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VOLVO
**Volvo Trucks North America, Inc.**
Greensboro, NC USA

TSI

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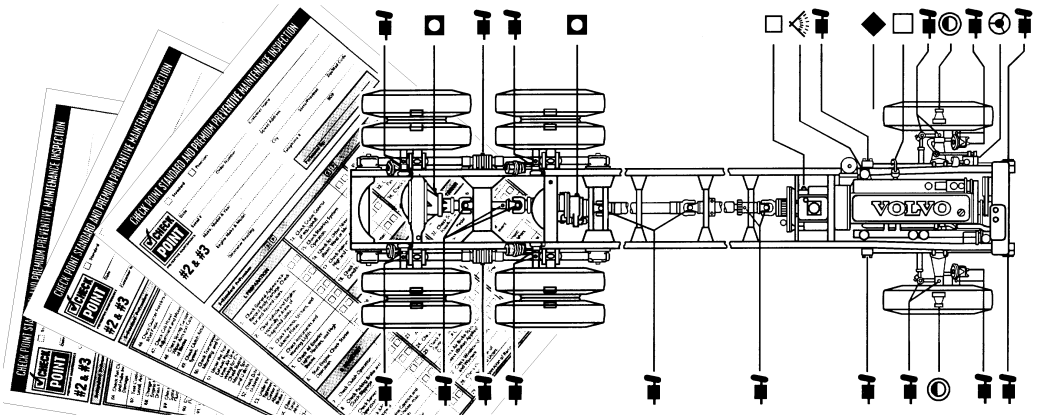
Oil and Filter Change Intervals for
VOLVO Components
All Models

# Oil and Filters, Volvo Components

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**(Valid from April 2003)**

This information covers the list of companies that offer oil types and qualities for Volvo engines. Information regarding transmissions, rear axle, and steering oil and change intervals is also included.

The list of companies that offer oils recommended by Volvo Trucks North America has been updated. **A new list has been included listing oils to be used in engines meeting the more stringent emissions requirements according to the consent decree.**.

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

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# Engine, Lubrication

For bulletin information, refer to “Oil and Filters, Volvo Components” page 1. For further Engine information refer to function group 2 and 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.

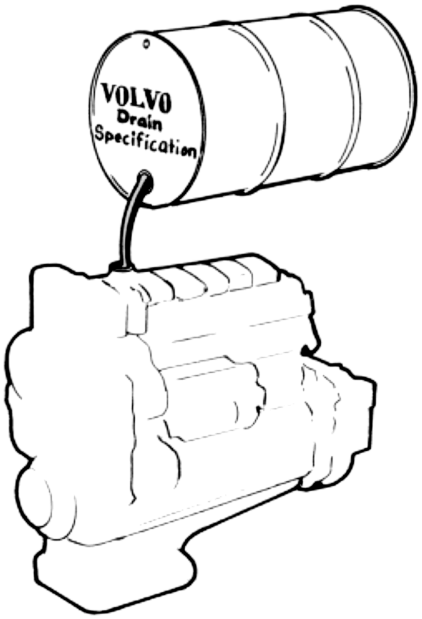
**CAUTION**

Please note that an extension of oil drains beyond the ones given in “Oil Change Intervals” page 10 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 (see “Oil Change Intervals” page 10). If the fuel has a sulfur content exceeding 0.5% by weight, the indicated maximum mileage intervals, must be cut in half.

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. **Use only Volvo original oil filters as replacement.**

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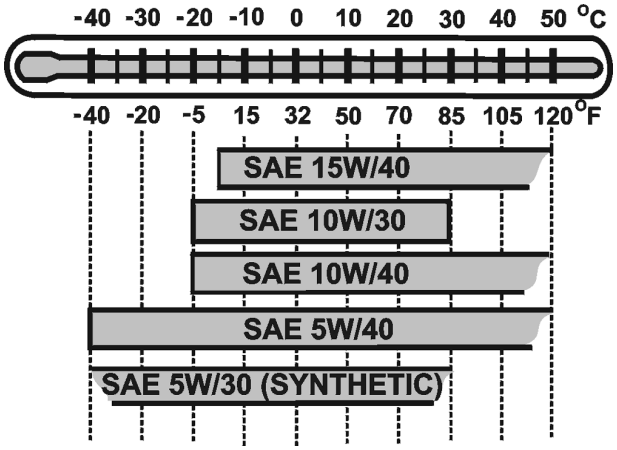
# Earlier Volvo Engines

Earlier engines should follow the intervals given for them at the time of manufacturing. Oil qualities have improved in response to new emissions legislation and today's oils also work well in older engines. Older engines should remain on the original intervals, indicated for oil changes.

# 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.

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

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# Oil Type/Quality

See the engine types for recommended oil change intervals. The intervals will not cover all applications. In on/off highway driving, severe off-highway, continuous stop-and-go city driving and extremely high mileages, the oil change interval needs to be customized for the best protection and economy. Change all oil filters at each oil change.

Synthetic oils do not allow further extension of oil drain intervals beyond those specified in “Oil Change Intervals” page 10. 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 the consent decree 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 and later Volvo engines. Earlier engines also work better with the above mentioned oils, but these are not required, though oils meeting VDS-2 and EO-N Premium Plus are strongly recommended.

**CAUTION**

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

For a list of oil qualities for a specific applications, see “Oil Change Intervals” page 10.

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

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# VDS-2 and CH-4 Approved Oils

**This list is current only from April 2003 until October 2003, at which time a new list will be released.**

| Company | Brand Name | Vis Grade |
|---|---|---|
| American Agip Co. | American Agip SHP | 15W-40 |
| American Agip Co. | American Agip All-Guard Plus | 15W-40 |
| American Agip Co. | Minuteman SHP | 15W-40 |
| American Agip Co. | Minuteman All-Guard Plus | 15W-40 |
| Arkimia Mexicana | Aceite Multi-Lub | 15W-40 |
| A. Silogram Lubricants Corp | Silogram Dynapak 1 | 15W-40 |
| Caterpillar | Caterpillar Diesel Engine Oil | 15W-40 |
| Lubrication Engineers, Inc. | 8800 Monolec Ultra | 15W-40 |
| Mexicana de Lubricantes (MEX) | Akron Ultra | 15W-40 |
| Mexicana de Lubricantes (MEX) | Akron Custom | 15W-40 |
| Mexicana de Lubricantes (MEX) | Mexlub CH-4 | 15W-40 |
| Productos Texaco (MEX) | Ursa Super Plus | 15W-40 |
| Productos Texaco (MEX) | Ursa Premium TDX | 15W-40 |
| Raloy Lubricantes (MEX) | Raloy Diesel Supreme Plus | 15W-40 |
| Shell Canada | Shell Fleet | 15W-40 |
| Shell Canada | Shell Rotella T SB Synthetic Blend | 10W-40 |
| Shell Oil Products Co. | Sheel Fleet | 15W-40 |

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# VDS-2 and CI-4 Approved Oils

**This list is current only from April 2003 until October 2003, at which time a new list will be released.**

| Company | Brand Name | Vis Grade |
|---|---|---|
| Aftermarket Auto Parts Alliance, Inc. | Parts Master Fleet | 15W-40 |
| American Agip Co. | All-Guard | 15W-40 |
| American Refining Group | Gulf Super Duty | 15W-40 |
| BP Lubricants North America | Vanellus MG | 15W-40 |
| BP Lubricants North America | Vanellus C Extra | 15W-40 |
| CAM2 | CAM2 Super HD | 15W-40 |
| Carquest | Carquest | 15W-40 |
| Castrol Heavy Duty Lubricants | Castrol Tection S | 15W-40 |
| Castrol Heavy Duty Lubricants | Castrol Elixion | 5W-30 |
| Champion Brands LLC | Champion All Fleet T | 15W-40 |
| Chevron Texaco Global Lubricants | Chevron Heavy Duty Motor Oil | 15W-40 |
| Comercial Importadora (MEX) | Quaker State Super Series III | 15W-40 |
| Conoco, Inc. | HD Fleet Supreme | 15W-40 |
| Dolphin Lubricantes (MEX) | Comodoro Plus Multigrado | 15W-40 |
| Exxon Branded (Exxon Mobil Corp) | XD-3 | 15W-40 |
| Exxon Branded (Exxon Mobil Corp) | XD-3 | 10W-30 |
| Independent Auto Parts of America (IAPA) | Auto Star | 15W-40 |
| Independent Warehouse Distributor (IWD) | Autopride | 15W-40 |
| Irving Oil | IDO Premium | 15W-40 |
| JD Streett & Company, Inc. | Streett SHD Fleet | 15W-40 |
| JD Streett & Company, Inc. | Streett SHD Fleet Plus | 15W-40 |
| Lubrication Engineers, Inc. | 8888 Monolec EGR Engine Oil | 15W-40 |
| Marathon Ashland Petroleum LLC | Multipower-3 | 15W-40 |
| Marathon Ashland Petroleum LLC | Multipower-3 Plus | 15W-40 |
| Mexicana de Lubricantes (MEX) | Akron Custom CI-4 | 15W-40 |
| Mexicana de Lubricantes (MEX) | Akron Ultra Clear | 15W-40 |
| Mobil Branded (ExxonMobil Corp.) | Delvac 1300 Super | 10W-30 |
| NAPA | NAPA Premium Performance Universal Fleet Plus | 15W-40 |
| Parts Depot Preferred | Parts Depot | 15W-40 |
| Parts Plus | Parts Plus | 15W-40 |
| Pinnacle Oil, Inc. | Fleet Pro | 15W-40 |
| Quaker State Corp. | Quaker State HDX Universal | 10W-30 |
| Quaker State Corp. | Quaker State HDX Universal | 15W-40 |
| Raloy Lubricantes (MEX) | Raloy Diesel Supreme VDS-3 | 15W-40 |
| Royal Mfg. Co., LP | Diesel Supreme Premium Plus | 15W-40 |
| Royal Purple Ltd. | Long Rider | 15W-40 |

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| Company | Brand Name | Vis Grade |
|---|---|---|
| Royal Purple Ltd. | Royal Purple | 15W-40 |
| 76 Lubricants Company | 76 Firebird HD | 15W-40 |
| Shell Oil Products Co. | Rimula Premium | 10W-30 |
| Sunoco Inc. | Super C | 15W-40 |
| Ultramar Ltd. | Ultramar Super Plus | 15W-40 |
| Valvoline | All-Fleet Extra | 15W-40 |
| Valvoline | All-Fleet Plus | 15W-40 |

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# VDS-2 and EO-N Premium Plus Approved Oils

**Note: Volvo strongly recommends using these oils in all engines, at all times.**

**This list is current only from April 2003 until October 2003, at which time a new list will be released.**

| Company | Brand Name | Vis grade |
|---|---|---|
| A. Silogram Lubricants Corp. | Silogram Dynapak 2 | 15W-40 |
| Amsoil Inc. | Amsoil PCO | 15W-40 |
| American Refining Group | Gulf Super Duty Plus | 15W-40 |
| Castrol | Tection Extra | 15W-40 |
| Castrol | Enduron S | 15W-40 |
| Chevron: See Chevron Texaco | | |
| Chevron Texaco Global Lubricants | Delo 400 | 15W-40 |
| Chevron Texaco Global Lubricants | Ursa Premium TDX | 15W-40 |
| Chevron Texaco Global Lubricants | Chevron RPM | 15W-40 |
| Chevron Texaco Global Lubricants | Texaco Ursa Super Plus | 15W-40 |
| Conoco | Hydroclear Power-D | 15W-40 |
| D-A Lubricants Co., Inc. | D-A Reliant | 15W-40 |
| D-A Lubricants Co., Inc. | D-A Excelon EBS | 15W-40 |
| D-A Lubricants Co., Inc. | D-A Excelon ST | 15W-40 |
| Exxon branded (Exxon Mobil Corporation) | XD-3 Extra | 15W-40 |
| Exxon branded (Exxon Mobil Corporation) | XD-3 Elite | 15W-40 |
| Imperial Oil Products Canada | Esso XD-3 Extra | 15W-40 |
| Kendall Motor Oil | Kendall SHP | 15W-40 |
| Kendall Motor Oil | Kendall Super-D 3 | 15W-40 |
| Mack Trucks Inc. | Bulldog EO-N Premium Plus | 15W-40 |
| Mobil Branded (Exxon Mobil Corp) | Delvac 1 | 5W-40 |
| Mobil branded (Exxon Mobil Corporation) | Delvac 1300 Super | 15W-40 |
| Northland Products Company | Superline | 15W-40 |
| Northland Products Company | HP Express Millenium | 15W-40 |
| Pennzoil Products Company | Long-Life | 15W-40 |
| Pennzoil Products Company | Long-Life EF | 15W-40 |
| Petro-Canada Lubricants | Duron | 15W-40 |
| Petro-Canada Lubricants | Duron XL | 15W-40 |
| Phillips 66 Company | Phillips Super HD II | 15W-40 |
| Phillips 66 Company | Phillips Super HD 3000 | 15W-40 |
| Pinnacle Oil Inc. | FleetPro SHP | 15W-40 |
| Quaker State Corp. | Quaker State HDX Plus | 15W-40 |
| 76 Lubricants Company | 76 Royal Triton QLT | 15W-40 |
| 76 Lubricants Company | 76 Guardol QLT | 15W-40 |

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| **Company** | **Brand Name** | **Vis grade** |
|---|---|---|
| 76 Lubricants Company | 76 T5X Heavy Duty | 15W-40 |
| Shell Canada Products Co. | Rotella T Multigrade | 15W-40 |
| Shell Oil Products Co | Rotella T Multigrade | 15W-40 |
| Shell Oil Products Co | Rimula Premium | 15W-40 |
| Texaco: See Chevron Texaco | | |
| Ultramar Ltd. | Ultramar Odyssey XLD | 15W-40 |
| Valvoline | Premium Blue | 15W-40 |

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# Oil Change Intervals

## Engine D7

**Note:** Engines meeting the emissions requirements of the consent decree 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 and later Volvo engines. **Earlier engines also work better with the above mentioned oils, but these are not required, though strongly recommended.**

**Note: Volvo strongly recommends to use oils meeting both 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.**

| **Type of Operation** | • Average fuel consumption is over 4.0 liters per 10 km (under 6.0 miles per gallon)<br>• Gross combined weight (GCW) is greater than 27,000 kg (60,000 lb)<br>• Idle time is 40% or higher<br>• Vehicle operates off road or in dusty areas<br>• Vehicle operates in inner city delivery | • Average fuel consumption is under 4.0 liters per 10 km (over 6.0 miles per gallon)<br>• Gross combined weight (GCW) is less than 27,000 kg (60,000 lb)<br>• Vehicle operates in regional distribution | • Average fuel consumption is under 3.5 liters per 10 km (over 7.0 miles per gallon)<br>• Gross combined weight (GCW) is less than 20,000 kg (45,000 lb)<br>• On highway operation only |
|---|---|---|---|
| ***Model Year 1994 to 1999 (up to serial No. 127057)*** | | | |
| **Oil Quality** | *CG-4, CH-4, VDS or VDS-2* | *CG-4, CH-4, VDS or VDS-2* | *Only CH-4, VDS or VDS-2* |
| **Mileage*** . . . . . .<br>**Months*** . . . . . .<br>**Hours*** . . . . . .<br>**Fuel Usage*** . . . | 16,000 km (10,000 miles)<br>4<br>250<br>5700 liters (1500 gallons) | 19,000 km (12,000 miles)<br>4<br>300<br>6800 liters (1800 gallons) | 24,000 km (15,000 miles)<br>4<br>400<br>8300 liters (2200 gallons) |
| ***Model Year 2000 (from serial No. 127058)*** | | | |
| **Higher Oil Qualities** | | | |
| **Oil Quality** | *both VDS-2 and CH-4* | *both VDS-2 and CH-4* | *both VDS-2 and CH-4* |
| **Mileage*** . . . . . .<br>**Months*** . . . . . .<br>**Hours*** . . . . . .<br>**Fuel Usage*** . . . | 16,000 km (10,000 miles)<br>4<br>250<br>5700 liters (1500 gallons) | 19,000 km (12,000 miles)<br>4<br>300<br>6800 liters (1800 gallons) | 24,000 km (15,000 miles)<br>4<br>400<br>8300 liters (2200 gallons) |
| **Normal Oil Qualities** | | | |
| **Oil Quality** | *CG-4, CH-4 or VDS* | *CG-4, CH-4 or VDS* | *CG-4, CH-4 or VDS* |
| **Mileage*** . . . . . .<br>**Months*** . . . . . .<br>**Hours*** . . . . . .<br>**Fuel Usage*** . . . | 8000 km (5000 miles)<br>4<br>125<br>2900 liters (800 gallons) | 10,000 km (6000 miles)<br>4<br>150<br>3400 liters (900 gallons) | 12,000 km (7500 miles)<br>4<br>200<br>4200 liters (1100 gallons) |
| * Whichever comes first | | | |

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

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# Engine D12

**Note:** Engines meeting the emissions requirements of the consent decree 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 and later Volvo engines. **Earlier engines also work better with the above mentioned oils, but these are not required, though strongly recommended.**

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

| **Type of Operation** | • Average fuel consumption is over 4.7 liters per 10 km (under 5.0 miles per gallon)<br>• Gross combined weight (GCW) is greater than 45,000 kg (100,000 lb)<br>• Idle time is 40% or higher<br>• Vehicle operates off road or in dusty areas<br>• 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)<br>• Gross combined weight (GCW) is less than 45,000 kg (100,000 lb)<br>• Vehicle operates in regional distribution | • Average fuel consumption is under 3.6 liters per 10 km (over 6.5 miles per gallon)<br>• Gross combined weight (GCW) is less than 36,000 kg (80,000 lb)<br>• On highway operation only |
|---|---|---|---|
| ***Model Year 1994 to 1999 (up to serial # 172659-D12C)*** | | | |
| **Oil Quality** | *CG-4, CH-4, VDS or VSD-2* | *CG-4, CH-4, VDS or VDS-2* | *Only CH-4, VDS or VDS-2* |
| **Mileage*** . . . . . .<br>**Months*** . . . . . .<br>**Hours*** . . . . . .<br>**Fuel Usage*** . . . | 19,000 km (12,000 miles)<br>4<br>300<br>9500 liters (2500 gallons) | 24,000 km (15,000 miles)<br>4<br>400<br>11,500 liters (3000 gallons) | 40,000 km (25,000 miles)<br>4<br>600<br>15,000 liters (4000 gallons) |
| ***Model Year 2000 (from serial # 172660-D12C)*** | | | |
| **Higher Oil Qualities** | | | |
| **Oil Quality** | *both VDS-2 and CH-4* | *both VDS-2 and CH-4* | *both VDS-2 and CH-4* |
| **Mileage*** . . . . . .<br>**Months*** . . . . . .<br>**Hours*** . . . . . .<br>**Fuel Usage*** . . . | 19,000 km (12,000 miles)<br>4<br>300<br>9500 liters (2500 gallons) | 24,000 km (15,000 miles)<br>4<br>400<br>11,500 liters (3000 gallons) | 40,000 km (25,000 miles)<br>4<br>600<br>15,000 liters (4000 gallons) |
| **Normal Oil Qualities** | | | |
| **Oil Quality** | *CG-4, CH-4 or VDS* | *CG-4, CH-4 or VDS* | *CG-4, CH-4 or VDS* |
| **Mileage*** . . . . . .<br>**Months*** . . . . . .<br>**Hours*** . . . . . .<br>**Fuel Usage*** . . . | 14,000 km (9000 miles)<br>4<br>250<br>7100 liters (1900 gallons) | 18,000 km (11,000 miles)<br>4<br>300<br>8500 liters (2200 gallons) | 30,000 km (19,000 miles)<br>4<br>450<br>11,500 liters (3000 gallons) |
| * Whichever comes first | | | |

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| **Type of Operation** | • Average fuel consumption is over 4.7 liters per 10 km (under 5.0 miles per gallon)<br>• Gross combined weight (GCW) is greater than 45,000 kg (100,000 lb)<br>• Idle time is 40% or higher<br>• Vehicle operates off road or in dusty areas<br>• 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)<br>• Gross combined weight (GCW) is less than 45,000 kg (100,000 lb)<br>• Vehicle operates in regional distribution | • Average fuel consumption is under 3.6 liters per 10 km (over 6.5 miles per gallon)<br>• Gross combined weight (GCW) is less than 36,000 kg (80,000 lb)<br>• On highway operation only |
|---|---|---|---|
| ***Model Year 2003 (from serial # 307434-D12D)*** | | | |
| **Higher Oil Qualities** | | | |
| **Oil Quality** | *both VDS-2 and EO-N Premium Plus* | *both VDS-2 and EO-N Premium Plus* | *both VDS-2 and EO-N Premium Plus* |
| **Mileage*** . . . . . .<br>**Months*** . . . . . .<br>**Hours*** . . . . . .<br>**Fuel Usage*** . . . | 19,000 km (12,000 miles)<br>4<br>300<br>9500 liters (2500 gallons) | 24,000 km (15,000 miles)<br>4<br>400<br>11,500 liters (3000 gallons) | 40,000 km (25,000 miles)<br>4<br>600<br>15,000 liters (4000 gallons) |
| **Normal Oil Qualities** | | | |
| **Oil Quality** | *both VDS-2 and API CI-4* | *both VDS-2 and API CI-4* | *both VDS-2 and API CI-4* |
| **Mileage*** . . . . . .<br>**Months*** . . . . . .<br>**Hours*** . . . . . .<br>**Fuel Usage*** . . . | 14,000 km (9000 miles)<br>4<br>250<br>7100 liters (1900 gallons) | 18,000 km (11,000 miles)<br>4<br>300<br>8500 liters (2200 gallons) | 30,000 km (19,000 miles)<br>4<br>450<br>11,500 liters (3000 gallons) |
| * Whichever comes first | | | |

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# Oil Capacity

## Current Engines

| Vehicle | Engine | Approximate oil change capacity in liters (US quarts) | | |
|---|---|---|---|---|
| | | ***Normal oil change (incl. filter)*** | ***Dry capacity*** | ***Max. to Min. on dipstick*** |
| **VN** | D12C, D12D | 33 (35) | 37 (39) | 8 (8.5) |
| **AC, WG, VHD** | D12C, D12D | 38 (40) | 42 (44) | 6 (6.5) |

## Older Engines

| Vehicle | Engine | Approximate oil change capacity in liters (US quarts) | | |
|---|---|---|---|---|
| | | ***Normal oil change (incl. filter)*** | ***Dry capacity*** | ***Max. to Min. on dipstick*** |
| **VN, WCA, WIA, AC, WG** | D12, D12A, D12B | 35 (37) | 40 (42) | 8 (8.5) |
| **FE, WX, WG, VHD** | D7, D7C | 21 (22) | 26 (27) | 6.5 (7) |
| **F 6** | TD 60 A/B | 12.5 (13) | 22 (23) | 3 (3) |
| **F 6** | TD 60 B[1] | 16 (17) | 27.5 (29) | 4.5 (5) |
| **FE 6** | TD 61 (All) | 17 (18) | 21 (22) | 4.5 (5) |
| **F 86** | TD 70 E | 16.5 (17) | 28.5 (30) | 5 (5.5) |
| **F 7** | TD 70 F/FC | 21 (22) | 34 (36) | 6.5 (7) |
| **FE 7** | TD 71 FA/FC | 21 (22) | 34 (36) | 6.5 (7) |
| **FE, WX** | TD 73 EA/EB | 21 (22) | 34 (36) | 6.5 (7) |
| **N 10** | TD 100 C | 20 (21) | 37 (39) | 8 (8.5) |
| **N 10** | TD 101 GB | 22 (23) | 37 (39) | 8 (8.5) |
| **AC, WC, WG, WI** | TD 102 (All) | 34.5 (36.5) | 39 (41) | 10 (10.5) |
| **N 12** | TD 120 FA/FB[2] | 29 (30) | 44 (46) | 9 (9.5) |
| **N 12** | TD 120 FA/FB[3] | 36 (38) | 51 (54) | 12 (12.5) |
| **N 12** | TD 121 (All) | 36 (38) | 41 (43) | 12 (12.5) |
| **AC, WCA, WIA, WG** | TD 122 (All) | 36 (38) | 41 (43) | 12 (12.5) |
| **AC, WCA, WIA, WG** | TD 123 (All) | 36 (38) | 41 (43) | 12 (12.5) |

1 Late production from S/N 47590 with increased oil capacity.

2 For vehicles with forward front axle.

3 For vehicles with normal front axle.

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# Fuel Filters

*Filter Change Interval*

All engines . . . . . At every engine oil change (maximum 40,000 km [25,000 miles])

# Air Filter (Engine)

*Filter Change Interval*

All engines . . . . . See reading on air restriction gauge or maximum every 2 years

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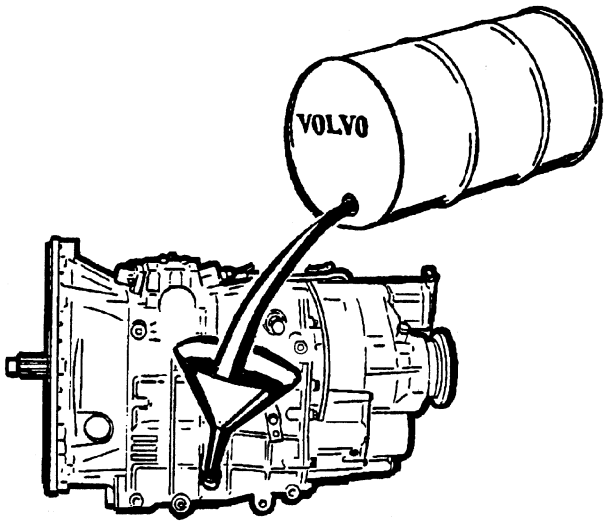
# Transmission, Lubrication

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For general information, refer to “Oil and Filters, Volvo Components” page 1and any appropriate vendor literature. For further Transmission information refer to function group 4 and appropriate vendor literature.

Volvo transmissions are fully synchronized and need correct lubrication for the synchronizers to work properly.

**CAUTION**

Use only the specified type of single-weight engine oils. Do not use multi-viscosity oil or EP gear oils (for example axle lube such as GL-5 gear oils) as they may damage components. Gear oil API GL-5 will severely lessen the synchronizer braking effect, leading to unsynchronized gear engagement that damages the engagement rings.

**Note:** Synthetic lubricants generally have lower friction. Thus the sychromesh is damaged by not matching gear speeds. Synthetic lubrication may also cause seal degradation, therefore, synthetic lubricants are not recommended.

The transmission should not be operated consistently at temperatures above 110 °C (230 °F). If the oil temperature reaches 140 °C (285 °F), stop the vehicle to let the oil temperature decrease.

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With lengthy or continuous driving at altitudes of more than 2000 m (6000 ft) above sea level, the change interval should be cut in half.

**Oil Heat Exchanger (Cooler) Requirements:**

If any of the following conditions apply, in any combination, an oil heat exchanger (cooler) is required:

1 If usually operating at low speed and/or in hilly terrain.

2 If the ambient temperature exceeds 32 °C (90 °F) during more than 1 month per year and/or if operating temperature of the oil exceeds 110 °C (230 °F).

3 If there is restricted air flow around the transmission (i.e. full air fairing; also see points 1 and 2).

4 If using engines with power of 297 kW (399 hp) or more and/or a GCW over 45,000 kg (100,000 lb).

5 If there is extensive PTO operation over 15 minutes or continuous output (e.g. bulk load operation) over 55 kW (75 hp).

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

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# Oil Change Intervals

## Old Transmission

- SR1900 (VT1414)

| | |
|---|---|
| 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) |

- S5–35 and S6–36

| | |
|---|---|
| Normal change interval, oil and filter | Every 12 months or 90,000 km (60,000 miles) |

- R5 (All)
- R6, SR6 (All)
- R7, SR7 (All)
- R1000 (VT809)
- R1700 & 1700A (VT1209 & 1309), SR1700 (VT1214)

| | |
|---|---|
| Normal change interval, oil and filter | Every 12 months or 120,000 km (75,000 miles) |

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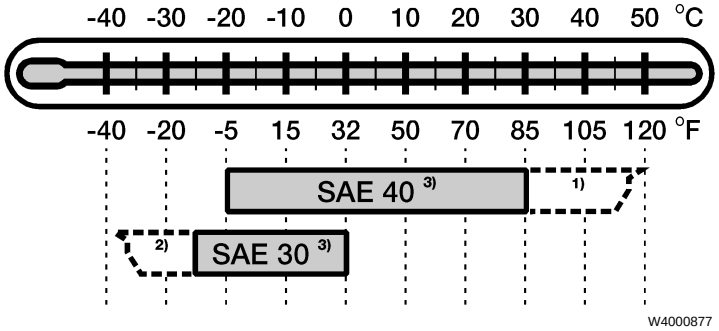
# Oil Viscosity

Use only single weight engine oil. With operation in hot climates, an oil heat exchanger must be installed. The Volvo transmission oil heat exchanger works together with the engine coolant system. It acts as a cooler in the summer and as a heater in the winter.




**1) With ambient temperatures of 32 °C (90 °F) or above during more than one month per year, an oil heat exchanger (cooler) must be installed. The same viscosity of oil can then be used for the higher temperatures.**
**2) With ambient temperatures of -25 °C (-15 °F) or below, a heat exchanger is recommended. With the heat exchanger, the oil warm-up times are faster.**
**3) Multigrade engine oils must not be used.**

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# Oil Type

Volvo transmissions are fully synchronized and need correct lubrication for the synchronizers to work properly.

**CAUTION**

Use only the specified type of single weight engine oils. Do not use multi-viscosity oil or EP gear oils (for example axle lube such as GL-5 gear oils) as they may damage components. Gear oil API GL-5 will severely lessen the synchronizer braking effect, leading to unsynchronized gear engagement that damages the engagement rings.

**Note:** Synthetic lubricants generally have lower friction. Thus the sychromesh is damaged by not matching gear speeds. Synthetic lubrication may also cause seal degradation, therefore, synthetic lubricants are not recommended.

| **Oil type** | |
|---|---|
| Engine oil | API-CE or CF |

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# Oil Capacity

## Old Transmissions

| Vehicle | Transmission | Approximate capacity in liters (quarts) |
|---|---|---|
| **VN, WCA, WIA, WG, ACL** | SR1900 (VT1414) | 13.0 (14.0) |

| Vehicle | Transmission | Approximate capacity in liters (quarts) |
|---|---|---|
| **F6** | S5-35<br>S6-65 | 3.5 (3.7)<br>9.5 (10.0) |
| **FE6** | S5-35<br>S6-65 | 3.5 (3.7)<br>9.5 (10.0) |
| **F86** | R51 | 9.0 (9.5) |
| **F7** | R52 | 8.8 (9.3) |
| **FE7** | R52<br>R1000 (VT809) | 8.8 (9.3)<br>9.5 (10.0) |
| **FE, WX, WG** | R1000 (VT809) | 9.5 (10.0) |
| **N10** | R63<br>SR62 | 13.1 (13.8)<br>14.7 (15.5) |
| **N12** | R70<br>SR70 | 10.0 (10.5)<br>10.0 (10.5) |
| **VN, AC, WCA,WIA, WG** | R1700, R1700A (VT1209, 1309) | 12.0 (13.0) |
| **WCA, AC** | SR1700 (VT1214) | 13.0 (14.0) |

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# Rear Axle, Lubrication

(For general information, refer to “Oil and Filters, Volvo Components” page 1)

For further information on the Rear Axle refer to function group 4 and appropriate vendor literature.

Make sure 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.

**CAUTION**

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

## 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) |

### Old Rear Axles

***Single Axles***

- RA EV 40 and 41
- RA EV 75 and 76
- RA EV 80 (VR2312)
- RA EV 85 (VR2314)
- RA EV 90 (VBA3814S — 6X2)

| | |
|---|---|
| Normal change intervals . . . . . | Every 12 months or 120,000 km (75,000 miles) |

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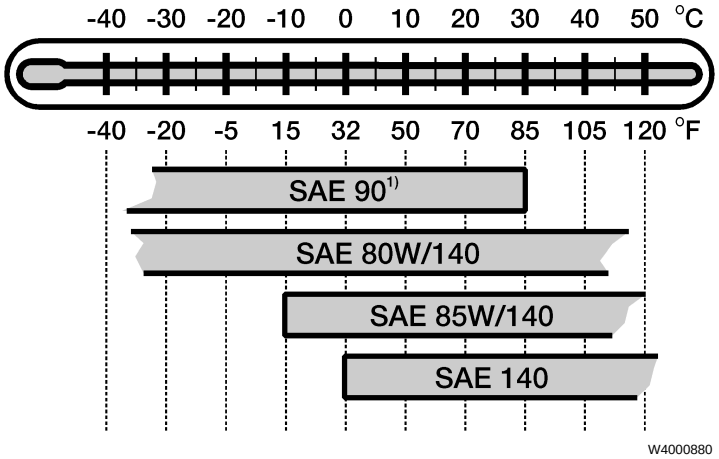
# Oil Viscosity

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 very hard 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.

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# Oil Capacity

## Current Rear Axles

| Vehicle | Tandem Axle | Approximate capacity in liters (quarts) |
|---|---|---|
| **VN, WX, WXLL, WG** | CT EV 87 (VBT4018, VBT4618, VBT4818 or VBT5218)<br>Front tandem EV 87<br>Rear tandem EV 80 | 20.0 (21.0)<br>9.0 (9.5) |

## Older Rear Axles

| Vehicle | Rear Axles | Approximate capacity in liters (quarts) |
|---|---|---|
| **F6** | EV 41<br>EV 75 (F614) | 9.0 (9.5)<br>12.0 (12.5) |
| **FE6** | EV 76 | 10.0 (10.5) |
| **F86** | EV 80<br>EV 85 | 9.0 (9.5)<br>13.0 (13.5) |
| **F7** | EV 80<br>EV 85<br>CT EV 87:<br>Front (EV 87)<br>Rear (EV 80) | 9.0 (9.5)<br>13.0 (13.5)<br>-<br>20.0 (21.0)<br>9.0 (9.5) |
| **FE7** | EV 80 | 9.0 (9.5) |
| **N10** | EV 85 (VR2312)<br>CT EV 87:<br>(VBT4018 or VBT4618)<br>Front (EV 87)<br>Rear (EV 80) | 13.0 (13.5)<br>-<br>-<br>-<br>20.0 (21.0)<br>9.0 (9.5) |
| **N12** | EV 85 (VR2312)<br>EV 90 (VR2314)<br>CT EV 87:<br>(VBT4018 or VBT4618)<br>Front (EV 87)<br>Rear (EV 80) | 13.0 (13.5)<br>10.0 (10.5)<br>-<br>-<br>-<br>20.0 (21.0)<br>9.0 (9.5) |

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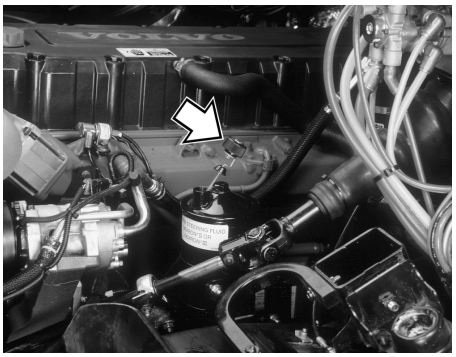
# Power Steering, Lubrication

## Power Steering Reservoir

Power Steering ReservoirThe 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 that the power steering system is running hotter than normal and the fluid is overheating. Take the vehicle to a Volvo Truck dealer for troubleshooting the overheating and to have the fluid changed.



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