

Adjusting Gibs

A gib is a wedge shaped piece of metal used to fill the gap between the sliding and non-sliding portion of the way surface on a solid way. It tightens the axis, reducing perpendicular movement and twist, while allowing motion in the intended direction. The gib may be laminated on one side with a material called Turcite, a hard plastic that provides a sliding surface that reduces friction and is also replaceable when worn.

It is important that the gibs are adjusted properly. Ill-adjusted gibs can cause the machine to cut poorly. The wedge shape of the gib allows the possibility of the axis dragging or locking up if the gib is too tight, a condition known as “Gib Lock”. A loose gib allows movement in directions other than the one intended.

Over tightening of a gib can be prevented by checking load on the axis drive, checking backlash, and checking tightness of the ball screw when turned by hand. If any of these things increase dramatically the gib has been tightened too much.

Styles of Gib Retention

There are different methods used to hold and adjust a gib. Several possibilities follow:

- 2 screw method: Screws are positioned at each end of the gib. The setting screw on the thicker end of the gib will drive it tighter. The keeper screw against the thinner tip of the gib helps to hold it in place. One screw must be loosened prior to adjusting the other. Tightening one screw without loosening the other can cause the gib to be bent. The gib is held in place by snugging the screws on each end.

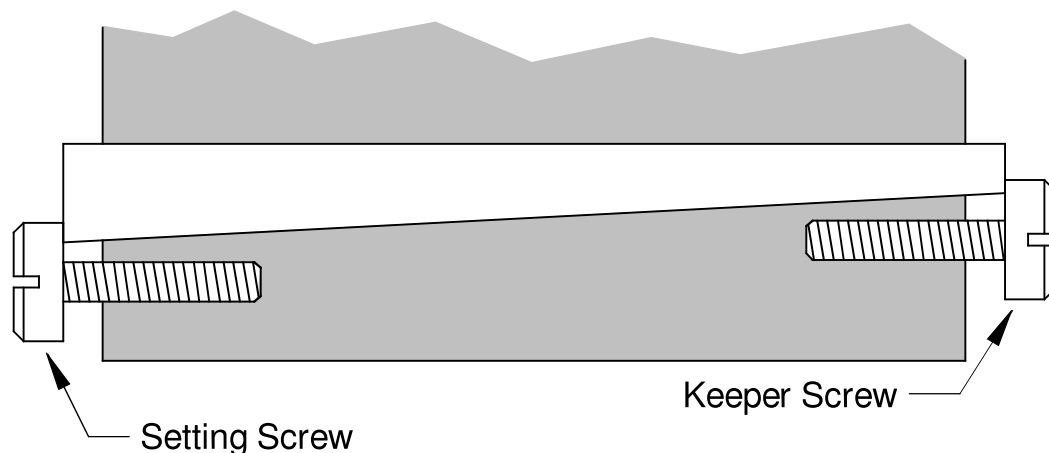


Figure 3-31: Single gib with 2 screws.



- **Single Screw Method:** A single screw is used with the head captured in a slot in the gib itself. This one screw is used to tighten or loosen the gib. A brass tip set screw or a screw on top of a piece of brass rod is often used to lock the screw in place. This method is often used on long travel axes that require a gib from each side.

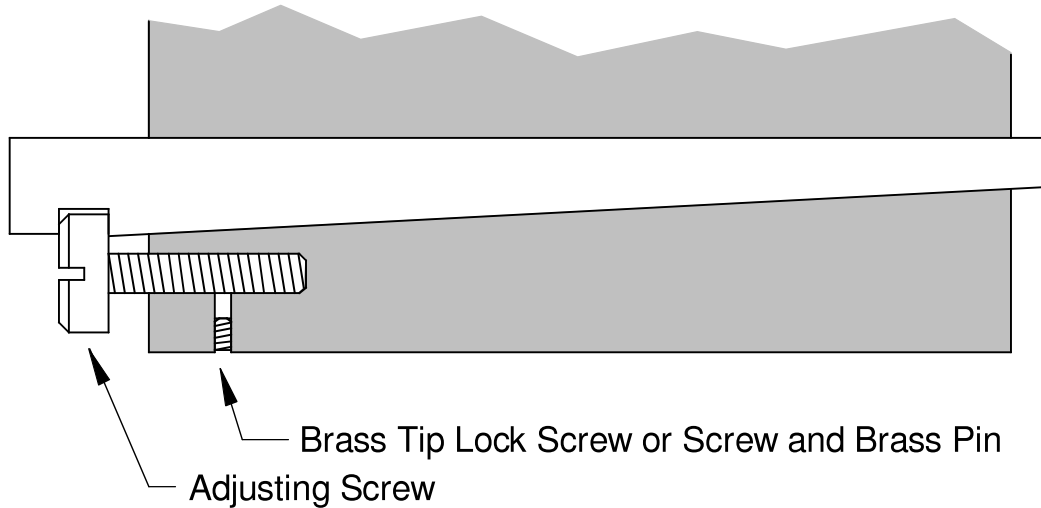


Figure 3-32: Gib with captured adjuster screw.

- **Tab and Post method:** The gib has a metal tab connected to its end that slides over a threaded post. Nuts on the inside and outside of the tab allow for tightening and loosening of the gib. One nut must be loosened before the other is tightened. Tightening both nuts locks the gib into place. This method can also be used when 2 gibs are present on the same axis.

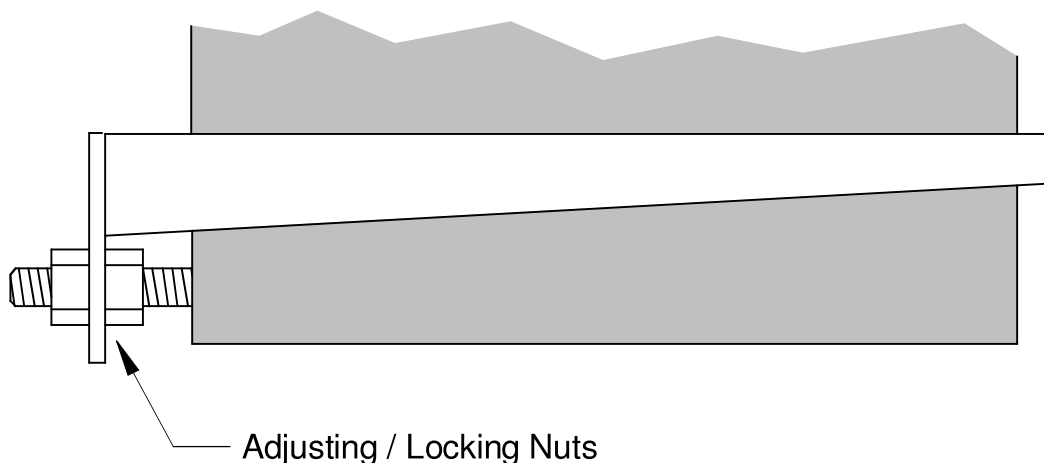


Figure 3-33: Gib with Tab and Post style of adjustment.

Various Milltronics products use the solid way design, which requires that the gibs that keep the machine tight must be checked approximately every 3 months. The following procedures illustrate setting gibs on a vertical milling machine. Setting lathe gibs will be very similar.

Adjusting the Table Gib(s) – Dovetail Way Surface

(See Adjustment of Saddle Gibs for box way surface)

Machine tables may have one or two gibs.

The single gib setup will have one X axis gib. This gib will have a single screw to tighten the gib and a keeper screw on the other end to hold it from moving in too far. The adjuster screw is on the wide end of the gib and the keeper screw is on the opposite end. **The keeper screw must be loosened before the adjuster screw is tightened or the gib will be bent.** If the gib is to be removed the adjuster screw should be removed and the keeper screw tightened to back the gib out.

A double gib setup will have a pair of gibs that come in from each side. Each gib has its own adjuster/keeper screw. On some gibs the screw head fits in a slot cut into the gib itself. On some other setups the gib is adjusted with nuts on a stud that sticks out from the casting. The gib has a bracket on the end that fits over this stud with a nut placed on either side of the bracket. The inside nut acts as a keeper, and the outside nut acts as the adjuster.

To set the X axis gib:

- Move the table to the center of travel before setting the gib.
- To adjust the gib loosen the keeper screw and tighten the setting screw lightly until a slight drag is felt when moving the table by hand.

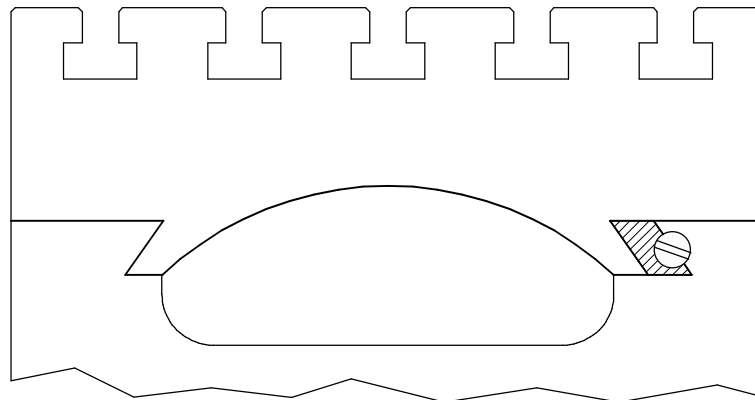


Figure 3-34: Typical table gib location (gib may be front or back).



- To check with an indicator place the indicator on the saddle of the machine with the indicator needle on the side of the table near the gib screw. Push the table back at that end being set. Set the indicator to zero. Pull the table forward. This will show the amount of play that the gib is allowing.
- Tighten the gib until the amount of play is .0002 to .0004 in. Repeat the procedure on the other end of the table.
- Tighten the keeper screw. Move the table back and forth several times, then recheck the play. Re-adjust as necessary.

Adjustment of Head Bolster Gibs

There are three Z axis gibs, a single gib on the side of the ways to prevent rock, and one on the back of each way on the backside of the bolster to prevent the head from drooping. These are all single gibs, and the keeper screws must be backed off before they are tightened. The chip wipers must be removed to access the gibs.

- To set the **side gib** place the indicator on the Z axis way surface, and the indicator needle on the side of the bolster near the gib screw.
- Push the head to the side. Set the indicator to 0.
- Pull the head back. This will show the amount of pivot in the head.
- Adjust the gib until the axis pivots .0002 to .0004 in.
- To adjust the back gibs lower the head onto a block to support its weight.
- Adjust the gibs until snug. Remove the block.
- Place the indicator on the way with the needle on the bottom of the bolster near the ways. Zero the indicator.
- Push up on the head to view the front to back rock.
- This should be .0002 to .0004 in. Check the tram of the head. If the tram seems heavy to the front the head may be drooping because the gibs may be too loose. Block the head and tighten additionally if necessary.
- At this time check the backlash. The backlash of the Z axis should not be more than .001 to .0012 in. If the backlash is higher than this loosen the gib and start again.
- Tighten the keeper screws when done. Move the head up and down several times, then recheck the gibs. Re-adjust as necessary.

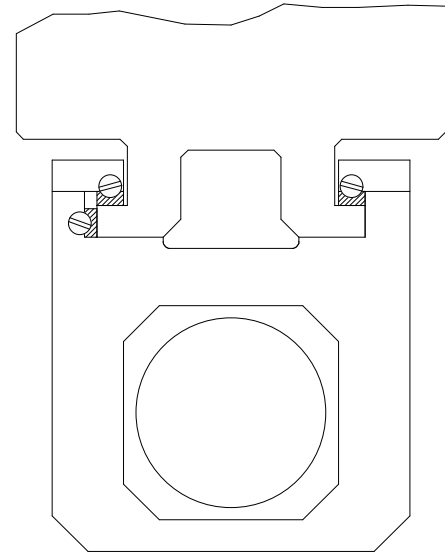


Figure 3-35: Typical head bolster gib location (top).

Adjustment of Saddle Gibs

There are typically three saddle (Y axis on mill, Z axis on lathe) gibs, a single gib on the side of the ways to prevent rock, and one underneath each way on the underside of the saddle to prevent the saddle from lifting. The side gib may be on the outside or the inside of the way. These are typically single gibs, and the keeper screws must be backed off before they are tightened. The chip wipers must be removed to access the gibs.

- Center the table over the saddle.
- To set the **side gib** place the indicator on the Y axis way surface and the indicator needle on the side of the saddle near the gib screw.
- Push the table back at this end. Set the indicator to 0.
- Pull the table forward. This will show the amount of pivot in the saddle.
- Tighten the gib until there is .0002 to .0004 in. of movement.
- To adjust the **bottom gibs** mount the indicator to the Y axis way surface and set the indicator needle on the bottom of the saddle close to the adjuster screw.
- Set the indicator to zero.

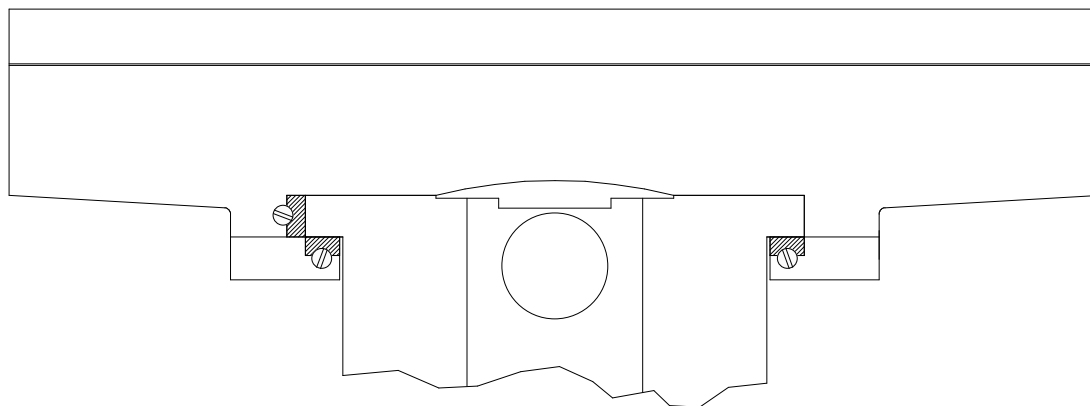


Figure 3-36: Typical saddle-base gib location (front).

- Move the table from the center of travel to the far end away from the gib being adjusted. This measures the lift on the gib.
- Move the table back to center, adjust the gib, and move it back out again.
- The maximum lift should be .0002 to .0004 in. Repeat the procedure for the opposite side.
- Tighten the keeper screws when done. Move the saddle back and forth several times, then recheck gibs. Readjust as necessary.