THREE-WIRE START GENERATORS

Three-wire start generators do not include automatic engine cranking control system. Separate control of the starter motor requires additional interaction between the inverter's auto-control system and the generator. This also adds complexity to the installation since more wires must be connected and more programming of the inverter is required. Troubleshooting can also be more difficult.

The automatic control system controls the starter much like a person does when starting a car engine. The starter is turned on for short periods of time and then turned off. If the engine starts up while cranking, the starter is turned off after a 1/2-second delay. If the engine does not start, the starter is turned on again after a delay period. This is repeated until either the generator starts or the maximum number of start attempts is reached.

The common term "three-wire start" may be misleading - the actual number of wires used may be four or more. It simply means that control of the starter motor is done separately from the generator. Most three-wire start generators are not designed for automatic, unattended operation. The generator supplier should be consulted regarding additional safety components required for your installation. The automatic control system only provides the starting and stopping signals based on what the batteries need. It will not shut off the generator if a problem such as low oil pressure occurs.

Three-wire start type generators can be divided into two basic types - "Honda" types and "Onan" types. The Honda type uses an automotive type starting circuit as previously discussed. Operating a switch that is first turned to "RUN" and then momentarily held to a "START" position starts it. Once the engine has started, the switch is released and it returns to the "RUN" position. To shut down the generator, the switch is placed in the "OFF" position. For this type of generator, relay ***RY7*** duplicates the "RUN" position and relay ***RY8*** duplicates the "START" position, cranking the starter motor. For this type of generator, select ***RUN*** from the ***SET RY7 FUNCTION*** menu item under the ***GEN STARTING DETAILS (13)*** menu heading. This is the default setting of this menu item.

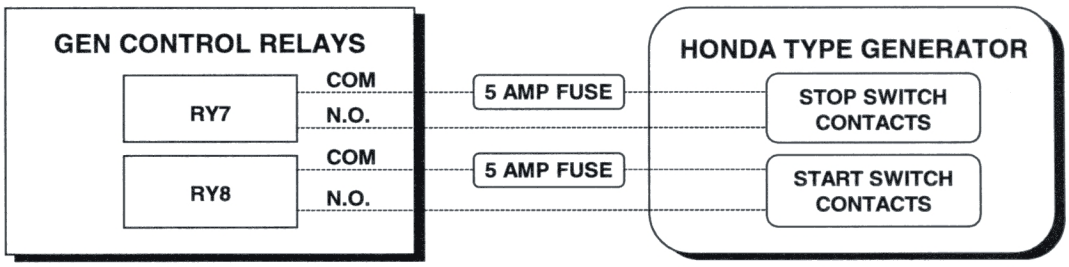

Figure 24, Three Wire Start Wiring Diagram (HONDA Type)

Onan type generators use a different starting sequence. Most Onan type generators use a three-position momentary type switch that controls their operation. To start the generator, the switch is held to the "START" position. This energizes the ignition system and cranks the starter motor. Once the engine has started, the switch is released and it returns to a center off position. The starter motor then stops cranking but the ignition system remains energized. To shut down the generator, the switch is held to the "STOP" position until the engine dies. Once the handle is released, it returns to the center position. For this type of generator, relay ***RY8*** duplicates the "START" position and relay ***RY7*** is used to duplicate the "STOP" position (using the common and normally open contacts). Some generators use a similar system with two push button switches - one to start and one to stop.

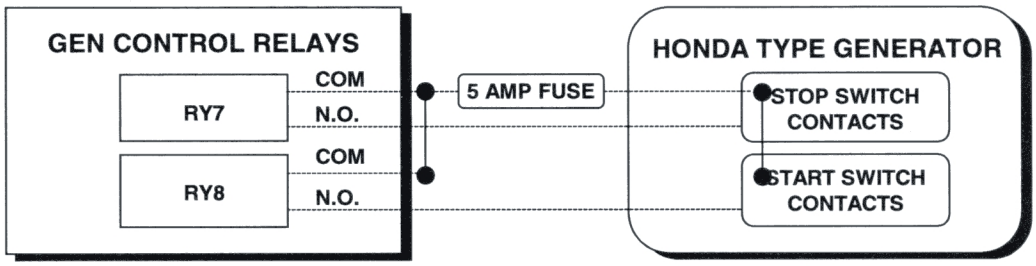

Figure 25, Three-Wire Start Wiring Diagram (ONAN Type)