INSTRUCTIONS FOR THE LOWELL COMPONENT DOWNBEARING GAUGE

The Lowell Component Downbearing Gauge is a versatile multipurpose tool with two easily interchangeable bases. The gauge can be used with either the adjustable span gauging fingers base attached (for Component and Net Bearing measurements) or, the magnetic base attached For Net Bearing and Rear Bearing plate height adjustments.

USING THE ADJUSTABLE SPAN GAUGING FINGERS BASE

1. Remove the screw from the top of the base.
2. Press the base into the underside of the channel vial housing so the screw hole in the base lines up with the hole in the channel vial housing.
3. Insert and tighten the screw through the top of the channel vial housing and into the base. Do this by pivoting the vial upwards to gain access to the hole.

USING THE MAGNETIC BASE

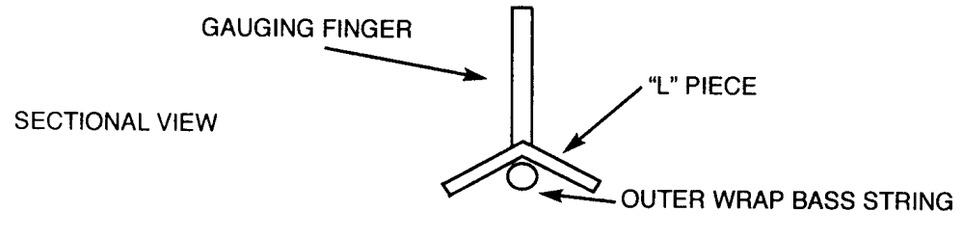
1. Remove the machine screw from the magnetic base.
2. Locate the screw hole in the base so it lines up with the screw hole in the channel vial housing, with the magnet located in the center front to back.
3. Insert and tighten the machine screw through the top of the channel vial housing and into the magnetic base. Do this by pivoting the vial upwards to gain access to the hole.

ADDITIONAL INFORMATION

1. In any one situation, multiple readings should be taken until consistant results are obtained.
2. In either Component or Net Bearing measurements, a bubble movement away from the bridge should be read as negative. A bubble movement towards the bridge is read as positive.
3. Front Bearing + Rear Bearing = Net Bearing.

ELIMINATING PROBLEMS ASSOCIATED WITH RIDGES AND TROUGHS OF BASS STRING WINDINGS

1. Place the aluminum "L" piece on the bass string winding of the string to be measured.
2. Locate the vee grooves (on the bottom of the gauging fingers) to ride on the edge of the "L" piece.
3. Some manuvering will be required to set the "L" piece in place: Pulling an adjacent string to the side, etc.



IMPORTANT ADDITIONAL INFORMATION

1. Always place the gauge one inch minimum away from either side of the bridge when taking front or rear bearing measurements. This is necessary to reduce or hopefully eliminate the influence of bends in the wire that occur near the bridge.
2. When moving the Component Downbearing Guage from the position where calibrated to the position where the bubble movement is observed, keep the gauge in the same orientation (front to back). ***Do not turn the gauge around end for end and do not change the width of the adjustable span gauging fingers. If the previous instructions are ignored, the gauge readings will most likely be faulty.***

For more information see article "The Geometry and Mechanics of Downbearing Made Easy", PTG Journal, January 1986.

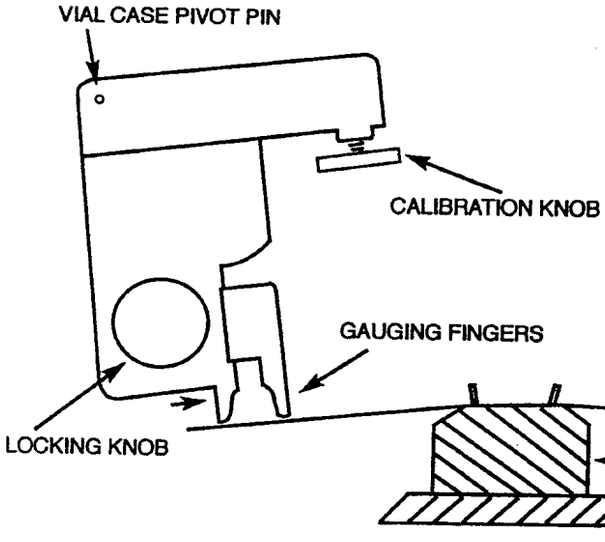
The Lowell Component Downbearing Gauge, Patent# 4798005, is manufactured and distributed by:
Pianotek Supply Company 740 N. Rochester Rd. Clawson, MI 48017 1-800-347-3854

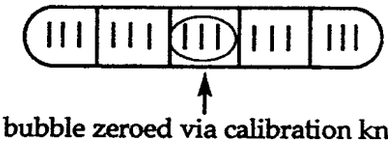
NET BEARING MEASUREMENTS

The object is to gain information about the angle made by the rear string length relative to the front string length. Follow the four steps below.

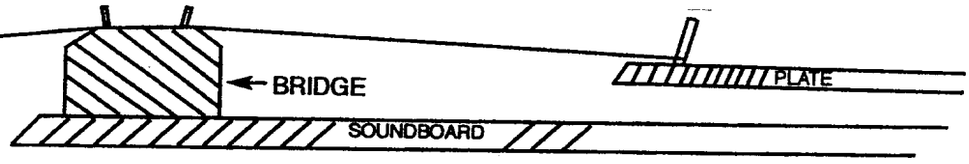
1. Locate the vee on the bottom of the fingers on to the front string segment.

2. Calibrate the bubble to a convenient line within the vial viewing area by rotating the cap screw as needed.



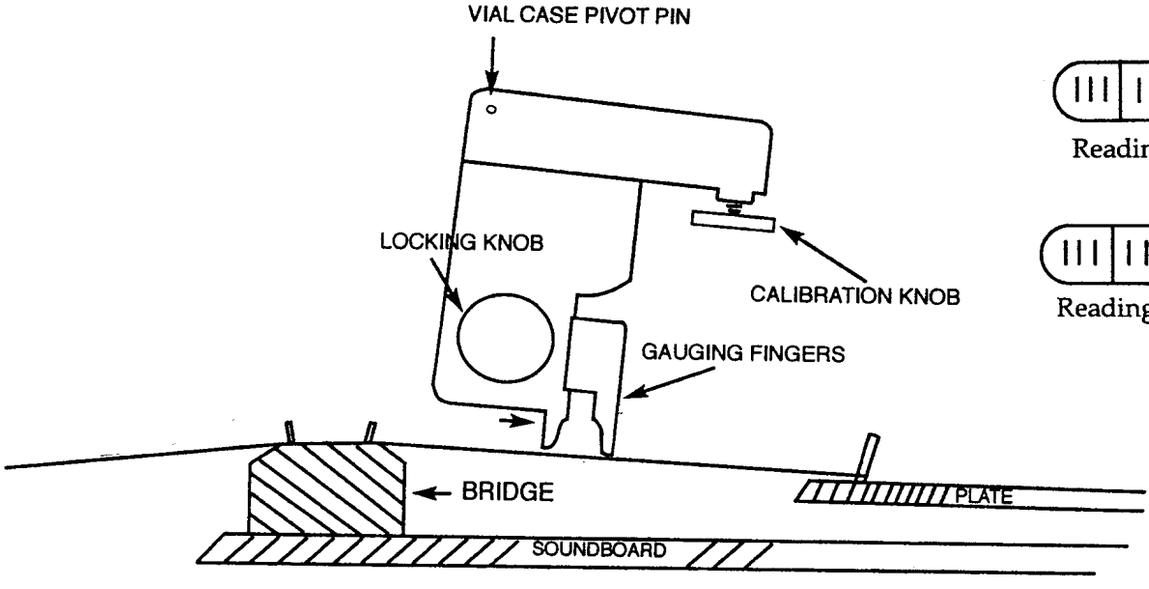


Vial bubble zeroed via calibration knob



3. Place the gauge on the rear string segment and count how many divisions the bubble crosses. Keep your eye on the edge of the bubble that was previously adjacent to your reference line of #2 above.

4. Multiply the number of divisions the bubble crossed by three. This will give the net bearing in thousandths.



Reading: -.003

Reading: +.003

DOWN BEARING = NET BEARING X STRING TENSION

Example: String tension is 160 lbs. and bubble movement is four divisions, front to rear.
4 divisions x .003 per division = .012
Downbearing = .012 x 160 lbs. or 1.9 lbs.

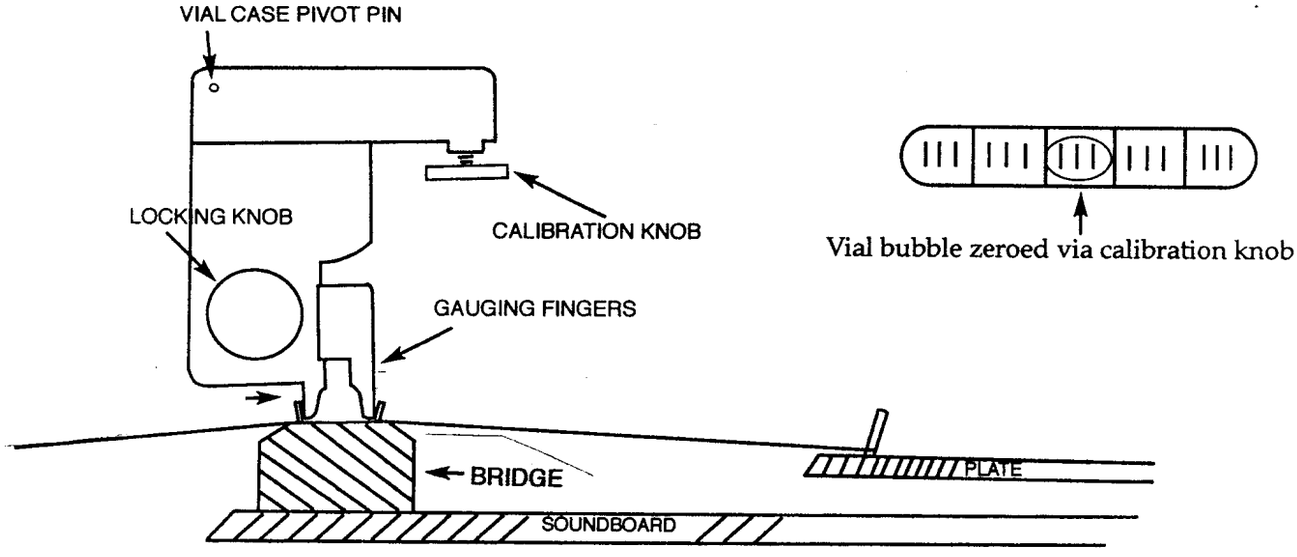
COMPONENT BEARING MEASUREMENTS

The object of component bearing measurement (front and rear bearing) is to gain information about the angle of the string as it comes off the bridge, relative to the top of the bridge. Follow the five following steps below.

#1. Adjust the moveable fingers of the gauge to fit between the bridge pins adjacent to the string being measured. Allow a tiny amount of play.

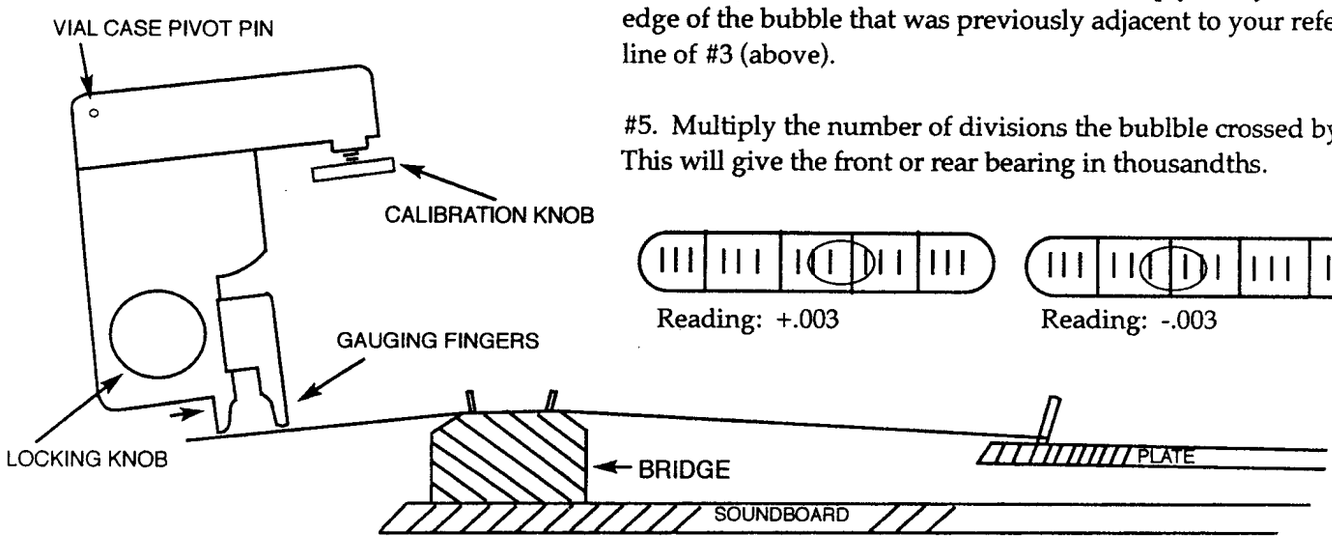
#2. Locate the vee on the bottom of the fingers on to the bridge string segment.

#3. Calibrate the bubble to a convenient line within the vial viewing area by rotating the cap screw as needed.



#4. Place the gauge on the front or rear string segment and count how many divisions the bubble crosses. Keep your eye on the edge of the bubble that was previously adjacent to your reference line of #3 (above).

#5. Multiply the number of divisions the bublble crossed by three. This will give the front or rear bearing in thousandths.



ADJUSTING THE NOSEBOLTS TO A NEUTRAL POSITION

(Before surfacing the top of the bridge)

The object is to adjust the nosebolt shoulder so that it is just in contact with the underside of the plate, but not springing up the plate. Follow the next six steps.

1. Secure the magnetic base to the channel vial housing, with the magnet positioned in the center of the housing.

2. Locate the gauge in front of the nosebolt, resting on a steel straight edge spanning between the bridge and the plate in front of the hitch pin.

3. Lower all nosebolts down so that you are certain none are contacting the underside of the plate.

4. Calibrate the gauge to the zero position as shown in previous instructions.

5. Raise the nosebolt until the first smallest movement of the bubble is detected. This indicates that the nosebolt shoulder has just contacted the underside of the plate.

6. Repeat the entire procedure on the remaining nosebolts except for step #3.

ADJUSTING REAR DOWNBEARING VIA THE NOSEBOLTS

The object is to precisely control the adjustment of the plate height (rear bearing). Follow the five steps below.

1. Secure the magnetic base to the channel vial housing, with the magnet positioned in the center of the housing.

2. Locate the gauge midway bewteen the bridge and the hitch pin on a pair of strings sharing that hitch pin.

3. Calibrate the gauge to the zero position as shown in previous instructions.

4. Lower the plate via the nosebolt and observe the movement of the bubble.

5. ***PROCEED WITH EXTREME CAUTION WHEN DEFLECTING THE PLATE WHERE THE BUBBLE MOVEMENT EXCEEDS SIX DIVISIONS. NOT RESPONSIBLE FOR BROKEN PLATES.***