



RV Recommendations

3176B/C-10/C-12/3406E/C9/C13/C15

OPERATION GUIDELINES

Engine Starting

1. Perform daily maintenance before starting the engine.
2. Set parking brake.
3. Turn the ignition switch (key) to the ON position.
4. Turn key to START position.
5. Release key when engine starts.
6. Wait for oil pressure gauge to indicate normal. Oil pressure should rise within 15 seconds after engine starts.
7. Drive moderately under light load until engine reaches operating temperature.

Note: If engine does not start after 30 seconds of cranking, refer to section *Starting the Engine* in the O & M manual. Do not keep starter motor engaged for more than 30 seconds at a time.

Normal Operating Conditions

Gauge	Range
Oil Pressure* 3176B, C-10, C-12 3406E, C9/C13/C15	30 – 45 psi 40 – 88 psi
Coolant Temperature	189° F – 208° F
Ammeter	Slightly Positive
Tachometer Idle	600 – 2120 rpm 600 – 700 rpm

* Lower oil pressure is normal at idle.

Engine Diagnostics (Flash Codes)

1. Turn cruise control switch to OFF position.
2. Move SET/RESUME switch to either position and hold.
3. Record two-digit flash codes:
 - short pause between digits
 - long pause between codes
4. Refer to Engine Diagnostics table in the O & M manual and consult your local Caterpillar dealer.
5. Flash code 55 is NO Detected Faults.

Driving Tips (Fuel Economy)

1. Lower coach speed = More MPG
2. Use cruise control on the highway. SoftCruise is recommended.
3. Use economy mode of the Allison transmission.
4. Use lowest engine rpm possible (1200 to 1600 rpm).
5. Minimize idle time — limit time on warm-up and cool-down to no more than three minutes under normal driving conditions.
6. Prior to shutdown, engine should be idled for three to five minutes after full throttle or high power operation such as climbing a steep grade.
7. Anticipate traffic and avoid sudden starts and stops.
8. Keep tires properly inflated to the tire manufacturer's recommendations.

Fuel Recommendations

1. Use ULSD fuel.
2. Use major fuel depots to assure quality fuels.
3. Keep fuel tank full when in storage.
4. Additives generally not recommended; however, biocides may be used to eliminate microorganism growth. Cat Diesel Fuel Conditioner (256-4968) is recommended and is available through your local Cat dealer.

Cooling System Recommendations

1. Use only distilled or deionized water.
2. Antifreeze must be a low silicate type that meets TMC RP329, ASTM D5345, D4985, or GM6038 specifications. DO NOT use commercial antifreeze with high silicate content formulated for gasoline engines.
3. Use conditioner or inhibitor to maintain a three to six percent concentration in cooling system. Requirements are different for ELC — consult your dealer.
4. Do not mix different antifreeze and conditioners.
5. Cat ELC recommended for six-year protection. Meets Cat EC-1 specification.



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Customer Call Center (Toll Free) 877-777-3126
Parts and Service Directory LEGT3466

Daily

- Walk-around inspection
- Check oil level
- Check coolant level
- Check air cleaner service indicator
- Drain water separator

PM Level 1

- Change oil and filter
- Scheduled Oil Sampling (S•O•SSM)
- Drain water from fuel tanks and replace fuel filter
- Test coolant (supplemental coolant additive)
- Inspect radiator and ATAAC aftercooler
- Clean crankcase breather (every other oil change)
- Check belts, hoses, and clamps
- Inspect, clean batteries
- Inspect cylinder head ground stud
- Replace air compressor filter (if equipped)

PM 1 Recommended Change Intervals*

Engine	Oil Pan	Years/Miles
3176B	28L (30 quarts)	1/15,000
C-10	34L (36 quarts)	1/15,000
C-12	34L (36 quarts)	1/15,000
3406E	38L (40 quarts)	1/15,000
C9	32L (34 quarts)	1/20,000
C13 (shallow)	34L (36 quarts)	1/20,000
C13 (deep)	40L (42 quarts)	1/20,000
C15	38L (40 quarts)	1/20,000

* Refer to oil change interval graph in O & M manual. S•O•SSM oil analysis program recommended if oil change intervals are extended.

Cat Filters

Oil Filter	1R0716
Oil Filter - Advanced High-Efficiency	1R1808
Fuel Filter	1R0749
Fuel Filter - Advanced High-Efficiency	1R0751

Coolant Conditioners

Maintenance Charge	8T1589
Maintenance Element	111-2369
Refill Charge	8T9190

Coolant Kits

Kit with Liquid	163-1128
Kit with Element	163-1129
Kit without Conditioner	128-4124

Lubrication Specifications

Temperature Range	Oil Viscosity	API Grade
-4° F to +104° F	SAE 10W30	CJ-4
+5° F to +122° F	SAE 15W40	CJ-4

Block heater or oil pan heater is recommended for extended cold weather operation below 32° F.

Cat Engine Oil

Oil Viscosity	Cat DEO (1 gallon)	Cat DEO (5 gallon)
SAE 10W30	3E9904	3E9709
SAE 15W40	3E9714	3E9713

Maintenance Intervals for 2007 Engines Only*

Oil	2007
C13/C15 OCV (Open Crankcase Ventilation)	1500 hours or 3rd oil change or 90,000 miles
C7/C9 CCV (Closed Crankcase Ventilation)	1500 hours or 3rd oil change or 90,000 miles
CRS Nozzle Cleaning	1500 hours or 50,000 miles
Spark Plug Inspection/Cleaning	1500 hours or 3rd oil change or 90,000 mile
DPF	Minimum 150,000 miles

* Serial number prefix for 2007; C7S (C7 engines), C9S (C9 engines), LEE (C13 engines), SDP (C15 engines)

Recommended Maintenance Parts for 2007 Engines

Cat Regeneration System	304-7755
Wire Brush	305-2389
OCV Filter Cartridge*	296-8325

* C13/C15 only

PM Level 2

Years	Miles	Hours
3	240,000	4200

Initial valve adjustment recommended around 30,000 miles for optimum engine performance. Additional valve adjustments required at 240,000 miles.

Antifreeze Protection

Protection Temperature	Concentration
To -34° F (-37° C)	50% antifreeze/50% water
To -60° F (-51° C)	60% antifreeze/40% water

(Recommended 50/50 glycol water coolant mixture)

Cat Extended Life Coolant

(6-year life)

Part Number	Size
101-2844	1 gallon (3.8L)

Cat Extender

(Add at 3 years)

Part Number	Size
119-5152	quart bottle