

Balancing Act

Adjusting Ludwig Balanced Action Timpani

Pedal tuned timpani must have some mechanism to maintain tension on the head so that the drum will remain at a set pitch. Ludwig balanced action timpani work by balancing spring tension against head tension to hold pitch at any point in the drums range.

Troubleshooting:

If a drum tends to creep up or down from a set pitch, this can usually be corrected by increasing the pressure on the friction pads slightly (if the drum is so equipped). If you use too much pressure on the "brakes" the pedal becomes difficult to move.

If the problem can't be solved with a small amount of brake pressure, it may be necessary to adjust the spring tension knob. Increasing the tension on the spring (turning the spring tension knob clockwise) will help prevent the pitch from sliding down while decreasing the tension of the spring (turning the knob counter-clockwise) will help prevent the pitch from sliding up.

If the problem is pronounced and localized at one end of the drums range, it is probably Toe Snap, Heel Snap or Spring Lift.

Toe Snap -

Symptoms: Typically, the drum will work in the lower range, but somewhere near the top of the drums range, the toe of the pedal "snaps" down and the drum goes to its highest pitch.

Cause: Spring mechanism has too much leverage because it is positioned too far from the center pivot point.

Cure: Re-position the spring closer to the center pivot point by lengthening the horizontal pull rod.

Heel Snap -

Symptoms: The opposite of "Toe snap", this is where the drum works ok in its upper range, but somewhere near the bottom the heel "snaps" down and the drum goes to its lowest pitch.

Cause: The spring mechanism does not have enough leverage because it is too close to the center pivot point.

Cure: Re-position the spring farther from the center pivot point by shortening the horizontal pull rod.

Spring Lift -

Symptoms: When the toe of the pedal is pressed down for the highest pitch, the spring mechanism "lifts" out of the base casting. The drum will not stay at its highest pitch.

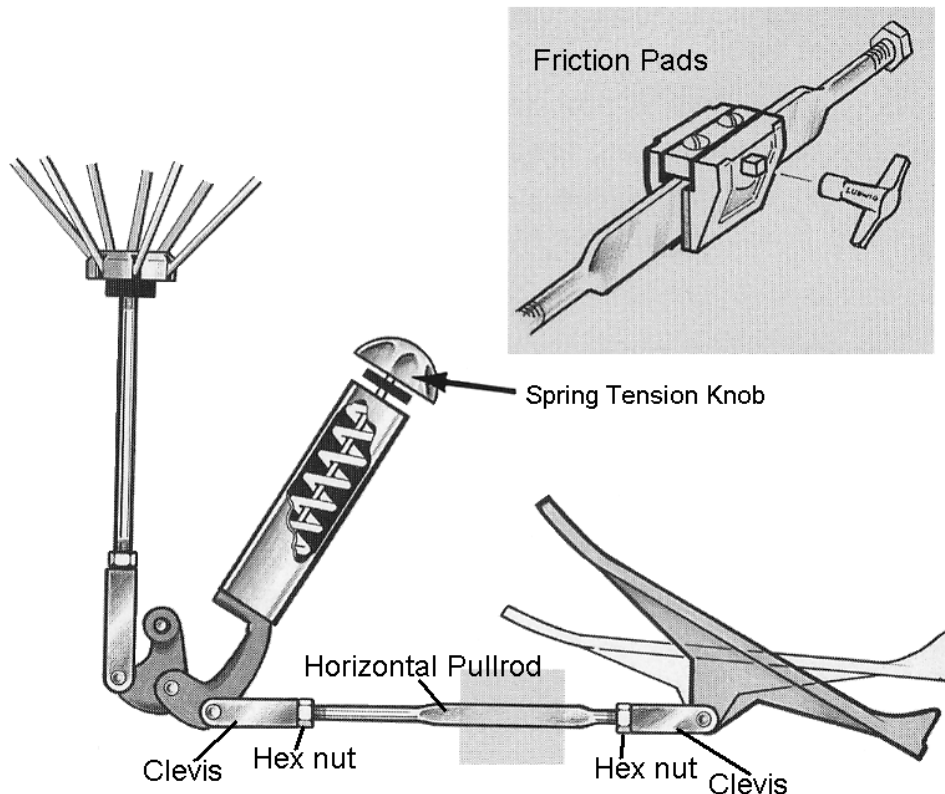
Cause: The spring has run out of travel before the pedal is fully depressed.

Cure: Increase the tension on the spring. This will extend the amount of travel that the spring has to match the range of the drum. Push the pedal all the way toe down, lifting the spring adjustment knob out of the base casting. While holding the pedal down, turn the spring tension knob until the bearing seats itself in the casting. The drum may now exhibit "toe snap" because of adding the extra tension to the spring mechanism.

Adjusting the Horizontal Pull Rod:

The horizontal pull rod connects the pedal to the spring mechanism. Drums made within the past 20 years have a flat section in the middle of the rod for friction pads to give resistance to pedal travel. Each end of the horizontal pull rod is threaded and is held to a clevis by two hex nuts. One end of the pullrod has left hand threads so the length can be adjusted by turning the pullrod like a turnbuckle.

- 1) Carefully turn the drum on its side to gain access to the underside of the drum.
- 2) If the drum is equipped with friction pads ("brakes"), use a regular drum key to spread the pads enough to allow the pullrod to turn.
- 3) Position the pedal somewhere in the middle of the drums range.
- 4) Loosen the two hex nuts that are closest to the center of the pullrod (you won't be able to turn the ones trapped inside the clevises). Remember, one of them has left hand threads. If one is painted red, that's the one. If neither is painted red you must look carefully at the threads to determine which one it is.
- 5) Adjust the length of the pullrod by turning it one or two turns. Two turns will make a pretty significant difference so start with no more than that.
- 6) If the drum has "brakes", tighten the brakes enough to align the flat spot in the pull rod and then re-tighten the hex nuts. Loosen up the brakes, stand the drum back up and try it out. You should at least notice improvement. Repeat the procedure as necessary.
- 7) Changing the length of the horizontal pullrod will change the lowest pitch of the drum, so you will have to re-tune the drum to the correct range.



When it's working:

The Ludwig balanced action timpani works by balancing the tension of the head against a spring mechanism. Think of it as a "tug-o-war". If the head "wins", the pitch of the drum slides down. If the spring wins, the pitch of the drum slides up. We want the tug-o-war to be a tie at every position in the drums range. The problem is that as the tension on the head increases (increasing pitch) the spring must provide increased resistance.

When the spring knob lifts up out of the base (toe down) it is because there is not enough tension on the spring. Increasing the tension on the spring also increases the amount of travel in the spring case and subsequently the range of the drum.

Changing the length of the horizontal pull rod affects the angle of the spring case and therefore adjusts the amount of leverage it has, and that's the big news when setting up timps. Making the horizontal pull rod shorter gives the spring more leverage and shortening it give the spring less leverage.

SO, if you have limited range and the spring knob (and case) are coming up out of the base casting, then it's time to crank up the spring tension like Glenn described. This will ensure that the spring case provides enough travel for the rest of the linkage. After doing that, the toe of the pedal will probably be stuck in the toe down position because the spring has way too much leverage. Reduce the leverage by making the horizontal pullrod longer the way Glenn described (think of it like a turnbuckle) by a couple of "turns" and the band director should notice improvement. A couple of turns on the pullrod doesn't seem like much, but it makes a BIG difference because of the way it repositions the spring. Continue lengthening the pullrod until the action is balanced and apply a little brake pressure, if needed.

The brake pads are available as parts as part number P3262. They have to be put on with a good 2 part epoxy.

Keep in mind that the measurements given for the length of the horizontal pullrod are BASE measurements. That is where the factory sets the length at when they're assembling the drum, but then they adjust from there to comp for variations in the casting (large thin-wall aluminum) and variations in drilling. So, don't worry if the measurement is a little off. That's why the length of the pullrod is adjustable.



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