SMT
SERVICES MACHINERY TRUCKS

OIL SAMPLING

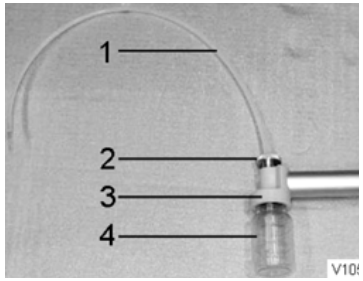
HOW TO TAKE AN OIL SAMPLE

Instructions for use
To ensure that you obtain an accurate oil reading, it is important that you sample the oil from the correct points on each machine and in the correct way. It is also important that the form is properly filled out and labels put in the right sections as mistake can cause irregular readings.

Form for oil analysis
Fill in the boxes for the Machine (Model, Hours etc.) Customer, Location and respective samples with regard to oil brand, number of operating hours for the oil and the oil grade. Also mark whether the oil was changed at the time of the sample being taken, i.e. during a service

Attaching Labels
Ensure that each sample bottle has a label fixed to the side and the corresponding label is also in the correct sample box on the form.

Instructions for vacuum pump
Use a new hose for each sampling. Store the pump in a clean place, when it is not used.



1. Hose (941363)
2. Lock nut
3. Vacuum pump (11411003)
4. Oil-sample bottle

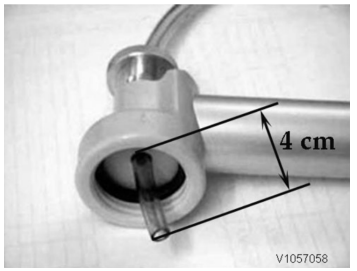
A Vacuum pump is available to purchase from SMT – **it is not included in the sample kit**

HOW TO TAKE AN OIL SAMPLE

Installing hose

1. Cut a hose to a suitable length.
2. Insert the hose through the head of the vacuum pump.

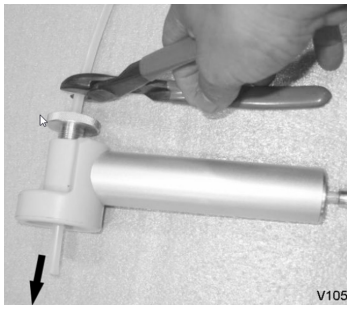
NOTE: The hose should protrude 4cm (1.6 in) outside the base of the pump head



Removing hose

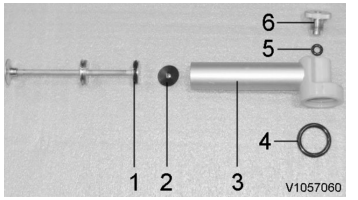
1. Loosen the lock nut.
2. Cut off the hose above the lock nut and pull the hose out of the pump.

NOTE: Check that the hose ends do not contaminate the pump head with oil.



Cleaning vaccum pump

1. O-ring
2. Diaphragm
3. Cylinder
4. O-ring
5. O-ring
6. Lock nut



The vacuum pump must be cleaned after each sampling to prevent any residual oil in the vacuum pump from contaminating future oil samples.

1. Dismantle the vacuum pump.
2. Wipe the parts with a clean lint-free paper or rag. Apply a thin coat of silicone grease to the O-rings. When required, use compressed air for cleaning
3. Assemble the vacuum pump and test its function.

NOTE: The vacuum pump must not be cleaned with diesel fuel, petrol or cleaning agent.

OIL SAMPLING METHODS

The following applies to all methods:

- Make sure that oil-sample bottle is completely clean.
- Operate the machine until all systems have reached normal working temperature.
- During the warming-up, all functions should be operated. It is important that all functions connected to the hydraulic system are operated to their respective end positions.
- Take the oil samples immediately after the warming up.
- Seal the oil-sample bottle thoroughly to avoid contamination and loss of oil during the transport.

(A) Oil sample method with hose (pressurised system)

This method is used for engine, transmission and working hydraulics.

Tools:
14025152 Hose with nipple

1. Start the engine.
2. Connect the hose to the machine so that oil begins to run out into the hose.

   NOTE: Collect the oil that is running out in a suitable vessel. Drain off 2–4 dl (6.8–13.6 US fl oz) into the vessel

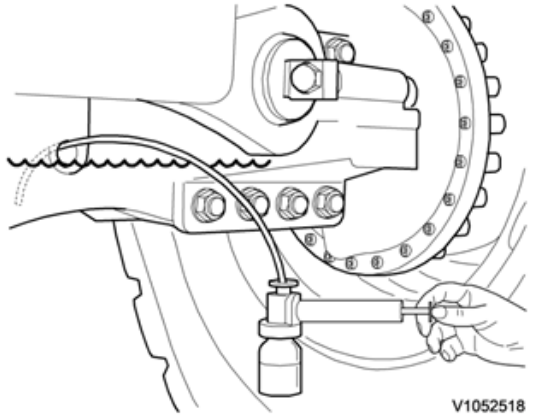
3. Slacken the hose connection to stop the oil flow.
4. Remove the vessel with the oil and make sure that it is taken care of in an environmentally safe way.
5. Make sure that it is possible to collect oil in the oil-sample bottle.
6. Tighten the hose connection again and fill the sample bottle 3/4 full.
7. Put the cap on oil-sample bottle.
8. Attach one label to the bottle and one label to the form for oil analysis.
9. Remove the hose.
10. Stop the engine.

OIL SAMPLING METHODS

(B) Oil sample method with vacuum pump

The same method is used for axles, engine, dropbox and hub reduction gears.

Tools:
11411003 Vacuum pump
941363 Hose



1. Cut the hose to a suitable length and connect it to the vacuum pump.
2. Install oil-sample bottle on the vacuum pump.
3. Insert the hose at the testing point.

   NOTE: Make sure that the oil sample is not taken from the bottom, but rather in the middle or within the working range of the oil.

4. Draw up oil to flush out the hose.
5. Remove the oil-sample bottle and empty it. Make sure that the oil is taken care of in an environmentally safe way.
6. Install oil-sample bottle on the vacuum pump and fill the sample bottle 3/4 full.
7. Remove the oil-sample bottle and put on the cap.
8. Attach one label to the bottle and one label to the form for oil analysis.

MACHINE SAMPLE LOCATIONS

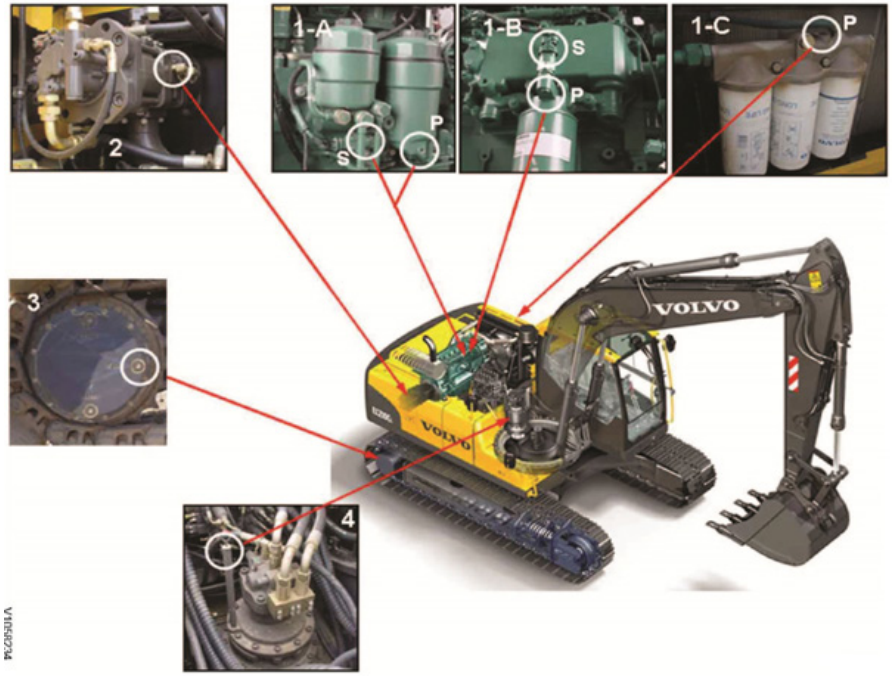
Sample Frequency

Machine Range	Sub Category	500	1000	2000
WLO	ALL	2		
			5	
				6
ART	ALL	2		
			8	
				9
EXC	EC140E - EC380E	1		
			5	
				6
EXC	EC480E - EC750E	1		
			6	
				7
EXW	ALL	1		
			6	
				7

Engine*	Hydraulic	Coolant* (Annually)	Swing Gearbox	LH Swing Gearbox	RH Swing Gearbox	LH Travel Gearbox	RH Travel Gearbox	Pump Gearbox	Front Axle	Mid Axle	Rear Axle	Gearbox	Transmission	Drop Box	Wet Brakes
1												1			
1	1							1		1		1			
1	1	1						1		1		1			
1												1			
1	1							1	1	1		1	1	1	
1	1	1						1	1	1		1	1	1	
1															
1	1		1			1	1								
1	1	1	1			1	1								
1															
1	1			1	1	1	1								
1	1	1		1	1	1	1								
1															
1	1		1					1		1	1				
1	1	1	1					1		1	1				

Crawler Excavator (EXC)

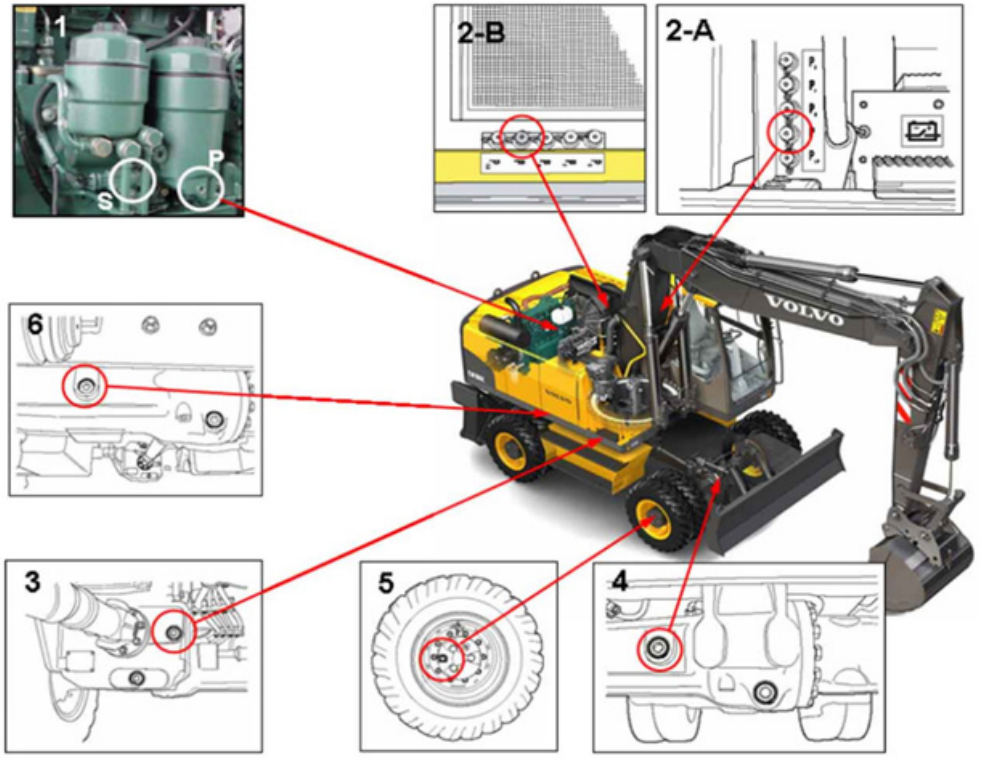
1. Engine (A,B or C engine size dependant)
2. Hydraulic Oil
3. Travel Gearbox (each side)
4. Swing Gearbox



MACHINE SAMPLE LOCATIONS

Wheeled Excavator (EXW)

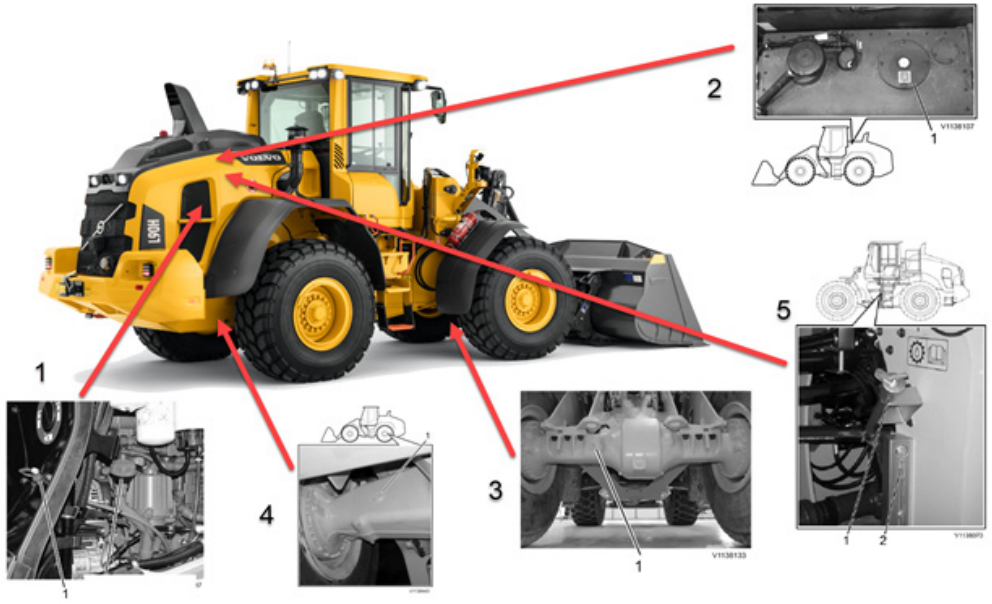
1. Engine
2. Hydraulic Oil (B/C Series)
3. Travel Gearbox
4. Front Axle Differential
5. Front Axle Hub
6. Rear Axle



MACHINE SAMPLE LOCATIONS

Wheeled Loader (WLO)

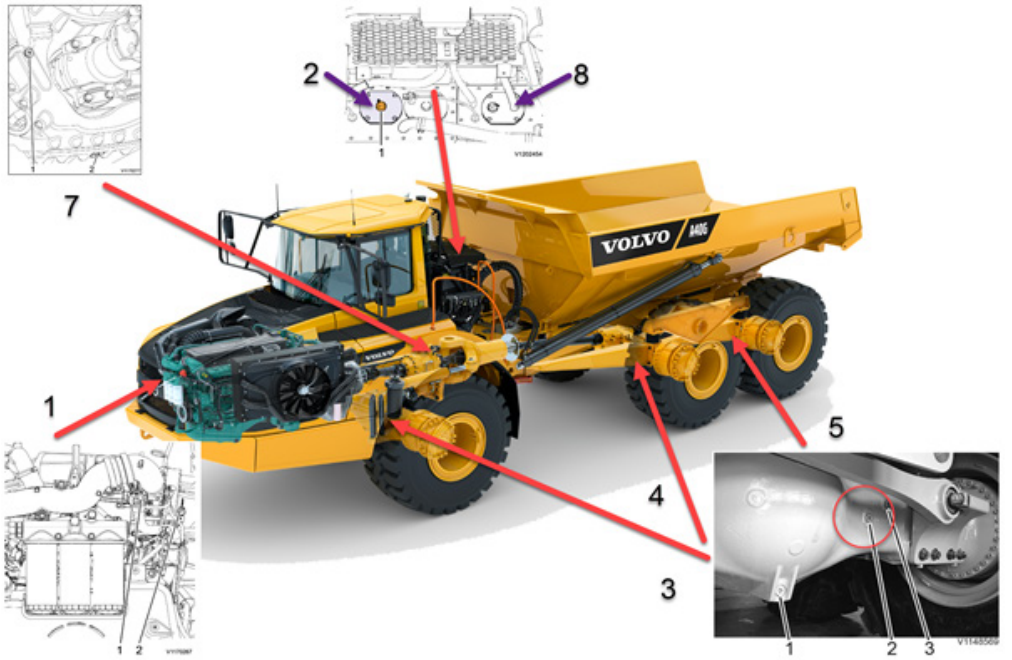
1. Engine
2. Hydraulic Oil (B/C Series)
3. Front Axle
4. Rear Axle
5. Transmission



MACHINE SAMPLE LOCATIONS

Articulated Hauler (ART)

1. Engine
2. Hydraulic Oil (B/C Series)
3. Front Axle
4. Centre Axle
5. Rear Axle
6. Transmission
7. Drop Box
8. Wet brake



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