

Auxiliary Switch Adjustments

Adjusting the auxiliary switches can be a painstaking task. Knowing how the operating shaft works in relation to the auxiliary switch assemblies makes adjustments easier.

Key Points

The following is a list of items to keep in mind when attempting to make adjustments to the auxiliary switches.

- The operating shaft rotates 92 degrees when opening and when closing.
- The distance from the center of the shaft to the center of the pin connecting to the auxiliary switch operating rod is 1-7/8 inches.
- The A and B contacts are offset 90 degrees from each other.

Safety

This procedure requires using the hand-operating lever. Before performing this procedure be sure that the breaker reservoir is emptied. The close the supply valve, and open the drain valve for the duration of the process. Open the control power switch.

Summary of Method

The following list is a summary of the order of adjustments made.

- Make sure the top auxiliary switch is rotating as close to 90 degrees as possible with the breaker opening and closing.
- Make sure the B contacts make after the blast valves reset.
- Make sure the bottom auxiliary switch is operating similar to the top auxiliary switch.

Obtaining 90 Degree Rotation on Top Auxiliary Switch

It is virtually impossible to obtain exact 90-degree rotation on the auxiliary switches. The only way to do this is with mathematical precision, and that is not practical. While making these adjustments, keep in mind the way a bicycle works. If two radii are the same length and attached, they will rotate at the same angle. However, if one radius is smaller than the other, the smaller radius rotates at a greater angle. Similarly, if one radius is greater than the other, the greater radius rotates at a smaller angle.

There is a 14-degree range of motion on the contact. The length of the shortest contact is about 3/8 of an inch. This means that the switch can rotate up to 97 degrees but no less than 83 degrees.

Method

1. With the breaker in either the open, note the position of the moving contacts with relation to the stationary contacts. Do not be concerned about centering the contacts at this point.
2. Close the breaker.
3. With the breaker in the closed position, note the position of the moving contacts with relation to the stationary contacts.
 - a. If the contacts rotated greater than 97 degrees, increase the radius of the operating arm on the top auxiliary switch.
 - b. If the contacts rotated less than 83 degrees, decrease the radius of the operating arm on the top auxiliary switch.
4. Repeat the above steps until satisfactory results are achieved.

Adjusting B Contacts

It is important that the B contacts do not make until after all three blast valves have reset. The #6 contacts on the top left auxiliary switch complete the circuit that allows the breaker to trip. The breaker is not allowed to trip until the blast valves reset. This insures that an air blast will occur.

This is also the time to try to center the stationary contacts on the moving contacts. To do this, lengthen or shorten the operating rod.

Method

1. With the breaker in the open position, adjust the length of the operating rod to center the contacts.
2. Place an ohmmeter on the #6 contacts (six from the operating lever) of the auxiliary switch to check for continuity.
3. Close the breaker slowly and listen for the blast valve levers to reset. Almost immediately after all three blast valves have reset, the meter should read continuity.
 - a. If the contacts made before all of the blast valves reset, lengthen the operating rod.
 - b. If the contacts made too late after the blast valves reset, shorten the length of the operating rod.
4. Repeat the above steps until satisfactory results are achieved.

Adjusting The Bottom Auxiliary Switch

Ideally, if the adjusting pins on the top-bottom operating arm of the top auxiliary switch and the operating lever on the bottom switch are the same distance from the center of the switch, the contacts should line up perfectly. However, because of manufacturing methods, this isn't always the case.

Method

1. Adjust the pin on the top auxiliary switch, which connects to the bottom auxiliary switch so that the radius is close to 1-7/8 of an inch.
2. Adjust the pin on the bottom auxiliary switch operating lever so that the radius is equal to the top switch.
3. Check the contacts on the bottom switch to see if they are centered or at least making.
 - a. If the switch needs to rotate clockwise (facing the operating lever), move the pin on the bottom auxiliary switch out away from the center of the switch.
 - b. If the switch needs to rotate counter-clockwise (facing the operating lever), move the pin on the bottom auxiliary switch in towards the center of the switch.
4. Close the breaker and check the position of the contacts.
5. Repeat the above steps until satisfactory results are achieved.

Recommended Manpower

Two People

Recommended Tools:

½" Socket and wrench

7/16" Socket or wrench

Small crescent wrench

Ohmmeter with clip-on leads

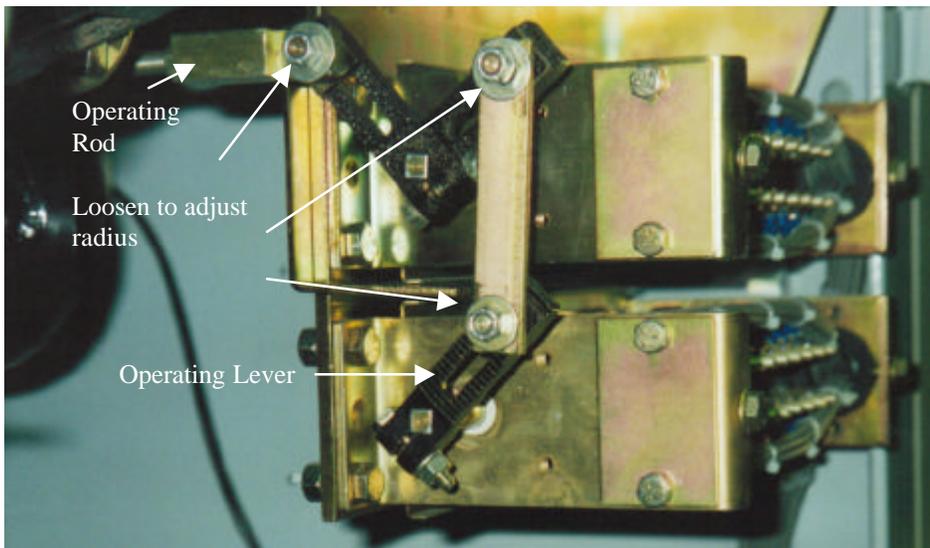


Figure 12 Auxiliary switch assembly