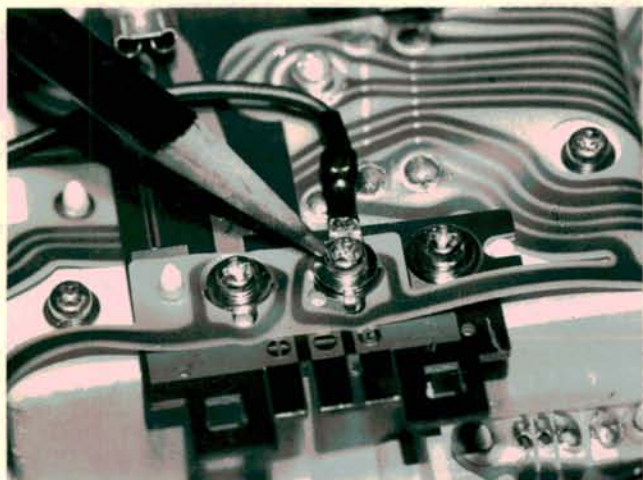
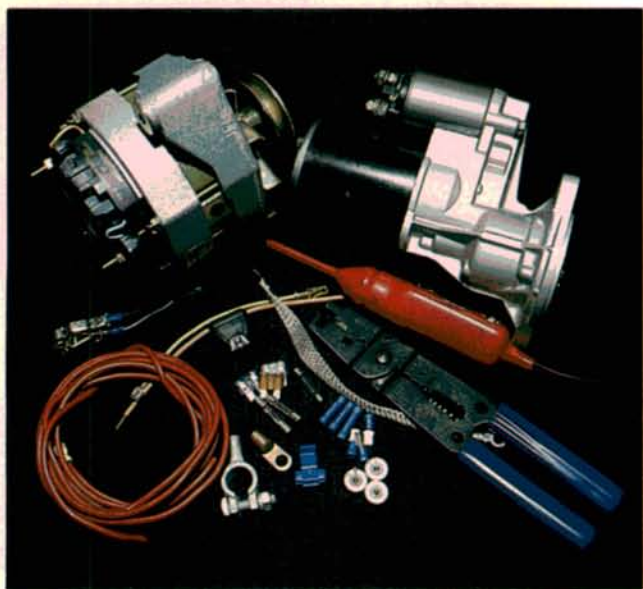


Electrical Service



Volvo Dash Light Mystery

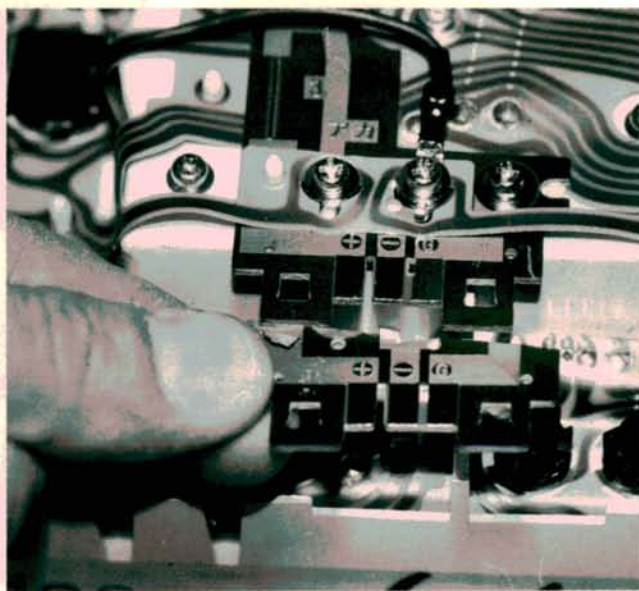
On some 700-series Volvos, the dash indicator lights (battery, oil, etc.) may not light up when you turn the ignition switch on. Meanwhile, the customer may tell you that both turn signal indicators sometimes come on and stay on. To fix this problem, remove the instrument cluster. Locate this terminal on the back of the instrument cluster circuit board. Then route a wire from this terminal to a good body ground.

You told us you loved 'em, so we're back with more. Yes, it's another installment of those fabulous electrical fiascos you just love to service.

You can listen to me now or hear me later. But remember this: the more sophisticated electrical systems become, the more important electrical basics become. And if this month's selection of electrical problems doesn't convince you of that, then nothing will!

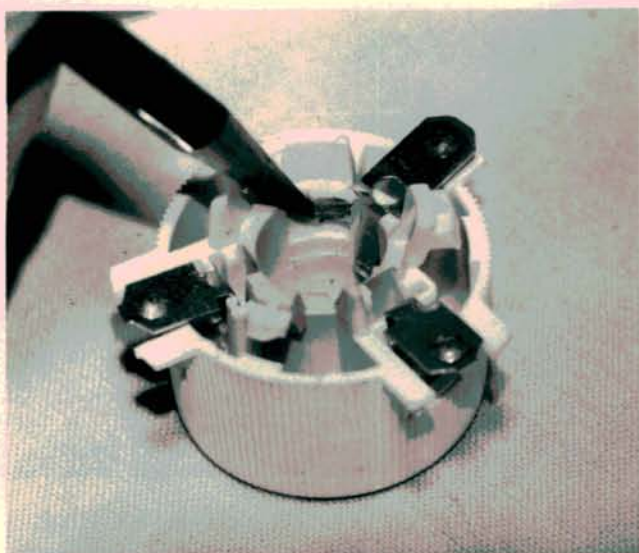
With all these body-ground problems that occur, don't forget your voltage drop checks. For a quick overall body ground check, clip the voltmeter positive to a clean point on the firewall. Clip the negative lead to battery negative. Turn on lots of electrical accessories. If that meter reads more than about a half volt, the body ground or grounds are hurting.

—By Dan Marinucci



Remove With Care!

If you have to remove the instrument cluster from a 700-series Volvo, take your time! Otherwise, you'll end up buying the customer a new instrument circuit board. You have to unplug the wiring harness connectors from the edge of this circuit board before you can remove the cluster. There isn't much slack in those wiring harnesses. Don't tug or yank the cluster too hard or you'll crack this piece off the circuit board.



Volvo Brake Light Socket Update

Whenever you're checking a brake light problem on 200-series or 700-series Volvos, inspect this area of the sockets carefully. Sometimes, this part of the socket becomes heat-distorted. If the sockets are distorted, replace them with Volvo's improved units. Black socket P/N 1372043-8 fits the left side and white socket P/N 1372044-6 fits the right side. And don't try swapping these sockets side-to-side.



Earlier Bosch, Later Bosch

If you've worked on Bosch charging systems, you probably recognize these parts. The three-wire connector and the brush holder on the left fit earlier Bosch alternators. The combination voltage regulator/brush holder on the right fits later Bosch alternators. You recall that the other end of the three-wire harness plugs onto an external regulator that's mounted somewhere on the inner fender panel.



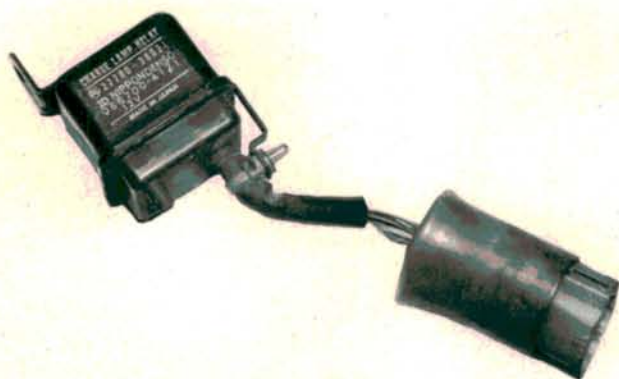
Volvo Rear Light Circuit Board

Volvo rear light sockets contact the copper strips on this circuit board. If these copper strips are burned, distorted, or corroded, you should replace the board along with the light sockets. If the copper strips aren't too bad, a little crocus cloth and electrical contact cleaner may save the day. Remember that besides circuit board and light socket problems, mismatched light bulbs can also trigger the safety monitor on the dashboard.



Updating Bosch Alternators

According to technicians at Hallco Auto Electric, Jenkintown, PA, you can both simplify and update the earlier Bosch alternator in one easy step. Just install the later integral regulator/brush holder in place of the original brush holder. Then discard the external regulator and its harness. Hallco techs like this swap because it means fewer parts, fewer wires, and fewer connections—an instant improvement in reliability. It also beats cleaning or replacing those three-wire connectors!



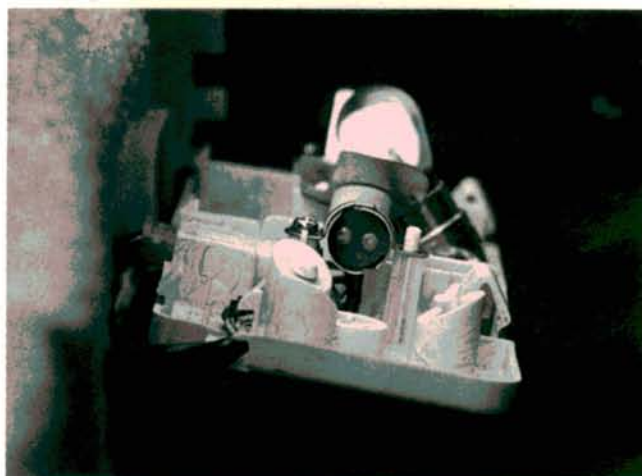
Toyota Charge Lamp Relay

A customer brings in a late '70s or early '80s Corona or Celica because the alternator light is on. Surprise—the car may already have a new alternator and regulator on it! Anyway, your meters tell you that the system is actually charging. If that's the case, this charge lamp relay is probably bad. You'll find this relay on the forward edge of the driver-side strut tower near the ignition coil.



Toyota Pickup Regulator Switchup

Some 1979 Toyota pickups were equipped with external mechanical voltage regulators. But '79 trucks equipped with cold-weather packages carried external solid-state voltage regulators. Don't interchange regulators or alternators on these trucks. Order parts for these trucks carefully! And although the two regulator harnesses are different, watch out for the nudnik who's tried to adapt the right part to the wrong system!



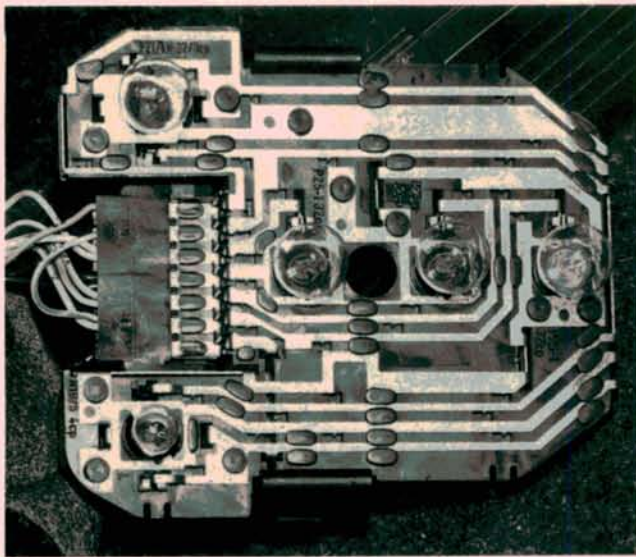
Camry Brake Lights: Return Of The Blob

You may get a 1986-87 Toyota Camry that intermittently blows brake light fuses. When you're troubleshooting this problem, inspect the brake light sockets closely. Sometimes, you'll find a blob of solder on one of these socket contacts. The solder will intermittently touch the wall of the socket and blow the fuse. Remove the blob and install a new fuse.



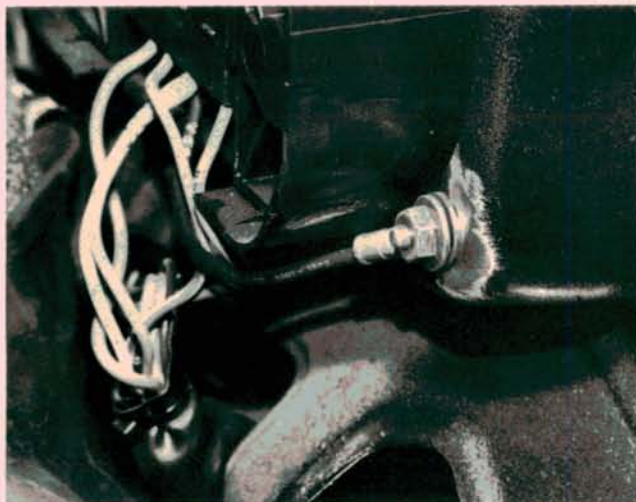
Toyota Cruise Control Won't Set

When a Toyota speed control won't set, remember two details. First, anything that triggers the dashboard brake warning light will keep the cruise control off. This includes a low master cylinder or a misadjusted switch on the hand brake lever. Second, electrical problems in the brake light circuit will also kill the cruise control. This includes bad bulbs, short circuits, or a misadjusted brake light switch.



Mismatched Saab Bulbs

On 1986-88 Saab 9000s, there's a pictogram or safety monitor on the dash below the tachometer. The pictogram warns the driver of rear-light failures. But what if you replace a burned-out rear bulb and the pictogram remains on? There's a good chance that the new bulb's resistance is substantially different from that of the other bulbs. Mismatched or corroded bulbs create an imbalance in resistance from left side to right side. This imbalance turns on the pictogram.



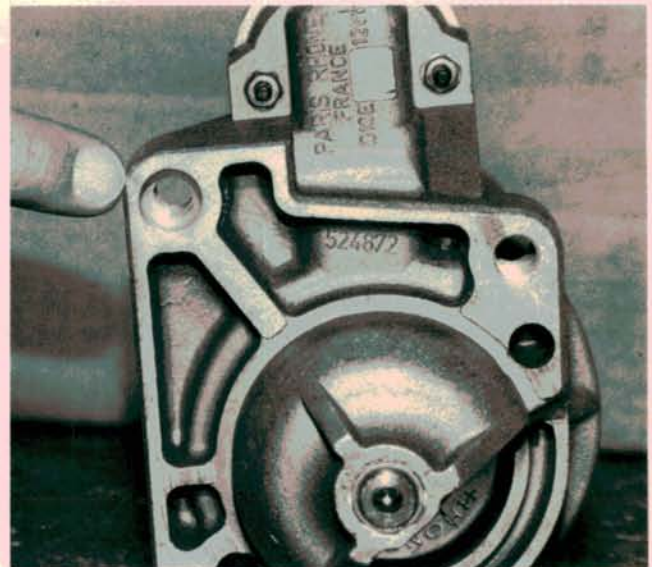
Right-Side Saab Light Ground

On the right-side rear light harness in the 9000, you'll find one black ground wire. Cut it close to the harness sheath, crimp a terminal onto it, and bolt it to a clean body ground. If you just want to clean off the paint around this stud and ground the ring terminal here, that's fine. As long as you're doing all this work, did you confirm that the body-to-engine grounds are in good shape?



Improving Saab Rear-Light Grounds

When all else fails, you may have to install a complete set of same-brand bulbs (five per side!) in order to placate the 9000's pictogram. Also, Saab recommends that you modify the rear light grounds in the following manner. On the left-side light harness, clip the two black ground wires as close to the harness sheath as possible. Crimp a ring terminal onto these wires. Clean the body metal and then bolt down the ring terminal.



Renault Alliance Starter Noise

You replace the starter on a Renault Alliance. For no apparent reason, the new starter is noisy. A locating pin or collar fits into this countersunk hole. The pin indexes the starter in the bellhousing. Sometimes, the pin sticks in the old starter casting instead of staying put in the bellhousing. To eliminate the starter noise, swap the pin from the old starter to the new one.



Toothed Washers Improve Connections

To their credit, some technicians always insist on cleaning body grounds until they see bare metal before they bolt down the ground wires. Installing a toothed washer on the connection improves your chances of making a solid electrical connection. You see, all those little teeth dig into the parent metal when you cinch down the connection. So if you can't always clean the parent metal as well as you'd like to, using these washers will help you put some teeth into your connections.



Grease Against The Grain

For years, we've been conditioned that grease and electrical connections don't mix. However, some dielectric grease can preserve critical connections for you without adding any resistance to them. After you've spent all that time reaching the socket, removing it, and cleaning it, do you really want to risk a comeback due to more corrosion? Heck no! So, coat the end of the bulb with some dielectric grease and be done with it.

Correction

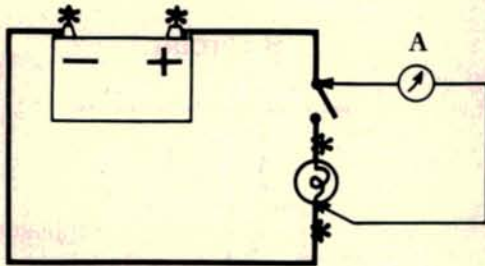
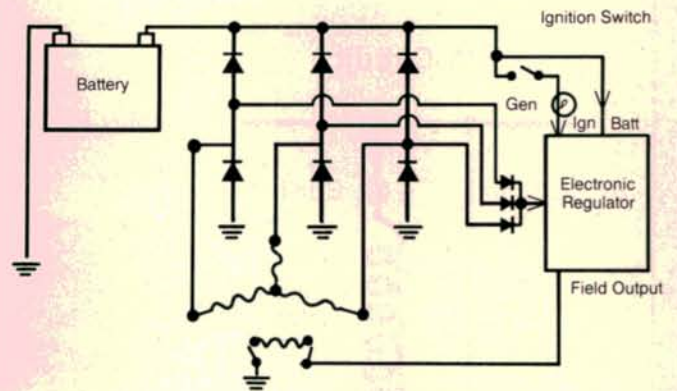


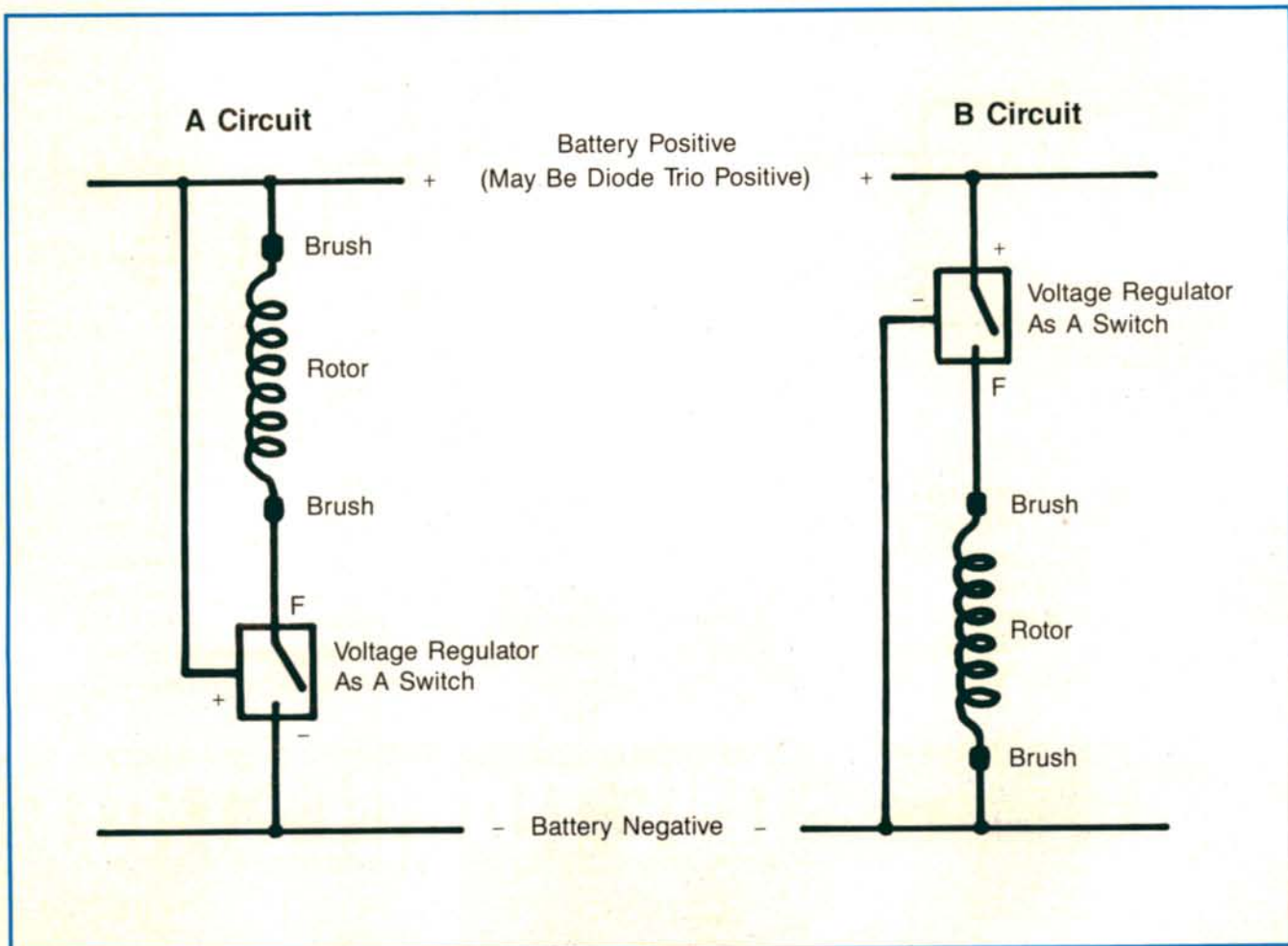
Figure 10

On page 15 of the January issue, Figure 10 was not explained accurately. Connected as shown, voltmeter A would read 12 volts with the switch open—regardless of the light bulb's condition. With the switch closed and a good bulb in the circuit, voltmeter A would read zero. With the switch closed and a burned-out bulb in the circuit, the voltmeter would read 12 volts.

Correction



On page 42 of the February issue, we omitted a set of positive diodes from a charging system illustration. The illustration above correctly shows a set of positive and a set of negative diodes. Negative diodes in the alternator's rectifier are always grounded to the alternator housing. Positive diodes are connected to the alternator output terminal and are insulated from the housing.



Field Circuits Revisited

Recently, we discussed both "A" and "B" field circuits. We have our own ways of remembering the difference between the two. And some of you have suggested your own tricks. Among the suggestions we received were these side-by-side illustrations comparing the two circuits. The illustrations and the following tips come courtesy of the folks at JIMCO Inc., Raymore, MO.

On the "A" circuit, the voltage regulator regulates by switching the *grounded* side of the field on and off. Some technicians remember the "A" circuit by calling it the externally grounded field.

On the typical "A" circuit alternator, both brushes are insulated from the alternator housing. Therefore, the regulator has to ground this circuit in order for the alternator to charge.

JIMCO technicians remind you of two "A" circuit details. Suppose the "A" field circuit is in good condition. Current is flowing through the field—but the regulator loses its power supply at the + regulator terminal. In this case, the alternator will begin charging

out of control. If the regulator loses its ground connection at its - terminal, the alternator stops charging.

To by-pass the "A" circuit regulator—to full-field the alternator—disconnect the wire from the regulator's F terminal and ground that wire.

On the "B" circuit, the regulator regulates by switching the *battery side* or *power-feed* side of the field circuit. Some technicians remember the "B" circuit by calling it the internally grounded one.

On the typical "B" circuit alternator, the brush that feeds the rotor is insulated from the alternator housing. However, the other brush is grounded to the alternator.

Suppose the "B" field circuit is in good condition and current is flowing through it. If the regulator loses its ground connection at its - terminal, the alternator will charge out of control. But if the regulator loses its power supply to its + terminal, the alternator stops charging. To full-field a "B" circuit alternator, disconnect the wire from the regulator's F terminal. Then connect this wire to battery positive with a jumper wire.