

The balance pins

The keys will be held in place in their middle by the balance pins and at their back by the guide pins working in the rack. The balance rail was drilled through the keys before the keys were sawn apart. The pins are soft steel under their chromed exterior—this allows them to be twisted easily for the regulation of the keyboard. Be careful not to bend or buckle them needlessly while putting them in.

Make a small block of wood with a hole in its centre to keep the pins exactly vertical and to serve as a depth gauge, stopping you from hammering them in too far. The block for the balance pins should be 19mm ($\frac{3}{4}$ ") thick. Drop your pins through the hole in the block, and hammer until they are flush. When all is done, they should be perfectly aligned like little soldiers when viewed from both the side, and the front. If they're not, adjust them now with a light tap from your hammer.

Slip a red felt balance washer over each balance pin, and you're done.

Fitting the rack

You can't miss this piece—its slots correspond to the backs of your keys alone because they were sawn together. It will only work one way, and it would be a disaster to get it upside down. Its side-to-side location on the backrail is quite critical so the keys will run square. We will screw it in place without using glue, flush with

the back of the backrail.

The elevation on the drawing shows how the rack guides the key tails. Use a soft lead pencil to run in the slots, leaving its residue to provide a little lubrication for the pins.

Take your top and bottom keys and place them on their balance pins. They will be too tight, but don't worry about that yet. Feed their guide pins into the top and bottom slots on the rack, making sure you have the rack correct end for end. Move the rack in its dado slightly one way or the other until you are satisfied that the outside edges of the fronts of these keys are parallel to each other and the frame. Make a pencil mark to index the location. Remove the keys, put your keyframe upside down and drill four evenly spaced holes with your Screwsink, and screw it on without using any glue.

The touchrail will eventually glue and screw to the top of the rack to limit the keydip, but we will leave the work on that piece until much later.

Installing the back rail cloth

Three layers of the black, 19mm-wide ($\frac{3}{4}$ ") cloth go on the backrail to cushion and quieten the fall of the key tails. Check the drawing and put the cloth where it belongs in front of the rack, fastening it in place with the tiny cloth nails spaced about 5cm (2") apart. If you had a magnetic brad pusher, you could simply drop

the head of the nail into the tool, put it where you want it, and press firmly. Without that tool, use your fine pliers to hold the nail in position, tap it with your hammer to get it started, and then remove the pliers while you seat the nail just below the surface of the cloth. The nails go along the front edge of the cloth, leaving the back edge loose where the corners of the key tails will actually fall on it.

Putting the keys on the frame

At this point you are ready to put all the keys in their place on the key frame, taking the opportunity to free them up individually on the balance pins, and checking that the guide pin can run smoothly up and down in the rack. I would first encourage you to read the next two sections so you can grasp the big picture of keyboard regulation. The general principle is not to do too much at once. You can always come back and work over the keyboard, and this is preferable than making it rattle all over the place to begin with.

When you first put a key on its balance pin with the guide pin in the rack and try to play, the key will probably stick.

Work on each key individually to ease them. When gently depressed at its head, a key must pivot cleanly on its balance pin, return and sit squarely on the backrail cloth. Be careful, because the slightest overworking can make the keys too sloppy and adversely affect the overall