

COMMON FAILURE POINTS FOR THE 15 KVA 400HZ GENERATOR

MAGNETO

NSN: 2920 66 104 2476

The faults I have encountered with the magnetos have been:

- Corrosion within the housing,
- The king lead shorted to earth
- Internal shorts to earth

The average life for the magnetos is about 600 hours ref Chart 4

FUEL LINES

Most of the fuel lines on the generators have been replaced within 12 months of being here. Due to them perishing. There has been a requirement to replace all fuel lines on the new replacement engines. When they were resprayed, the paint has caused a rapid deterioration of the lines.

FUEL PUMPS

NSN: 5330 12 136 0800

Fuel pump failures have been due to:

- Diaphragms perishing
- Corrosion
- Mechanical failure
- Blockage
- Shrinkage of gaskets

The fuel pump failures I have encountered in the last 12-month period have largely been due to the diaphragms perishing from age. Within a three-week period during EX CROC 03, I encountered 4 cases where the fuel pumps required replacement. Upon stripping the fuel pumps for a later rebuild two of the four were badly corroded on the inside.

Mechanical failure due to:

1. The outlet pipes coming loose and spraying fuel onto the exhaust piping.
2. The retaining cir-clip snapping and the rocker pin working loose.

Blockages are mostly due to contaminated fuel or rusty fuel jerries. They occur mostly on long exercises where the fuel bladders are 'run dry' due to long resupply delays. This often results in the fuel pump requiring a rebuild as the contaminants pass the filters and lodge under the reed valves within the pump.

Gasket shrinkage is found on replacement engines or pumps that have been sitting for a long period of time this requires the pumps to be rebuilt.

Parts kit, engine fuel pump NSN: 2910 12 147 6535 which is required to rebuild the fuel pump is nearly non-existent within the system.

CARBURETTOR

NSN: 2910 66 099 2797

Carburettor faults encountered are:

- Blockages
- Gasket shrinkage
- Corrosion
- Air leaks around throttle shaft

Blockages are mostly due to contaminated fuel or rusty fuel jerries. They occur mostly on long exercises where the fuel bladders are 'run dry' due to long resupply delays. This often results in the carburettor requiring a rebuild as the contaminants pass the filters, lodge in the 'needle and seat', and the jets within the carburettor.

Gasket shrinkage is found on the replacement engines and carburettors that have been sitting for a long period of time. The carburettor then requires rebuilding.

Upon stripping the carburettor for later rebuilding it was found to be badly corroded internally.

The throttle shafts have air leaks around the seals and bushes, this results in the throttle body being scraped due to lack of available of replacement parts (seals and bushes) to repair them.

SPARK PLUG LEADS

NSN: 2920 12 192 5839 1 AND 2 CYLINDERS

NSN; 2920 12 192 5838 3 AND 4 CYLINDERS

These fail after 150 to 200 hours of operation. The main fault area seems to be at the ends where they connect to the magneto and spark plug due to tight radius bends. Demand of these items is fairly high with limited stocks.

ENGINES

NSN: 2805 66 123 0287

Engine faults encountered have been:

- Oil seals
- Seizing
- Short life
- Parts
- Silent bloc coupling

Oil seals and oil leaks appear to be due to long periods of inactivity. The areas of concern are the front and rear main seals in which the engines require replacement.

The only seized engine that has occurred in the last 12 months suffered from a undetermined mechanical failure. This engine had only done approximately 500 hour's work.

The generators require the engine to be swapped between 500 and 1000 hours.

The two silent bloc couplings failed in the last 12 months due to the deterioration of the rubber bushers. It is unknown what caused the faults. Possible factors are:

1. An oil leak causing the rubber to deteriorate
2. Old age
3. Vibration
4. Poor alignment
5. A combination of the above

CONTROL BOX

NSN: 6110 66 093 8937

Control box failures have been:

- Potential transformer
- Cannon connectors
- Circuit cards
- Water inside control box

The potential transformer failed due to water ingress inside the control box caused by the rubber o-ring shrinking. This appears to have been an isolated occurrence as on further inspection of the other control boxes there was no sign of water ingress. The seal was then coated with rubber grease and replaced.

There has been significant failure of the cannon plugs these failures are:

1. Cannon connector (fire control unit) NSN: 00 878 1781. This plug is the outlet for the air-conditioner. Over the past 12 months there has been four plugs that have required repair, due to them being unavailable through the system.
2. Cannon connector (main outlet) NSN: 5935 66 029 1487. These fail due to the number of times they have the main power cables removed from the generator.
3. Other connectors have failed insulation resistance. This also applies to the connecting cables and the alternator.

Circuit cards quite often are found to be defective straight 'out of the packet' with 30% to 50% failure rate. These parts are expensive and repair parts are not easily available.

GOVERNORS

NSN: 2910 66 026 4438

The faults that occur with the governor are:

- Sticking
- Oil leaks
- Governor pulley
- Governor belt

Two of the governors in the last 3 months have had a problem of remaining in the fully open position. As yet the cause of the problem has not been determined. When a solution is found they will be rebuilt.

There is a common fault with oil leaks from the governor housing. These are from the cover plate gasket and front oil seal.

Governor pullies have been wearing on the keyway as well as 'flogging out' on the shaft. Also the governor belts are perishing due to age and deterioration from being painted.

FUEL TAPS

NSN: 4820 66 095 8318 FUEL TAP TANK

NSN: 4820 66 095 8317 FUEL TAP EXTERNAL

These develop fuel leaks from time to time (both internal and external) and can usually can be repaired; the other major fault is the tap handles coming off.

ALTERNATORS

NSN: 6115 66 125 4815

The alternator faults have been:

- Worn / fractured impeller hubs
- Short circuited main windings
- Cracked or missing dust boot
- Damaged faulty regulator / diode plates

In the past twelve months there has been two impeller hub failures:

1. The first hub cracked along the key way and was beyond repair
2. The second hub was worn around the shaft this was temporally repaired with quick metal to prevent further wear and still keep the generator serviceable until a new hub can be sourced.

One alternator has a short circuit between the main windings and earth. This is awaiting removal and will be sent to trade repair to be rewind.

In the last twelve months there has been four cracked dust boots.

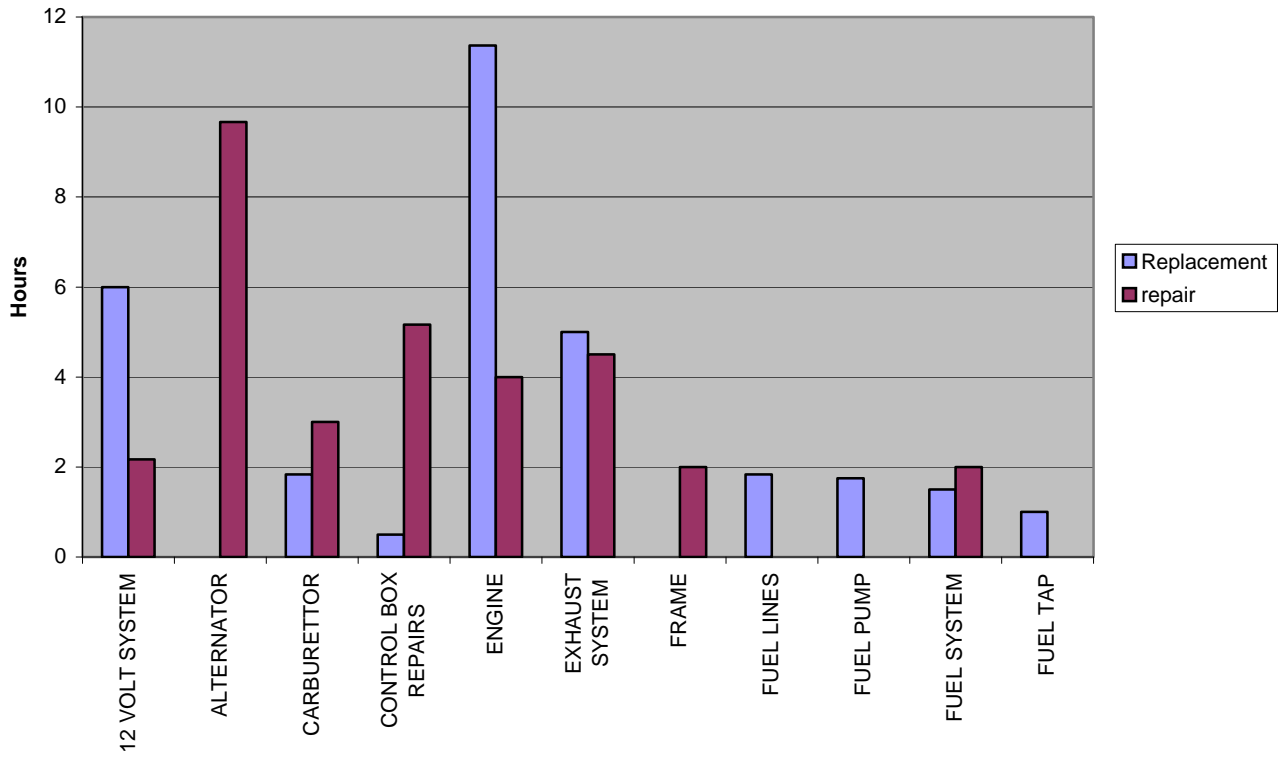
Two regulator /diode plates have been replaced due to corrosion and rust shorting out the components.

SHORTAGE OF PARTS

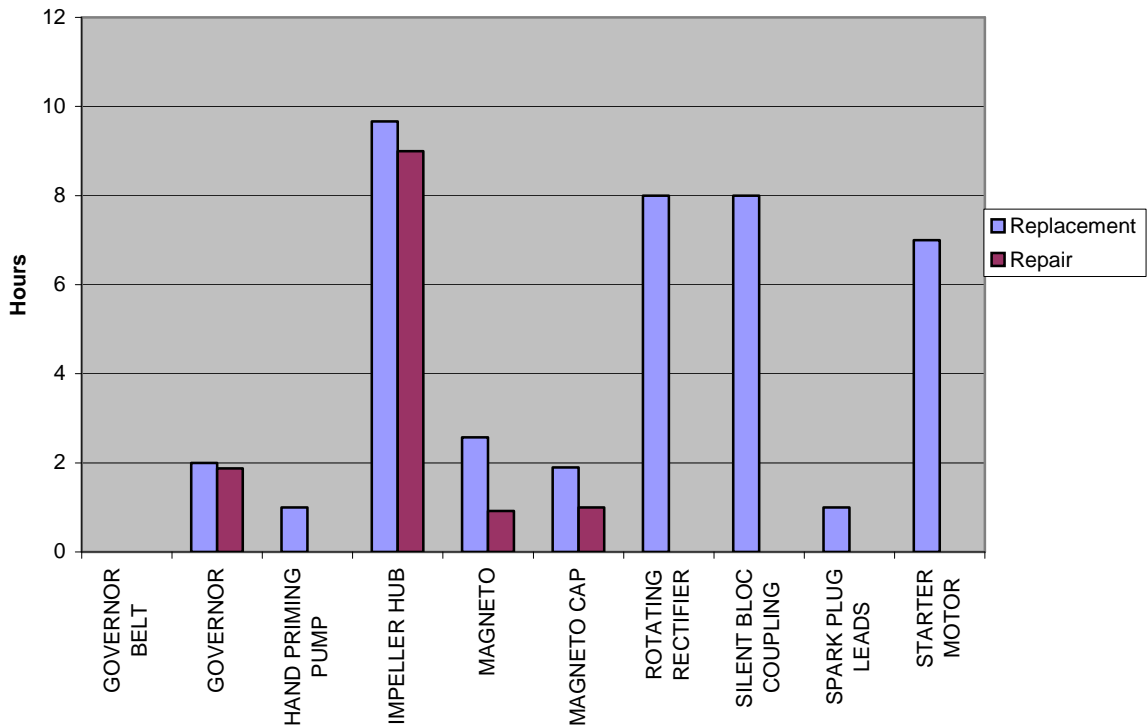
Listed below is a list of parts that are in high demand or hard to get that I have so far identified:

1. Gaskets:
 - Sump – NSN: 2805 12 136 0412
 - Tappet cover – NSN: 2805 12 147 6574
 - Fuel bowl – NSN: 5330 66 028 1870
2. Spark plug leads - NSN: 2920 12 192 5839 1 AND 2
NSN: 2920 12 192 5838 3 AND 4
3. Magnetos - NSN: 2920 66 104 2476
4. Carburettors - NSN: 2910 66 099 2797
5. Governors - NSN: 2910 66 026 4438
6. Governor pullies - NSN: 2990 12 147 6641
7. Governor belts - NSN: 2990 66 147 6643
8. Air cleaners - NSN: 2940 66 025 3444
9. Oil strainers - NSN: 2940 12 147 6664
10. Alternators - NSN: 6115 66 125 4815
11. Spark plugs - NSN: 2920 12 125 7593
12. Impeller hubs - NSN: 6115 66 093 8951
13. Dust boots - NSN: 5975 66 095 0672
14. Fuel pumps - NSN: 2910 12 147 6549
15. Fuel pump rebuild kits - NSN: 2910 12 147 6535
16. Carburettor rebuild kits - NSN: 2910 12 136 0385
17. Hand priming pumps - NSN: 2910 66 027 2776
18. Hand priming pump rebuild kits - NSN:
19. Magneto caps - NSN: 2920 66 118 3692
20. Rotor buttons - NSN: 2920 12 136 0318
21. Over speed cut-out – NSN: 2920 12 136 0320

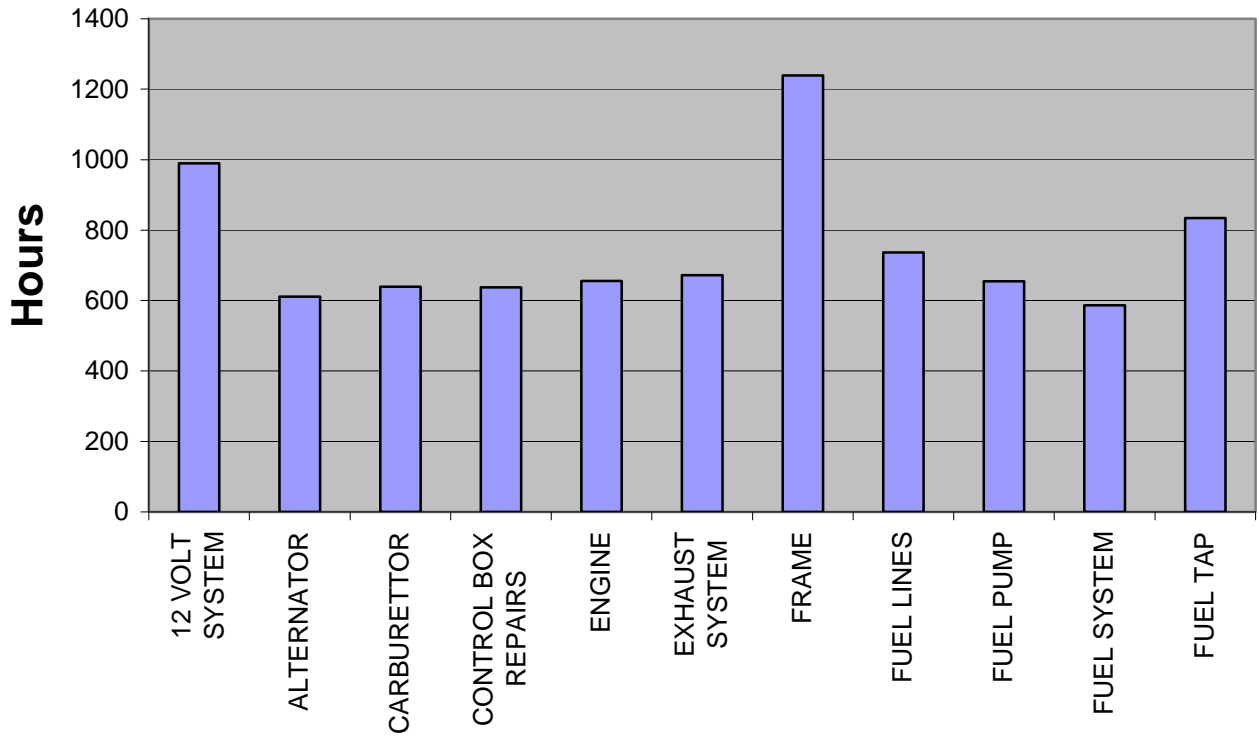
Replacement vs Repair Times (avg) Chart 1



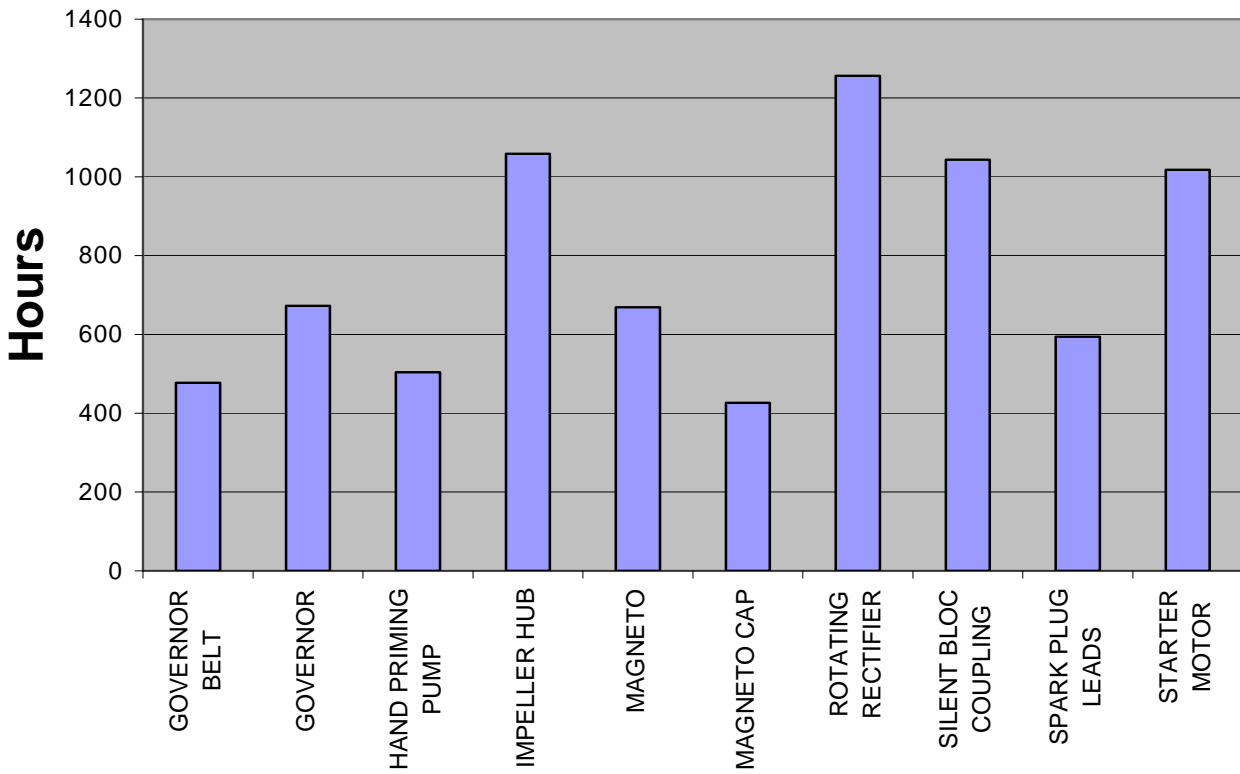
Replacement vs Repair Times (avg) chart 2



Hours Before Repair or Replacement (avg) chart 3



Hours Before Repair or Replacement (avg) chart 4



The above tables show the average life expectancy for components on the generators. Charts 1 and 2 show the average time between repairs to components compared to the time to repair them. Charts 3 and 4 shows the average time between failures of parts and the projected part usage.

This doesn't include parts required for servicing.

The required servicing parts are:

- Spark plugs – 100 – 200 hours
- Air filter – 200 hours
- Fan belt – 500 hours – if damaged
- Governor belt – 200 hours – if damaged
- Tappet cover gasket –100 hours
- Sump gasket – 100 hours
- Oil filter – 500 hours or less if damaged on removal
- Fuel bowl gasket – 100 hours
- Points – 500 hours