The Shade Tree Mechanic

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I hope to see a lot of you at the meet in Niagara. There are some great tech sessions scheduled—some for older cars—and Volvo’s Service Training group will be doing some things for you owners of newer cars.

Ever wonder what those little blinking lights on the OBD (On-Board Diagnostics) System meant? OBD systems should be one of the tech sessions offered.

850 Turbo Performance Upgrades

With the advent of the Bosch Motronic Fuel Management System on the 850, it is now possible to control a vast array of engine characteristics based on real-time measured parameters. And now, a variety of performance upgrades are starting to become available. Both IPD and Group 6 Performance are weighing in with re-programmed ECU’s (Electronic Control Units). I have not seen any specs for the unit from Group 6, but I am currently reviewing the extensive testing reports on the IPD unit. IPD had a Swedish company do their engineering work, with all components conforming to ISO 9002 quality standards, and U.S. testing was performed on one of the three (in N.A.) 1/M 240 test stations.

The 1/M 240 test is a federal test that simulates the federal urban test cycle, and it is used for certifying the emissions performance of new vehicles. It utilizes a 4-wheel dynamometer in order to test the engine under simulated loading conditions. I will do a detailed report on the test results in the next issue.

The new IPD module provides 270 HP at 5600 rpm and, unlike the T-5R module, gives added horsepower throughout the rpm range. It also gives 261 lb-ft of torque from 2000 rpm to 5300 rpm, up 40 ft-lbs from stock and T-5R configurations. Top speed is increased to 160 mph,

they weren’t hooked up. Now all of a sudden, they are going to be required. There are additional benefits—many insurance companies offer a small additional safety discount on insurance rates for DRLs. There are now several options for installing DRLs in your pre-1995 Volvo.

DRLs, 1991-1994 Volvos (all models)

Volvo offers a kit for this conversion that does not require any rewiring. It simply replaces the light switch and/or the light relay, depending on which model/year you have. Check with your dealer for parts and prices. This kit will use the headlights as DRLs (like the 1995 Volvos and GM products). If your parts person cannot find the information, it is contained in Volvo Parts Bulletin Group 35, Number 7 dated February 1995, titled: Daytime Running Lights Conversion, M/Y 1991-1994 Vehicles.

For earlier models, the September/October 1987 issue of Rolling carried an article on how to activate the DRLs on your 240 series car. Due to the renewed interest (and the fact that we do not have lots of copies of that issue lying around), I am running an edited version of the article here along with a new article on how to turn the fog lights of your 700 series car into DRLs.

For you owners of new 850s or 900 series cars equipped with DRLs, you may notice a very small black screw on the lower right of the light switch plate.

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VOLVO SAAB

July/August 1995
This screw is a manual override switch that will disable the DRLs, which now use the low beam headlights in the event you need to turn them off. Many people have found this useful where they are required to turn off headlights when approaching a guard house at the entrance to military installations.

**Turning 700 Series Fog Lights Into DRLs**

Submitted by member Scott Mitchell in California. (Note: If you have a 240 equipped with fog lights, a little research and the information here should allow you to perform the same conversion. Note that you will need to do some tracing of 240 wiring diagrams so that you can find the right leads to hook up.—SS)

First I would like to acknowledge the help of Chris Knight, a local Volvo expert, in figuring out how to do this and preventing me from shorting out the whole electrical system on my 1988 740.

The whole secret to using your fog lamps as DRLs lies in how the fog lamp relay interfaces with the headlight switch and the low/high beam headlight relay. Nothing else needs to be changed, and all the work is carried out on the central fuse and relay panel in the console behind the ashtray.

The front fog lamp (auxiliary lights) relay, one of the two right ones in the first row. (Check your manual for your particular year to ensure yours is in the same location. Mine was second from the right.—SS.)

To make the changes, you will need to pull out the fuse/relay panel. Start by disconnecting the battery ground cable at the battery terminal to prevent the possibility of electrical shorts. Also check your owner's manual for any cautions with regard to SRS systems if your vehicle is so equipped. Next, remove the ashtray and its holder, just as though you were trying to get to the fuses. Remove the cigarette lighter, and unsnap the small plastic cover from the front where the lighter plugs in. Then remove the two screws from the left side of the plastic cubby hole piece that holds the lighter socket. One is brass colored and the other is black. The plastic panel swings out from the left—there is a small tab that holds it on the right.

You should now be able to see the fuse/relay panel. Block your car's wheels, set the parking brake, and move the transmission selector all the way back for automatics. Put manuals into fourth gear to provide sufficient space to pull the panel out. Release the white plastic latch on the left side of the panel and carefully pull the panel up and out.

The wire harness is pretty stiff, and it may take some effort to get it out. But the harness is plenty long enough to pull the box completely out of the console so that you can turn it over to work on the underside.

Find the fog lamp relay and remove it from its slot. Now remove the relay plug you have some old wire harnesses in your junk bin, release a wire from an old relay connector and use it. Plug the new wire into the slot for terminal #86 on the relay holder, and connect the other end to a vacant terminal on any of the fuses that are switched by the ignition (usually #6 or higher).

Try #18 or #25 if you wish to maintain wiring according to service manual options. You do not need to worry about overloading the fuse—this only provides power to activate the relay coil. Power to the fog lights still comes from fuse #3 as before.

What we have done is remove the requirement for the headlights to be on in order to turn on the fog lights. Yet they will still go off when the high beams are on, and they will go off when the key is turned off or the fog light switch is off.

Now it is time to test. Plug the relay into the plug—do not replace the relay socket in the board yet—and check to make sure that your new wire is in the correct socket for relay terminal #86. Ensure that there are no exposed connectors/bare wires that could short, turn off the fog light switch, headlights, and ignition switch. Now reconnect the battery.

Fog lights should not come on. If they do, you must move the new wire to a fuse that is powered from the ignition switch rather than one that is constantly powered. Then check with ignition on and fog lamp switch off. Then turn on the fog lamp switch. The lights should come on. Then turn on headlight low beams. Fog lights should stay on. Check high beams. Fog lights should go off. If they do not work this way, go back and check all your wiring changes. If they work, turn everything off, and disconnect the battery.

Remove the relay, re-insert the relay plug into the correct slot in the relay panel, and replace the relay. Carefully return the relay board to its home in the console. You may have to work to make sure the wire harness gets settled back into the area behind the board as you are pushing it in. Check to make sure it is latched. Then reconnect the battery and double check operation of the lights. Replace the plastic panels, lighter, trim piece, and ashtray part, and you are done!

Leave your fog lamp switch on, and your lights will turn on whenever you have the ignition switched on, but they will still go out when the high beams come on. And you don't have to worry...
about leaving them on, because they will go off when you turn the ignition off.

200 Series DRLs

Activating 200 Series DRLs (Adapted from Sept./Oct. 1987 Rolling article by Dr. Kenneth Alan Crossner).

All 200 series Volvos are designed for DRLs, because they were required in Europe. The 240 has two bulbs in each front corner light. The lower bulb is a dual filament that only uses the higher-wattage filament for the turn signals. The upper bulb has a dual filament, but in the U.S. only uses the lower wattage filament for the parking lights. The high-power filament is used in Europe for the DRLs. In Europe, the headlight switch has an extra set of contacts that activate the DRLs when the lights are turned off and deactivate them when the lights are turned on.

Also, the bulb socket is missing the contact for the bright filament, but the hole is there for the wire. To activate the DRLs, you will need commonly available hand tools for wiring, wire, two bus fuse holders, and fuse (1 amp and 7-1/2 amp), and 1/4" "tab" female terminals (to tap the fusebox). You will also need a relay—any 12V normally closed automotive relay with at least a 10 amp at 16V rating is fine. "Normally closed" means that the circuit is complete when the relay coil is not activated; when the coil is energized, the circuit is broken. I used a Radio Shack No. 275-2188, a 12V relay with dual poles (i.e., two circuits) and both normally closed and normally open contacts for each pole, simply because I keep a supply of these on hand for all sorts of projects. If you use such a plastic cased relay, keep it located in the passenger compartment to avoid the high temperatures of the engine bay.

The first step is to make two taps in the fuse panel, one that is energized when the engine is running, and another that is energized when the lights (parking and headlight positions) are on. On my 1983, I used fuses 12 (for engine running) and 14 (for lights on). I did not use fuse 4 (actually marked "Daytime Running Lights," because this is powered with the key in the "accessory" position, and I did not want my DRLs on when I'm just parked listening to the radio. The "lights on" tap should be used with a 1-amp bus fuse and then led to one of the relay’s coil terminals. The coil’s other terminal should be grounded.

The "engine on" tap (e.g., fuse 12) should be fused with the 7-1/2 amp bus fuse and run to one of the two normally closed terminals. The other normally closed terminal should be run to the DRLs. Be sure to insulate the relay’s terminals with electrical tape or silicone filler. A Bosch 700 series fog light relay (Volvo part number 1259926-2), along with a relay plug/holder (Volvo part number 127798-1) will also work. You will need to get the female spade terminals from your dealer, those that have the small metal tabs used to lock them into the relay holder also. This will save you the necessity of insulating the relay connections, and the relay can be easily unplugged and replaced.

Terminals 85 and 86 are the coil terminals, terminal 30 is DRL power from the fuse, and terminal 87 is the normally closed terminal to the DRLs. Terminal 87 is a "normally open" terminal and is not used. When the engine is running, current will flow to the DRLs, but when the parking or headlamps are switched on, the relay breaks the DRL circuit, and they are turned off. This serves as a substitute for the special European version headlight switch.

The U.S. corner light fixture, concerning the upper bulb’s socket, has only a contact for the bulb’s dim filament. You have to fabricate the second contact for the brighter filament. However, the socket does have the hole through which to run the wire for the bright filament. Unbolt and remove the fixture, run the wire from the relay through the rear of the hole, then attach a tab of metal (e.g. a springy fuse holder), either by crimping and/or soldering. Cut the tab to size and bend to match the existing contact in the bulbholder. Withdraw the wire and terminal into the socket and examine it carefully to plan the orientation to match the bulb contacts and to avoid any possibility of shorting out the other contact. When satisfied it is correct, use a small dab of epoxy to permanently fix it in place. Check all wiring, then test the lights. If they do not work, recheck your connections. When they work, reinstall all fixtures and panels.

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