PART II. Installation and Alignment Procedures

Optional Sustain Pedal Solenoid Mounting (70130)

You can now turn your attention to the installation of the sustain pedal solenoid assembly. This procedure is not required when installing the Magic Pedal Kit #71200 & 51200.

Because there is a certain amount of variation in the architecture of grand pianos, you will probably have to custom-tailor the following directions to suit the mechanical dimensions of the particular instrument you are working on.

The key elements to focus on here include the sustain pedal lyre rod's upward projection onto the keybed immediately above it, the location of the large hole through which the original sustain pedal pitman dowel projected to reach its corresponding hole in the wooden or aluminum damper tray (which lifts all of the piano's dampers simultaneously), and the rearmost OUTSIDE vertical wall of the keyboard compartment, called "the belly rail." The proper installation of the sustain pedal solenoid assembly takes into account the dimensional relationships of these three elements.

In addition to providing for both the manual and automatic operation of the piano's dampers, you want to give the sustain pedal solenoid as much mechanical advantage as possible in order to minimize the power required to activate it. Despite the excellent design of the sustain pedal solenoid assembly, its long term operation depends upon your skill in locating the various leverage-points which enable it to function both manually and automatically.

Optimally, the sustain pedal solenoid assembly will be mounted on the belly-rail immediately behind the sustain pitman dowel which formerly connected the old trapwork lever's far end to the damper tray in the keyboard compartment. This arrangement provides the shortest distance between the sustain pedal solenoid assembly's lever-arm and the load imposed by the damper tray through the pitman dowel. Where such a situation exists, you will use the four mounting holes to locate the four #10 x 1" (70080) panhead screws used to secure this assembly to the belly-rail.

Now, measure the distance from the center of the pedal solenoid's pusher tip to the exact center of the damper tray's pitman rod location. Sixty percent (60%) of this distance FROM THE PEDAL SOLENOID'S CENTER (that is, the lion's share of this distance) is the location of the fulcrum of the trapwork assembly's stright bar. The remaining 40% of this distance becomes the minor portion from the fulcrum to the pitman dowel.
The soft shift (una corda) pedal mechanism usually includes a long, cast-iron bellcrank lever whose short-arm protrudes through the keybed to engage a groove cut in the bottom of the keyframe somewhere beneath the treble section. The shift pedal in this configuration does not have to pass through the solenoid rail and, therefore, may often be left untouched. However, on some pianos you may have to move the soft shift toward the front of the piano to accommodate for the width of the rail. For the pianos that need modifications, brackets have been included in the kit (70222 & 70224) for easy readjustment. The brackets can be attached to the keybed with four #10 x 1" mounting screws (70080). The pedal must shift the action the same distance as before with the same pedal movement. Refer to the measurements taken when the trapwork was removed to verify that this behavior has been retained (See "Modify the piano action" section).
Unfortunately, there is no set procedure for modifying the trapwork on a grand piano. Different manufacturers connect the pedals to their respective action mechanisms following their own designs. Ultimately, it is up to the installer’s ingenuity to make the trapwork behave as it originally did. There are some design generalizations which can be observed.

Because the damper lift rail is always further back in the piano case than the key tails, connecting the sustain pedal to the damper mechanism requires a linkage passed over the plane of the rail. Likewise, if a sostenuto pedal is present, it must be linked to the monkey by means of a lever mechanism passing over the plane of the rail. The low profile cable system (70850) may be installed.

Tools needed include a drill with screwdriver attachments, a hack saw, a metal file.

At this point in the installation, you have before you a raw canvas upon which you must now execute your scheme for re-linking the pedals to the piano mechanisms. Allowable clearances over the rail can now be directly measured. The diagram below shows the proper setup for the trapwork included with the system.

1. 3/8" x 12 1/2" straight bar (70234)
2. 3/8" x 12 1/2" angled bar (70271)
3. Sustain Trapwork Mounting Bracket (70222)
4. Lost Motion Bolt (70232)
5. Wooden Dowel (70274)
6. Nylon Bushing (70272)
7. Pivot Rod (70226)
8. Pivot Rod (70226)
9. Teflon Pad (70281)