

Consultant's Corner: Specification: Standby Engine Generator



consultants corner

Part 2 - PRODUCTS

2.01 ENGINE

The engine shall be ____ fueled 4 cycle, water cooled with mounted radiator, fan, water pump and closed recovery system. The radiator shall be capable of providing sufficient cooling capabilities for operation in 110 degrees Fahrenheit ambient temperature. It shall have ____ cylinders with a minimum cubic inch displacement of ____ and shall have a minimum BHP of ____ at 1800 RPM.

The engine shall have hard faced exhaust valves with rotators. Lubrication shall be full pressure as supplied by a positive displacement lube oil pump. The engine shall be equipped with a dry type air cleaner and oil filter with replaceable elements.

Engine speed shall be controlled by a _____ governor to maintain alternator frequency with 3 Hertz from no load to rated alternator output. The engine shall have a 12 or 24 volt battery charging DC alternator with a transistorized voltage regulator. Remote starting shall be by a 12 or 24 volt solenoid shift electric starter.

The generator set shall contain a complete solid state start/stop control which starts the engine on closing contact and stops the engine on opening contact. Cycle cranking shall be provided to open the start circuit after eight attempts to start the engine have failed.

2.02 ALTERNATOR

The alternator shall be four pole revolving field design with a temperature compensated Volts/Hertz voltage regulator and brushless excitation system. The stator shall be directly connected to the engine flywheel housing and the rotor shall be drive through a semi-flexible flange to insure alignment. The insulation system shall be class F as defined by NEMA MG-1.65 definition. The three phase alternator shall be 12 lead reconnectable for:

- a) All voltages
- b) Full capacity single phase

Frequency regulation shall not exceed 3 Hertz from no load to rated load. Voltage regulation shall be with +/- 2% of rated voltage at 60 Hertz from no load to full load. The instantaneous voltage dip shall be less than 12.5% of rated voltage when full 3 phase load and rated power factor is applied to the alternator. Recovery to stable operation shall occur within 2 seconds. A rheostat shall provide a minimum of +/- 5% voltage adjustment from rated value. Temperature rise shall be within NEMA MG-22.40 definition.

2.03 INSTRUMENT PANEL

The alternator instrument panel shall be housed in a NEMA 1 enclosure, wired, tested and shock mounted on the generating set by the manufacturer of the alternator. It shall contain panel lighting, automatic reset circuit breaker, oil pressure gauge, coolant temperature gauge, DC battery charge ammeter, frequency meter, running time meter, voltage adjusting rheostat, AC voltmeter, AC ammeter and phase selector switch. In addition, it will have the following shutdowns and indicator lights which will latch in the on position should a fault occur until manually reset. A test and reset switch shall also be provided to test the operation of the lights.

- a) Low oil pressure
- b) High coolant temperature
- c) Low coolant level
- d) Overcrank
- e) Overspeed
- f) RPM sensor loss

The control panel shall also have the following pre-alarm lights:

- a) Low oil pressure
- b) High coolant temperature
- c) Low coolant temperature
- d) High battery voltage
- e) Low battery voltage
- f) Low fuel
- g) Switch not in auto.



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