

# G-19

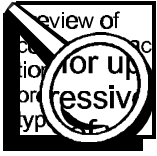
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## MAINTENANCE MECHANIC TRAINING

### SKILL DEVELOPMENT GUIDE

**Duty G: Conveyors**  
**G-19: Troubleshoot Chip Conveyor**

Issued 06/01/98



## Task Preview

### Troubleshoot Chip Conveyor

Chip conveyors gather and lift cuttings from machining operations, often from a cooling water bath underneath machine tools. If a chip conveyor fails, it shuts down production at the machine tools it serves. A Maintenance Mechanic must be able to:

- identify the immediate component malfunction responsible for an operating symptom quickly
- propose efficient procedures for correcting the problem
- recognize the conditions that led to component failure and recommend measures to prevent recurrence
- work safely around a chip conveyor

### How your skills will be checked

The Skill Check will require you to troubleshoot a chip conveyor. All tools, materials, and resources will be available. The Evaluator will verify that your demonstration meets the skill objective by observing or measuring each task standard. You must demonstrate safe work practices during the Skill Check. Contact your Evaluator when you are ready for the Skill Check.



## Skill Objective

Given a chip conveyor that is not working correctly or at all, troubleshoot the problem.

### Task Standards

1. The conveyor problem must be correctly identified as quickly as possible.
2. The most efficient procedures for correcting the problem must be proposed.
3. After the problem is corrected, the conveyor must operate normally.
4. All safety requirements must be demonstrated.

## What You Will Need

This section contains the safety information, tools, and resources you will need before troubleshooting a chip conveyor.



- Follow all Caterpillar facility safety standards when performing this task.
- The pickup end of chip conveyors is usually in a confined space; a permit, harness, and special precautions are required.



- flashlight
- hand tools necessary for removing inspection covers
- wrenches necessary for adjusting conveyor, drive belt, and drive chain tension
- pry bar
- come-a-long



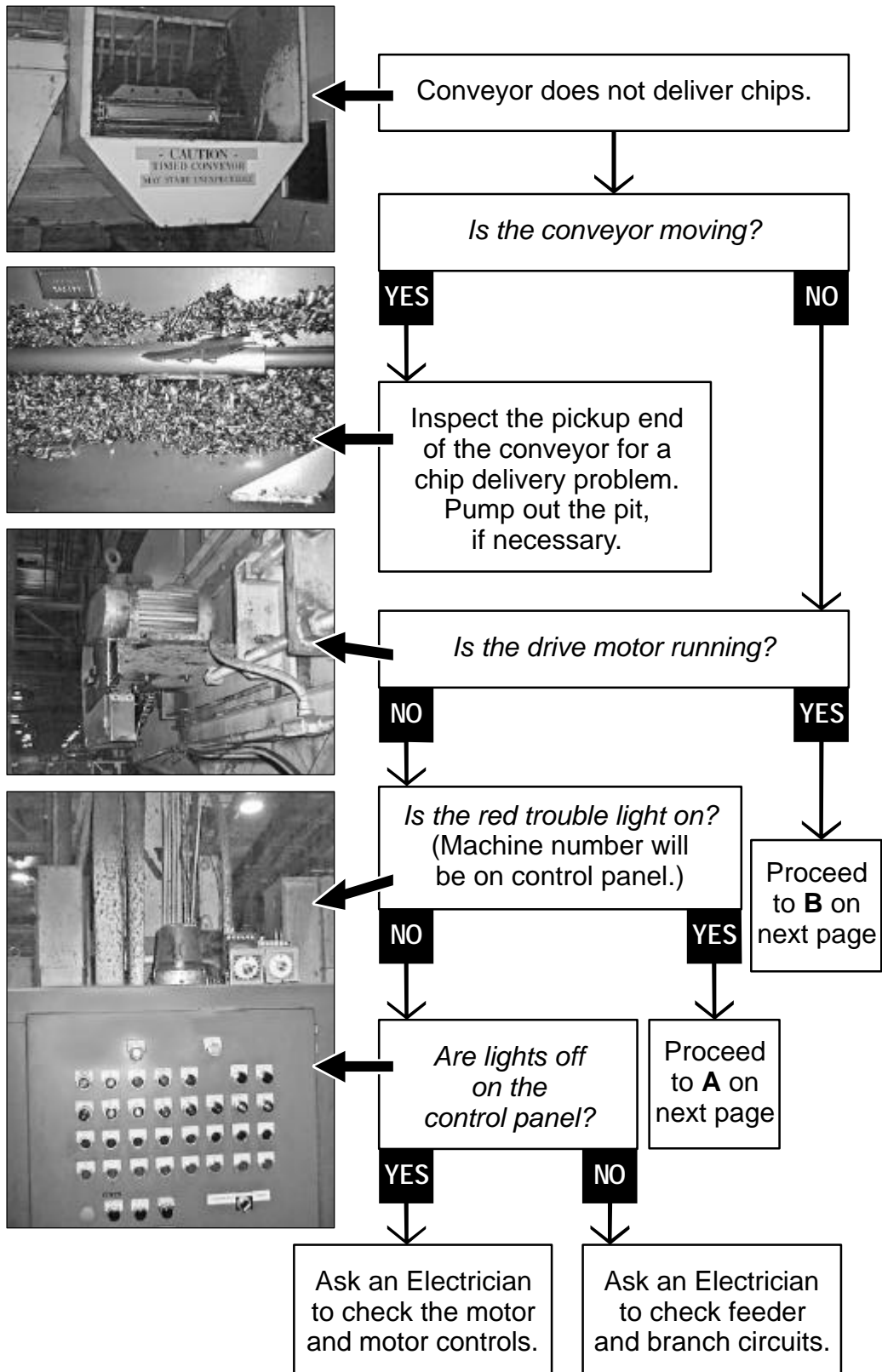
- conveyor documentation and prints
- the person who reported the conveyor problem or symptoms
- conveyor maintenance records
- the person responsible for Preventive Maintenance on the conveyor
- Electrician
- Welder

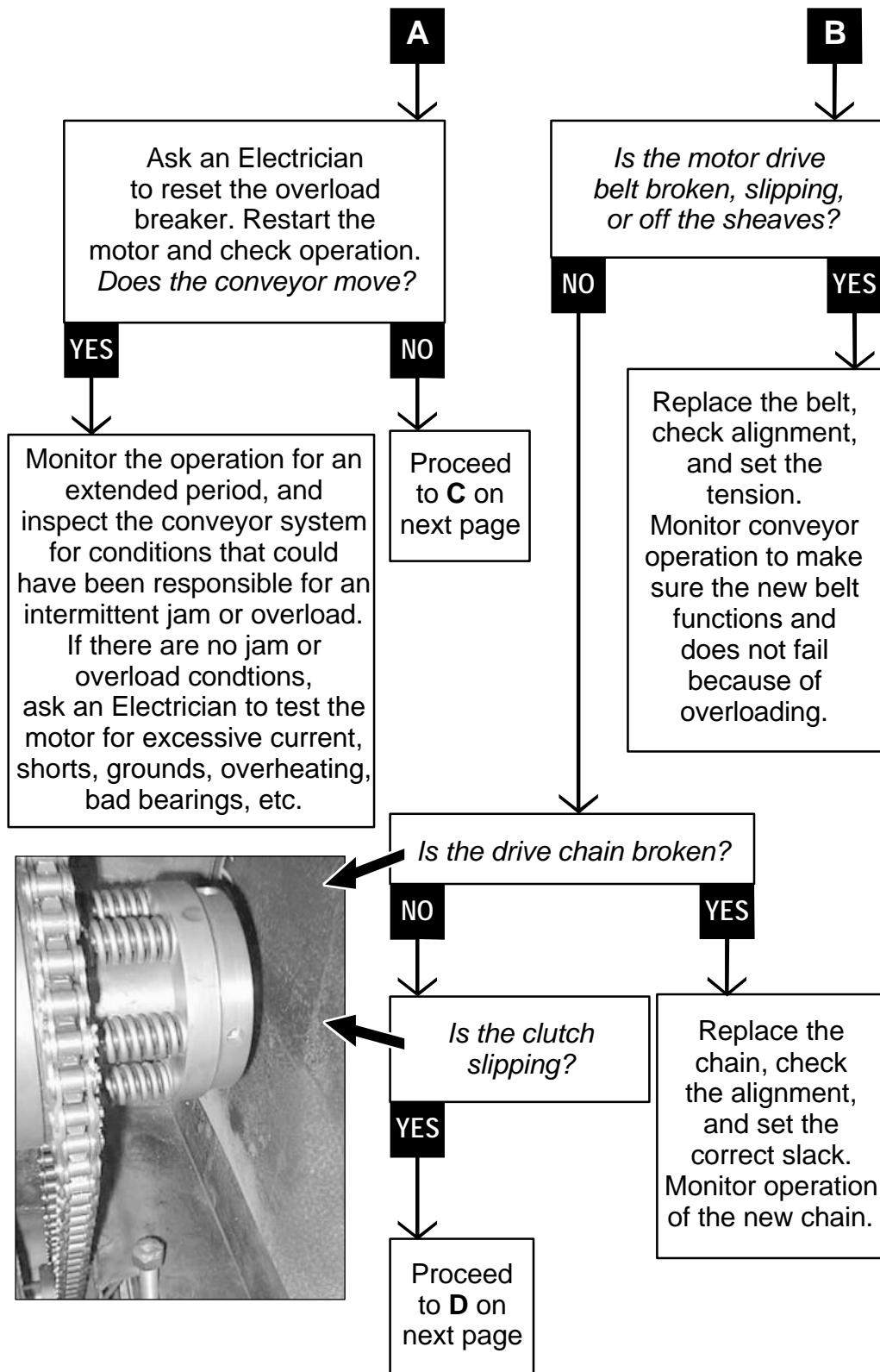


## Task Steps

### Troubleshoot Chip Conveyor

1. Troubleshoot the conveyor according to the symptom charts on the following pages.





**C**

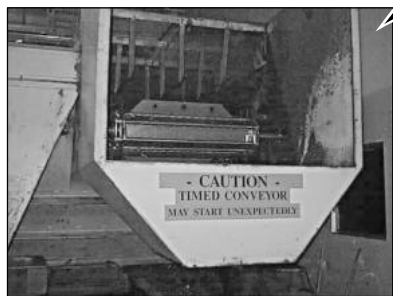
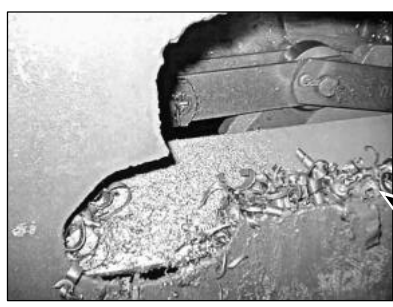
**D**

From the top of the conveyor, through exposed areas, or through cutaway sections, inspect the accessible parts of the conveyor system for a jammed condition, such as:

- Material or parts wedged between the sprockets and the conveyor chain links, between the conveyor links and the guides, or between the conveyor links and the conveyor structure.
- Broken links or missing link cotter pins and washers.
- Links caught on worn link guides.
- Link hinge pins shifted out of position far enough to catch on the conveyor structure.
- Severely worn sprockets or chain rollers.
- Conveyor chain so loose that it has wedged high on a sprocket.

If none of these conditions are evident, ask an Electrician to reverse the drive motor.

*Does the conveyor run in reverse?*



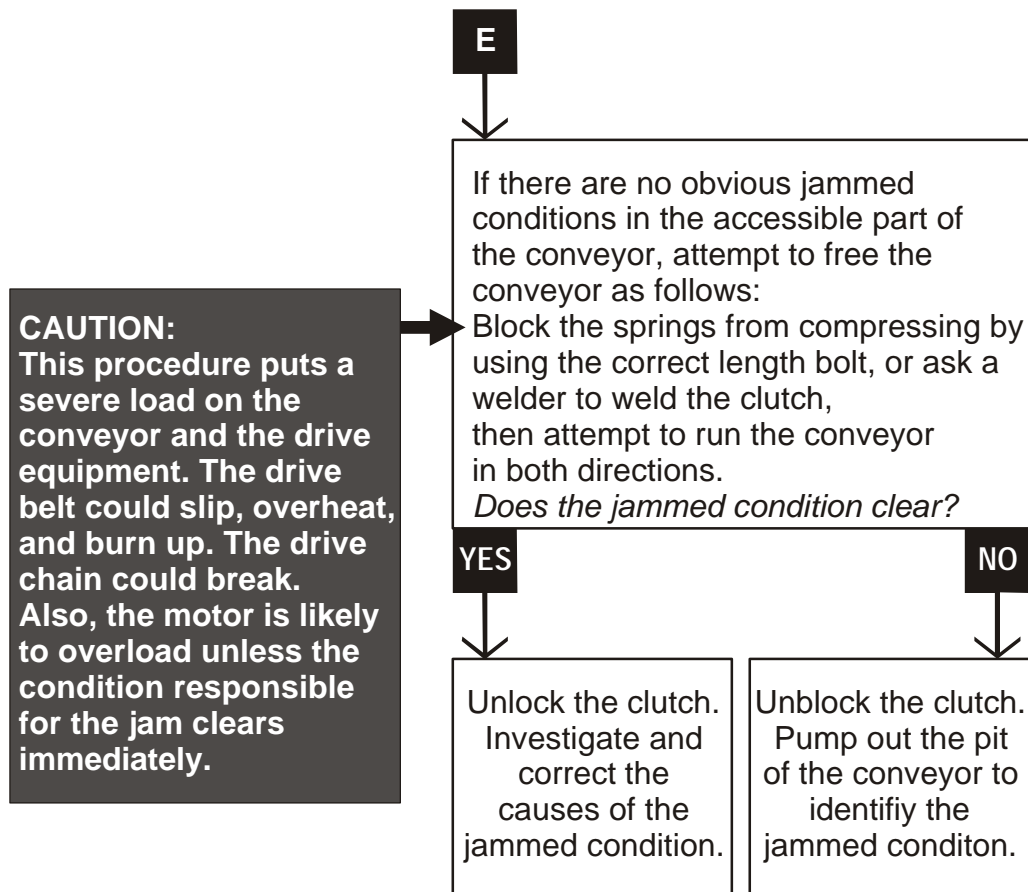
**NO**

**YES**

Proceed to **E** on next page

Inspect the conveyor system for conditions that could have jammed it in one direction.





2. Plan the procedures necessary to correct the problem identified in the conveyor system. Possible procedures include:
  - removing the material that is jamming the conveyor.
  - clearing accumulated chips or debris from the pit.
  - adjusting the drive belt tension.
  - adjusting the drive chain tension.
  - adjusting the conveyor tension (look for the adjustment on the low, tailshaft end of a dry pit conveyor, and on the high, headshaft end of a wet pit conveyor).
  - repairing the clutch.
  - repairing or replacing the conveyor chain guides.
  - repairing or replacing the conveyor chain links and pins.



## Concept Check

### Troubleshoot Chip Conveyor

Answer the following questions to check your understanding of troubleshooting a chip conveyor. Circle the correct answer in each question. Then compare your responses with the answers at the bottom of this page. Some of the questions may have more than one correct answer. If you have difficulty answering a question, review the Skill Development Guide or ask your Trainer for assistance.

1. The red trouble light on the chip conveyor control panel turns on when the:
  - a. drive motor overload trips.
  - b. drive belt or chain breaks.
  - c. conveyor has no chips to convey.
  - d. clutch slips.
  
2. The conveyor drive clutch should be locked:
  - a. to drive the conveyor in reverse.
  - b. during normal operation.
  - c. whenever the conveyor is worked on.
  - d. only to free a jam, and with extreme caution.
  
3. Jams are often due to:
  - a. bad motor or gear reducer bearings.
  - b. an overtightened drive chain.
  - c. material wedged between the conveyor chain and its sprockets.
  - d. chips lodging in the drive gears.

Answers: (1. a 2. d 3. c 4. b 5. d)

## Next Step

If you are ready to demonstrate the task now, ask your Evaluator or Trainer to schedule the Skill Check. However, if you need to practice some of the steps first, continue to the next section.



## Practice

The following practice will help prepare you for the Skill Check. Ask your Trainer to set up the practice for you. After you complete a practice, ask your Trainer to check your work.

### Practice 1

List the steps to follow if the red trouble light is on.

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### Practice Objective 1

You must list the steps that will identify possible causes of a tripped conveyor drive motor.

### Practice 2

List the possible causes of a jammed conveyor.

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### Practice Objective 2

You must list all possible causes of a conveyor jammed in both the forward and reverse directions.

### Practice 3

Given a manufacturing conveyor, identify the problem and plan how to correct the problem.

### Practice Objective 3

You must identify the actual problem and suggest measures to correct it in the most efficient way.

## Next Step

Continue to practice until you are ready for the Skill Check. When you are ready to demonstrate the task, ask your Evaluator or Trainer to schedule the Skill Check.

