PianoDisc

Mute Rail for Grand Pianos

Installation Guide

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Introduction

Adding a mute rail…..

A mute rail is a mechanical configuration of parts that will mechanically silence your piano. The hammer motion is stopped just before hitting the stings. A small modification to let-off may be necessary.

Intention of this manual…..

This installation manual will guide you though the process of fitting the PianoDisc mute rail on most all grand piano. Along with any training seminar you might attend, this guide should be an invaluable resource.

Illustration List

Step 1 Required Tools

The following is a list of tools that will be needed to install a mute rail on a grand Piano.

1/4” Ratchet and socket
1/4” Hex Nut Driver
Torx Screw Driver, T-15 and T-20
Variable speed drill
3/8" (9.6mm) Drill Bit
1/4" (6.35mm) Drill Bit
1/2" (13mm) Drill Bit
¼”(6mm)x18”(457mm) Drill bit
Hack Saw
Fine Metal File
(2) Needle nose vise grips
Tape Measure
Cutting oil
Phillips screwdriver #1 and #2 tip

Step 2 Disassemble the piano

A. Remove the fallboard and keyslip.

B. Remove the action from the piano. Be careful that your hands do not apply pressure on the end keys. This will cause hammers to break while removing the action from the cavity.

Step 3 Measure the Piano

This mute rail will fit most pianos fairly easily but there are some pianos that will require some modification for clearance. The following measurement procedure will help you in decide if indeed any additional work is necessary.

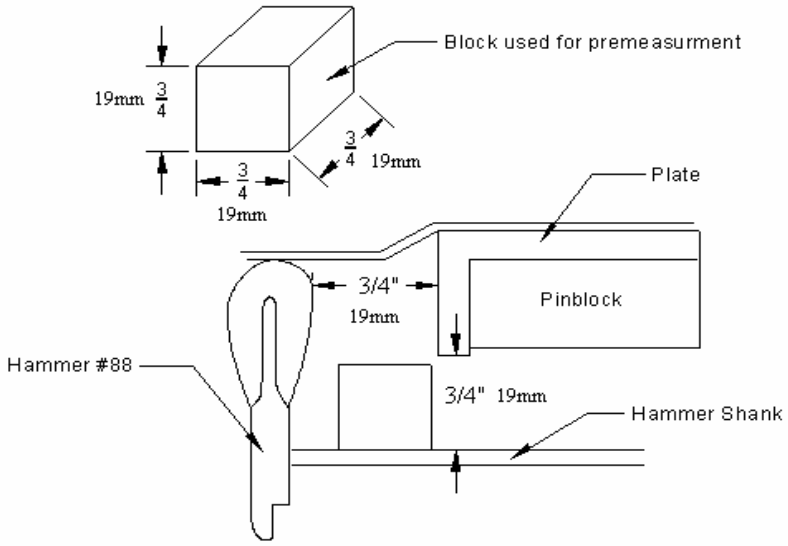

Figure 1 Measuring for clearance

Note: A measurement of under 19mm indicates some modification may be necessary on the mute rail and/or the plate for the mute rail to fit the piano. (See Ill. Above) Contact PianoDisc technical support for more information.

A. Measure the distance between the back of hammer #88 and the pinblock and/or plate. A measurement of 19mm ensures a good fit for the mute rail. (See Ill. Above)

B. Measure between the pinblock and/or plate and hammer shank #88. A measurement of 19mm ensures a good fit for the mute rail.

Note: At this point, it would be a good idea to familiarize yourself with the mute rail parts nomenclature. Pictures that list all the parts you will be working with can be found on the following pages.

Mute Rail Parts

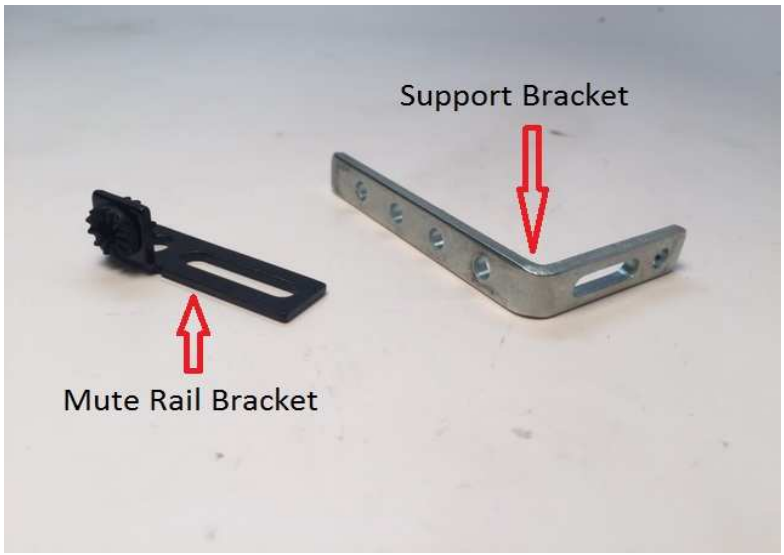

Figure 2

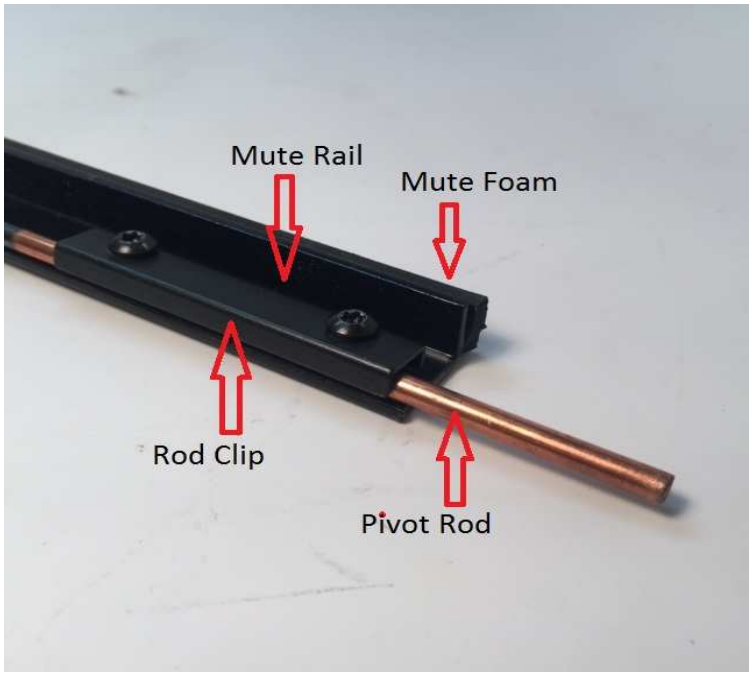

Figure 2A

Cable Parts

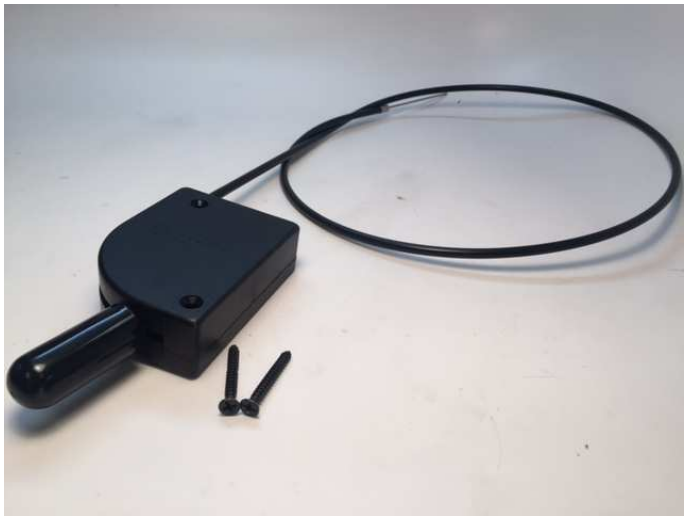

Figure 3 - Cable Assembly

Figure 4 - Cable Bracket assembly

Step 4 Mute rail construction

A. At this point the rails will be cut to their appropriate lengths that correspond to each section (bass, tenor, and treble) of the piano. This is how you measure each section: Lay the rails over the bass, tenor and treble sections. Then, mark the sections to the correct length to be cut. The rails should extend 1/4" (6mm) beyond the first and last hammer shank of each section. (See fig. 5 and 6)

NOTE: Make sure to check that you have enough material for all three sections before cutting. Follow the carpenters rule: **"measure twice and cut once".**

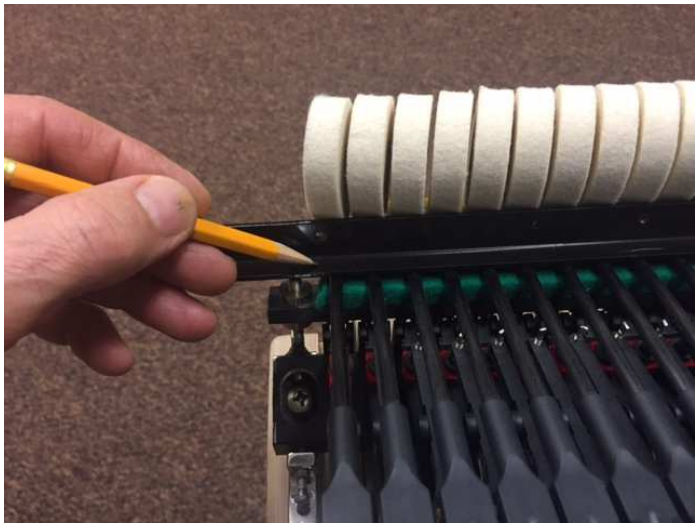

Figure 5 Marking rail

Figure 6 - Rail sectional over hang

B. File or grind off the ends to flatten, round off sharp edges, and remove burrs.

C. Attach clips to the mute rail. But, temporarily leave them loose for later assembly of the pivot rods and mute rail sections.

D. With the rails resting on the hammer shanks, measure the required lengths of pivot rod that will be used to connect the sections together. Cut the pivot rods to the measured lengths.

NOTE: The hole in the clip is off set to one side for the pivot rod. (See fig. 7)

Figure 7 - Rail Clip and Rod

Step 5 - Mute rail assembly without horn

A. Locate the "L" support mounting brackets and mute rail bracket in the kits. (See Fig. 8 and 9)

Figure 8 - Support mounting bracket

Figure 9 - Mute rail bracket

B. Assemble the mute rail brackets to the support brackets. Most pianos will use the two middle hole location except for the high treble. (See fig 10)

Figure 10 - Assembled mounting brackets

Figure 11 - Treble mounting bracket

NOTE: The mounting bracket at key 88 will usually use a different set of holes. This is because of the protruding area of the belly rail. For proper fit some trimming of the mounting bracket may be required. (See figure 11)

C. Place the assembled mounting brackets at each of the 4 locations; bass end, bass/tenor break, tenor/treble break and treble end. Note that the treble may need to be shorter as in figure 10 and 11.

D. The mute rail must be controlled for side movement. This is accomplished by placing a plastic tube on the pivot rod on both sides of the rail bracket at key 88 to control movement. (See fig. 12) The two pieces of plastic collars are supplied in the kit.

E. Now the complete mute rail can be installed into the piano.

NOTE: A good starting point for the height of the mute rail will be the pivot rod level with the bottom of the pin block. (See figure 13) The mute rail should be 1/8" (3mm) away from the hammers.

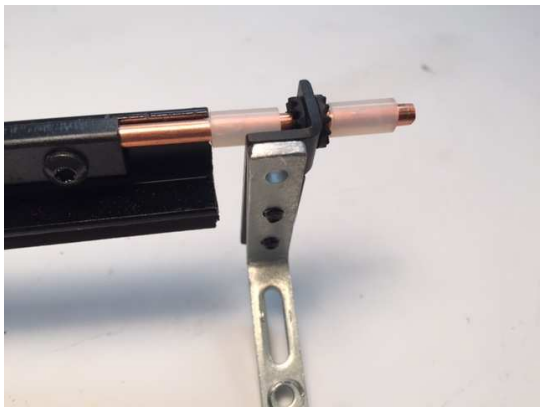

Figure 12 - Plastic tube for side control

For pianos without a horn, skip steps 6, 7. Continue to step 8.

Step 6 Mute rail installation for pianos with horn

The horn of the piano can be described as a downward projecting part of the plate that extends to the belly rail at the cross point of the bass and tenor sections. If the piano has a horn, most likely the horn will be in the way of the mute rail. If this is the case it will be necessary to drill an access hole through the plate horn.

Note: For determining horn hole location it will be necessary to assemble the bass mute rail first and mount into the piano to determine the hole location thru the horn.

Step 7 Determining horn hole location

NOTE: Years ago we supplied a "Dummy Mute Rail" for locating the hole location thru the plate horn at the bass/tenor location, but this was not necessary as the bass mute rail section can be used for the same purpose.

A. Mount the bass mute rail (with cushion foam attached to rail) into the bass section.

NOTE: Mount the pivot rod height to about the same height as the bottom of the pinblock. (See figure 13) This is a good starting point.

B. Put the action back into the piano with the end blocks in place.

C. With a thin shank straight slot screw driver, move the mute rail in the "on" position.

D. Raise the first and last note in the bass section slowly to check for the clearance between **hammer and mute rail.** With the screw driver, slide the mute rail to acquire 1/8" (3mm) front to back clearance.

Figure 13 – Mute rail pivot rod height

E. While playing the last bass note (next to the horn) with a medium blow, bend the bracket up to where you hear the hammer is hitting the string. Then bend the bracket down slightly to keep the hammer from hitting the string. The rail should be in the approximate area of letoff position. This is the ideal place to drill the hole thru the horn.

F. When marking horn, remove the rail, leaving the support bracket next to the horn in place. Stick a pencil through the grommet hole and mark the hole location. (See figure 14)

NOTE: The bracket mounted to the belly rail below is only there to locate the horn hole. The mute rail bracket will be attached to the horn to support the mute rail.

Figure 14 - Marking pivot rod horn hole location

G. Mark the location with a center punch and mask off area to catch the metal shavings.

H. Start with a1/4" (6 mm) drill bit and drill a hole thru the horn using a slow speed. Now step up to a 3/8" (9.5 mm) drill bit and then finish with a 1/2"(13 mm) drill bit. This leaves plenty of room for adjusting the mute rail height.

I. Now prepare pivot bracket for mounting to the horn. Place the pivot bracket in a vise and cut off tang. (See fig. 15) Place the rubber grommet in other hole. (See fig. 16)

Fig. 15 – Cutting off pivot tang

Fig. 16 – Pivot bracket with grommet

J. Now place the pivot bracket at the horn hole location and place a mark on the horn to drill a hole to secure the pivot bracket to the horn.

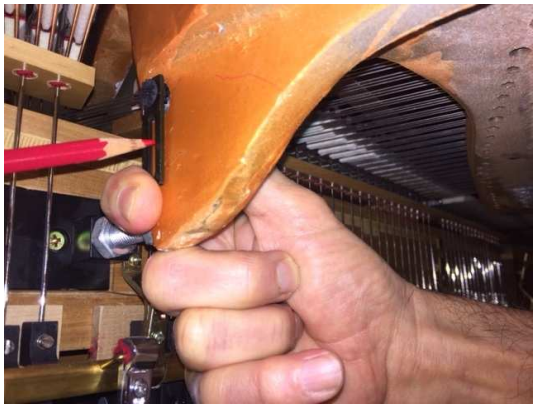

Fig. 17 – Marking location for horn screw

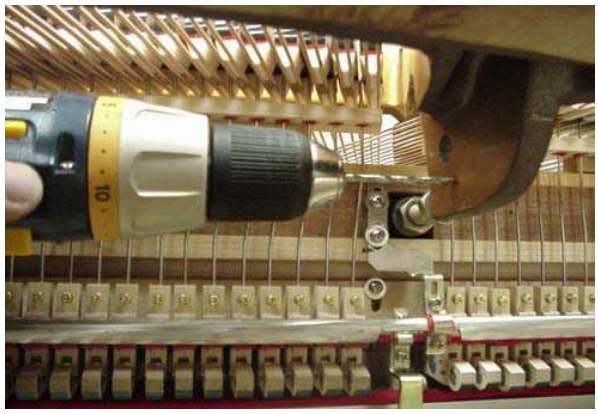

Fig. 18 – Drilling pivot bracket screw hole

K. Center punch the location on the horn to be drilled. Drill a 9/64" (3.5 mm) hole into the horn with cutting oil. Place the 8/32" self taping screw, with oil, into the hole. Drive the screw in by hand or with a drill at slow speed. (See figure 18)

NOTE: The mute rail assembly procedure is similar to those found on pianos without a horn. So, follow the assembly directions of Step 5 except for the rail bracket at the bass/ tenor break location on the horn.

A. At the bass/tenor break (horn location) the rail bracket will be mounted to the horn.

NOTE: This picture below (figure 19) shows the bracket on the opposite side of the horn as in previous picture, either side can be used.

Fig. 19 - Horn bracket

Step 8 Installation of cable assembly

Note: The cable lever can be mounted on either side of the piano under the keybed. Normally the left hand side is used.

A. Mount the cable lever to the bottom of the keyed about 1/4" (6 mm) in from the edge of the keybed. Locate the screws in the kit and secure to the desired location.(See figure 20)

Fig. 20 – Mounting Cable Lever

B. Drill a 1/4" (6 mm) hole with a 18" (457 mm) long drill bit from the inside of the piano thru the belly rail on a slight angle. (See Figure 14)

NOTE: There are some pianos where it may be necessary to drill thru the keybed due to lack of room at the belly rail.

Fig. 21 - Belly rail cable thru hole

C. Feed the cable thru the belly rail hole into the piano. Pull the excess into the piano.

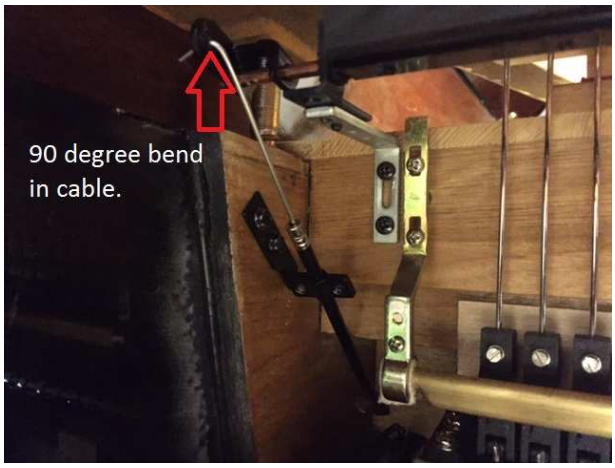

Fig. 22 – Cable bracket secured to rim

D. Secure the cable bracket to the rim with 3/4" (19 mm) hex head screws supplied in kit. (See fig. 22) It may be necessary to use a wood spacer to acquire a good alignment with the cable lever.

E. Place the cable handle in the off position (facing out) and the mute rail in the off position.
Hold the cable core 1/2" (13 mm) past the hole on the cable lever and cut the wire with wire cutters. Using two slip joint pliers or vise grip pliers, carefully bend the cable core 90º at the cable lever hole location. (See fig. 22) Place the cable into the cable lever hole and adjust the mute rail position if necessary.

F. The cable can be re-positioned at the cable clamp if necessary.

Step 9 Mute rail shimming and foam cushion

A. Locate the mute rail shim in the kit. (See figure 23, next page)

B. Remove the paper from the self adhesive shim and place the shim on the tenor and treble area.

NOTE: To keep the same let-off between the bass and tenor/treble the 1/16" (1.59 mm) shim is necessary for the tenor/treble.

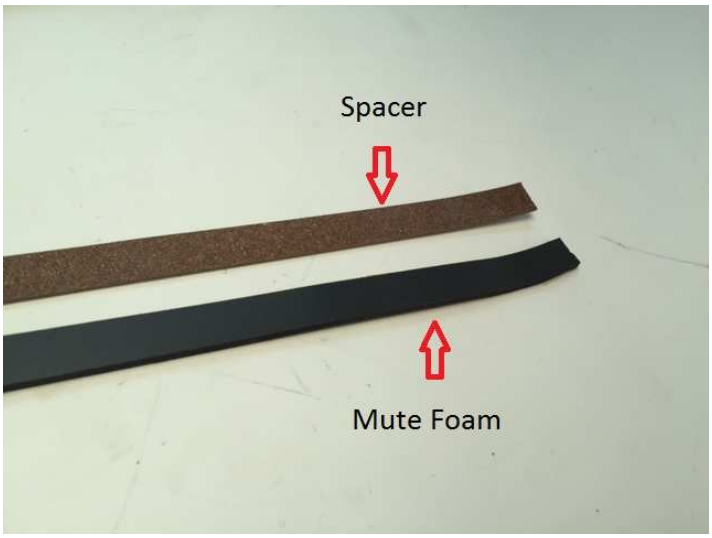

Fig. 23 – Self adhesive spacer and mute foam

C. Remove the paper from the self adhesive mute foam and place the on the rail.

Step 10 Mute rail fine adjustment

A. Install the action into the piano with the end blocks in place. Place the mute rail in the "on" position.

B. Check to see if the mute rail is horizontal or flush with the hammer shank in the "on" position.

C. Play key # I with moderate blow. If the hammer hits the string, bend the mounting bracket down slightly to achieve no contact with the string. If the hammer does not hit the string, bend the mounting bracket up slightly with a string hook to get as high as possible without making contact with the string. Because the cable bracket is located at key#1, it may be necessary to re-adjust the horizontal plane of the mute rail. This can be done by loosening the rod clip on the mute rail at the #I hammer location and adjust as necessary.

D. Now using the same method of adjustment for the three other brackets.

Note: The object is to get the mute rail as high as possible, without the hammer touching the string on a moderate blow. Usually 1/8" (3mm) let-off is possible. Just make sure to adjust let-off so the shank is NOT blocking against the mute rail.