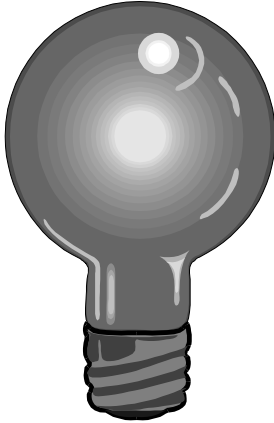




## Standby Electric Generators for Emergency Power



Standby generators are powered by tractors or engines and may be either portable or stationary. Engine-driven units available may have an automatic or manual start and are powered by gasoline, LP gas (bottled gas) or diesel fuel.

Generators must provide the same type of power at the same voltage and frequency as that supplied by power lines. This is usually 120/240 volt, single phase, 60 cycle alternating current (AC). For generators larger than 15 kilowatts, an air-cooled engine is necessary. Two to 2 1/4 hp engine capacity with the proper drive system must be available for each 1,000 watts of generator output.

### Size of Generators

A full-load system handles an entire farmstead's energy needs. An automatic, engine-powered, full-load system begins to furnish power immediately or within 30 seconds after power is off.

A smaller, less expensive part-load system may be enough to handle essential equipment during an emergency. Power take-off (PTO) generators cost about half as much as engine-driven units and can be trailer mounted. A part-load system operates only the most essential equipment at one time. For most farms this is adequate, if the generator has the power to start the largest motor. For example, the milk cooler or the ventilation fan must operate continuously, but operation of the silo unloader and mechanical feeding system can be delayed until the milking chores are over.

### Installation

Wiring and equipment must be installed in accordance with the National Electrical Code, local ordinances and the requirements of the power supplier. It is very important to have the proper equipment for disconnecting the generator from public utility lines. Most companies require the installation of a double-pole double-throw transfer switch or its equivalent for this purpose. Check with your electrician or power company representative for installation instructions and inspection.

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## Location and Safety Features

Large engine generators are best located in a heated building. Inlet and outlet air ducts must be large enough to carry off excess heat. Air inlets and outlets should be open at least ½ square foot for each 1,000 watts of generator capacity. Combustion fumes must be carried outdoors safely. Exhaust pipes must be at least 6 inches from combustible material.

## Operation

An automatic standby unit starts automatically when power fails, and stops when power is restored. When using an engine-driven generator with manual start, or when using a tractor-driven unit, follow this procedure when power fails:

- ① Call your power supplier and advise them of the conditions.
- ② Turn off or disconnect all electrical equipment.
- ③ Position the tractor or engine for belt or PTO drive. Check on direction of exhaust pipes. Be sure there is no danger of fire.
- ④ Start the unit and bring the generator up to proper speed (1,800 or 3,600 rps). The voltmeter indicates when the generator is ready to carry the load.
- ⑤ Turn the transfer switch to the generator position.
- ⑥ Start the largest electrical motor first. Add other loads when each is up to operating speed. Don't add too many loads too fast. If the generator quits, then repeat steps 2, 4 and 5.
- ⑦ Check voltmeter frequently. If voltage falls below 200 volts for 240-volt service or below 100 volts for 120-volt service, disconnect some electrical equipment to reduce the generator load.
- ⑧ When commercial power is restored, return the transfer switch to the normal power position. Then stop standby unit.

## Maintenance

- Keep the unit clean and in good running condition at all times for immediate use. Accumulation of dust and dirt can cause the motor to overheat when operated.
- Follow the maintenance instructions in manufacturer's manual. A short operation at set intervals will keep the engine in good operating condition. Regularly scheduled warm-ups are necessary to keep standby generator in working order.