

Purchase of US Navy 250-KS4 Military Gas Turbine Engine

The Naval Surface Warfare Center Code 9334, Philadelphia PA is looking to purchase one military Spec. gas turbine engine, identified by US Navy part number 250-KS4, as an inventory spare for use in the fleet. The engine required, shall conform to the US Navy specification outline below and must be a Zero Time overhauled engine. All mil. Spec. Requirements below are critical and must be adhered to exactly or exceed the requirements specified.

The US Navy specification for the model 250-KS4 engine requires that the engine contain the parts listed on Table 1 with the applicable Navy part numbers, identified on table 1, permanently applied to each part. The two items identified, as Government Furnished Equipment (GFE), will be provided by NAVSEA as new parts to the contracted supplier for reassembly of the engine prior to engine testing.

Table 1.		
Parts & Unique Number identification for US Navy 250-KS4		
New Part Nomenclature	KS4 P/N	NOTES
Cover, Governor Drive Pad	23071546	
Cover Assembly, Gearbox - Power and Accessory	23068020	GFE
Housing Assembly, Gearbox - Power and Accessory	23068021	GFE
Plug, Machine Thread Magnetic - .750-20 X .500-20	23070143	
Engine Assembly, Industrial Turbo-Shaft / 250-C20B	23070145	
Gearbox Assembly, Power and Accessory	23070146	
Compressor Assembly	23071547	
Rotor Assembly, Compressor	23071548	
Impeller, Compressor	23071549	
Plate Assembly, Identification - Engine	23061551	
Electrical Systems Assembly, Engine	23070528	
Fuel, Lube and Air System Assembly, Engine	23070529	
Rotor Assembly, Power Turbine	23070540	
Rotor Assembly, Turbine Gas Producer	23070541	
Wheel, Turbine 1st Stage (Production)	23070704	
Wheel, Turbine 2nd Stage (Production)	23070708	
Wheel, Turbine 3rd Stage	23070709	
Wheel, Turbine 4th Stage	23070710	
Wheel, Turbine 1st Stage (Spares)	23075964	
Wheel, Turbine 2nd Stage (Spares)	23075965	

} when?

The US Navy 250-KS4 engine contains Life Limiting Components that are critical to the extended safe operation of the engine in Navy's military operation cycle. These parts are identified in Table 2 for the purchase of this Zero Time replacement, limiting operating hours and component cycles are list on Table 2. No components in the engine to be purchased shall exceed any of the limits.

The supplier of this Navy 250-KS4 Zero Time engine shall warrant the engine for 1 year or until a life limiting component reaches life limit as identified in table 2, 18 months if the engine is in storage, whichever occurs first.

Table 2. 250-KS4 Life Limited Components

New Part Nomenclature	KS4 P/N	Hours	Cycles
Impeller, Compressor	23071549	2100	5400
Wheel, Turbine 1 st Stage	23070704	600	1015
Wheel, Turbine 2 nd Stage	23070708	600	1015
Wheel, Turbine 3 rd Stage	23070709	600	1015
Wheel, Turbine 4 th Stage	23070710	600	1015
Bolt, Tie-Turbine	23068265	NA	3000

ZERO TIME REPAIR INSTRUCTIONS.

1. Overhaul/maintenance manuals and parts catalog do not exist at this time for the 250-KS4 engine. The overhaul/maintenance/IPC manuals for the 250-C20 engines should be used as a guide for inspection and repair. In addition to the OHM, Rolls-Royce authorized repair procedures may be used.
 - 10W2 250-C20 Series Operations and Maintenance Manual
 - 10W4 250-C20 Series Illustrated Parts Catalog
 - 10W3 250-C20 Series Overhaul Manual.
- 1.1 Non-destructive inspection (NDI). Any NDI must have been performed in accordance with the 250-C20 Series Overhaul Manual, supplemented with Rolls-Royce approved procedures.
- 1.2 Cleaning. Engine components and/or module components should be cleaned using the 250-C20 Series Overhaul Manual, supplemented with Rolls-Royce approved procedures.
- 1.3 Deviations to the C20 OHM are permitted under the following conditions.
 - 1.3.1 Minor Deviation. Component defects that exceed serviceable limits or repairs beyond the C20 OHM work scope are not allowed for this Zero Time engine purchase. Minor deviations can be considered only for non-rotating hardware and as such will not affect structural, form, fit, or function. Copies of each minor deviation shall be identified to NAVSES with the estimated engine cost proposal.
 - 1.3.2 Major Deviation. No Major Deviations for this Zero Time engine purchase is allowed.
- 1.4 All accessories must be zero timed, bench tested and repaired as required.
- 1.5 All bearings, mainline and accessory in this Navy Zero Time engine shall be new, meeting the latest Rolls Royce specifications.
- 1.6 Bulletin compliance. Comply with all mandatory CEB's that affect the C20 series II engines and/or call out a common part number between the C20 and KS4. A partial list follows:
CEB 1389 Engine, Compressor, Removal of Certain Front Compressor Bearing Housings
AGISL 0016 250-KS4 New PTO and Snap Ring
- 1.7 KS4 Life Limited components are listed in Table 2. All parts in the Zero Time 250-KS4 engine to be purchased shall not exceed any of the hours and cycles identified in Table 2.
- 1.8 An Engineering/Condition report should be supplied with the Zero Time engine at the time of purchase.

2) PARTS REPLACEMENT.

2.1 The 250-KS4 unique components and Life Limited components may not be substituted with any 250-C20 components. All other components that have been inspected/repai red per approved ROLLS-ROYCE processes may be used as replacement parts.

3) ENGINE TEST.

3.1 Engine to be tested IAW with the 250-C20 Series Overhaul Manual (10W3) with the following exceptions. RRC data reduction program EDR 19034C can be used for engine performance calculations.

3.2 Prior to doing the locked rotor start, the engine is shutdown from full load (1453 degrees F, 349 ft-lb or 53,519 N1, whichever occurred first). 4.7.4. Slowly increase N1 a minimum of 385 ft-lb_f of torque must be maintained as N1 is increased without exceeding 1490°F, 53,519 N1 rpm or 430 ft-lb_f. If the engine fails to maintain 385 ft-lb_f of torque until N2 reaches 50% speed (3000 RPM) or the temperature or torque limits are exceeded during the start. During the start and acceleration, record the highest observed value of torque and case pressure. Case pressure should not exceed the limits of Figure 5 at the conditions specified at the 1453°F MGT point. Stabilize at this point for two (2) minutes and record Block 2 data.

3.3 The sell points are:

Specific values, which are to be used for comparisons and the horsepower or MGT at which the comparisons are to be made, are shown below:

	CRUISE B	CRUISE A	NC	TAKEOFF
MGT, (*F)	----	----	1360	1453
HORSEPOWER	278	333	360	400
SFC, MAX.	0.709	0.665	0.654	0.648

	CRUISE B	CRUISE A	NC	TAKEOFF	GROUND IDLE
HORSEPOWER	278	333	360	400	=10
T.M. OIL PRESS	67.0 +/-1.8	80.2 +/-1.8	87 +/-1.8	97 +/-2.0	=6

4) PRESERVATION AND SHIPPING

4.1 Fuel system will be long term preserved at conclusion of test.

4.2 Engine or module container shall be packaged in accordance with commercial standard.

Logs and records will be shipped in containers.

Identification of container shall be in accordance with MIL-STD-129M. Shipment must be in accordance with DD Form 250.