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# GENERAL INFORMATION &

## GENERAL GUIDE LINES AND PRECAUTIONS

The Hyundai TERRACAN is a completely new vehicle design. During its development, close attention has been given to safety, stability, weight and corrosion protection. Typical of unit body design, the Hyundai TERRACAN is designed so that the front and rear compartments will absorb much of the collision energy so that the passengers are better protected. During collisions, these front and rear energy absorbing systems may be severely damaged. During repair, these damaged areas must be returned to their original strength and geometry. If this is not properly done, the vehicle will not provide the intended level of protection to its occupants in the event of another collision.

The repairs described in this manual were performed on TERRACAN body shells. In some instances special fixtures were welded in place to support the structure. During the repair of an actual vehicle, the interior would be fully disassembled and standard jack screws or portable braces may be used for temporary support.

During the repair of an accident involved vehicle, the vehicle must first be returned to pre-impact dimensions prior to beginning the sectioning repair procedures. The extent of damage that must be repaired should then be evaluated to determine the appropriate repair procedures. This manual provides locations and procedures where structural sectioning may be employed. It is the responsibility of the repair technician, based upon the extent of damage, to determine which location and procedure is suitable for the particular damaged vehicle.

During the repair of a collision damaged automobile, it is impossible to fully duplicate the methods used in the factory during the vehicle manufacture. Therefore, auto body repair techniques have been developed to provide a repair that has strength properties equivalent to those of the original design and manufacture.

Certain guidelines and precaution are noted as follows.



#### SRS AIRBAG

#### SYSTEM COMPONENT



The Hyundai TERRACAN is equipped with a Supplemental Restraint System (AIRBAG) to provide the vehicle's driver and/or the front passenger with additional protection than that offered by the seat-belt system alone, in case of a frontal or lateral impact of sufficient severity.

When handling airbag components (removal, installation or inspection, etc.), always follow the directions given in the repair manual for the relevant model to prevent the occurrence of accidents and airbag malfunction.

Also take the following precautions when repairing the body:

- Work must be started after approximately 30 seconds or longer from the time the ignition switch is turned to the LOCK position and the negative (-) terminal cable is disconnected from the battery. (The airbag system is equipped with a back-up power source so that if work is started within 30 seconds of disconnecting the negative (-) terminal cable of the battery, the airbag may be deployed.) When the negative(-) terminal cable is disconnected from the battery, memory of the clock and audio systems will be cancelled. So before starting work, make a record of the contents memorized by the audio memory system. Then when work is finished, reset the audio system as before and adjust the clock.
- 2. When using electric welding, first disconnect the SRSCM connectors under the lower crash pad center.
- 3. Store the airbag module where the ambient temperature remains below 80°C (176°F), without high humidity and away from electrical noise.
- 4. WARNING/CAUTION labels are attached to the periphery of the airbag components. Refer to the TERRACAN SHOP MANUAL.

# ELECTRONIC PARTS

Vehicles today include a great many electronic parts and components, and these are in general very susceptible to adverse effects caused by over current, 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.

Therefore, take the following precautions during body repair to prevent damage to the CONTROL MODULES (ECM, TCM, ABS CM, SRS CM, etc.)

- 1. Before removing and inspecting the electrical parts or before starting electric welding operations, disconnect the negative (-) terminal cable from the battery.
- 2. Do not expose the CONTROL MODULES to ambient temperatures above 80°C (176°F).
  - NOTE :

If it is possible the ambient temperatures may reach 80°C (176°F) or more, remove the CONTROL MODULES from the vehicle before starting work.

3. Be careful not to drop the CONTROL MODULES and not to apply physical shocks to them.

#### CORROSION PROTECTION AND SEALING

Proper corrosion protection and sealing is an important part of any repair. When reviewing these repair procedures, it is important to recognize the need for corrosion restoration to provide for long term strength of the repaired member.

A two part epoxy primer was applied to the metal surfaces during the latter part of the repair. For closed sections, such as front and rear rails, rocker panels and pillars, the primer is applied without applying the metal conditioner and the conversion coating. These steps are omitted to insure that no rinse water is trapped in the closed sections. The primer application is followed by an application of an oil or wax based on rust proofing material.

After the corrosion restoration process for the closed sections are completed, then the process can be applied to all exterior sections. For exterior surfaces, both metal conditioner and conversion coating treatments are applied to the exterior surface prior to application of the epoxy primer. The procedure in applying the corrosion restoration process is important in order to insure that moisture, due to the water rinsing of the metal conditioner and conversion coating is not inadvertently trapped inside any closed section before the epoxy primer and rust proofing materials have been applied.

Appropriate seam sealers are then applied to all joints. Follow manufacturer's recommendations for the appropriate type of seam sealer to be used at each seam or joint.

#### SIDE BODY PANELS

The side body panel for TERRACAN is designed and stamped as single piece of sheet metal in factory as shown in the figure. While the entire side panel is available for service, the partial panels sectioned by several damaged areas are also available. Therefore when repairing side body, select and use the appropriate part.



#### WELDING

All repairs in this manual require the use of a Metal-Inert Gas (MIG) welder, Gas (oxyacetylene) welding must not be used.

Both high strength steel and mild steel can be welded using the MIG welder. The I-CAR recommendations for welding should be followed. The shielding gas should be 75% Argon and 25% CO<sub>2</sub>.

The recommended welding wire size is 0.23" and the wire should satisfy the American Welding Society Standard code AWSER70S-6.

During the repair process, plug welds are used to duplicate original factory spot welds. All plug welds should be done with the MIG welder. An 8 mm (5/16") hole is placed in the top (welding side) sheet metal.

You then begin welding along the edges and the spiral towards the center (see illustration). This is important so that weld penetration between the two metal pieces may take place along the circumference of the circle.



#### SAFETY FACTORS

Disconnect the negative(-) battery cable before performing any work on the vehicle.

Protect yourself by wearing goggles, earplugs, respirators, gloves, safety shoes, caps, etc. when working on a vehicle.

Safely support the vehicle before any work is done. Block the front or rear wheels if the vehicle is not lifted off of the ground.

Cap or remove the fuel tank when working on the rear section of the car.

Insure proper ventilation of your working area. Some paint and sealant can generate toxic gases when heated. Use an air chisel or saw to remove damaged panels instead of a gas torch.

Observe all local and national safety regulations when performing any work.

Cover interior with heat-resistant cover to insure safety when welding.

Take care when using gas or cutting torches so as not to burn body sealer or interior. Extinguish immediately if they should catch fire.

\* · · · ·

# BODY CONSTRUCTION

# **BODY COMPONENTS**

Body construction will sometimes differ depending on specifications and country of destination. Therefore, please keep in mind that the information contained herein is based on vehicles for general destination.



- 1. Radiator support panel
- 2. Bridge panel
- 3. Front end cross member
- 4. Front end lower reinforcement assembly
- 5. Radiator lower(A) bracket
- 6. Front end side reinforcement(LH/RH)
- 7. Fender apron panel(LH/RH)
- 8. Fender shield(A) reinforcement(LH/RH)
- 9. Cowl top reinforcement(LH/RH)
- 10. Fender shield(B) reinforcement(LH/RH)
- 11. Dash panel
- 12. Dash panel reinforcement
- 13. Cowl top outer panel
- 14. Cowl top inner panel
- 15. Cowl cross member assembly
- 16. Roof front inner rail
- 17. Map lamp bracket
- 18. Roof panel
- 19. Roof bow(A)
- 20. Roof bow(B)
- 21. Roof bow(C)
- 22. Roof bow(D)
- 23. Roof rear inner rail
- 24. "A" inner pillar(LH/RH)
- 25. Side outer panel(LH/RH)
- 26. "B" inner pillar(LH/RH)
- 27. Roof side inner rail(LH/RH)
- 28. Side inner panel(LH/RH)
- 29. Side outer extension(LH/RH)
- 30. Fuel filler door

- 31. Shift lever reinforcement
- 32. Backbone reinforcement
- 33. Front floor panel
- 34. Front seat cross member(LH/RH)
- 35. Front seat rear bracket(LH/RH)
- 36. Front floor No. 1 cross member
- 37. Body mounting No. 2 bracket(LH/RH)
- 38. Front floor No. 2 cross member
- 39. Body mounting No. 3 bracket(LH/RH)
- 40. Side sill inner panel(LH/RH)
- 41. Center floor panel
- 42. Rear floor panel
- 43. 2nd seat hinge rear bracket
- 44. Rear floor No. 1 cross member
- 45. Rear floor No. 2 cross member
- 46. Rear floor No. 3 cross member
- 47. Rear floor side member(LH/RH)
- 48. Rear floor No. 4 cross member
- 49. Body mounting No. 5 bracket(LH/RH)
- 50. Rear end cross member
- 51. Rear floor side panel(LH/RH)
- 52. Rear floor side reinforcement(LH/RH)
- 53. Front door outer panel(LH/RH)
- 54. Front door inner panel(LH/RH)
- 55. Rear door outer panel(LH/RH)
- 56. Rear door inner panel(LH/RH)
- 57. Tail gate outer panel
- 58. Tail gate inner panel
- 59. Hood outer panel
- 60. Hood inner panel

# ZINC-GALVANIZED STEEL PANELS

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



- 1. Bridge panel
- 2. Front end cross member
- 3. Front end lower reinforcement assembly
- 4. Dash panel
- 5. Dash panel reinforcement
- 6. Cowl top outer panel
- 7. Cowl top inner panel
- 8. Side outer panel(LH/RH)
- 9. Side inner panel(LH/RH)
- 10. Side outer extension(LH/RH)
- 11. Fuel filler door
- 12. Shift lever reinforcement
- 13. Backbone reinforcement
- 14. Front floor panel
- 15. Front floor No. 1 cross member(LH/RH)
- 16. Body mounting No. 2 bracket(LH/RH)
- 17. Front floor No. 2 cross member
- 18. Body mounting No. 3 bracket(LH/RH)
- 19. Side sill inner panel(LH/RH)
- 20. Center floor panel

- 21. Rear floor panel
- 22. 2nd seat hinge rear bracket
- 23. Rear floor No. 1 cross member
- 24. Rear floor No. 2 cross member
- 25. Rear floor No. 3 cross member
- 26. Rear floor side member(LH/RH)
- 27. Rear floor No. 4 cross member
- 28. Body mounting No. 5 bracket(LH/RH)
- 29. Rear floor side panel(LH/RH)
- 30. Front door outer panel(LH/RH)
- 31. Front door inner panel(LH/RH)
- 32. Rear door outer panel(LH/RH)
- 33. Rear door inner panel(LH/RH)
- 34. Tail gate outer panel
- 35. Tail gate inner panel
- 36. Hood outer panel
- 37. Hood inner panel

## HIGH STRENGTH STEEL PANELS

Because High strength steel panel has excellent resistance, it is used in areas which have a high possibility of painting deficiency below.



- 1. Cowl top reinforcement(LH/RH)
- 2. Body mounting No. 2 bracket(LH/RH)
- 3. Rear floor No. 4 cross member
- 4. Rear end cross member
- 5. Front door outer panel(LH/RH)
- 6. Rear door outer panel(LH/RH)
- 7. Tail gate outer panel

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8. Hood outer panel

## BODY CONSTRUCTION - Front body <Engine room bracket>

## ENGINE ROOM BRACKET

	<image/>	
		RSP0011
No.	PART NAME	a na har na an
1 2 3 4 5 6 7 8	Hood latch bracket Hood latch stay Fender mounting bracket(LH) Fender mounting bracket(RH) Bumper mounting bracket(A) Bumper mounting bracket(B) Side mounting bracket(LH) Side mounting bracket(RH)	

# RADIATOR SUPPORT COMPLETE MEMBER ASSEMBLY

		N.	
INO.	Rediator support papel	μ <b>ΝΟ.</b>	Rody mounting No. 1 (A) reinforcement/LH
2 3 4 5 6 7	Front end side reinforcement(LH) Front end side reinforcement(RH) Bridge panel Radiator mounting reinforcement Front end crossmember Radiator lower bracket(A)	9 10 11 12 13 14	Body mounting No. 1 bracket(LH/RH) Body mounting No. 1 bracket(LH/RH) Body mounting No. 1 (A) reinforcement(RH) Front end lower reinforcement Radiator lower bracket(B) Air conditioning condenser bracket Horn mounting reinforcement

## RADIATOR SUPPORT COMPLETE MEMBER ASSEMBLY



## FENDER APRON PANEL COMPLETE ASSEMBLY



# FENDER APRON COMPLETE PANEL



# DASH PANEL



## DASH PANEL



## COWL PANEL

			10 $12$ $11$ $13$ $16$ $16$ $17$ $17$ $18$ $18$ $18$ $18$ $18$ $18$ $19$ $19$ $19$ $19$ $19$ $19$ $19$ $19$
No.	PART NAME	No.	
1 2 3 4 5 6 7 8 9 10 11	Cowl top outer panel Wiper motor reinforcement Wiper pivot center reinforcement Hood hinge reinforcement(LH) Hood hinge reinforcement(RH) Intercooler(A) bracket Intercooler(B) bracket Cowl top inner panel Air guide bracket Crash pad upper center bracket Crash pad upper side bracket	12 13 14 15 16 17 18 19 20 21 22	Weld bolt Heater bracket Blower(A) bracket Blower (B) bracket Pedal support upper bracket Cowl top extension(LH) Cowl top extension(RH) Cowl top reinforcement(LH) Cowl top reinforcement(RH) Cowl bulkhead

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# COWL PANEL



#### **BODY CONSTRUCTION - Side body**

# SIDE STRUCTURE



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#### SIDE STRUCTURE

- 1. Side outer panel(LH/RH)
- 2. Front fender bracket(A)
- 3. Front fender bracket(B)
- 4. Front door checker reinforcement
- 5. "A" pillar lower reinforcement(LH/RH)
- 6. "A" inner upper reinforcement(LH/RH)
- 7. "A" inner upper pillar(LH/RH)
- 8. "A" inner lower pillar(LH/RH)
- 9. Electronic controlled unit bracket
- 10. Deck crossmember upper bracket(LH/RH)
- 11. Deck crossmember lower bracket(LH/RH)
- 12. "B" inner pillar(LH/RH)
- 13. 1st seat belt lower reinforcement
- 14. "B" pillar reinforcement(LH/RH)
- 15. Side sill rear reinforcement(LH/RH)
- 16. Front seat belt upper reinforcement(LH/RH)
- 17. Front door striker retainer
- 18. Plate
- 19. Side inner panel(LH/RH)
- 20. Rear wheel house front panel(LH/RH)
- 21. Rear wheel house inner panel(LH/RH)
- 22. Wheel house inner front extension(LH/RH)

- 23. Fuel filler protector mounting bracket(A)
- 24. Wheel house inner rear extension(LH/RH)
- 25. 2nd seat belt lower front reinforcement(LH/RH)
- 26. Fuel filler protector mounting bracket(B)
- 27. "C" pillar reinforcement(LH/RH)
- 28. Roof rail side rear reinforcement(LH/RH)
- 29. 2nd seat belt lower rear reinforcement
- 30. Net mounting bracket
- 31. "D" pillar upper reinforcement(LH/RH)
- 32. "D" pillar lower reinforcement(LH/RH)
- 33. Spare tire hinge upper reinforcement
- 34. Spare tire hinge lower reinforcement
- 35. Side outer upper extension(LH/RH)
- 36. Side outer lower extension(LH/RH)
- 37. Gas spring reinforcement
- 38. Damper reinforcement
- 39. "D" pillar lower plate(LH/RH)
- 40. Fuel filler neck bracket
- 41. Retainer
- 42. Plate
- 43. Striker reinforcement
- 44. Roof side inner rail

## SIDE OUTER PANEL : "A" PILLAR



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## SIDE OUTER PANEL : "B" PILLAR



# SIDE OUTER PANEL : "C" & "D" PILLAR



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# SIDE OUTER PANEL : "C" & "D" PILLAR



# SIDE OUTER PANEL : SIDE SILL



#### **BODY CONSTRUCTION - Front floor**

# FRONT FLOOR COMPLETE



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#### FRONT FLOOR COMPLETE

- 1. Front floor panel
- 2. Backbone reinforcement
- 3. Shift lever reinforcement
- 4. Shift lever reinforcement
- 5. Automatic lever mounting bracket
- 6. Shift lever extension(LH)
- 7. Shift lever extension(RH)
- 8. Front seat crossmember(LH)
- 9. Front seat crossmember(RH)
- 10. Front seat rear bracket
- 11. Front floor No. 1 crossmember(LH/RH)
- 12. Body mounting No. 2 bracket(LH/RH)
- 13. Body mounting No. 2 reinforcement(LH/RH)
- 14. Front floor No. 2 crossmember
- 15. Body mounting No. 3 bracket(LH/RH)
- 16. Body mounting No. 3 reinforcement(LH/RH)

- 17. Center support bracket
- 18. Side sill inner panel(LH)
- 19. Splash shield bracket
- 20. Side sill inner panel(RH)
- 21. Side step bracket
- 22. Side sill inner reinforcement(LH)
- 23. Side sill inner reinforcement(RH)
- 24. Center floor panel
- 25. 2nd seat hinge front bracket
- 26. Center floor reinforcement
- 27. Body mounting No. 4 bracket
- 28. Body mounting No. 4 reinforcement
- 29. Automatic transmission cable bracket
- 30. Torque on demand electronic control unit bracket
- 31. Parking brake cable bracket
- 32. Parking brake cable No. 1 bracket

#### **BODY CONSTRUCTION - Rear floor**

# REAR FLOOR COMPLETE



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#### **REAR FLOOR COMPLETE**

- 1. Rear floor panel
- 2. Rear floor No. 1 cross member
- 3. 2nd seat striker bracket
- 4. Rear floor No. 2 cross member
- 5. Rear floor No. 3 cross member
- 6. Rear floor side member(LH)
- 7. Rear floor side member(RH)
- 8. 2nd seat hinge bracket
- 9. Luggage hook No. 1 bracket
- 10. 2nd seat hinge rear bracket
- 11. Tail gate striker bracket
- 12. Rear end outer cross member
- 13. Rear end lower cross member
- 14. Spare tire rod upper guide
- 15. Spare tire rod lower guide

- 16. Rear end inner cross member
- 17. Rear end inner extension(LH)
- 18. Rear end inner extension(RH)
- 19. Luggage hook No. 2 bracket
- 20. Rear floor No. 4 cross member
- 21. Body mounting No. 5 bracket(LH)
- 22. Body mounting No. 5 bracket(RH)
- 23. Body mounting No. 5 reinforcement
- 24. Rear floor side panel(LH)
- 25. Rear floor side panel(RH)
- 26. Rear floor side reinforcement(LH)
- 27. Rear floor side reinforcement(RH)
- 28. Oil jack support
- 29. Spare tire mounting bracket
- 30. Spare tire mounting reinforcement

# REAR FLOOR PANEL



## **ROOF PANEL**

RUUF			
No.	PARTNAME	No.	PARTNAME
1 2 3 4 5 6 7 8 9 10	Roof panel Roof bow(A) Roof bow(B) Roof bow(C) Roof bow(D) Roof rack mounting rear bracket Roof front inner rail Map lamp bracket Roof rear inner rail Tail gate hinge reinforcement(LH)	11 12 13 14 15 16 17	Tail gate hinge reinforcement(RH) Roof rear outer rail Sun roof reinforcement ring Sun roof reinforcement extension(LH) Sun roof reinforcement extension(RH) Roof bow(SUN ROOF) Room lamp bracket
## HOOD PANEL & FENDER PANEL



### TAIL GATE PANEL



## FRONT DOOR PANEL



## REAR DOOR PANEL



# REPLACEMENT PARTS

## **REPLACEMENT PARTS**

The following section illustrates replacement parts used in the repairs described in this manual. It is important that only Hyundai replacement parts be used in making these repairs to ensure the repairs are made with the highest possible standards for fit, safety and corrosion protection.

For a more complete listing of service parts, refer to an authorized Hyundai dealership.

#### FRONT BODY



#### **REPLACEMENT PARTS - Side body**

#### SIDE BODY

		CON-0381
	PART NAME	· · ·
A B C D E F G H I J	FRONT PILLAR OUTER PANEL ASSEMBLY, "A" PILLAR LOWER REINFORCEMENT, "A" INNER PILLAR ASSEMBLY, CENTER PILLAR OUTER PANEL ASSEMBLY, "B" PILLAR REINFORCEMENT ASSEMBLY, "B" INNER PILLAR ASSEMBLY, ROOF SIDE INNER RAIL SIDE SILL OUTER PANEL ASSEMBLY, QUARTER OUTER PANEL ASSEMBLY, SIDE OUTER EXTENSION ASSEMBLY,	LH/RH LH/RH LH/RH LH/RH LH/RH LH/RH LH/RH LH/RH

#### **REPLACEMENT PARTS - Rear body**

#### **REAR BODY**



#### **REPLACEMENT PARTS - Door**



# BODY AND CHASSIS FRAME DIMENSIONS

#### GENERAL

- 1. Basically, all measurements in this manual are taken with a tracking gauge.
- 2. When a measuring tape is used, check to be sure there is no elongation, twisting or bending.
- 3. For measuring dimensions, both projected dimension and actual-measurement dimension are used in this manual.

#### **MEASUREMENT METHOD**

#### **PROJECTED DIMENSIONS**

- 1. 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. 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.

#### **ACTUAL-MEASUREMENT DIMENSIONS**

- 1. These dimensions indicate the actual linear distance between measurement points, and are the reference dimensions for use if a tracking gauge is used for measurement.
- 2. Measure by first adjusting both probes to the same length (A=A').

#### NOTE

Check the probes and gauge itself to make sure there is no free play.

#### **MEASUREMENT POINT**

1. Measurements should be taken at the hole center.







### SIDE BODY





Wiring earth mounting hole( $\emptyset$ 6.6)



Rear door hinge upper mounting hole( $\varnothing$  11)



Rear door switch mounting hole ( $\Box$  9.2 × 9.2)



Body mounting No.1 hole(Ø14)



Front door hinge upper mounting hole( $\emptyset$ 11)



Rear door hinge lower mounting  $hole(\emptyset 11)$ 



Quarter glass mounting hole (  $5 \times 20$  slot)



Hood hinge mounting hole  $(\emptyset 10)$ 



Front door hinge lower mounting hole( $\emptyset$ 11)



Location hole( $\emptyset$  7)



Quarter glass mounting hole (  $5 \times 20$  slot)



Body mounting No. 2 hole  $(\emptyset 14)$ 



Body mounting No. 3 hole  $(\emptyset14)$ 



Body mounting No. 4 hole  $(\emptyset14)$ 



Body mounting No. 5 hole  $(\emptyset14)$ 

## INTERIOR



\* These dimensions indicated in this figure are **actual-measurement dimensions**.

Point symbol	A-A'	B-B'	C-C'	D-D'	E-E'	F-F'	G-G'	H-H'
Length (mm)	1523	1260	1470	1563	1316	1114	1565	1156
Point symbol	- '	J-J'	J-L'	К-К'	L-L'	[=Ľ'		
Length (mm)	1224	1120	1476	1330	1112	1860		-



Front door checker mounting  $hole(\emptyset 11)$ 



Front door striker lower mounting hole ( $\emptyset$  11)



Rear door striker lower mounting hole( $\emptyset$ 11)



Rear(2nd) assist grip mounting  $hole(\emptyset 6.6)$ 



Front seat mounting hole(Ø11)



Front seat belt upper mounting  $hole(\emptyset 14.5)$ 



Trim mounting hole ( $\Box$  8.4 × 8.4)



Rear seat belt upper mounting  $hole(\emptyset 15)$ 



Front seat belt lower mounting  $hole(\emptyset 11)$ 



Rear seat belt lower mounting hole(Ø14)



Wiring mounting hole(Ø6.6)



Rear assist grip mounting hole( $\emptyset$ 8)

## **UPPER BODY**





Fender mounting hole(Ø6.6)



Fender mounting hole(Ø6.6)



Fender mounting hole( $\emptyset$ 6.6)



Hood hinge mounting(Ø10)



Front edge of side outer panel



Rear edge of side outer panel



Corner of side outer panel



Point symbol	A-A'	A-B'	B-B'	B-C'	C-C'	C-D'	D-D'	D-E'
Length (mm)	884	1635	1260	1610	1318	1417	1290	1805
Point symbol	E-E'	E-F	F-D	A-B	B-C	B-E'	C-D	D-E
Length (mm)	1224	626	1563	1248	966	3074	555	1295



Body mounting No. 1 hole  $(\emptyset14)$ 



Body mounting No. 4 hole  $(\emptyset14)$ 



Body mounting No. 2 hole  $(\emptyset14)$ 



Body mounting No. 3 hole  $(\emptyset14)$ 



Body mounting No. 5 hole  $(\emptyset14)$ 



Location hole( $\emptyset$ 16)

## FRONT BODY



Point symbol	A-A'	B-B'	C-C'	D-D'	D-E'	D-F'	D-G'	E-E'
Length (mm)	1166	1520	700	1410	1446	1545	1692	1435
Point symbol	F-F'	F-G'	G-G'					
Length (mm)	1456	1462	1360					

#### **BODY DIMENSIONS - Front body**



Location hole( $\emptyset$ 10)



Head lamp mounting hole  $(\emptyset 6.6)$ 



Horn mounting hole( $\emptyset$ 11)



Fender mounting hole(Ø6.6)



Fender mounting hole(Ø6.6)



Fender mounting hole( $\emptyset$ 6.6)



Hood hinge mounting hole  $(\emptyset 10)$ 

# REAR BODY



REAR-1

\* These dimensions indicated in this figure are actual-measurement dimensions.

Point symbol	A-C	A-D'	A-E	B-B'	B-C'	C-C'	C-D'	D-D'
Length (mm)	775	796	883	1093	1312	1500	1390	1240
Point symbol	E-E'	E-D'	E-F'	F-F'	A-F	A-F'		
Length (mm)	1335	1294	1175	830	1119	1133		



Tail gate striker mounting hole  $(\varnothing9)$ 



Lamp mounting hole(Ø6.6)



Rear bumper mounting hole  $(\emptyset 6.6)$ 



Rear combination lamp mounting hole ( $\emptyset$ 10)



Tail gate upper hinge mounting hole ( $\emptyset$ 8)



Tail gate hinge mounting  $hole(\emptyset11)$ 



# 2.5 ENGINE, 2 WHEEL DRIVE(ACTUAL DIMENSION)



# 2.5 ENGINE, 2 WHEEL DRIVE(PROJECTED DIMENSION)



CH-0020

\* These dimensions indicated in this figure are **projected dimensions**.

Point symbol	1	2	3	4	5	6	7	8	9	10
Length (mm)	710	807	884	1005	906	1326	1021	526	1260	1610
Point symbol	11	12	13	14	15	16	17	18	19	20
Length (mm)	1318	1417	1290	983	615	1131	782	1202	757	1303
Point symbol	21	22	23	24	25	26	27	28	29	30
Length (mm)	1224	1147	1056	141	136	110	141	103	36	152
Point symbol	31	32	33	34	35	36	37	38	39	40
Length (mm)	21	155	9	4	181	92	139	92	153	105
Point symbol	41	42	43	44	45	46	47	48	49	50
Length (mm)	275	823	973	1230	1498	1623	690	456	98	245
Point symbol	51	52	53	54	55	56				
Length (mm)	455	631	658	714	1286	1411				

# 2.5 ENGINE, 4 WHEEL DRIVE(ACTUAL DIMENSION)



۴Tł	iese dimens	ions in	ndicated	in	this t	figure a	are <b>actı</b>	ual-measurement	t dimensions.
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Point symbol	1	2	3	4	5	6	7	8	9	10
Length (mm)	710	807	703	998	152	884	722	1008	464	1249
Point symbol	11	12	13	14	15	16	17	18	19	20
Length (mm)	439	721	906	773	1348	822	526	1029	1260	1610
Point symbol	21	22	23	24	25	26	27	28	29	30
Length (mm)	1984	966	1318	1417	555	1104	1290	984	1144	1210
Point symbol	31	32	33	34	35	36	37	38	39	40
Length (mm)	1804	1294	615	480	757	1325	943	782	1303	757
Point symbol	41	42	43	44	45	46				
Length (mm)	1187	1286	725	1224	158	1056				

#### CHASSIS FRAME DIMENSION - 2.5 Engine, 4 wheel drive

# 2.5 ENGINE, 4 WHEEL DRIVE(PROJECTED DIMENSION)



CH-0040

\* These dimensions indicated in this figure are **projected dimensions**.

Point symbol	1	2	3	4	5	6	7	8	9	10
Length (mm)	710	807	884	693	438	698	906	1326	1021	526
Point symbol	11	12	13	14	15	16	17	18	19	20
Length (mm)	1260	1610	1318	1417	1290	983	615	1131	782	1202
Point symbol	21	22	23	24	25	26	27	28	29	30
Length (mm)	757	1303	1224	1147	1056	141	136	110	141	103
Point symbol	31	32	33	34	35	36	37	38	39	40
Length (mm)	36	152	21	155	9	4	181	92	139	92
Point symbol	41	42	43	44	45	46	47	48	49	50
Length (mm)	153	105	275	823	973	1230	1498	1623	690	456
Point symbol	51	52	53	54	55	56	57	58		
Length (mm)	98	245	455	631	658	714	1286	1411		

# 3.5 ENGINE, 2 WHEEL DRIVE(ACTUAL DIMENSION)



# 3.5 ENGINE, 2 WHEEL DRIVE(PROJECTED DIMENSION)



CH-0060

\* These dimensions indicated in this figure are **projected dimensions**.

Point symbol	1	2	3	4	5	6	7	8	9	10
Length (mm)	710	807	884	1005	906	1326	1048	526	1260	1610
Point symbol	11	12	13	14	15	16	17	18	19	20
Length (mm)	1318	1417	1290	983	615	1131	782	1202	757	1303
Point symbol	21	22	23	24	25	26	27	28	29	30
Length (mm)	1224	1147	1056	141	136	110	141	103	36	152
Point symbol	31	32	33	34	35	36	37	38	39	40
Length (mm)	21	155	9	4	181	92	139	92	153	105
Point symbol	41	42	43	44	45	46	47	48	49	50
Length (mm)	260	808	958	1215	1483	1608	705	456	98	245
Point symbol	51	52	53	54	55	56				
Length (mm)	455	631	658	714	1286	1411				

# 3.5 ENGINE, 4 WHEEL DRIVE(ACTUAL DIMENSION)



# 3.5 ENGINE, 4 WHEEL DRIVE(PROJECTED DIMENSION)



CH-0080

\* These dimensions indicated in this figure are projected dimensions.

Point symbol	1	2	3	4	5	6	7	8	9	10
Length (mm)	710	807	884	693	438	698	906	1326	1048	526
Point symbol	11	12	13	14	15	16	17	18	19	20
Length (mm)	1260	1610	1318	1417	1290	983	615	1131	782	1202
Point symbol	21	22	23	24	25	26	27	28	29	30
Length (mm)	757	1303	1224	1147	1056	141	136	110	141	103
Point symbol	31	32	33	34	35	36	37	38	39	40
Length (mm)	36	152	21	155	9	4	181	92	139	92
Point symbol	41	42	43	44	45	46	47	48	49	50
Length (mm)	153	105	260	808	958	1215	1483	1608	705	456
Point symbol	51	52	53	54	55	56	57	58	-	
Length (mm)	98	245	455	631	658	714	1286	1411		



2.9 ENGINE, 2 WHEEL DRIVE(ACTUAL DIMENSION)

Point symbol	1	2	3	4	5	6	7	8	9	10
Length (mm)	710	807	998	152	884	1008	464	1249	906	745
Point symbol	11	12	13	14	15	16	17	18	19	20
Length (mm)	1348	822	526	1079	1260	1610	1984	966	1318	1417
Point symbol	21	22	23	24	25	26	27	28	29	30
Length (mm)	555	1104	1290	984	1144	1210	1804	1294	615	480
Point symbol	31	32	33	34	35	36	37	38	39	40
Length (mm)	757	1325	943	782	1303	757	1187	1286	725	1224
Point symbol	41	42								
Length (mm)	158	1056								

# 2.9 ENGINE, 2 WHEEL DRIVE(PROJECTED DIMENSION)



CH-0100

\* These dimensions indicated in this figure are **projected dimensions**.

Point symbol	1	2	3	4	5	6	7	8	9	10
Length (mm)	710	807	884	1005	906	1326	1071	526	1260	1610
Point symbol	11	12	13	14	15	16	17	18	19	20
Length (mm)	1318	1417	1290	983	615	1131	782	1202	757	1303
Point symbol	21	22	23	24	25	26	27	- 28	29	30
Length (mm)	1224	1147	1056	141	136	110	141	103	36	152
Point symbol	31	32	33	34	35	36	37	38	39	40
Length (mm)	21	155	9	4	181	92	139	92	153	105
Point symbol	41	42	43	44	45	46	47	48	49	50
Length (mm)	260	808	958	1215	1483	1608	705	456	98	245
Point symbol	51	52	53	54	55	56				
Length (mm)	455	631	658	714	1286	1411				

#### **CHASSIS FRAME DIMENSION - 2.9 Engine, 4 wheel drive**

# 2.9 ENGINE, 4 WHEEL DRIVE(ACTUAL DIMENSION)



\* These dimensions indicated in this figure are actual-measurement dimensions.

Point symbol	1	2	3	4	5	6	7	8	9	10
Length (mm)	710	807	703	998	152	884	722	1008	464	1249
Point symbol	11	12	13	14	15	16	17	18	19	20
Length (mm)	439	721	906	745	1348	822	526	1079	1260	1610
Point symbol	21	22	23	24	25	26	27	28	29	30
Length (mm)	1984	966	1318	1417	555	1104	1290	984	1144	1210
Point symbol	31	32	33	34	35	36	37	38	39	40
Length (mm)	1804	1294	615	480	757	1325	943	782	1303	757
Point symbol	41	42	43	44	45	46			an a	
Length (mm)	1187	1286	725	1224	158	1056				

# 2.9 ENGINE, 4 WHEEL DRIVE(PROJECTED DIMENSION)



CH-0120

\* These dimensions indicated in this figure are projected dimensions.

Point symbol	1	2	3	4	5	6	7	8	9	10
Length (mm)	710	807	884	693	438	698	906	1326	1071	526
Point symbol	11	12	13	14	15	16	17	18	19	20
Length (mm)	1260	1610	1318	1417	1290	983	615	1131	782	1202
Point symbol	21	22	23	24	25	26	27	28	29	30
Length (mm)	757	1303	1224	1147	1056	141	136	110	141	103
Point symbol	31	32	33	34	35	36	37	38	39	40
Length (mm)	36	152	21	155	9	4	181	92	139	92
Point symbol	41	42	43	44	45	46	47	48	49	50
Length (mm)	153	105	260	808	958	1215	1483	1608	705	456
Point symbol	51	52	53	54	55	56	57	58		
Length (mm)	98	245	455	631	658	714	1286	1411		


Front door mounting bolt center



Front shock absorber mounting  $hole(\emptyset 15.1)$ 



Body mounting hole(Ø32)



Spring seat mounting hole( $\emptyset$ 32)



Body mounting hole(Ø32)



Differential mounting hole(Ø13)



Body mounting hole(Ø60)



Upper link mounting hole( $\emptyset$ 7)



Body mounting hole(Ø60)



Engine mounting hole( $\emptyset$  11)



Body mounting hole(Ø32)



Rear shock absorber mounting  $hole(\emptyset 16.6)$ 



Rear bumper mounting bolt center



Lower arm mounting rear hole ( $\emptyset$  44.6)



Lateral rod mounting front hole(Ø14.2)



Lower arm mounting front hole( $\emptyset$ 15)



No.2 cross member mounting  $hole(\emptyset 12)$ 



Lateral rod mounting rear  $hole(\emptyset14.2)$ 



Upper arm mounting hole( $\emptyset$ 12.5)



Lower link mounting  $hole(\emptyset14.2)$ 

# BODY PANEL REPAIR PROCEDURE

# RADIATOR SUPPORT MEMBER ASSEMBLY



# FENDER APRON PANEL COMPLETE



#### NOTE

Before repairing, remove Engine and Suspension Components. Refer to the body dimension charts and measure the vehicle to determine straightening and alignment requirements. The body must be returned to its original dimension before you begin the repair procedure.



#### REMOVAL

1. Drill out all the spotwelds to separate radiator support panel from fender apron panel.

#### NOTE

When spotwelded portions are not apparent, remove paint with a rotary wire brush.





PRO-0110



3. Drill out all the spotwelds attaching the cowl top reinforcement panel.

#### NOTE

If it is possible that the cowl top reinforcement panel is reusable, be careful not to damage it while removing.

## BODY PANEL REPAIR PROCEDURE - Fender apron panel complete (Assembly)

4. Using a spotweld cutter, drill out all the spotwelds attaching the fender apron to the dash panel.

5. Remove the fender apron panel.

6. 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.

7. Using a hammer and dolly, correct any flanges that become bent or deformed when spotwelds are broken.







 $\square$ 

PRO-0180

## INSTALLATION

1. Drill 8 mm holes in the new fender apron panel for MIG plug welding.



2. Remove paint from both sides of all portions that are to be welded such as peripheries of MIG plug weld holes.



- 3. Temporarily install new parts in place.
- 4. Measure each measurement point (Refer to the BODY DIMEN-SIONS) and corrcet the installation position.







6. Clean MIG welds with a disc grinder.



#### NOTE

- 1. Be careful not to grind welded portions too much.
- 2. The internal parts will be stronger if the weld traces are not ground.

7. Before welding the cowl top reinforcement, apply the two part epoxy primer and anti-corrosion agent to the interior of the fender apron panel.

- 8. Install the cowl top reinforcement in place.
- 9. MIG plug weld all holes.
- 10. Clean and prepare all welds, remove all residue.
- 11. Apply the two part epoxy primer to the interior of the each panel.







- 12. Apply an anti-corrosion agent as required (Refer to the CORROSION PROTECTION).
- 13. Prepare the exterior surfaces for priming using wax and grease remover.
- 14. Apply metal conditioner and water rinse.
- 15. Apply conversion coating and water rinse.
- 16. Apply the two-part epoxy primer.
- 17. Apply the correct seam sealer to all joints carefully (Refer to the BODY SEALING LOCATION).
- 18. Reprime over the seam sealer to complete the repair.

- 19. After completing body repairs, carefully apply under coating to the dash panel and fender apron (Refer to the CORROSION PROTECTION).
- 20. In order to improve corrosion resistance, if necessary, apply an under body anti-corrosion agent to the panel which is repaired or replaced (Refer to the CORROSION PROTECTION).







# FENDER APRON PANEL (PARTIAL)



## REMOVAL

#### NOTE

This procedure is to be used only for repair of minor damage to the fender apron panel and when it is impossible to straighten the damaged fender apron panel. The following procedure illustrates a repair for the front left fender apron panel. The procedure may also be applied to the front right fender apron panel.

1. Mark a vertical cut line at 20mm point from the fender mounting hole center.







2. Drill out all the spotwelds to separate radiator support panel from fender apron panel.

#### NOTE

1. When spotwelded portions are not apparent, remove paint with a rotary wire brush.

2. In order to perform cutting and separation of spotwelded 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.

3. Cut through the fender apron panel cutlines.

NOTE

 $\label{eq:care} Take \, care \, not \, to \, cut \, through \, fender \, a pron \, shield (A) \, reinforcement.$ 

4. Prepare all surfaces to be welded.









#### INSTALLATION

- 1. Transcribe the fender apron panel cutline to the new fender apron panel, cut to length and chamfer butt end to improve weld surface.
- $2. \quad {\rm Drill\,}8mm\, holes\, in\, new\, fender\, apron\, panel\, for\, MIG\, plug\, welding.$

- 3. Fit and clamp the fender apron panel in place.
- 4. MIG plug weld all holes and MIG butt weld all seams.

5. Measure each measurement point (Refer to the BODY DIMEN-SIONS) and correct the installation position.

- 6. Fit and clamp the radiator support panel in place.
- 7. MIG plug weld all holes.
- 8. Clean and prepare all welds, remove all residue.
- 9. Apply the two-part epoxy primer to the interior of the front side member.







- 10. Apply an anti-corrosion agent as required (Refer to the CORROSION PROTECTION).
- 11. Prepare the exterior surfaces for priming using wax and grease remover.
- 12. Apply metal conditioner and water rinse.
- 13. Apply conversion coating and water rinse.
- 14. Apply the two-part epoxy primer.

- 15. Apply the correct seam sealer to all joints carefully (Refer to the BODY SEALING LOCATIONS).
- 16. Reprime over the seam sealer to complete the repair.

# **BODY PANEL REPAIR PROCEDURE - Front pillar**

# FRONT PILLAR



## REMOVAL

1. Measure and mark the cutline on the front pillar outer panel at 120mm from the roof panel end line to remove the front outer pillar panel.

After that measure and mark the cutline on the "A" inner pillar at 50mm from the cut line on the pillar outer panel to remove the "A" inner pillar indicated in the illustration.



2. Measure and mark the cutline on front door scuff trim mounting hole center as shown in the illustration.



3. Depending on the extend of damaged area, it may be possible to determine the cutting range within indicated in the illustration.



- PRO-0520
- 4. To remove the front pillar, grind away and drill out all welds attaching the cowl top reinforcement as illustration.

#### NOTE

If it is possible that the cowl top reinforcement is reusable, be careful not to damage it while removing.

- 5. Drill out all welds attaching the front pillar to dash and cowl top outer, cowl inner lower panel.
- 6. Remove spotwelds and lap welds attaching cowl crossmember bar mounting upper bracket to remove front pillar.

7. Before cutting front pillar, be sure to support roof panel.

8. Cut the front pillar through each cutline, taking care not to damage the other panel as illustration.

9. Before cutting the front side sill outer panel, make a rough cut the front side sill outer panel only.









- 10. Cut the side sill outer front reinforcement as illustration.
- 11. Cut the front side sill outer panel vertical cutline and remove the front pillar.

12. Straighten all flanges as necessary, prepare all surfaces to be



 PR0-0580

# INSTALLATION

welded.

- 1. Transcribe the cutline to the new"A" inner upper pillar, cut to length and chamfer butt end to improve weld surface.
- PR0-0590



- Transcribe the cutline to the new front pillar outer panel, adding 30mm overlap to end and cut to length.
- 3. Drill 8mm holes along outer panel flanges in production location for attachment to other panels.

- 4. Transcribe the cutline to the new "A" inner pillar, adding 30mm overlap to end and cut to length.
- 5. Drill 8mm holes in the "A" inner pillar for MIG plug welding.
- 6. Fit and clamp the new "A" inner pillar in place for welding.
- 7. MIG plug weld all holes and MIG butt weld the seams.

- 8. Temporarily install "A" inner pillar and front pillar outer panel in place.
- 9. Measure and each measurement point (Refer to the BODY DIMENSIONS) and correct the installation position.
- 10. If necessary, make temporary welds, and then check to confirm that the closing and fit for windshield glass, door and fender are correct.

- 11. MIG butt weld "A" inner pillar and front pillar outer panel seams.
- 12. Reattach the cut away "A" inner pillar section, then MIG butt weld.

- 13. MIG plug weld all holes and MIG butt weld all seams in the front side sill outer panel.
- 14. Clean and prepare all welds, removing all residue.
- 15. Apply body filler to joints and sand as needed.
- 16. Apply the two-part epoxy primer to the interior of the front pillar.









17. Clean all welds with a disc grinder.

NOTE \*

- 1. Be careful not to grind welded portions too much.
- 2. The internal parts will be stronger if the weld traces are not ground.

18. Before welding the cowl top reinforcement, apply the two part epoxy primer and anti-corrosion agent to the interior of the fender shield panel.







- 22. Apply an anti-corrosion agent to the welded parts and inside of front pillar (Refer to the CORROSION PROTECTION).
- 23. Prepare exterior surfaces for priming, using wax and grease remover.
- 24. Apply metal conditioner and water rinse.
- 25. Apply conversion coating and water rinse.

19. Install the cowl top reinforcement in place.

21. Clean and prepare all welds, removing all residue.

20. MIG plug weld all holes.

26. Apply the two-part epoxy primer.

- 27. Apply the correct seam sealer to all joints carefully (Refer, to the BODY SEALING LOCATIONS).
- 28. Reprime over the seam sealer to complete the repair.



# **CENTER PILLAR**



## REMOVAL

1. Measure and mark the horizontal cutline on center outer pillar as illustration.

2. Measure and mark the vertical cutline on side sill outer panel 80mm from the front door scuff trim mounting hole and rear door

scuff trim mounting hole.



- 80 mm 80
- 3. Before cutting center pillar, be sure to support roof panel.

4. Drill out all spotwelds attaching the center outer pillar to the body to remove center outer pillar.





5. Cut through center outer pillar and side sill outer panel at cutlines.

#### NOTE

When cutting side sill outer panel take care not to cut through mating flanges or side sill rear reinforcement.

6. After cutting side outer panel (center outer pillar & side sill), cut the "B" pillar reinforcement and "B" inner pillar.





Front seat belt upper reinforcement "B" pillar reinforcement "B" inner pillar PRO-0810



7. Remove the center pillar.

- 8. Determine if the side sill rear reinforcement is damaged and needs to be replaced. If replacing is necessary, mark out the damaged portion of the reinforcement. Cut at cutlines and remove damaged portion.
- 9. Straighten all flanges as necessary.
- 10. Prepare all surfaces to be welded.

# INSTALLATION

1. In order to install "B" inner pillar drill out all spotwelds attaching the roof side inner rail to center inner pillar to separate them.



30 mm





- 2. Transcribe the center outer pillar cutlines to the new center outer pillar, adding 30mm overlap at side sill rear reinforcement.
- 3. Cut and chamfer butt end to improve weld surface.
- 4. Drill 8mm holes in overlap area and along outer panel flanges.

5. MIG butt weld all seams in "B" inner pillar and front seat belt upper and "B" pillar reinforcement and center outer panel as illustration.

- 6. Transcribe the cutline dimensions to the new side sill rear reinforcement, adding 30mm overlap to each end and cut to length.
- 7. Drill 8mm holes in overlap areas on each end of new side sill rear reinforcement and clamp.



8. MIG plug weld all holes MIG butt weld seams.

#### NOTE

The reinforcement will be stronger if the weld traces are not ground.

- 9. Temporarily install new center outer panel in place.
- 10. Screw center pillar in place.
- 11. Measure and each measurement point (Refer to the BODY DIMENSIONS) and correct the installation position.
- 12. Check the fit of the front and rear doors.



- 14. MIG plug weld all holes and MIG butt weld all seams.
- 15. Clean and prepare all welds, and remove all residue.
- 16. Apply body filler to the outer center pillar seam. Sand and finish.
- 17. Apply the two-part epoxy primer to the interior of the center pillar.
- 18. Apply an anti-corrosion agent to the welded parts and interior of the center pillar (Refer to the CORROSION PROTECTION).





- 19. Prepare exterior surfaces for priming, using wax and grease remover.
- 20. Apply metal conditioner and water rinse.
- 21. Apply conversion coating and water rinse.
- 22. Apply the two-part epoxy primer.



- 23. Apply the correct seam sealer to all joints carefully (Refer to the BODY SEALING LOCATIONS).
- 24. Reprime over the seam sealer to complete the repair.



# SIDE SILL (ASSEMBLY)



## REMOVAL

1. Measure and mark vertical cutline from the rear door scuff trim mounting hole on the side sill outer panel.



2. At the front and center pillar, measure and mark horizontal cutlines from the door hinge mounting hole on the side outer panel as illustration.



- 3. Cut the side sill outer panel along cutlines. Be careful not to cut mating flanges.
- 4. Drill out all spotwelds, attaching the side sill outer panel.
- 5. Remove the side sill outer panel.

- 6. Determine if the side sill rear reinforcement is damaged and needs to be replaced, measure cutline on reinforcement as illustration.
- 7. Cut side sill rear reinforcement along the cutline.
- 8. Drill out spotwelds attaching the side sill rear reinforcement to the body and remove side sill rear reinforcement.
- 9. Prepare all surfaces to be welded.





## INSTALLATION

- 1. Transcribe cutline dimension to side sill rear reinforcement, adding 30mm overlap to rear end and cut to length.
- 2. Drill 8mm holes in overlap area on rear end and along front flange.
- 3. Fit and clamp the side sill rear reinforcement in place.
- 4. MIG plug weld all holes and MIG butt weld seams.



#### NOTE

The reinforcement will be stronger if the weld traces are not ground.





6. Using service panel for replacement of side sill outer panel, drill 8mm holes in overlap areas and along upper and lower flanges.



- 7. Crimp flanges on the remaining portion of the side sill outer panel at all joint for overlap.
- 8. Fit and clamp the side sill outer panel in place.
- 9. MIG plug weld all holes and MIG butt weld seams.
- 10. Clean and prepare all welds and remove all residue.
- 11. Apply body filler to the side sill outer seams.
- 12. Apply the two-part epoxy primer to the interior of the side sill.



- Apply an anti-corrosion agent to welded parts and interior of the side sill (Refer to the CORROSION PROTECTION).
- 14. Prepare the exterior surfaces for priming, using wax and grease remover.
- 15. Apply metal conditioner and water rinse.
- 16. Apply conversion coating and water rinse.
- 17. Apply the two-part epoxy primer.



19. Reprime over the seam sealer.





20. Apply the anti-corrosion primer to the side sill outer panel to complete the repair (Refer to the CORROSION PROTECTION).



#### BODY PANEL REPAIR PROCEDURE - Side sill (partial)

# SIDE SILL (PARTIAL)



#### REMOVAL

1. Depending on the extent of damage, mark out the damaged portion of the side sill.



2. Drill out the spotwelds in upper and lower flanges of side sill between cutlines to remove side sill outer panel and cut the damaged portion of the side sill at the cutlines.



- 3. Transcribe the side sill outer panel cutline to the new side sill, adding 30 mm overlap to each end, cut and chamfer butt end to improve weld surface.
- 4. Drill 8 mm holes in overlap areas on each end and along upper and lower flanges of the new side sill outer panel for MIG plug welding.
- PRO-1170





15. Apply the anti-corrosion primer to the side sill outer panel to complete the repair (Refer to the CORROSION PROTECTION).

- 5. Fit and clamp the side sill in place.
- 6. MIG plug weld all holes and MIG butt weld seams.
- 7. Clean and prepare all welds, removing all residue.
- 8. Apply body filler to the side sill outer seams.
- 9. Apply the two-part epoxy primer to the interior of the side sill.

- 10. Apply an anti-corrosion agent to the welded parts and interior of the side sill (Refer to the CORROSION PROTECTION).
- 11. Prepare the exterior surfaces for priming, using wax and grease remover.
- 12. Apply metal conditioner and water rinse.
- 13. Apply conversion coating and water rinse.
- 14. Apply the two-part epoxy primer.

# QUARTER PANEL



# REMOVAL

1. Depending on the extent of damage, measure and mark cutlines on the quarter outer panel as illustration.



- 2. Drill out all attaching spotwelds on the quarter outer panel, including the seam around the door lip opening.
- 3. Cut the quarter outer panel at cutlines and remove the quarter outer panel as illustration.

#### NOTE

When cutting the quarter outer panel, be careful not to cut quarter inner panel.

4. Prepare all surfaces to be welded.





- 1. Transcribe the cutline to the new quarter outer panel, adding 30 mm for overlap at the old joint.
- 2. Drill 8 mm holes in overlap areas and along upper and lower flanges of the new quarter outer panel for MIG plug welding.

- 3. Fit and clamp the quarter outer panel in place.
- 4. MIG plug weld all holes and MIG butt weld seams. At the wheel well the edge must be crimped over the wheel housing. This joint may be welded after crimping or may be made by applying a bead of adhesive may be applied to the joint before or after crimping.
- 5. Clean and prepare all welds, removing all residue.





6. Apply body filler to the welded seam. Sand and finish. Apply the two-part epoxy primer to the interior of the quarter outer panel.



- 7. Apply an anti-corrosion agent to the welded parts and interior of the quarter outer panel (Refer to the CORROSION PROTEC-TION).
- 8. Prepare exterior surfaces for priming, using wax and grease remover.
- 9. Apply metal conditioner and water rinse.
- 10. Apply conversion coating and water rinse.
- 11. Apply the two-part epoxy primer.



13. Reprime over the seam sealer to complete the repair.








## **REAR FLOOR**



## **REAR FLOOR SIDE MEMBER (ASSEMBLY)**



#### NOTE

Because the rear floor side members are designed to absorb energy during a rear collision, care must be taken when deciding to use this repair method. This repair is recommended only for moderate damage to vehicle, where distortions do not extend forward of the trunk region. If the damage is more severe, then the entire side member assembly should be replaced at factory seams without employing this sectioning procedure.

Refer to the body dimension chart and measure the vehicle to determine straigthening and alignment requirements. The body must be returned to its original dimension before beginning the repair procedure.

### REMOVAL

- 1. Drill out all the spotwelds attaching the rear floor panel to the wheel housings and rear floor side members.
- 2. Make a rough cutting of the rear floor panel where shown in the figure.

3. Remove the rear floor panel.









5. Remove the rear floor panel (rear section) and rear floor side member from the rear body.





### INSTALLATION

 Transcribe the cutline to the new rear floor side members. Drill out the spotwelds attaching the inner reinforcements. Remove remaining portions of side members.



2. Temporarily fit and clamp the rear floor side members in place. **NOTE** 

When installing the rear floor side member, temporarily install the rear and outer cross member to measure each measurement point.

- 3. Measure each measurement point (Refer to BODY DIMEN-SIONS) and correct the installation position.
- 4. If necessary, make temporarily welds, and then check to confirm that the fit of rear floor panel is correct.



### BODY PANEL REPAIR PROCEDURE - Rear floor and rear floor side member (assembly)

- 5. MIG plug weld the rear floor side members and MIG butt weld seams.
- 6. Prepare the welds and surfaces to which the rear floor will attach.
- 7. Transcribe the cutline to the new rear floor panel, adding 30mm for overlap at the old joint.

- 8. Drill 8mm holes in overlap area and production locations of the new rear floor panel for MIG plug welding.
- 9. Fit and clamp the rear floor panel and attach the rear floor panel to the rear floor side members and other panels.

- 10. MIG plug weld all holes and MIG butt weld the seams.
- 11. Clean all welded surfaces.
- 12. Drill 8 mm holes on the flange attaching the rear and crossmember to the rear floor and rear floor side member ends.

- 13. Fit and clamp the rear floor and rear floor end crossmember in place.
- 14. MIG plug weld the rear floor and rear floor end crossmember.
- 15. Clean and prepare all welds, remove all residue.
- 16. Apply the two-part epoxy primer to the interior of the rear side members.









- 17. Apply an anti-corrosion to the interior of the rear floor side members
  - (Refer to the CORROSION PROTECTION).
- 18. Prepare exterior surfaces for priming, using wax and grease remover.
- 19. Apply metal conditioner and water rinse.
- 20. Apply the two-part epoxy primer.





- 21. Apply the correct seam sealer to all joints (Refer to the BODY SEALING LOCATIONS).
- 22. Reprime over the seam sealer to complete the repair.

- 23. After completing body repairs, carefully apply under coating to the under body (Refer to the CORROSION PROTECTION).
- 24. In order to improve corrosion resistance, if necessary, apply an under body anti-corrosion agent to the panel which is repaired or replaced (Refer to the CORROSION PROTECTION).



## FRONT AND REAR DOOR OUTER PANELS



### REMOVAL

- 1. Cut door outer panel hem with a sander.
- 2. After grinding off the hemming location, remove the outer panel.



3. Dress rusty part with a sander and prepare surface to be hemmed.



### INSTALLATION

- 1. Apply adhesive or equivalent to outer panel hem.
- 2. Apply mastic sealer or equivalent to the door upper member and door reinforcement beam as shown in the figure.





3. Bend the flange hem with a hammer and dolly, then fasten tightly with a hemming tool.

NOTE

- 1. Hemming work should be done in three steps as illustration.
- 2. If a hemming tool cannot be used, hem with a hammer and dolly.







- 4. After completing the hemming work, make MIG spot welds at 50 mm intervals on the inside.
- 5. Clean and prepare all welds, remove all residue.
- 6. Apply the two-part epoxy primer to the interior of the door panel.

- 7. Apply an anti-corrosion agent to the welded parts and lower inside of the door panel (Refer to the CORROSION PROTEC-TION).
- 8. Prepare exterior surfaces for priming, using wax and grease remover.
- 9. Apply metal conditioner and water rinse.
- 10. Apply conversion coating and water rinse.
- 11. Apply the two-part epoxy primer.



- 12. Apply the correct seam sealer to whole panel edge.
- 13. Reprime over the seam sealer to complete the repair.



## BODY SEALING LOCATIONS





### **BODY SEALING LOCATIONS - Floor**





## UPPER AND SIDE BODY



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## BODY SEALING LOCATIONS - Upper and side body



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## BODY SEALING LOCATIONS - Upper and side body



# CORROSION PROTECTION

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## ZINC-GALVANIZED STEEL PANELS

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



- 1. Bridge panel
- 2. Front'end cross member
- 3. Front end lower reinforcement assembly
- 4. Dash panel
- 5. Dash panel reinforcement
- 6. Cowl top outer panel
- 7. Cowl top inner panel
- 8. Side outer panel(LH/RH)
- 9. Side inner panel(LH/RH)
- 10. Side outer extension(LH/RH)
- 11. Fuel filler door
- 12. Shift lever reinforcement
- 13. Backbone reinforcement
- 14. Front floor panel
- 15. Front floor No. 1 cross member(LH/RH)
- 16. Body mounting No. 2 bracket(LH/RH)
- 17. Front floor No. 2 cross member(LH/RH)
- 18. Body mounting No. 3 bracket(LH/RH)
- 19. Side sill inner panel(LH/RH)
- 20. Center floor panel

- 21. Rear floor panel
- 22. 2nd seat hinge rear bracket
- 23. Rear floor No. 1 cross member
- 24. Rear floor No. 2 cross member
- 25. Rear floor No. 3 cross member
- 26. Rear floor side member(LH/RH)
- 27. Rear floor No. 4 cross member
- 28. Body mounting No. 5 bracket(LH/RH)
- 29. Rear floor side panel(LH/RH)
- 30. Front door outer panel(LH/RH)
- 31. Front door inner panel(LH/RH)
- 32. Rear door outer panel(LH/RH)
- 33. Rear door inner panel(LH/RH)
- 34. Tail gate outer panel
- 35. Tail gate inner panel
- 36. Hood outer panel
- 37. Hood inner panel

## **ANTIVIBRATION PADS-LOCATION & SECTION**



## ATTACHMENT OF ANTIVIBRATION PADS

Antivibration pads 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 antivibration pads 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 antivibration pads are to be attached for individual models, refer to the figure below.



1. Heat the "antivibration pad" with a blow drier to soften it.



2. Align the antivibration pad 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 antivibration pad layer and the body panels (be sure to wear gloves).



## UNDER BODY COAT

In order to provide corrosion, stone chipping and vibration resistance, and under body coat is applied to the under sides of the floor and wheel house.

Therefore, when such panel is replaced or repaired, apply under body coat to that part.

### FLOOR



## SIDE BODY



## CAVITY WAX INJECTION

In order to provide greater corrosion resistance, cavity wax injection has been performed for the lower areas of the vehicle, such as the sidemember, the side sill and the inside of other panels which are a hollow construction. When replacing these parts, be such to apply cavity wax to the appropriate areas of the new parts.



## **CORROSION PROTECTION - Cavity wax injection**



### **CORROSION PROTECTION - Cavity wax injection**



## UNDER BODY ANTI-CORROSION AGENT

The undersides of the floor and wheel house are undercoated to provide greater corrosion resistance. Therefore, when such panel is replaced or repaired, apply under body anti-corrosion agent to that part.

### NOTE

Do not apply the under body anti-corrosion agent to come in contact with tires, muffler and exhaust pipe.

