Service Manual

Repairing Reuter Ventil and Pitman Windchests

by Andy Siler & Robert Vaughan

Ed Note: The following information is part of a comprehensive package put together by Mr. Siler and Mr. Vaughan covering all aspects of Reuter organs from the earliest to more recent work. As space allows, future installments will be printed in the Journal. Please note the intent to provide practical information for dealing with real problems, thus representing a model example of what we hope other individuals will provide in the ongoing process of assembling the AIO Service Manual.

Ventil Boxes

Reuter ventil boxes can be difficult to diagnose because the problem is concealed. The big valves can get cocked and hang up in their holes. They usually will refuse to close when this happens. This is especially true with large stops because many of these have two-stage valves. There is a smaller valve that closes a hole in a larger "ring" shaped valve. They both are strung on the same valve wire in such a way that the little one opens first, breaking the seal and making it easier to open the big one. Often the nuts on the cocked valve need to be readjusted (or replaced).

The oldest ventil boxes have lead tubes instead of channels in the wood. Be very careful around this material unless you are prepared to replace it. The lead becomes more and more brittle with age.

Some Reuter ventil boxes have double primaries — all on the same pouchboard. Often there will be two primaries operating off of one trigger for large valves. The real puzzler is the bleed valve. Ventil valves always leak a little. This will cause the stop to play through if allowed to build up. There is a bleed channel, which comes off the edge of the ventil hole right above the big valve. It leads to a bleed valve right at the top of the ventil box back. Its pouch is connected to the side of the main primary valve bore. When the main valve is off, it is pressurized and pops the valve open. When the main valve is on, it is exhausted, and the air from the ventil closes the valve and keeps it closed. However, when the leather fails, it will not close. The question is, where is the pouch?

The pouch is behind the valve — in the back board of the ventil box. That's why you cannot see it when you open the bung of the ventil box. There isn't a pouchboard as such. Unscrew the

valve wire from the pouch and take off the guide cap. There it is. It is not easy to clean up or install a new pouch, but it can be done. The temptation is to disable it: this is not a good idea because the stop surely will play through.

Another troublesome feature of ventil boxes on many old Reuters is the location of the stop action cable. It flies from the floor directly to the ventil box. Because it is only a few wires, it is small and fragile. In the dark of the organ chamber, it is just about invisible. Be careful! You don't want to have to fix it. You have to unwire most ventil boxes to remove them from the chest. The very oldest Reuter organs have screw-on contact blocks, which are more convenient but cause many problems of their own.

Auxiliaries

Ventil auxiliary primaries (key action primaries) are a separate little chest. They have their own little conductor either from the ventil box or from the reservoir. It must be disconnected before removing the primary. The oldest ones have sloping faces (because of the dangling armature magnets) and newer ones have vertical faces. These newer ones have a magnet cap on the bottom. Removal requires some help: They are heavy. They are not attached to the side of the chest as is the case with the later pitman chest. They hang under the primary connector board or an extension of the topboard depending on whether it is a single or double chest. You need to plan on someone on top of the walkboard or the chest to remove the screws and someone underneath — preferably two someones — to catch it. Perhaps jackstands could help. You cannot let down one end at a time. They are even harder to reinstall.

Split Chests

All Reuter ventil and pitman chests suffer from these problems. The usual split is a glue joint failure. The ultimate cure is to remove the chest from the organ, knock the ends out and completely disassemble the split joint. You then clean up the surfaces, re-glue and rebuild the chest. Often this isn't possible because you can't get the chest out of the organ.

Because Reuter chests have channels in the tops clear across the chest, it often is possible to repair a split by "rodding" the chest. If you can get at the chest, use a pipe clamp while the organ is running to see if you can pull the chest back together. You could leave the clamp there to fix the problem if desired. Rodding usually works when the entire joint has separated clear through the thickness of the top, usually at one or the other end (whichever is hard to get to). When the chest top has cupped, opening only the inside or the outside of the joint, rodding usually does not work.

To install a rod in a chest key action channel, locate both ends of the same channel and bore holes through the cap strip into the channel. These holes should be a snug fit on the rod to be used. Usually you need to install the rod in the end channel. End channels are located outside of pipe hole No. 61 (or 68 or 73) and No. 1 Long splits may need several rods spaced down the chest to pull it together. Pull a pouchboard, measure and calculate to get an accurate location. You need to locate the holes at the bottom of the channel because you cannot lift up the far end of the rod to get it to come out at the other end. If you can turn the chest even partly upside down, you can put the rods at the top of the channels, which is better for pneumatic reasons. Channels 1 through 24 always have been 3/8" wide, and channels 25 through 61 (and higher) are 1/4" wide. You can use 1/4" all thread rod in the bass end and 3/16" in the treble.

Your immediate instinct is probably to glue the split. If you can get at it and work some glue into it, good. Rodding probably will work anyway because the chest mechanism will tolerate some leakage and still function. Thread the rod(s) through the channel(s) and put large washers and silicone at each end. Run the first nuts down and pull the chest together, then put a second nut on the outside of the main nut and lock it. It reduces the stress on the threads. Hopefully, you can get to one end of the rods and do final adjustment with the organ wind on. It works like magic and often lasts many years.

The full thickness split, as above, usually causes ciphers not dead notes. It is usually at the end of the chest, so the last note(s) will fail first and gradually spread down or up the chest. On the other hand, cupped splits can cause either dead notes (split to the inside), ciphers (split to the outside), or a combination of one of these with runs between notes.

The cupped top split can be anywhere in the length of the chest. Splits to the outside sometimes can be repaired by running a saw kerf down the split and installing a thin wooden strip to close off the leak. Plan the strip so as not to close off the channels. This requires a strip about 1" wide from the outside. Inside splits and outside splits, which you cannot saw, often can be fixed with filler material — glue, wood putty, etc. Again, be conservative about the amount to avoid clogging the channels. If you can, consider sealing the inside with leather or paper over the top of the filler.

Ciphers (channels exhausting to the outside air) or dead notes (chest pressure getting into the channels) often can be repaired by this method. It even may fix runs. Runs still may persist, however. Try drilling up into the joint from the inside of the chest about in the center between the channels and installing a piece of dowel (1/4" or 3/16"). This dowel needs to be about 1 1/8" long if installed from the inside. You can do this from the outside, but locating the spot is a little tricky, and you need about 1 3/4"-long dowels.

The worst-case scenario is a split to the inside of a joint over the top of a partition or over an inside unit. If this is causing dead notes, injecting glue or silicone may help. This may even help runs by reducing the area available to run. If that doesn't work, removing the chest for surgery, such as sawing down the joint and re-gluing, seems indicated.

The final broken glue joint problem should be called delamination because it is the same problem that sometimes afflicts plywood. The chest tops are constructed from two layers glued together. Drying and warping can cause the lamination joint to fail. This causes runs, perhaps subtle, perhaps pronounced. It can produce dead or almost dead notes because the channel is being pressurized from those around it. This spreads through the chest like cancer as the joint gradually fails.

This is not easy to fix, but it can be done in the chamber. Strip the chest of bungs, pipes, pouchboards, etc., and turn it over. It will sit on its frame just as well as in its frame. Because the channels are in the lower half of the lamination (in its normal position), you can inject glue through the action holes, and it will spread around to fill the void. Some pipe holes may have to be cleaned out, and most of the action holes will need to be cleaned. It almost always will work. The chest needs a day or so to dry out. Sealing it up again too soon may defeat the entire purpose of the project. If this cures it, you could repeat the treatment after reasonable drying time.

Pitman Chests

Pitman side auxiliary primaries are somewhat easier to deal with than ventil primaries. They are screwed to the side of the chest, and they will hang on their dowels after you get the last screw out. They still are heavy, and they come down in one piece, so look out. It often is difficult to deal with the screws, which are jammed up under the walkboard. There are two screws in each end, one of which may be a flathead. These can be hard to locate. The magnet cap is a separate, removable bung. Most newer chests have holes in the chest side behind the primary so that you can tighten the primary pouch screws from inside the chest. You also can remove a primary pouchboard without removing the entire assembly. The valves for that pouchboard do have to be removed.

Working with the pouchboards requires removal of stop action parts. There have been many variations on this theme, so study what your chest has to see how best to disconnect it. If the hoses have deteriorated, you may need to replace them. Regular 5/6" ID garden hose works well, but you may have to make new blocks for it. Leakage in stop actions is another cause of "gradual death" of stops.

Buzzing pitmans can be devastating in a reverberant building. Locate the note that is buzzing by turning on a soft stop and playing up and down. You have to turn on a stop or defeat the primary cutout in some fashion. Stops that are on usually don't buzz. Start with the stop you suspect the most, remove a pouchboard and massage the pitman for that note — roll it, unroll it, rub it between your fingers, etc. Put the board back in and test. If there still is a buzz, try another stop. If this doesn't cure it, try replacing pitmans. If removing the pouchboards is difficult, just replace the pitmans and forget it.

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