

Caterpillar Engine Seminar

Frequently Asked Questions & Answers

(Updated 7/03)

• Lubrication System Maintenance

1. I have a FCCC, which oil pan do I have?

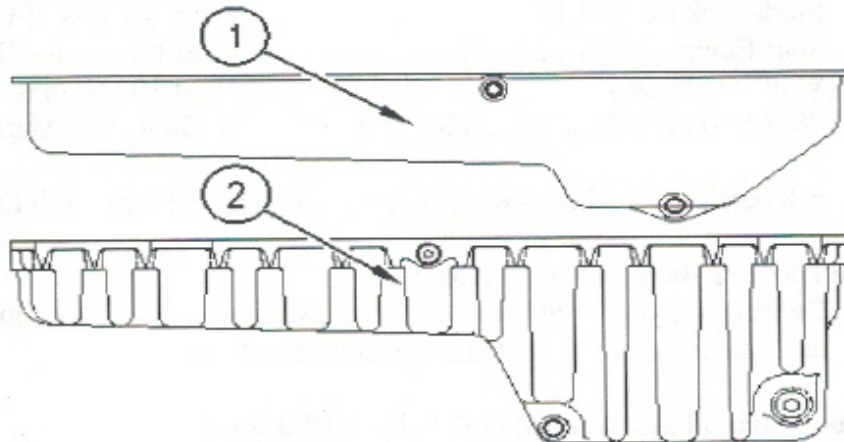
Shallow Oil Pan. See next question for fill capacities & oil pan sizes.

2. What is the proper amount of oil to put in the engine at oil change?

What should my oil change intervals be?

3126/ 3126B/ 3126E/ C7 Oil Fill Capacity

<u>Serial Number Prefix</u>	<u>Oil Pan</u>	<u>Sump</u>	<u>Miles/Years</u>
1WM & 7AS	19 Quarts (18L)	Shallow	9,000 Miles/ 1 Year
7AS*, 8YL, 9SZ, CKM, HEP, KAL	22 Quarts (21L)	Shallow	11,000 Miles/ 1 Year
7AS*, 8YL, 9SZ, CKM, HEP, KAL	30 Quarts (28L)	Deep	15,000 Miles/ 1 Year
* Dip Stick has been Calibrated on the 7AS			



(1) Shallow oil sump

(2) Deep oil sump

We recommend using Cat filters because they are superior. Using another brand doesn't automatically void the engine warranty. Your "Caterpillar Warranty" covers defects in material or workmanship.

8. I heard about extending the oil breather tube so mist doesn't spray on my radiator and collect dirt and dust. Should I do this?

Extending the fumes disposal tube is an option if oil mist is collecting in the radiator cores. Talk to your chassis OEM at about getting the needed parts.

*Make sure the breather is cleaned every oil change

9. There is oil coming from my breather tube and it gets oil all over the radiator and my tow vehicle. What should I do?

Diesel engines produce blow-by that is vented to the atmosphere. This can be drawn into the engine fan depending on location. Consult your chassis OEM about possible configuration changes to your RV.

10. Why can I double the mileage on my oil change intervals with only three additional quarts of oil (19-22)?

You DO NOT Double your mileage on change intervals by adding 3 quarts of oil, you only increase it by 2,000 miles. 9,000 miles/1 year to 11,000 miles/1 year. On some the older 3126 engines, there was a 6,000 miles oil change interval, that is where the "Double your mileage" came from.

11. Are the oil change intervals based on mileage or time? Why?

Both time and mileage. Oils will become contaminated with time and mileage. So to be on the safe side, you should change your oil on what ever occurs first. It is 11,000 miles or 1 year for the shallow oil pan. (22 quart) For the deep oil pan (30 quart) it is 15,000 miles or 1 year.

12. Will there be some kind of warning (check engine light) if oil pressure is too low?

In Medium Duty Engines – the engines are self-protecting and will shut down if the oil pressure gets too low. The HEUI pump will not allow the engine to run without engine oil.

In Heavy Duty Engines – there is an oil pressure sensor. As long as it is programmed, a warning light will be on and the engine will automatically go into a warning, de-rate, or shut down mode.

3. What are the benefits of Extended Life Coolant?

Extended Life Coolant (ELC) requires a flush and fill every 6 years/600,000 miles with an Extender added at the 3 year/300,000 mile mark. SCA's Do Not need to be checked or added at every PM service.

4. What is a maintenance kit?

A Preventative Maintenance Kit contains all the needed materials to perform a PM service.

Basic PM Kit – oil filter, fuel filters, & coolant conditioners – (regular coolant)

SOS PM Kit – oil filter, fuel filters, coolant conditioners, and SOS bottle

5. How do I perform the cooling system test?

Only perform a cooling system test if you have Regular Coolant.

1. Purchase test strips from the Cat Dealer, dip into your coolant and check color of strip with side of bottle.
2. Take a Sample of your coolant to your Cat Dealer
3. Purchase an SCA Kit from the Cat Dealer, gives you directions and bottles for mixing the chemicals to check the SCA's.

6. What are SCAs? What do they do? How do I check their status?

SCA's – Supplemental Coolant Additives

- used to prevent corrosion, formation of mineral deposits, cavitation erosion of the cylinder liners and foaming of the coolant.
- SCA's are not required with Extended Life Coolant (ELC).

7. Where do I get the test strips?

At any Caterpillar Dealer or TEPS Dealer.

8. Why do I have to buy 50 test strips at a time when they have such a short shelf life?

These are packaged for the truck market in mind, they use test strips more often.

Ask your dealer parts department to split a pack or ask the service department to sell you one or two strips.

Also ask your Owners Club to purchase a bottle of 50, then sell them individually to the club members.

9. Can an engine run too cool?

Yes!! The operating temperature of a 3126 engine is 180 degrees F through 215 degrees F.

4. How long does my coach have to sit in order to require the addition of a fuel treatment additive?

Additives generally are not recommended; however, biocides may be used to eliminate microorganism growth when your coach sits for longer than 3 Months. Remember to always store your coach full of fuel. Less air in fuel system, less chance for moisture and microorganism growth.

5. Do I need to start my coach if it sits for an extended period of time?

Not necessary, but if you do start the engine, make sure you run the engine until it reaches operating temperature in order to burn off any moisture the has formed.

• **Performance**

1. Do I need horsepower or torque? What is the difference?

BOTH – Torque gets the coach moving and up the hills. Horsepower is acceleration.

2. What does it mean when an engine de-rates?

Today's engines are very smart, so it knows when it gets too hot to operate. The engine electronics take power away (de-rate the engine) in order to help cool down.

3. I don't think that I really have a surge problem, should I have my ECM flashed anyway?

If your coach is operating properly, and you are happy with the results, you do not need to flash new software.

4. When cruise is set, my transmission will not downshift when going up a hill?

This means you are operating in Economy Mode. Economy mode holds gears longer, about 5 or 6 mph above or below what you speed is set at in cruise.

• **Miscellaneous**

1. When should I have the initial valve adjustment done? Subsequent adjustments?

- 3126 – Valves adjusted between the first and fourth oil change.
- 3176, C-10, C-12, 3406, C-15, C-16 –Valve adjusted between the first and fourth oil change.

2. How often should my thermostat be replaced?

Change your thermostat every three years.

3. How often do I have to drain my water separator?

This is part of your "Daily Checks", whenever you are operating the coach.

3176B/C-10/C-12/C13/C-15

Oil Fill Capacity

<u>Engine Model</u>	<u>Oil Pan</u>	<u>Miles/Years</u>
3176B	30 Quarts (28L)	9,000 Miles/ 1 Year
C-10	36 Quarts (34L)	11,000 Miles/ 1 Year
C-12	36 Quarts (34L)	15,000 Miles/ 1 Year
C13	34 Quarts (34L)	15,000 Miles/ 1 year
C-15	40 Quarts (38L)	15,000 Miles/ 1 Year

3. Should I check the engine oil while my engine is running or off? Cold or Hot?

Check your oil when your engine is OFF...

If HOT – wait at least 10 min. from shut down of the engine

If COLD – check it before you start the engine

4. Should I install my oil filters dry?

YES – Always install the oil filters DRY.

5. How do I recalibrate the dipstick?

22 Quart Shallow Pan

Drain ALL the Oil

Add 17 Quarts

Mark stick as “ADD”

Add 3 More Quarts

(20 Quarts Total)

Mark stick as “FULL”

Start Engine for One Minute

Wait 10 Minutes

*Refill to Full Mark (2 Qrts for filters)

30 Quart Deep Pan

Drain ALL the Oil

Add 25 Quarts

Mark stick as “ADD”

Add 3 More Quarts

(28 Quarts Total)

Mark stick as “FULL”

Start Engine for One Minute

Wait 10 Minutes

*Refill to Full Mark (2 Qrts for filters)

*Depending on what filters you have, amount will vary. Fill to FULL mark

Should I do it or should I have it done?

Depends on your comfort level. If you want to do, the procedure is above, or you can take it to your local dealer, customer's choice.

6. Will too much oil hurt the engine? What will it do?

Yes, too much oil can harm the engine. Excessive oil might allow the crankshaft counter weights to “dip” into the oil. This might cause air to form in the oil. “aeration”

7. Do I have to use Cat Filters? Does an after-market filter void my warranty?

13. The oil pressure gauge fluctuates and sometimes reads really low during normal operation. Is there anything wrong with my engine? How can I fix this?

On Medium Duty Engines – Caterpillar does not need to measure oil pressure.
The HEUI pump will not allow an engine to run without oil.

14. I am having a problem with my oil pressure gauge fluctuating or not being accurate. Do I have a bad gauge or bad oil sending unit?

The problem could definitely be either situation. It could be as simple as a loose wire, faulty sending unit or faulty gauge. Since the gauge is not a precision or calibrated gauge, we recommend you have the oil pressure checked at a local Cat or TEPS Dealer to be on the safe side. This will also help determine what the problem is or is not.

15. On a new 3126B/3126E, where would I get a new oil sending unit if I want to replace it myself?

Contact your Coach Manufacturer or Selling Dealer

16. On 3126B/3126E Engines, where is the grease fitting located on the fan accessory drive?

It is located at the twelve o'clock position behind the fan drive pulley, near the valve cover.

If your engine serial number is HEP15357 or higher, there is not a grease zerk provided, since the bearing is permanently lubricated.

17. What is the difference between a 3126 and a C7 engine?

The C7 engine has a different valve cover, cylinder head, fuel injectors, a side mounted breather, and software to meet current emissions.

• **Cooling System Maintenance**

1. What are the proper cooling system maintenance practices?

For Regular Coolant – SCA should be checked at every PM service. Coolant Conditioner should be maintained between 3% - 6%. Add SCA's if tests report less than 3% SCA's present.

Extended Life Coolant – Add extender at 3 year/ 300,000 miles

*Contact Chassis OEM for which type of coolant you have.

2. Do I need to flush and fill every year?

NO!!

Regular Coolant - flush and fill every 3 years or 200,000 miles.

Extended Life Coolant – flush & fill at 6 year interval/600,000 miles.

10. What might cause my RV overheats under a hard pull?

- If the temperature remains normal under other conditions of driving, this is probably inadequate air flow across radiator, or inadequate coolant flow in to the radiator.
- Ensure the radiator is clean (see below) then consult with your chassis OEM about possible configuration problems.
- It may be feasible to downshift when climbing a steep hill.
- The recommended R.P.M.'s when climbing a hill is 2,200 R.P.M. This provides adequate fan speed and provides better coolant flow.

11. What is the proper method to clean my radiator?

- Clean from both sides with pressurized air or low-pressure water.
- Use a degreaser and steam for removal of oil & grease. (High pressure water could bend the fins on the radiator).
- Your local Cat Dealer or TEPS dealer will also be able to clean your radiator.

• **Engine Start-up /Storage**

1. What is the proper procedure to cold start an engine, or start an engine in high elevation?

3126 engines are standard with an Air Inlet Heater. The heater will pre-heat inlet air to help start engines that are cold or at high elevation.

- Turn the ignition key On
- Wait for the Check Engine Light to Go OFF or Stop Flashing
- Cycle the Key Again & Repeat 2 – 3 times
- Finally – start the Engine

If it does not start – repeat the procedure.

2. Do I have to wait for the Air Inlet Heater to turn off before starting the engine?

NO – it really depends on the temperature and your altitude. You should wait for it to turn off to be on the safe side, but if you are not in extremely cold temperatures or a very high altitude you can start the engine with out the air inlet heater off.

It is possible you will get white smoke if you don't wait. The air inlet heater will cycle on and off until the coolant reaches 103 degrees F/ 60 degrees C.

3. Should I use a block heater?

Block heaters are very good if the coach is used predominately in cold climates.

4. What is the warranty on my Cat Engine?

- 3126E – Warranty is 5 year or 6,000 operating hours.
- 3176, C-10, C-12, 3406, C-15, C-16 – Warranty is 5 year or 200,000 Miles

5. When does the warranty start?

Warranty starts the day the coach is delivered to the customer.

6. Do I need to send in warranty information if I have already taken my coach to an authorized TEPS dealer for service?

- Warranty information needs to be sent in so that your coach is registered in the Caterpillar system as a RV.
- Trucks have the same serial number prefix and only 3 years or 150,000 mile coverage. So by sending in your information, it will get your information correct from the beginning and give you the longer warranty period. Also avoids confusion down the road when the system states you are out of warranty because it has your engine registered as a truck instead of a RV.

If you have any further comments or questions, please stop by our booth during the show or call the RV Toll Free Support Line

1-877-777-3126.