

FRANKLIN AID



Franklin Electric



Franklin Application/Installation Data (AID) ... For The Professional Driller-Installer

Vol. 17, No. 2, March/April 1999

ALTERNATIVE POWER SOURCES

As mentioned previously in the May/June 1998 Franklin Aid, all Franklin Electric submersible products are Y2K compatible. This includes submersible motors, control boxes, Subtrols, all versions of Pumptec, and Franklin's newest product, CP Water. Franklin Electric has spent considerable time and effort to ensure we, as a company, are Y2K compatible.

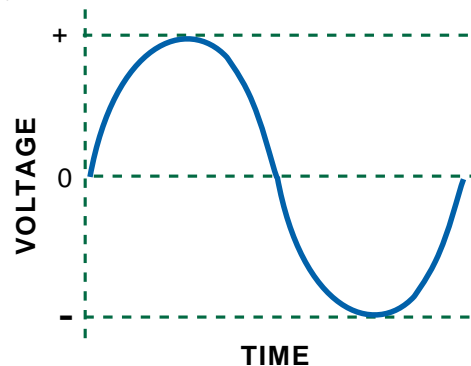
As January 1st, 2000 approaches, more phone calls asking about alternate energy sources are coming into the Hotline. Generator sizing is the number one issue and we will discuss proper sizing in the next edition. However, in this issue we would like to answer questions regarding alternative power sources.

Battery Back-up: The popularity of battery back-up systems is increasing due to the concern for Y2K and because more people are moving to remote areas. Battery back-up systems are used to provide power where utility power is unavailable or to provide uninterrupted power during outages. Battery back-up systems are typically used in conjunction with generators, photovoltaic cells, windmills and utility power sources. These sources provide DC power to a battery bank while they operate. When the power goes off, the batteries switch on. However, since our homes normally operate on AC power, the first step is an inverter.

The Inverter: The inverter changes the DC (Direct Current) power from the battery into AC (Alternating Current) power. The inverter also changes or boosts the typical 12 volt power from the battery to 120/230 volt AC power which is normally required for our homes. The inverted/boosted power can then be used to operate a submersible pumping system.

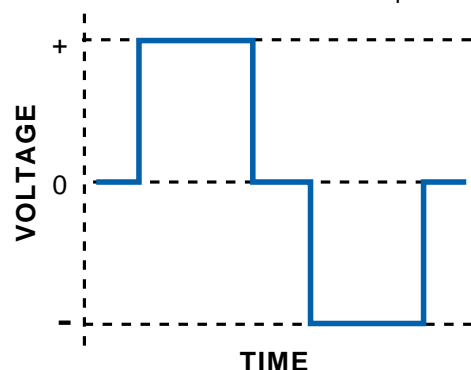
Sine Waves: There are typically two types of inverters used to convert this power. One type is commonly known as a "pure wave" or "sine wave" inverter. The other is known as a "modified wave" inverter. The name comes from the type of power wave created or supplied to the output side of the inverter.

Pure Wave: The figure below shows a typical "utility" supplied sine wave. This is the wave that comes into your house and is used to operate your electrical appliances. This sine wave is typically smooth and looks sort of like a roller coaster ride.



Pure wave inverters duplicate the smooth flowing sine wave and can be used with today's electronics. This includes televisions, VCRs, computers, etc. This type of sine wave can also be used to power Franklin Electric's submersible motors and control boxes.

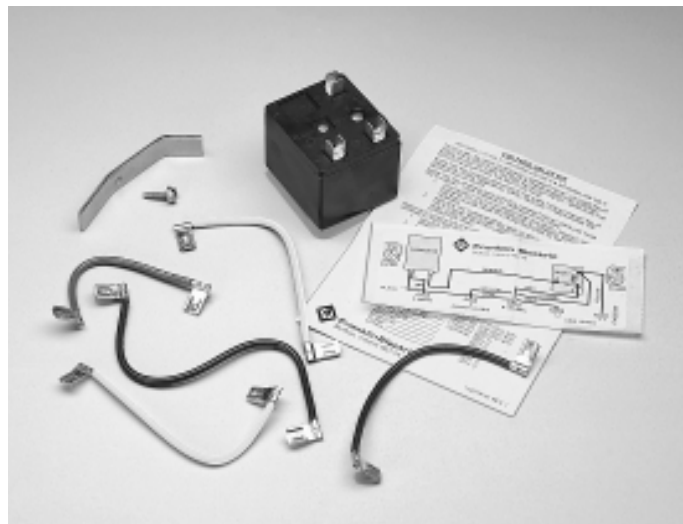
Modified Wave: The figure below shows the output from a "modified" wave inverter. This looks similar to a pure sine wave except there are typically on/off steps. This modified wave generally does not work well with electronics and can be a problem for Franklin's 2-wire and small Hp 3-wire motors.



Concerns: Franklin's 2-wire motor utilizes an electronic "Triac actuated, Bi-metallic" switch, known as a BIAC switch. Franklin's 1 Hp and smaller 3-wire motors also use an electronic "Triac actuated" switch known as the QD (blue) Relay. Triacs are electronic switches used to turn off the start winding of the motor. Because a modified sine wave "steps" instead of "flows", there may be incidents where this style of switch may not work reliably. It is best to only use a pure wave inverter for 2-wire motors. For 3-wire motors a simple modification to the control box makes it compatible with a modified wave inverter.

3-Wire Solution: Substituting a "voltage" relay into the 3-wire control box allows the system to work with the irregular sine wave shape. Franklin's voltage relay kits supply the voltage relay, mounting hardware, jumper wires and instructions required to make this change. Franklin part 305 102 901 is the 115 volt kit and 305 102 902 is the 230 volt kit.

Franklin 3-wire systems larger than 1 Hp already contain the voltage relay and will work with either type of wave.



Voltage Relay Kit

Frequently Asked Questions:

Q *"Can I buy the smaller Hp control boxes with a voltage relay factory installed?"*

A Franklin changed the 1/3 through 1 Hp control boxes to the QD Relay several years ago. We currently do not manufacture 1 Hp and smaller control boxes with voltage relays.

Q *"How difficult is the voltage relay to install?"*

A The instruction sheet in the relay kit is very easy to read and makes the installation simple.

Q *"If the voltage relay is better in this situation, Why doesn't Franklin offer it as a standard?"*

A Franklin uses the QD Relay for several reasons. The most important is it works better. When a voltage relay opens its internal connection to turn off the start winding an arc can occur. This arc occurs when the current tries to maintain its flow as the contacts open. This is a normal phenomenon with voltage relays. However as the arc occurs, the contacts wear and can eventually stick or weld together. When this happens, the motor's start circuit will not turn off.

With the QD Relay, the start winding is switched electronically. The "triac" turns the current to the start winding on and off without arcing. Without arcing, the QD Relay doesn't wear and is able to cycle more times than a voltage relay. This has been proven many times during life testing of our product. Better life makes the QD Relay a better choice.

TOLL-FREE HELP FROM A FRIEND

Phone Franklin's toll-free SERVICE HOTLINE for answers to your installation questions on submersible pump motors. When you call, a Franklin expert will offer assistance in troubleshooting submersible systems and provide immediate answers to your motor application questions.

Franklin Electric SERVICE HOTLINE 800-348-2420 FAX 219-827-5102



Franklin Electric
QUALITY IN THE WELL