VOLVO

Volvo Trucks North America
Greensboro, NC USA

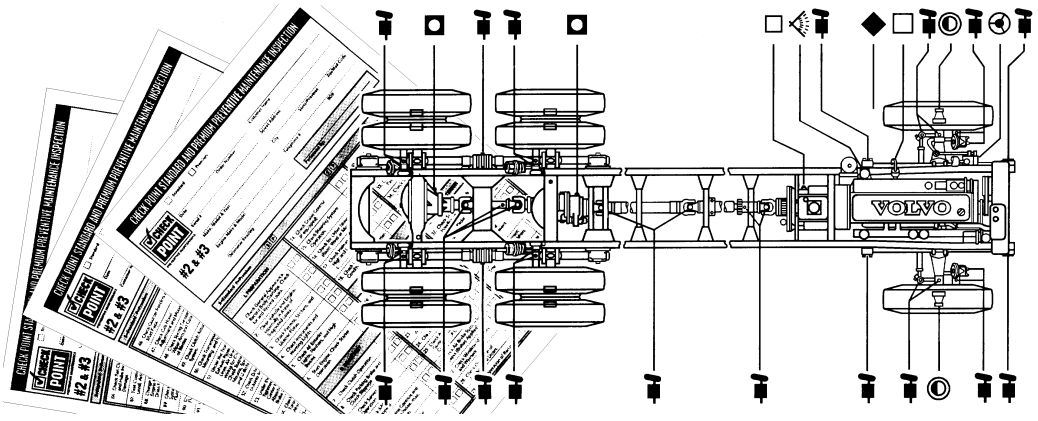
Service Bulletin Trucks

This Service Bulletin replaces Service Bulletins 175-60, “Oil and Filters, Volvo Components”, VN, VHD VERSION2, (6.2007), publication number PV776–20178478 and VT (6.2007), publication number PV776–20180778.

Date	Group	No.	Page
12.2007	**175**	**60**	1(18)

Oil and Filter Change Intervals for VOLVO Components VN, VHD, VT

Oil and Filters, Volvo Components



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(Valid from January 2007)

This information is updated as necessary. It provides oil change intervals for Volvo components. Information regarding engine, transmission, rear axle and steering oil is also included.

For the list of companies that offer oil types that meet the Volvo Drain Specification, refer to Service Bulletin 175-62, “Approved Oils, Volvo Components”. For more information about lubrication, refer to Service Information in Group 1.

Note: Failure to follow these recommendations may void any and all applicable engine and driveline warranties.

Contents

Engine, Lubrication

For more engine information, refer to the Service Information in Group 2 and the appropriate vendor literature.

Engine oil lubricates, seals, cools and cleans 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 that the correct oil type and also the correct viscosity are chosen for the mileage interval driven.

CAUTION

Please note that an extension of oil drains beyond the ones given in this bulletin may damage the engine, and void your warranty, if in effect.

Shorter oil change intervals are required if the engine is operating in a dusty environment or if frequent stops and starts are made.

There are many aftermarket oil additives that claim improved performance when added to the engine oil. Do not use supplements such as aftermarket oil treatment additives. Each oil type recommended here already contains additives that have been tested by engine and oil manufacturers. Adding extra additives may put the engine at risk of failure.

Oil filters should always be changed when changing oil. Previously there were two types of oil filters; one for normal intervals and one for extended intervals. Only long-life filters are available for all intervals today.

CAUTION

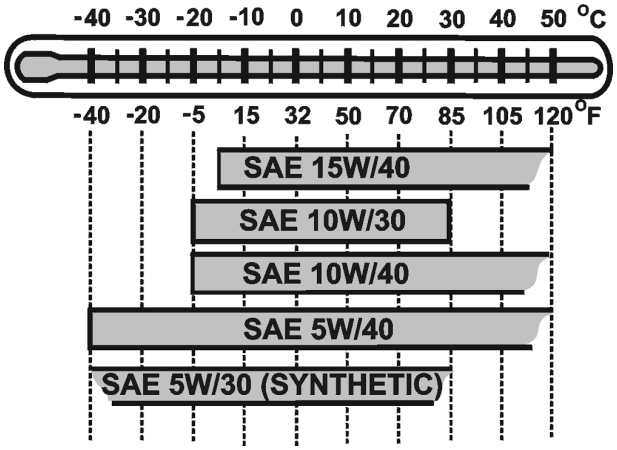
Volvo branded oil filters are designed to provide the proper level of filtration and protection for Volvo engines. Filters that do not meet the same stringent requirements may cause unsatisfactory results

Volvo Trucks North America cannot guarantee the performance of filters that are not made or sold by Volvo Trucks North America. The performance guarantee of any commercially available filters is the responsibility of the filter manufacturer.

Oil Viscosity

Select viscosity for the ambient temperatures the vehicle will be exposed to. It is not enough to just select the right type of oil; the right oil viscosity is just as important.

The correct viscosity according to the SAE is determined by the minimum ambient temperature at cold start and the maximum ambient temperature during engine operation. Use the temperature chart below to select the best viscosity. In general, use the highest viscosity oil available that still meets the cold start-up temperature requirements.



Select viscosity from the table above. Temperatures refer to stable ambient temperature readings.

D12D and D16D Oil Type/Quality

The length of time an engine can operate before an oil change depends on the quality oil used, the type of fuel used, fuel consumption, engine oil consumption, vehicle application, level of dust in the air, and fuel consumption. The change intervals given in this bulletin are maximum intervals. If the vehicle is operating in heavy-duty operation, dusty or off-road conditions, etc., reduce the intervals for more frequent oil changes. Change all oil filters at each oil change.

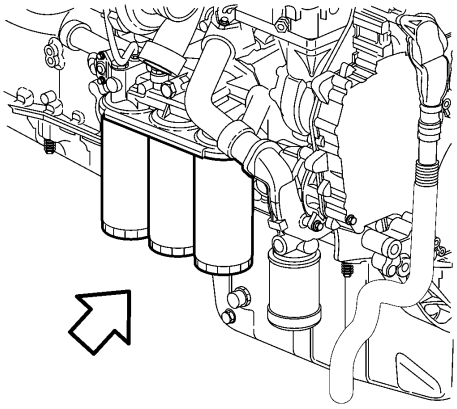
Synthetic oils do not allow further extension of oil drain intervals. It is the contamination rate, i.e., soot, and the depletion of additives, rather than base oil quality that determines the useful engine oil life and therefore the oil change intervals.

Note: Engines meeting the emissions requirements of 2004 operate under more severe conditions than previous engines. This has lead Volvo to require an oil that meets both VDS-2 and EO-N Premium Plus quality or both VDS-2 and API CI-4 quality standards for model year 2003 through 2006 Volvo engines. **Earlier engines also work better with these oils. They are not required, but are strongly recommended.**

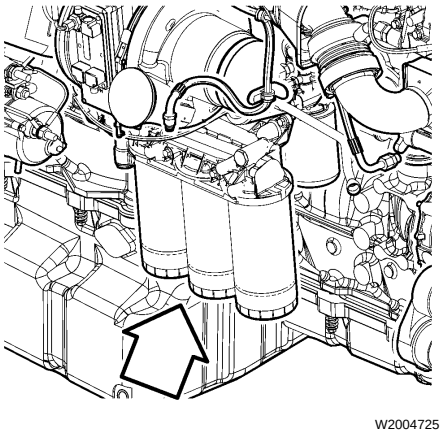
CAUTION

Extra oil additives must never be added to any oil used.

Note: Oil Terminology: VDS (Volvo Drain Specifications), and EO-N (Engine Oil - [Grade Level])



D12D Oil Filters



D16D Oil Filters

D12D and D16D Oil Change Intervals

Note: Volvo strongly recommends to use oils meeting <u>both</u> VDS-2 and EO-N Premium Plus at all times.

Note: For information on the Oil Change Intervals for Non-Volvo engines refer to the appropriate vendor literature.

D12D Engines

Note: Use the information in the table below to determine the operating condition and usage applicable to your vehicle.

Type of Operation	• Average fuel consumption is over 4.7 liters per 10 km (under 5.0 miles per gallon) • Gross combined weight (GCW) is greater than 45 000 kg (100,000 lb) • Idle time is 40% or higher • Vehicle operates off road or in dusty areas • Vehicle operates in inner city delivery	• Average fuel consumption is between 4.7 and 3.6 liters per 10 km (between 5.0 and 6.5 miles per gallon) • Gross combined weight (GCW) is less than 45 000 kg (100,000 lb) • Vehicle operates in regional distribution	• Average fuel consumption is under 3.6 liters per 10 km (over 6.5 miles per gallon) • Gross combined weight (GCW) is less than 36 000 kg (80,000 lb) • On highway operation only
Model Year 2003 (from serial # 307434)			
Higher Oil Qualities			
Oil Quality	*<u>both</u> VDS-2 and EO-N Premium Plus*		
Mileage*	19 000 km (12,000 miles)	24 000 km (15,000 miles)	40 000 km (25,000 miles)
Months*	4	4	4
Hours*	300	400	600
Fuel Usage*	9500 liters (2500 gallons)	11 500 liters (3000 gallons)	15 000 liters (4000 gallons)
Normal Oil Qualities			
Oil Quality	*<u>both</u> VDS-2 and API CI-4*		
Mileage*	14 000 km (9000 miles)	18 000 km (11,000 miles)	30 000 km (19,000 miles)
Months*	4	4	4
Hours*	250	300	450
Fuel Usage*	7100 liters (1900 gallons)	8500 liters (2200 gallons)	11 500 liters (3000 gallons)
* Whichever comes first			

D16D Engines

Note: Use the information in the table below to determine the operating condition and usage applicable to your vehicle.

Type of Operation	• Average fuel consumption is over 4.7 liters per 10 km (below 5.0 miles per gallon) • Gross combined weight (GCW) is greater than 50 000 kg (110,000 lb) • Idle time is 40% or higher	• Average fuel consumption is under 4.7 liters per 10 km (above 5.0 miles per gallon) • Gross combined weight (GCW) is equal to or less than 50 000 kg (110,000 lb) • Idle time is less than 40% **Note:** All three conditions (fuel consumption, GCW and idle time) must be fulfilled to use this interval.
Oil Quality	*both VDS-2 and EO-N Premium Plus*	
42L (44 quarts) Oil Capacity		
Mileage*	24 000 km (15,000 miles)	40 000 km (25,000 miles)
Months*	4	4
Hours*	400	600
Fuel Usage*	12 500 liters (3,300 gallons)	17 000 liters (4,500 gallons)
52L (55 quarts) Oil Capacity		
Mileage*	32 000 km (20,000 miles)	56 000 km (35,000 miles)
Months*	4	4
Hours*	500	800
Fuel Usage*	17 500 liters (4,500 gallons)	24 000 liters (6,400 gallons)
* Whichever comes first		

D11F, D13F and D16F Engines Oil Type/Quality

The length of time an engine can operate before an oil change depends on the quality oil used, the type of fuel used, fuel consumption, engine oil consumption, vehicle application, level of dust in the air, and fuel consumption. The change intervals given in this bulletin are maximum intervals. If the vehicle is operating in heavy-duty operation, dusty or off-road conditions, etc., reduce the intervals for more frequent oil changes. Change all oil filters at each oil change.

Volvo Trucks North America cannot guarantee the performance of filters that are not made or sold by Volvo Trucks North America. The performance guarantee of any commercially available filters is the responsibility of the filter manufacturer.

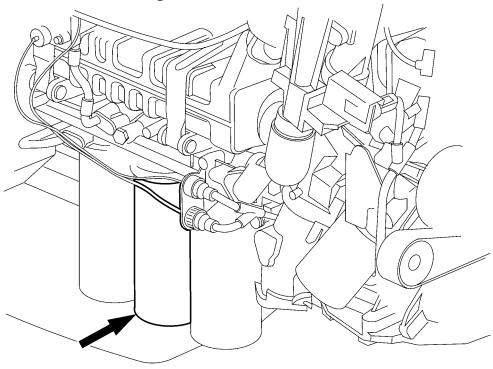
Synthetic oils do not allow further extension of oil drain intervals. It is the contamination rate, i.e., soot, and the depletion of additives, rather than base oil quality that determines the useful engine oil life and therefore the oil change intervals.

Note: Engines meeting the emissions requirements of 2007 are designed with exhaust aftertreatment systems requiring a new engine oil quality. This has lead Volvo to require an oil that meets VDS-4 and EO-O Premium Plus quality standards for model year 2007 and later Volvo engines. VDS-4 and EO-O Premium Plus are both based on the newly developed API CJ-4 engine oil specification, but have additional performance requirements essential to adequately protect the Volvo engines at the drain intervals specified. Earlier engines also work better with the above mentioned oils, but are not required.

CAUTION

Extra oil additives must never be added to any oil used.

Note: Oil Terminology: VDS (Volvo Drain Specifications), and EO-O (Engine Oil - [Grade Level])



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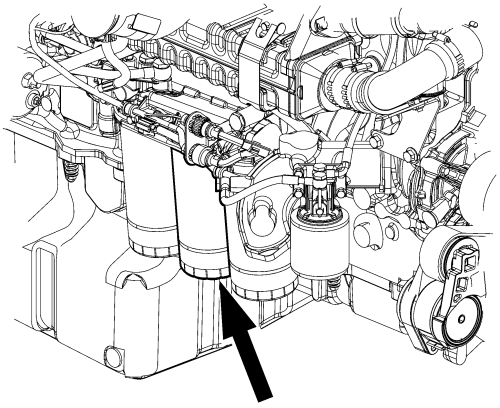
D13F Oil Filters (D11F Similar)



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D16F Oil Filters

D11F, D13F and D16F Engines Oil Change Intervals

Note: Volvo strongly recommends using oils that meet both VDS-4 and EO-O Premium Plus quality standards at all times.

Note: For information about oil change intervals for non-Volvo engines, refer to the appropriate engine manufacturer's literature.

D11F and D13F Engines

Note: Use the information in the table below to determine the operating condition and usage applicable to your vehicle.

Engine Operating Condition	Medium	Heavy	Severe
Total Fuel Consumption (L/100 km)	Less than 39	Less than 50	Less than 64
Total Fuel Consumption (mpg)	More than 6.0	More than 4.7	More than 3.7
Engine Oil and Filter Change Interval, km (miles) — 36 L (38 quarts) oil capacity	56 000 (35,000)	40 000 (25,000)	24 000 (15,000)
Note: If idle time is greater than 25%, use the next lower drain interval.			

D16F Engines

Note: Use the information in the table below to determine the operating condition and usage applicable to your vehicle.

Engine Operating Condition	Medium	Heavy	Severe
Total Fuel Consumption (L/100 km)	Less than 39	Less than 50	Less than 64
Total Fuel Consumption (mpg)	More than 6.0	More than 4.7	More than 3.7
Engine Oil and Filter Change Interval, km (miles) — 42 L (44 quarts) oil capacity	56 000 (35,000)	40 000 (25,000)	24 000 (15,000)
Engine Oil and Filter Change Interval, km (miles) — 52 L (55 quarts) oil capacity	80 000 (50,000)	56 000 (35,000)	40 000 (25,000)
Note: If idle time is greater than 25%, use the next lower drain interval.			

Oil Capacity

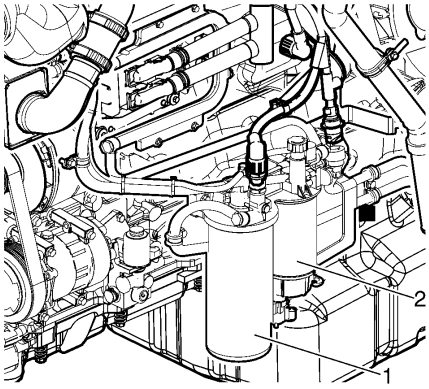
All Engines

Vehicle	Engine	Approximate oil change capacity in liters (US quarts)	
		Normal oil change (including filter)	***Maximum to minimum on dipstick***
VN	D12D	33 liters (35 quarts)	8 liters (8.5 quarts)
VHD	D12D	38 liters (40 quarts)	6 liters (6.5 quarts)
VNL	D16D	42 liters (44 quarts), standard	8 liters (8.5 quarts)
		52 liters (55 quarts), optional	
VT	D16D	52 liters (55 quarts)	8 liters (8.5 quarts)
VN, VHD	D11F and D13F	36 liters (38 quarts)	8 liters (8.5 quarts)
VNL	D16F	42 liters (44 quarts), standard	8 liters (8.5 quarts)
		52 liters (55 quarts), optional	
VT	D16F	52 liters (55 quarts)	8 liters (8.5 quarts)

Fuel Filters

Note: When draining the fuel filters, collect the waste in a fuel-safe container. Always dispose of fuel according to Federal or local regulations. Take the drained fuel and water to a recycle or waste management center.

The filters are an important part of the fuel system. Always replace the filters at every engine oil change and use the recommended filter types for the best engine operation and service life. Drain the primary filter water trap daily.



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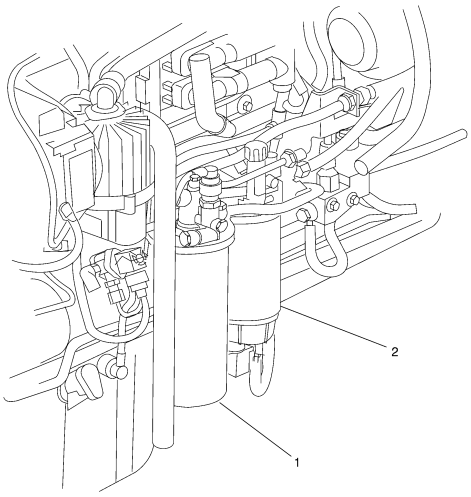
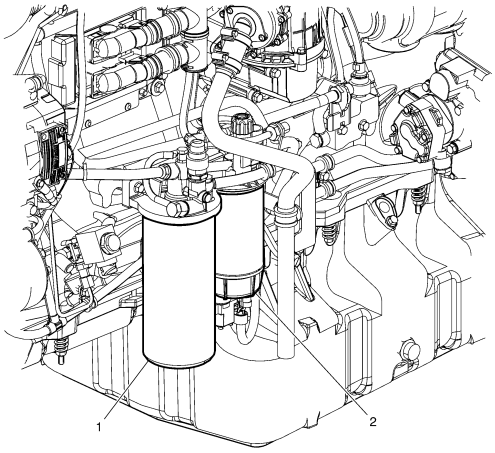
1 D16D Secondary Fuel Filter
2 D16D Primary Fuel Filter with Water Separator



W2006058

1 D13F Secondary Fuel Filter (D11F Similar)
2 D13F Primary Fuel Filter with Water Separator (D11F Similar)



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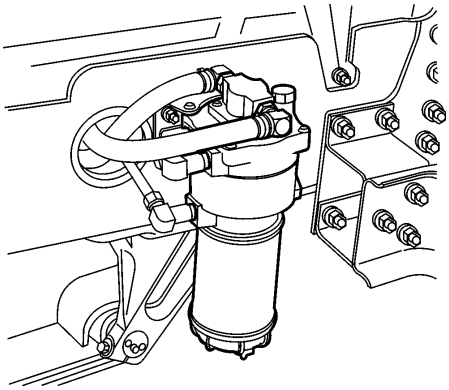
1 D16F Secondary Fuel Filter
2 D16F Primary Fuel Filter with Water Separator



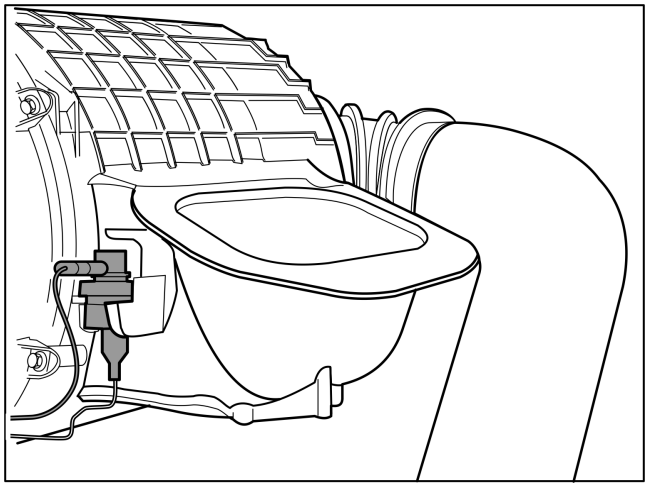
W2003931

Chassis Mounted Primary Fuel Filter

Engine Air Filter

> **CAUTION**
>
> Continued operation with the gauge showing in the red may cause damage to the engine. Operating the engine with a damaged filter allows dust to pass directly into the engine, causing damage. Replace damaged or clogged filters.

The engine air filter is monitored by a pressure restriction gauge mounted on the air filter housing. The gauge may be connected to a telltale signal on the instrument panel which illuminates when the air filter needs to be changed. Refer to the vehicle operator's manual for additional information.



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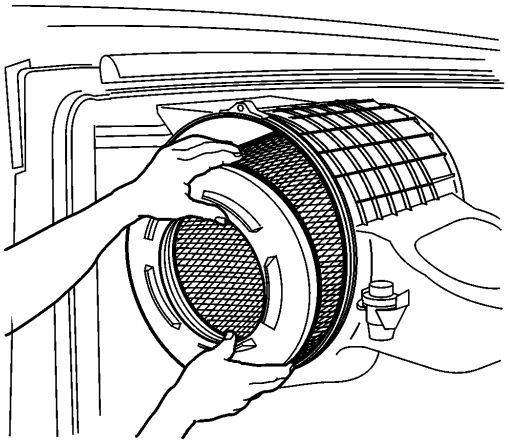
Pressure Restriction Gauge

A manual gauge needs to be inspected regularly. Replace the filter according to the gauge or after a maximum of two years, whichever comes first. The optional extra filter insert should be changed with every third main air filter.



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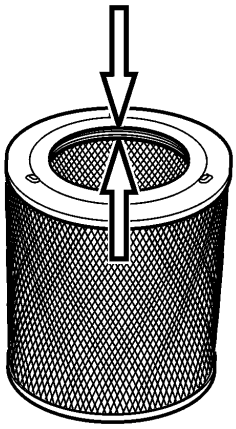
Main Engine Air Filter



W2003945

Optional Extra Filter Insert

Engine Component Maintenance Intervals
D11F, D13F and D16F Engines

Engine Coolant

CAUTION

Volvo Trucks North America does not recommend using plain water in the cooling system. Water alone is corrosive at engine operating temperatures and does not provide adequate boiling protection. The engine may develop corrosion and cavitation problems in the engine and radiator, and the boiling point of the coolant is lowered compared to a proper antifreeze and water mixture. Failure to follow Volvo Truck North America's cooling system care/maintenance recommendations can render the warranty invalid.

Note: Always dispose of coolant according to Federal or local regulations. Take all used coolant to a recycling or waste collection center.

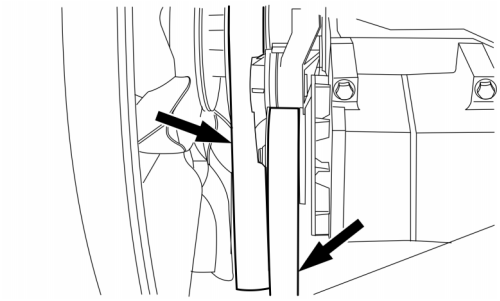
Coolant capacity is approximately 50L (53 quarts) with a manual transmission. For an automatic transmission, add 9.5L (10 quarts).

Change the filter and coolant according to the intervals in the table.

Coolant Filter	80 000 km (50,000 miles) or 6 months, whichever comes first
Long Life Filter with Extended Life Coolant	240 000 km (150,000 miles) or 12 months, whichever comes first
Standard Coolant	500 000 km (300,000 miles) or 24 months, whichever comes first
Extended Life Coolant	1 000 000 km (600,000 miles) or 48 months, whichever comes first

Drive Belts

All engine belts should be checked at each service point. Inspect for cracked or frayed material. All belts have automatic belt tensioners to keep the correct tension without adjustment. Replace the drive belts every 500 000 km (300,000 miles) or 36 months, whichever comes first, for VN and VT; 240 000 km (150,000 miles) or 12 months, whichever comes first, for VHD.



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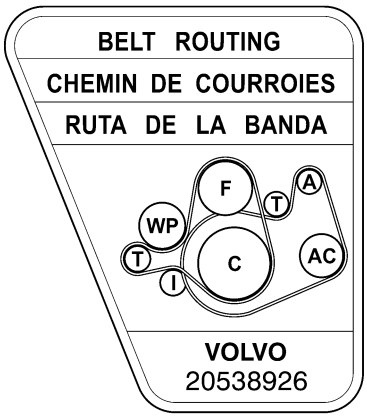
Drive Belts

A drive belt routing label is located on the vehicle frame rail.



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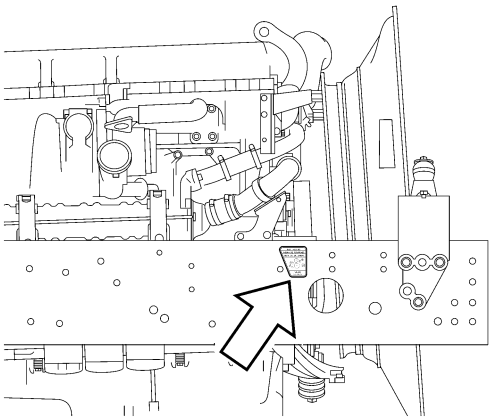
Drive Belts Routing Label



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Drive Belts Routing Label Location

Valve Adjustment

Adjust the valves according to the intervals in the table.

D11F and D13F	Initial Adjustment: 200 000 km (125,000 miles) or 12 months, whichever comes first
	Then adjust every 400 000 km (250,000 miles) or 24 months, whichever comes first
D16F	Initial Adjustment: 100 000 km (60,000 miles) or 6 months, whichever comes first
	Then adjust every 200 000 km (125,000 miles) or 12 months, whichever comes first

Exhaust Aftertreatment System

Diesel Particulate Filter

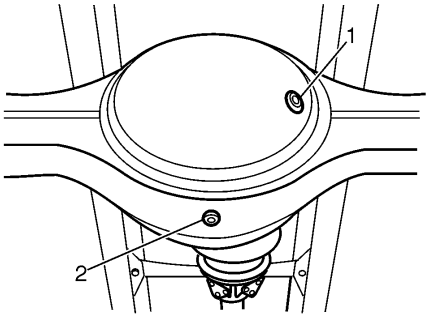
The vehicle must be taken to an authorized Volvo Truck dealer to replace the diesel particulate filter. Replace the filter every 400 000 km (250,000 miles) or 4500 hours, whichever comes first.

Aftertreatment Fuel Injector

The aftertreatment fuel injector must be cleaned every 240 000 km (150,000 miles) or 4500 hours, whichever comes first.

Rear Axle, Lubrication

Ensure the vehicle is parked on a level surface when checking the oil level. Fill or add oil to the lower edge of the level hole in the carrier housing. If the hubs were empty, tilt axle for one minute to each side.



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CAUTION

Do not use synthetic lubricants in the rear axle. Synthetic lubrication may cause seal degradation.

For more information on the Rear Axle refer to Service Information in Group 4 and appropriate vendor literature.

Oil Change Intervals

Current Rear Axles

Tandem Axles

- CT EV 87 (VBT4018, VBT4618, VBT4818 & VBT5218)

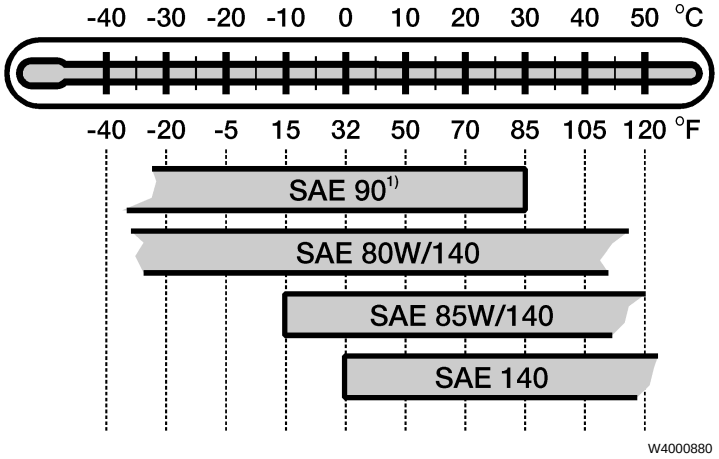
First oil and filter change	After 1 month or 10,000 km (6000 miles)
Normal change interval, oil and filter	Every 12 months or 120,000 km (75,000 miles)

Oil Viscosity

High viscosity single grade oil, SAE 140, should only be used in warm climates where no cold weather is encountered. Low viscosity single grade oil, such as SAE 75, should only be used in cold climates where no warm weather is encountered.

CAUTION

Do not use synthetic lubricants in the rear axle. Synthetic lubrication may cause seal degradation.



For severe operation or continuous operation above an altitude of 2000 m (6000 ft) above sea level, a viscosity of SAE 140, SAE 80W/140 or SAE 85W/140 is recommended for use instead of SAE 90.

Oil Type

Mineral oil	API-GL-5, MIL-PRF-2105E

CAUTION

Do not use synthetic lubricants in the rear axle. Synthetic lubrication may cause seal degradation.

Oil Capacity

Rear Axles

Vehicle	Tandem Axle	Approximate capacity in liters (quarts)
VN, VHD	CT EV 87 (VBT4018, VBT4618, VBT4818 or VBT5218) Front tandem EV 87 Rear tandem EV 80	20.0 (21.0) 9.0 (9.5)

Power Steering, Lubrication

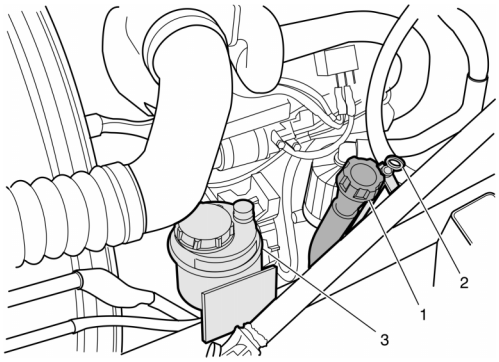
Power Steering Reservoir

The power steering fluid reservoir is filled with Automatic Transmission Fluid (ATF) Dexron® III for the power steering system. Change fluid every 240,000 km (150,000 miles). Change filter every year or more often if necessary.

If the fluid has darkened, it indicates the power steering system is running hotter than normal and the fluid is overheating. Troubleshoot for possible overheating and change the fluid.

The Power Steering Reservoir fluid is maintenance free and should only be changed in the event of required maintenance as a result of mechanical failure.

For more information on Steering refer to Service Information in Group 6 and appropriate vendor literature.



W2006042

1 Engine Oil Fill Tube

2 Engine Oil Dipstick

3 Power Steering Fluid Reservoir

Transmission, Lubrication

Transmission Oil

CAUTION

Only use Volvo approved synthetic SAE 75W/85 gearbox oil (specification 97307) in the I-Shift transmission. Using non-approved oil can result in damage to transmission components.

CAUTION

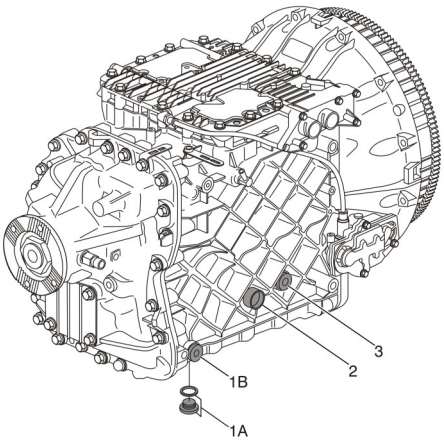
Never reuse drained I-Shift oil. The oil must be replaced along with the oil filter. Reusing drained oil can result in damage to transmission components.

Keep the transmission oil at the proper level and change it at the Volvo recommended intervals. Always replace the oil filter when the oil is changed. Always use the Volvo approved synthetic oil whenever adding or changing the transmission oil.

For a complete list of approved oils, contact your Volvo Truck dealer. Also, refer to Bulletin 175-61, Approved Oils, Volvo Components.

Check Oil Level

Check the transmission oil level at each service interval. Park the vehicle on a level surface. Check the oil level through the sight glass on the side of the transmission. Add oil as necessary. Always use the correct Volvo approved synthetic oil.



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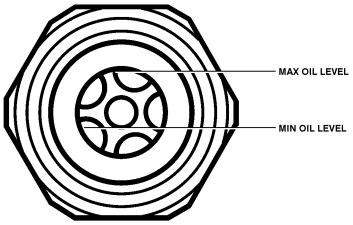
1 Drain Plug
2 Sight Glass
3 Fill Plug and Oil Level



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Sight Glass for Checking Oil Level

Oil Change Interval

The length of time a transmission can operate before an oil change is required depends on the quality of the oil used and the vehicle application. For severe service or off-highway applications, more frequent oil changes may be necessary.

For on-highway applications, change the transmission oil every 400 000 km (250,000 miles). Always replace the oil filter when the oil is changed. Always use the Volvo approved synthetic oil whenever changing the transmission oil.

Oil Change

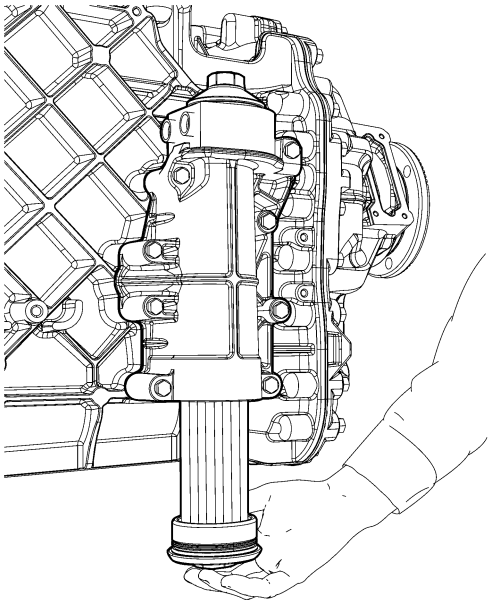
WARNING

Hot oil can cause burns. DO NOT allow hot oil to contact the skin. When changing oil, wear protective gloves.

CAUTION

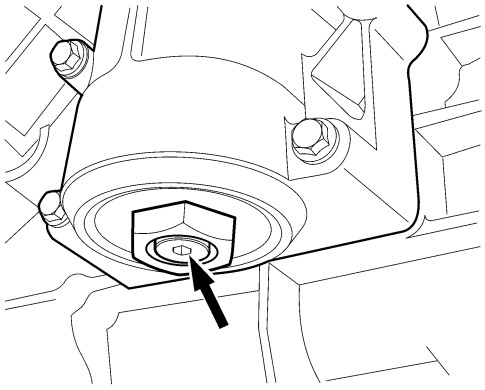
Always dispose of all lubricants (engine oil, coolant, transmission oil, etc) and filters according to Federal or local regulations. Used oil disposed of in nature or waterways contaminates our drinking water and kills wildlife.

Change the oil filter at every oil change. Drain the oil filter housing before you remove the filter.



W4002908

Oil Filter



W4002889

Oil Filter Housing Drain Plug