

M250-C20 SERIES OPERATION AND MAINTENANCE

C. Alternate Inspection Schedule

Based on current engine configuration and the use of modern oils, operators may use this alternate inspection schedule. Prerequisites for this include:

- (1) The use of a wet spline starter/generator drive shaft (new production or those replaced in accordance with the Rolls-Royce Commercial Engine Bulletin M250-C20 CEB-1082).
- (2) The use of High Thermal Stability (third generation) oils. Reference [PARA 4.C., 72-00-00, Engine-Description and Operation](#), for oil specifications and mixing cautions.
- (3) The engine must have an external oil filter installed that has a valid STC (Supplemental Type Certificate).

Table 603 Alternate Scheduled Inspections				
Inspection Checksheet				
Owner _____ Date _____				
A/C Make/Model _____ S/N _____ Reg No. _____ TSN _____				
Engine S/N _____ TSN _____ TSO _____				
This inspection checksheet is to be used when performing scheduled inspections. This form can be locally reproduced and/or expanded to reflect the aircraft operating environment. Keep the completed sheets as a permanent part of the aircraft engine records. Detailed information regarding each inspection item is contained in the referenced Operation and Maintenance Manual paragraphs. CAUTION: BEFORE UNDERTAKING ANY INSPECTION OR MAINTENANCE ACTION, CONSULT THE REFERENCED PARAGRAPHS OF THE OPERATION AND MAINTENANCE MANUAL. FAILURE TO FOLLOW THE RECOMMENDED INSTRUCTIONS IN THE MANUAL COULD RESULT IN EQUIPMENT DAMAGE OR DESTRUCTION, POSSIBLY RESULTING IN PERSONNEL DEATH OR INJURY. NOTE: THIS INSPECTION CHECKLIST CAN ONLY BE USED IF THE OPERATOR IS USING AN APPROVED THIRD GENERATION (HTS) OIL AND AN APPROVED AIRFRAME MOUNTED SCAVENGE OIL FILTER. NOTE: COMPLIANCE TO THE 150 HOUR AND 300 HOUR ITEMS IN THIS TABLE MUST BE PERFORMED AT LEAST EVERY 12 CALENDAR MONTHS OR BY HOURS, WHICHEVER OCCURS FIRST.				
Item	Inspection/Maintenance Action	REF PARA	✓	Initial
	<u>150 Hour Inspection</u>			
1	Remove, examine, and clean the fuel nozzle. If no airframe mounted fuel filter is installed, examine the fuel nozzle filter.	73-10-03		
	NOTE: Operators may find it necessary to inspect and clean the fuel nozzle more often depending on past experience or operating conditions.			
2	Inspect for discharge air tube inserts that are cocked or backing out of the scroll. If cocked or loose inserts are detected, check the engine for possible vibration causes. Check the air tubes for cracks.	PARA 1.D.(2) , this section		
3	Visually check the compressor discharge air tubes for damage or deterioration.	PARA 4.A., 72-40-00		

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Item	Inspection/Maintenance Action	REF PARA	✓	Initial
	<u>150 Hour Inspection (cont)</u>			
4	On engines with CECO fuel system, clean or replace the high-pressure fuel filter.	PARA 2., 73-10-05		
5	If optional CEB 1165, (removal of gearbox spare accessory drive gear), has been accomplished without removal of bearing cage, then inspect bearing cage retention for looseness.	CEB 1165 Revision 5 (or later revision) Paragraph 2. B. (2)		
6	Visually inspect the outer combustion case (sheet metal and weld seams) for cracks. Pay particular attention to the weld seams in the area of the igniter plugs, dummy plug, drain valves, fuel nozzle bosses, armpit braze patch and adjacent areas. Use a bright light and mirror as necessary. The OCC does not have to be removed. Perform a Leak Tec check for installed OCC's and an FPI for removed OCC's.	Para 2.B. (1), (2), (3), and (4), 72-40-00		
	<u>300 Hour Inspection</u>			
	In addition to the 150 hour inspection items, perform the following:			
1	Clean the compressor with the chemical wash solution as required if operating in a smoggy area, conditions with airborne pollutants, or with water alcohol.	PARA 6., 72-30-00		
2	Inspect the entire engine for loose or missing bolts, broken or loose connections, security of mounting accessory, and broken or missing lockwire. Check accessible areas for obvious damage and evidence of fuel or oil leakage.	N/A B0051.3		
3	Inspect all B-nuts for application and alignment of torque paint. If missing, loosen the B-nut, retighten, and apply torque paint.	PARA 9.B., 72-00-00, Engine-Servicing		
4	Check the mounting and support bolts to be sure they are tight, lockwired, and in good condition. Check the security of screws and rivets. Remove all foreign material which might be drawn into the compressor inlet.	N/A		
5	Check accessible fuel system components, lines, and connections for security, damage, or leakage. Accomplish with the boost pump on, if available. Remove, visually inspect, and clean if visual condition dictates.	PARA 2., 73-00-00		
6	Inspect the P _c filter for proper clamping.	N/A		
7	Until CEB-A-1233 is complied with, inspect the P _c filter assembly as follows: Without disassembly or removal of the P _c filter assembly from the mounting bracket, inspect using a 10X magnification glass and a bright light to detect any signs of cracks, paying particular attention to both of the end fittings at their junction with the end walls. If cracks are detected, remove the assembly and comply with CEB-A-1233.	N/A		

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Table 603 Alternate Scheduled Inspections				
Item	Inspection/Maintenance Action	REF PARA	✓	Initial
8	Remove the Scroll-to-Pc Filter Tube Assembly at both ends and inspect for cracks using a10X power glass. Pay particular attention to the flared ends of the tube for cracks, and to the areas beneath the floating ferrules for fretting damage. Tubes found to contain cracks and/or excessive fretting damage are to be replaced by new parts of the same part number as removed.	N/A		
	NOTE: Excessive fretting is present when the ferrule has chafed the tube sufficiently to wear a step in the tube that can be felt with a thumbnail or other inspection aid.			
9	With the Scroll-to-Pc Tube Assembly still removed and using a 10X power glass, inspect the elbow in the compressor scroll for distress, cracks, and proper alignment. No cracks are permissible.	N/A		
10	Check the fuel control and power turbine governor linkage for freedom of operation, full travel, and proper rigging. Check the security of linkage for loose or worn linkage and linkage bolts.	PARA 3.C., 73-20-02, 3.B., 73-20-03, 3.C., 73-20-04 and PARA 2.C., 73-20-01		
11	Inspect the compressor inlet guide vanes and visible blades and vanes for foreign object damage.	N/A		
12	Visually inspect the water-alcohol nozzles for build-up of contaminants which could restrict flow or alter the spray pattern. Ultrasonic clean the nozzles if equipment is available.	N/A		
13	Clean the 200 mesh screen (if equipped with water-alcohol injection kit).	N/A		
14	Inspect the compressor scroll for cracks or breaks at the anti-ice air valve and customer bleed port. If cracks or breaks are detected, check the engine for possible vibration causes.	PARA 1.D.(2), this section		
15	Check the anti-ice valve for security, worn parts, and proper operation. The anti-ice valve need not be removed or disassembled unless a problem is detected.	PARA 4., 75-10-01		
16	Inspect the compressor mount inserts, bolts and nuts for looseness, fretting, or oil leakage. Replace or retighten as required. Check the engine for possible vibration causes.	PARA 4.D., 72-60-00 and PARA 1.D.(2), this section		
17	Inspect the turbine support assemblies and engine exhaust ducts for the condition of welded joints, for cracks, and buckling. Check the exhaust duct clamps for proper installation, condition, and torque.	PARA 8.A., 72-50-00		
18	Inspect the starter-generator brushes for wear in accordance with the Aircraft Manual at the same time the spline inspection is made.	N/A		

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Item	Inspection/Maintenance Action	REF PARA	✓	Initial
	<u>300 Hour Inspection (cont)</u>			
19	Turbine pressure oil tube screen assembly. Detach the clamp, then disconnect the power turbine pressure oil tube at the connector (tee). Loosen the tube coupling nut at the fireshield elbow only enough to allow sufficient movement of the tube to enable removal of the screen. At assembly, tighten, the connector coupling nut to 200–250 lb in. (23–28 N·m). Tighten the fireshield elbow coupling nut to 80–120 lb in. (9–14 N·m). Tighten the clamp nut to 35–40 lb in. (3.9–4.5 N·m).	N/A		
20	Measure oil flow from the scavenge passage or the external sump of the power turbine support and scavenge passage of the gas producer support.	PARA 7.D., 72-50-00		
21	Inspect and clean the turbine pressure oil check valve.	PARA 7.K., 72-50-00		
22	Drain the oil system and refill.			
	Oil changed at: 300 hours/6 months:(optional) _____ 600 hours/12 months: _____			
	Maximum oil change interval is 600 hours or 12 months, whichever occurs first. Some operators experience and/or harsh environments can dictate oil changes at more frequent intervals.	PARA 11.C., 72-00-00, Engine-Servicing		
22A	Remove, inspect, and clean the oil filter. Note any accumulation of metal chips, debris, or carbon particles. Conduct further inspection of the lube system and/or engine gear train/bearings if metal chips or debris are found. See Items 21, 36, 37, and 38 if carbon particles are found.	PARA 1.C., 72-60-00		
	NOTE: Follow the STC manufacturer's recommendations regarding replacement/cleaning of external oil filter elements. Inspect removed elements for any accumulations of metal chips, debris, or carbon particles. It can prove helpful to cut apart disposable (paper) filter elements to facilitate this inspection. If chips, debris, or carbon particles are found, proceed with additional inspection/maintenance as outlined in item 21A.			
22B	Inspect the magnetic chip detector plugs.	PARA 11.G., 72-00-00, Engine-Servicing		
22C	Inspect the quick disconnect magnetic chip detector plugs and flanged inserts for wear, if installed.	PARA 11.G., 72-00-00, Engine-Servicing		
	NOTE: This step must be performed before draining oil or after the oil system has been refilled.			
23	If installed, inspect the start counter for proper operation, increase in count, and for loose, chafed, frayed, or broken wires, and loose connectors.	PARA 1., 74-20-03		

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Table 603 Alternate Scheduled Inspections				
Item	Inspection/Maintenance Action	REF PARA	✓	Initial
	<u>300 Hour Inspection (cont)</u>			
24	Check the condition of the bleed valve gasket without removing the bleed valve. Replace the gasket if air leaks (blowouts) can be detected.	PARA 2., 75-10-02		
25	Visually inspect the outer combustion case (sheet metal and weld seams) for cracks. Pay particular attention to the weld seams in the area of the igniter plugs, dummy plug, drain valves, fuel nozzle bosses, armpit braze patch and adjacent areas. Use a bright light and mirror as necessary. The OCC does not have to be removed. Perform a Leak Tec check for installed OCC's and an FPI for removed OCC's.	PARA 2.B., 72-40-00		
26	Clean the burner drain valve.	PARA 3., 72-40-00		
27	Inspect the ignition lead for burning, chafing, or cracking of conduit, loose connectors, and broken lockwire.	PARA 2., 74-20-02		
28	On engines with CECO fuel systems, visually inspect the bleed hole at the low point in the scroll-to-governor Pc tube for any obstruction. If the hole is not completely open, remove any contamination which could obstruct drainage of moisture from the tube using a piece of lockwire.	N/A		
29	Review the engine records for compliance with all mandatory bulletins, inspections, and airworthiness directives.	N/A		
30	Review the engine records for time limited parts components, accessories, or modules.	N/A		
31	Enter component changes, inspection compliance, etc., in the log book as required.	N/A		
	WARNING: MANDATORY COMPLIANCE DATE FOR ROLLS-ROYCE COMMERCIAL ENGINE BULLETIN M250-C20 CEB-1051 WAS AUGUST 30, 1980.			
32	Perform fuel pump backlash inspection on Sundstrand dual element pump P/N 6854292, 6857548, 6877719, 6856250, and 6876803.	M250-CSL-1007		
	CAUTION: INSPECTION FREQUENCY MUST BE BASED ON THE NATURE OF THE EROSION AND/OR CORROSIVE ENVIRONMENT. THE OPERATING ENVIRONMENT CAN DICTATE A MORE FREQUENT INSPECTION INTERVAL. FOR NON-COATED COMPRESSOR WHEELS, THE INSPECTION MUST NOT EXCEED 300 HOURS OR 6 MONTHS. FOR COATED COMPRESSOR WHEELS, INSPECTION MUST NOT EXCEED 300 HOURS OR 12 MONTHS. IF ANY PARENT METAL IS EXPOSED DUE TO CORROSION AND/OR EROSION, THE INSPECTION REQUIREMENT MUST REVERT BACK TO 300 HOURS OR 6 MONTHS.			

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Item	Inspection/Maintenance Action	REF PARA	✓	Initial
33	Inspect the compressor case when operating in an erosive and/or corrosive environment. 10X power magnification is recommended for corrosion pit inspection.	PARA 1.D.(9), this section		
	<u>300 Hour Inspection (cont)</u>			
	CAUTION: AIRCRAFT INSTALLED-ENGINE FUEL-PUMP FILTER DIFFERENTIAL PRESSURE WARNING SYSTEMS AND/OR OPERATING EXPERIENCE CAN DICTATE REPLACEMENT AT A LESSER TIME INTERVAL. IN NO INSTANCE CAN THE 300 HR REPLACEMENT INTERVAL BE EXCEEDED.			
34	Replace the fuel filter element. This filter is a throw-away item. It is not cleanable. Before discarding the filter, inspect for signs of contaminants. If any are found, inspect the entire fuel system and clean if necessary.	PARA 2.C., 73-10-01		
	CAUTION: WHEN THERE IS EVIDENCE THAT THE FUEL PUMP FILTER HAS BEEN BYPASSED, THE GAS PRODUCER FUEL CONTROL INLET FILTER, THE FUEL NOZZLE FILTER, THE GOVERNOR FILTER, AND THE HIGH-PRESSURE FUEL FILTER, IF APPLICABLE, MUST BE CLEANED. (REFER TO SPECIAL INSPECTIONS, 72-00-00, TABLE 604). IF ANY CONTAMINATION IS FOUND IN THE FUEL NOZZLE FILTER, THIS WILL REQUIRE THAT THE FUEL CONTROL BE SENT TO AN AUTHORIZED REPAIR FACILITY FOR INTERNAL CLEANING. REFERENCE MUST ALSO BE MADE TO THE AIRFRAME MAINTENANCE MANUAL FOR FUEL SYSTEM MAINTENANCE FOLLOWING FUEL CONTAMINATION.			
	CAUTION: PURGE AIR FROM THE FUEL SYSTEM.			
35	Do a fuel pump bypass valve operation check when a fuel filter is replaced. NOTE: Applicable to Sundstrand/Pesco and Argo-Tech/TRW manufactured pumps only.	PARA 3.A., 73-10-01		
36	Visually inspect the external sump. Clean internal carbonous deposits and build up from the sump or replace if necessary.	PARA 7.E., 72-50-00		
37	Inspect the scavenge oil strut in the power turbine support. Clean carbonous deposits from the strut.	PARA 7.E., 72-50-00		
38	Inspect the No. 6 and 7 bearing pressure oil nozzle. Clean internal carbonous deposits from the nozzle.	PARA 7.G. 72-50-00		
39	Inspect the thermocouple assembly.	PARA 2.B., 77-20-01		
39A	Remove and disassemble the fuel nozzle. Clean and examine the fuel nozzle filter assembly. Assemble and install the fuel nozzle.	73-10-03		

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Table 603 Alternate Scheduled Inspections				
Item	Inspection/Maintenance Action	REF PARA	✓	Initial
	<u>500 Hour/1 Year Inspection</u>			
1	Inspect all uncoated and coated P/N 6846278 and 6871338 power turbine outer coupling nuts for corrosion.	M250-C20 CSL-1060		
	NOTE: Compliance with Rolls-Royce Commercial Engine Bulletin M250-C20 CEB-1120 and/or M250-C20 CEB-1158 removes this inspection requirement.			
	<u>600 Hour Inspection</u>			
	In addition to the 150 hour and 300 hour inspection items, perform the following:			
1	Remove, clean, and inspect the engine Pc filter every 600 hours or earlier as engine performance dictates.	PARA 3., 73-20-06		
2	Inspect and clean the No. 1 bearing oil pressure reducer.	PARA 3., 72-30-00		
3	Check the fuel pump driveshaft on Sundstrand single element pumps for spline wear.	N/A		
	NOTE: This inspection is not required for Agro-Tech (TRW) fuel pumps or Sundstrand fuel pumps P/N 23003114 and subsequent.			
4	Do the scavenge oil filter impending bypass functional test per Facet Service Bulletin No. 090589 (Ref. Rolls-Royce M250 CSL 1164) for aircraft equipped with this type of external scavenge filter system. Follow the Facet instructions and time intervals, or follow this recommended inspection interval each 600 hours.	N/A		
5	Replace the fuel control strainer assembly. (Bendix fuel controls P/N 2524552-4 or 2524552-6 (less-5) and prior unless M250-C20 CEB-1089 has been accomplished).	PARA 4.A., 73-20-02, 4.A., 73-20-03		
	<u>1000 Hour Inspection</u>			
1	Inspect Py port on Bendix power turbine governor per M250 CEB-A-1281. The governor must be removed from the engine to perform this inspection.	N/A		
	NOTE: If CEB-A-1289 or CEB 1330 have been accomplished, this inspection is not required.			
	<u>1500 Hour Inspection</u>			
1	Replace the fuel control filter assembly.	PARA 4.A., 73-20-02,		
	NOTE: The fuel control strainer assembly must be replaced on all fuel control units that have not had CEB-1089 accomplished.			
2	Deleted			

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Item	Inspection/Maintenance Action	REF PARA	✓	Initial
	<u>1750 Hour Inspection</u>			
1	Inspect the compressor case, blades, and vanes. Inspection frequency must be made necessary by the operating environment. In an erosive environment, inspect the case at least every 300 hours. In any environment, do not exceed 1750 hours without a case inspection. 10X power magnification is recommended for corrosion pit inspection.	PARA 1.D., this section and PARA 5., 72-30-00		
2	Heavy Maintenance Inspection (HMI). Heavy maintenance inspection must consist of gas producer turbine wheels replacement and inspection of assembled components per Rolls-Royce published documents. It is the responsibility of the operator to assure that the total time and cycle life limits of specific parts listed in Section 05-10-00, Airworthiness Limitations , are not exceeded.	N/A		
	<u>As Required Inspection</u>			
1	Clean the bleed valve after each 10 hr of water-alcohol augmentation operation or after consumption of each 750 gallons (2840 liters) of water-alcohol mixture.	PARA 2.C., 75-10-02		

F. Special Inspections

Special inspections are required when the engine has been subjected to abnormal operating conditions, when engine damage is suspected, or when associated parts are removed from the engine. The special occurrence, the component or system to be inspected, and the nature of the inspection are given in [Table 604](#).

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