



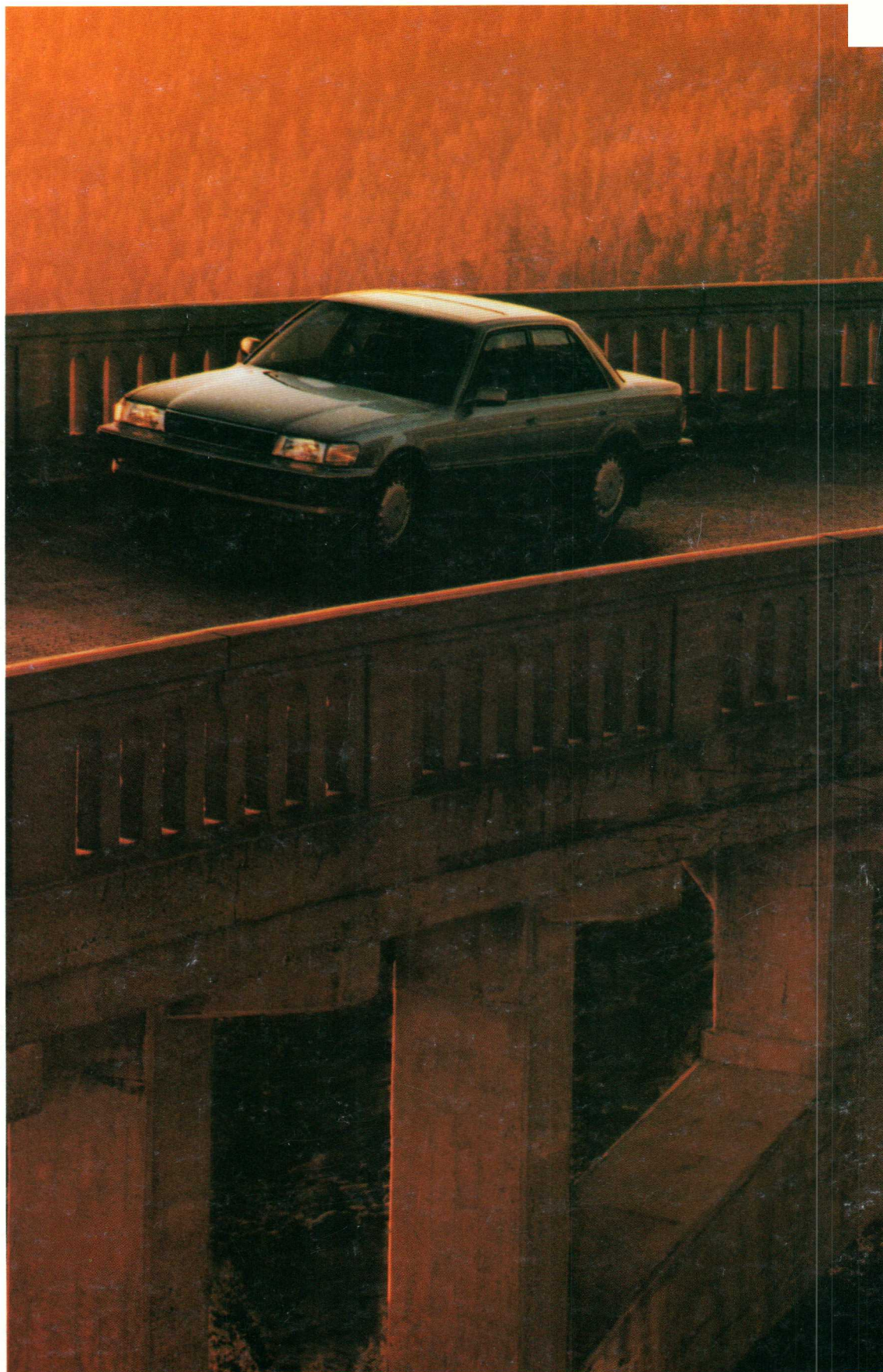
SERVICE NEWS

**Body Repair—
Outer Door
Panel
Replacement**

**Toyota
Education
Network
Offers
Advanced
Training**


For Winter:

- **Battery
Testing**
- **Celica
All Trac
Driveability**
- **Engine Block
Heaters**



**PART OF TOYOTA'S
CONTINUING SUPPORT TO
AFTERMARKET REPAIR.**

U-Groove electrodes, triple mesh weave and crystalline element material.



What separates Toyota Genuine tune-up parts from the competition? Toyota technology.

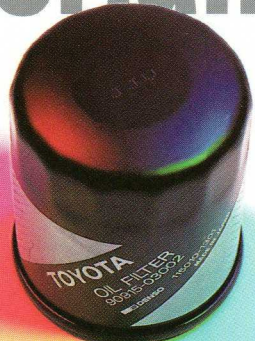
Toyota's patented U-Groove spark plugs have a unique U-shaped ground electrode that provides a larger, fuller, flashfront for more complete combustion, faster starts and reduced fouling. Toyota's

platinum-tipped spark plugs offer the outstanding thermal properties that high-performance engines demand.

Toyota Genuine air filters have a triple-layered coarse/ medium/ fine mesh filter pattern for outstanding filtration.

Molded urethane top and bottom plates resist heat, vibration, gasoline and oil, and help the filter retain its shape for a tight seal.

The Toyota Genuine compact oil



filter has a patented element that's formed into a crystalline structure of optimum filtration density, enabling it to trap more contaminants. It also offers improved strength and heat resistance.

Your Toyota customers chose Toyota quality, reliability and performance when they bought their vehicles. Why give them anything less when they come to you for a tune-up?

Toyota's technologically advanced tune-up parts are designed specifically to keep your customers' Toyotas running in peak condition. That's what sets Toyota Genuine Parts apart from the rest.

"I love what you do for me."

 **TOYOTA**



SERVICE NEWS

Features

Body Repair– Outer Door Panel Replacement	2
Toyota Education Network Offers Advanced Training	10
Battery Testing for Winter	12

Tech Tips

Improved Celica All-Trac Driveability	16
MR2 Supercharged Fuel Injector Replacement	16
Fuel Cut Solenoid Troubleshooting	17
Battery Fusible Link	18
Speedometer Drive Cable Noise	19

Parts News

Engine Block Heaters	20
----------------------	----

WHAT IS A STAR DEALER?

STAR (Support To Aftermarket Repairs) is a special Toyota support program offered by a select group of Toyota dealers, recognized by Toyota as having made an extraordinary commitment to serving the special needs of independent repair and body shops. From extra parts inventory and special local or WATS telephone lines, to specially trained counterpeople backed by outstanding delivery services, Toyota STAR dealers are a unique group of parts wholesale specialists who offer support, services and benefits not usually offered by the typical dealership.

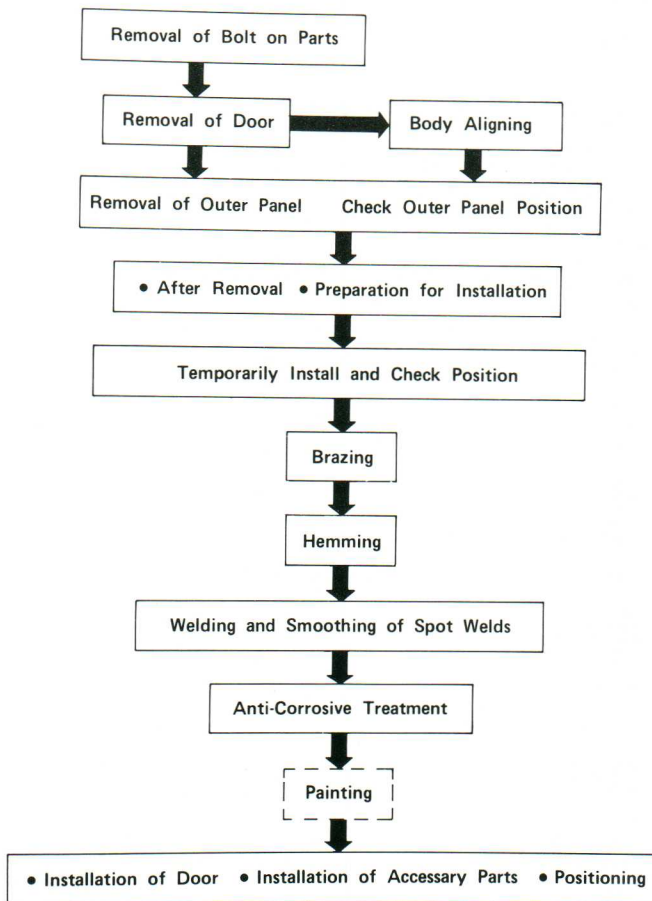
Toyota STAR Service News are only available through Toyota's Wholesale parts specialists, Toyota STAR dealers. Articles and technical data in this periodical are based in whole or in part on prior communications to Toyota dealers.

All procedures, specifications and part numbers were in effect at the time this publication went to press. No express or implied warranty implications are intended, nor should any be construed. Toyota Motor Sales, U.S.A., Inc. reserves the right to change procedures, specifications and/or part numbers without incurring obligation. For complete specifications and/or procedures please refer to the appropriate repair manuals. For part number changes, please consult with your local Toyota STAR dealer. Contents of this publication may be reprinted with permission. Please address all correspondence and inquiries to Editor, Toyota STAR Service News, P.O. Box Q-100, Torrance, CA 90509.

BODY REPAIR– OUTER DOOR PANEL REPLACEMENT

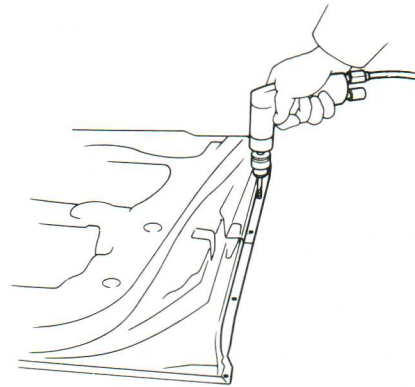
Model Application: All models having doors with sashes. For other types of doors, the procedures described below are the same, however for detailed information on where to weld, where to apply body sealer, etc., please refer to appropriate Body Repair Manual for the vehicle being repaired.

REPLACEMENT METHOD

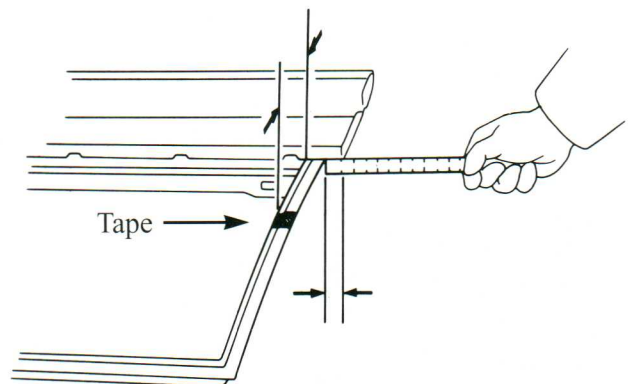


REMOVAL

1. Remove spot welds
 - a. Using a oxy-acetylene gas torch and wire brush, burn off the paint at the spot welds.
 - b. Using a drill and spot cutter or cut-off grinder, grind out the spot welds.



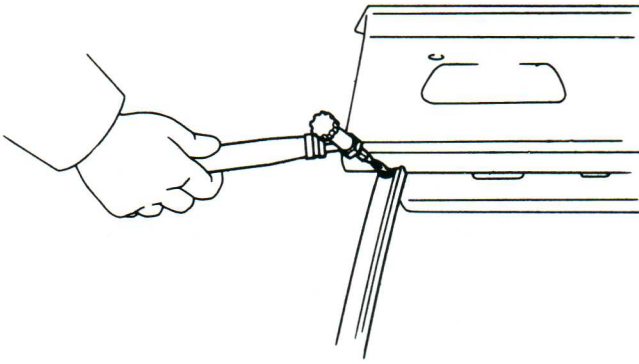
2. Check outer panel position.
 - a. Upward/downward: Apply tape to the door frame and measure the distance between the lower line of the tape and outer panel.
 - b. Forward/rearward: Measure the distance between the front (rear) edge of the outer panel and door frame.



Features

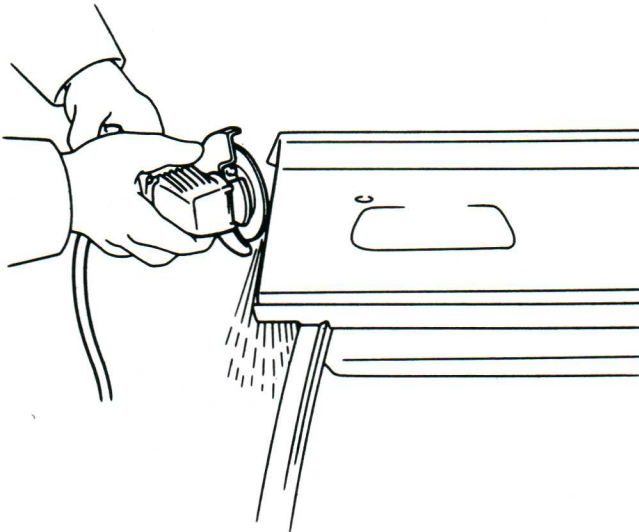
3. Remove brazing material.

Use an oxy-acetylene torch or cut-off grinder to cut the brazed portion away from the outer panel.



4. Grind off the edge of the outer panel hemming flange edge.

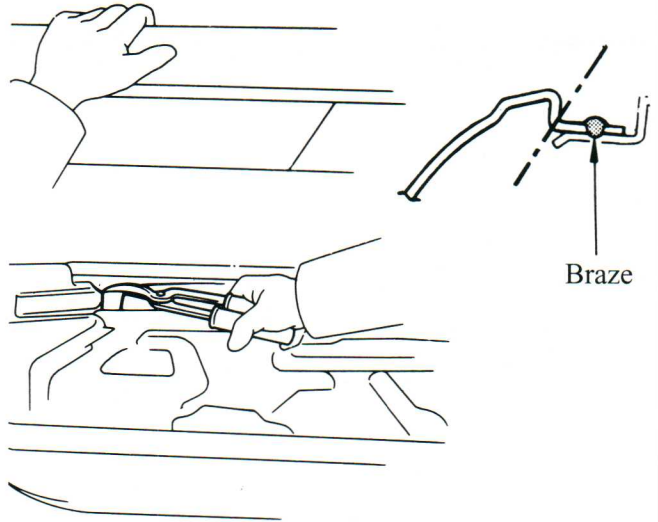
Use a disc grinder to grind off the hem of the outer panel. NOTE: Be careful not to grind into the inner panel.



5. Remove outer panel from inner panel.

a. Using a hammer and chisel, remove outer panel from the inner panel. NOTE: Using a pair of tin snips, cut out any spot welds not removed in Step 1 from around the glass opening.

b. Remove the remaining outer panel from the inner panel.

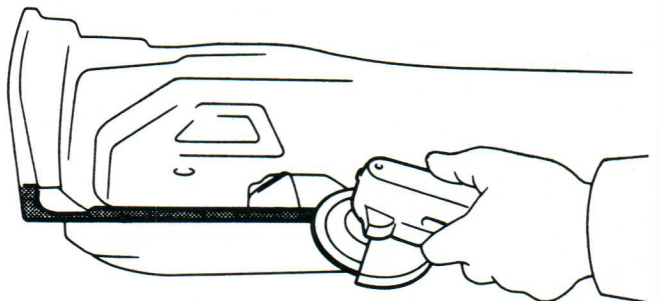


AFTER REMOVAL

1. Finishing inner panel.

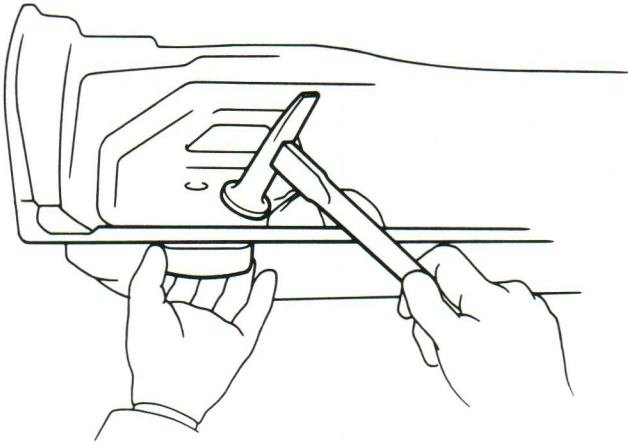
a. Using a disc sander, surface finish the spot weld, braze and rust from the inner panel. NOTE: Be careful not to grind off too much.

b. Remove the paint at the tack weld location of the inner panel.



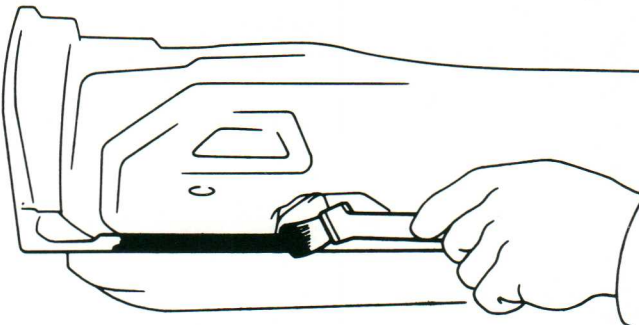
Features

c. Take out any dents or protrusions on the inner flange with a hammer and dolly. NOTE: Work carefully because the hammer or dolly can easily put dents in the outer panel during the hemming operation.



2. Anti-corrosive treatment.

- Apply weld-through primer to the weld location.
- Rust treat those areas where paint has been removed. NOTE: Do not apply anti-corrosive treatment to areas that will require brazing in a subsequent operation.
- If there is side-impact protector beam, apply enough sealer so that there is contact between the sealer and both the protector beam and outer panel.



PREPARATION FOR INSTALLATION

1. Welding procedures for the new outer panel:

- Use a drill or hole punch to make holes for plug welds.
- Using a sander, remove the paint from weld and braze locations.

c. Apply weld-through primer to the bare metal seam areas.

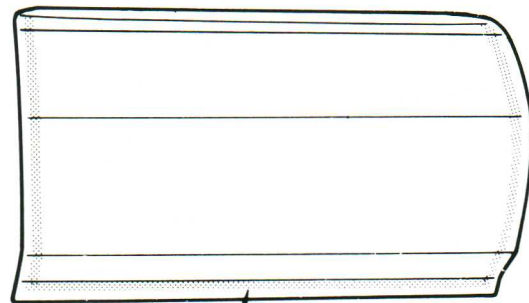
d. Do not apply sealer to the bare metal areas.

2. Glue on silencer pad.

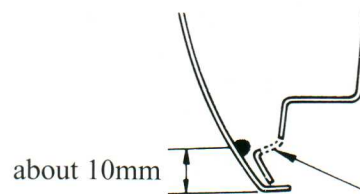
- Clean the outer; panel at the pad location with alcohol or equivalent.
- Heat the outer panel and silencer pad with a heat lamp.
- Glue the silencer pad the outer panel.

3. Apply body sealer.

Apply body sealer to the back of the new panel. NOTE: Apply sealer evenly 10 mm (0.39 in.) from the flange, about 3 mm (0.12 in.) in diameter.

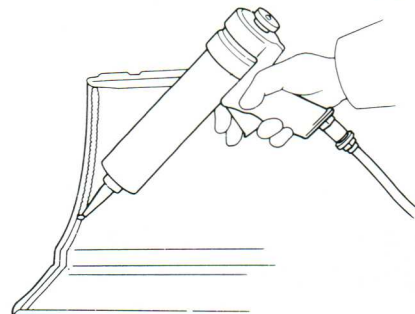


Body Sealer



about 10mm

Do not close the drain hole.



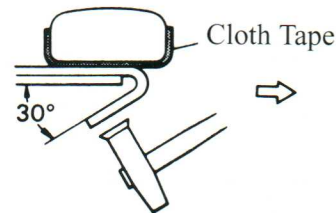
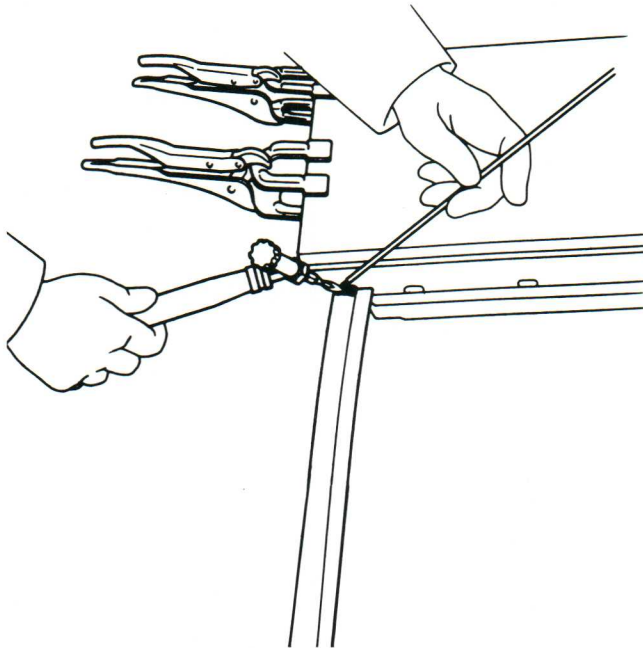
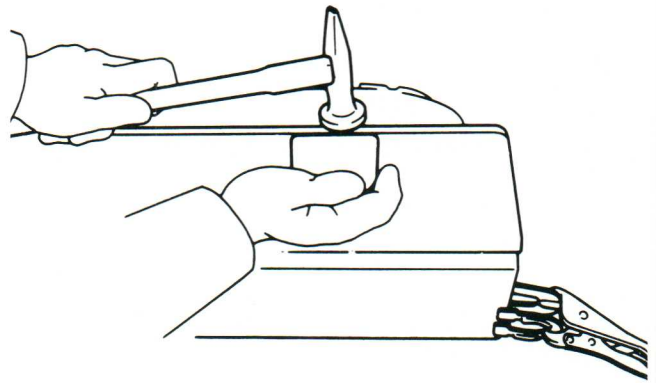
INSTALLATION

1. Temporarily install new outer panel.

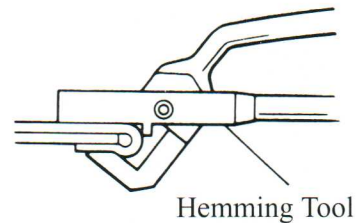
Using vice grips, temporarily install the new outer panel and determine the old outer panel location.

NOTE: Attach cloth tape to the vise grip jaws.

careful not to deform the panel; do not tap the edge of the panel; and be careful not to deform the body line of the outer panel.



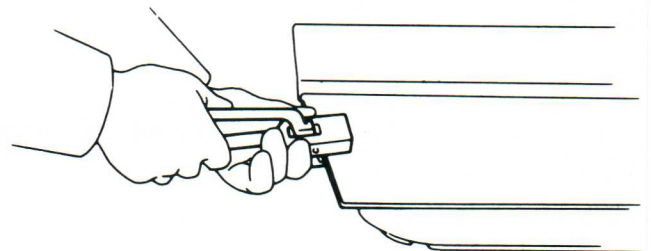
b. Use a hemming tool to hem the flange. NOTE: Make the hem in three steps, being careful not to deform the panel; using a hammer and dolly, hem the body line of the new outer panel.



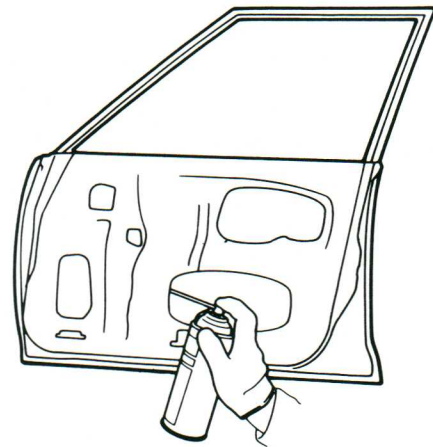
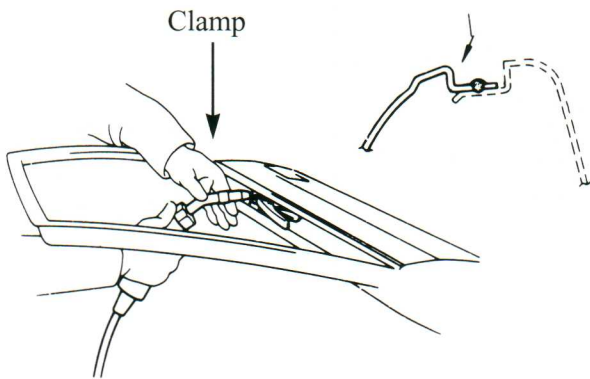
2. Braze outer panel.

3. Hemming outer panel flange area.

a. Using a hammer and dolly, bend the flange 30 degrees. NOTE: Make the hem in three steps, being



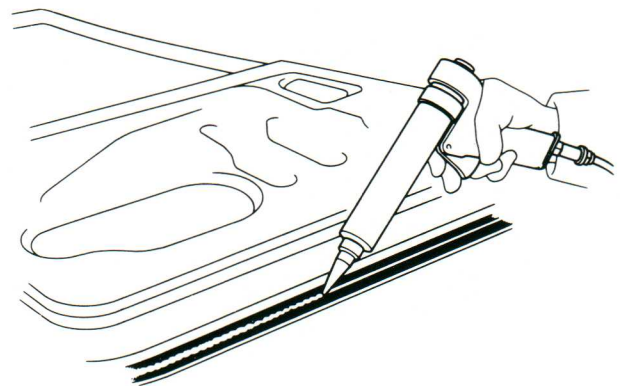
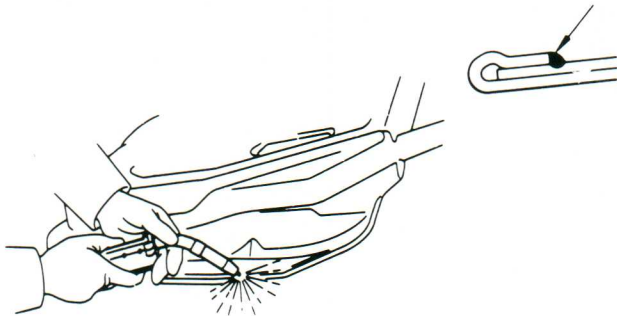
Features



4. Weld new outer panel.

a. Weld the plug weld location of the glass opening.

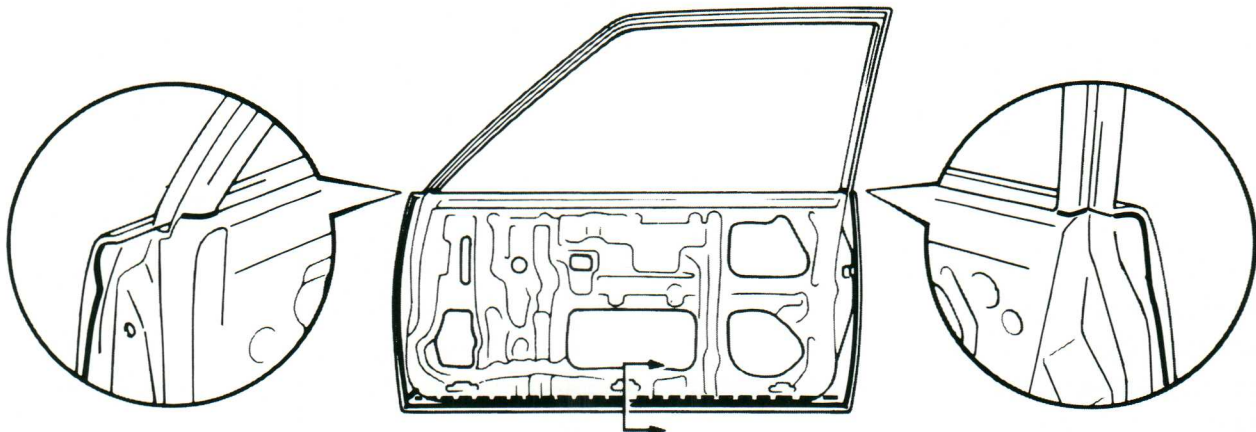
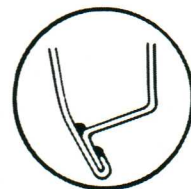
b. Apply anti-rust agent on the inside of the tack weld, plug weld and brazed areas.



b. Tack weld the hemming edge of the outer panel flange.

5. Anti-corrosion treatment (see expanded information on sealers and anti-rust treatment later in this article).

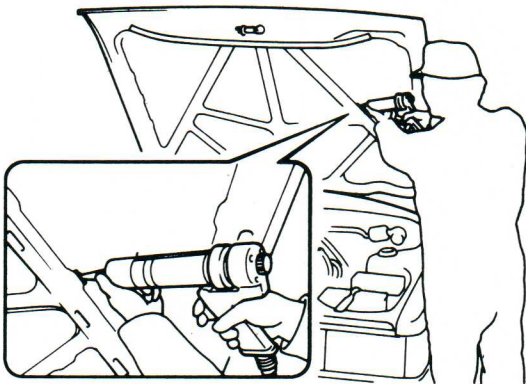
a. Apply body sealer to the hemming edge area.



SEALER BACKGROUND

General adhesives can be classified by their ingredients, application, hardening method and performance. For automotive use, adhesives are classified by their function. Adhesives used for structural parts which are subjected to severe stress, such as brake linings, are called structural adhesives. Adhesives used for interior trim materials are non-structural adhesives. Semi-structural adhesives are used for filling or bonding between outer and inner reinforcing panels, as well as those used for fondling hemmed flanges.

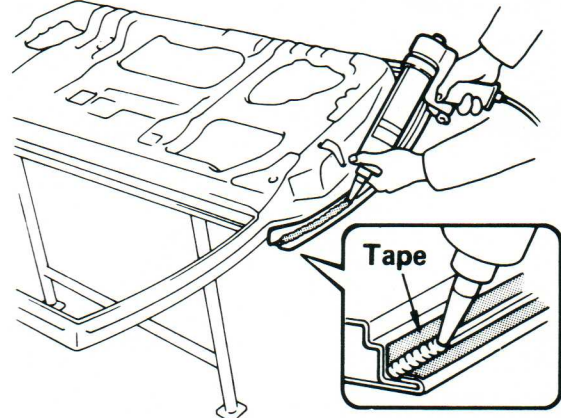
1. Mastic Adhesive Sealer. Mastic increases the rigidity of the panels and helps prevent vibration and noise. The main ingredients of this adhesive are synthetic rubber and carbon. It is foamed at high temperatures up to 180 C (356 F) for 20 to 30 minutes. It is used as a filler and a bonding agent between parts such as outer hood panels and inner reinforcement structures.



FILLING WITH SEALER

2. Hemming Adhesive Sealer. High viscosity one-part epoxy is used to bond hemming seams. It hardens and forms a bond between the door outer and inner panels in 20 to 30 minutes. The lower portion of doors (between inner and outer panels) is filled to prevent corrosion of the panels.

3. Body Sealer and Drip Rail Sealer. Another type of adhesive used as a sealer is vinyl plastizol-based high-temperature thermosetting body sealer and drip rail sealer.



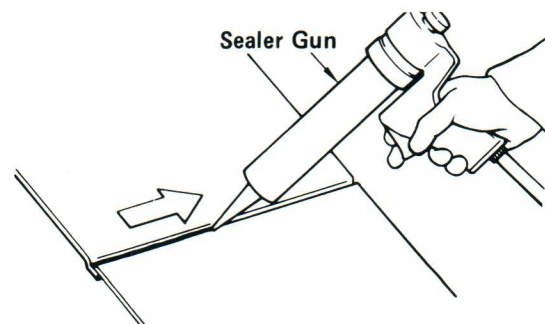
APPLYING SEALER

4. Urethane-based Sealer. Windshield glass and side protector moldings are bonded in place by urethane-type sealers which harden at room temperature.

ANTI-RUST TREATMENT

1. Body Sealer Application. Body sealer prevents the penetration of water or mud into panel joints and serves the important role of preventing rust from forming between adjoining surfaces.

Apply the sealer to the desired area after cleaning all dirt and oil substances from the sealer application area with a rag soaked in a special precleaning solution available from the local automotive supply store.

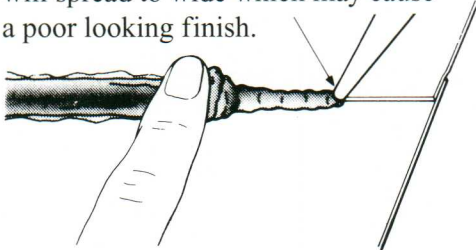


APPLY BODY SEALER

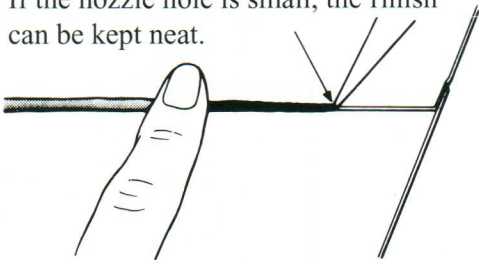
Features

Important: Use a nozzle with a small hole in the end to apply the sealer and then spread out the bead of sealer with the fingertip.

If the nozzle is too large, the sealer will spread to wide which may cause a poor looking finish.

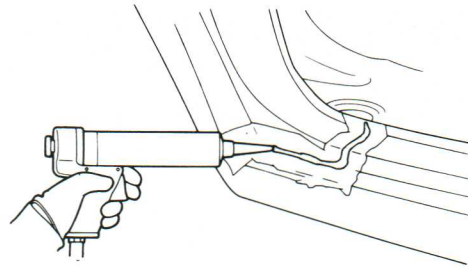


If the nozzle hole is small, the finish can be kept neat.



Important:

- Neat sealer application is simple if masking tape is used to make a parting line for the sealer application area.
- Refer to the body repair manual for each vehicle to determine the sealer application area or look at the other side of the vehicle to see where sealer is applied.



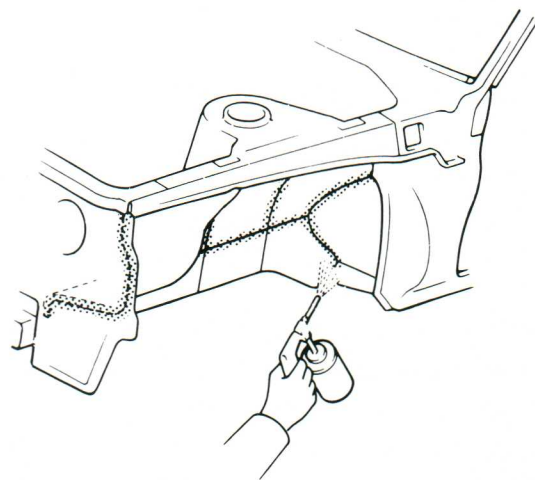
2. Undercoat application. The bottom surface of the under body and inside of the wheel housings can be damaged by flying stones causing rust to develop, so these areas are given an undercoat of anti-rust treatment.

APPLICATION METHOD

After cleaning all dirt and oily substances from the application areas with a rag soaked in precleaning solution, apply the undercoat.

Note:

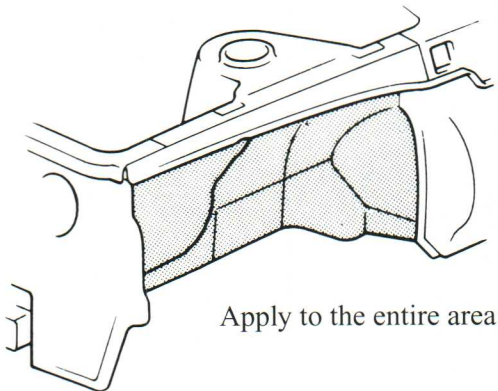
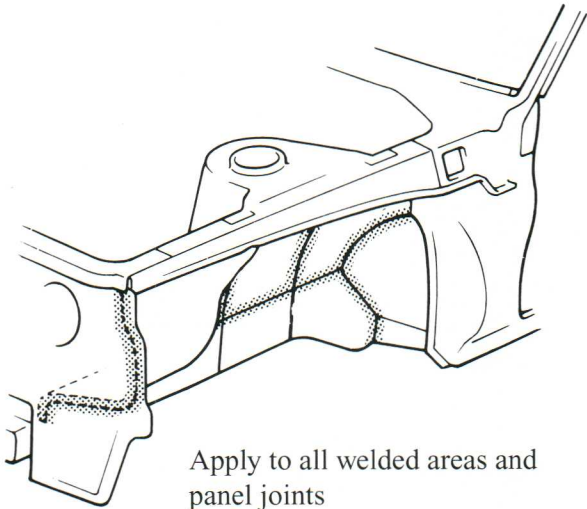
- Cover places surrounding the application area with masking paper to prevent the undercoating from sticking to areas where the application of undercoating is undesirable.
- Do not apply undercoat to parts which reach high temperatures such as the exhaust pipe, and do not apply it to the suspension or drive train parts.



APPLY UNDERCOAT

Features

Important: Apply the first coat of undercoat to all welded areas and panel joints, then apply a second coat over the entire area.



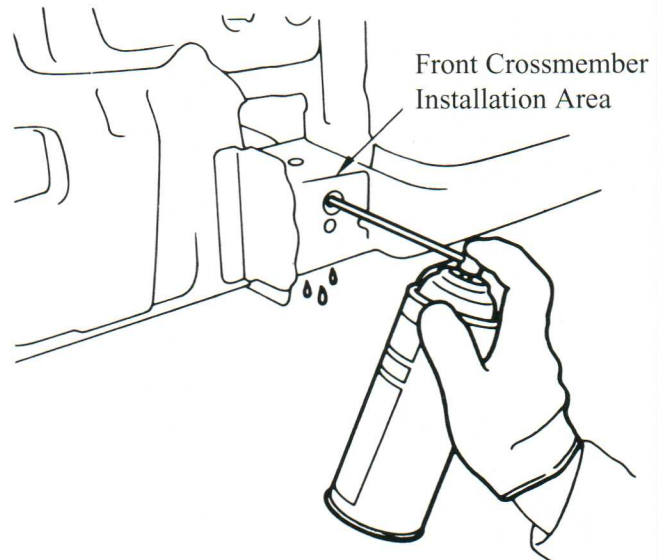
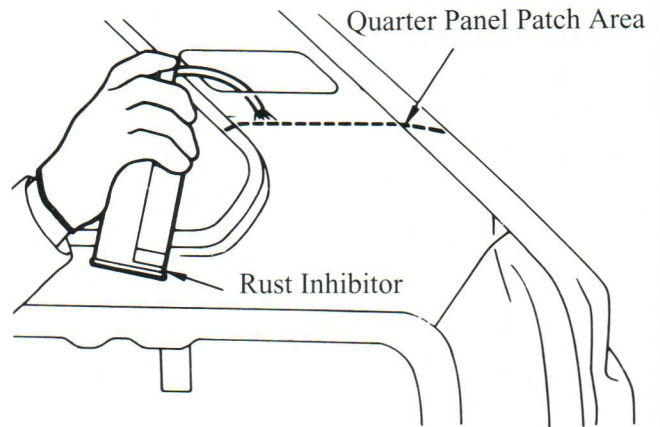
APPLY UNDERCOAT

ANTI-RUST TREATMENT AFTER THE PAINTING PROCESS

1. Application of a body anti-rust agent. The back sides of welded parts with boxed cross section structures such as side members and body pillars cannot be painted, so use an anti-rust treatment (such as Rustop, Tectyl or equivalent).

Apply anti-rust agent using service holes or bolt holes, etc.

Important: Aim the nozzle toward the welded area and apply the anti-rust agent until it starts to ooze out between the panel joining surfaces.



APPLY RUST INHIBITOR

THE TOYOTA TECHNICAL EDUCATION NETWORK OFFERS A UNIQUE OPPORTUNITY FOR ADVANCED TRAINING

As today's automobiles become more technically advanced and sophisticated, they become more challenging to maintain and repair. The degree of skill, talent and knowledge needed to be a profession automotive technician increases every year. To ensure that Toyota owners can rely on an ongoing pool of competent technicians, Toyota has established the Toyota Technical Education Network, or T-TEN program.

In this program, Toyota is working in partnership with 65 of the best vocational and training schools across the country. Toyota provides these schools with tools, equipment, component parts, technical and financial support, and vehicles.

These schools can now offer their students the most up-to-date-curriculum and hands-on experience with the most modern technology.

In return, these schools provide a "Toyota Specific" curriculum which familiarizes these students with Toyota products so that they graduate with the knowledge needed to work on Toyota products from their first day on the job. Courses are N.A.T.E.F. certified and Toyota also pays the ASE certification fee when the student is enrolled in the T-TEN program.

Toyota also uses these schools and equipment as convenient training sites for existing Toyota technicians.

Toyota's T-TEN program is a cornerstone of the Company's efforts to provide the best customer satisfaction in the industry. Quality service, done right the first time, is an ongoing Toyota goal, and the T-TEN program is helping Toyota meet that goal.

From time-to-time, there are openings in various T-TEN classes and programs that can provide mechanics in independent garages with training in the latest

Toyota technology. Many of these schools will give credit for on-the-job experience that can considerably shorten the required course work. In some cases, tuition and tool scholarships are available. For more information, ask your Toyota STAR Dealer for the T-TEN school in your area or call (800) 441-5141.

The following is the school list for the Toyota Technical Education Network:

ALABAMA:

Bessemer State Technical School
Bessemer

John M. Patterson State/Technical College
Montgomery

ARIZONA:

Gateway Community College
Phoenix

CALIFORNIA:

Bakersfield College
Bakersfield

Cerro Coso Community College
Ridgecrest

Citrus College
Glendora

Cypress College
Cypress

El Camino College
Torrance

Riverside Community College
Riverside

San Diego City College
San Diego

Ventura Community College
Ventura

American River College
Sacramento

Merced College
Merced

Skyline Community College
San Bruno

Features

COLORADO:

Pikes Peak Community College
Colorado Springs

CONNECTICUT:

Greater New Haven State Technical College
North Haven

FLORIDA:

Florida Community College
Jacksonville

Miami Lakes Technical/Education Center
Miami Lakes

Sarasota County Vocational Center
Sarasota

GEORGIA:

Atlanta Area Technical School
Atlanta

ILLINOIS:

Joliet Junior College
Joliet

INDIANA:

Indiana Vocational Tech. College
Indianapolis

IOWA:

Kirkwood Community College
Cedar Rapids

KANSAS:

Pittsburg State University
Pittsburg

**Vocational Technical Center,
Hutchinson Community College**
Hutchinson

KENTUCKY:

Jefferson State Vocational/Technical School
Louisville

Northern Kentucky State/Vocational School
Covington

MAINE:

Portland Regional Tech. Center
Portland

MARYLAND:

Catonsville Community College
Catonsville

MASSACHUSETTS:

Massachusetts Bay Community College
Framingham

MICHIGAN:

Jackson Community College
Jackson

MINNESOTA:

Hennepin Technical Institute-Eden Prairie
Eden Prairie

MISSISSIPPI:

Holmes Junior College
Goodman

MISSOURI:

Longview Community College
Lee's Summit

Ranken Technical College
St. Louis

MONTANA:

Northern Montana College
Havre

NEBRASKA:

Metropolitan Community College
Omaha

NEW HAMPSHIRE:

New Hampshire Technical College in Stratham
Stratham

NEW JERSEY:

Brookdale Community College
Lincroft

NEW MEXICO:

San Juan College
Farmington

NEW YORK:

Columbia Greene Community College
Hudson

Monroe Community College
Rochester

Westchester Community College
Valhalla

NORTH CAROLINA:

Central Piedmont Community College
Charlotte

OHIO:

Cuyahoga Community College
Western Campus
Parma

OKLAHOMA:

Oklahoma State University
Oklmulgee

OREGON:

Umpqua Community College
Roseburg

PENNSYLVANIA:

Lehigh County Community College
Schnecksville

Pennsylvania College of Technology
Williamsport

SOUTH CAROLINA:

Midlands Technical College
Columbia

SOUTH DAKOTA:

Lake Area Voc./Tech. Institute
Watertown

TENNESSEE:

Covington State Area/Vocational-Tech.
Covington

TEXAS:

San Jacinto College Central
Pasadena

Texas State Technical College
Waco

UTAH:

Weber State University
Ogden

VIRGINIA:

J. Sargeant Reynolds Community College
Richmond

New River Community College
Dublin

Tidewater Community College
Chesapeake

WASHINGTON:

Clark Community College
Vancouver

Shoreline Community College
Seattle

Spokane Community College
Spokane

WISCONSIN:

Waukesha County Technical College
Pewaukee

BATTERY TESTING FOR WINTER

MODEL APPLICATION: ALL

Battery testing is an integral part of periodic vehicle maintenance and should be performed whether or not a starting problem has occurred. A variety of battery load testers, hydrometers, and voltmeters are available for testing all types of batteries. This article deals with testing lead acid batteries which are used in starting, lighting and ignition applications.

TESTING WITH ADJUSTABLE LOAD TESTER AND HYDROMETER

For testing batteries with an adjustable load test and hydrometer, refer to the "Battery Testing Chart — Figure X, on page 13."

Step 1 - Visual Inspection

Please note: Use all appropriate safety procedures, including wearing safety goggles and a face shield.

First, visually inspect the battery. Check the container, cover, or terminal damage that might cause leakage of electrolyte or internal damage. If serious damage is found, replace the battery. Check the electrolyte level in each cell. If it's below the tops of the plates in any cells, fill all cells with distilled water to just above the tops of the separators and charge for 15 minutes at 15-25 amps to mix the water with the electrolyte. If electrolyte levels are above the tops of the plates, continue to Step 2.

NOTE: Use caution when filling water and electrolyte.

1. Do not overfill battery or spillage will occur.
2. If water is added, accurate specific gravity readings are not possible for some time (mixing must occur first).

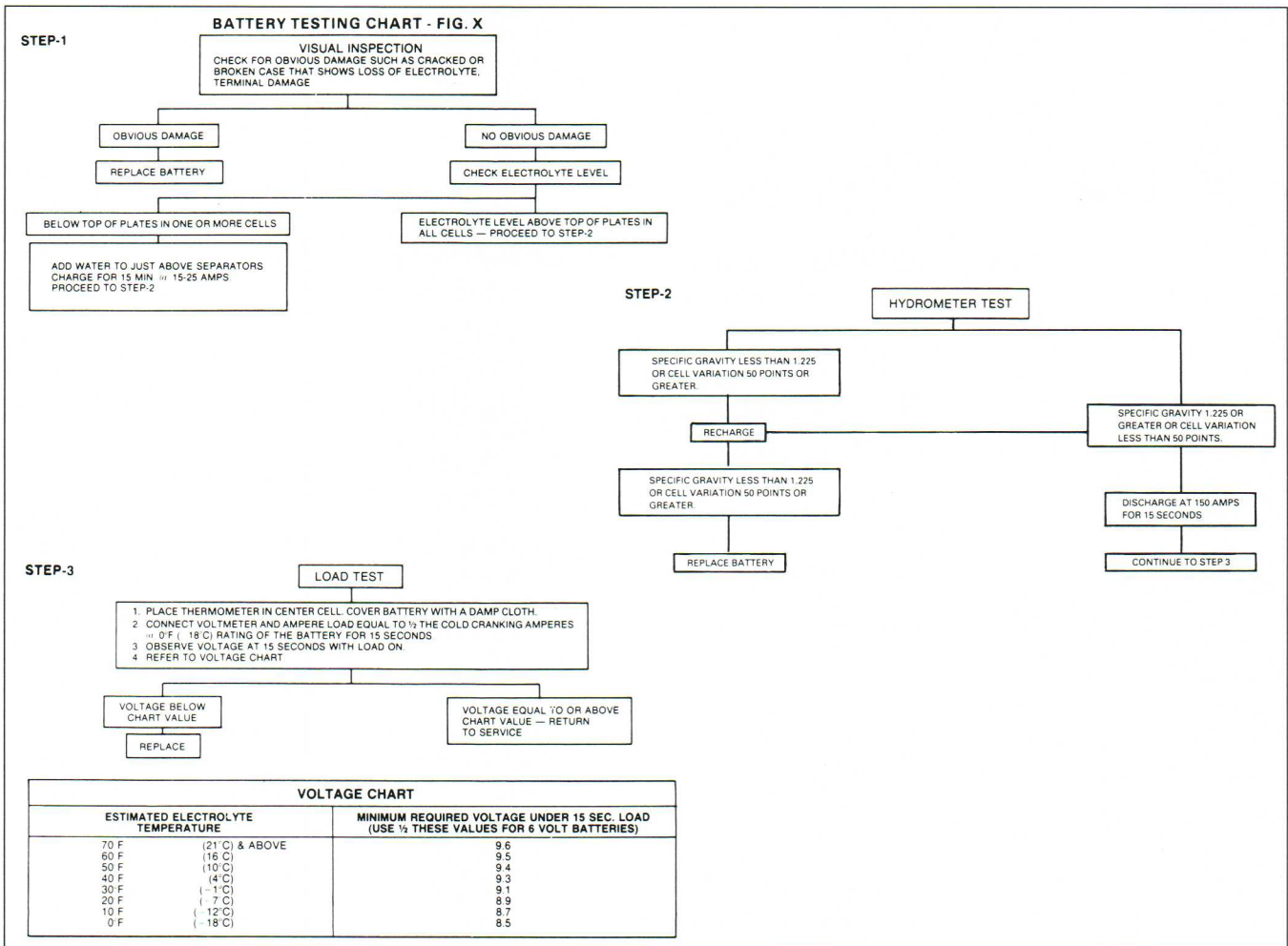
Step 2 - Hydrometer Test

Using a hydrometer, measure and recorded the specific gravity, corrected to 80F (26.7C) of the electrolyte in each cell. If the range (highest to lowest) is 50 points, (0.050 specific gravity) or greater or the lowest is less than 1.225 specific gravity, charge the battery until all cells are 1.225 specific gravity or greater and the range is less than 50 points. If no amount of charging will achieve these conditions, replace the battery. If these conditions are achieved, apply a 150 amp load for 15 seconds to remove the surface charge on the battery and continue on to Step 3.

Step 3 - Adjustable Load Test (in Figure)

The following instructions are intended as guidelines. When available, the testing instrument manufacturer's instructions should be followed. Be sure to follow all safety precautions.

- a. Disconnect battery cables starting with ground cable.
- b. Measure temperature of a center cell. If instrument has an integral temperature compensator, use attached probe. Cover battery with a wet cloth.
- c. Connect voltmeter and load test leads to appropriate battery terminals. Make certain terminals are free of corrosion.
- d. Connect current transducer (if necessary) to appropriate lead.
- e. Apply test load equivalent to 50% of cranking performance rating of battery for 15 seconds.
- f. Read the voltage at 15 seconds, then remove the load.
- g. Determine minimum voltage required at electrolyte test temperature from chart in Figure X.
- h. If test voltage is above minimum, replace battery.



TESTING WITH FIXED LOAD TEST AND OPEN CIRCUIT VOLTMETER

For testing batteries with a fixed load tester and an open circuit voltmeter, refer to Figure Y.

Step 1 - Visual Inspection

First, visually inspect the battery and check the electrolyte levels as described in Step 1 of "Testing with Adjustable Load tester and Hydrometer." Take the same corrective actions. Continue to Step 2.

Step 2 - Fixed Load Test

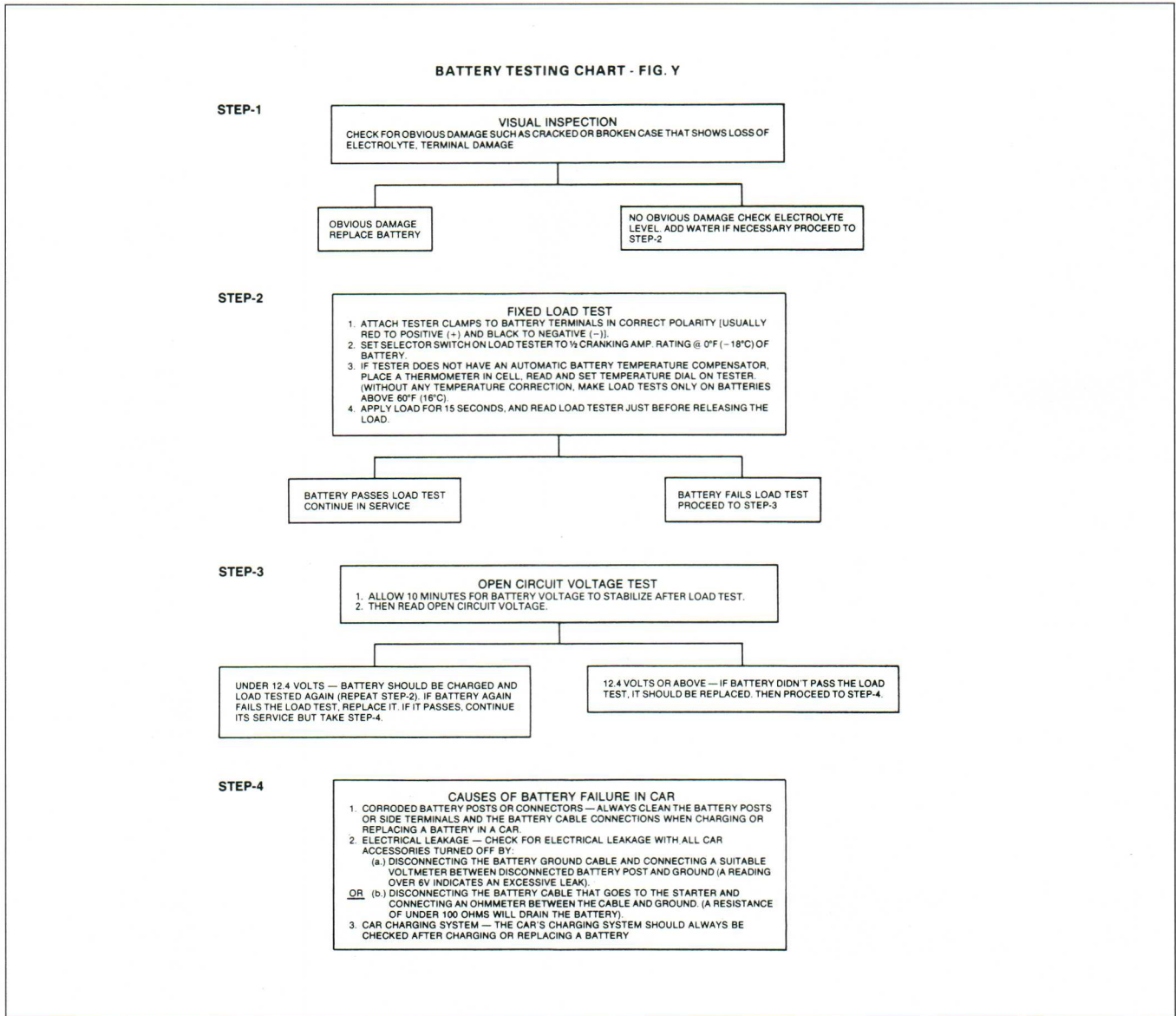
Some commercial battery testers do not have an adjustable load but measure the battery voltage under a heavy fixed load. The tester should include a selec-

tor switch or meter scale to choose among a variety of battery (or engine) sizes. It should include some means of correcting for the battery temperature, either in automatic sensing circuit or one that can be set manually.

Again, the following instructions are intended as guidelines only. When available, the testing instrument manufacturer's instructions should be followed.

a. Disconnect battery cables starting with ground cable.

b. Measure temperature of a center cell and set temperature dial on tester or insert automatic temperature corrector probe in center cell. Cover battery with a wet cloth.



c. Set battery size selector to a range or select range on meter which will include 50% of the Cranking Performance rating or three times the 20 ampere-hour capacity of the battery.

d. Connect voltmeter and load test leads to appropriate battery terminals. Make certain terminals are free of corrosion.

e. Apply test load for 15 seconds.

f. Read battery performance from instrument meter at 15 seconds, then remove the load.

g. If the battery passed the load test, return it to service.

h. If the battery failed the load test, continue to Step 3.

Step 3 - Open Circuit Voltage Test

If the battery failed the load test, the state of charge must be checked. If a hydrometer is not available, the stabilized open circuit voltage can be used to indicate the state of charge. Allow at least 20 minutes after the load test for the voltage to stabilize, then measure and record the open circuit voltage. Determine the

approximate state of charge from the following chart (battery temperature 60 - 100 F).

OPEN CIRCUIT VOLTS	PERCENT CHARGE
12.6 or greater	100%
12.4 - 12.6	75 - 100%
12.2 - 12.4	50 - 75%
12.0 - 12.2	25 - 50%
11.7 - 12.0	0 - 25%
11.7 or less	0%

The charge of voltage with state of charge is small and must be measured accurately using a digital meter or an analog meter with an expanded scale. If the state of charge is 75% or greater and the battery failed the load test, it should be replaced. If the state of charge is less than 75%. The battery should be charged and the load test repeated. If the battery passes the load test, return it to service. If it fails the load test again, replace it and determine the cause of failure.

Step 4 - Determining Causes of Battery Failure in the Vehicle

If the battery passed the load test only after a recharge, the cause of the discharge condition should be determined. If the battery has been returned previously or is otherwise still questionable, one final test should be made. Fully charge the battery and place it on an open circuit stand for three days. If the loss in specific gravity of any cell is greater than 35 points or the open circuit voltage drops by more than 0.20 volts, replace the battery. If not, return the battery to service and determine the cause for the discharged condition.

The following should be checked:

1. Corroded battery terminals or connectors —

A corrosion layer between the battery terminals and the cable connectors can prevent good electrical contact even when the connectors are tight. The cables should always be removed before testing a battery and any corrosion cleaned from the terminals.

2. Electrical Circuit Leakage —

Most vehicles normally have small, continuous discharge on the battery of as much as 20 milliamperes due to digital clocks and other electronic devices. In addition, there may be a fault in the vehicle's electrical system that can discharge the battery even when all the accessories are turned off. To check for such leakage, turn off all accessories in the vehicle and close all doors, trunk, etc. to turn off all lights and warning systems. If there is a light under the hood, remove the bulb. Check for leakage using one of the following methods:

a. Ammeter — Cover battery with a wet cloth. Disconnect the ground cable (negative on most vehicle) at the battery. Using a DC ammeter with a resolution of at least 0.1 amp, measure the current between of at least 0.1 amp, measure the current between the disconnected cable and the battery terminal. (DO NOT CONNECT AMMETER ACROSS BATTERY TERMINALS!) A leakage current measurement or more indicates the vehicle electrical system should be tested or repaired.

NOTE 1: Older cars may have an electric clock that turns on momentarily every few minutes to wind. When this happens, touch the disconnected post to wind the clock.

NOTE 2: After running the leakage test, replace the bulb in the engine compartment and close the hood. Check to see that the light turns off. Most vehicles use either a mechanical or mercury level switch which may require adjustment.

Please note that Toyota STAR Service News would like to thank the Battery Council International for the input to this article.

IMPROVED CELICA ALL-TRAC DRIVEABILITY

Model Application: 1988 - 1989 Celica All-Trac

To improve cold driveability on 1989 Celica All-Trac models, a revised Toyota Computer Control System (TCCS) Electronic Control Unit (ECU) was adopted beginning with October 1988. This new ECU may be used as a replacement part to improve cold weather operation in 1988 Celica All-Trac models.

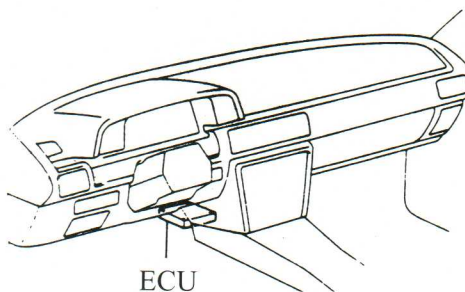
Production Change Effective

From VIN: JT2ST68M#K0008692

Production Date: October 1988

Part Number Information

Year:	1988/89
Model:	All-Trac Celica
Old P/N:	89661-20360
New P/N:	89661-20361



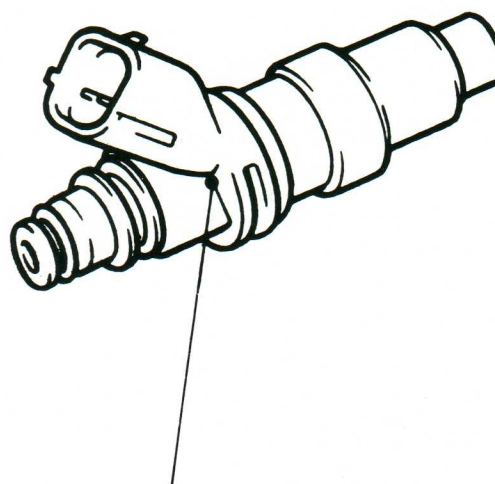
MR2 SUPERCHARGED FUEL INJECTOR REPLACEMENT

MODEL APPLICATION: ALL SUPERCHARGED MR2 ENGINES (4A-GZE)

The fuel injectors on a supercharged MR2 engine are carefully matched at the factory according to the flow rate. The flow rate is indicated by color coding on the injector body. All four injectors must be the same color coding. If replacement is required, replacements must be the same color coding as that originally installed. In other words, four yellow coded injectors cannot be substituted for four black coded injectors.

Part Numbers

23209-16060-01	(blue)
23209-16060-02	(black)
23209-16060-03	(yellow)
23209-16060-04	(white)

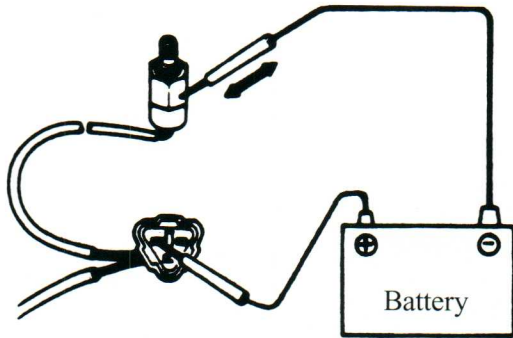


FUEL CUT SOLENOID TROUBLESHOOTING

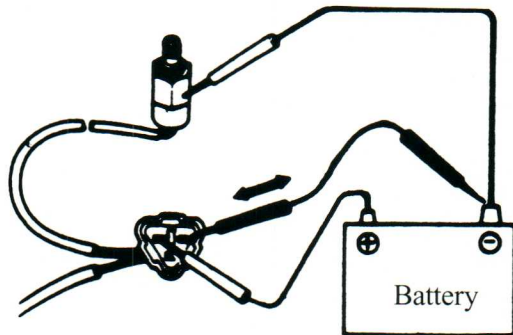
MODEL APPLICATION: TERCEL SEDAN

When checking the Deceleration (Decel) Fuel Cut Solenoid Valve operation (item 3c in the service manual), the “click” may be difficult to hear or feel, even when the valve is functioning properly. The following procedure is a more effective test procedure.

1. Inspect operation of the main solenoid valve using test leads. Connect the black wire of the fuel cut solenoid to the positive terminal of the battery, and the solenoid valve body to the negative battery terminal. You should feel a click from the solenoid valve as you touch the ground wire to the solenoid valve body.



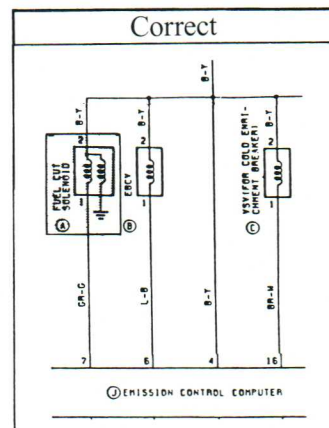
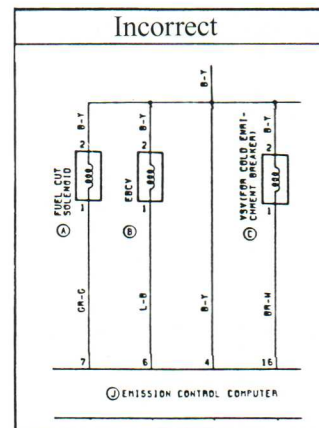
2. To inspect the operation of the Decel Fuel Cut Valve, leave the two leads connected from Step 1. Connect a third test lead to the negative terminal of the battery and touch it to the white/black wire. You should feel a click when touching the test lead to the wire.



3. If you do not feel a click in either of the above tests, the solenoid valve is not operating properly and should be replaced.

WIRING DIAGRAM CORRECTION

The 1987 Tercel wiring diagrams are incorrect. They show a single solenoid winding in the fuel cut solenoid valve. The valve actually has two solenoid windings, as shown in the revised schematic below:



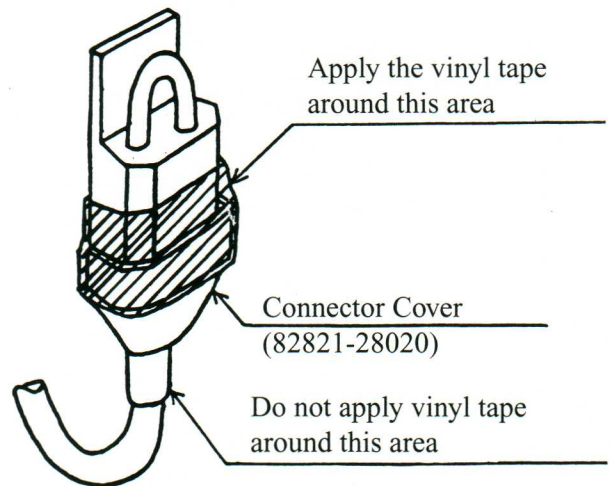
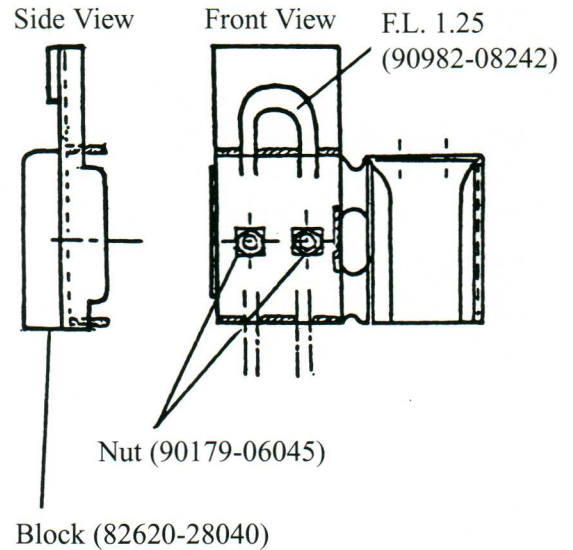
This correction should be noted on the wiring diagram in the 1987 Tercel Sedan Repair manual (wiring diagram #1) and the Electrical Wiring Diagrams Manual (page 20).

BATTERY FUSIBLE LINK

MODEL APPLICATION: YR SERIES VAN

To increase the durability and reliability of the battery fusible link, the shape of the fusible link block has been changed and a connector cover has been added. This new link and cover can be used as replacements for previous parts.

1. Remove the old style fusible link.
2. Install the new-style fusible link and fusible link block.
3. Apply dielectric grease to the nuts.
4. Apply vinyl tape around the fusible link block and connector cover as shown.



PART NUMBER INFORMATION:

Part Name	P/N	New P/N
Block Assy, Fusible Link	82620-28040	_____
Fusible Link (1.25 Block)	90982-08242	_____
Nut (M6, P-1.0)	90179-06045	_____
Cover, Connector	_____	82821-28020

*Part numbers remain unchanged

SPEEDOMETER DRIVE CABLE NOISE

MODEL APPLICATION: CELICA

FROM FRAME NUMBER ST162-7183253
(Beginning production: August 1987)

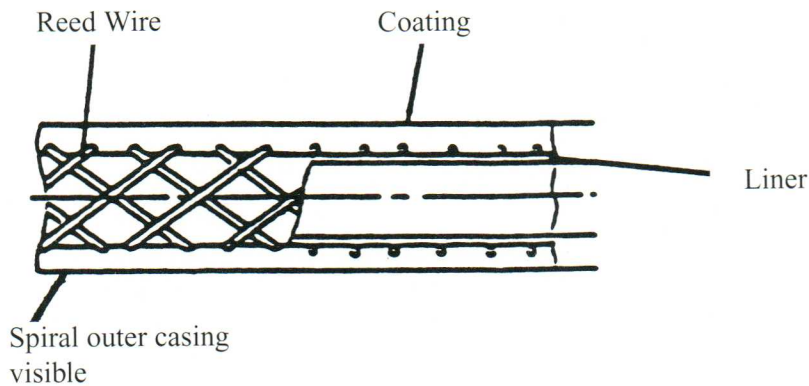
The outer casing of the Number 2 speedometer drive cable (P/N 83710-20530) can transmit noise or clatter from the speedometer cable into the passenger compartment. To eliminate this noise, the design of the outer casing of the drive cable has been changed.

The cables can be identified visually.

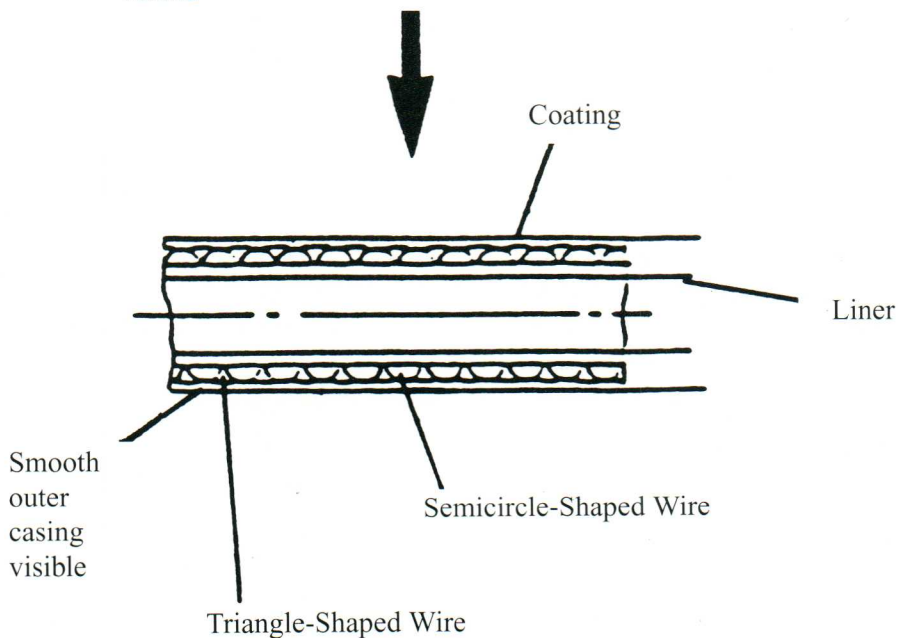
Previous cable – Spiral outer casing visible
New cable - Smooth outer casing visible

Note the part number (83710-20530) has NOT been changed. The cables ARE interchangeable.

■ PREVIOUS



■ NEW



ENGINE BLOCK HEATERS

MODEL APPLICATION: ALL

Toyota offers a full line of block heaters for most Toyota engines. These heaters require professional installation and offer numerous benefits in extremely cold temperatures. These benefits include quicker starting, quicker warmup, reduced engine wear, prolonged battery life, and increased fuel economy. The Toyota block heater was developed and tested in the extreme temperatures of Northern Canada. The heater assembly is installed in one of the freeze plugs or sand casting plug openings. The heater consists of an electric element, much like that used in an electric stove, that is suspended in the coolant and away from the

block. Overnight or during long periods of non-operation, the heater is plugged into any 110 power source and transfers heat to the coolant to keep it from freezing. Unlike dipstick type heaters which affect only the oil in the pan, a block heater distributes heat far more effectively throughout the engine block and head through the coolant passages. The original factory fill of coolant and demineralized water is effective to a temperature of -34 degrees F, and a block heater should definitely be used at temperatures below this point. However, the heater can also provide other benefits such as reduced starter and battery wear above this temperature and is a useful and desirable accessory in all cold climates. Specific heaters are available for specific engine types.

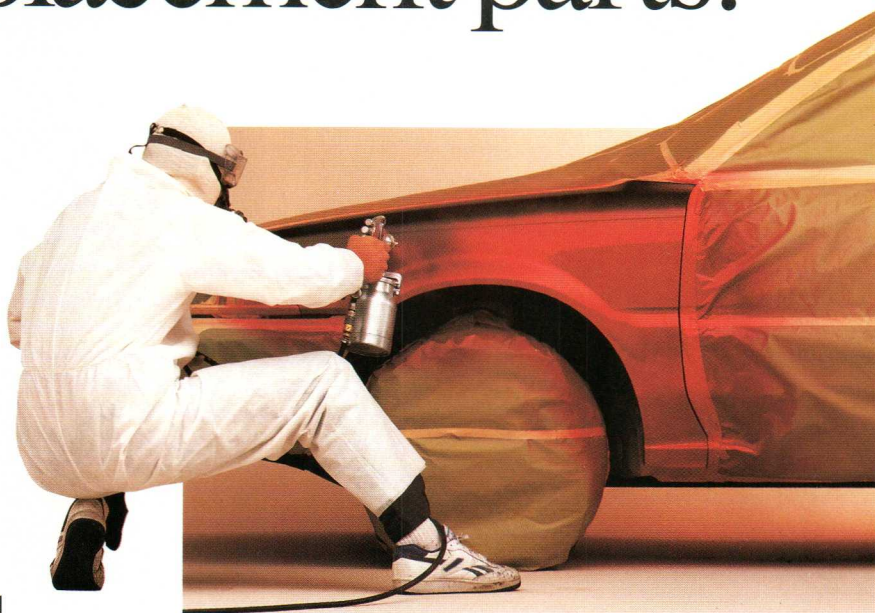
BLOCK HEATERS

Vehicle	Year	Engine	P/N	Location
Tercel SR5 (AL)	1980-88	3A	00213-00123	LH 2nd from Front
Tercel (3L)	1987-91	3E	00213-00134	Front LH
Tercel	1992	3E-E	00213-00134	Front 2nd from Right
Paseo	1992	5E-E	00213-00128	Front 2nd From Right
Corolla	1988-92	4AF	00213-00123	Front LH
Corolla GTS	1988-91	4AGE	00213-00110	Intake Side 1st from Left
Corolla FX 16	All	4AGE	00213-00110	Intake Side 1st from Left
Corolla FX	All	4A-C	00213-00123	Front 2nd from Right
Camry	1982-91	3SFE	00213-00134	Rear 2nd from Right
Camry AWD	1987-91	3SFE	00213-00134	Rear 2nd from Right
(All Wheel Drive)				
Camry V6	1987-91	2VZ/FE	00213-00110	Front Center
Camry	1992	5S-FE	00213-01123	Front 2nd from Left
Camry AWD	1992	5S-FE	00213-01123	Front 2nd from Left
Camry V6	1992	3YZ-FE	00213-01141	Front 2nd from Left
MR2	1992 (All)	3SGTE	00213-00141	Rear 2nd from Left
		5SFE		
Celica ST	1990-92	4AFE	00213-00123	Rear 2nd from Right
Celica GTS/GT	1990-92	5SFE	00213-00141	Rear 2nd from Right
Celica AWD				
Turbo		3SGTE		
Supra	1986-92	7MGE	00213-00123	Front RH
Supra Turbo	1987-92	7MGTE	00213-00123	Front LH
Cressida	1986-92	7MGE	00213-00123	Front RH
4Runner	1985-92	22RE	00213-00123	Front RH
		22RTE		
4Runner V6	1988-92	3VVZ/E	00213-00110	Front LH
Truck 2WD	1981-92	22RE	00213-00123	Front RH
		22RTE		
Truck 4WD	1981-92	22RE	00213-00123	Front RH
		22RTE		
Truck Diesel	All	2L	00213-00120	Rear LH
Truck V6	1988-92	3VZ/E	00213-00110	Front LH
Land Cruiser	1988-92	3F-E	00213-00162	2nd from Rear Lower LH
Previa	1992 (All)	2TZ-FE	00213-00134	Front of engine

Are insurance companies asking you to paint over inferior replacement parts?

When working on Toyotas, it's wise to use only Genuine Toyota Body Parts, even though insurance companies often suggest that you use imitation replacements. Many imitation replacement parts simply do not meet Toyota's high quality standards for fit and corrosion resistance.

You'll appreciate what the real thing does for you. Genuine Toyota Body Parts have proven quality and durability. They look right, fit right and maintain maximum corrosion protection—which can save you work now and complaints later. What's more, Toyota dealers offer you competi-



tive prices, prompt delivery and the technical advice you may need.

See your local STAR Dealer for more information, and *accept no substitutes*. Use only Genuine Toyota Body Parts. They'll make both you and your repairs look good.

"I love what you do for me."



TOYOTA GENUINE PARTS

STAR dealers win best supporting role.

Toyota's STAR Dealers have been recognized for their outstanding performance in serving the wholesale market. To them, you're not the competition. You're the customer. A valued customer. And they'll support you in any way they can.

STAR Dealers provide convenient daily delivery service, dedicated outside salespeople, and direct wholesale parts hotlines. They also maintain a large inventory of competitively priced Toyota Genuine Parts, which means you can get most parts immediately. If not, their direct access to the Toyota Parts Distribution Network can get you almost any part you need within 24 hours. And finally, if you have a question about a specific part or repair job, just ask. No one knows Toyotas, or the parts needed to repair them, like a Toyota STAR Dealer.

So give Toyota's STAR Dealers a chance to perform for you.



"I love what you do for me."

