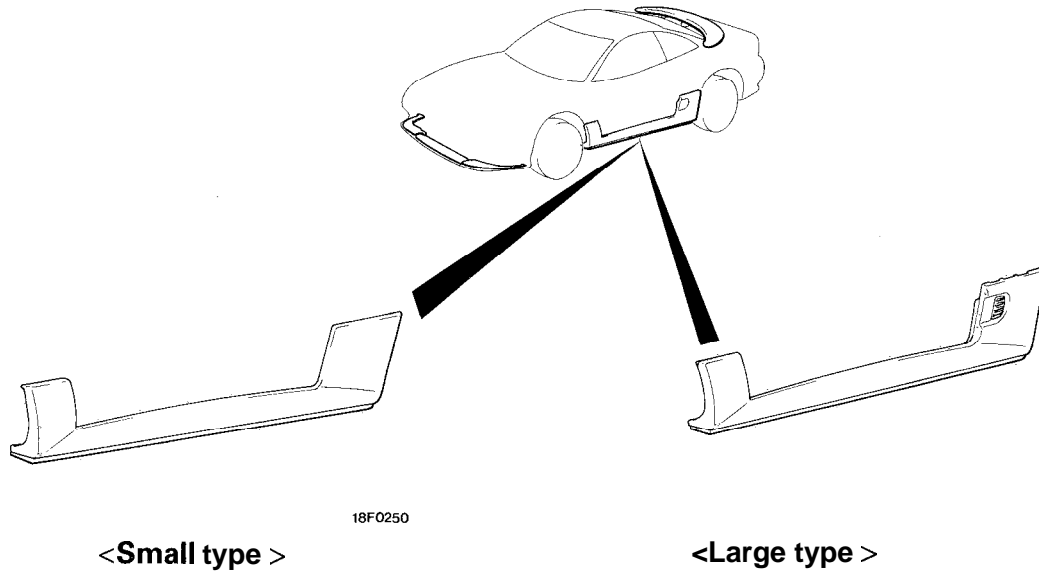
INSTALLATION

Install it in the same way as the side garnish is installed.

However, when attaching the side protect moulding, apply adhesive as indicated.

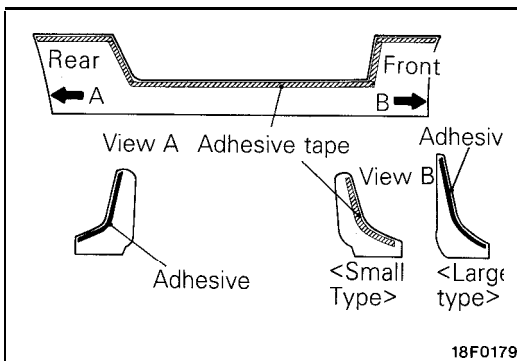
- Adhesive tape : 3M ATD Part No. 6382 or equivalent**
- Adhesive : 3M ATD Part No. 8609 SUPER FAST URETHANE or equivalent**

SIDE AIR DAM



REMOVAL

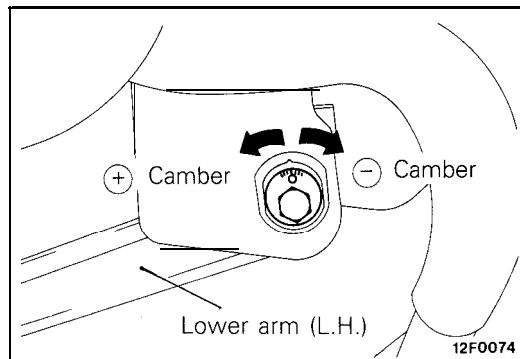
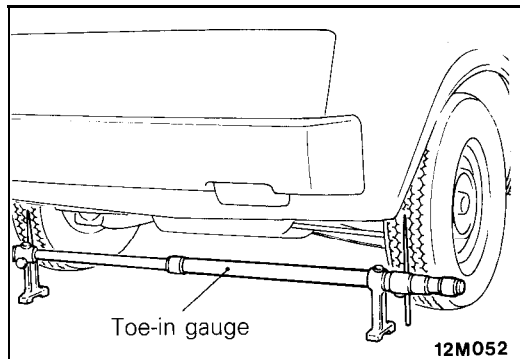
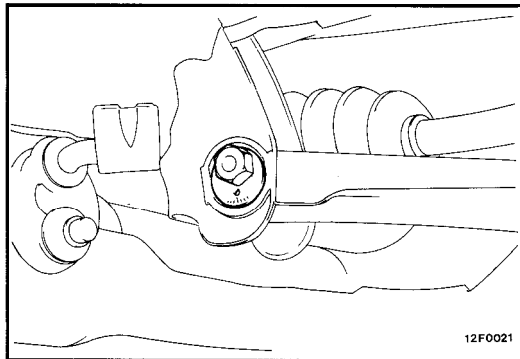
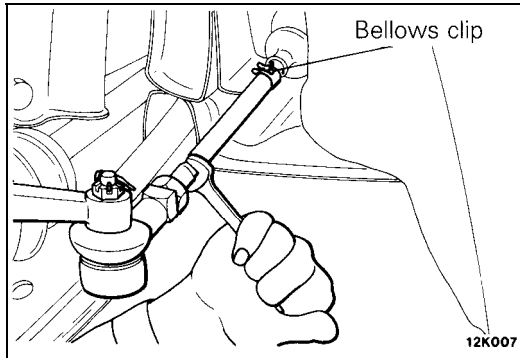
Remove it in the same way as the side garnish is removed.



INSTALLATION

Install it in the same way as the side garnish is installed. However, when attaching the side air dam, apply adhesive as indicated.

- Adhesive tape :** 3M ATD Part No. 6382 or equivalent
- Adhesive :** 3M ATD Part No. 8609 SUPER FAST URETHANE or equivalent



ADJUSTMENT OF OTHER PARTS

FRONT WHEEL ALIGNMENT CAMBER AND CASTER

Camber

Standard value: $0^{\circ} \pm 30'$

Caster

Standard value: $3^{\circ}56' \pm 30'$

The special tool should be installed with the same torque as the drive shaft nut.

The camber is adjusted by turning the strut (lower) mounting bolt (top side). The camber can be adjusted by about 20' for 1 graduation. The caster is already set to the fixed value at the factory and is a non-adjusting type.

Caution

- (1) Since the toe-in also changes about 0.5 mm (.02 in.) for 1 graduation of camber adjustment, the toe-in should be adjusted after camber is adjusted.
- (2) The right/left camber difference should be within $0^{\circ}30'$.

TOE-IN

Standard value: -3 to +3 mm (-.02 to +.02 in.)

To adjust, first remove the tie rod bellows clip and then turn (in opposite directions) the left and right tie rods the same amount.

After adjusting, use the turning radius gauge to check that the steering angle is at the standard value.

Standard value:

Inside: $33^{\circ}45'$

Outside: $28^{\circ}21'$

REAR WHEEL ALIGNMENT

<2WD>

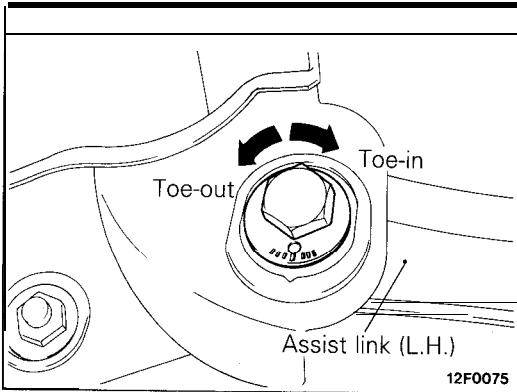
CAMBER

Standard value : $0^{\circ} \pm 30'$

Turn the lower arm mounting bolt (crossmember side) to adjust the rear wheel alignment.

NOTE

- Adjust with the assist link mounting bolt (crossmember side) loosened.
- Difference in the right and left wheels shall be 30' or less.
- Left wheel: clockwise direction (-) camber
Right wheel: clockwise direction (+) camber
Camber can be adjusted approximately 15' by 1 graduation.



TOE - IN

Standard value : 0.5 ± 2.5 mm (.01 ± .09 in.)

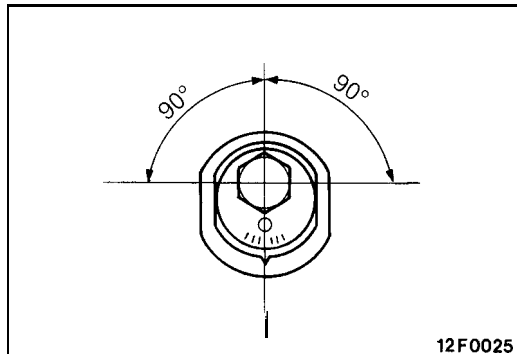
To adjust, turn the assist link mounting bolts (crossmember side) on the right and left by the same amount.

NOTE

- Difference in right and left wheels should be 3 mm (.12 in.) or less.
- Left wheel: clockwise direction, toe-in
- Right wheel: clockwise direction, toe-out
- Toe-in can be change approximately 4.8 mm (.19 in.) for 1 graduation <equivalent to one side toe-in angle of 27'>.

Caution

- Adjust the off-center bolt in a range of 90° right and left from the center position.
- Perform the camber adjustment and toe adjustment in that order and when camber has been adjusted, be sure to adjust toe.



<4WD>

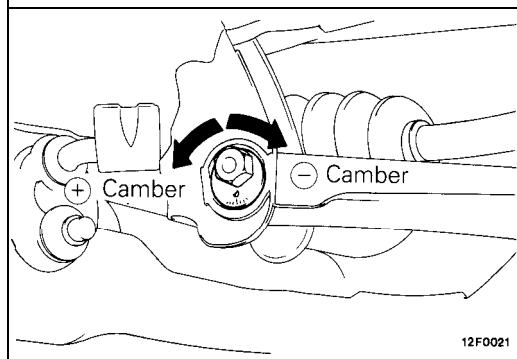
CAMBER

Standard value: -0°10' ± 30'

To adjust, turn the lower arm mounting bolt on the crossmember side.

NOTE

- LH: Clockwise rotation → ⊖ camber direction
- RH: Clockwise rotation → ⊕ camber direction
- The difference in the right and left wheels should be 30' or less.
- Camber can be adjusted approximately 12' for 1 graduation.



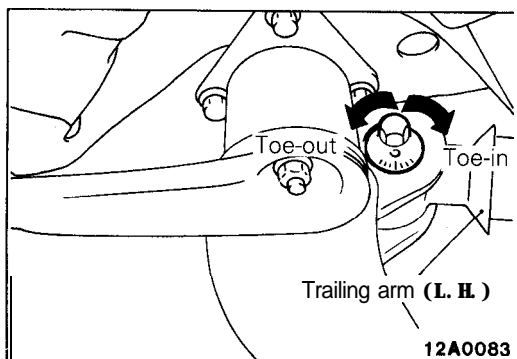
TOE-IN

Standard value: -2 to +3mm (-.08 to +.02 in.)

To adjust, turn the trailing arm mounting bolts (right and left) on the crossmember side by the same amount.

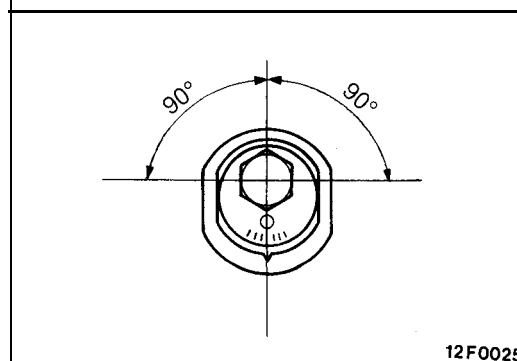
NOTE

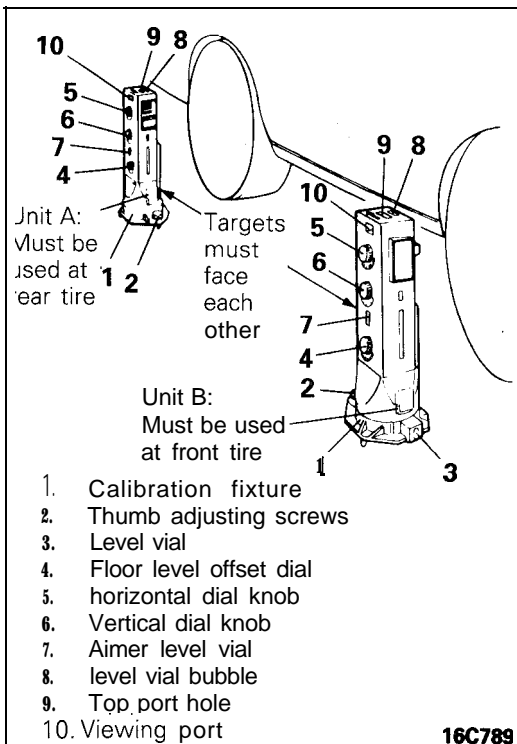
- LH: Clockwise rotation → Toe-in direction
- RH: Clockwise rotation → Toe-out direction
- The difference in the right and left wheels should be 3 mm (.02 in.) or less.
- Toe-in can be adjusted approximately 2 mm (.08 in.) for 1 graduation.



Caution

- (1) The off-center cam bolt should be adjusted within a range of 90° right and left of the center position.
- (2) Perform the camber adjustment and toe adjustment in that order and when camber has been adjusted, be sure to adjust toe.
- (3) When making the adjustment on 4WS models, remove the connection between the 4WS tie-rod end and trailing arm.





HEADLIGHT AIMING

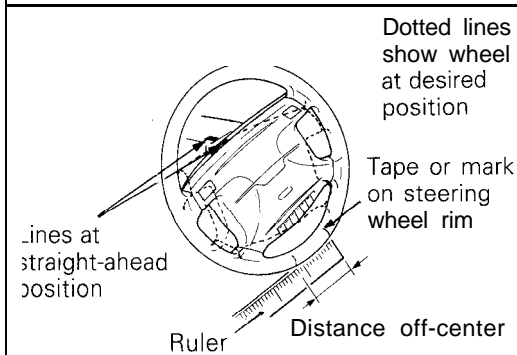
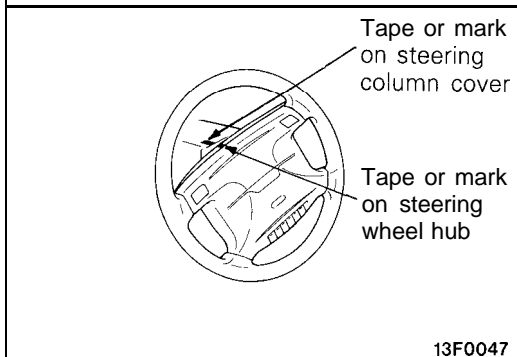
PRE-AIMING INSTRUCTIONS

1. Test dimmer switch operation.
2. Observe operation of high beam light mounted in instrument cluster.
3. Inspect for badly rusted or faulty headlight assemblies. These conditions must be corrected before a satisfactory adjustment can be made.
4. Place vehicle on a level floor.
5. Bounce front suspension through three (3) oscillations by applying body weight to hood or bumper.
6. Inspect tire inflation.
7. Rock vehicle sideways to allow vehicle to assume its normal position.
8. If fuel tank is not full, place a weight in trunk of vehicle to simulate weight of a full tank [3 kg (6.5 lbs.) per gallon].
9. There should be no other load in the vehicle other than driver or substituted weight of approximately 70 kg (150 lbs.) placed in driver's position.
10. Thoroughly clean headlight lenses.
11. Adjust headlights following the instructions of the headlight tester manufacturer.

STEERING WHEEL CENTERING

SIMPLIFIED STEERING WHEEL CENTERING

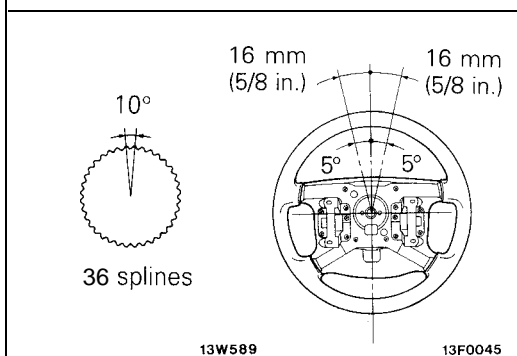
- (1) For the road test, take along chalk or tape and a ruler.
- (2) Drive straight ahead on an uncambered level surface.
- (3) When the vehicle's wheels are pointing straight ahead, mark the steering wheel hub and column cover with a chalk or tape line.
- (4) Stop the vehicle and line up the marks on the hub and column cover.
- (5) Place a tape strip or mark on the steering wheel rim.
- (6) Hold a ruler next to the rim as shown in the illustration, and then steer the steering wheel until it is in the desired centered position.
- (7) Record the distance the strip or mark on the rim has moved. This is how far the steering wheel is off center. If it is more than 16 mm (5/8 in.) off center, it can be centered by indexing it ten degrees towards the center.

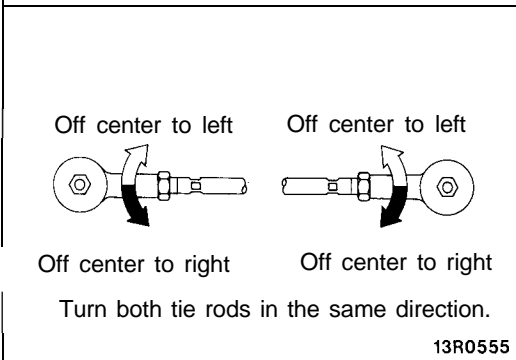
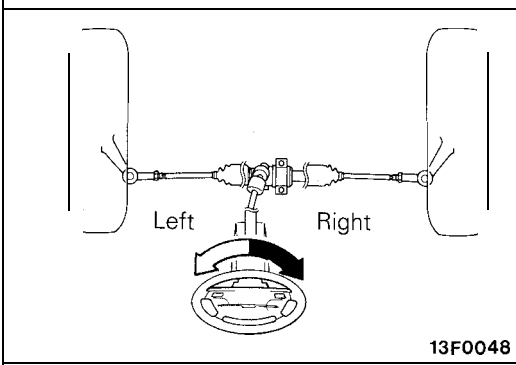
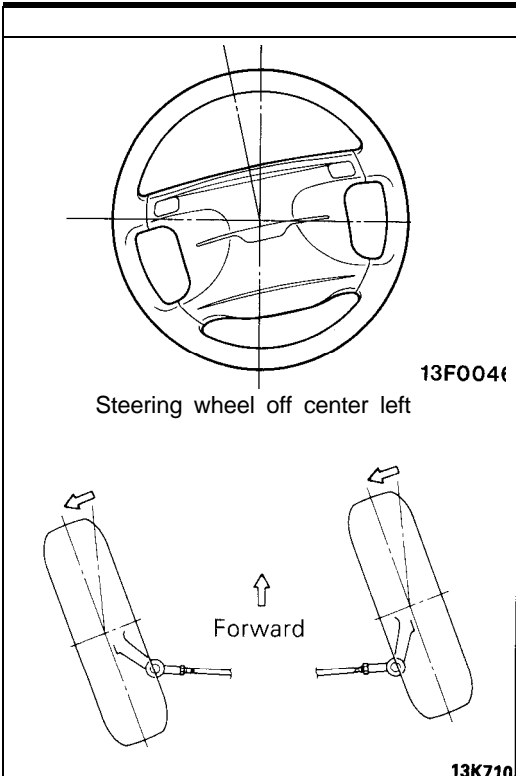


INDEXING STEERING WHEEL TO CENTER IT

The steering wheel shaft has 36 splines, allowing the steering wheel to be indexed in ten-degree increments.

- (1) Remove the steering wheel.
- (2) Without disturbing the position of the steering wheel shaft, re-install the wheel as near on-center as possible.





PRECISION STEERING WHEEL CENTERING

In general, the tie rods are adjusted to steer the front wheels in the same direction that the steering wheel is off center. If the steering wheel is off center to the left, center it by adjusting the tie rods to make the front wheels steer toward the left, and vice versa.

- (1) Mark the tie rods and tie rod ends with chalk before loosening the lock nuts.
- (2) Hold the tie rod with a wrench and loosen the lock nut.
- (3) Hold the tie rod end with a wrench and turn the tie rod the desired number of turns.

For 2" or 6 mm (.25 in.) at the steering wheel rim 1/5 turn of tie rods.

- (4) Tighten the lock nut to the specified torque, taking care not to turn the tie rod.

NOTES

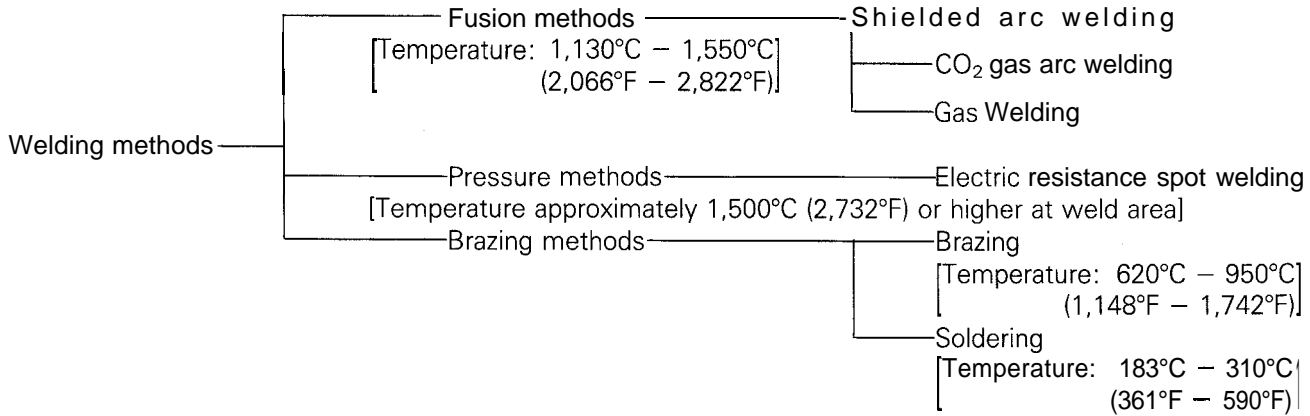
9

BASE OF BODY REPAIR

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WELDING

Welding is the partial joining of two or more metals by deposition; the welding methods used for body maintenance and repair can be classified into the following methods.



FUSION WELDING

Fusion welding is a method of welding in which the weld connection is made by forming or supplying the weld metal at the part where the weld is to be made.

PRESSURE WELDING

Pressure welding is a method of welding in which the weld connection is made by applying external pressure while the part where the weld is to be made is in a molten or semi-molten condition.

BRAZING

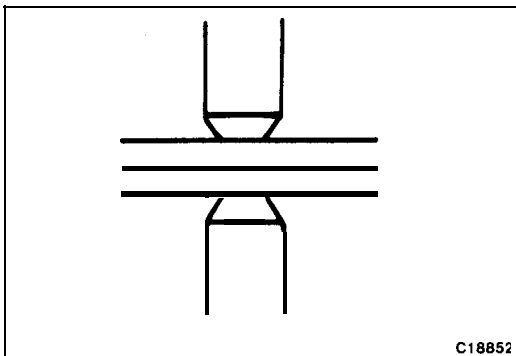
Brazing is a method of welding in which the weld connection is made by supplying a filler metal (which is molten at a temperature lower than the melting temperature of the base metal) at the place where the joining is to be made without melting the base metal itself.

ELECTRIC RESISTANCE SPOT WELDING

Electric resistance spot welding is a method for fusing metal parts together. Two or three metal sheets are positioned between two copper-alloy electrode tips, and pressure and a large current are then applied, thus causing the contacting surfaces to heat up and fuse together because of the electric contact resistance.

ADVANTAGES OF ELECTRIC RESISTANCE SPOT WELDING

- Because the time required for welding at each point is brief, the work can be done quickly and at reduced cost.
- Because both metals are fused and pressure applied to make the weld, the strength and reliability are both high.
- Because the time required to make the welds is short, there is little occurrence of distortion of the panel due to heat

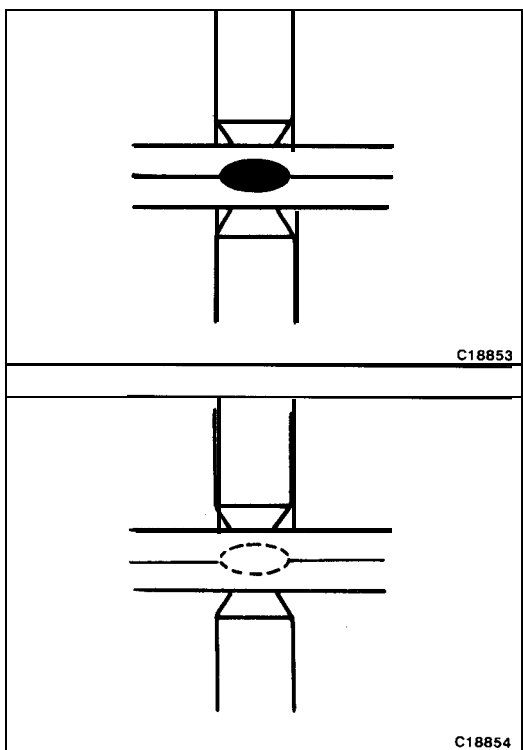


PROCEDURE

There are three basic stages in electric resistance spot welding.

(1) Initial pressure application stage

This stage precedes the current application. Applying pressure to the steel panels through the electrode tips ensures a uniform contact resistance and a smoother current flow.



(2) Current application stage

While an ample amount of pressure is being applied, the current is sent through the electrode tips. The contact resistance causes the contact surfaces of the steel panels to heat up and fuse together.

(3) Holding stage

When the current application is finished and a nugget (a solidified piece of molten metal) forms at the weld, the pressure application is continued in order to strengthen the weld. This is the most important stage of electric resistance spot welding in ensuring the strength of the weld.

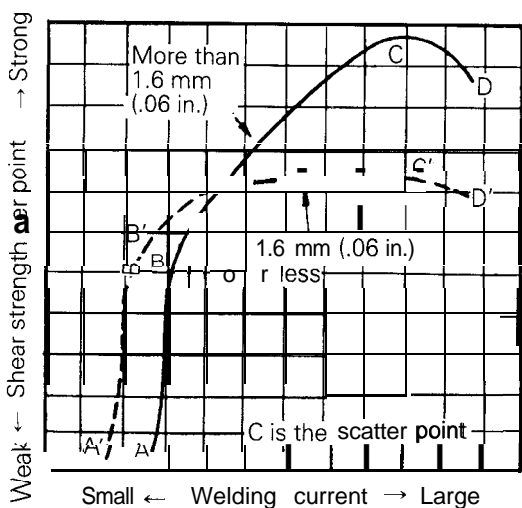
NUGGET FORMATION

Generally speaking, the size of the nugget will increase as the welding current increases, and as the size of the nugget increases, the strength of the weld will also increase.

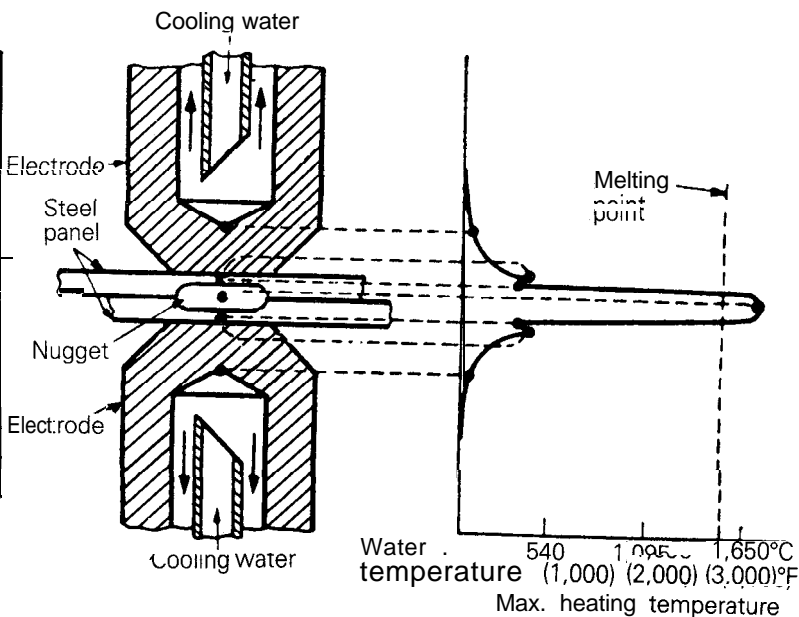
Nugget formation will not begin until the current level reaches a certain point; however, once this welding current level is passed, the strength will increase rapidly. (between points A and B).

As the current level increases further, the weld strength for thick panels [more than 1.6 mm (.06 in.)] continues to increase proportionately (between points B and C); however, for thin panels [1.6 mm (.06 in.) or less], the weld strength reaches a peak very quickly and will increase only slightly, even if the current level increases (between points B' and C').

Then, for both thick panels and thin panels, the molten metal will scatter if the current level increases past a certain point.



C18855



C18856

NOTES REGARDING WELDING**(1) Selection of the electrode tips**

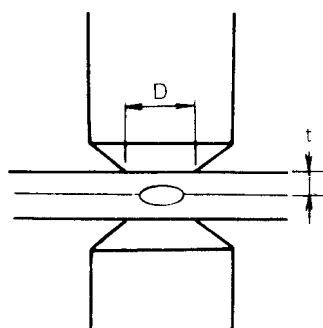
- Select the electrode tips according to the thickness of the panels to be welded.
 $D = 2t + 3$ (mm), $D = 2t + .12$ (in.)
- The angle of the tip should be between 90° and 120° .
- To always keep the end of tip in the correct shape, use a tip cutter, file or similar tool to shape it if it becomes worn.

(2) Alignment of the electrode tips

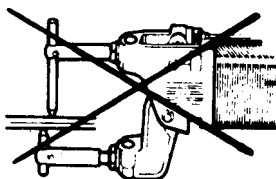
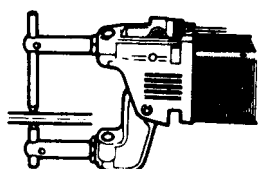
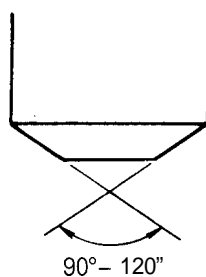
- Adjust the arms so that the upper and lower electrode tips are in a straight line.

(3) Alignment and length of the arms

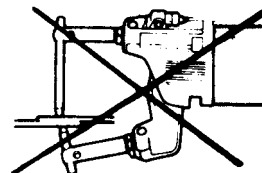
- Adjust the electrode tips so that the upper and lower arms are parallel.
- Select an appropriate arm length. Note, however, that the arm length should not be more than 350 mm (13.78 in.) in order to ensure nugget strength.



(D: Diameter of the electrode tip)
 (t : Thickness of the panel)



C18859



C18860

(4) The weld points

- The overall strength will increase as the pitch decreases; however, if the pitch decreases too much, the current will be short-circuit diverted to the previous weld point and the strength of the individual nuggets will be insufficient.
- Make the spot welds at the centre of the flanges to provide sufficient adhesion. When welding at an edge, make the spot welds at least 5 mm (.17 in.) from the edge of the flange.
- The number of spot weld points should be the same as, or slightly more than the number of original repair welds.
- When spot welding three or more panels together, if painted surfaces cause a loss of conductivity, make the welds at the same places as the factory welds. If this is done, extra welds will not be necessary, but if extra welds are necessary, switch to plug welding.

WELDING REQUIREMENTS
Standard steel plate (SPCC, etc.)

	Panel thickness* [mm (in.)]	Number of repair welds (percentage of factory welds)
Safety equipment areas	1.0 (.04) or less	100% Same number as factory welds
	1.2 (.05)	150% Maintain pitch of at least 22 mm (.87 in.); if not possible, plug weld.
	1.4 (.06) or more	100% Same number as factory welds; plug welding
Other areas	1.2 (.05) or less	100% Same number as factory welds
	1.4 (.06)	130% Maintain pitch of at least 26 mm (1.02 in.); if not possible, plug weld..
	1.6 (.06) or more	100% Same number as factory welds; plug welding

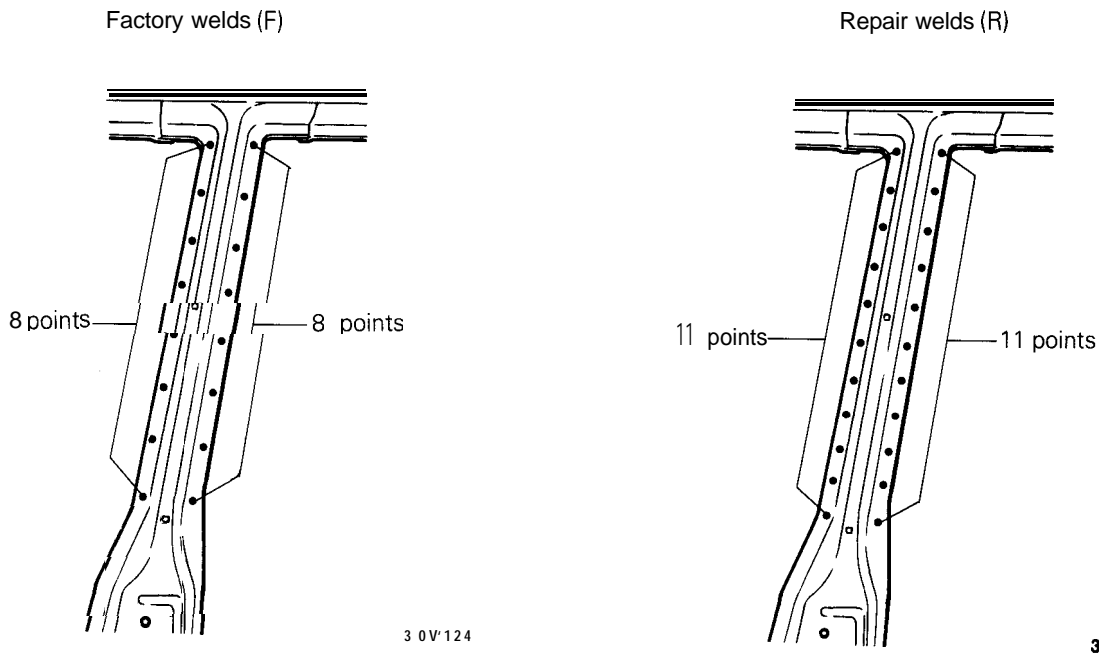
*: For welding steel plates of different thickness, conform to the welding conditions for the thinner plate.

Caution

If the total thickness of the plates at the weld places is 3 mm (.12 in.) or more, use plug welding, because spot welding will not provide sufficient welded strength.

Example

Center pillar (outer): plate thickness 1.4 mm (.055 in.), material SPCC }
 Center pillar (inner): plate thickness 1.5 mm (.059 in.), material SPCC } The number of repair weld points, when they are ordinary points, are as shown in the figure below.



3 0V124

30Y125

As shown by the Welding Requirements table, the number of repair welds is as follows.
 $8 \text{ (points)} \times 130 \text{ (\%)} = 10.4 \text{ (points)}$
 The number of weld points should, therefore, be ten or eleven.
 If, however, a pitch of 26 mm (.02 in.) or more cannot be maintained, the plug welding method (eight weld points) should be used.

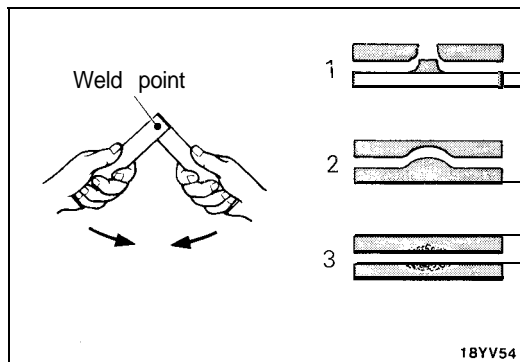
Galvanized steel plate (SECC)

	Panel thickness* [mm (in.)]	Number of repair welds (percentage of factory welds)
Safety equipment areas	0.9 (.04) or less	100% Same number as factory' welds
	1.0 (.04)	200% Maintain pitch of at least 18 mm (.71 in.); if not possible, plug weld.
	1.2 (.05) or more	100% Same number as factory welds; plug welding
Other areas	0.9 (.04) or less	100% Same number as factory welds
	1.0 (.04)	140% Maintain pitch of at least 18 mm (.71 in.); if not possible, plug weld.
	1.2 (.05) or more	100% Same number as factory welds; plug welding

*: For welding steel plates of different thicknesses, conform to the welding conditions for the thinner plate.

Caution

If the total thickness of the plates at the weld places is 3 mm (.12 in.) or more, use plug welding, because spot welding will not provide sufficient welded strength.

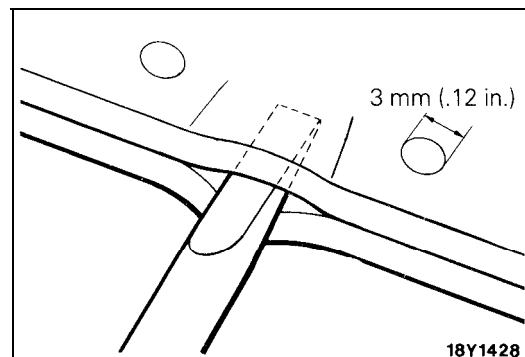
**USING A TEST PIECE TO CHECK NUGGET FORMATION**

Weld a test piece of the same type of steel plate as the panels to be welded. Try to twist the piece, and also check the nugget diameter.

Using the weld point as an axis, apply force in the direction indicated by the arrows in the illustration, and determine the strength of the weld.

1. Good (The welded part remains at one side.)
2. and 3.

The weld conditions are unsatisfactory; adjust the welding current, the current application time, and/or the applied pressure.

**CHECKING NUGGET STRENGTH FOLLOWING SPOT WELDING**

Wedge the tip of a chisel or flat-tipped (–) screwdriver into the space between two weld points.

- The nuggets should not break apart.
- The nugget diameter should be 3 mm (.12 in.) or more.

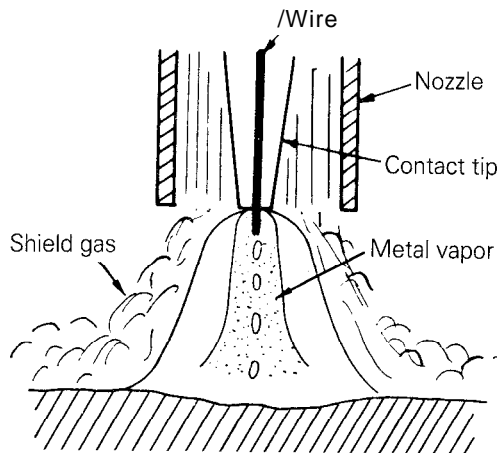
Caution

- Stop wedging the tip or the chisel or flat-tipped screwdriver as soon as the size of the nuggets can be determined; do not wedge it in more than 30 mm (1.2 in.).
- After checking the nugget diameter, correct the place where the checking was done.

GAS SHIELDED ARC WELDING

Gas shielded arc welding is one method of arc welding. In this method, while the area to be welded is shielded from the air by a layer of inert gas (such as argon) or carbon dioxide gas, the filler metal (wire) is fed from the torch nozzle at a constant rate and an electric arc is generated between the tip of the wire and the area being welded, thus generating heat to fuse the area. There are two types of gas shielded arc welding, classified according to the gas they use as the shield gas: carbon dioxide (CO₂) gas shielded arc welding, and MIG welding, which uses an inert gas (such as argon).

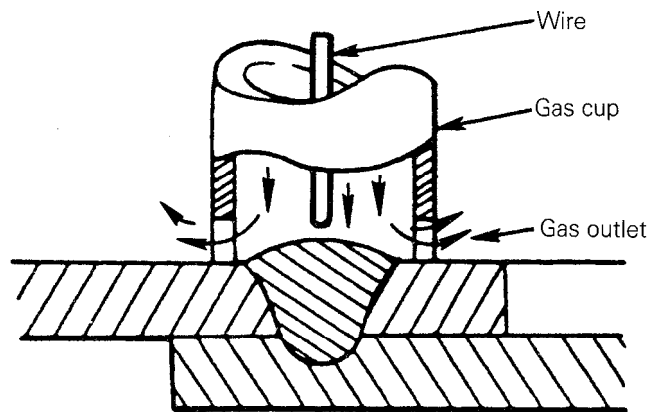
However, herein we will refer to all gas shielded arc welding as MIG welding.



C18868

MIG SPOT WELDING

This welding method is used in areas where regular spot welding cannot be done. The two panels are stacked together, the tip of the torch (one designed for use in MIG spot welding) is positioned on one side, an arc is generated for a short time, and a partial melting is done to obtain a spot weld.



C18882

Procedure

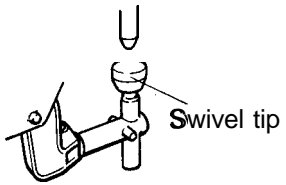
- (1) Position the tip of the nozzle at a right angle to the surface to be welded.
- (2) Being sure that the two prongs are not leaning to either side, set them in direct contact with the panel to be welded.
- (3) Welding will begin when the torch trigger is squeezed, and will stop automatically when the weld is complete.

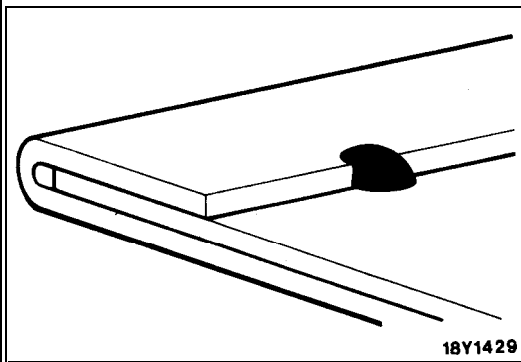
Caution

- Make sure that the area to be welded is perfectly clean; remove oxidation film, scales, rust, dirt, etc.
- The two panels to be welded must be in perfect contact with each other.
- The number and pitch of the weld points should be approximately the same as for the factory welds.

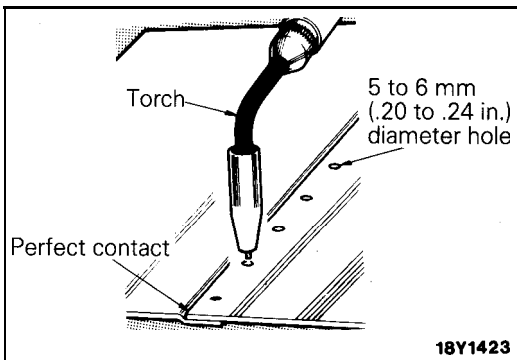
FEATURES OF MIG SPOT WELDING

In comparison to resistance spot welding, MIG spot welding has the following advantages and disadvantages.

Item	MIG spot welding	Electric resistance spot welding
Working characteristics	<ul style="list-style-type: none"> • Light weight • Welding possible at various positions (no limit upon welding positions) 	<ul style="list-style-type: none"> • Although the torch with separate transformer is lightweight, the torch combined with transformer type is heavy. • The arm must be exchanged to conform to the weld location.
Weld time/point	Slow (.5 second or more)	Fast (.5 second or less)
Treatment after welding	Necessary (grinding by grinder, etc.)	Unnecessary
Power	High voltage, low current (15 – 30V, 50 – 200A)	Low voltage, high current (2 – 4V, 4 – 10 kA)
Flux material	<ul style="list-style-type: none"> • CO₂ (carbonic acid gas) • Weld wire 	Unnecessary
Weld points/10 minutes (rate of use)	<ul style="list-style-type: none"> • 25 points or less • Arc instability and contact tip burn if rate of use is exceeded. 	<ul style="list-style-type: none"> • 50 – 60 points • Welding rod deformation and transformer overheating if rate of use is exceeded.
Distortion caused by welding	Occurs easily	Rare
Welding strength	Depends on strength of welding wire itself.	<ul style="list-style-type: none"> • Same as base material • Little oxidation • Uniform welding quality
Weld traces	Button head (slightly convex)	Slight concave (Almost no indentation if swivel tip) used.  <p style="text-align: right;">301126</p>
Re-repairability (cutting away welded area)	Difficult (Much welding trace (High hardness of weld points))	Easy (Can be separated by spot cutter.)



The MIG welding done around the doors, wheelhouse arches, etc., to prevent the flanges from coming undone after hemming work is also called MIG spot welding.

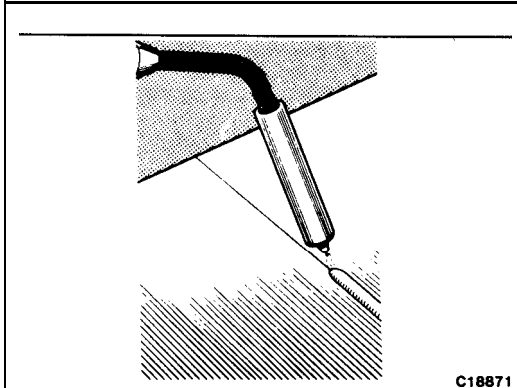


PLUG WELDING

Plug welding is done by making holes 5 to 6 mm (.20 to .23 in.) in diameter in one of the panels to be welded together, positioning the torch at a right angle to the holes, and then filling in the holes one at a time.

Caution

In order to prevent the formation of blowholes, fill in each hole completely in one pass. Be sure that the two panels are in perfect contact. Be sure that the penetration goes all the way to the bottom panel.



CONTINUOUS WELDING

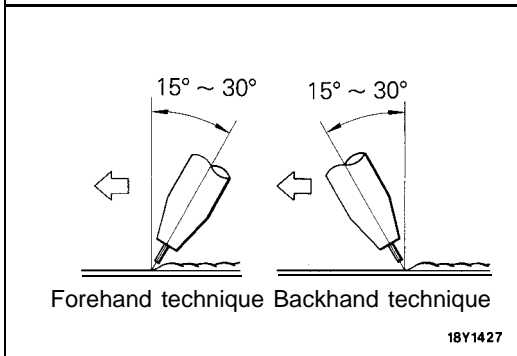
There are several types of continuous welding: fillet (lap joint) welding, butt welding, T joint welding, gap welding, etc.; these are called short-circuit arc welding, and provide a stable arc at a relatively low current.

Torch angle and welding technique

There are two welding techniques: forehand welding and backhand welding.

Forehand welding: Penetration is shallow and the bead is flat.
Backhand welding: Penetration is deep and the bead has a convex shape.

The angle of the torch should be 15° to 30° for either technique, and the tip should be maintained at a distance of 6 to 10 mm (.24 to .39 in.) from the surface being welded.



Preventing warping

(1) Backhand technique

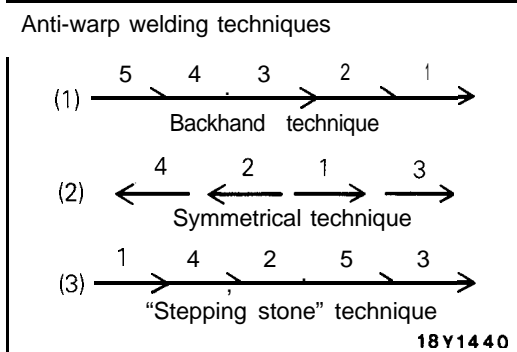
Because the direction for each weld pass and that for the fusion progression are opposite, the residual stress is evenly distributed.

(2) Symmetrical technique

Because the welds are made in symmetrical positions in relation to the centre of the joint, the residual stress is also symmetrical.

(3) "Stepping stone" technique

Because the welds are made at random positions, the residual stress is the most evenly distributed; however, the possibility of flaws at the starting and stopping points is relatively high.



NOTES REGARDING MIG WELDING

Note the following notes regarding MIG welding.

- (1) The surface to be welded must be perfectly clean; be sure to remove any non-conductive paint.
- (2) If the end of the wire forms into a ball, it will adversely affect the formation of the arc; cut the end off with a pair of wire snips or a similar tool.
- (3) Select a welding current to match the thickness of the panels being welded.
- (4) For continuous welding, maintain a constant weld speed and keep both the height and the width of the bead constant.

In addition, the tack welding pitch and the welding bead should be shorter as the thickness of the panels being welded decreases.

OTHER TYPES OF WELDING

BRAZING

In brazing, a filler metal is melted into the joint of the panels to be welded at a comparatively low temperature to fuse them together without melting the panels themselves. In other words, through the aid of a flux and because of the capillarity phenomenon, the molten filler metal will flow into the joint between the two panels which are in contact with each other and spread along the metal surfaces. When this molten filler metal cools and solidifies, it will form a strong joint of the two panels. Note that, if two panels of different kinds of metal are brazed, the electrolysis generated between the two metals will cause moisture to form, which will result in corrosion.

Panels should not be connected together by brazing at any place except those places indicated. The following materials (filler metals) are usually used for brazing.

(1) Brass filler metal (brass solder)

Brass filler metal is an alloy consisting of 60% copper and 40% zinc with a melting temperature of approximately 850°C to 1,050°C (1,562°F to 1,922°F), and it is the most commonly used brazing filler metal used for body repair.

The filler metal itself is coated with flux to facilitate penetration between the panels to be joined.

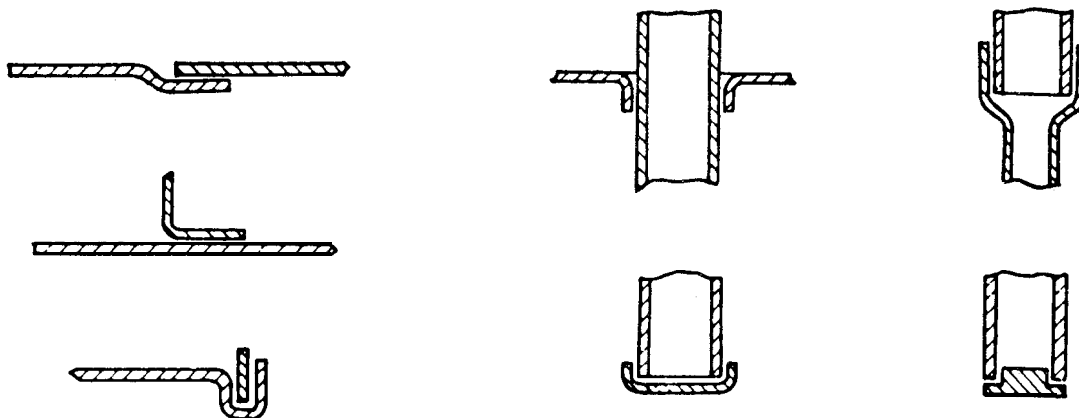
(2) Silver alloy filler metal (silver solder)

Silver alloy filler metal consists of silver, copper, zinc or cadmium, nickel, and tin, or other metals.

This filler metal is most applicable for the brazing of steel and non-ferrous alloy other than aluminium, magnesium, and others with low melting points.

Notes with regard to brazing work

- Use a wire brush, sandpaper, file etc., to remove any oxide film grease, dirt, etc., from the surfaces of the panels to be brazed.
- When doing brass brazing, if the panels and the filler metal are heated excessively, a weak iron-copper alloy will form, which could crack easily. Be careful not to apply excessive heat.
- The joint of the panels must overlap as indicated in the illustration.



Examples of brazed joints

C18885

SOLDERING

Because the base metal itself is not fused, and also because the solder itself is not mechanically strong, soldering is not used for joining body panels that require some form of welding.

For that reason, the special characteristics of solder (low temperature molten point, not apt to cause distortion of the base metal, excellent adherence to the base metal, and excellent formability) are generally utilized for such purposes as sealing, as well as a filler to build up an indentation or other concave area in order to improve the external appearance of a repair, etc.

TYPES OF SOLDER

Solder is an alloy, the major components of which are lead and tin. In addition, by adding a small amount of antimony, the material's strength can be increased with no change of the molten point temperature, and the luster can be maintained. Because the ratio of the components (lead, tin and antimony) changes depending upon the intended use, it is important to select the correct ratio that matches the base metal.

The solder usually used for body repair and maintenance purposes is called solder for lead pipes (lead 68.5%, tin 30%, antimony 1.5%); it begins to melt at 183°C (361°F), and is completely molten at approximately 253°C (487°F). The greater the difference between the temperature at which melting begins and the temperature at which it is completely molten (the solder is in a paste-like condition during this time), the better is its formability characteristics. Solder for lead pipes has a comparatively long period during which it is in a paste-like condition, and it can therefore be more easily shaped to the required shape to conform to the body shape.

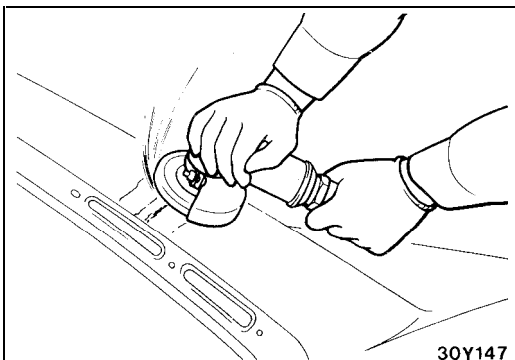
FLUX

Flux functions to remove the oxide film and impurities from the base metal, to improve the spreadability of the solder, and to make the deposition of the solder to the base metal easier. There are various materials used for flux, such as hydrochloric acid, zinc chloride, ammonium chloride resin, tallow, phosphoric acid, etc.; the one most suitable to the base metal should be used. For body repairs and maintenance, a "solder cream" consisting of powdered solder mixed with a solution of ammonium chloride, zinc chloride, water and glycerine is used. When this solder cream is coated onto the base metal and then heat is applied, the oxide film and impurities on the surface of the base metal are dissolved and removed by the weak acidic solution, the powdered solder melts, and a solder plating of the surface is formed. This action results in semi-permanent adherence of the solder to the surface of the base metal.

REPAIRS BY SOLDER BUILD-UP

Solder is quite suitable for build-up paddings of panels, and is also relatively quick and easy to work with. However, because the strength of solder itself is insufficient, it cannot be used for such purposes as joining panels. Consequently, soldering methods should only be used for the surface finishing, seam finishing and other repairs of plane shapes where using a hammer and dolly would be very time consuming.

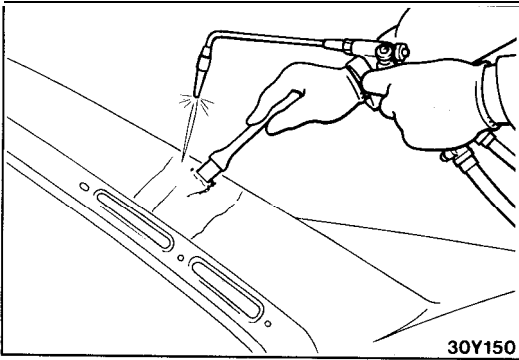
The following are the usual repair procedures when solder is used.



- (1) A sander should be used to remove any coating (of paint, etc.) and rust, dirt, etc. from the surface to be repaired.

Caution

Care should be taken to do this work thoroughly; solder won't successfully adapt to surfaces on which such coatings and impurities remain.



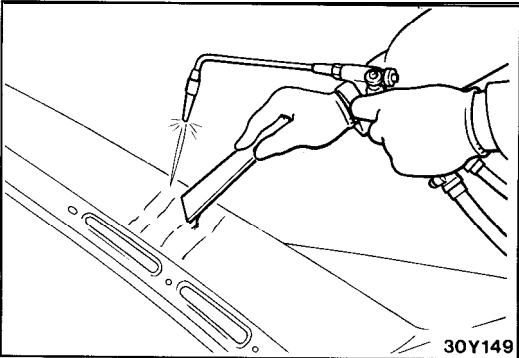
- (2) Heat the surface to be repaired; apply the flux by using a brush, heat by using a burner to create form the “tinned” surface.

Caution

Care must be taken not to overheat.

NOTE

Use a piece of clean cloth to wipe away the slag that forms on the surface during heating.



- (3) After heating the surface to be repaired, heat the solder and place it on the body. Use a spatula-like tool to form it while applying pressure.

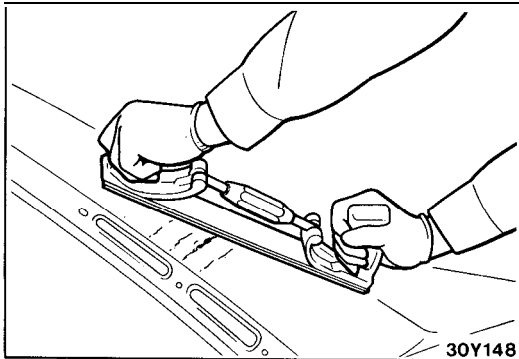
First, spread so that the large concave and convex areas become small.

Caution

Work carefully so that pinholes don't form.

NOTE

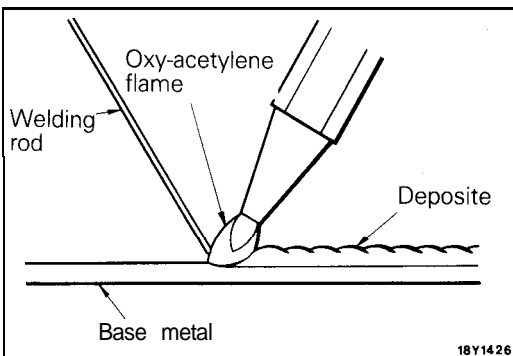
The solder build-up should be slightly larger than what might appear to be required.



- (4) Apply a finish to the solder build-up by using a body file.

NOTES FOR SOLDERING

- When the solder is coated to the base metal and then heated, the oxide film and impurities will appear as slag on the solder surface, so wipe this away by using a clean piece of cloth before the solder solidifies.
- Before using solder as a build-up of indentations and convex areas of a panel, first repair the area as completely as possible by other methods (sheet metal working, etc.), thereby minimizing the amount of solder required.
- Heating by using the burner must be uniform at all places, not localized. Care must also be taken to avoid overheating, because this will cause distortion to occur.
- Poisonous gases and fine dust are generated by making solder build-ups, so be sure the work is done in a place where dust-absorption equipment is in use, and protective clothing, etc. must be used.
- The most important factors that determine whether a solder build-up is successful or not are a clean surface of the base metal, and the use of the solder and flux most suitable to the base metal.



GAS WELDING

Gas welding is a method in which a high temperature flame is used to melt both a welding rod and the base metal (panels) to make a fused joint. Oxy-acetylene is the most common type of gas welding. However, because of the extremely high temperature of the fused joint, the strength of the steel plate deteriorates, and there is a higher possibility of warping. This method, therefore, is not very suitable for body repair.

The flame in gas welding can be classified according to the ratio of acetylene and oxygen.

(1) Carburizing flame (acetylene-rich flame)

This flame has an excess of acetylene or a deficiency of oxygen. The incomplete combustion gives off a black smoke, and two flame cores can be seen inside the deformed yellow flame. The flame itself is large, but the temperature is relatively low, making this flame unsuitable for welding.

(2) Standard flame (neutral-mixture flame)

This flame has approximately equal amounts of acetylene and oxygen. The length is shorter than that of the carburizing flame; the flame core is rounded; and it is clear and bright.

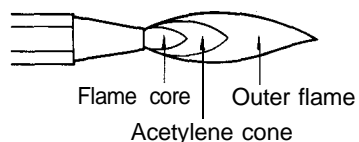
The carbon in the acetylene is burned completely, resulting in the maximum obtainable temperature.

This is the flame most commonly used for welding.

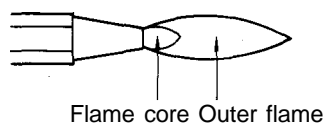
(3) Peroxide flame (oxygen-rich flame)

This flame has an excess of oxygen or a deficiency of acetylene. The flame core is shorter and sharper, and the entire flame has a blackish-purple colour. The combustion is unstable, and the flame flickers continuously.

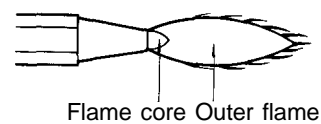
(1) Carburizing flame



(2) Standard flame



(3) Peroxide flame



18Y1430

Notes with regard to gas welding

- (1) Handle the oxygen and acetylene tanks carefully.
- (2) Adjust the flame in accordance with the type of metal being welded.
- (3) Select a nozzle to match the work to be done. Avoid overheating and adhesion of foreign matter (dirt, etc.).
- (4) The following points are particularly important when welding mild steel plate.
 - Melt a sufficient amount of welding rod, but be careful not to melt the base metal. Use the same amount of welding rod on both sides.
 - Use the correct amount of welding rod in accordance with the melting point of the base metal.
 - Avoid welding over places which have been welded before.
 - In order to avoid warping, do only the amount of tack welding that is absolutely required.

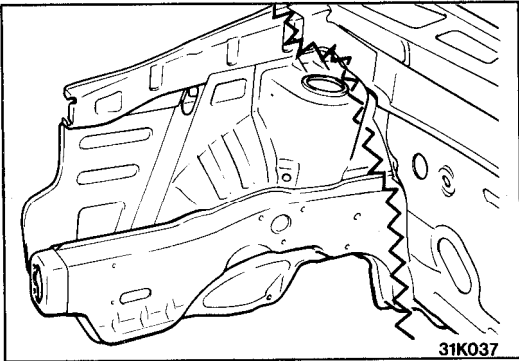
BODY REPAIR

STANDARD BODY REPAIR PROCEDURES

The following is an explanation of the standard repair procedures for the monocoque body and the frame-type body. Note that reference should be made to page 11-31 concerning repair procedures for the frame of frame-type vehicles. Furthermore, please refer to the replacement of welded panels for the applicable model for information concerning the procedures for replacement of panels (as classified by position) for the various models.

STANDARD PROCEDURES FOR REPLACEMENT OF WELDED PANELS

In order to maintain the proper levels of strength, rigidity, and precision when making welded panel replacements, it is essential to first gain a thorough understanding of the body structure, and then to perform all repair operations carefully and correctly. In addition, when performing the operations, be sure to use the proper protective equipment for each operation.

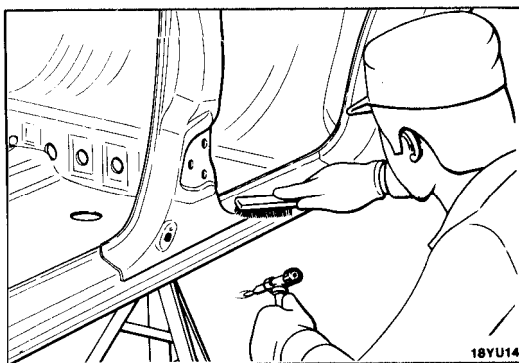


(1) Rough cutting of panels

First make a rough cutting of a portion of the panel to be replaced, and then remove that portion, thus making it easier to break the spot welds.

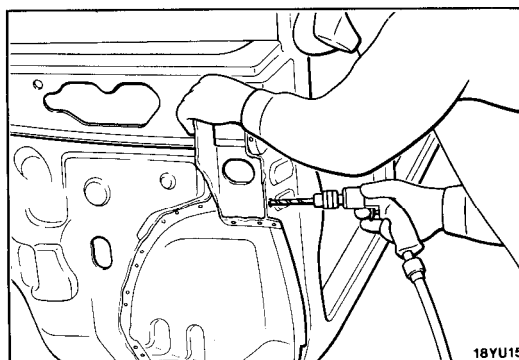
Caution

- Select an appropriate location for the cutting operation, and perform the work carefully, so as not to cut into the reinforcements located inside the pillars, panels which are not to be replaced, or any other such parts.
- There are harnesses, hoses, and other such parts routed inside the front pillar, the rear pillar, the fender shield, the side sill, etc.; perform the repair work only after any such material has been removed.
- For overlap cutting, allow an overlap of approximately 30 to 50 mm (1.18 to 1.97 in.) when performing the cutting operation.



(2) Removal of the paint coat from spot-welded points

In order to clearly identify the spot-welded points, remove the paint coat from areas where it is difficult to determine the spot welds.



(3) Cutting and separation of spot-welded points

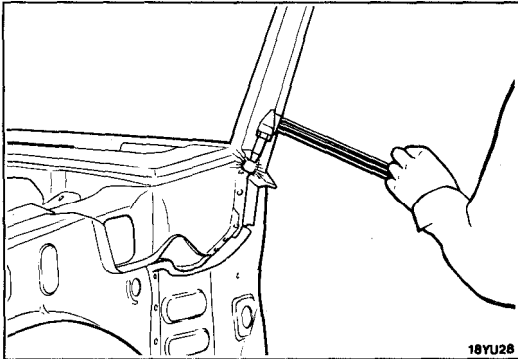
In order to perform cutting and separation of spot-welded points, use a spot weld cutter which is larger than the size of the nugget to make a hole only in the panels to be replaced.

When cutting and separating spot-welded points in places where the surrounding panel or other parts interfere with the spot weld cutter, or if the operation is hampered by a lack of space, bend back the flanges in order to make the work easier.

If a spot-weld cutter cannot be used at all, cut and separate the spot welds by using a chisel or similar tool.

NOTE

If a replacement panel is to be mounted by doing plug welding from the side of the panel remaining on the body, either a hole can be made in the panel on the body, or a hole can be made right through both the panel which is to remain on the body and the panel to be replaced.

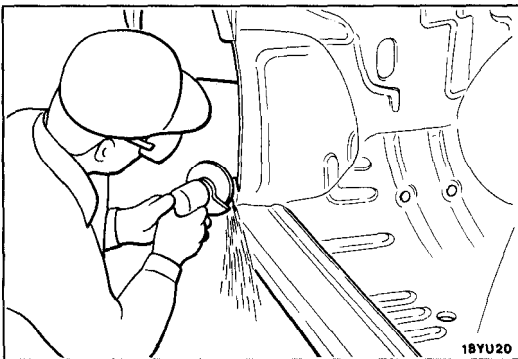


(4) Breaking of brazing and arc welds

Heat only the brazed or arc welded portion (such as the upper portion of pillars, etc.), and then separate by using a screwdriver while melting occurs.

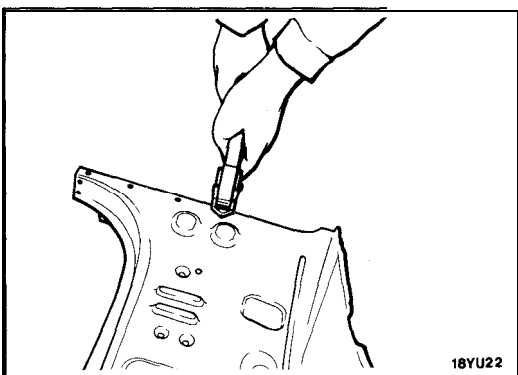
Caution

When performing this operation, warping of the surrounding panels may occur if an excessive amount of heat is applied; therefore, be careful to avoid doing this.



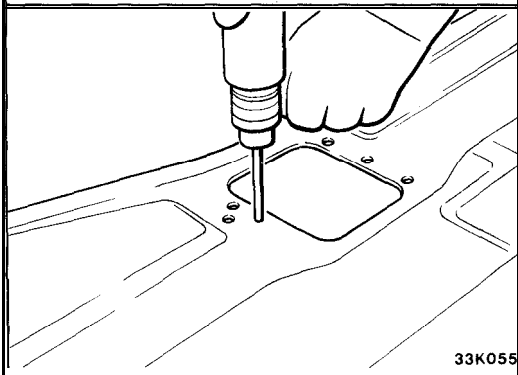
(5) Finishing work of spot welding

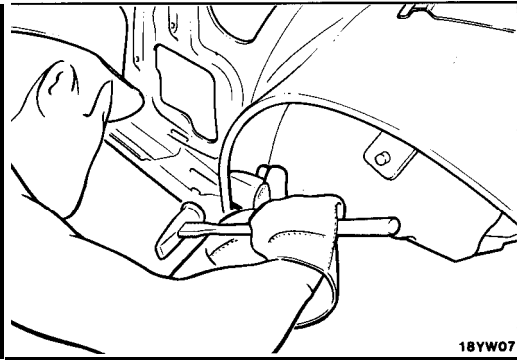
Grind and smooth any weld traces which might be left on the body surface by using an air grinder or similar tool, being careful not to damage any of the panels which is not to be replaced. When performing this operation, be sure to wear safety goggles (dustproof glasses).



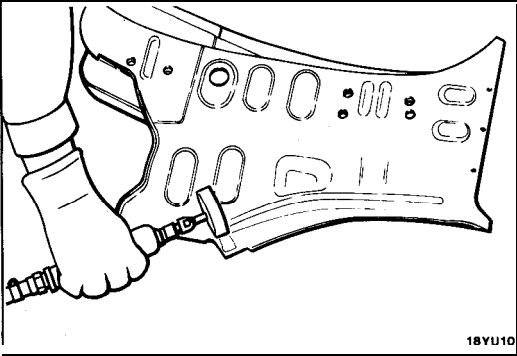
(6) Making of holes in new parts for MIG plug welding

Make holes approximately 5 to 6 mm (.20 to .24 in.) in diameter at points where plug welding is to be performed because spot welding is not possible.



**(7) Flange correction for spot weld traces**

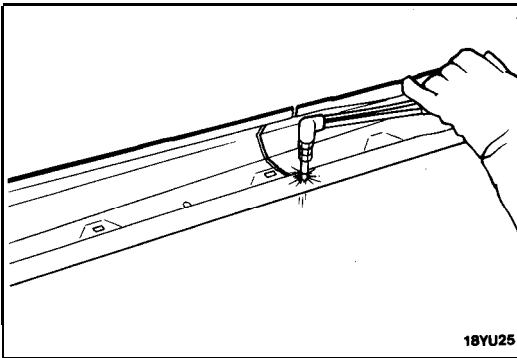
Correct any flanges that become bent or deformed when spot welds are broken or during other work.

**(8) Removal of the paint coat from new parts and from the vehicle body**

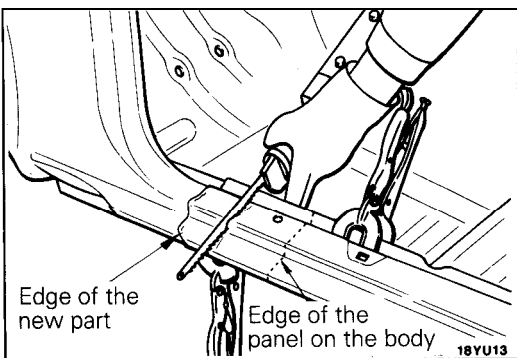
In order to provide for the proper flow of electric current during spot welding operations, remove the paint coat from both sides of the new part and the body by using a polisher wheel or similar tool.

Caution

Do not use a flame for paint coat removal because doing so might damage the paint coat of panels which are not to be replaced, thus causing corrosion.

**(9) Rough cutting of new parts**

Cut off the unnecessary portions of new parts. Allow an overlap of approximately 30 to 50 mm (1.18 to 1.97 in.) when performing overlap cutting of the pillars, side sills, or other locations.

**(10) Overlap cutting of new parts**

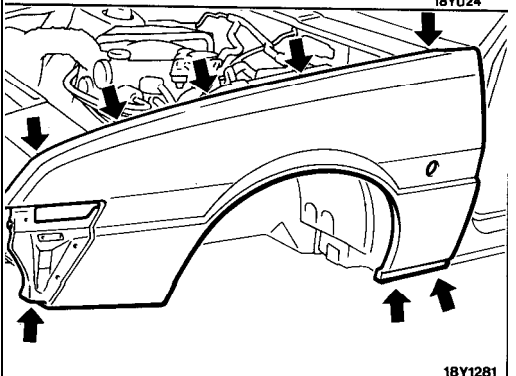
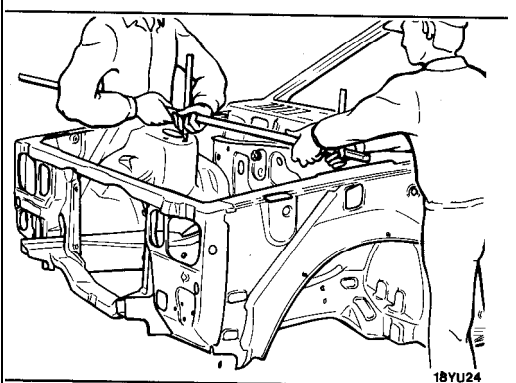
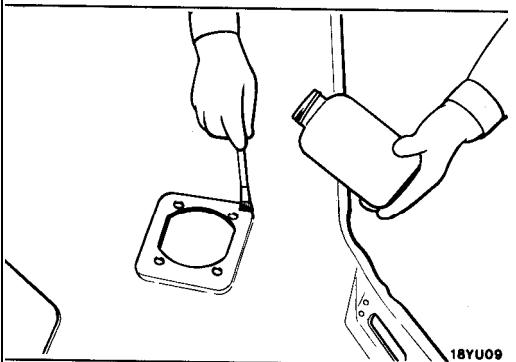
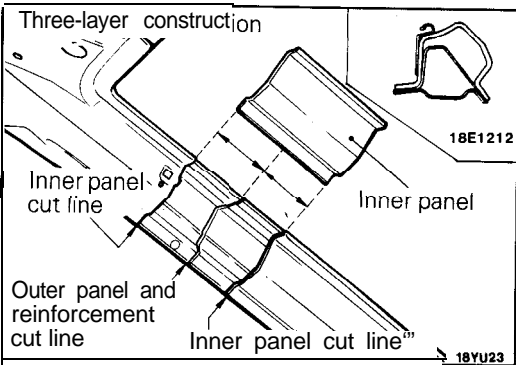
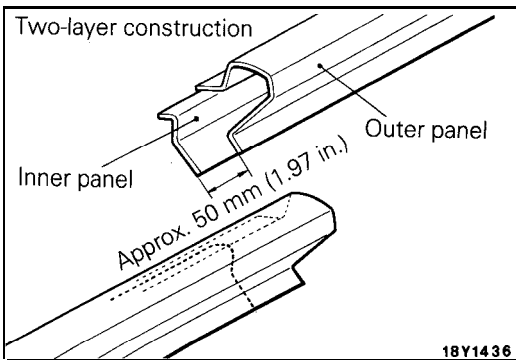
For locations in which butt welding is to be done, first temporarily attach the new parts to the body, and then cut the two panels simultaneously.

Caution

Carefully select the location for cutting, taking care not to cut a reinforcement at the inner side of a pillar, etc. or a panel that is not to be replaced.

NOTE

If a reinforcement or a panel which is not to be replaced is cut accidentally, first repair the mistake by welding before proceeding with the rest of the work.



(II)Cutting of new parts by using a measurement marking

If overlap cutting is not possible in a place where butt welding is to be done, make a measurement marking on the new part at the exact same measurement which was used for the cutting of the body panel, and then cut the new part by using this measurement marking.

- Two-layer construction
When cutting a front pillar or center pillar which has a two-layer construction but no reinforcement, make the cutting of the inner panel and that of the outer panel approximately 50 mm (1.97 in.) apart in order to obtain maximum strength.
- Three-layer construction
When cutting a front pillar or center pillar which has a three-layer (including a reinforcement) construction (double-box construction), cut the outer panel and the reinforcement at the same position, and don't forget to butt weld the reinforcement. If the inner panel is an assembly replacement part, cut it at two places in order to provide ample working space for the butt welding of the reinforcement.

Caution

Perform the operations carefully so that the cut ends fit together properly.

(12)Application of spot sealer to spot-welded points

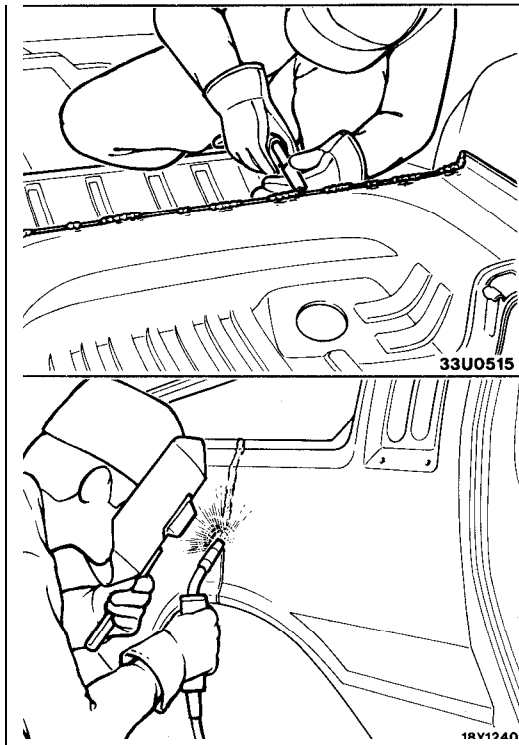
Apply an electro-conductive spot sealer to the connecting surfaces of both the new parts and the vehicle body in order to provide corrosion protection.

(13)Temporary mounting of new parts

- In order to bring the new parts into the proper mounting position, measure each part carefully and make any corrections necessary in order to obtain agreement with the measurements.
- In addition, make temporary welds, and then check to confirm that the closing and fit of the doors, fenders, etc., are correct.
For parts which should be symmetrical to the body centre, measure the distances from the body centre point to both the left part and the right part, and confirm that the distances are the same.

Caution

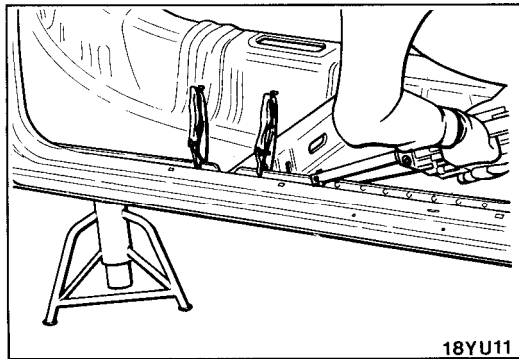
During temporary mounting, it is extremely important to obtain accurate measurements for each component. The mounting positions for the front and rear suspensions are especially crucial with regard to safety; therefore, it is necessary that all work concerning these areas be done carefully and correctly.

**(14)Butt welding**

For butt welding, make a 10 to 15 mm (.39 to .59 in.) MIG spot weld, and then, in order to prevent warping which might be caused by the welding heat, complete the welding by making welds of the specified width at alternate positions.

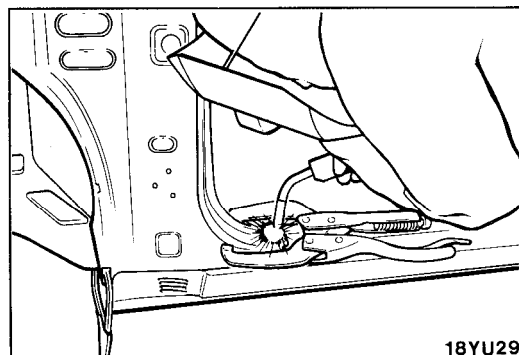
Caution

Weld completely so that there are no pinholes.

**(15)Spot welding**

When doing spot welding, it is not only important to correctly position the electrode tips, but also to hold the two panels securely together with vise-grip pliers or some other type of clamps, being sure that they are in perfect contact with each other.

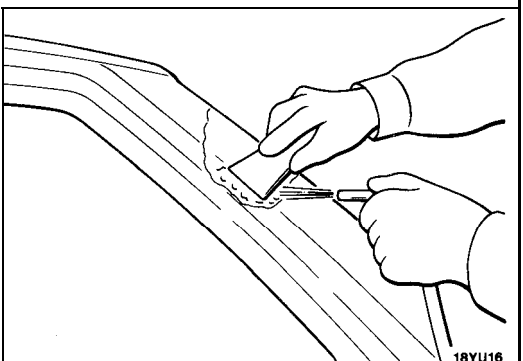
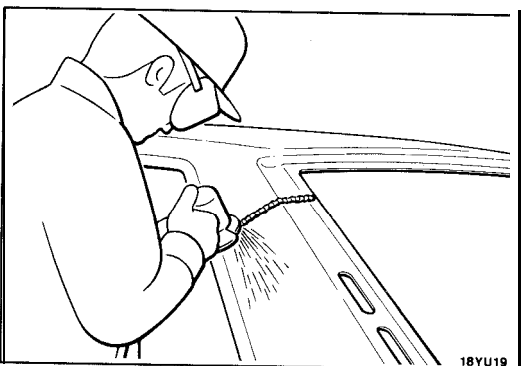
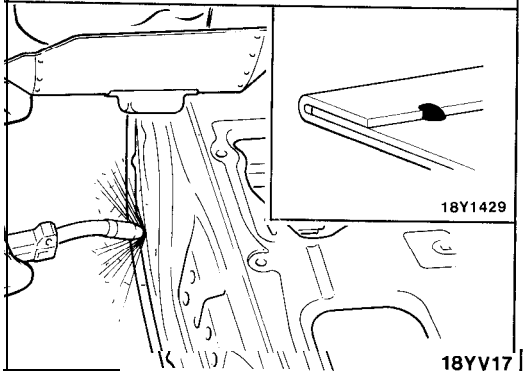
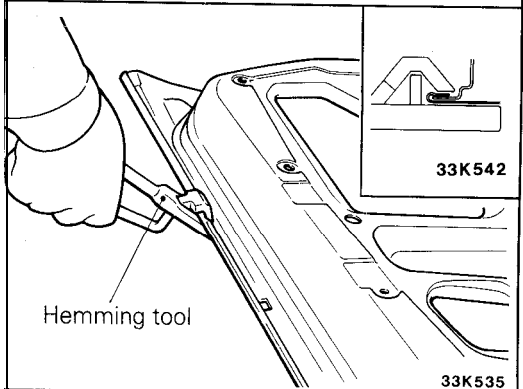
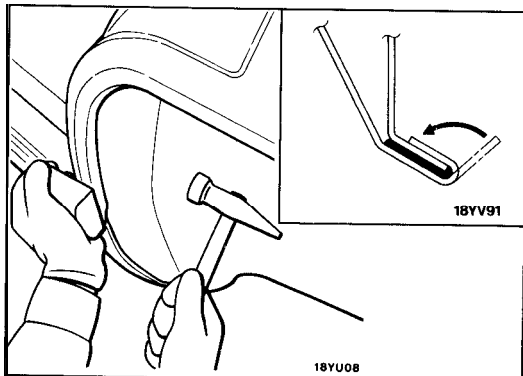
- Be sure that the force applied by the arm is sufficient.
- Use a test piece to check the secondary current and the current application time of the spot welder, and adjust the values as appropriate.

**(16)Plug welding**

If spot welds cannot be made, make holes for plug welding in the new part, and then MIG weld. Because the quality of the fusion varies according to the size of the holes, they should be about 5 to 6 mm (.20 to .24 in.) in diameter. In addition, be sure the two surfaces are in complete contact with each other by using vise-grip pliers to securely hold them.

NOTE

Depending on the working conditions, it might also be necessary to make holes in the panel remaining on the body.



(17) Hemming work

- If hemming work is to be done for the rear wheel cut line, the door outer panels, or other parts, use a hammer and a dolly or a hemming tool to do the work manually.

- After completing the hemming work, make MIG spot welds at 50 to 60 mm (1.97 to 2.36 in.) intervals on the inside.

(18) Finishing work for butt welding and plug welding

Do the finishing work to smooth the protruding weld traces. However, the butt joints of reinforcements and other internal parts will be stronger if the weld traces are not finished.

Caution

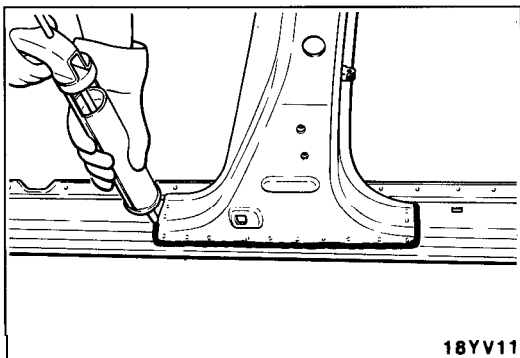
- Be sure not to grind the panel down too much.
- Before welding the outer panel, be sure to apply an anticorrosion agent.

(19) Soldering of butt-welded joints

After the smooth-finishing work of the butt welds has been completed, do the soldering work. For soldering work in areas where the rigidity of the outer panel is low, the heat of the burner may cause the panel to warp., therefore, perform embossing repairs by using a hammer and a dolly and limit the amount of soldering.

Caution

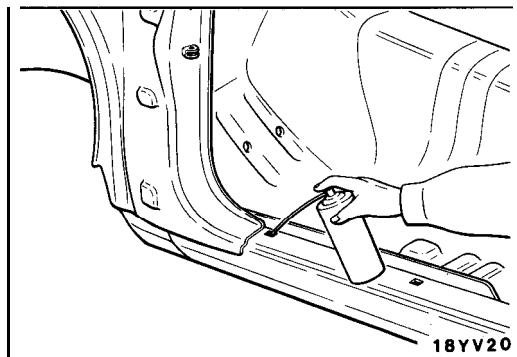
Because solder-finishing work generates toxic gas and dust, be sure to perform the operation in a place equipped with the proper safety equipment and wear a protective mask, glasses, etc.

**(20)Application of body sealant**

Apply a coating of sealant carefully, without breaks, as described in the section (of the manual corresponding to that model).

NOTE

After application has been made to any external surfaces, perform smooth-finishing work.

**(21)Application of an anticorrosion agent**

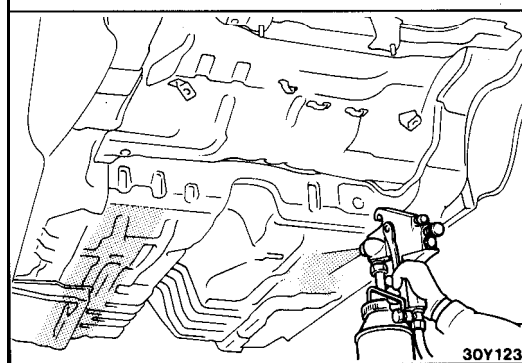
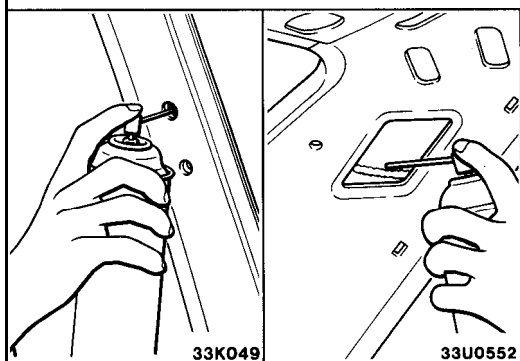
Apply an ample amount of anticorrosion agent to any welded areas and to all surfaces from which the paint coat was removed.

The paint coat of welded areas will have been damaged by the heat; be sure to apply an anticorrosion agent to surfaces to be repaired.

Use an aerosol-type anticorrosion agent for application to the side sills, the pillars, and other similar parts which have a hollow construction, by utilizing the trim mounting holes, etc.

Caution

Wipe off any anticorrosion agent which oozes out onto surfaces to be painted later; the presence of such anticorrosion agent would prevent correct adhesion of the paint coat.

**(22)Application of undercoating**

If the underbody is repaired or replaced, carefully apply a coating of undercoating as described in the section (of the manual corresponding to that model).

CAUTIONS REGARDING BODY REPAIR

Because each component part of a single-unit construction body makes some contribution, more or less, to the overall strength of that body, it is necessary to sufficiently understand the actual function of any part to be repaired before attempting any repair or welding procedure.

STRENGTH AND RIGIDITY

(1) The suspension installation part plays an important role, determining the wheel alignment. Wheel misalignment is of course potentially very dangerous because it can lead to driving instability, one-sided braking, abnormal tire wear, abnormal vibration, etc.

At the time of repair, it is particularly necessary to take measurements at the components noted below, and to make all welds and installations with special care.

- Front sidemember
- Front wheelhouse (inner)
- Rear floor sidemember
- Rear wheelhouse (inner) (IRS type)

(2) Because the places where the floor panel and sidemember parts are joined have an important effect upon the rigidity of the entire body, welds in these places must be done with particular care.

(3) After repairs have been completed, the wheel alignment, wheel base, tread, etc. must be carefully checked to be sure that there is no deviation.

SAFETY

(1) Procedures related to the installation of any component related to safety must be done with particular care in order to assure full maintenance of safety.

- Suspension installation parts
- Brakes
- Fuel pipe
- Fuel tank installation parts, etc.

(2) Because seat belts are directly related to driver and passenger safety, any welds of seat belt anchor points or reinforcements must be done with particular care in order to maintain strength,

PREVENTION OF CORROSION AND OF WATER OR DUST ENTRY

(1) After any work is completed, it is important to completely remove any welding residue, particles or residue from cutting, and any other dirt, etc.

(2) Corrosion-prevention material must without fail be applied at the following places:

- At any place where paint has flaked off or peeled away.
- At the outer and inner side of every welded place.
- At the outer and inner side of any place subjected to heat.
- At any surfaces that have been cut.
- Within any semi-enclosed structure or component (aerosol-type rust inhibitors are effective for difficult-to-reach places.)
- At any soldered place or arc-brazed place.

(3) Apply a coating of undercoating if the underbody is repaired.

(4) Use spot sealer if spot welds are made.

(5) Repair any scratches to panels made by moldings, sashes, etc.

(6) Carefully apply body sealant to panel connection joints and other fitting places.

(7) Tape over any unused holes in the panel inner side by using sealing tape.

VIBRATION AND NOISE

(1) Prevent any decrease of tensional rigidity caused by welding distortion.

(2) Carefully apply body sealant to panel connection joints and other fitting places.

(3) Tape over any unused holes in the panel inner side by using sealing tape.

CONTACT AND ALIGNMENT

(1) In order to maintain the precision of openings, make careful measurements as repairs are being made.

(2) Make contact/alignment adjustments of door hinge, lid, and hood hinge installation parts.

APPLICATION OF STRUCTURAL ADHESIVES

In order to avoid leaving the indentations or other traces left by spot-welds in outer panels, and in order to maintain the same strength as spot-welds, the self-drying, two-liquid denatured epoxy adhesive (MZ100320) is used on some models. The following are instructions concerning the application procedures for this adhesive.

REPAIR TOOLS AND SUPPLEMENTARY MATERIALS

Name	Use	Remarks
Adhesive (MZ100320)		Main material: 3M 2216B Hardening material: 3M 2216A *
Dry-type sealer	For prevention of adhesive drippage	MOPAR Silicone Rubber Sealer 4026070
Spatula-like tool Plastic plate Sealer gun Adhesive-type tape	For mixing the adhesive For mixing the adhesive For applying the adhesive For prevention of adhesive drippage	

* 3M Scotch -Weld STRUCTURAL ADHESIVE 2216 A/B

Temperature	Hardening time
5°C (41°F)	7 days
24°C (75°F)	24 — 48 hours
65°C (149°F)	Approx. 2 hours
90°C (194°F)	30 — 60 minutes
120°C (248°F)	5 — 10 minutes

MIXTURE RATIO OF MAIN MATERIAL AND HARDENING MATERIAL

Main material: hardening material = 1 : 1.4 (ratio by weight)
 = 1 : 1.5 (ratio by volume)

HARDENING TIME (DRYING TEMPERATURE)

The hardening times are shown in the table at the left.

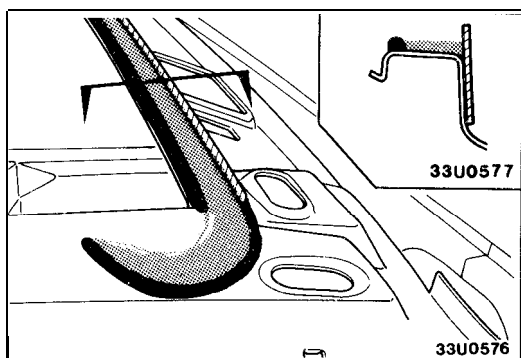
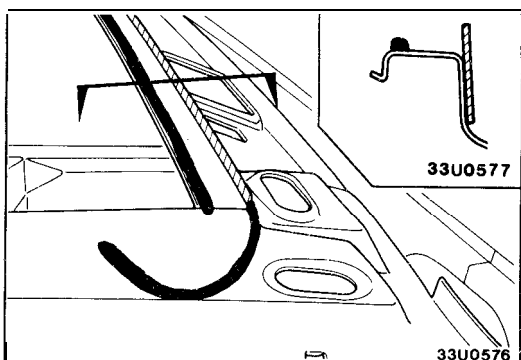
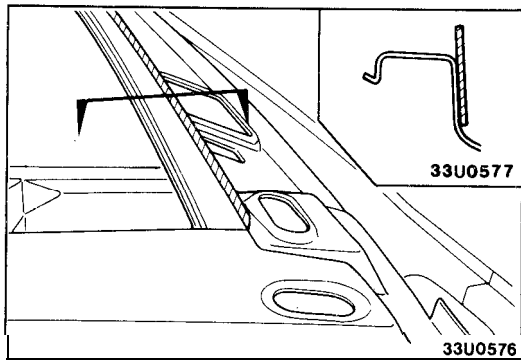
ADHESIVE APPLICATION PROCEDURES

The following is an example in which adhesive is used on one part of the roof panel and the panel is installed.

(1) Mix the main material and the hardening materials.

Caution

- Although visual estimates can be used to estimate the mixture ratio proportions, the hardening time and strength will vary greatly if the estimate is in significant error.
- The mixture should be made quickly, and should be applied within two hours after mixture.
- Do not let air get mixed into the mixture when mixing.
- Store any remaining main material and/or hardening material in a place where the temperature does not exceed 5°C (41°F).



(2) Because the viscosity of the mixed adhesive is low, make a dam to prevent it from flowing at the place where applied.

- Attach adhesive-type tape.
- Apply the drying sealer (MOPAR Silicone Rubber Sealer 4026070)

Caution

Be careful that the drying sealer doesn't penetrate the surface to be coated with adhesive.

NOTE

Use adhesive-type tape and drying sealer depending upon the surface to be coated with adhesive.

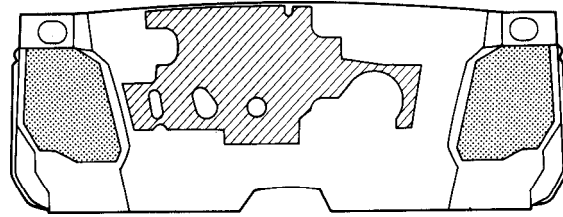
(3) Apply the adhesive.

Caution

- The adhesive contains irritants that must not contact the eyes, skin or clothing. If it does contact the skin, clean away by using alcohol and then wash thoroughly with soap and water. If the adhesive gets into the eyes, rinse thoroughly with clean water and then consult a doctor.
- Provide ventilation where used, and avoid inhalation the fumes.

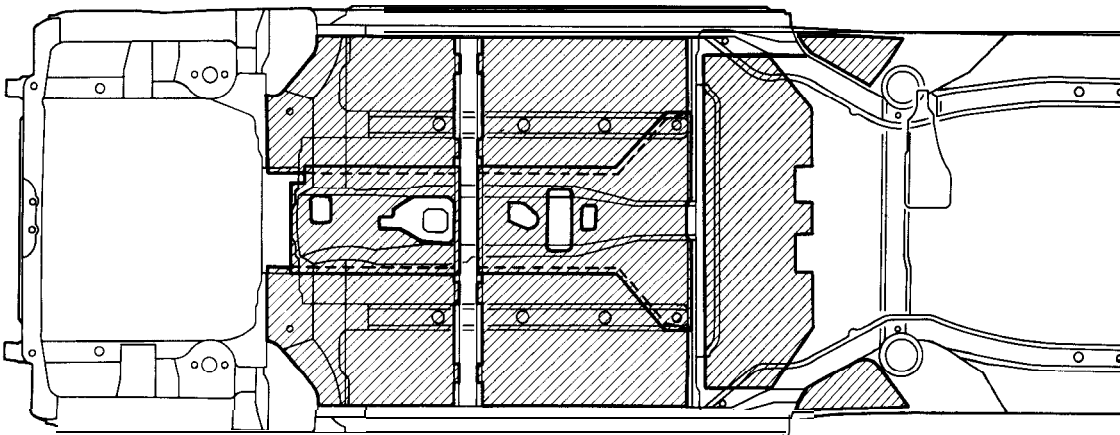
ATTACHMENT OF SILENCERS

Silencers (petroleum-asphalt sheets) are attached to the upper surface of the floor and at the interior side of the dash panel in order to absorb vibrations and shut out exhaust gas heat. If these silencers are peeled off in the course of replacement or repair of a welded panel, cut and attach replacement material (in the shape shown in the figure). For detailed information concerning the locations where silencers are to be attached for individual models, refer to the manual for that model.



Dash panel interior side

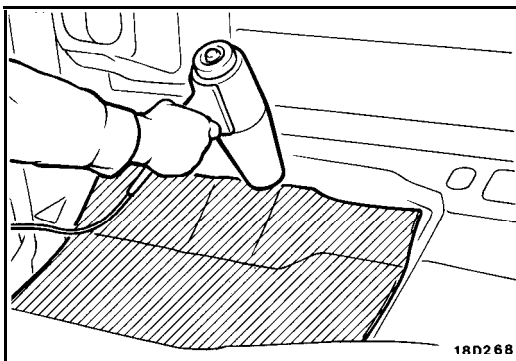
31R0047



▨ : Thickness: 1.6 mm (.06 in.)

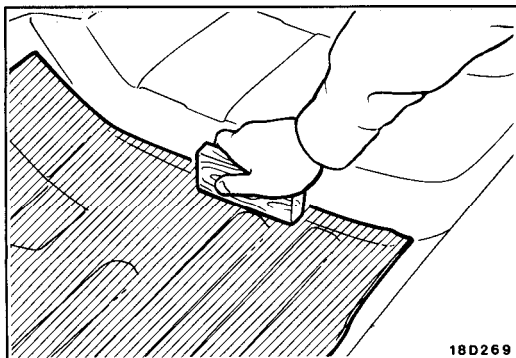
▨▨ : Thickness: 3.2 mm (.13 in.) (two 1.6 mm (.06 in.) silencers overlapped)

31R0043



18D268

- (1) Heat the "silencer layer" (petroleum-asphalt sheet) with a blow drier to soften it.



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- (2) Align the silencer layer in the position where it is to be installed, and then press it down with a roller or a block of wood so that it adheres well.

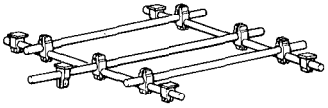
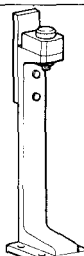
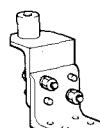

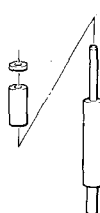


NOTE

An infrared lamp can also be used to heat both the silencer layer and the body panels (be sure to wear gloves).

USE OF SPECIAL TOOLS FOR REPAIRS WHEN FENDER SHIELD ASSEMBLY IS REPLACED

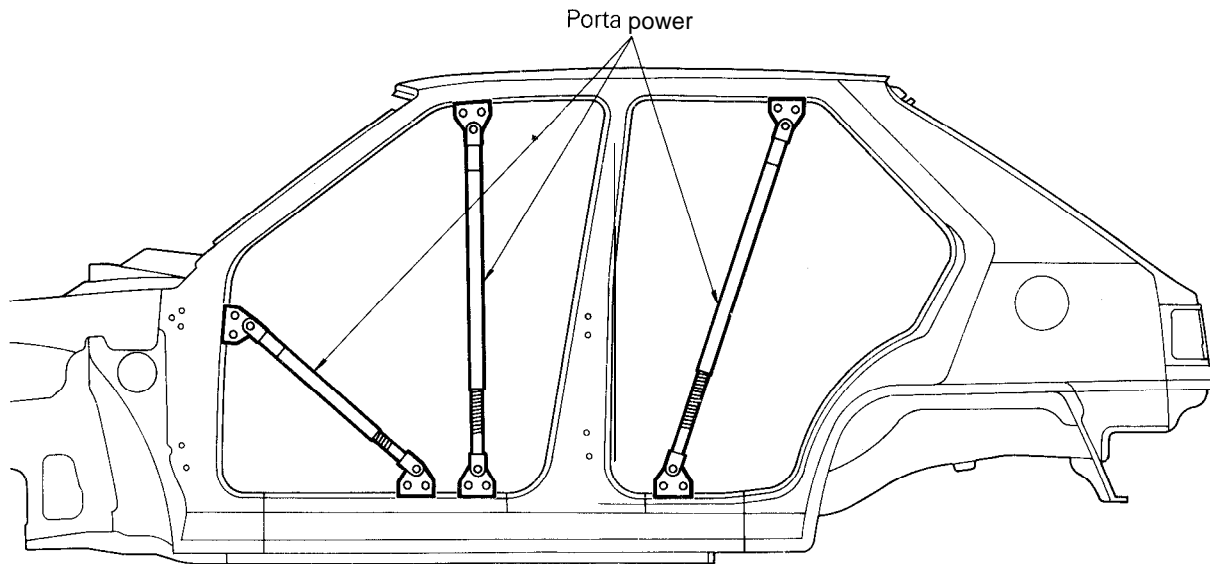
FRONT SIDEMEMBER LOCATION TOOL

If the fender shield for one side (or both sides) is to be replaced, secure the special tool (front sidemember location tool), described below, to the fender shield assembly; if positioning is done before beginning the work, the panel installation precision can be maintained and the work can be done more quickly.

Tool (name)	Part no.	COLT	COLT WAGON	Remarks
Locator base  33R0540	MB991057	●	●	Base for locator installation
Locator A  33R0577	MB991081	●	●	Front sidemembe (front side) positioning
Locator B  33R0542	MB991065	●	●	Headlamp support and front sidemember (rear side) positioning
	MB991083	●	●	
	MB991082	●	●	
Special bolt  33R0542	MB991066	●	●	For securing the locator
	MB991085	●	●	
Height-adjustment bar collar  33R0543	MB991067	●	●	Tool assembly
	MB991084	●	●	
Plate gauge A Gauge A 	MB991 088	—	●	Locator positionir
Plate gauge B Gauge B  31 X0078	MB991 089	—	●	

POSITIONING DIMENSIONS FOR OPENINGS WHEN WELDED PANEL IS REPLACED

If a panel(s) for the front pillar, rear pillar or other opening is replaced, positioning should be conducted as described below in order to prevent deviation of the position of the components that make up the opening at the body side.



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STANDARD PROCEDURES FOR SHEET METAL WORK

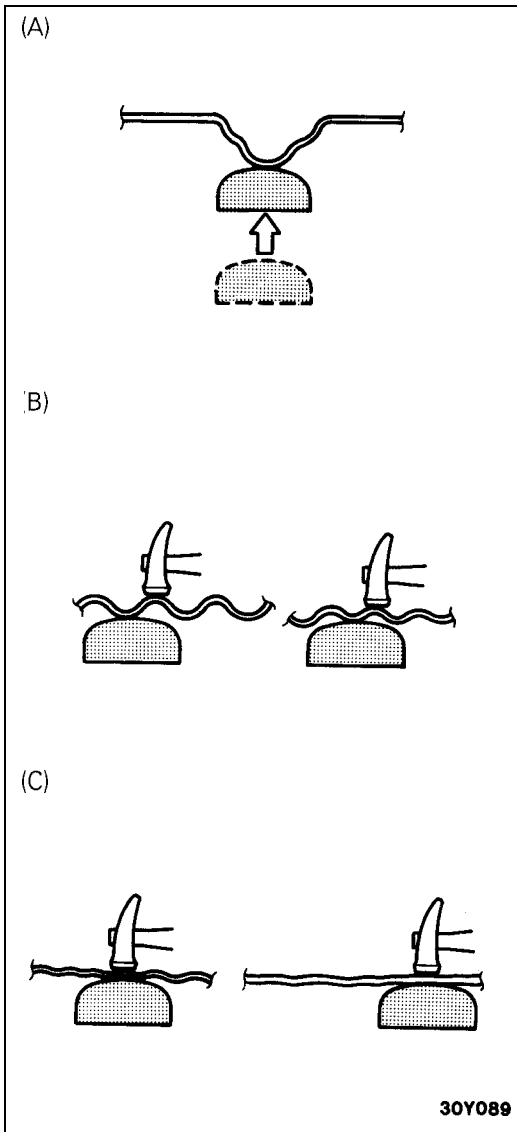
REPAIRS USING A HAMMER AND DOLLY

If a damaged external panel, etc. can be reused, the usual way to repair it is by using a hammer and dolly to hammer out the damaged area. The following describes these repair procedures.

- (1) Check whether or not there is foreign material (mud, etc.) on the panel surface. If so, clean it away.
- (2) Select the appropriate hammer and dolly to be used according to the panel shape.

Caution

The surface of the hammer and dolly must be free of scars, etc.



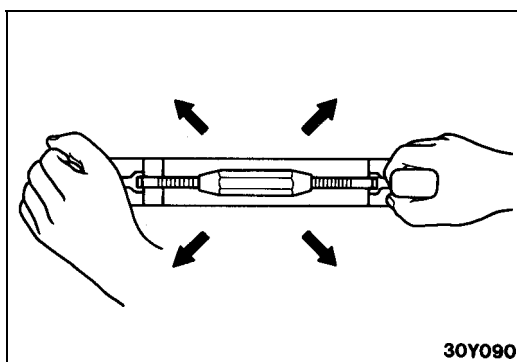
- (3) Use the hammer and dolly to repair the dents and other uneven surfaces of the panel.
- (A) First repair the larger areas of damage so that they are as close as possible to the original condition before the damage occurred.

(B) Next repair the areas of moderate damage.

(C) Finally smoothen the areas of minor damage.

Caution

Care should be taken, as far as possible, not to permit the panel plates to become elongated.



- (4) Next, file the area so that convex and concave parts are no longer clearly visible, and at the same time remove small projections.

Caution

- Be careful not to file too much; this will reduce the strength and rigidity of the panel.
- Do not use the file in one direction only; alternate use in two directions diagonally opposite each other.

- (5) After once again smoothing the clearly visible dents and projections by using the hammer and dolly, follow step (4) above.
- Alternately repeat hammering and filing until there are file traces over the entire repair area.
- (6) Make a solder build-up at the repair. (Refer to the section "Repairs by solder build-up" on page 1-I-1.)
- (7) Finally, finish up the solder build-up by using a body file.

USING A FRAME STRAIGHTENER

For serious and extensive damage, when for example the damage extends to the frame of members, it is necessary to first use a frame straightener to make a rough, overall repair of the body, and then to proceed to careful repairs of each individual area of damage. When a frame straightener is used for body repairs, it is a fundamental principle that the pulling should be in the direction from which the impact was sustained, and from the opposite direction. If this is, in error, not done, previously undamaged components will be deformed, and repair may become impossible.

It is for that reason that it is important to decide upon the method of repair, especially regarding the initial overall repair, by following the steps below.

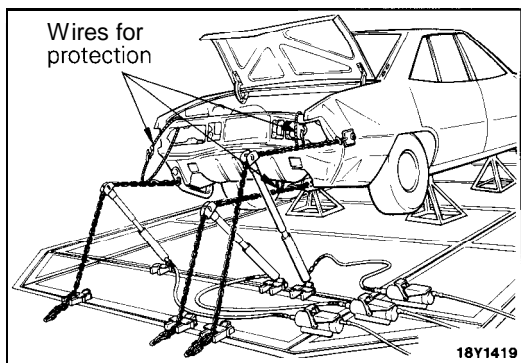
OVERALL ROUGH REPAIRS

- (1) First, analyze the impact. This means analysis and consideration of the point of collision, the speed at the time of collision, and the strength, weight and shape of the object hit.
- (2) Then get a complete understanding of the condition of the existing damage. In particular, if the damage extends to the suspension installation components, an inspection must be made to determine whether or not there is any deviation of the frame or body alignment.
- (3) Finally, determine what repair methods should be used.
 - To what extent will frame straightening and other overall repairs be necessary in order to restore the damaged areas to the way they were?
 - At what stage of the repairs should panels adjoining the components to be frame straightened, etc. be removed?
 - Decide upon the work steps and restoration methods to be followed after the rough, overall repairs are completed.

Select the frame straightener based upon the results of the above, and use it to pull in the appropriate direction. More than one direction may be appropriate, depending upon the damage.

If the damage is of a moderate degree or less, it may be possible to do all that is necessary in one pull.

If, however, the damage is major, that is to say if repairs must be made to components of the passenger compartment such as the dash panel, etc., it may be necessary, after completing the first pull, to set up the frame straightener at a different position and use it again at that position.



FRAME STRAIGHTENING NOTES

- For safety, no one must be standing in the direction of the pull.
- Wires or chains should be used for protection in the event of an accident.
- For frame straightening of a body with frame, care should be taken regarding the position (body mount) of installation to the frame. The reason for this is that usually mounting rubber pieces are used at the installation part in order to improve vibration prevention, and these mounting rubber pieces might be deformed if there is a deviation of the installation position.
- If the part to be pulled is made of high-tensile steel (which has a higher tensional strength and yield point than ordinary steel), the pulling must be done with care in order to avoid "overpull" and "springback". It is particularly important for the pulling of sidemembers and other reinforcement components made of high-tensile steel that the pulling not be all done at one time; pull gradually while using a hammer to repair distorted areas as the pulling is done.

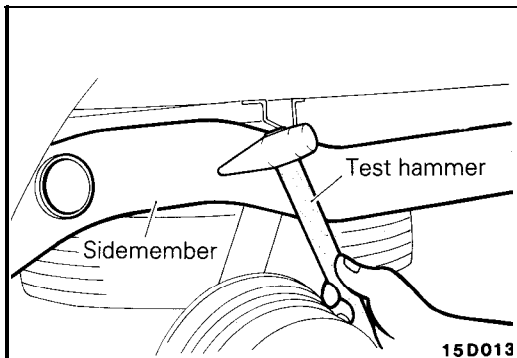
FRAME REPAIR PROCEDURES

The frame is subjected to the following types of loads.

- Vertical loads . . . Vertical loads may occur either while stopped or during travel.
- Lateral (horizontal) loads . . . This type of load occurs during turning, start-off and braking.
- Torsional loads Torsional loads occur while traveling on roads with poor surface conditions.

These various types of loads are compounded under various conditions, and are applied to the frame.

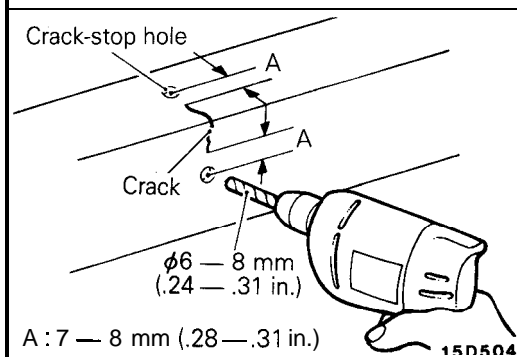
As a result, it is important, before attempting to repair the frame, to carefully observe the shape of the damaged part and to in that way fully understand the cause of the damage.



CHECKING FOR FRAME CRACKING OR FLANKING

Check, by using a test hammer, for flaking or cracking of the welded surfaces of the sidemembers, crossmembers and brackets.

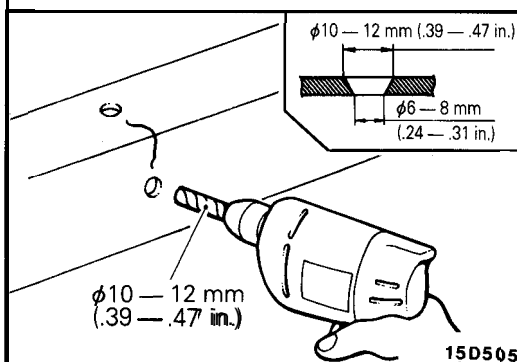
If any suspicious places are found, grind thoroughly and then check by using a crack finder (red check, etc.).



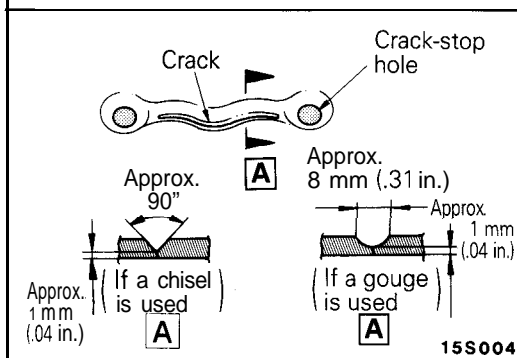
REPAIRING CRACKS

If the check reveals a crack(s) in the frame, repair as described below.

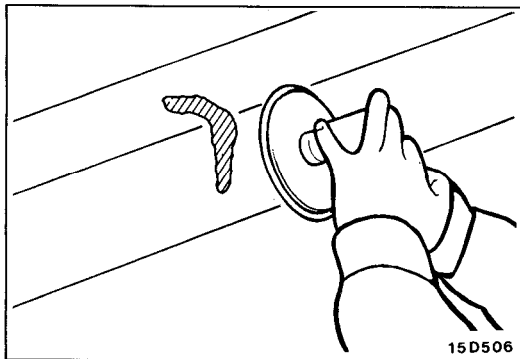
- (1) Remove the components near the crack.
- (2) Make $\phi 6 - 8 \text{ mm}$ (.24 — .31 in.) holes (to prevent further cracking), by using a drill, at points 7 — 8 mm (.28 — .31 in.) from the crack ends.



- (3) Use a $\phi 10 - 12 \text{ mm}$ (.39 — .47 in.) drill to bevel the hole openings.



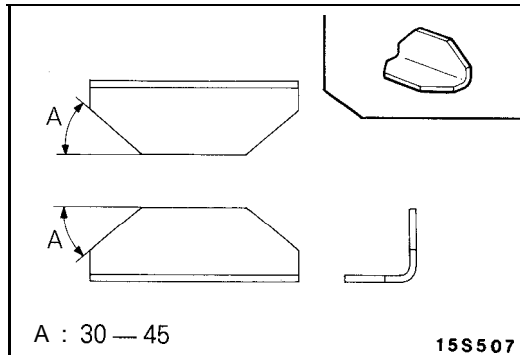
- (4) Use a chisel or gouging tool to open up the crack and holes, and then fill the crack and holes by MIG welding.



(5) Using a grinder for finishing after welding.

Caution

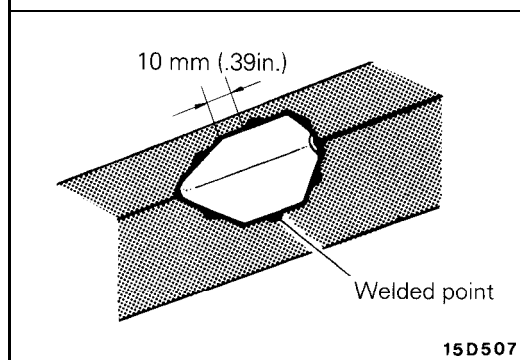
- Gas welding should be avoided because it cause thermal distortion of the frame.
- When using a grinder for finishing, be careful not to grind the frame excessively.



(6) To avoid a concentration of stress, prepare a reinforcement plate that has been cut to 30 — 45° at both ends.

Caution

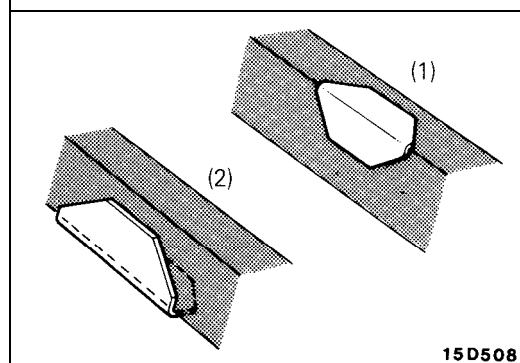
- The reinforcement plate should completely cover the cracked part.
- The reinforcement plate should be the same thickness and material as the frame.



(7) Attach the reinforcement plate to the repaired crack area by MIG welding. In order to avoid a concentration of stress at this time, weld the reinforcement plate at points about 10 mm (.39 in.) from its edges.

Caution

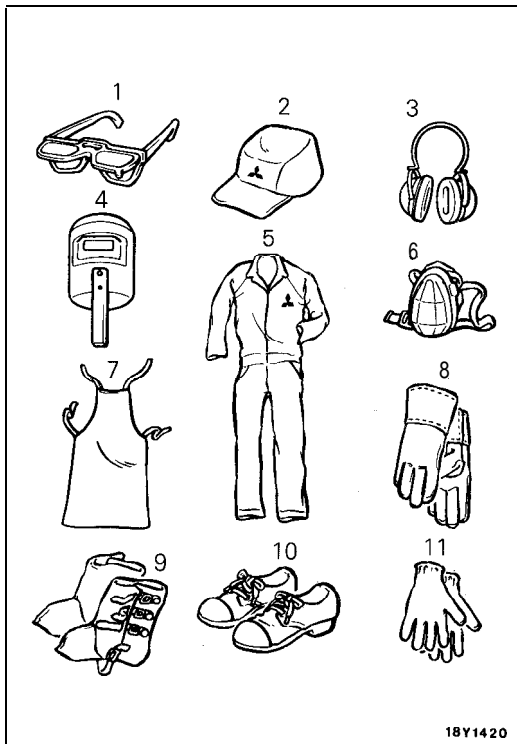
Be sure that the edges of the reinforcement plate are not near any place where a concentration of stress of the crossmember or spring hanger installation part, etc. could easily occur.



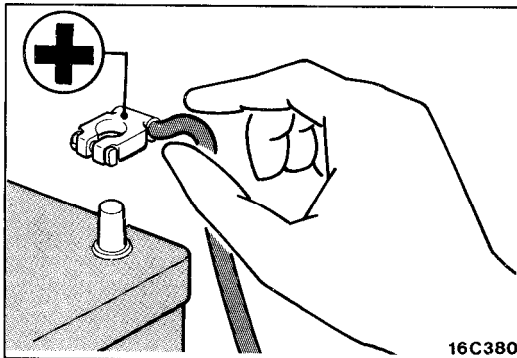
NOTE

If the crack is at the upper side of the frame, attach the reinforcement plate facing downward, as shown in (1).
If the crack is at the lower side, attach the reinforcement plate to face upward, as shown in (2).

(8) Finally, apply a coating of chassis black to the repaired area and to any places where the coating has flaked off.



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NOTES REGARDING REPAIR WORK

SAFETY MEASURES

PROTECTIVE GEAR

During body repair work, a work suit, a work cap, and safety shoes should be worn at all times. Depending on the work being done, safety glasses, gloves, ear protectors, a dustproof mask, etc., should also be worn as needed.

- | | |
|-------------------|------------------------------|
| 1. Safety glasses | 7. Work apron |
| 2. Work cap | 8. Welding gloves |
| 3. Ear protectors | 9. Foot and ankle protectors |
| 4. Head protector | 10. Safety shoes |
| 5. Work suit | 11. Work gloves |
| 6. Dustproof mask | |

SECURING THE VEHICLE

If the vehicle is raised on a jack, be sure to always support it with jack stands positioned at the specified points.

CLEARING THE AREA OF FLAMMABLE MATERIALS

Because of the presence of many various kinds of flammable materials, organic solvents, etc., in the work area, there is always the possibility of a fire or explosion. It is, therefore, important to keep the work area as clear as possible of such dangerous materials.

HANDLING ELECTRONIC PARTS AND SEMICONDUCTORS

When the body is used as the ground during welding for body repairs, be absolutely sure to first disconnect the battery's positive (+) cable.

NOTE

Vehicles today include a great many electronic parts and components, and these are in general very susceptible to adverse effects caused by overcurrent, reverse current, electromagnetic waves, high temperature, high humidity, impacts, etc. In particular, such electronic components can be damaged if there is a large current flow during welding from the body side, etc.

This is because, for electronic components that incorporate a back-up circuit (for memory retention) that functions (by a trickle current) even when the ignition key is at OFF, an electronic circuit is formed even when the key is at OFF.

Caution

- Be sure that both the ignition and lighting switches are off before either disconnecting or reconnecting a battery cable. (If this is not done, equipment containing semiconductors could be damaged.)
- Note that the memory of electronic equipment having a memory function will be cleared when the battery cable is disconnected.

HANDLING COMBUSTIBLE MATERIALS

If welding work is to be done in the area of the fuel tank, the fuel tank must be removed to prevent the generation of flammable gases. Also be sure to cap the inlet port and the pipes of the fuel tank after removal to prevent the escape of any fuel or flammable gases.

Wipe up any fuel, oil, etc., spilled in the work area as soon as possible.

Only the amounts of paint to be used for the day's work should be in the work area; do not keep excessive amounts of paint, or paint which is not going to be used, in the work area.

HEALTH AND SANITATION PROCEDURES

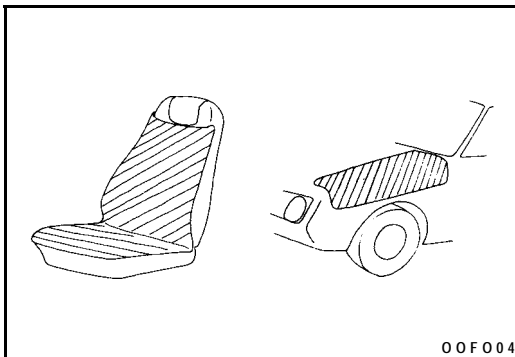
The following points should be noted for employee health and sanitation.

- The work area should be well ventilated in order to prevent the inhalation of dust, organic solvent vapors, etc.
- All unused paint cans must be securely covered.
- Care should be taken to avoid exposure to the skin of adhesives, organic solvents, etc.

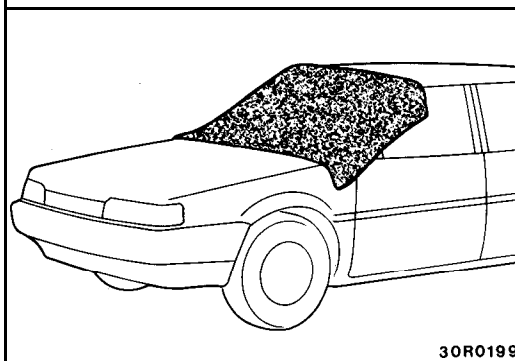
If an unavoidable exposure occurs, the exposed area should be immediately washed with clean water.

VEHICLE PROTECTION

- Vehicle covers (fender covers, seat covers, etc.) and tape (if there is the possibility of damage by tools, equipment, etc.) should be used to protect painted surfaces, interior/exterior parts and components, etc. from staining and damage.



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- For welding operations, a heat-resistant protective cover should be used to protect glass, seats, instrument panel, carpeting, etc.

HEAT-WITHSTAND TEMPERATURES OF RESIN-PLASTIC PARTS

Because resin-plastic parts are deformed by heat, they should be removed if the heat to be applied is high enough to cause deformation, as shown by the table below.

Material name	Abbreviation	Heat-deformation temperature °C(°F)	Where mainly used	
			Interior/exterior	Other
AAS resin	AAS	80 to 100 (176 to 212)	Radiator grille	
ABS resin	ABS	75 to 105 (167 to 221)	Instrument panel Console box Radiator grille Rear garnish Headlamp bezel	
Cellulose acetate	CA	50 to 90 (122 to 194)		
Cellulose acetate butylate	CAB	60 to 100 (140 to 212)	Door trim molding	
Ethylene vinyl acetate	EVA	40 to 80 (104 to 176)	Mud guard	
Polyamide	PA	120 (248)	Harness connector Wheel cap	Cooling fan Fuel strainer
Polyamide (with talc)	PA	185 (365)	Hood garnish	
Polycarbonate	PC	130 (266)	Room lamp lens	
Polyethylene	PE	40 to 80 (104 to 176)	Heater duct Fender liner	Flasher tank
Polyacrylate	PMMA	80 to 100 (176 to 212)		Lamp lens
Polyacetal	POM	125 (257)	Door regulator handle	Ball joint seat
Polypropylene	PP	60 to 100 (140 to 212)	Glove compartment Steering wheel Accelerator pedal pad Pillar trim Bumper Undergrille Scuff plate	Heater unit Cooling fan Battery case Condenser tank
Polyphenylene oxide	PPO	110 to 130 (230 to 266)	Wheel cap Speaker garnish	
Polyurethane	PUR	80 (176)	Bumper Air spoiler Steering wheel	
Polyvinyl alcohol	PVAL	Different according to the shape		
Polyvinyl butyral	PVB	Different according to the shape		
Polyvinyl chloride	PVC	65 to 80 (149 to 176)	Steering wheel Side molding Shift lever cover Window molding	
Urethane (foamed)	U	80 to 100 (176 to 212)	Seat cushion Arm rest Door trim Instrument pad	
Phenol resin	PF	120 to 180 (248 to 356)	Ashtray	
Glass-fiber-reinforced plastic	FRP	200 (392)	Tailgate garnish Bumper	
Urea resin	UF	120 to 145 (248 to 293)		
Polybutylene terephthalate	PBT	100 to 120 (212 to 248)	Door outer handle	

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an infra-red lamp is used for drying, use a heat-resistant cover, etc. to protect parts.

HOW TO DISTINGUISH TYPES OF PLASTICS

There are various methods that can be employed to determine types of plastics, among them (1) using a chemical solvent, etc. to check it chemically, (2) scratching the material to determine its make-up, (3) cutting of a small piece (where the scar can't be seen) and burning it to judge by the way it burns, etc. The following is an outline of the burning method, which is a relatively simple method.

Plastic name	Abbreviation	Flame color	Combustion conditions	Self-extinguishing	Odor
Polyvinyl chloride	PVC	Yellow flame top Blue flame bottom	Burns to black residue	Yes	Irritating acid odor
Polyethylene	PE	Yellow flame top Blue flame bottom	Burns cleanly while melting.	No	Candle-like odor
Polypropylene	PP	Yellow flame top Blue flame bottom	<ul style="list-style-type: none"> • Burns briskly and drips • Slight white smoke 	No	Petroleum-like odor
Polyurethane	PUR	Orange	Crackles as burns; drips	No	Rubber odor
	TRUR	Orange			
Polycarbonate	PC	Yellow	Cinders remain	To some extent	Sweet odor
Polyamide (nylon)	PA	Yellow flame top Blue flame bottom	Melts and drips	Yes	Strong formic acid odor
Polyester resin	UP	Yellow	Ashes remain	No	Styrene odor
Glass-fiber-reinforced plastic	FRP	Yellow	Ashes with glass-fiber remnants remain	No	Differs according to plastic type
Phenol resin	PF	Yellow	Ashes remain	Yes	Formalin odor
ABS resin	ABS	Orange	Burns accompanied by foaming and black smoke	No	Rubber odor

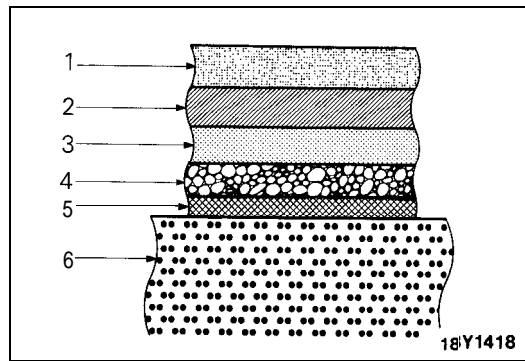
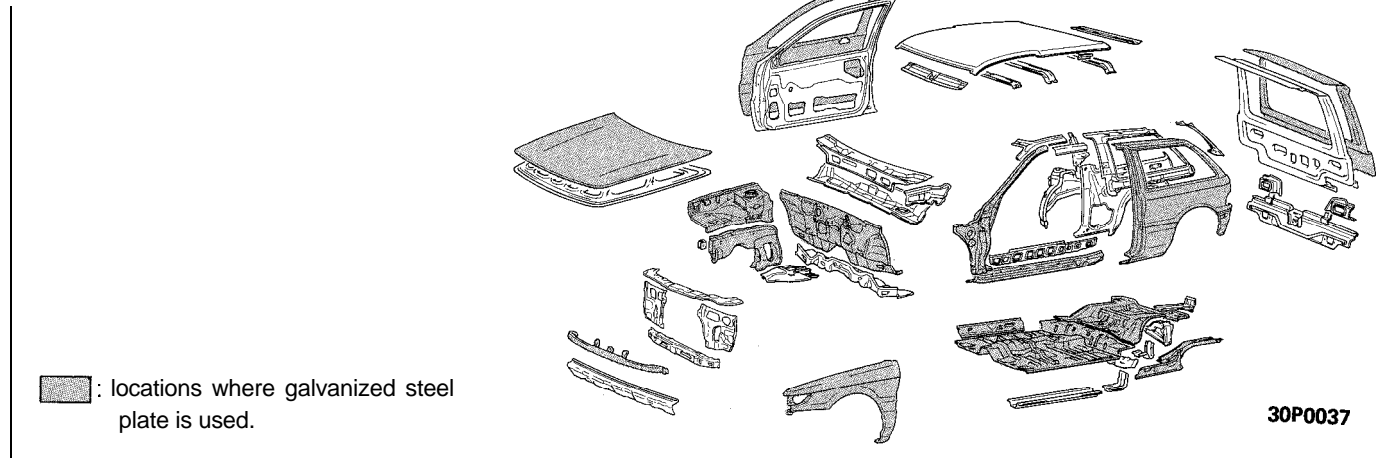
CORROSION PROTECTION

ANTICORROSION TREATMENT AT THE FACTORY

Anticorrosion treatment at the time of production includes the following measures.

THE USE OF GALVANIZED STEEL PLATE

Because galvanized steel plate has excellent corrosion resistance, it is used in areas which have a high possibility of painting deficiency.



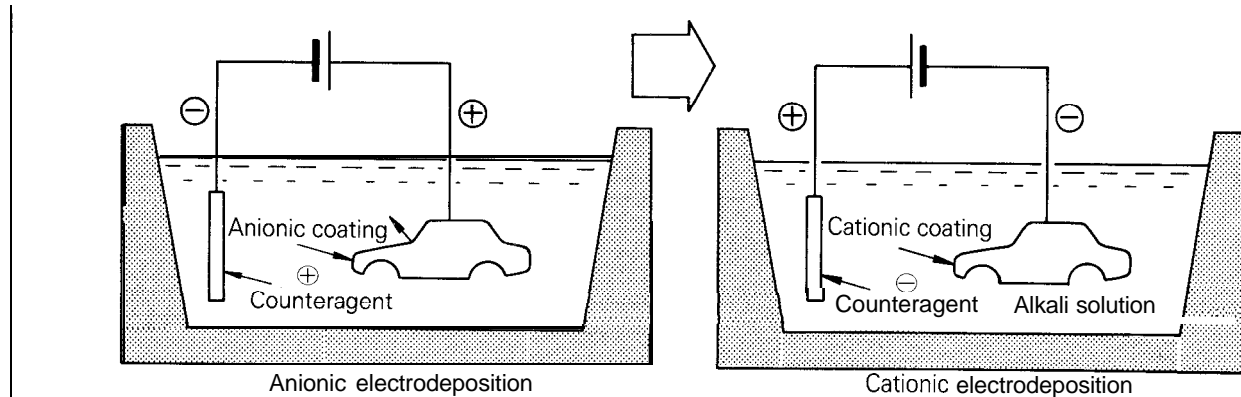
ZINC PHOSPHATE COATING

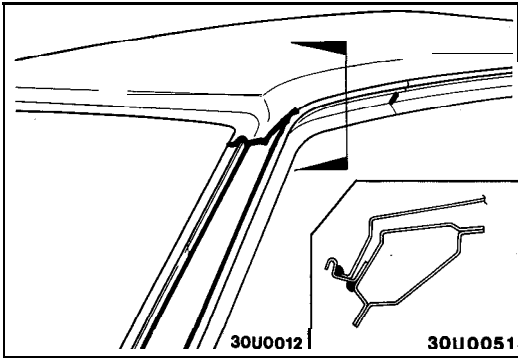
In order to improve the adhesive properties of the paint coat on the steel plate, and also to improve the finish of the paint coat, the entire body is coated with a film of zinc phosphate prior to undergoing the electrodeposition undercoating process.

1. Final coat
2. Intermediate coat
3. Anticorrosion primer
4. Undercoat
5. Zinc phosphate film
6. Steel plate

CATIONIC ELECTRODEPOSITION UNDERCOATING

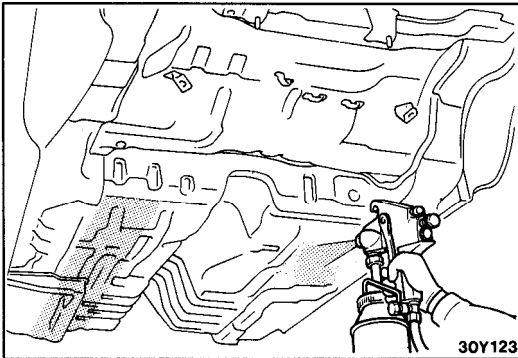
In the cationic electrodeposition method, the car body is the negative pole, thus preventing damage to the zinc plating of the galvanized body panels or to the chemically formed phosphate crystals. This method, therefore, maximizes the corrosion resistance and the results obtained are much better than those from conventional anionic electrodeposition.





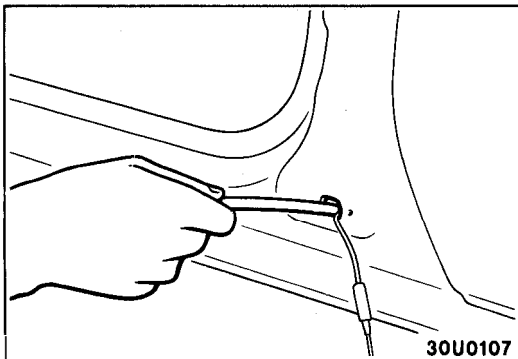
BODY SEALING

Sealant has been applied to all body panel joints and seams in order to provide resistance to water, dust, and corrosion.



UNDERBODY COATING

An underbody coating has been applied to the underside of the floor pans, the inside of the doors, etc., in order to provide resistance to vibration, corrosion, and wear.

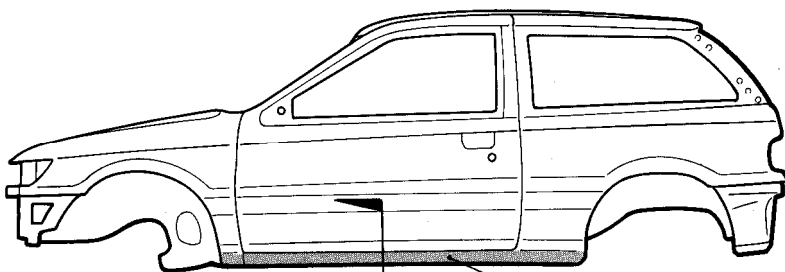


WAX INJECTION

Wax injection is used at the lower part of the frame, side sill and hollow panels, etc. in order to obtain a better anticorrosion effect.

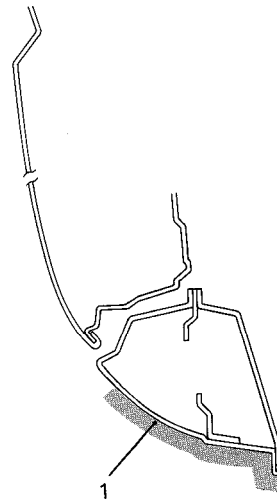
ANTICORROSION PRIMER

Anticorrosion primer is used at the side sill outer panels in order to prevent corrosion and to suppress vibration.



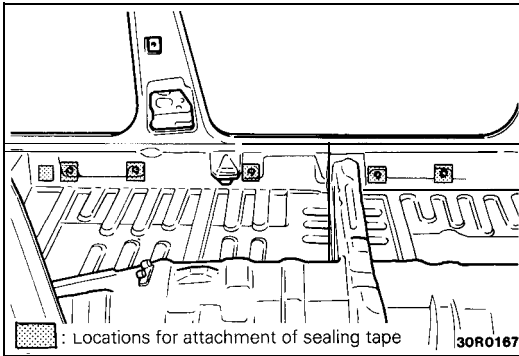
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1. Rocker panel primer application



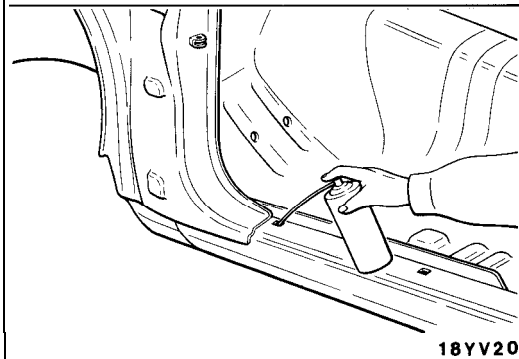
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SEALING TAPE

Sealing tape is attached at unused holes, at the inner side of the panel, for waterproofing and anticorrosion protection.

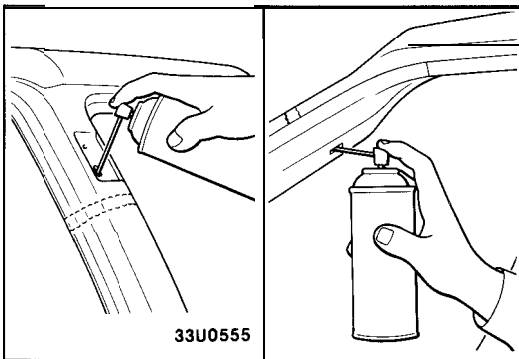


ANTICORROSION TREATMENT AT THE TIME OF BODY REPAIR WORK

The following procedures should be followed for anticorrosion protection when making repairs.

CORROSION PROTECTION FOR HOLLOW PARTS

The insides of hollow parts (such as the side sill, pillars, etc.) which have been welded are more susceptible to corrosion. Spray an aerosol-type anticorrosion agent into these parts by using the trim mounting holes and other openings.

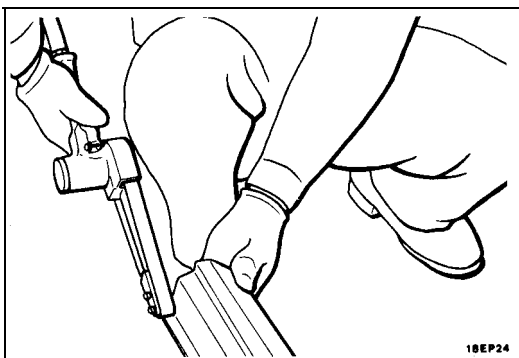


Caution

- Wipe away any excess anticorrosion agent on the coated surface, because it can adversely affect the coating.
- When spraying the anticorrosion agent, use holes in different areas to ensure that all weld surfaces of the hollow structure are well coated.

ANTICORROSION TREATMENT OF ROUGH CUTS

An anticorrosion agent should be applied to rough cuts made in the course of welding, because the surface film has been damaged by the heat of welding.

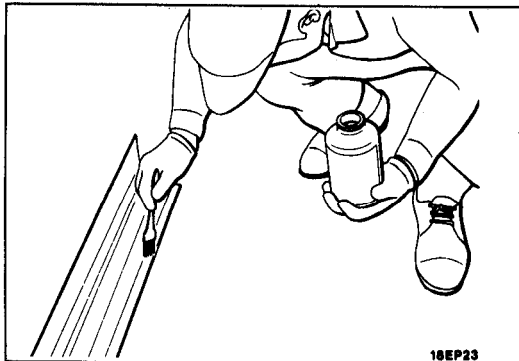


SPOT SEALER

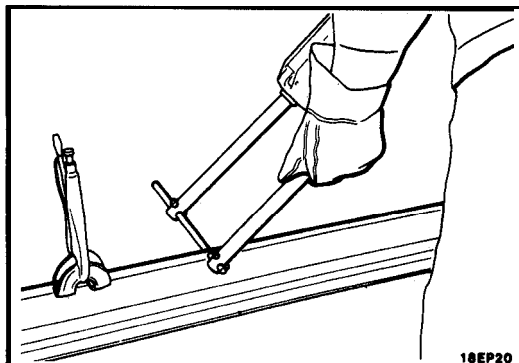
In order to prevent corrosion from occurring at the contact surfaces of panels which are spot welded, apply an electro-conductive spot sealer.

SPOT SEALER APPLICATION STEPS

- (1) Remove all paint, etc., from the areas to be spot welded by using sandpaper or a pneumatic belt sander.



- (2) Use a brush to apply spot sealer to the contact surfaces of the panels (both the new panel and the panel remaining on the body) to be spot welded.

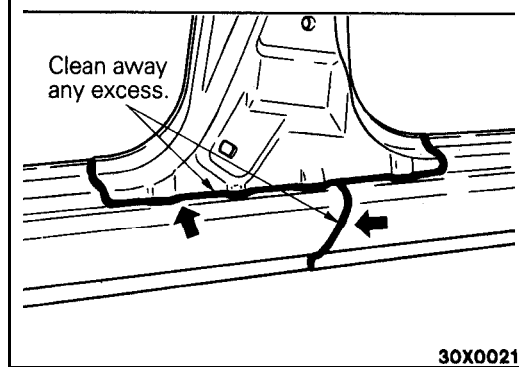


- (3) Do the spot welding

NOTE

The spot welding can be done as soon as the spot sealer is dry to the touch.

Dry to the touch: 30 minutes or less at 20°C (68°F)

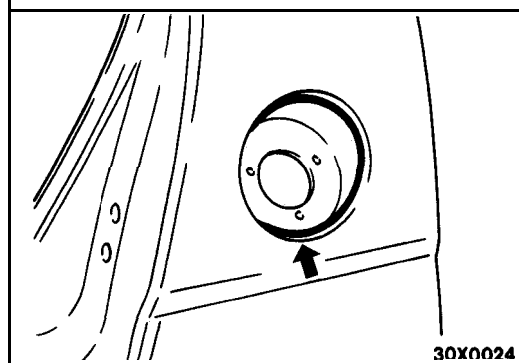


BODY SEALING

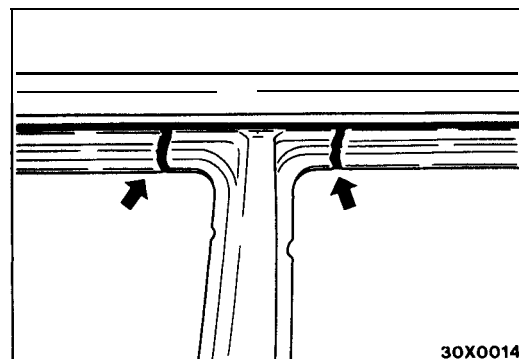
Even if a car body is restored to the exact specified dimensions, the body repair work cannot be considered to be complete if an ample amount of sealant is not applied to each of the panel joints and seams. Insufficient sealant will result in water leakage, corrosion, etc.

NOTE

Use a piece of clean cloth dampened in lead-free gasoline or a similar material to clean parts and areas where sealant is applied.



- When applying sealant to areas at which the external appearance is important (areas which can be seen or where the condition of the paint coat is important), be sure to apply the sealant so that it is perfectly level with the surrounding panels.
- Apply the sealant at the fuel port so that it is perfectly level with the surrounding panel so that drops of fuel will not collect.



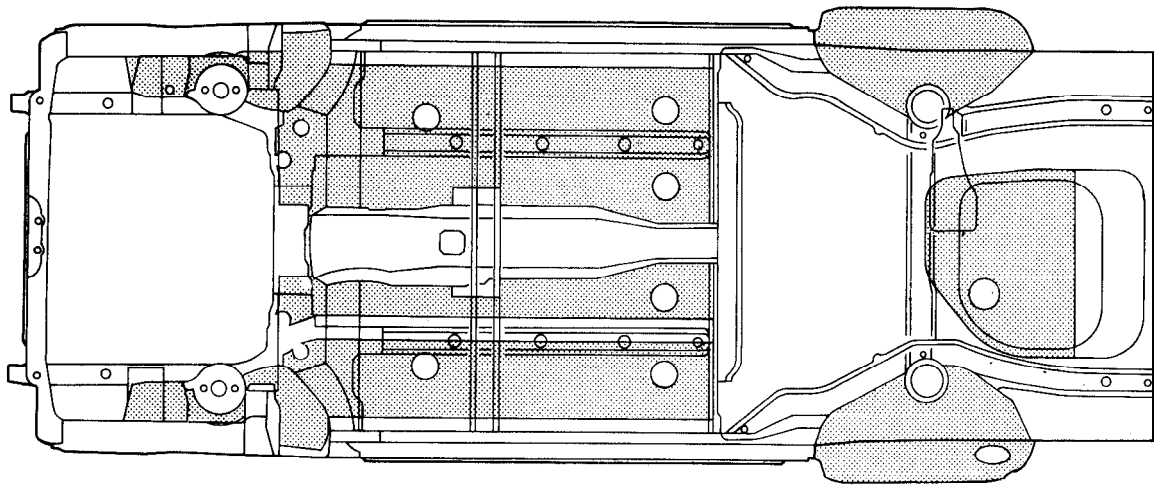
- After applying sealant to the door-stop, etc., clean away any excess so as to be sure that there is no interference with installed parts, etc.

UNDERCOATING


If the undercoating application inside the wheel housing, on the under body, etc. is insufficient, it can result in corrosion. Be sure, therefore, to apply a good coating of undercoating to such parts after repairs are completed.

Caution

- Be sure to mask any parts installation holes, and the area around the place where undercoating is to be applied, before applying it.
- Be sure not to apply the undercoating to tires or to the drive shaft and other drive components.



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 : Undercoating application locations

SUPPLEMENTAL RESTRAINT SYSTEM (SRS)

- (1) A Supplemental Restraint System (SRS), which uses a driver-side air bag, has been installed in the STEALTH
- (2) The SRS includes the following components: impact sensors, SRS diagnosis unit; SRS warning light, air bag module, clock spring, interconnecting wiring.

Other Supplemental Restraint System (SRS)-related components are shown in the following MASTER TABLE OF CONTENTS. Be sure to carefully read and understand the WARNING below before proceeding.

GROUP NUMBER	GROUP NAME	SRS-related components
2A	FRONT SUSPENSION	RIGHT MEMBER, LEFT MEMBER AND CROSSMEMBER
2B	ELECTRONIC CONTROL SUSPENSION	STEERING WHEEL ANGULAR VELOCITY SENSOR
5	BRAKES SERVICE AND PARKING	PARKING BRAKE LEVER AND PARKING BRAKE CABLE
8	CHASSIS ELECTRICAL	AUDIO SYSTEM
		COLUMN SWITCH
		HORN
		IGNITION SWITCH
	METERS AND GAUGES	
14	FUEL SYSTEM	CRUISE CONTROL SYSTEM
19A	STEERING	POWER STEERING GEAR BOX
		STEERING WHEEL AND SHAFT
21	TRANSAXLE MANUAL AND AUTOMATIC	TRANSAXLE CONTROL
23A	BODY	FENDER
		FLOOR CONSOLE
		FRONT SEAT
		INSTRUMENT PANEL
24	HEATERS AND AIR CONDITIONING	AIR CONDITIONER CONTROL PANEL AND AIR CONDITIONER CONTROL UNIT
		DAMPER CONTROL MOTOR ASSEMBLY
		HEATER CONTROL ASSEMBLY
		HEATER UNIT
		VENTILATORS (INSTRUMENT PANEL)

NOTE

Refer to the STEALTH Service Manual [Pub. No. 81-270-1 1151 for each Group Number, Group Name and Reference Page concerned as shown in the table.

WARNING!

- (1) Improper service or maintenance of any component of the SRS, or any SRS-related component, can lead to personal injury or death to service personnel (from inadvertent firing of the air bag) or to the driver (from rendering the SRS inoperative).
- (2) If it is possible that the SRS components are subjected to heat over 93°C (200°F) in baking or in drying after painting, remove the SRS components (air bag module, SRS diagnosis unit, front impact sensors) beforehand.
- (3) Service or maintenance of any SRS component or SRS-related component must be performed only at an authorized CHRYSLER dealer.
- (4) CHRYSLER dealer personnel must thoroughly review the STEALTH Service Manual [Pub. No. 81-270-11151, and especially its GROUP 23B – Supplemental Restraint System (SRS), before beginning any service or maintenance of any component of the SRS or any SRS-related component.

UNITED STATES



The special service tools referred to herein are required for certain service operations. These special service tools or their equivalent, if not obtainable through a local source are available through the following outlet.

32615 Park Lane, Garden City, Michigan 48135, U.S.A.



TRIANGLE SPECIAL PRODUCTS GROUP
(MILLER SPECIAL TOOLS)
DIVISION OF THE TRIANGLE CORPORATION

Telephone (313) 522-6717

FAX (313) 522-6505

CANADA



The special service tools referred to herein are required for certain service operations. These special service tools or their equivalent, if not obtainable through a local source are available through the following outlet.

C & D Riley Enterprises Ltd., P.O. Box 243, Amherstburg, Ontario N9V 2Z4
Telephone (519) 736-4600

FAX (519) 736-8433

INTERNATIONAL



The special service tools referred to herein are required for certain service operations. These special service tools or their equivalent, if not obtainable through a local source are available through the following outlet.

32615 Park Lane, Garden City, Michigan 48135, U.S.A.



TRIANGLE SPECIAL PRODUCTS GROUP
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