



MARINE ADVANTAGE CERTIFICATION INSPECTION FORM

Advantage Certification Inspection Form For Caterpillar Marine Engines Marine Pleasure Craft or Marine Revenue Applications

Effective January 1, 2013

INSPECTING DEALER INFORMATION

INSPECTING DEALER: _____ DEALER CODE: _____
ADDRESS: _____ CITY: _____
STATE/PROVINCE: _____ POSTAL CODE: _____ COUNTRY: _____

INSPECTED ENGINE INFORMATION

ENGINE SERIAL NUMBER: _____ INSPECTION DATE*: _____
ENGINE SALES MODEL: _____ APPLICATION (must choose one):
ORIGINAL DELIVERY DATE: _____ PLEASURE CRAFT PROPULSION:
CURRENT ENGINE HOURS: SMU: _____ ECM: _____ PLEASURE CRAFT AUXILIARY:
ADVANTAGE START DATE: _____ MARINE REVENUE PROPULSION:
ADVANTAGE START HOURS: SMU: _____ ECM: _____ MARINE REVENUE AUXILIARY:
BOAT OR YACHT MANUFACTURER: _____

* - 'Inspection Date' is the date of the last day in the inspection process.

DEALERSHIP AND CUSTOMER ACKNOWLEDGEMENTS

INSPECTING DEALERSHIP ACKNOWLEDGEMENT: I hereby certify that the appropriate certification procedure as specified in this form has been completed and the engine is eligible for the Advantage program. Only genuine Caterpillar new or remanufactured components were used during the repairs listed in the check list portion of this worksheet. As an authorized Caterpillar dealer, I have read and understand my responsibilities with regard to the administration of Extended Service Coverage programs.

I also acknowledge the following:

- 1) All operating controls function per manufacturer's specifications.
- 2) All safety devices function per manufacturer's specifications.
- 3) Comments made on this form describe the condition of the equipment.
- 4) Upload at least 4 digital photos to SIMSi representing the overall condition of the engine.
- 5) Upload to SIMSi this completed inspection form prior to the registration of this Advantage coverage.

Name of Lead Technician in charge of this inspection: _____

Dealership Service Manager Name (clearly printed): _____

Dealership Service Manager Signature: _____ Date: _____

CUSTOMER ACKNOWLEDGEMENT: I acknowledge that the dealership has explained this Inspection Certificate Worksheet to me. All problems discovered by this inspection and covered by the Advantage program have been repaired or replaced. All other problems discovered have been explained to me. The dealer has given me a copy of the Inspection Certificate Worksheet.

Customer Signature: _____ Date: _____

INSPECTION PROCESS, COMMENTS AND REPAIR CHECKLIST

Check When Passed	<u>ITEM, COMPONENT OR PROCESS</u>	<u>EXPLAIN ACTION TAKEN / COMMENTS REQUIRED ON EVERY LINE!!</u>
	<u>Visual/Walk Around:</u>	
<input type="checkbox"/>	yes Check SIMS for PIPs/PSPs. Perform all not already done.	_____
<input type="checkbox"/>	yes Document condition of belts, pulleys, idlers, fan drive.	_____
<input type="checkbox"/>	yes Visually check all gauges - log oil PSI at idle & rated RPM.	_____ Idle RPM Oil PSI: _____ Rated RPM Oil PSI: _____
<input type="checkbox"/>	yes Is there a fire extinguisher present, if so, how many?	_____
	<u>Perform PM Level 1 Service:</u>	
<input type="checkbox"/>	yes Record oil level and condition before doing service.	_____
<input type="checkbox"/>	yes Perform lab analysis of oil sample and attach results.	_____
<input type="checkbox"/>	yes Replace engine oil with Cat approved oil.	_____
<input type="checkbox"/>	yes Replace engine oil and fuel filters with Cat filters.	_____
<input type="checkbox"/>	yes Replace fuel separator with Cat fuel separator.	_____
<input type="checkbox"/>	yes Cut open oil filter. Document findings.	_____
	<u>Cooling System:</u>	
<input type="checkbox"/>	yes Document overall condition of radiator/heat exchanger.	_____
<input type="checkbox"/>	yes Perform lab test of coolant & attach results.	_____
<input type="checkbox"/>	yes Check and document entire cooling system for leaks.	_____
<input type="checkbox"/>	yes - Head gasket (must not leak to pass).	_____
<input type="checkbox"/>	yes - Jacket Water Pump (must not leak to pass).	_____
<input type="checkbox"/>	yes - Thermostat housing (must not leak to pass).	_____
<input type="checkbox"/>	yes Perform bottle test (list volume / minimum).	_____
	<u>Fuel System:</u>	
<input type="checkbox"/>	yes Check fuel tank level and alarms.	_____
<input type="checkbox"/>	yes Check all fuel lines for cracks, leaks, pliability, support.	_____
<input type="checkbox"/>	yes - Fuel transfer pump (must not leak to pass)	_____
<input type="checkbox"/>	yes - All Cat fuel supply return lines (must not leak to pass).	_____
<input type="checkbox"/>	yes - Hand priming pump (must not leak to pass).	_____
<input type="checkbox"/>	yes - Filter base(s) (must not leak to pass).	_____
<input type="checkbox"/>	yes Document fuel pressure at idle and rated RPM:	_____ Idle RPM Fuel PSI: _____ Rated RPM Fuel PSI: _____
<input type="checkbox"/>	yes Verify fuel settings as set from factory or as noted in SIMS:	_____
	<u>Lubrication System:</u>	
	Leaks in these areas must be fixed to pass inspection:	
<input type="checkbox"/>	yes - Head to block joint (& spacer plate if applicable)	_____
<input type="checkbox"/>	yes - Front / rear crank seals	_____
<input type="checkbox"/>	yes - Front cover and flywheel housing	_____
<input type="checkbox"/>	yes - All major castings (head, block, oil pan, etc..)	_____
<input type="checkbox"/>	yes - Oil Cooler	_____
<input type="checkbox"/>	yes - Turbocharger	_____
<input type="checkbox"/>	yes Measure and record blowby and correct as needed if not in spec. _____	_____
<input type="checkbox"/>	yes Service & check crankcase breather with engine running. _____	_____
	<u>Electronics & Starting Systems:</u>	
<input type="checkbox"/>	yes Use service tool to check FLS / FTS settings.	FLS: _____ FTS: _____ notes: _____
<input type="checkbox"/>	yes Perform cylinder cutout test with electronic service tool.	_____
<input type="checkbox"/>	yes Ensure ECM has latest flash file for this engine.	_____
<input type="checkbox"/>	yes Upload ECM warranty download to SIMS. Clear faults.	_____
<input type="checkbox"/>	yes Check battery, terminals, connections & cables.	_____
<input type="checkbox"/>	yes Check battery cells' specific gravity, replace if needed.	_____
<input type="checkbox"/>	yes Record alternator charge rate at idle and rated RPM.	_____

Engine Serial #: _____ Customer Signature Acknowledging Page 2 Results: _____

INSPECTION PROCESS, COMMENTS AND REPAIR CHECKLIST - continued

Check When Passed	ITEM, COMPONENT OR PROCESS	<u>EXPLAIN ACTION TAKEN / COMMENTS REQUIRED ON EVERY LINE!!</u>
	<u>Intake & Exhaust Systems:</u>	
<input type="checkbox"/>	yes Check/repair air intake pipes, air filter & restriction gauge.	_____
<input type="checkbox"/>	yes Check and record valve recession/perform valve lash if due per O&M.	_____
<input type="checkbox"/>	yes Check for exhaust cracks, leaks or smoke w/engine running.	_____
<input type="checkbox"/>	yes Check exhaust manifold for oil or fuel slobbering.	_____
<input type="checkbox"/>	yes Check/repair exhaust manifold if any broken hardware.	_____
<input type="checkbox"/>	yes Inspect turbo for excessive end play clearance.	_____
<input type="checkbox"/>	yes Inspect turbo for any seal leaks.	_____
<input type="checkbox"/>	yes - Engine lifetime Review - Review the lifetime totals and average load factor to confirm that the engine has been operated within the rating limits (Pleasure Craft or Marine Revenue ratings). Refer to Caterpillar A & I Guidelines for Marine Engine Ratings for details.	
<input type="checkbox"/>	yes - Review Service Records - To confirm conformance with the Operation and Maintenance Manual, perform appropriate level of service based on hours or years to bring the engine in conformance. This includes items that should have been serviced at an earlier date. Replace all non-Cat filters and parts with genuine Cat parts.	
<input type="checkbox"/>	yes - Perform Sea Trial Using Data Logger - Engine must reach rated rpm during the sea trial and the Exhaust Back Pressure and Air Inlet Temperature must remain within limits for the engine to qualify for this program. For mechanical engines, dealer must retain sea trial data for 24 months following inspection date.	

IF ENGINE FAILS TESTS OR INSPECTIONS, CORRECT PROBLEMS AND REPEAT THE TEST!

SEA TRIAL PROCEDURE - Find a proper place to run the sea trial and bring the engines up to operating temperatures.

A. Run in smooth waters, if possible, for at least 15 minutes at a time in one direction. The longer you can run in one direction the better. If possible, run to a bridge or other large object if using a hand held GPS for boat speed. If windy, run with the wind and down wind for an average. If the engine is not up to operating temperature, run vessel at 60-75% of rated speed until water temperature stabilizes (using monitor ET). Approximately 15-30 minutes.

STEADY STATE SEA-TRIAL - Stabilize engine at various RPM's and take data on Electronic Technician (ET) data logger.

A. Go to steady state sea trial data logger menu in ET. Complete general information portion of data logger to capture engine / vessel information. Start steady state data logger. Use the preset group for performance data. Take data starting at low idle and then go to 1000 rpm and take data every 200 rpm up to full throttle. Repeat the process if adverse conditions like wind, waves or currents force you to run in both directions and average the data. Remember to add manual data - exhaust temperature, exhaust back pressure and inlet air temperature at the air cleaner.

Exhaust Back Pressure- Back pressure must not exceed the limit listed in TMI during transient and steady state sea trial test and at rated rpm. Back pressure must be equal to or less than the limit in TMI for engine to qualify for this coverage.

Air Inlet Temperature at air cleaner- The maximum allowable air inlet temperature at the air cleaner element is 120 Degrees F (49 degrees C) at full load / Wide Open Throttle and rated rpm.

B. Observe and record the following at each rpm step: **Idle 1000 1200 1400 1600 1800 2000 2200 2400 2600 2800**

- 1. Steady state smoke level is acceptable (Y/N). _____
- 2. Smooth acceleration to the next higher rpm (Y/N). _____
- 3. Exhaust back pressure (inches H2O). _____
- 4. Air inlet temperature at air cleaner. _____
- 5. Boat speed (knots or mph) _____.

C. Engine rpm at WOT (Wide Open Throttle): _____ Speed: _____

TRANSIENT SEA TRIAL - Record acceleration data using the Electronic Technician (ET) data logger.

A. Start the transient logger in ET. Use the preset group for performance. Log file comments if known such as vessel weight and fuel and water load. Start the test with the engines at low idle and in forward gear. Go immediately to full throttle. Record runs at different FARC settings, trim tabs up and down and if wind, current or waves are present, run various directions and average the data.

- B. Observe and record the following:
- 1. Is the acceleration smooth from idle to rated RPM? (Y / N) _____
 - 2. Smoke level - is the FARC setting OK for both smoke and acceleration? (Y / N) _____
 - 3. Did the engines reach full rated RPM? (Y / N) _____

Engine Serial #: _____ Customer Signature Acknowledging Page 3 Results: _____