

# V-02

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## ELECTRICIAN TRAINING

### TRAINER'S GUIDE

Duty V: Welders  
V-02: PM Welder (Lincoln)

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## Instructions To The Trainer

1. The Learner will contact you when ready to practice performing preventive maintenance on a Lincoln welder.
2. Be prepared to demonstrate the steps for this task.
3. Ask the Learner to contact the Evaluator when ready for the Skill Check.



## Skill Objective

Given a request for a PM Check on a Lincoln welder, perform preventive maintenance on the welder.

### Task Standards

1. The MD number on the welder must match the numbers on welder disconnect and the overhead buss disconnect.
2. Control cable jackets must be free of cuts and cracks; control connectors must be secure and not broken; there must be no exposed wires or lugs; cable connectors must be secure.
3. Cooling hoses must not leak; gas hoses must not leak.
4. Welding cable jackets must be free of cuts and cracks; welding cable lugs must not be or broken; there must be no exposed wires; cable lugs must be wrench-tight; cable terminals must not be burned.
5. Conduit connectors, grommets and couplings must be wrench-tight.
6. Feed and idler rollers must have no wear grooves; wire guide tubes must have a smooth, round bore; guide tubes must not touch the wire feeder rollers.
7. Digital weld voltage meter display must be within .1 volt of the set-for voltage.
8. The leakage voltage must not exceed  $\pm.5$  volt.
9. The gas meter reading must be 35-55 CFH.
10. The INTERLOCK switch, unless intentionally disabled, must operate as specified in the Lincoln manual.
11. The fan must run continuously when the welder is powered up (if the model is not a Lincoln 655).
12. The welder and wire feeder must be free of dust, dirt, and debris.

## What The Learner Will Need

This section contains the safety information, tools, and resources you will need before performing preventive maintenance on a Lincoln welder.

### **SAFETY FIRST**

**DON'T TAKE  
CHANCES**

- Follow all Caterpillar facility safety standards when performing this task.
- Lock and tag the welder when cleaning the welder. After the welder is covered, the welder only needs to be turned off when connecting to the load bank.
- If adjustments to R8 and R40 are required, power down the welder before scraping the seals.
- When checking the wire feed speed or weld voltage, do not allow the weld wire to contact any machinery or objects that are grounded.
- Ladders or manlifts may be required to reach the feed rollers. Wear a safety harness when you are on a manlift. Check for overhead clearance and cabling when working aloft.



- certified, calibrated load bank
- certified, calibrated wire feed speed meter
- certified, calibrated digital shielding gas flow meter
- digital and analog voltmeter
- Electrician's hand tools
- vacuum cleaner equipped with brush
- electrical tape
- safety harness
- cleaning tent

- low pressure air source
- pot trimmer or very small screwdriver



- Lincoln Welder Operator's Manual
- Lincoln Welder Feeder Manual



## Practice Set-Up

The Learner may perform the following practice to help prepare for the Skill Check. Set up the practice for the Learner. Assist the Learner during the practice, if necessary; answer any questions concerning the task; and be prepared to demonstrate the task to the Learner. Make sure the Learner follows safe work practices while practicing the task.

### Practice 1

Ask the Learner to:

- inspect the cables, hoses, connectors, and lugs
- identify repairs that are necessary.

### Practice Objective 1

Damaged control and welding cable jackets must be identified; damaged hoses must be identified; damaged or loose connectors must be identified; damage or loose connectors must be identified.

### Practice 2

Ask the Learner to clean the welder. All safe practices associated with cleaning the welder must be demonstrated.

### Practice Objective 2

The welder housing and wire feed components must be free of dirt and debris. The welder must be locked and tagged during the activity.

### Practice 3

Ask the learner to check the following components. Ask the Learner to identify the required adjustments prior to performing the adjustments.

- operation of the wire feeder controls
- operation of gas flow meter
- weld voltage

The Learner must demonstrate all the safe practices associated with these checks.

### Practice Objective 3

The wire feed speed must be within two inches of the set-for speed. The gas flow must be set for 35-55 GPM. The wire feed control meter display must read within .01 volt of the set-for voltage. The leakage voltage must not exceed  $\pm 5$  volt. The INTERLOCK switch must operate as specified by the Lincoln Manual. The welder must be locked and tagged, as necessary, during the activity.

### Next Step

Allow the Learner to continue practicing and developing skills needed to demonstrate the task. The Learner should ask the Evaluator to schedule a Skill Check when ready to demonstrate the task unaided and meet all the task standards and safe work practices.

