

VOLVO

DL
GL
GLE
TURBO



1984 Supplement to owners manual

USA/Canada



Foreword

This supplement to the Owner's Manual deals with the changes made to the Volvo DL, GL, GLE and Turbo models since the printing of the Owner's Manual. For example the new heated Lambda-sond® on the B23F engines. This new Lambda-sond® normally needs no service and consequently no indicator lamp is installed in the instrument cluster (page 2).

There is also a shift indicator lamp installed in the instrument cluster on all manual transmission DL and GL models. The light can help you obtain a mileage improvement of six percent or more, depending on how you normally drive (page 2).

However, the most interesting new feature is the engine in the Volvo Turbo. This engine, called B21FT-Intercooler, which supersedes the B21FT, gives higher output, 162 hp, and higher torque, 181 ft. lbs., than the B21FT. The new Intercooler engine is described on pages 4-6.



Shift indicator light

Reminder light, Lambda-sond[®]

Reminder light, Lambda-sond[®] (oxygen sensor system) service

On late-production cars with the B23F engine, the oxygen sensor (Lambda-sond[®]) is electrically heated. The use of a PTC (Positive Temperature Coefficient) element to heat the Lambda-sond ensures a shorter warm up time and continuous operation at its working temperature.

This type of Lambda-sond[®] does not require periodic replacement and therefore the Lambda-sond[®] reminder light is not connected on late production cars with B23F engine.

*Lambda-sond[®] is a trademark of Volvo of America Corporation.

Shift indicator light (Manual transmission late-production cars only)

The Volvo shift indicator light (S.I.L.) is a device designed to help you get even better gas mileage from your Volvo car. Studies have shown that the best fuel economy is obtained by shifting gears at low engine rpm and high relative engine load. The Volvo S.I.L. is calibrated to show you when to shift for improved mileage *without sacrificing smooth acceleration.*

Use of the S.I.L. is simple. Shift to the next higher gear as soon as the light comes on. You may find after using the S.I.L. for some time that your natural shifting rhythm will adapt to the S.I.L.'s suggestion. Some drivers may even shift before the light comes on.

Obviously, there will be times when you need to shift later than the light would indicate (for example, when climbing hills or trailer towing). Using the light regularly, however, should result in a mileage improvement of six percent or more, depending on how you normally drive.

Programming instructions for shift indicator

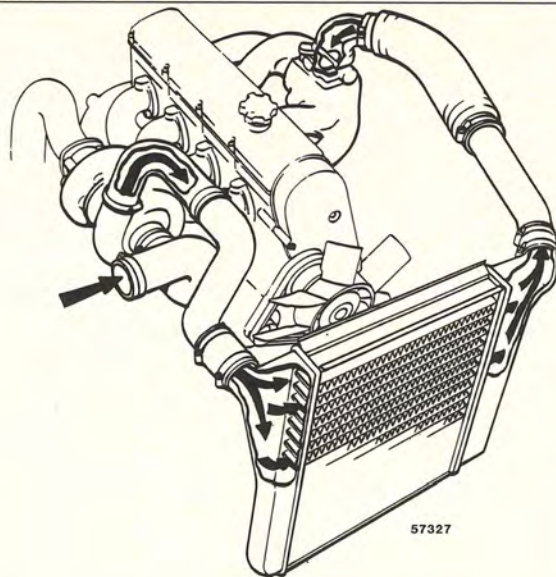
If the current supply to the control unit is cut (battery disconnected), the control unit will have to be re-programmed as the control unit memory will be erased.

Drive the car in each gear (first gear not necessary) for approximately 8 seconds.

The gear change indicator light will flicker once (0.5 seconds), as each gear is programmed.

Note: Remove the foot completely from the clutch pedal after each gear change when programming the control unit.

The Intercooler Boost System

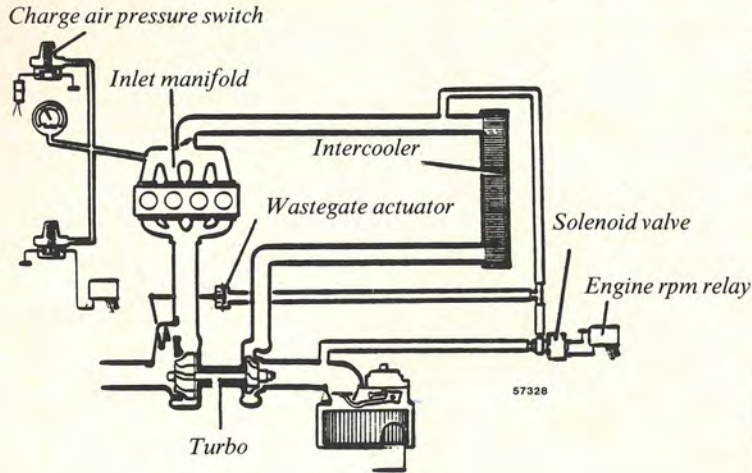


The Intercooler Boost System

The B21FT Turbo engine employs a turbo-charger to force air into the engine inlet manifold at a boost pressure of approx. 6.5 psi. The resulting increase in air flow mass boosts power output by approximately 30 horsepower over that developed by the normally aspirated B21F engine. In carrying the tuning process one stage further, the Intercooler Boost System cools the compressed inlet air and increases the boost pressure to approx. 8 psi. An rpm relay triggers the on-off valve to control the pressure to the wastegate actuator. This increases the boost pressure by an additional 2.5 psi when the engine is running above 3,700 rpm.

The intercooler is located between the turbo compressor and inlet manifold, and limits intake air temperature rise to approximately 50-89°F (10-30°C). This compares with about 105-175°F (40-80°C) for the standard turbo engine. The resulting increased air density and boost pressure increases the engine power output by an additional 30 horsepower over the standard turbo engine.

Engine torque is increased over the full working rpm range, producing improved performance characteristics without compromising the smoothness or noise level over that of a standard turbo engine.



Charge Pressure Control System

The Intercooler Boost System incorporates a charge pressure control system, including a solenoid valve controlled by an engine rpm relay. The engine rpm relay is also connected to a separate relay which disengages the AC compressor under certain conditions.

Normally the engine rpm relay is off and the solenoid valve is closed. Charge pressure is limited to approx. 8 psi by the wastegate actuator.

When the engine is accelerated above 3700 rpm, the solenoid valve opens and the wastegate actuator is off-loaded slightly permitting an increase in charge pressure to a max of approx. 10.5 psi. At the same time the AC compressor is disengaged by its relay and thus does not "steal" power from the engine.

During normal driving the AC function is not affected.

Fuel

The B21FT with Intercooler Boost System requires the same octane **unleaded gasoline** as the B21FT:

91 octane RON
AKI = $87 (R + M) / 2$
(AKI = Anti Knock Index)

Cooling Fan

An auxiliary cooling fan is mounted in front of the intercooler to increase air flow through intercooler and radiator. The fan is thermostatically controlled and helps to maintain a normal operating temperature range under adverse driving and/or climatic conditions.

Warranty, Servicing

Warranty

The Volvo 12 month New Car Limited Warranty is unaffected by the addition of the Intercooler Boost System provided the boost pressure is not altered from the pre-set factory adjusted specification. The wastegate rod sleeve has been sealed to ensure adherence to specifications. Tampering with the boost pressure adjustment may affect consideration under the Volvo New Car Limited Warranty if it is determined that this alteration contributed to the failure of a component(s) or system(s).

Failures resulting from misuse, negligence, modification, accident or lack of required maintenance (including oil and filter changes at 3,750 miles/6,250 km intervals) are not covered by the warranty. Please refer to your Warranties and Maintenance Records Booklet for complete details on the Volvo New Car Limited Warranty. You should also contact your Volvo dealer to discuss particular servicing requirements for your car based on the driving conditions you experience.

Servicing

The Intercooler Boost System requires no more service than outlined in the normal maintenance schedule for Turbo engines in your Owner's Manual and Warranties and Maintenance Records Booklet. However, it is recommended that the hose connected to the wastegate actuator, the on-off valve and the air pipe be checked every 30,000 miles (50,000 km). These hoses should be free from damage and leak proof.

Please note: Recommended engine oil change at intervals of 3,750 miles/6,250 km must be adhered to.

Consult your Owner's Manual for correct oil specifications. Oil additives must not be used!

Specifications

Engine Type Designation	B21FT-Intercooler
Output (SAE J 1349 net)	162 hp/5,100 rpm
Max torque (SAE J 1349 net)	181 ft.lbs./3,900 rpm

Shift Light Survey – Free Gift Offer*

If your Volvo is equipped with the shift indicator light, you can qualify for a free Volvo gift.

Simply drive your new Volvo for at least one month and fill out the attached survey questionnaire. Then mail the completed card to us. No postage is necessary if mailed in the U.S. Don't forget to include your name and address so we can send your free gift!

**Offer valid through September 30, 1984.*

Shift Light Questionnaire

How long have you had your new Volvo?

Approximately _____ weeks.

What percent of the time do you shift with or before the light?

_____ percent

As a way of improving fuel economy, I feel the Volvo shift light is:

Extremely Helpful____

Helpful____

Has No Effect____

Has a Negative Effect____

Acceleration performance of the car when using the shift light is:

Excellent____

Very Good____

Good____

Fair____

Poor____

Very Poor____

If a shift light was optional equipment on a car, how interested would you be in ordering it?

Very Interested____

Not Interested____

Somewhat Interested____

How much would you be willing to pay for the shift light if it was an option?

Over \$100____

About \$20____

About \$100____

About \$10____

About \$50____

Nothing____

If the shift light was standard equipment, would it affect your choice of the Volvo over other cars?

Very Positive____

Negative____

Positive____

Very Negative____

Neutral____

Additional Comments:

Mr./Mrs./Miss/Ms. _____

First Name

Last Name

Date

Street Address

City

State

Zip



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VOLVO

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