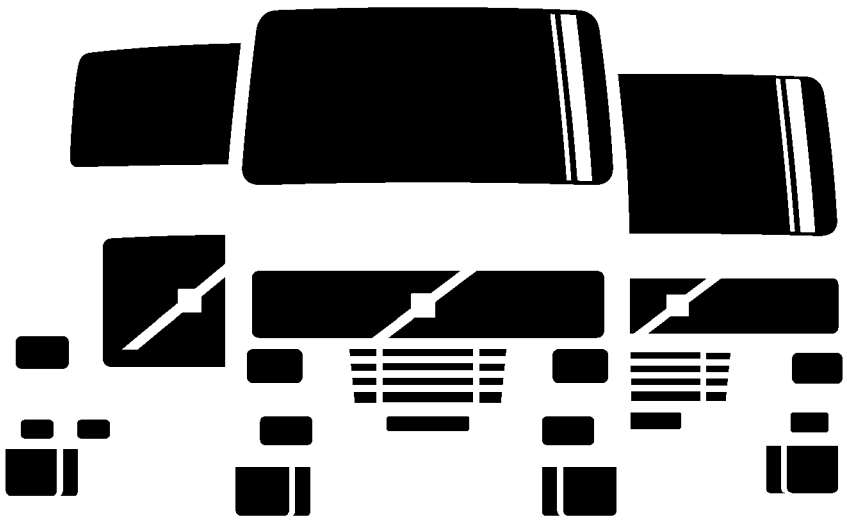
Service Manual
Trucks

Group **177–500**

Preventive Maintenance
Basic Service
VN,VHD



PV776-TSP151476

VOLVO

Specifications

Engine

General

For further information concerning component specifications see service information in Group 1, “Oil and Filter Change Intervals for Volvo Components,” Publication Number 175–001, and any appropriate vendor literature.

In a modern diesel engine it is very important to have regular oil changes. The demands of pulling high loads, pulling at high elevations, extreme high or low temperatures and longer service intervals, make the choice of correct oil a hard task. The Volvo dealer, the engine manufacturer or the oil manufacturer has the expertise to analyze driving conditions and to recommend what oil gives the best protection and economy.

Oil

The engine oil has the task of lubricating, sealing, cooling and cleaning the engine. Filtering the intake air and using a low sulfur fuel helps the oil protect the engine parts. With better engine designs and improved oils, the service intervals have steadily increased. The interval choice depends on the engine manufacturer specifications. Make sure the correct oil type and also the correct viscosity are chosen for the mileage interval driven.

Periodic oil testing is recommended. The test results give a continuous picture of the health of the engine and can warn well in advance of a problem developing.

The intervals will not cover all applications. In on/off highway driving, severe off highway, continuous stop-and-go city driving and extremely high mileage, the oil change interval and preventive maintenance schedule need to be customized for the best protection and economy. The intervals listed in these specifications are guidelines that should be used in establishing a correct maintenance program.

CAUTION

Adding unknown additives may put the engine at risk of failure. There are many aftermarket oil additives that claim improved performance if added to the engine oil. Each oil type recommended already contains additives that have been tested by a collaboration with engine and oil manufacturers.

Synthetic oil is offered as an alternative to the traditional petroleum based oil for the engines. The ability of synthetic oil to protect the engine is better than regular oil but its life is the same as for regular oil. This is because of the combustion by-products that contaminate the oil. These contaminates will make the change intervals the same as for regular oil. However, in extreme driving conditions, a synthetic oil may be the only choice for the application.

Note: It is not recommended to mix synthetic oils with petroleum-based oils.

Coolant

The engine coolant protects the cooling system from freezing or boil over problems. It also protects against corrosion and cylinder liner pitting. Coolant requirements are based on the additive levels present in the cooling system. To be able to run the cooling system as long as 2 years between coolant changes, there must be a replenishment of additives as they are used up. Testing should be done regularly to be sure the additive levels are within recommended levels.

Never run the engine with only water in the cooling system. Always use a mixture of clean water and a recommended antifreeze. The mixture should never be less than 40% antifreeze and 60% clean water or more than 60% antifreeze and 40% clean water.

Note: For further information on Long life coolant refer to Service Bulletin 260–002, “Texaco Extended Life Coolant.”

CAUTION

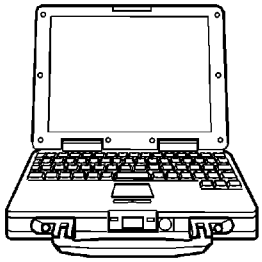
Long life coolant is colored red for identification purposes, so as not to mistake it for conventional, green coolant. Long life coolant will test as out of additives (SCA), but SCA should not be added.

Fuel

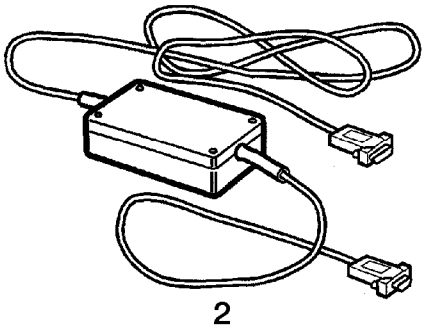
The sulfur content in low-sulfur fuel has been regulated to a maximum of 0.05% per weight for No.2–D diesel fuel. For fuels that have a sulfur content of 0.5% by weight and above, most engine manufacturers are requiring that oil is changed at shorter intervals. Sulfur creates highly acidic pollutants in the oil that break down the additives at a higher rate. If fuel with a higher sulfur content is used, the engine manufacturers recommend that the oil change intervals be reduced.

VCADS Pro Tools

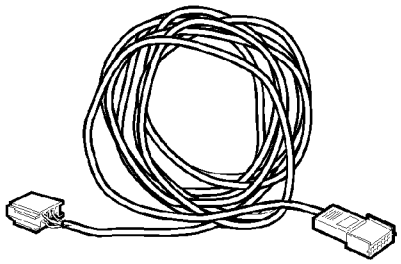
The following hardware is used to operate VCADS Pro. The tools can be ordered from Volvo Trucks North America; please refer to the specific tool number when ordering.



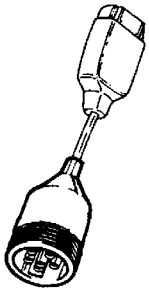
1



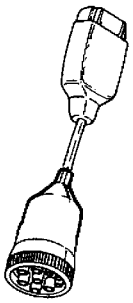
2



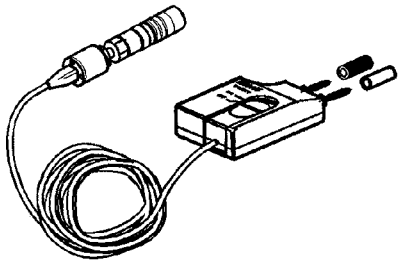
3



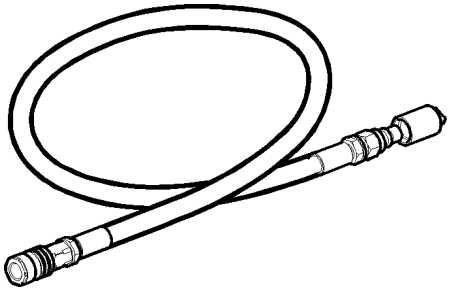
4



5



6



7

1 PC tool-package

2 9998555, Communication interface unit

3 9812331, Extension cable

4 J-43999, 6 pin Diagnostic adapter (for VN vehicles prior to 1999)

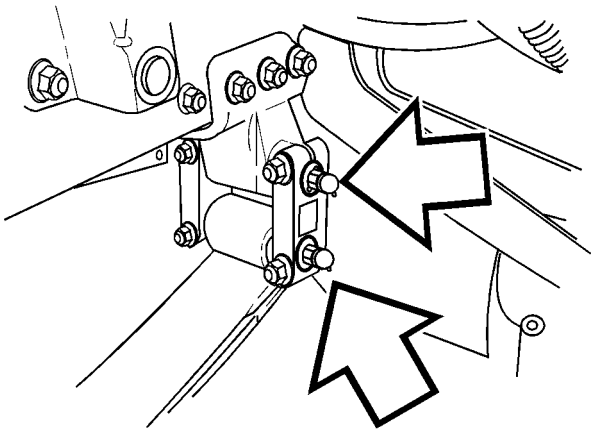
5 J-43939, 9 pin Diagnostic adapter (for VN vehicles built from January 1999)

6 9998496, Pressure gauge

7 9998495, Air Pressure Hose

Chassis

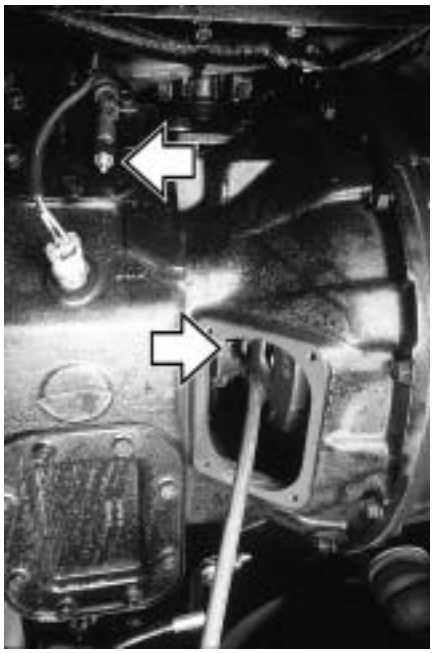
Springs and Suspension



Note: For further information concerning component specifications see service information in Group 1, “Oil and Filter Change Intervals for Volvo Components, All Models”, Publication Number 175-001, and any appropriate vendor literature.

Lubricate spring pins using a lithium based grease with EP additives and the consistency of NLG1 No.2. Fill grease until old grease has been pushed out past the seal on both sides and new grease can be seen flowing. If grease is not flowing through, use a prybar to lever down the spring ends to open up for the grease to flow. To perform this procedure the axle must be free hanging. Refer to the proper Service Publication in Function Group 7.

Wear tolerance for the spring pin and bushing is 5 mm (3/16 in.).

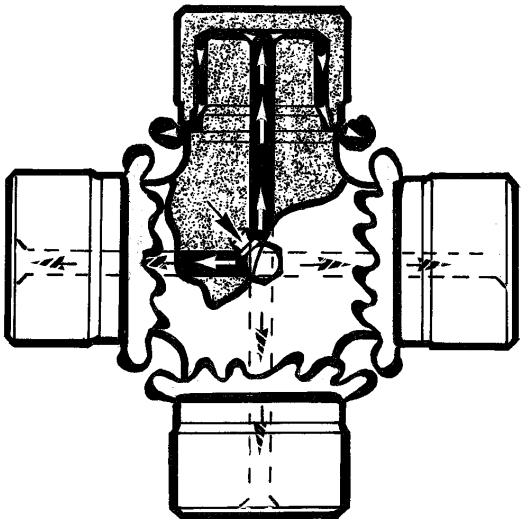


Clutch Bearing and Cross Shaft

The Volvo Clutch Release Bearing is sealed for life and does not need lubrication. However, the cross shaft must still be lubricated.

Vendor clutch cross shafts and release bearings need to be lubricated. The cross shaft bearings are remotely lubricated by a hose. The grease fitting is located on the right side of the bell housing.

Grease the release bearing — but do not overgrease.



Driveshafts

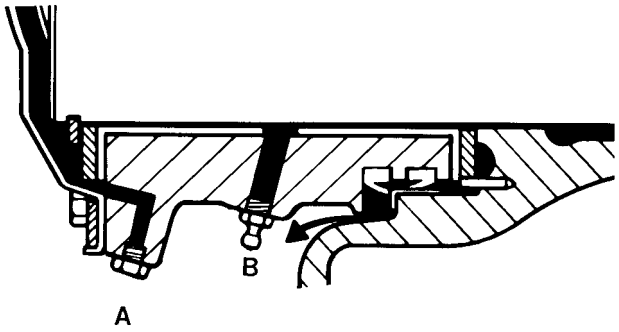
When greasing a driveshaft U-joint, it is very important that grease comes out of each of the four bearings. If grease does not come out of a seal, move the shaft from side to side.

If a U-joint cannot be fully greased, note it on the form for further inspection.

⚠ CAUTION

An ungreased U-joint bearing will fail after a short time.

If vehicle is equipped with a PTO that has a driveshaft, lubricate its U-joints.



Volvo T-Ride

1 Remove the pressure relief valve located at A and install a grease fitting.

2 Remove the grease fitting at B

3 Fill with grease through A fitting until grease oozes out of B.

4 Install the grease fitting at B and fill it with grease until it oozes out around the entire seal (See arrow).

5 Remove the grease fitting at A and reinstall the pressure relief valve.

It is important that the bearing is completely filled with grease. This becomes very important if vehicle operates in wet areas. If operating in places where driving through water, lubricate daily to force water out of bearing area.

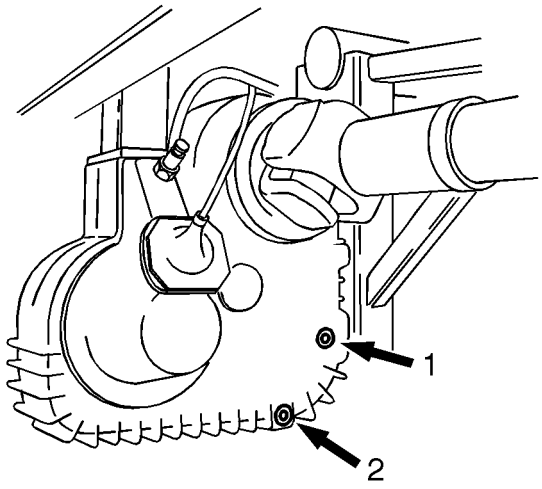
7	Check Oil Level in Retarder

For further information concerning component specifications see service information in Group 1, “Oil and Filter Change Intervals for Volvo Components, All Models”, Publication Number 175-001, and any appropriate vendor literature.

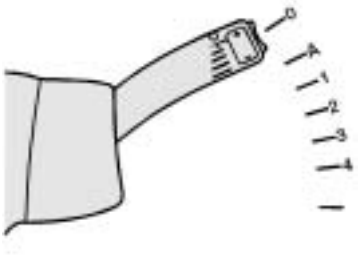
To ensure the correct oil level in the retarder the oil level should be checked when the retarder is warm.

8	Check Oil Level in Transfer Case

Remove the level/filler plug and check that the oil level reaches up to the edge of the filler hole.

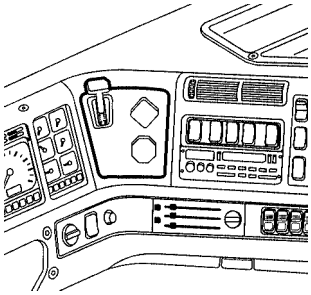


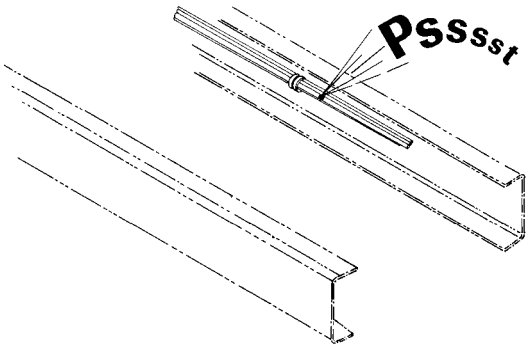
1	Level/Fill Plug
2	Drain Plug



25	Check Retarder Control

Ensure that the control's steps are well-defined and that the control stops in the set position.





26	Check Sealing on Main Brake (Service)

To perform the check of the Main Brake Seal perform the following:

1 Start engine.

2 Charge the Compressed Air System to 7.5 bar (109 psi).

3 Shut off engine.

4 Release the parking brake.

5 Apply the foot pedal for a minimum of five minutes. Use a pedal jack whenever appropriate.

6 Use a Dual Pressure Gauge to ensure that the pressure drop doesn't exceed .10 bar (1.57 psi) per minute.

7 Listen for air leaks.

8 Disconnect the Dual Pressure Gauge from the compressed air tank.

38	Check Radiator Fan, Fan Shroud and Fan Ring with Rubber Seal

For further information refer to literature in Function Group 2.

DANGER

Ensure that the engine cannot be started while working around the fan area. Failure to do so may result in serious personal injury or death.

Note: This check is also considered Noise Emissions Control Maintenance, which is required maintenance for any Volvo vehicle. For further information on Noise Emissions refer to “Noise Emissions” page 6.

Perform the Check of the Hubs and Pulleys as follows:

1 Inspect fan blades for any damage.

2 Ensure there is enough clearance between the fan blade tips and the fan ring in the shroud.

Note: The minimum clearance is 3 mm (0.12 in.) at any point around the fan ring.

3 Loosen the belts and rotate the fan hub assembly. Check for roughness and binding in the bearings. Check that the end play does not exceed 1.5 mm (1/16 in.).

4 Check fan clutch for lining wear or air leaks. Lubricate fan hub, if applicable.

5 Inspect the idler pulley for cracks.

6 Check for bearing roughness and binding.

7 Inspect the belt driven water pump for bearing wobble and any evidence of leakage.

8 Check the radiator package mounts.

9 Inspect rubber cushions for wear.

10 Inspect fan shroud rubber molding and all fasteners for wear and tightness.

54	Check Drive Shaft, Universal Joints, Sliding Joints and Support Bearings

Note: For further information refer to literature in Function Group 4.

To perform a check of the driveshaft, Universal Joints, Sliding Joints and Support Bearings complete the following:

1 Check transmission output shaft bearing for wear. Move the flange up and down; bearing play should not be larger than 1.5 mm (1/16 in.).

2 Check for oil leaks past the transmission output shaft seal.

Note: There is a difference between sweating and a leak. If oil is seeping past the seal after cleaning, there is a leak.

3 Check driveshaft U-joints and slip joint for play. There should exist no noticeable play in the U-joint bearings. The slip joint radial play maximum is 0.18 mm (0.007 in.).

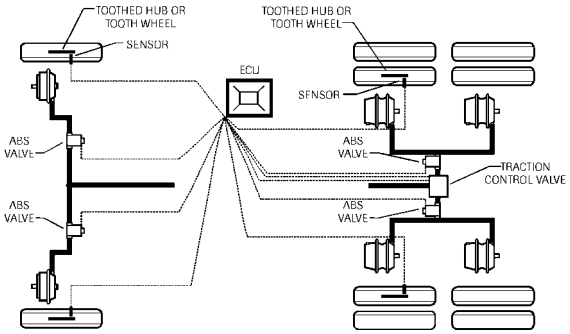
4 The driveshaft tube should be straight and have no damage or missing weights. Remove any build-up of foreign material such as undercoating, concrete, etc.

5 Check the torque of driveshaft bolts 170 Nm (125 ± 10 ft-lb).

6 Check center bearing mounting.

7 Check rear axle pinion bearing for wear and leaks past the seal.

Note: The Volvo CT EV87 front tandem gear input shaft has a large play for the input shaft bearing. This is normal and does not have any damaging effect on the transfer gear-during rotation, the shaft is balanced so that the clearance is insignificant. If there is no oil leakage there is no reason for concern about this play.



Check ABS System

Note: For further information refer to literature in Function Group 5.

DANGER

To do the brake test safely, ensure there are no other vehicles within 300 yards when testing, or perform the test in a off-road area where there is no traffic. Performing a brake test in traffic may lead to an accident, and cause personal injury or death.

Check the ABS system by attempting to lock up the wheels during hard braking. The vehicle should come to a controlled stop. Brake from a speed of 50 to 55 km/h (30 to 35 mph). Make a full brake application.

Note: The rear wheels may lock intermittently while driving unloaded under 30 km/h (20 mph) even when equipped with ABS brakes. This is normal in unloaded operation.

Also check that the ABS telltale indicator comes on and goes out at approximately 8 km/h (5 mph).