

K-06b

ELECTRICIAN TRAINING

SKILL CHECK GUIDE

**Duty K: PLC (Modicon)
K-06b: Troubleshoot I/O Module**

Issued 01/01/98

Rationale

This Skill Development Guide provides the knowledge needed to troubleshoot an I/O module. At Caterpillar, some PLC problems are cued by a device that is not working correctly. Often the problem is with the input or output module and not with the device. Troubleshooting the input or output often eliminates potential problems within the system. The individual performing the task must exercise extreme caution when troubleshooting an I/O module. The machine must be in the manual mode and must have stopped before any troubleshooting takes place. Failure to stop the machine could result in unexpected movement of the machinery, which could cause injury to personnel or damage to a part.

Skill Check Set-Up

Select a device on the machine to use as a simulated “problem device” for the Skill Check. Contact the Operator where the PLC is located to schedule a convenient time for the Skill Check. Before the Learner begins, enter the program and either deactivate a device or remove the power supply from the I/O module. Have the Operator describe the “problem” to the Learner. The Learner should have access to a programmer to communicate with the corresponding machine PLC and the machine program. Observe the Learner and verify that he or she performs all task steps. The Learner should be able to identify the I/O module problem by following the troubleshooting steps. Verify that the Learner makes the correct modification to the part and puts the machine back to its original condition. You must make available the tools, materials, and resources needed to demonstrate the task.

What The Learner Will Need

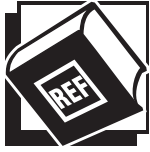
This section contains the safety information, tools, and resources you will need before troubleshooting an I/O module.



- Follow all Caterpillar Facility Safety Standards when performing this task in the plant.
- Use caution when working around the PLC; high voltage is present on the inside of the PLC cabinet door and near the I/O chassis.
- Wear safety glasses and hearing protection in assembly and production areas.



- P190 programmer (Typically used with the 184, 384, 484, 584, 884, and 984 processors.)
- P230 programmer (Used with the 984 processor and the 184, 384, 484, 584, and 884 processors in the P190 emulator mode.)
- PLC communication cable
- Tape Loader Tape (P190 only)
- Program Loader Tape (P190 only)
- Modicon Bus Plus (Used with all processors.)
- Wiggy voltage tester



- Basic Help Keys, available on programmer software
- Modsoft Programmer User's Manual (GM-MSFT-001 Rev. F)
- Modicon P230 Quick Key reference card
- Ladder Diagram printout
- Modbus Plus Data Highway Chart
- Machine Print



Skill Check

Upon notification of a machine device communication problem, troubleshoot the I/O module.

Needs
Mastered Practice

Safe Work Practices

- | | | |
|-------|-------|---|
| _____ | _____ | 1. Follow all Caterpillar Facility Safety Standards when performing this task in the plant. |
| _____ | _____ | 2. You will perform this task online. Perform the steps carefully; mistakes could result in injury to personnel or damage to the equipment. |
| _____ | _____ | 3. Wear safety glasses and hearing protection in assembly and production areas. |

Task Standards

- | | | |
|-------|-------|--|
| _____ | _____ | 1. You identify the problem and suggest a corrective action. |
| _____ | _____ | 2. Corrective action results in the machine performing according to specification. |



Evaluator's Sign-Off

The Learner has demonstrated safe work practices and competent performance of the task.

Evaluator: _____ Date: _____

Learner: _____ Clock No: _____