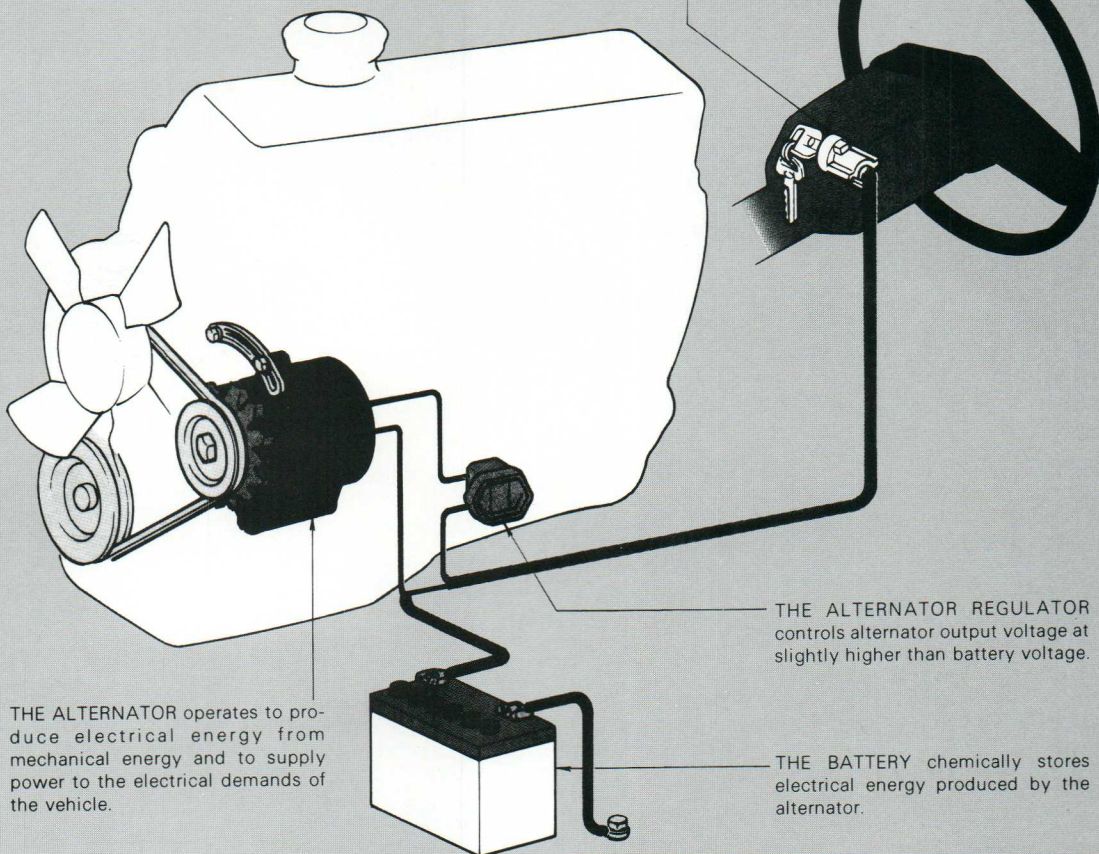


## CHARGING AND STARTING SYSTEMS

### WHAT UNITS COMPRISE THE CHARGING SYSTEM

THE IGNITION SWITCH controls the supply of power to the alternator to develop magnetic force when the engine is running.



THE ALTERNATOR operates to produce electrical energy from mechanical energy and to supply power to the electrical demands of the vehicle.

THE ALTERNATOR REGULATOR controls alternator output voltage at slightly higher than battery voltage.

THE BATTERY chemically stores electrical energy produced by the alternator.

(Actual wiring of the vehicle differs from the illustration.)

### IN THIS ISSUE:

- Battery Test Procedures
- Starting System Tests
- Full Fielding

# The only tool you need to clean EFI injectors

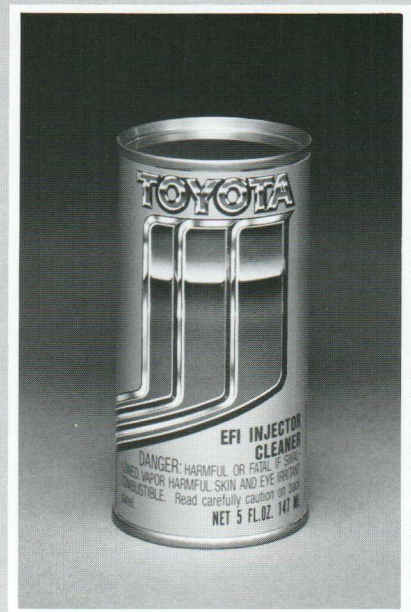


Clogged fuel injector nozzles can cause rough idling. Hesitation. Now there's an easy way to dissolve deposits that affect engine performance: Just open a can of Toyota EFI Injector Cleaner.

Pour the cleaner directly into your customer's half-full fuel tank and drive. Within an hour, the deposits will be gone. And the car will run clean. Because it is clean.

WE'VE  
GOT MORE  
FOR YOU!

**TOYOTA**  
GENUINE PARTS



Follow label directions carefully to avoid possible damage to fuel hoses.

# TOYOTA SERVICE NEWS

Fall 1988

Bulletin 29

PAGE DESCRIPTION

ARTICLE NO.

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## On the Cover



Servicing the charging and starting systems on Toyota vehicles is easier when you understand how the component parts work together. This issue describes how to test and diagnose these systems.

**WATCH FOR UPCOMING ISSUES ON VARIABLE VENTURI CARBURETORS AND FUEL SYSTEMS.**

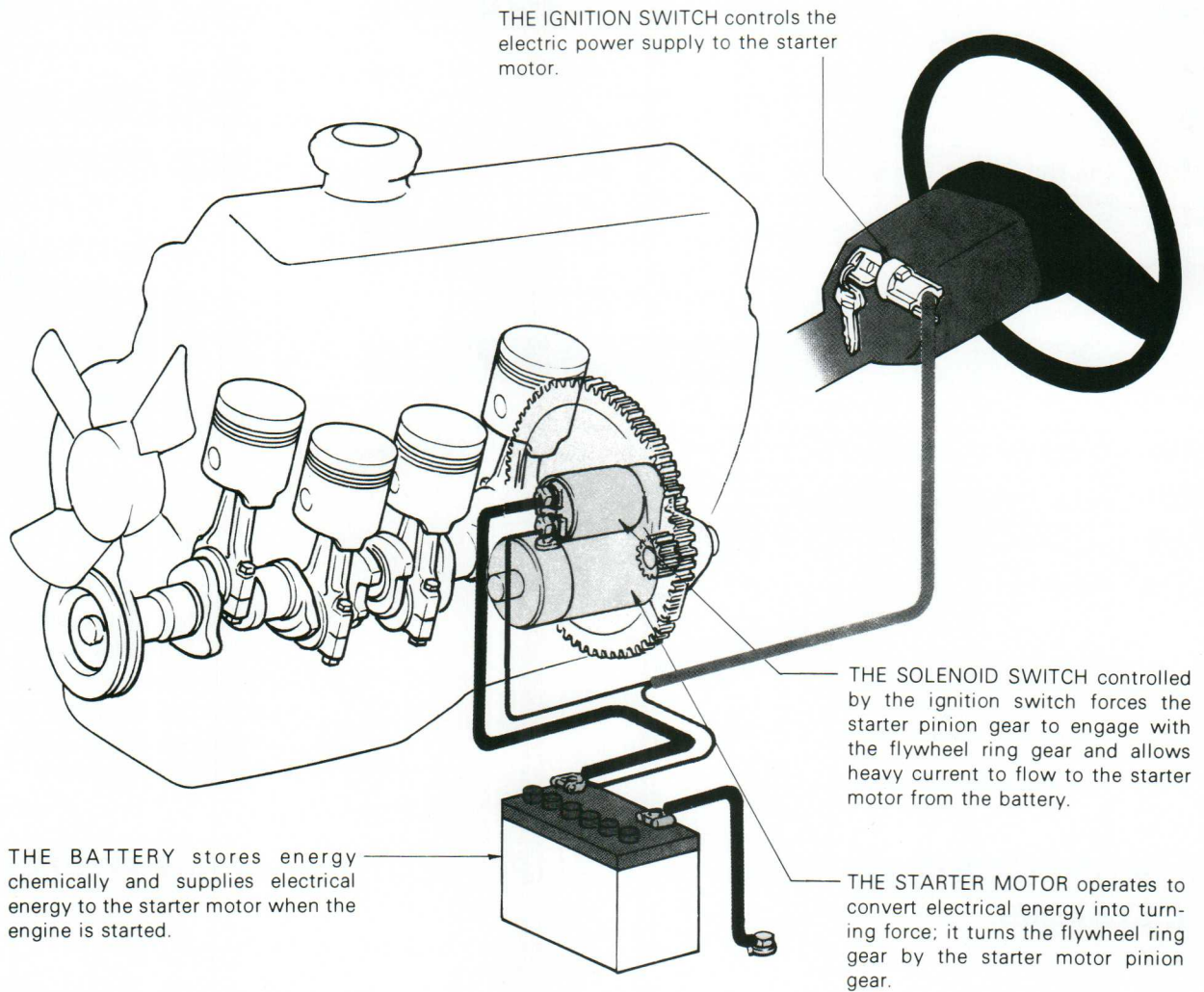
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Article No. 259

## GENERAL DESCRIPTION

### WHAT COMPRISES THE STARTING SYSTEM

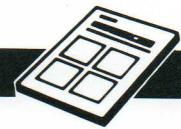


(Actual wiring of the vehicle differs from the illustration.)

### The Starter Motor

The engine is not able to start by itself. In order to draw in and compress the air/fuel mixture and initiate engine combustion, the crankshaft must be turned by another force. The starter motor operates to "turn" the

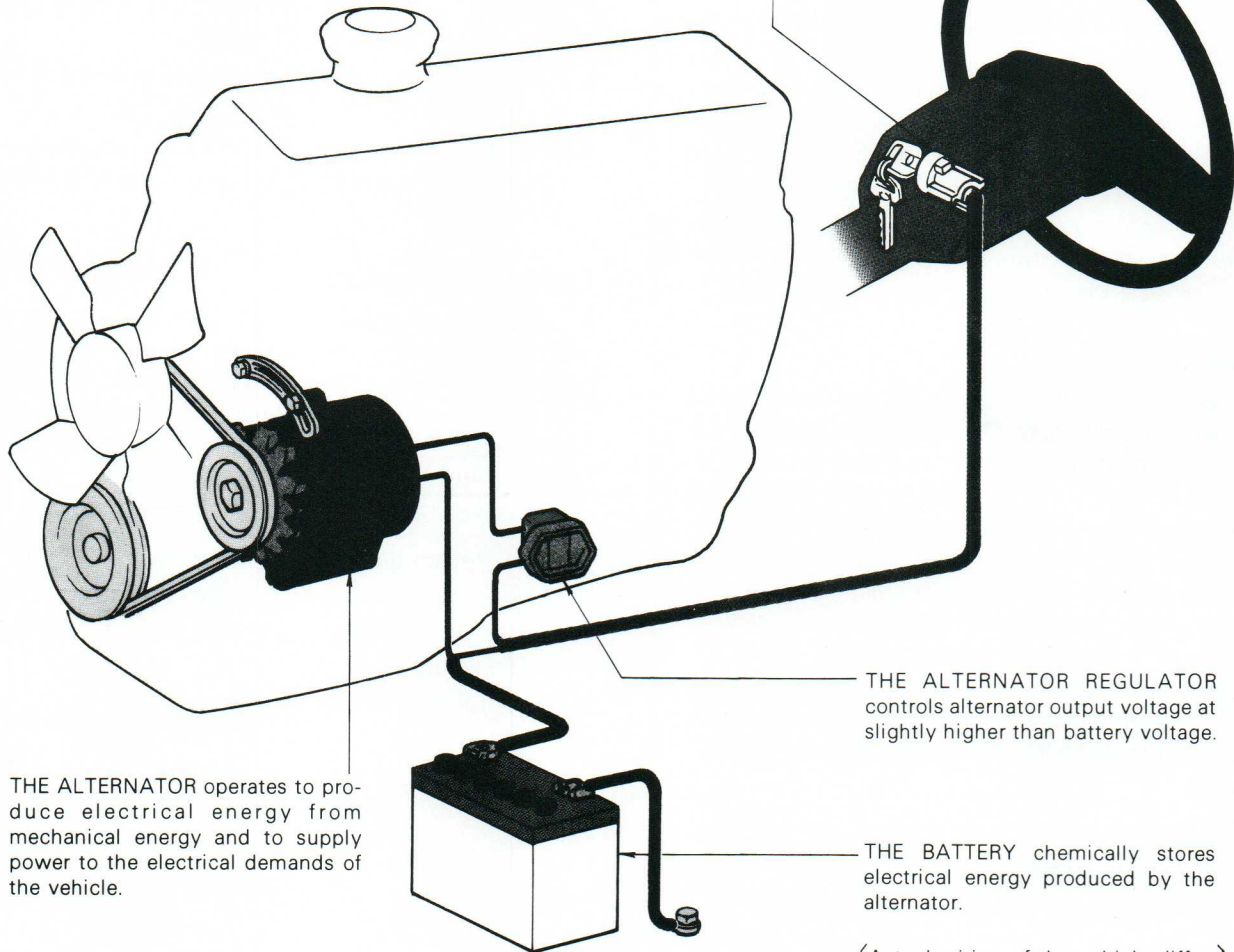
engine until it fires. Turning the ignition key switch to the START position enables electrical power to flow from the battery to the starter motor and the starter pinion gear to engage with the flywheel to rotate the crankshaft.



**GENERAL DESCRIPTION (Continued)**

**WHAT UNITS COMPRISE THE CHARGING SYSTEM**

THE IGNITION SWITCH controls the supply of power to the alternator to develop magnetic force when the engine is running.



THE ALTERNATOR operates to produce electrical energy from mechanical energy and to supply power to the electrical demands of the vehicle.

THE ALTERNATOR REGULATOR controls alternator output voltage at slightly higher than battery voltage.

THE BATTERY chemically stores electrical energy produced by the alternator.

(Actual wiring of the vehicle differs from the illustration.)

**The Alternator**

The battery is the source of electric power. However, it is not able to supply electric power continuously to meet the electrical demands of the vehicle because of the limit to its electrical storage capacity. The alternator supplies

electrical power to components consuming electricity and, at the same time, it charges the battery, which can then supply electrical power when needed.



## GENERAL DESCRIPTION (Continued)

### The Diagnostic Process

Developing a diagnostic process requires a troubleshooting procedure following logical steps. To assist in the process, the word VECTOR can be used as a catch word. Each letter provides a clue to the next step in a logical process. The letters in VECTOR indicate:

- V — Verify or validate complaint.
- E — Examine all available information.
- C — Check all system components for obvious causes of the problem.
- T — Test the affected system for cause of the problem. Think about the results of the verifying, examining, checking and testing steps. Analyze what types of problems could be causing the symptoms found.
- O — Organize your thinking, your tools and your repair strategy.
- R — Repair the affected part or system.

### Safety Measures

When testing or servicing a battery, safety should be your first consideration. The electrolyte contains sulfuric acid. It can eat your clothes. It can burn your skin. It can blind you if it gets in your eyes. It can also ruin a car's finish or upholstery. If electrolyte is splashed on your skin or in your eyes, wash it away immediately with large amounts of water. If electrolyte is spilled on the car, wash it away with a solution of baking soda and water.

When a battery is being charged, either by the charging system or by a separate charger, gassing will occur. Hydrogen gas is explosive. Any flame or spark can ignite it. If the flame travels into the cells, the battery may explode.

Here are some safety precautions:

- Wear gloves and safety glasses.
- Remove rings, watches and other jewelry.

- Never use spark-producing tools near a battery.
- Never lay tools on the battery.
- When removing cables, always remove the ground cable first.
- When connecting cables, always connect the ground cable last.
- Do not use the battery ground terminal when checking for ignition spark.
- Be careful not to get electrolyte in your eyes or on your skin, the car finish or your clothing.
- If you have to mix battery electrolyte, pour the acid into the water → not the water into the acid.
- Always follow the recommended procedures for battery testing and charging, and for jump starting an engine.

### Care of Electronics

Disconnecting the battery will erase the memory on electronic devices. Write down trouble codes and programmed settings **before** disconnecting the battery. Two 6V dry-cell (lantern) batteries, connected in a series, can be used to maintain electronic memories while a battery is disconnected. Hook the batteries to the cable clamps before disconnecting the vehicle's battery.

Also, to prevent damage to electronic components:

- Never disconnect the battery with the ignition ON.
- Never use an electric welder without the battery cables disconnected.
- Never reverse battery polarity.



Article No. 260

# BATTERY TEST PROCEDURES

To test the battery:

**A. Visual Inspection**

Check the battery thoroughly. Look for damage or signs of leakage.

**B. Specific Gravity Test or Hydrometer Test**

Measure each cell's specific gravity. A variation of .050 point or more is unacceptable, and means a bad cell. Replace the battery.

**C. Open-Circuit Voltage Test**

Use an accurate digital voltmeter to check the battery's open-circuit voltage:

1. If the battery has just been charged, turn on the headlamps for one minute to remove any surface charge.
2. Turn headlamps off and connect the voltmeter across the battery terminals.
3. Read the voltmeter. A fully charged battery will have an open-circuit voltage of at least 12.6 volts. A dead battery will have an open-circuit voltage of less than 12.0 volts.

The following steps outline a typical procedure for load testing a battery:

1. Test the specific gravity of the electrolyte. The battery must be at least half charged. If the specific gravity is less than 1.190, charge the battery.
2. Disconnect the battery cables, beginning with the ground cable.
3. Prepare the tester by:
  - Rotating the Load Increase control to OFF.
  - Checking each meter's mechanical zero. Adjust if necessary.
  - Connecting the tester Load Leads to the battery terminals; RED to positive, BLACK to negative.
  - Setting the Volt Selector to INT 18V. Tester voltmeter should indicate battery open-circuit voltage.

**Note:** Battery open circuit voltage should be at least 12.2 volts (50 percent charged). If not, the battery requires charging.

  - Adjusting the ammeter to read ZERO using the electrical Zero Adjust control.
4. Connect the clamp-on Amps Pickup around either tester load cable (disregard polarity).
5. Set the Test Selector switch to No. 1 STARTING.
6. Load the battery by turning the Load Increase control until the ammeter reads **three times** the amp-hour (AH) rating or **one-half** the cold-cranking ampere (CCA) rating.
7. Maintain the load for **no more** than 15 seconds, and note the voltmeter reading.
8. Immediately turn the Load Increase control OFF.
9. If the voltmeter reading is 10.0 volts or more, the battery is good. If the reading is 9.6 to 9.9 volts, the battery is serviceable but requires further testing. Perform the 3-minute charge test. If the reading is below 9.6 volts, the battery is either discharged or defective. Perform the 3-minute charge test.

STATE OF CHARGE	SPECIFIC GRAVITY*	OPEN-CIRCUIT VOLTAGE
100%	1.265	12.6
75%	1.225	12.4
50%	1.190	12.2
25%	1.155	12.0
DEAD	1.120	11.9

\*Difference between cells should not vary more than points (0.050). If it does, replace the battery.

**D. Heavy-Load Test**

While a hydrometer test determines the battery's state of charge, it does not measure the battery's ability to deliver adequate cranking power. A capacity, or heavy-load, test does. A Sun VAT-40 type tester is used. If another type of tester is used, follow the manufacturer's recommended procedure.



**BATTERY TEST PROCEDURES (Continued)**

**NOTE:** Test results will vary with temperature. Low temperatures will reduce the reading. The battery should be at operating temperature.

Any battery which has had water added must be charged before testing. Do not fast charge discharged batteries.

Cold batteries will require a warm-up to be tested. This is especially true for "maintenance free" batteries. Since the minimum voltage on cold batteries is less than 9.6 (see chart), the battery temperature must be raised to a point above 70° F.

<b>BATTERY RATING SYSTEM COMPARISON CHART</b>			
<b>Cold Crank Rating</b>	<b>Watts</b>	<b>Approximate Amp/Hour</b>	<b>Load For 15 Sec. Test</b>
200	1800	35-40	100A
250	2100	41-48	125A
300	2500	49-62	150A
350	2900	63-79	175A
400	3250	71-76	200A
450	3600	77-86	225A
500	3900	87-92	250A
550	4200	93-110	275A

<b>LOAD TESTING MAINTENANCE-FREE BATTERIES TEMPERATURE vs. MINIMUM VOLTAGE</b>	
<b>Temperature</b>	<b>Voltage</b>
70°F and above	9.6
60°F	9.5
50°F	9.4
40°F	9.3
30°F	9.1
20°F	8.9
10°F	8.7
0°F	8.5

Ambient temperature is the temperature of the battery itself. Cold batteries will usually warm to room temperature in the shop in about two to five hours. Use a thermometer to determine the actual temperature of battery before testing. If the minimum voltage under load for 15 seconds is less than specified, the battery should be slow charged and re-tested. Never charge a frozen battery.





Article No. 261

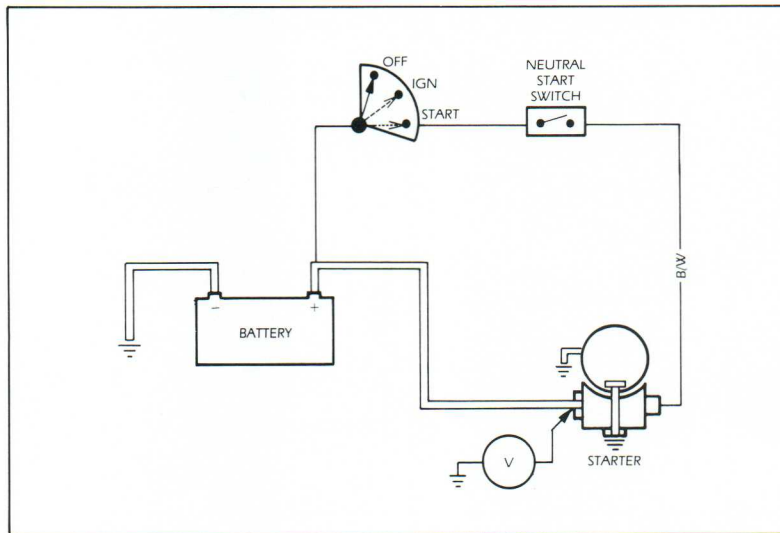
# STARTING SYSTEM TESTS

## Starter Test Procedures

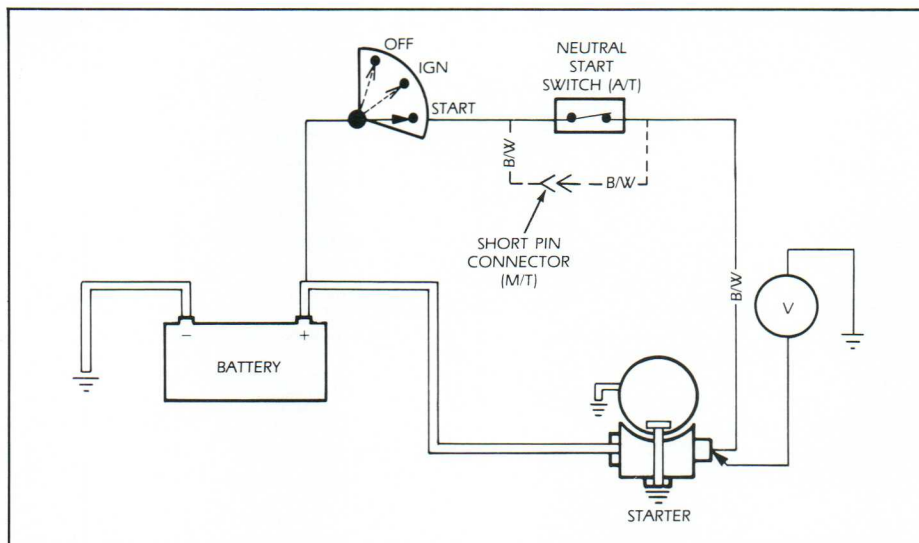
### On Vehicle

To test:

1. Inspect and test battery.
2. Check for battery voltage at battery terminal of solenoid.



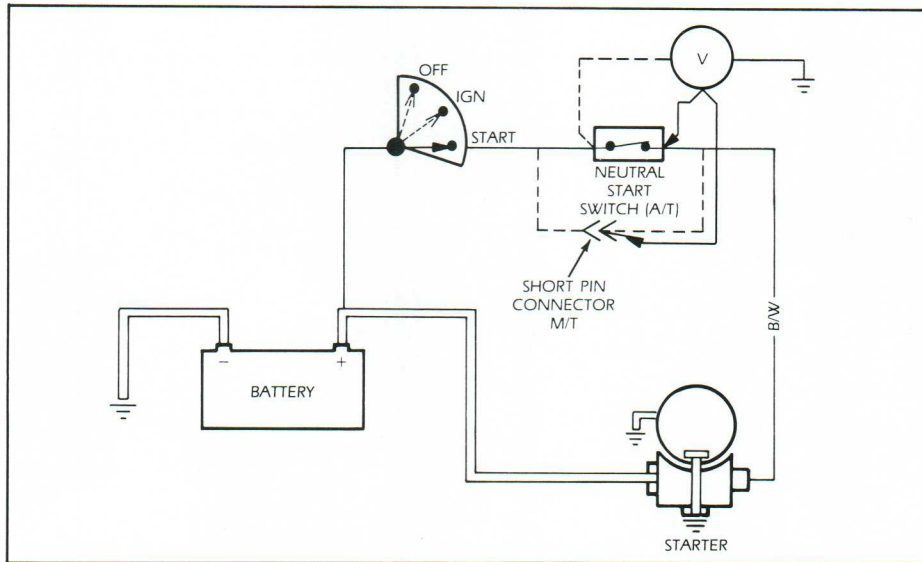
3. Check for voltage at ignition switch terminal of solenoid. Make sure vehicles with automatic transmission are in "P" or "N". Turn key to START. If **voltage** is present at solenoid terminal, but the starter does not operate, remove and perform starter off-vehicle tests.



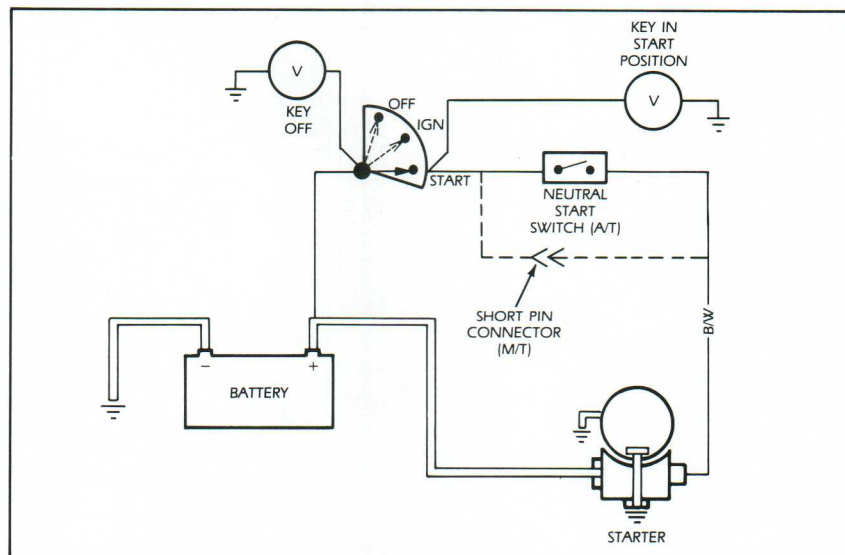


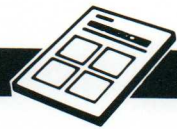
**STARTING SYSTEM TESTS (Continued)**

4. If there is no voltage at the solenoid terminal, check neutral start switch (automatic transmission vehicles only) or short pin connector (manual transmission vehicles only). With key in START, there should be battery voltage at both pins of neutral start switch, or battery voltage at black/white wire at the short pin connector.



5. If there is no voltage at these points, check the ignition switch circuit. With key OFF, battery voltage should be present at input wire to ignition switch. With key in START, voltage should be present at start position output wire.





## STARTING SYSTEM TESTS (Continued)

### Voltage Drop Testing

#### “Hot” Side

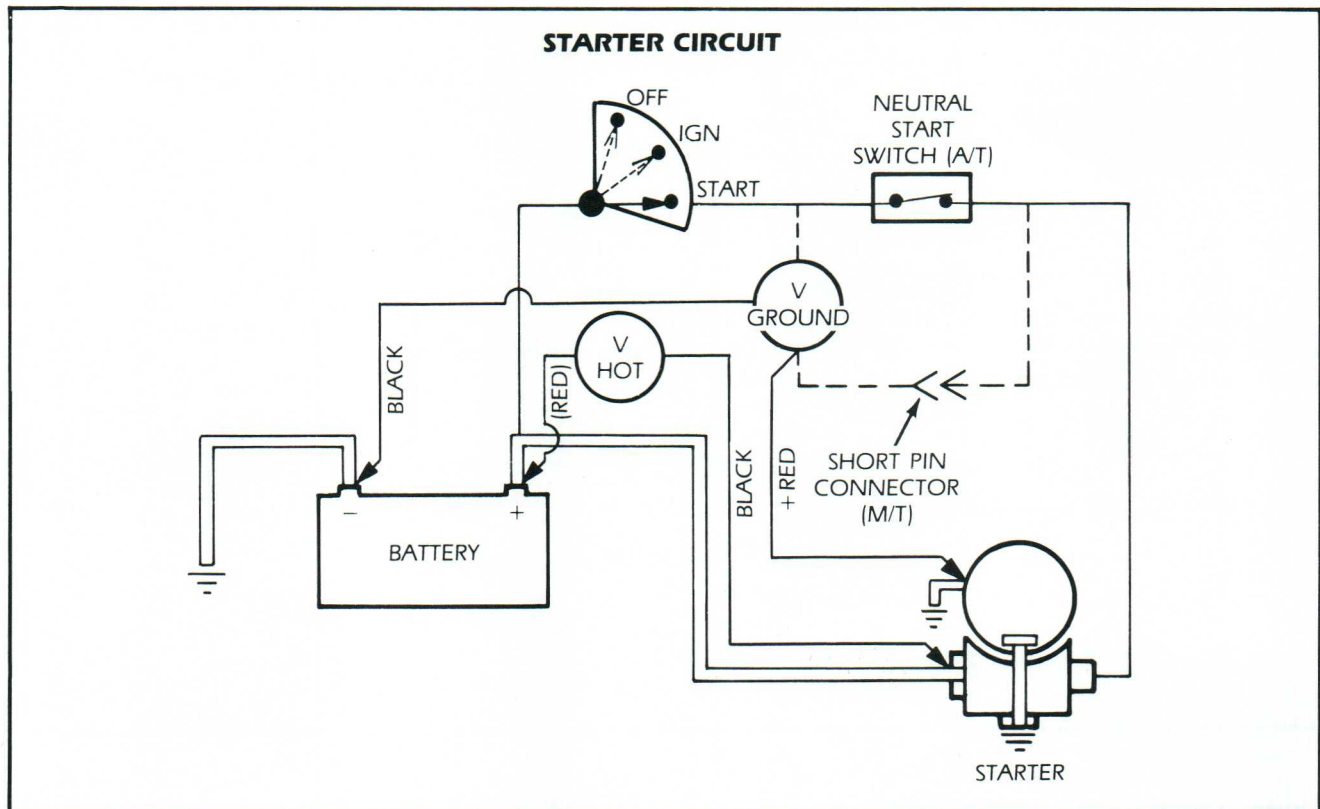
#### On Vehicle

To test for voltage drop:

1. Set the voltmeter on lowest scale (1-3 volts).
2. Attach + (positive) terminal of voltmeter (red) to + (positive) post of battery (most positive place there is).
3. Attach - (negative) terminal of voltmeter (black) to + (positive) battery terminal on starter motor (it is just a little bit less positive).
4. Crank engine.
5. Voltmeter should show little or no reading while starter is cranking (up to 0.1 volts per connection is allowable).
6. Any reading of more than 0.1 volts per connection indicates excessive resistance in the wire or connections.

#### “Ground” Side

1. Set voltmeter on its lowest scale (1-3 volts).
2. Attach + (positive) terminal of voltmeter (red) to case of starter.
3. Attach - (negative) terminal of voltmeter (black) to - (negative) post of battery.
4. Crank engine.
5. Voltmeter should show little or no reading while starter is cranking. A reading in excess of 0.1 volts indicates a poor connection in the ground circuit.





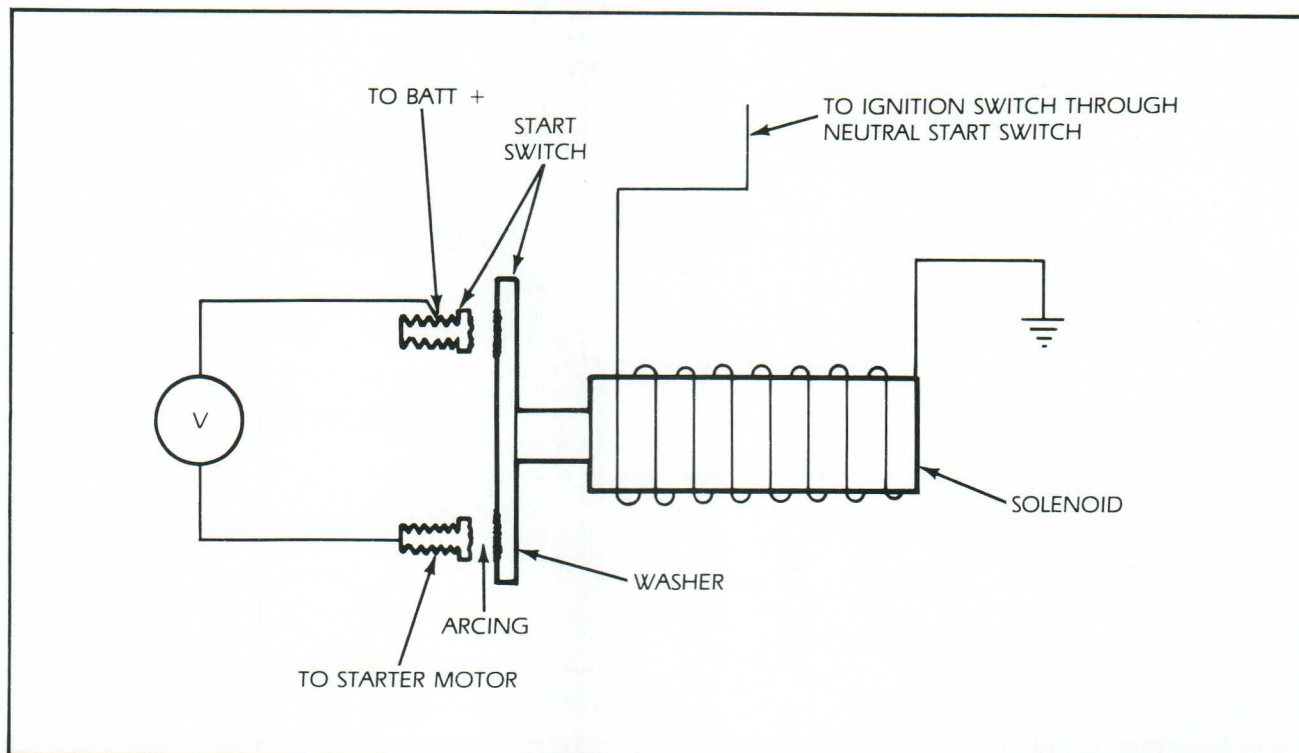
## STARTING SYSTEM TESTS (Continued)

### Solenoid Test on Vehicle

The starter solenoid is a magnetic switch. When energized by voltage from the ignition switch in the START position, the switch closes to apply battery voltage to the starter motor. Arcing at the solenoid switch contacts can produce resistance in the form of burned areas. If this occurs, the solenoid will make one "click" when the ignition switch is turned to START, and there will be no starter sound.

To test:

1. Set the voltmeter at 12 volts.
2. Attach + (positive) terminal of voltmeter to battery terminal of solenoid.
3. Attach - (negative) terminal of voltmeter to starter motor terminal of solenoid.
4. Voltmeter will read battery voltage (12 volts or more).
5. Turn key to START.
6. Voltmeter will read the drop across solenoid contact washer (ideally, the reading will be zero).
7. Any reading above 0.2 to 0.3 volts means excessive resistance between the solenoid washer and the contacts.
8. Often a sharp tap on the solenoid with a tool, while someone holds the key in START, will start the engine cranking — a sign of excessive solenoid switch contact resistance.



### Starter Problems Caused by Use of Non-Toyota Ignition Keys

It has been found that duplicate keys that are not made on approved Toyota key blanks can cause the ignition key lock cylinder to bind. This may cause the starter to remain engaged and, consequently, to be destroyed.

**IMPORTANT:** At all times, newly cut key duplicates should be checked for proper operation of the ignition switch. Aluminum keys are too soft and can leave chips of metal that cause binding of the ignition switch.



## BELT CHECK

### V-Belt

To check:

1. Is the belt in the proper pulley?
2. Has the belt slipped out of the pulley?
3. Is the belt cracked, glazed, loose or too tight?

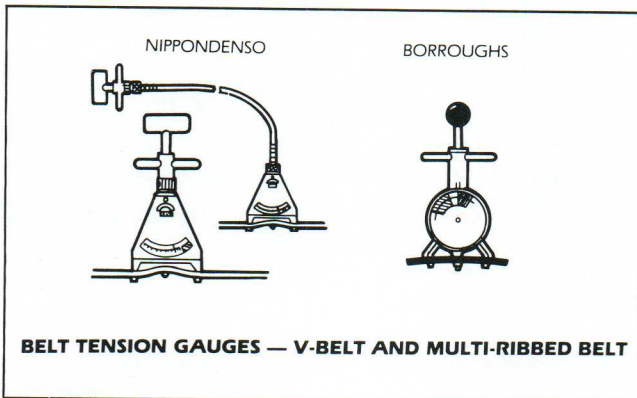
Check the belt tension:

Drive belt tension: Used belt  $90 \pm 20$  lb

New belt  $100 \pm 25$  lb

If necessary, adjust the drive belt tension.

NOTE: "New belt" refers to a brand new belt that has never been used before. "Used belt" refers to a belt that has been used on a running engine for five minutes or more.



### Multi-Ribbed Belt

To check:

1. Is the belt in the correct position?
2. Is the belt properly set in ribbed grooves?
3. Check the belt tension.

Drive belt tension:

New belt with air conditioner  $175 \pm 5$  lb

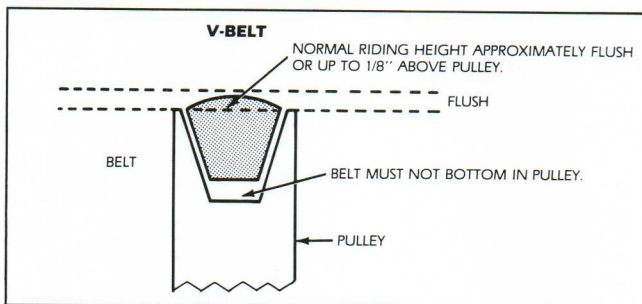
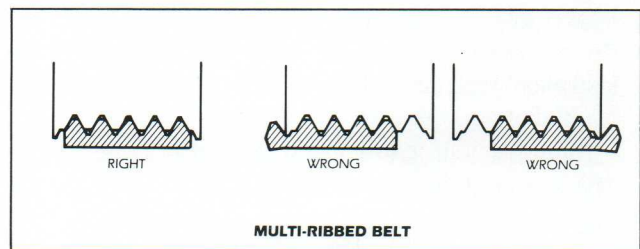
New belt without air conditioner  $125 \pm 25$  lb

Used belt with air conditioner  $130 \pm 10$  lb

Used belt without air conditioner  $95 \pm 20$  lb

If necessary, adjust the drive belt tension.

NOTE: "New belt" refers to a brand new belt that has never been used before. "Used belt" refers to a belt that has been used on a running engine for five minutes or more.



4. Is the belt riding too deep in the pulley?
5. Is the belt riding too high on the pulley?



Article No. 263

## FULL FIELDING

“Full fielding” involves removing all regulation by the regulator. It is sometimes called bypassing.

When performing this procedure, observe the following precautions:

- Make sure battery cables are connected to correct terminals.
- Always disconnect battery cables (beginning with the **negative**) when the battery is given a quick charge.
- Never operate an alternator on an open circuit (a circuit in which the battery cables are disconnected.)
- Always follow specs for engine speed when grounding terminal “F” to bypass the regulator. High speeds may cause excess output that could damage components. (Do not allow battery voltage to exceed 16 volts.)
- Never ground alternator output terminal “B”. It has battery voltage present at all times, even with the engine off.
- Do not perform continuity tests with a high-voltage insulation resistance tester. This type of ohmmeter could damage the alternator diodes.

There are four fundamental regulating forces:

1. The speed of the engine (alternator)
2. The counter-electromotive force of the battery
3. The impedance of the alternator stator size (design)
4. Field strength control (NOTE: Field strength control is a function of the voltage regulator, either external or internal. The regulator is a rotor or field current controller, and is in series with the rotor or alternator field. It normally carries from 0-5 amps. The greater the field strength, the greater the alternator output. All external vibrating or electro mechanical regulators used are on the “hot” side of the circuit.)

In this type of regulation, the field or rotor is constantly grounded and the regulator contact points supply a rapid on/off “hot” feed to the field or rotor.

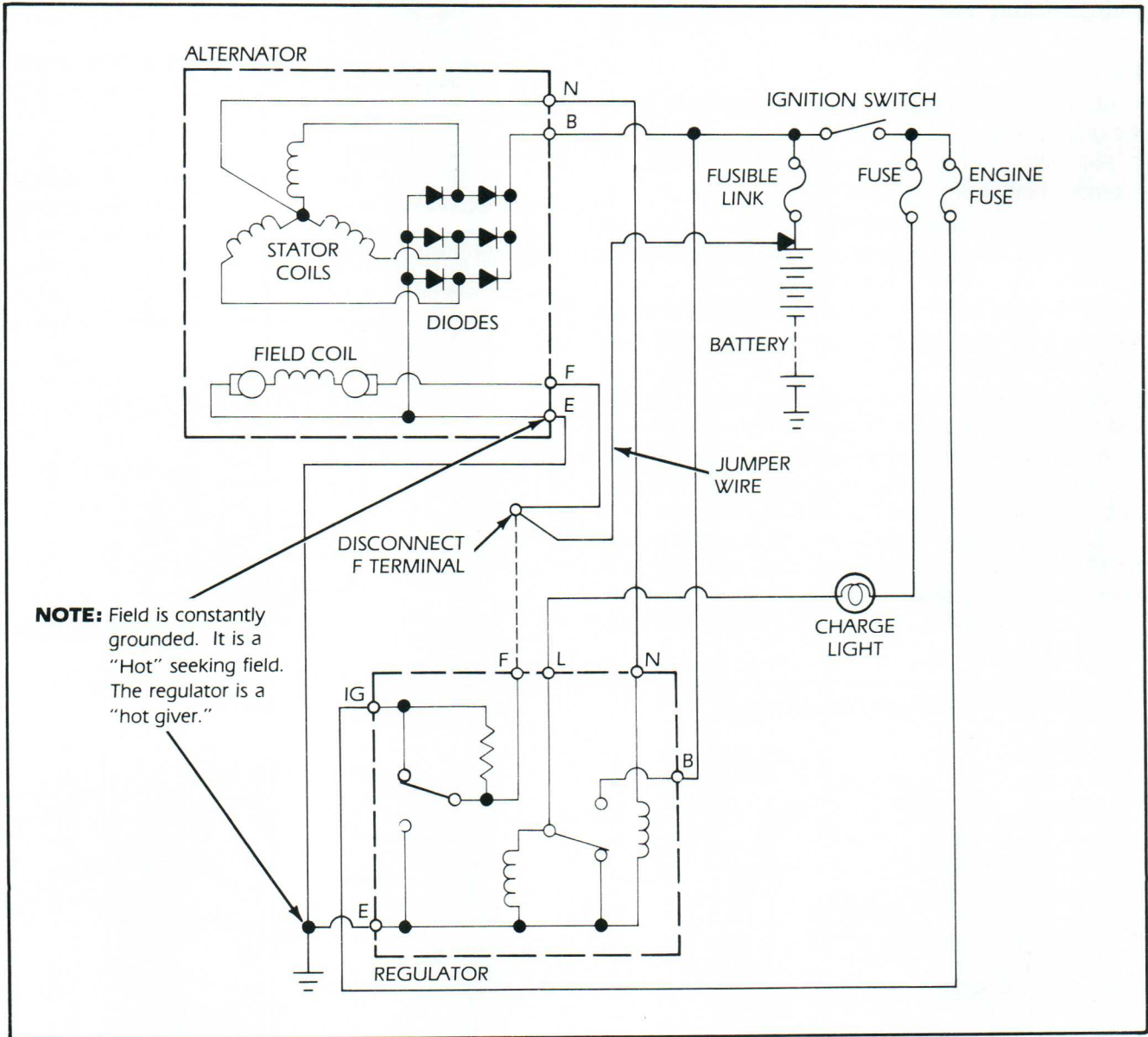
### Full Fielding an Alternator with External Turrill-type Electro Mechanical Voltage Regulator

With Engine Off:

1. Disconnect F terminal from regulator.
2. Connect jumper wire from a battery positive to the F wire that was disconnected from the regulator (not to the F terminal) on the regulator. (You disconnected it to prevent a battery feedback from burning contacts within the regulator case.) The jumper is used to go directly from battery hot into the already grounded field.
3. When the jumper is attached, a small blue spark or “whisper spark” should be observed and you should be able to feel a magnet at the back of the alternator with a pocket knife or screwdriver.
4. Start the engine and observe output. It will be at maximum and regulated by rpm and battery.
5. Do **not** over-rev the engine, as this unregulated output can damage on-board components, as well as the alternator. (Do not allow battery voltage to exceed 16 volts.)



**FULL FIELDING (Continued)**





**FULL FIELDING (Continued)**

**Full Fielding Test Procedure for Toyota 9-Diode Charging System**

Procedures:

1. All internal or integrated circuit (IC) regulators are on the ground side of the circuit.
2. Full fielding an IC, or a constantly hot circuit, is a process of grounding the field.
3. In this type of regulation, the field or rotor is constantly "hot" (always has power to it). The regulator is a method of turning the ground on and off electronically.
4. The 9-diode alternator has a grounding hole on the back. (A screwdriver is inserted into the hole so that it also touches the alternator case.)
5. Inserting a screwdriver or tester probe through the hole and letting the tool touch the case at the same time will allow the alternator to give full output (unregulated).
6. The regulator is a variable "grounder," so using the test probe or screwdriver does the job of the regulator:

A. The alternator grounds the field internally through the IC regulator circuit, and there is no "N" terminal as there is on an 8-diode alternator.

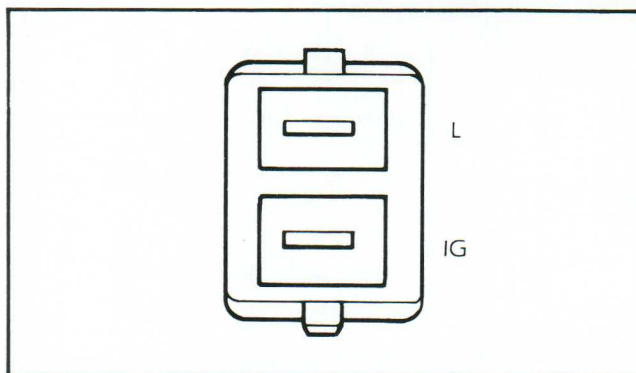
B. Input 12 volts to both the "L" and IG terminals,

remove "L" after output is achieved, and the system should continue charging.

NOTE: The charge light relay in this circuit controls only the charge light itself. It cannot cause a no charge condition.

System Identification:

All Toyota 9-diode systems have an IC regulator mounted in or on the alternator. The rear of the alternator case has a two-terminal chassis socket shaped like the illustration below.



**1982-83 ALTERNATOR**

**1983- ALTERNATOR**

**FULL FIELDING PROCESS:**

1. Hook up voltmeter across battery.
2. Ground "F" through hole on back of alternator.

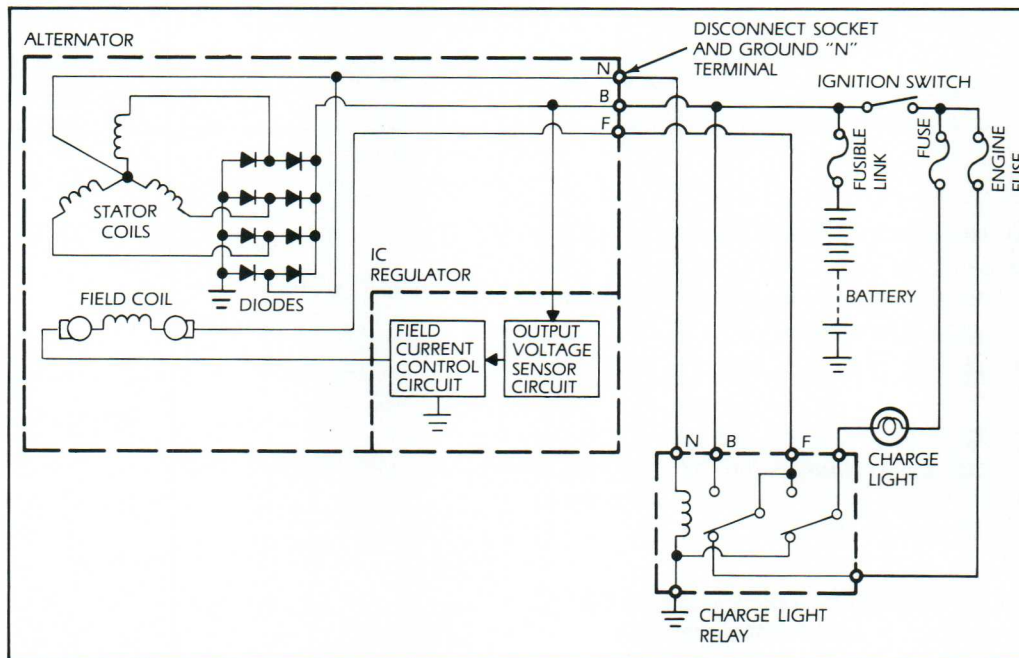
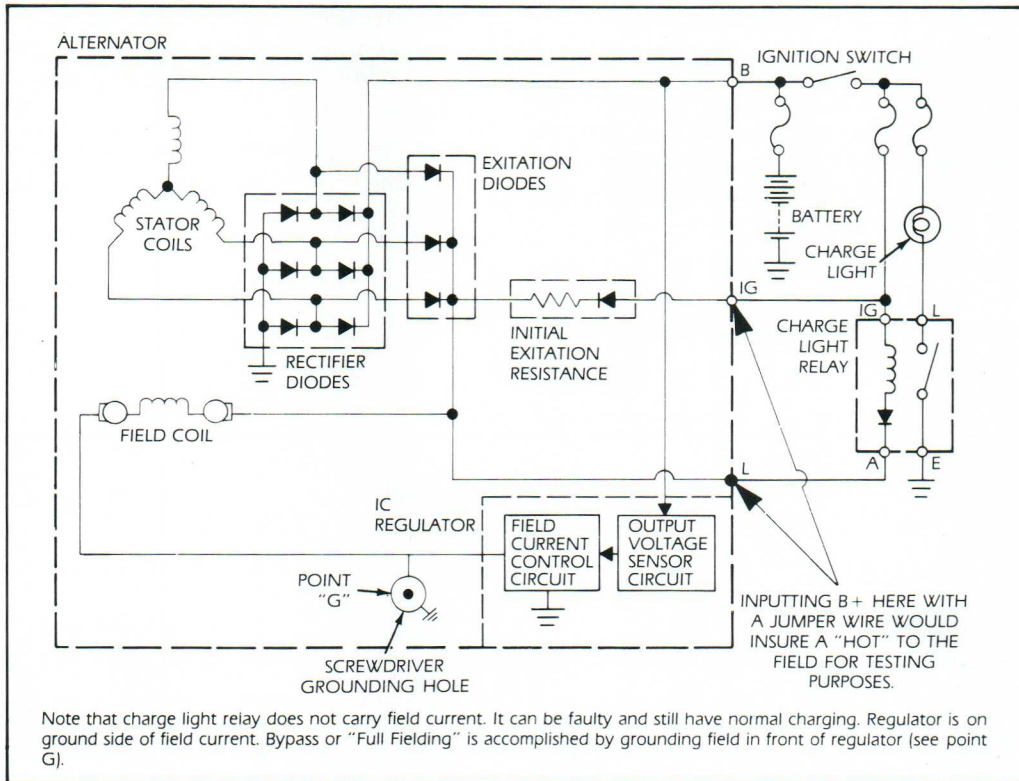
- If voltage comes up and system begins to charge, REGULATOR is bad.
- If voltage still stays down and system still does not charge, alternator is bad.





## FULL FIELDING (Continued)

### 9-Diode Charging System





## FULL FIELDING (Continued)

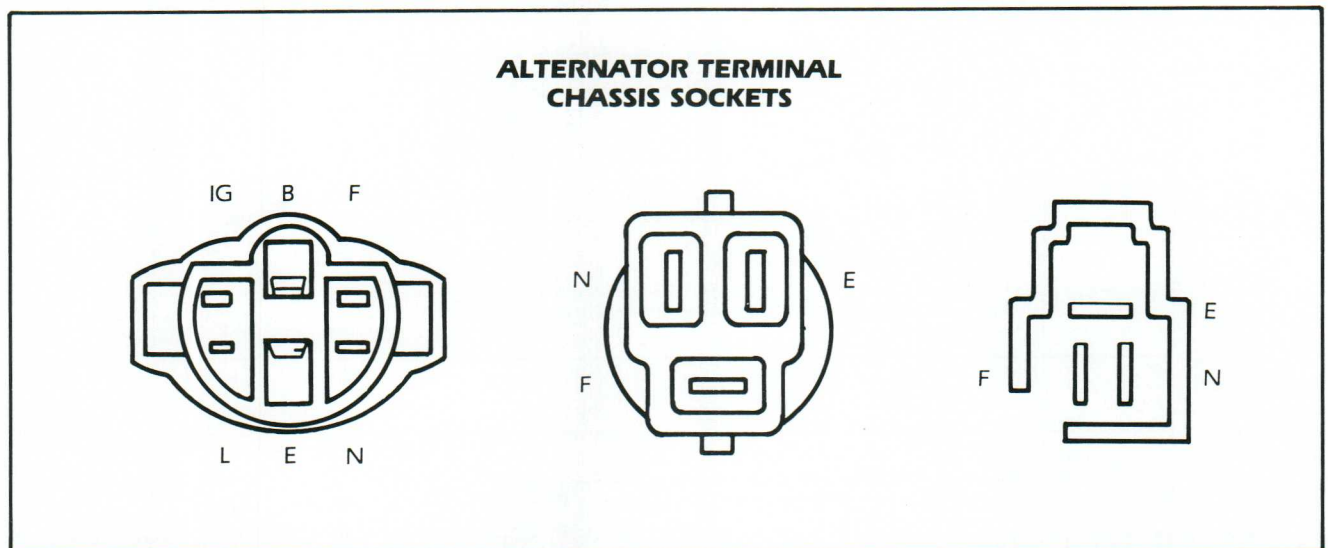
### Full Fielding Test Procedure for Toyota 8-Diode Charging Systems

Procedures:

1. Disconnect alternator wiring socket from alternator.
2. Ground the "N" terminal at the alternator. Note: You must use a resistor in series between the "N" terminal and ground of 80 ohms. This simulates the resistance of the charge light relay coil, and will prevent damage to the alternator.
3. Input 12 volts to both the "B" and "F" terminals. REMEMBER: A charge light relay problem can cause an inoperative charge system, as the field current must pass through the relay.

System Identification:

- The 8-diode systems have an IC regulator mounted on the alternator, with the exception of the pickup truck, which has the regulator mounted on the driver's fender liner. The rear of the alternator has a three-terminal chassis socket.
- For truck regulator and alternator sockets, remember that truck uses an external IC regulator on the left fender liner.



#### NOTES:

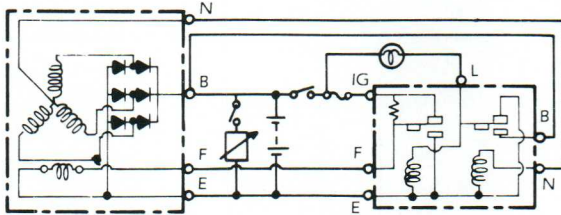
- The 8-diode alternator does not provide a grounding hole at the back, so "full" fielding is not possible externally. However, this circuit carries field current through the charge light relay.
- A faulty charge light relay can cause a no charge condition.
- The charge light relay can be bypassed and an external B+ can be jumped to the "F" terminal to insure a constant "hot" to the field. This will serve to diagnose a faulty charge light relay, but output will still be regulated.
- If there is still no output after supplying B+ to the "F" terminal, the problem is inside of the alternator.



## FULL FIELDING (Continued)

You can identify which charging system you are working on by identifying the plug on the wiring harness of the alternator.

A. VIBRATING TWO UNIT REGULATOR/ALTERNATOR

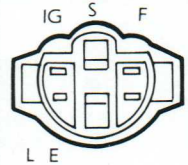
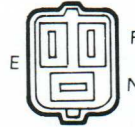


CONNECTOR TYPE

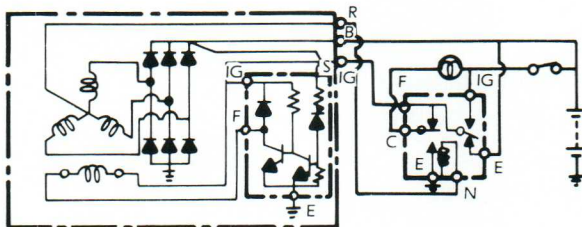
ALTERNATOR PLUG

REGULATOR PLUG

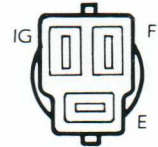
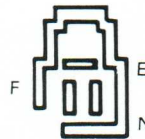
A



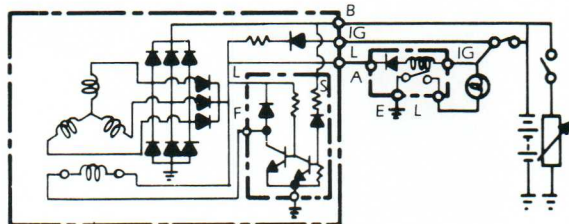
B. INTERNAL (I.C.) REGULATOR/ALTERNATOR W/REMOTE LAMP RELAY



B



C. INTERNAL (I.C.) REGULATOR/ALTERNATOR W/DIODE LAMP RELAY

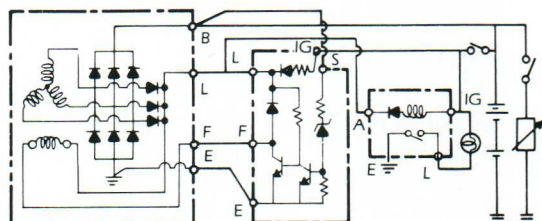


C

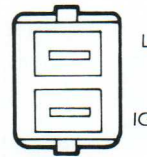


IC REGULATOR

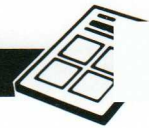
D. EXTERNAL (I.C.) REGULATOR/ALTERNATOR W/REMOTE LAMP RELAY



D



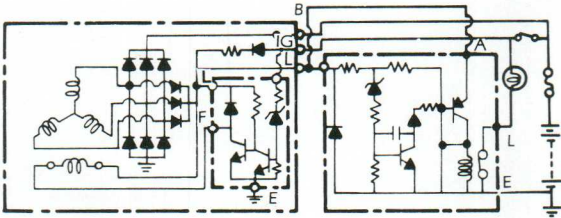
IC REGULATOR



**FULL FIELDING (Continued)**

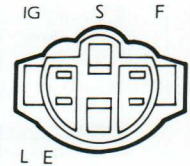
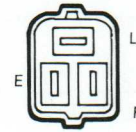
You can identify which charging system you are working on by identifying the plug on the wiring harness of the alternator.

**E. INTERNAL (I.C.) REGULATOR/ALTERNATOR W/REMOTE LAMP RELAY**

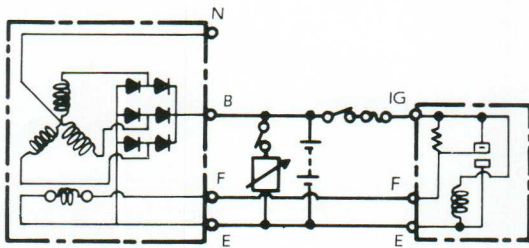


CONNECTOR TYPE	ALTERNATOR PLUG	REGULATOR PLUG
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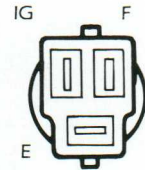
**E**



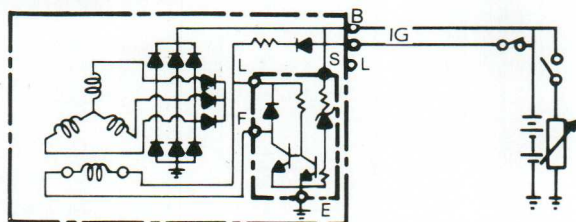
**F. VIBRATING SINGLE UNIT REGULATOR/ALTERNATOR**



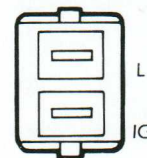
**F**



**G. INTERNAL (I.C.) REGULATOR/ALTERNATOR W/METER WITHOUT RELAY**



**G**



IC REGULATOR



Article No. 264

# CHARGING OUTPUT TEST

The regulator must be "fooled" into believing battery voltage is low. To accomplish this, an "intentional drain" must be imposed on the battery.

1. A VAT with a carbon pile load resistor is hooked across the battery posts.

A. An ammeter is built into the VAT. It is usually an inductive clamp or type that clamps around the battery cable. Alternator output will read on the ammeter. Be cautious that the inductive clamp does not read the current going to the carbon pile.

B. A voltmeter is built into the VAT that will record battery voltage as it is being "intentionally drained."

2. Start engine and hold at 2000 rpm.

3. Turn carbon pile to decrease its resistance (increase the current flow), and record the highest amperage reading attained. The alternator should generate within 10 percent of its rated output.

## Caution

Do not assume alternator output by disconnecting the battery cable from the battery with the engine running. This may damage the alternator or other electronic

semi-conductor devices.

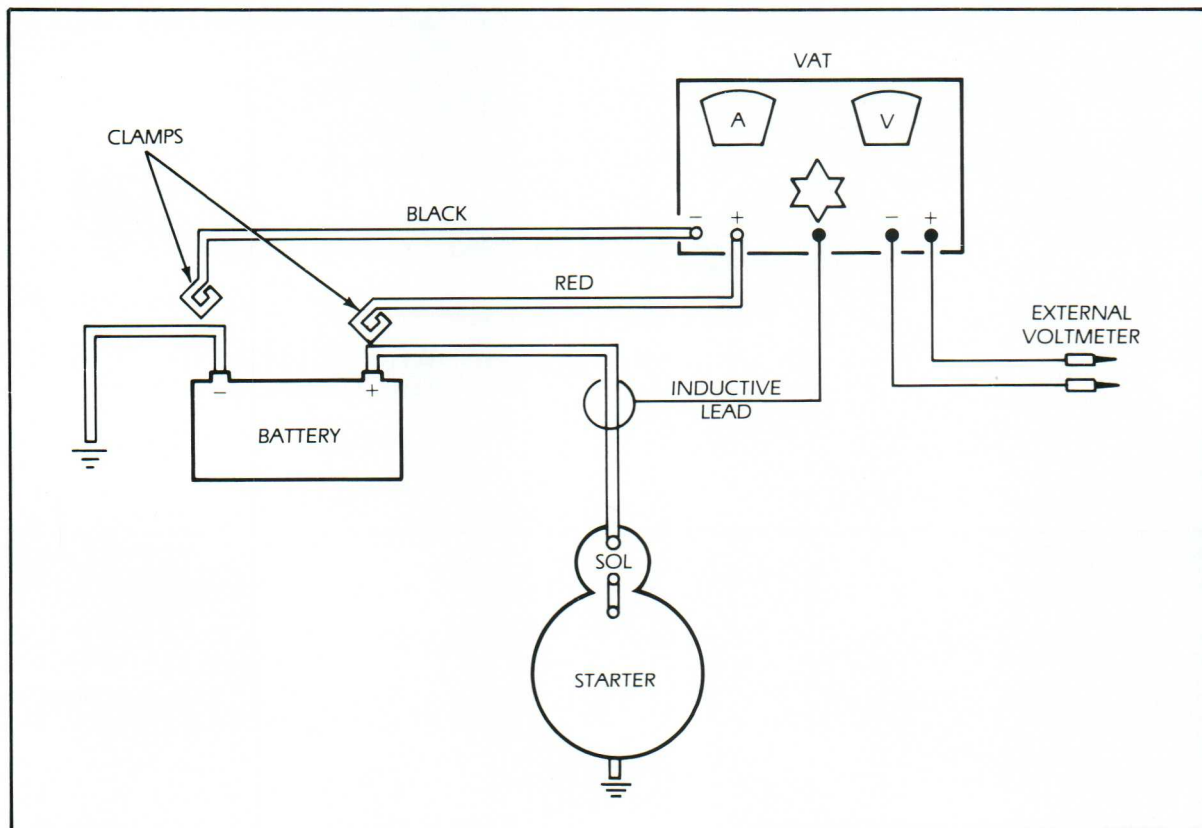
This is not a valid test for alternator output and should **not** be done.

Pulling positive battery cable with engine running will produce:

- Approximately 250v transient spike with Tirrill Regulator.
- Approximately 600v transient spike with 8-diode integrated circuit (IC) regulator.
- Approximately 800-900v transient spike with 9-diode integrated circuit (IC) regulator.

Voltage spikes can result in damage to any of the following:

- EFI ECU
- TCCS ECU
- ECT ECU
- Cruise Control ECU
- Trip Computer
- Digital Instrument Cluster
- Radio





Article No. 265

## BATTERY "PHANTOM" DRAIN TEST

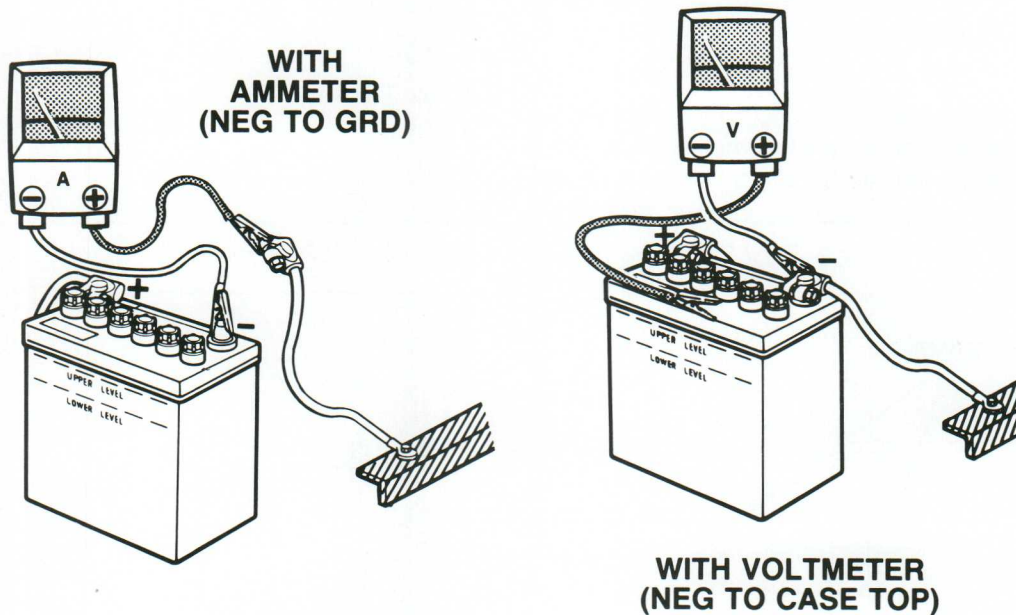
Use an ammeter to check for current leakage or battery drain to vehicle loads.

- Connect the ammeter in series between the battery negative terminal and ground cable connector.
- Toyota systems typically show less than 0.1 amp of current to maintain electronic memories. A reading of more than 0.5 amps is unacceptable.
- If the ammeter reads more than 0.5 amps, locate and correct the cause of excessive battery drain.

To check for battery drain across the top of the battery, use a voltmeter.

- Select the low voltage scale on the meter, connect the negative (black) test lead to the battery's negative post, and connect the positive (red) test lead to the top of the battery case.
- If the meter reading is more than 0.5 volt, clean the case top using a solution of baking soda and water.

### CHECK FOR BATTERY DRAIN



# “The Toyota STAR Cabinet helped me solve my wait problem.”

“Wait loss. That’s what happens when your customer goes somewhere else because *you* don’t have the part you need to fix his car. It happened to me, and believe me, it’s painful.

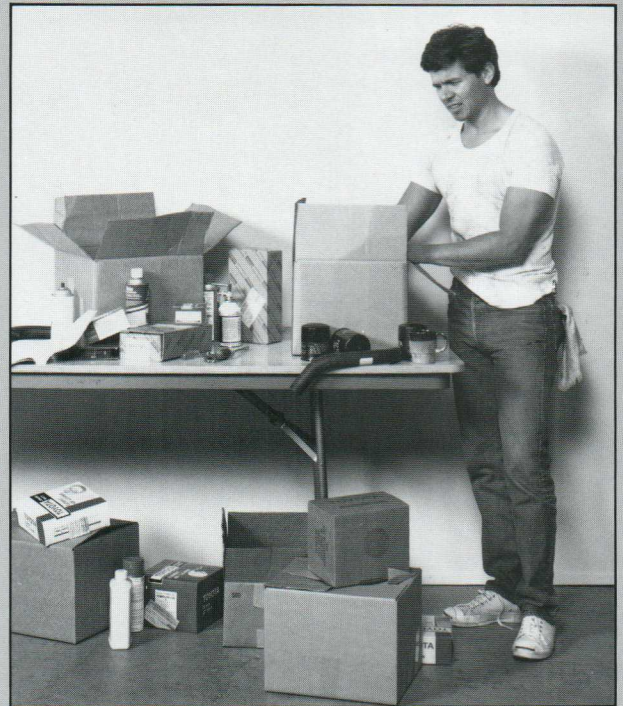
“Then my Toyota STAR Dealer showed me what the STAR Cabinet could do for my business. Now I can stock the fast-moving Toyota Genuine Parts my shop needs.

“The inventory is tailored to *my* business, and it’s restocked regularly – with no delivery charge. That means parts are within reach, or a phone call away.

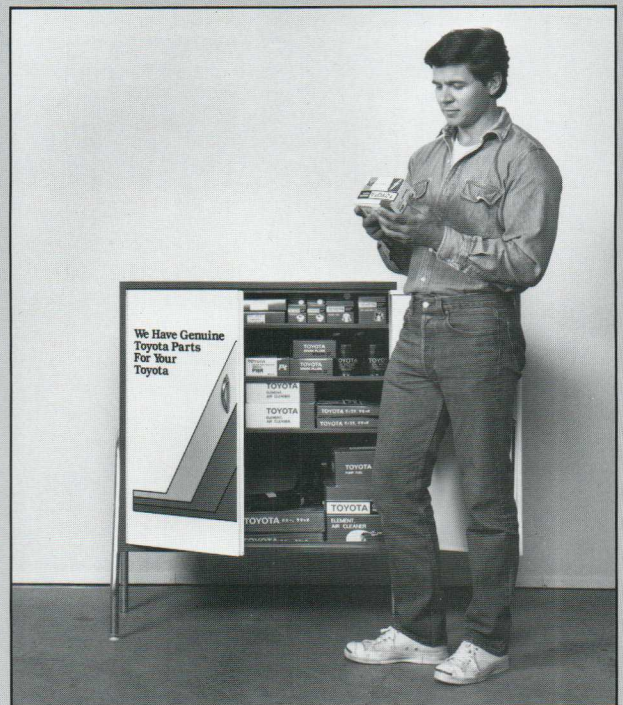
“The STAR Cabinet is attractive, too. It can hang on the wall or sit on the floor, and the shelves are adjustable. It even comes with a security lock.

“It’s just one of many services my Toyota STAR dealer offers.

“Now my customers are satisfied. And so am I.”



Before



After

# Avoid Mistaken Identity.

**TOYOTA**  
GENUINE PARTS

## Toyota Vehicle Identification Chart 1976-1986

to help you order the correct Toyota part for the job

**TOYOTA**  
GENUINE PARTS

**Model Number Information**  
To determine the correct model type and year, locate the appropriate Vehicle Identification Number (VIN) chart on the identification label.

**Production Date Information**  
To determine year of vehicle production, locate the production date label on either the identification label or the engine compartment.

**Starlet**

**Corolla**

**Tercel**

**Celica**

**Supra**

**MR2**

**Corona**

**Cressida**

**Van**

**Trucks**

**Toyota Truck Beds**

**4-Runner**

**Landcruiser**

**Camry**

This chart illustrates major Toyota body changes only. It is not meant to show every model.

WE'VE  
GOT MORE  
FOR YOU!

**TOYOTA**  
GENUINE PARTS

Toyota's Vehicle Identification Chart helps you order the right part. Right away. It has engine numbers, model numbers and production dates for most Toyota models from 1976 through 1986. Ask your dedicated STAR dealer for your copy. And ask about other items that will make life at your shop easier: the STAR parts cabinet, Toyota parts signage and Toyota Service News.