

SMOOTH MOVE PRODUCTS

Ratcheting Drawbar Conversion Kit
(Patent Applied For)

Installation Instructions

Thank you for purchasing the Smooth Move drawbar conversion kit. The kit has been designed to make the conversion process as simple as possible while providing very smooth drawbar response without the annoying interruption of tones between drawbar settings.

PLEASE READ INSTRUCTIONS CAREFULLY BEFORE STARTING ANY WORK

Step 1. Take inventory of kit.

Your kit should contain: 2 gold clad buss boards (one board is slightly longer than the other).

- 38 Drawbar Contacts
- 1 Cable assy (2 cables for split vibrato)
- 9 Solder lugs (18 for split vibrato)
- 1 set of drawbar guides
- 13 Black plastic insulators (circuit board retainers)

Tools required: Soldering iron, flat blade screwdriver, 1/4 nut driver and a white grease pencil or china marker.

Step 2. Remove drawbar Assembly

Before starting any work be sure the organ is unplugged from AC power source. Start by removing the four screws from the apron/music rack covering the drawbar assembly. **NOTE:** *If you are converting a model with a chorus generator it will be necessary to disconnect the chorus drawbar linkage on the far right hand side in order to remove the apron/music rack. Also, if the organ has a vibrato/chorus toggle switch mounted on the apron it must be temporarily removed or disconnected.*

With the drawbar assembly now exposed, use the attached **drawbar hole pattern chart** to locate the screws which mount the drawbar assembly to the organ. Remove these screws and set them aside. There are nine buss wires protruding from the left end of the drawbar assembly (there will also be nine wires on the right side of a split vibrato organ) that connect to the organ's pre-set panel at the rear of the organ. Disconnect all of these wires from the pre-set panel.

You should now be able to move the drawbar assembly far enough toward you that you will be able to unsolder the wires from the rear of the drawbar contacts. You may also unsolder these wires from the rear of the organ if you prefer. If the wires are covered with a cotton insulation the colors have probably faded to a point where they are no longer easily recognizable. It is a good idea to label each wire. This will make reassembly easier.

Step 3. Disassemble the drawbar assembly.

NOTE: The front lip of the top drawbar chassis plate is slightly longer than the backside lip. It is important to maintain the proper orientation during reassembly or the drawbars will not make contact with the buss boards.

Place the drawbar assembly on a work area in front of you with the drawbars facing you. Using a white grease pencil or some other form of marking, draw an arrow toward you on the top drawbar chassis plate. This will tell you which edge is the front.

Remove the 1/4 hex screws from the rear of each drawbar to remove the old drawbar contacts.

You will now be able to slide each drawbar out one at a time. It is recommended that you place each drawbar off to the side in the same order which they were removed. This will make reassembly easier.

Using the **drawbar hole pattern chart**, remove the screws which hold the drawbar assembly together. You will now be able to separate the top and bottom chassis plates.

Remove the screws holding the existing buss bars in place and remove all nine buss bars as well as all of the black ribbed buss retainers. These black plastic retainers will be replaced with the non-ribbed retainers contained in your kit ([see note on last page](#)). There were two types of plastic insulator strips used in the drawbar assemblies. The very early drawbars used a thin brownish colored material. Later versions used a thicker clear pliable plastic as an insulator.

Remove all of the drawbar guides from the bottom chassis plate keeping track of their proper orientation. You will be replacing the drawbar guides with the new ones enclosed in the kit.

It is a good idea to clean the upper and lower chassis plates, drawbars, and insulators at this time.

Step 4. Reassembly using the SMOOTH MOVE Conversion Kit.

If converting organ with straight vibrato (A, BC, BV, CV etc.)

Locate the two gold-clad buss boards supplied with your kit. On the back of each board is a black dot, connect the board ends together at the black dots. When assembled, the mating connectors will lay between the 8' pedal drawbar and the first drawbar of the next drawbar group when properly attached to the top drawbar chassis plate. (proceed to step 5)

If converting organ with split vibrato (B2, C2, RT2 etc.)

Locate the two gold-clad buss boards. Each board will have a black male connector on one end. Position the short buss board in the left half of the top drawbar chassis plate. Position the long buss board in the right portion of the drawbar chassis plate. The connectors at the end of each buss board should protrude slightly from the ends of the drawbar chassis. The two buss boards should meet but not touch at position #20 (see **drawbar hole pattern chart**).

Step 5.

Use the **drawbar hole pattern chart** to locate the position of each black plastic insulator/retainer. Place the insulators into position in the top drawbar chassis plate. Place the Buss Boards in position according to the type of organ you are converting (straight or split vibrato). The boards should be seated into each black retainer. Using the original screws, lock washers, and metal strips with insulators (make sure there is an insulator strip underneath each metal strip) begin securing each black insulator in place. Do not over tighten screws. When you are sure you have all the insulator/retainers in the proper position wipe the buss boards clean with alcohol to remove the oil deposits from your hands. Install the new drawbar guides in the same orientation as the

original guides.

Reassemble the drawbar chassis making sure the buss board connector between the boards (straight vibrato organ) rests between the 8' pedal drawbar and the first drawbar of the next drawbar group.

NOTE: The two short pedal drawbar guides will not be held in place until the chassis screws are installed. These two sections may be difficult to keep in place while reassembling the top and bottom chassis plates. A small amount of super glue or hot glue may be used to secure these pieces in place long enough to complete reassembly. Be careful not to get any glue on the buss boards. Once the drawbar chassis has been reassembled carefully reinsert all of the drawbars. Check the drawbar movement to be sure they do not rub against the connector. Reinstall all screws which hold the chassis assembly together.

Step 6. Installing the drawbar contacts.

There are 38 drawbar contacts included with your kit. Each drawbar must be bent upward at a 22-23 degree angle. You should use the old contacts as a guide. We suggest applying a small amount of grease (such as Lubrex or Tunerlube) on the button of each drawbar contact. With the contact pad facing up, bend each contact at the point where the contact blade becomes narrow. Attach the contacts to the drawbars using the original 1/4 hex screws. Each contact will need to be adjusted for proper tension against the buss boards and will not have a smooth action at this point. Use a general purpose grease (white grease or lithium grease works well) apply a **very thin** layer of grease along the bottom of each drawbar. This will prevent the drawbars from squealing as they are pulled out and pushed in.

Step 7. Reinstalling drawbar assembly to the organ.

Mate the cable assembly to the buss board connector protruding from the left end of the drawbars assembly. If you are converting a split vibrato organ there will be two cables (the longer cable assembly mates at the far right end of the drawbar assembly). Note that the connector is now upside down. The connector has a locking feature and will only lock when the connector is properly mated. The black wire is pin#1 and should be the farthest away from you when properly mated to the buss board connector. Some drawbar assemblies (model A) will have an extended length of drawbar guide at the connector end with holes for the connector wire to pass through. You may route the connector wires through these holes or you may just cut this extension off.

Solder all the drawbar contact wires onto the back of each drawbar contact. Check to be sure the wires are not tangled and will not impede the drawbar movement. Route the drawbar cable through to the inside of the organ and down to the pre-set panel. If your kit has two cables, route the long cable inside the trough which runs behind the drawbar mounting plate, and down to the pre-set panel. Cut wires to length if needed. Strip the ends of each wire and solder a lug onto each wire. Connect the wires to the pre-set panel according to the attached **PRE-SET panel connection chart** .

STEP 8. Adjusting the drawbar contacts.

Start the organ. With the drawbars pushed all the way in, adjust each drawbar contact by pressing down on the contact blade until the movement is smooth and there are no tone breaks throughout the entire range of drawbar movement. Be sure there is no audible tone from any drawbar when it is pushed all the way in. Repeat this procedure for each drawbar.

The drawbars should now be very smooth with no tone breaks in between drawbar settings.

Reinstall the screws which mount the drawbar assembly to the organ. Reinstall the apron/music rack (if converting a split vibrato organ it may be necessary to slightly enlarge the cut outs under the drawbar apron/music rack in order to clear the connectors at each end of the buss boards) and reattach any switches and linkages which were removed. All left over hardware may be discarded.

The drawbar conversion is complete.

If you have any questions or comments about this product please visit our website at **www.smoothdrawbars.com** and leave us an email

NOTE: We are doing our best to keep this product available to you at a reasonable price. In order to do this we must keep a supply of the black plastic ribbed buss bar retainers which you have replaced with our modified ones. Please send your old black ribbed retainers back to us as soon as possible. We appreciate your business and hope you will help us keep this innovative product available to you.

Sincerely,

Ron Spiegleman
Smooth Move Products