

BE-07

MAINTENANCE MECHANIC TRAINING

SKILL DEVELOPMENT GUIDE

**Duty BE: Ways and Gibs
BE-07: Set and Adjust Gibs**

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Task Preview

Set and Adjust Gibs

The Machine Repair, with the assistance of an Electrician sets and adjusts the gibs on a vertical lathe for two main reasons: 1) a semi-yearly PM is scheduled; 2) piece part dimensions exceed the allowable tolerance. Piece part dimensions exceed allowable tolerance when the lathe turns a part and the measured tolerance goes from a minus to a plus, or vice versa. An indication of loose gibs is the occurrence of tapered surfaces and rough finishes.

When gibs are not adjusted to specifications, bad parts are produced and material and time are wasted. Overtightened gibs can result in binding of the ram, which can “kick out” the motor due to high amps.

The tools must be removed from the ram and the tool holder (four-star) to prepare the machine for the adjustment. The head is positioned to provide access to the gibs. The wipers must be removed to access the adjustment screws/bolts for the four gibs. The four bolts on the adjustable gibs are loosened, and the adjustment screw torque is checked on the four gibs. The head is moved up/down several times and the torque rechecked to ensure gibs are set within specifications.

How your skills will be checked

The Skill Check will require you to set and adjust the gibs on a vertical lathe. 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 vertical lathe with a semi-yearly PM scheduled or a piece part with dimensions exceeding the allowable tolerance, set and adjust the gibs on the vertical lathe.

Task Standards

1. Gibs are adjusted to within 25-30 in/lbs.
2. Piece part is machined within specifications.

What You Will Need

This section contains the safety information, tools, and resources you will need before setting and adjusting gibs on a vertical lathe.



- Follow all Caterpillar facility safety standards when performing this task.
- The floor surface inside the machine may be slippery due to coolant.
- You will be working in a confined space; watch your head clearance.
- Feedrate for the machine must be set to MIN. to avoid unexpected movement of the machine head.



- Giddings & Lewis VTL
- shop cleaning rags
- torque wrench (in/lb)
- Allen wrenches



- machine's maintenance service manual



Task Steps

Set and Adjust Gibs

Warning: Perform a lockout and tagout, as necessary, during the adjustment procedure.

1. Empty the tools from the ram and four-star.

- There are two methods for removing the tools. Both are performed from the pendant control station.
 1. manually
 2. using the program
- To remove the tools in the manual mode, empty the four-star first, then the ram. Using the keypad, enter the following data:
 - a. Press T, then press 0.
 - b. Press ENTER.
 - c. Press the CYCLE START pushbutton. If there is more than one tool in the four-star, repeat these steps until the four-star is empty.
 - d. If a tool is present in the ram, type T0M6.

Note: M6 is a tool change command.

- e. Press ENTER.
 - f. Press the CYCLE START push button.
- To remove the tools using the program, use the keypad to enter the following data:
 - a. Type RETTL.
 - b. Press PROGRAM NAME. The program name appears on the top line of the display.

- c. Press the CYCLE START pushbutton. The program first empties the four-star, then empties the ram (if a tool is present).
- d. Press SELECT SOURCE.
- e. Press S1 to delete the program.

2. Position the head to provide access to the gibs.

Enter the following data using the keypad to move the head to the X, 0 position:

- a. Type X, then 0.
- b. Press ENTER.
- c. Press CYCLE START. The head moves to the X, 0 position.
- d. Press AUTO to take the machine out of the AUTO mode; you are now able to move the axis.

The head is now flush with the ram.

3. Minimize the machine feedrate.

Warning: Minimizing the feedrate is required to eliminate the possibility of machine head movement.

Turn the FEEDRATE control fully counterclockwise.

4. Remove the way wipers.

- Open the operator's door. The way wipers around the ram, inside the machining area. See the figure below.



Ram

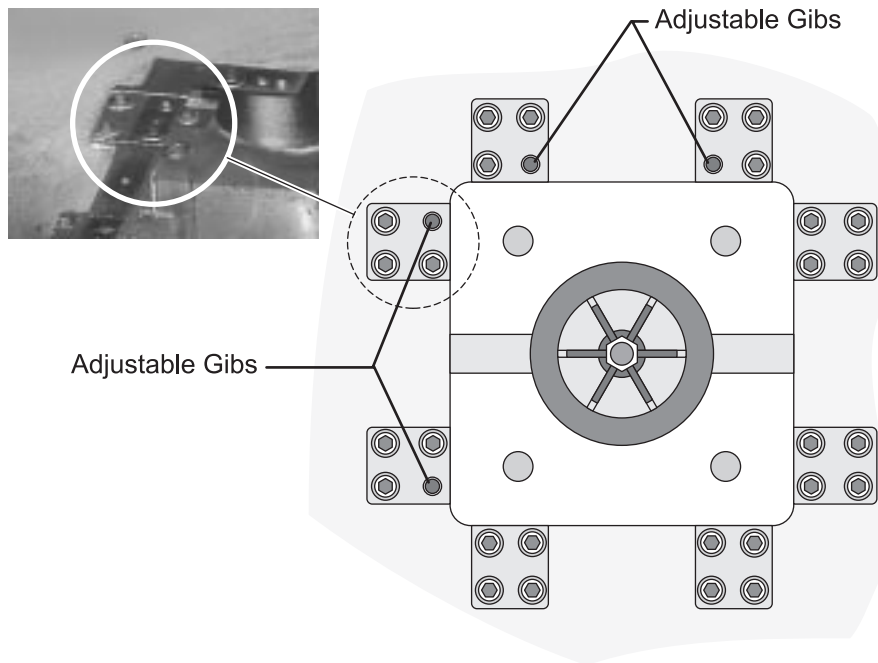
Machining Area

Warning: Machine floor may be slippery due to the coolant. You may be working in a confined area; check for overhead clearance.

- Using the Allen wrench, loosen the screws securing the wipers to the gib plate and set aside.
- Remove the way wipers.
- Wipe debris from the gib plate.

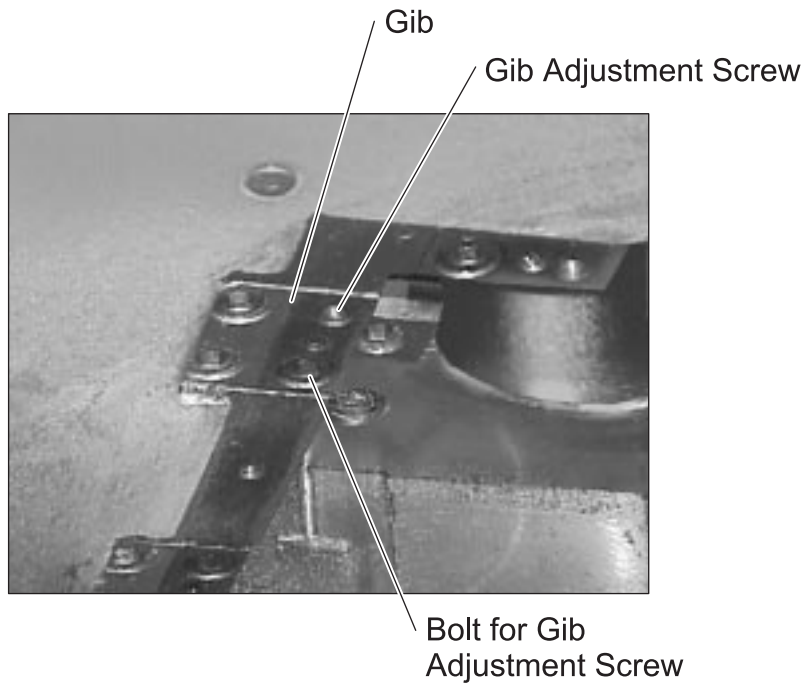
5. Adjust the gibs.

- There are four adjustable gibs on the machine. The gibs are located inside the machine beneath the wipers. See the figure below.



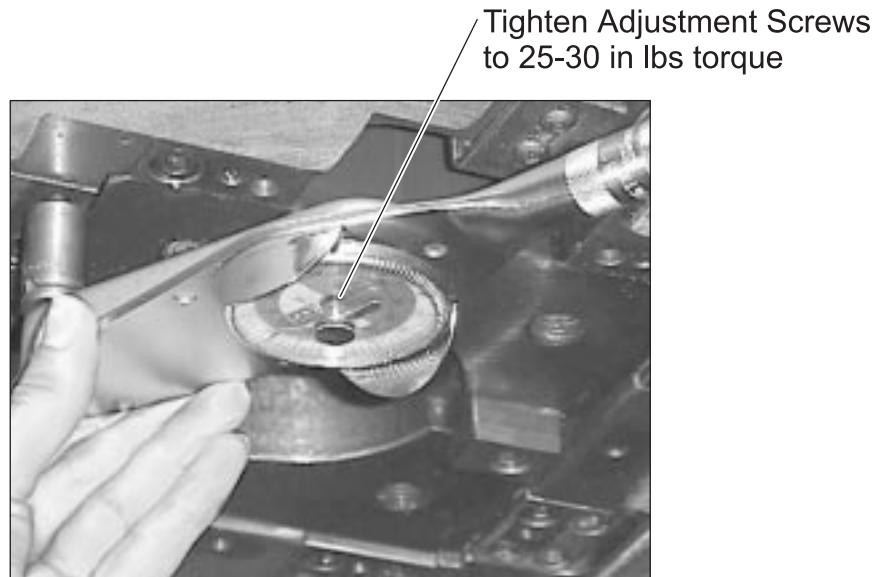
Gib Location on the Vertical Lathe

- Loosen the bolts for each of the four gib adjustment screws. See the figure below.



Gib Adjustment

- Using the torque wrench, take a reading from each of the four adjustment screws. See the figure below.



Measuring Torque

- Adjust the torque if the reading is outside the range of 25-30 in/lbs.
 - Tighten the bolt to lock the adjustment screw setting in place. Repeat this process for all four gibs.
 - Move the machine head up and down several times to seat the gibs, rechecking and adjusting as necessary.
- 6. Replace the way wipers.**
- Inspect the wipers for wear and damage, and replace as necessary.
 - To ensure a flush fit, clean the wipers with a shop towel.
 - Attach the way wipers. Secure the mounting screws hand-tight. Do not overtighten.
 - Exit the machine housing and close the operator's door.
- 7. Document the job completion.**
- Enter the work performed in the maintenance reporting system.
- 8. Notify the appropriate personnel to re-data the tool probe.**



Concept Check

Set and Adjust Gibs

Answer the following questions to check your understanding of setting and adjusting the gibs on a vertical lathe. 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. An indication of loose gibs is the occurrence of:
 - a. tapered surfaces.
 - b. planed surfaces.
 - c. rough finishes.
 - d. polished finishes.

2. Overtightened gibs could result in binding of the:
 - a. way.
 - b. tool.
 - c. part.
 - d. ram.

3. The tools must be removed from the _____ and the _____ to prepare the machine for the adjustment.
 - a. ram, four-star
 - b. lathe, three-star
 - c. gib, ram
 - d. lathe, four-star

4. Adjust the torque if the reading is outside the range of:
 - a. 20-24 in/lbs.
 - b. 25-30 in/lbs.
 - c. 31-35 in/lbs.
 - d. 36-40 in/lbs.

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

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 designate a G & L lathe for the practice activity. When you are ready, ask the Trainer to set up a situation where the gibs require an adjustment.

Practice Objective

Perform the steps for setting the gibs to specifications. Demonstrate emptying the ram and the four-star in both the manual and program modes. Before replacing the way wipers, ask the Trainer to check the adjustment readings to ensure that they are within specifications. All safe practices must be demonstrated during task performance.

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.

