

# EF-01

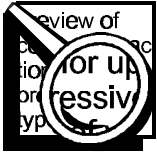
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## MAINTENANCE MECHANIC TRAINING

### SKILL DEVELOPMENT GUIDE

Duty EF: Doors  
EF-01: Troubleshoot Doors (Fast Track)

Issued 3/1/98



## Task Preview

### Troubleshoot Doors (Fast Track)

When notified of a door problem, you should first communicate with the person reporting the problem to determine what happened and what the symptoms are for the door problem. An electrician should be on the site with you to co-troubleshoot, determine if the problem is electrical, and/or to help operate the door. A third person may be required to assist when troubleshooting the door.

After identifying the symptoms of the problem, you must make a diagnosis. Typical symptoms of a fast track door malfunctions include the door not open all the way, not closing all of the way, knocked off the track, or not operating at all. Diagnosis of the symptom may indicate that an accident has knocked out the break away, something in the counterbalance system or in the power drive system has broken or worn out, or there is a problem with the wind bar assembly. Evaluate your diagnosis, then implement a corrective action.

### How your skills will be checked

The Skill Check will require you to troubleshoot a door. 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 whenever you are ready for the Skill Check.



## Skill Objective

Upon notification of a problem with a fast track door, troubleshoot the door.

### Task Standards

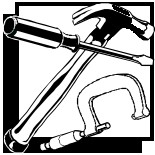
1. The Trainer must agree that you have accurately diagnosed the problem.
2. The Trainer must agree that your suggested corrective action will correct the problem with the door.
3. All safety practices must be demonstrated.

## What You Will Need

This section contains the safety information, tools, and resources you will need before troubleshooting a fast track door.



- Follow all Caterpillar facility safety standards.
- A safety harness is required when a lift is used to reach the power drive system or any high locations on a door.
- A lock and tag may be required to shut off power to the door if an Electrician is not immediately available to control the power to the door.



- Maintenance Mechanic handtools
- prybar
- manlift
- red emergency cones



- manufacturer's manuals



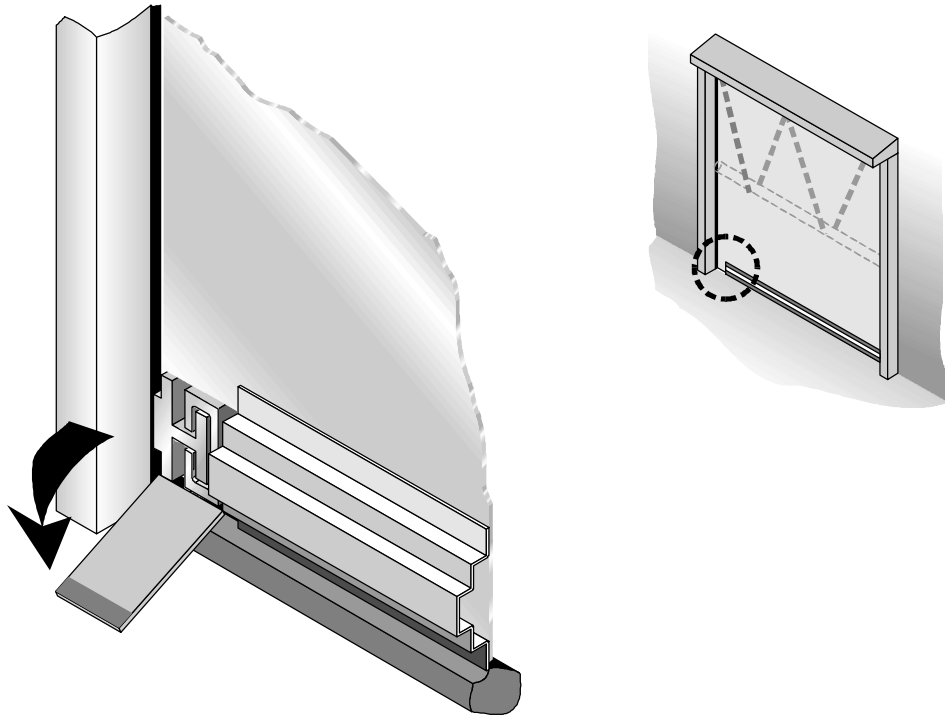
## Task Steps

### Troubleshoot Door (Fast Track)

1. Identify the symptoms of the door problem.
  - Communicate with the Electrician on site and the person reporting the problem.
  - Ask the Electrician to determine if there is the possibility of an electrical problem, first.
2. Mark the area around the door with red emergency cones.
3. When the problem is identified, perform a lockout/tagout on the door's electrical disconnect.
  - If the Electrician is available to co-troubleshoot, ask the Electrician to lockout and tag the electrical supply before you work on the door.

Note: There will be times the electrical supply must be turned on.

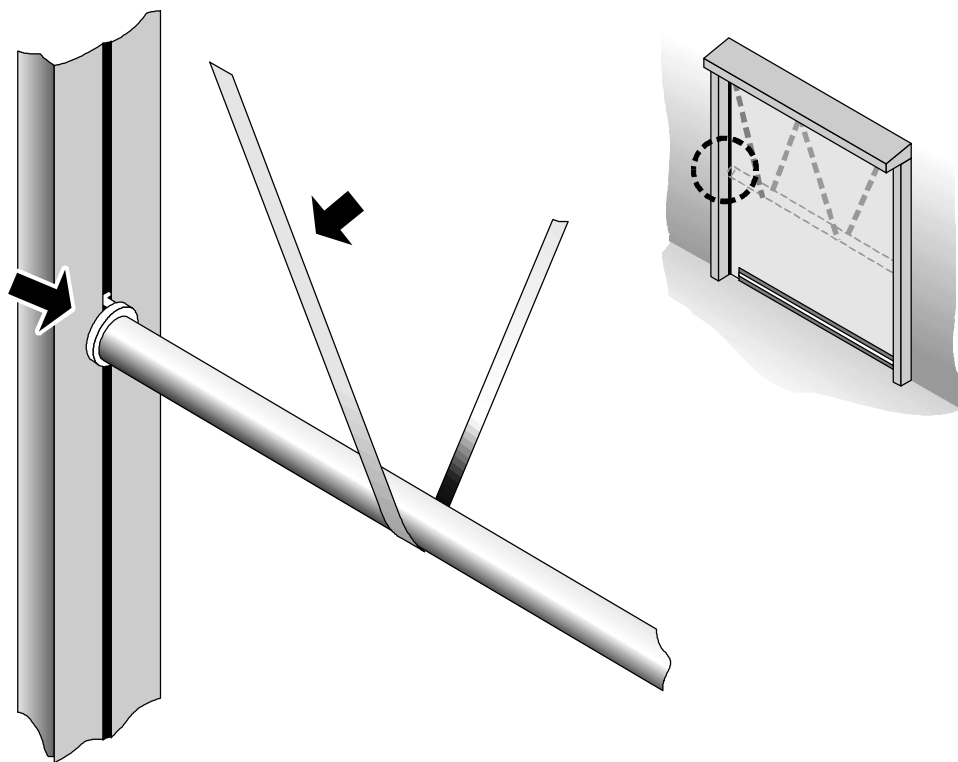
4. If the door will not operate, visually inspect the “break away” (if applicable). The door must be in the “down” position.



#### Break Away

- If the break away is intact on both sides of the door, proceed to step 5.
- If the break away has been engaged on one or both sides of the door, reset the break away according to the manufacturer’s specifications.
- Determine how the break away became engaged (i.e., was the door hit by a vehicle?) If the door failed to operate normally, proceed to step 5.
- Proceed to step 9, to implement a corrective action for an engaged break away.

5. If the break away on both sides of the door are intact, inspect the door and the wind bar.
- Verify that the door is in the track, and inspect for any visible damage to the door.
  - Inspect the wind bar and wind bar belt assembly to ensure it is assembled according to manufacturer's specifications.



#### Wind Bar

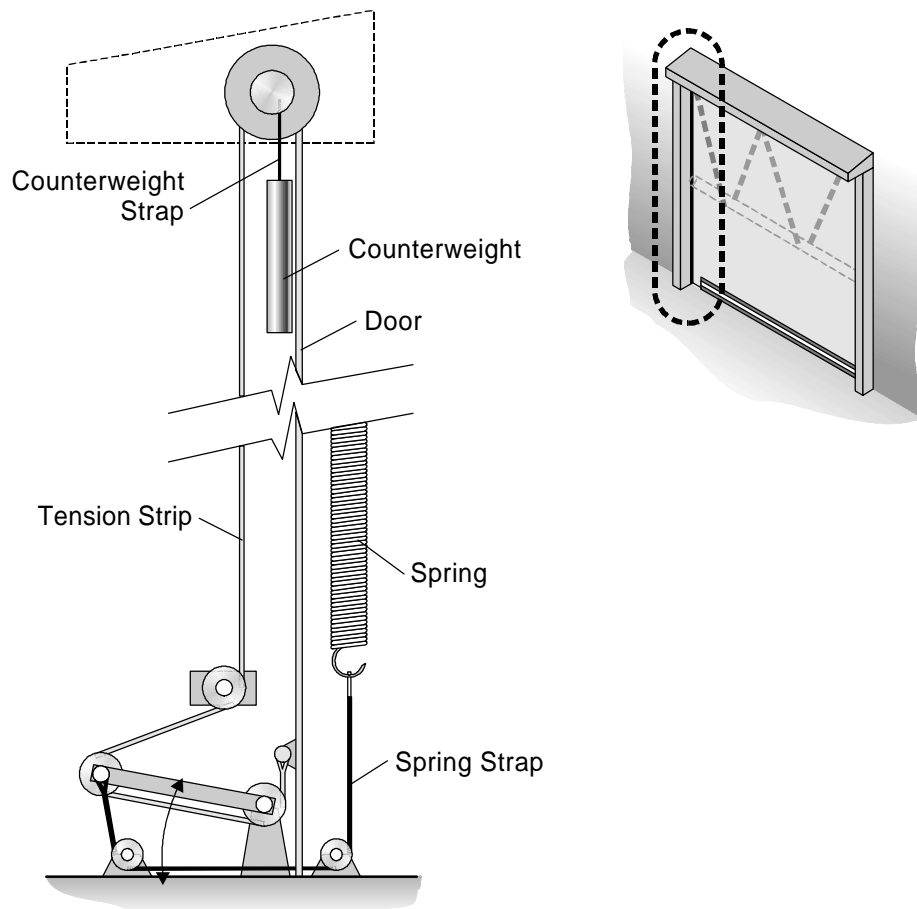
- Verify that the wind bar is intact and the guide rollers for the wind bar are in the track.
- Verify that the wind bar belt is not bound and is installed according to the manufacturer's specifications.

6. Inspect the counterbalance system on both sides of the door.

- This is located on the outside side of the door.

Note: Counterbalance systems may consist of the belt assembly as in the Ryttec door, or the cable assembly in the Kelly door. Follow the manufacturer's specifications when inspecting and repairing the door.

- Open the counterbalance system covers.



Counterbalance System

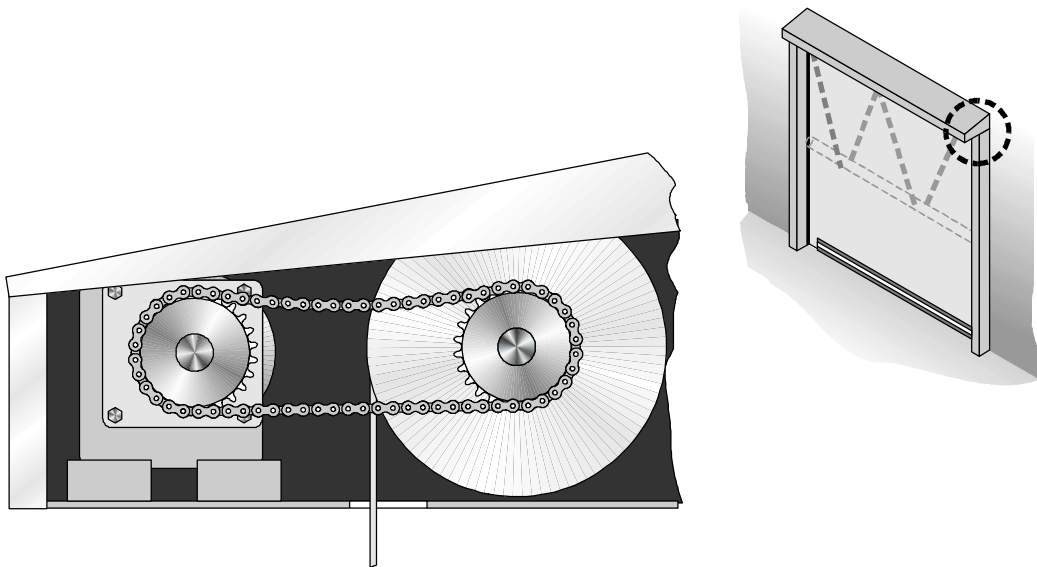


- Verify that the tension strap (or cable) is installed according to the manufacturer's specifications.
  - Verify that the counterweight and counterweight strap are installed according to the manufacturer's specifications.
  - Verify that the spring strap is installed according to the manufacturer's specifications.
  - Observe the counterbalance systems on both sides of the door, and verify that the counterweights are evenly distributed.
7. Go to Step 9 if you find anything wrong with the counterbalance system.
  8. Check the power drive system located above the door.

Note: Power drive systems may consist of a chain drive assembly or a motor coupling assembly, depending upon the type of fast track door.

**Warning:** You will be required to use a man lift to reach the drive system. Follow all safety requirements.

- If the door is operating erratically, the chain (if applicable) may need adjustment.



### Chain Drive

- If the door is not moving at all, inspect the entire power drive system and verify that all components are operating according to the manufacturer's specifications.
9. Implement a corrective action.
- When you have identified and diagnosed the problem with the fast track door, proceed to task for repairing or replaing a door, to implement your corrective action.



## Concept Check

### Troubleshoot Fast Track Doors

Answer the following questions to check your understanding of troubleshooting fast track doors. 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. When troubleshooting a fast track door, \_\_\_\_\_ person/people may be required.
  - a. 1
  - b. 2
  - c. 3
  - d. 4
  
2. An \_\_\_\_\_ should be on the site with you to co-troubleshoot.
  - a. Apprentice
  - b. Electrician
  - c. Operator
  - d. Engineer
  
3. Typical symptoms of a fast track door malfunction include:
  - a. the door is not opening all the way.
  - b. the door is closing all the way.
  - c. the door is on the track.
  - d. the door not operating at all.

4. The main systems or components you will troubleshoot on a door include:
  - a. wind bar
  - b. counter cable system
  - c. power drive system
  - d. breaker cable
5. If the door is operating erratically, what should you check?
  - a. electrical connection
  - b. power supply
  - c. chain on the chain drive
  - d. break away

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

### 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

Ask your Trainer to set up the door with a fault in it for you to troubleshoot.

### Practice Objective

Diagnose the symptoms and suggest a corrective action to your Trainer. Continue to practice until you understand the basic components of the door and can identify potential problems. Follow and demonstrate all safety practices while performing this practice.

## 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.

