

ADJUSTABLE PLATE SYSTEM INSTRUCTIONS

READ ALL INSTRUCTIONS PRIOR TO INSTALLING ADJUSTABLE PLATE SYSTEM TO DETERMINE THE APPROPRIATE TASKS TO BE COMPLETED.



Picture 1

Tools & Materials

Tools and Materials

- Rectangular block of wood (about 1" 25 mm)
- Calipers
- Set of transfer punches (See Picture 2)
- 6 in. (150 mm) Ruler
- 13/32" (10 mm) Drill Bit (long, WNG part # 06-5624)
- 7/8" (22.2 mm) Spade bit (long, WNG part # 06-5622)
- 9/16" (14.3 mm) Spade bit (long, WNG part # 06-5623)
- Butcher's wax or paraffin wax
- Magnetic dial indicator
- 8 mm or 5/16" T Handle Allen wrench (WNG part # 06-5625)
- Torque wrench (100-400 in. lbs.) or Metric torque wrench (115kgf-cm to 460 kgf-cm)
- Wooden dowels
- Wood glue
- Lags and bolts (to be determined)



Picture 2

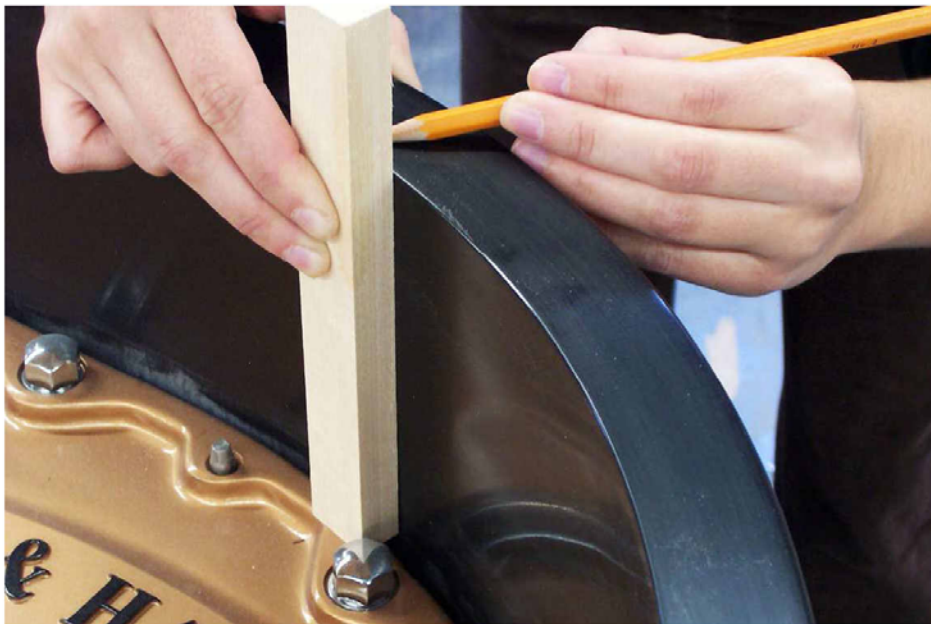
Transfer Punch Set

ADJUSTABLE PLATE SYSTEM INSTRUCTIONS

Procedures

1. **Draw a detailed diagram of the plate prior to beginning.** Label each bolt, plate screw, etc. to make the recording of measurements easier.
2. **Take plate height measurements.**

Prior to removing the plate from the piano, take precise measurements of the plate height. Get a block of wood that is taller than the distance from the top of the plate to the top of the case; the top of the case is the reference point. Ensure that the block is square. Place the block on top of the plate, to the side of the plate bolt, and push it up against the side of the case (See picture 3 below). Now take a pencil, look at the top of the case so your eye is level with it and trace a line on the block of wood. Label the block of wood so you know which plate bolt corresponds to which line. Do this for each perimeter plate bolt as well as the two



Picture 3

plate screws located where the case meets the front stretcher. These plate screws should have two reference points each: the front stretcher and the side of the case (See pictures 3,4&5). Keep track of this information if you are placing the plate back in the same spot. If possible, determine whether any part of the plate will be closer than $\frac{1}{4}$ " (6.4 mm) to the soundboard. It will be necessary to counterbore the soundboard in those location to allow clearance for the head of the lag bolt.

ADJUSTABLE PLATE SYSTEM INSTRUCTIONS



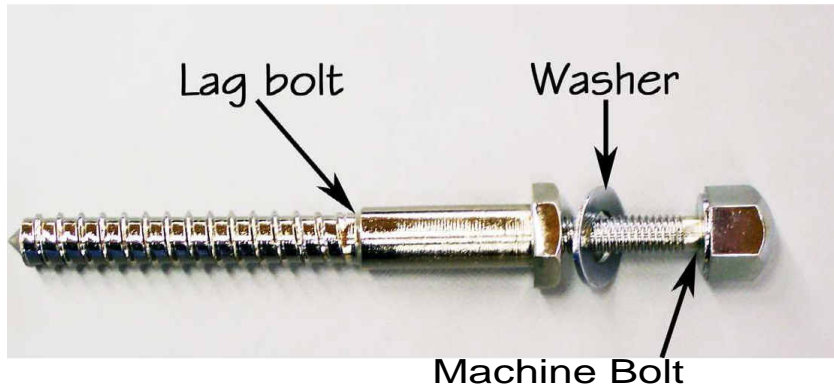
Picture 4



Picture 5

If you are changing the location of the plate: You may need to take the original measurements as reference points.

ADJUSTABLE PLATE SYSTEM INSTRUCTIONS



Picture 6

- 3. Determine bolt lengths needed.** After the plate has been removed, determine and order the appropriate bolt lengths needed for each perimeter lag. To do so, measure the thickness of the plate at each perimeter bolt hole with calipers (See picture 7). Choose and record (on your diagram) the bolts that correspond to the plate thickness according to the chart below. Use the **Bolt Code** (Below) when ordering your parts.

CAUTION: Do not assume that the thickness of the plate is uniform at each perimeter bolt location; using the incorrect bolt length will result in poor plate support.

PLATE THICKNESS RANGE		BOLT LENGTH		BOLT CODE
mm	inches	mm	inches	-
8.29 - 30.64	0.326 - 1.206	38	1.496	A
16.29 - 38.64	0.641 - 1.521	46	1.811	B
24.29 - 46.64	0.956 - 1.836	54	2.126	C

Bolt Code

ADJUSTABLE PLATE SYSTEM INSTRUCTIONS



Picture 7

Double check order. When the parts arrive double-check that the correct bolts were sent. Test the bolts and lags at each perimeter bolt hole with the plate outside of the piano. If the correct bolts were ordered they will not bottom out in the lag and at least $\frac{1}{2}$ " (13 mm) of the machine bolt will protrude through the bottom of the plate.

4. Prepare the rim for the lags.

Plug the original holes with hardwood dowels. Trim the dowels flush with the soundboard. Put the plate back in the piano and position it to its exact final location. Use a transfer punch that is the same diameter as the holes in the plate and mark the location for each lag bolt.

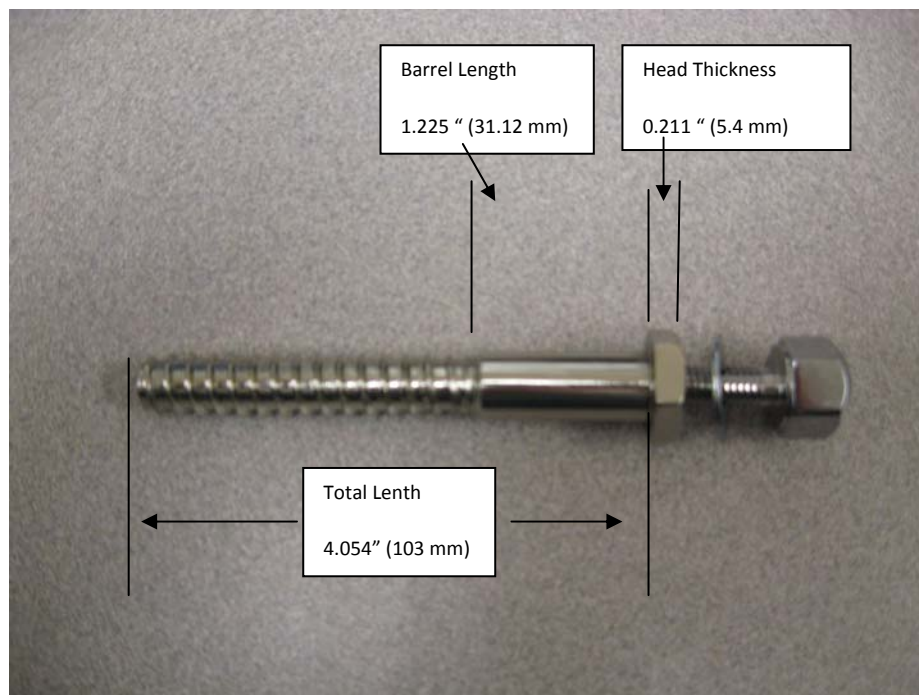
NOTE: It is very important to use the correct transfer punch to get the true center of the hole. You must have a complete set (See Picture 2).

Remove the plate and drill the holes for the new lag bolts. If the distance between the plate and the soundboard will be less than $\frac{1}{4}$ " (6.4 mm), use a $\frac{7}{8}$ " (22 mm) spade type drill bit to counter bore for the head of the lag bolt. Drill to a depth of $\frac{1}{4}$ " (6.4 mm).

Next, use a $\frac{9}{16}$ " (14.3 mm) spade type drill bit as a counterbore for the shank of the lag bolt. If a counterbore for the lag head was drilled, drill to a depth of $1 \frac{1}{2}$ " (38 mm) from the surface of the soundboard. Otherwise, drill to a depth of $1 \frac{1}{4}$ " (32 mm) from the surface of the soundboard.

Finally, use a $\frac{13}{32}$ " (10 mm) drill bit and drill to a depth of $4 \frac{1}{8}$ " (105 mm) from the surface of the soundboard.

ADJUSTABLE PLATE SYSTEM INSTRUCTIONS



Picture 8

5. Install lags.

When the plate is ready to be placed back in the piano you will need a 6" (150 mm) ruler and a magnetic dial indicator. Insert all of the lags with butcher's wax. Turn the lags down until the heads are about $\frac{1}{4}$ " above the soundboard (or the approximate height to support the plate). Install the plate on top of the lags; look to see that all lag heads are accessible through the bolt holes in the plate. If they are, proceed to set plate height. If the heads of the lags do not line up with the perimeter bolt holes, then plug and re-drill in the correct location. If the lag bolt is very close to the center, but the perimeter bolt has a slight interference with the plate, then a slight enlargement of the plate hole is acceptable.

6. Set plate height and secure.

Bring the plate to the correct height by using the lag bolts at the three locations indicated in picture 9. Make sure the rest of the Lag bolts are lower than the 3 sample locations so that they will not interfere with the height adjustment. Use a $\frac{5}{16}$ " (8 mm) Allen wrench to turn the lags up and/or down to adjust the plate to the measurements recorded earlier (or to new height if necessary). Once the plate is at the correct height at the three locations, then install the three corresponding perimeter bolts and secure to 300 in/lbs. (340 kgf-cm). Next, place the magnetic base, of the dial indicator, as close as possible to one of the lag bolts with of a piece of cloth to prevent scratching the plate (See Picture 10). Adjust the height and location of the dial indicator so that it can be easily read, then zero it out (See picture 10). Proceed to turn the lag up slowly

ADJUSTABLE PLATE SYSTEM INSTRUCTIONS

until the dial indicator just barely moves. The bolt is now holding up the plate properly. Repeat this step with all the other lags to ensure they are all equally supporting the plate. Now, install the remaining perimeter bolts and torque to 300 in/lbs. (340 kgf-cm). **WARNING: We recommend against tightening the bolts more than 300 in/lbs. (340 kgf-cm)**



Picture 9
3 points for plate height adjustment



Picture 10
Setting plate height

ADJUSTABLE PLATE SYSTEM INSTRUCTIONS

7. The Adjustable Plate System has now been completed. See picture below to see the end result. This is what the Adjustable Plate System will look like inside the piano. The picture of a piano below was taken without an outer rim.



Picture 11

Without Outer Rim