2025-2026 EMC
Speech/Demonstration Topic

PROBLEM: The contestant will be expected to thoroughly explain the operating principles and installation of an Interlock kit (manual lockout switch) for an optional standby system. The service entrance will be located inside a separate garage where the homeowner wants to install a manual load connection for a generator to power a well and 2 branch circuits. The Interlock Kit will be located inside the service entrance panel and meets NEC Code 702.4 requirements regarding installation and operation of optional standby systems. The system will provide standby power to branch circuits which contain lighting outlets, an individual branch circuit for necessary power during long term outages, and a 240V well pump. In the event of a power outage the manual lockout switch will be used to switch power from the electrical utility to a portable generator rated at 7,500 watts (7.5 kW). The generator will supply power to the service entrance panel by means of a flanged inlet connection located on the outside of the building.

10 AWG, THHN solid-copper conductors will be installed between the 30-amp double pole breaker and the 30-amp flanged inlet that will connect to the generator. One 12 AWG, NM cable will be installed to supply the branch circuit, protected by a 20-amp breaker. One 14 AWG, NM cable will be installed to supply the lighting branch circuit, protected by a 15-amp breaker. A 10 AWG, UF cable will be installed in ½" schedule 40 conduit and protected by a 30-amp breaker. The 240-volt, 1½ hp submersible pump and will be located 80 feet from the panel with a 2% voltage drop.

Materials List:

The following list of materials will either be attached to the demo frame or laid out for the contestant to use as they explain the installation of the circuit.

1 - 100 Amp Eaton Service Entrance Panel with 6 AWG bare copper grounding conductor installed and connected to a driven ground.
3 - #2 RHH Conductors installed in a 100-amp circuit breaker.
1 - 100 Amp Eaton Service Entrance Panel Cover with installed Generator Interlockkit K-9011 kit
1 - 30 Amp electrical box, flanged inlet
2 - 30 Amp double pole circuit breaker
1 - 20 Amp single pole circuit breakers
1 - 15 Amp single pole breaker
4 - #10 AWG Copper THHN solid conductors (1 black, 1 red, 1 white, 1 green)
1 – 12/2 AWG, NM Cable w/ground
1 – 14/2 AWG, NM Cable w/ground
1 – 10/2 AWG, UF Cable (.518" x .215")
1 - 10 AWG, 30 Amp, 125/250 Volt, Generac Generator Cord with L14-30 ends
1 - 1 ¼" PVC threaded male adaptor w/locking ring
1 - 1 ¼" Schedule 40 Rigid PVC Conduit
2 - ½" PVC threaded male adapter w/locking ring
2 - ½" PVC conduit, Schedule 40
1 - ½" PVC 90 Degree Sweep, Schedule 40
1 - Generator Interlockkit K-9011 kit contents (See Picture on page 2)

References:

2023 National Electrical Code
AAVIM Electrical Wiring 9th Edition
Agricultural Wiring Handbook – 18th Edition
Poster Size Schematic Drawing
Generac GP Series Portable Generator Owner's Manual
Separately Derived and Non- Separately Information Sheet

Generator Interlockkit K-9011

KIT CONTENTS

Description	Quantity	Part #
Back plate	1	BP-9011
Front plate	1	FP-9011
Binder post	4	B-1002
Binder screw	4	B-1003
Drill bit 11/64	1	D-1004
Thread lock pipette	1	T-1005
Instruction booklet	1	IB-9011
Main label	1	L-1006
DANGER label	1	L-1007
Generator label	1	L-1008
Instructions label	1	L-1009
Breaker Retainer	1	R-1001
Self Tapping Screw	2	S-2001

TOOLS NEEDED TO INSTALL

- Drill or cordless drill
- Flathead screwdriver
- Metal file
- Accurate voltage sensor

CONTACTING US

You can contact us by phone at (804) 726-2448 or by fax at (804) 231-1984
Questions or comments:
questions@interlockkit.com

Optional Standby System

12-2 w ground to a receptacle circuit protected by a 20-amp

14-2 w ground to a lighting circuit protected by a 15-amp breaker

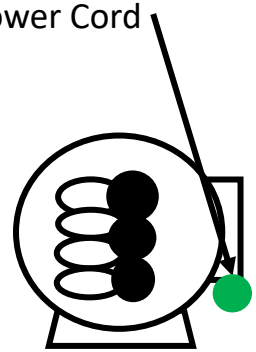
30 Amp Double Pole Breaker for Generator

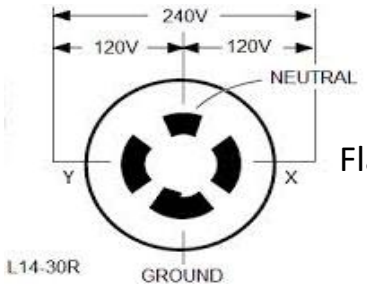
100 Main circuit Breaker

30 Amp Double Pole Breaker to Well Pump

Breaker retainer Installed between breakers 3 & 4 and breakers 5 & 6 with tab pointing toward main breaker to land on breakers 3 & 4.

7,500 watts (7.5 kW) Generator (Bonding Jumper Removed) Connected to Flanged Inlet by Power Cord





30 Amp Flanged Inlet

10-2 w/ground UF cable installed to well pump

The length the box will be from the panel is 10”