Service Manual

Servicing Casavant Organs

by Alan Jackson

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There are over 3,000 Casavant organs in use today, most of them located in North America. Probably less than half are serviced by the twenty authorized Casavant representatives. This article will outline some of the servicing techniques that have been developed by Casavant technicians.

With a firm as old as Casavant, it is interesting that our technicians in the field sometimes know more about the 75-year-old organs than do those in the factory. Inquiries about the older instruments often get redirected to the field.

In Toronto, my firm services 100 of the 131 Casavants in the metropolitan area. My predecessor here in Toronto was John Morel, son of Lorenzo Morel from the Casavant factory. Lorenzo was sent to Toronto about 1904 as a salaried representative when the first Casavant was installed. That organ, in the Church of the Redeemer, has been rebuilt and is still in use.

Today, owners of Casavant organs are free to choose whomever they wish for tuning and maintenance. However, in order not to void the organ's five-year warranty, only Casavant employees, authorized representatives or persons approved in writing by the builder are permitted access to the interior of the organ during this five-year period. This is probably a standard arrangement among organbuilders. It is also a company policy that Casavant owners must have access to genuine Casavant parts for repair purposes. These are available through the local representative or directly from the factory.

New Casavants are usually serviced by a representative. If there is not one in the area, the most suitable local company has to be found and approved. It takes a lot of time and work to establish just who has the best reputation in an area. An AIO certification process for technicians would be useful in this regard. AIO conventions also provide a good opportunity to meet technicians and find out who is who.

Blowers

Early Casavant blowers all required oiling and usually had sleeve bearings, oil rings and wells. With every service call, the tuner would check the oil levels while in the blower room cleaning the DC generator. Now that rectifiers have replaced the generators, the blower is liable to be

ignored and bearings allowed to run dry. In the old days, the trip to the blower room was also a time to chat with the caretaker who took care of stoking up the coal furnace to get the proper heat for tuning. Needless to say, caretaker relations were very important — he could be the tuner's best friend or his worst enemy!

Casavant made its own blowers until the mid 1960s, when sufficiently silent sleeve-bearing motors were no longer available. Many of the last Casavant-made blowers from this period had "maintenance-free" motors, although this should not be taken for granted since there were a variety of sleeve-bearing motor suppliers used. The early European blowers from both Meidinger and Laukhuff still need regular oiling. All of the more recent organs have Laukhuff blowers, and the original bottle of synthetic oil supplied with each blower should be enough to last for decades.

Today we try to replace the old belt-driven shaft-mounted blowers, which is always a good investment. Picking the proper replacement size can be tricky because of the differences in wind consumption between nicked and unnicked pipes. For organs up to 1959, the calculations found on the Bobco charts are accurate since these come from the land of heavy nickers.

Power Supplies

In organs still using a DC generator, the service procedure is to pull the brushes out, wipe off the grease and mark them so they can go back the same way. The slots between the comutator segments are scraped with the sharp square tip of a small screwdriver, the comutator is lightly sanded, and the brushes are reinstalled in the proper order.

Most Casavant organs before 1960 had blackbox rectifiers with selenium plates. When the plates give out, you can make a good and easy replacement using Radio Shack's full wave rectifier bridges. These 25- or 50-amp bridges can be bolted to the original metal bracket as a heat sink. The current is usually better than the original. The air switches within these rectifiers sometimes need releathering. While the microswitches are standard, one must be sure that the replacement's rating is adequate and that it is switching the high-voltage AC, not the low-voltage DC which will weld the contacts together. Selenium diode relays were used by Casavant as early as 1956, so polarity must be observed.

Reservoirs and Schwimmers

Releathering or replacing reservoirs can be a problem if they are too large to move without dismantling the entire organ. One solution is to replace the reservoir top with two half-tops if there is a way to get them into place. After clearing off the old top down to the well, fit a rail across the center, fasten the new tops and join them together with two stout rails running end to end, refit or replace the spring rails and use the original gate. An example of this repair can be seen under the Orchestral division at the Metropolitan United Church in Toronto.

Converting to a schwimmer wind system is another option when reservoirs need replacing. I personally like the sound of Schwimmer-winded organs. They are like a singer with good breath control and pressure. In the case of ventil-action organs, installing Schwimmers also requires converting to a pitman action. This would make a universal chest, and though the cells remain, they are not used. Any pitman action can have Schwimmers instead of reservoirs, though sometimes the stop action has to be moved over to make a large enough table. At least one reservoir must be kept to supply the Schwimmers with suitable back pressure.

Regrettably, we are having to recover many of the reservoirs and Schwimmers from the late 1960s and early 1970s, since sheepskin suppliers had not yet benefited from the investigation and reports of organ leather aging by Cogswell in 1981 and Piltingsrud in 1987. Casavant is currently using bellows cloth rather than sheepskin for most Schwimmer work. So long as a good quality is available, there is no reason not to use it except for historical organs. It can be fastened with the traditional hot glue, does not need feathering, and promises a long life. Although the organ industry has not always used enough of this material to keep it in production, car-top fabric used in the auto industry makes a good substitute since it is just as tough and more supple than some organ cloth.

Schwimmers use a flow system, as compared to a supply of volume from reservoirs. The table must be firm and free of all friction, and the valve admitting air must be free to lift smoothly when admitting air and to settle squarely when closing. Common problems encountered with schwimmers include the following:

- A drop in pitch and pressure when playing more than a few pipes. The installers may have put one long screw in the flange for the air supply and made a lump on the valve seat.
- Occasionally too much pressure, dropping always to normal when playing heavily. The grease on the valve ball joint may have hardened, preventing the valve from sitting straight.
- The Schwimmer table drifts up, leaving the valve wide open and the wind shaky. The back pressure supplied from the reservoir may be too low.
- Two chests are sharing one key action distributor. The chest containing the distributor plays sharp until more than two or three notes are sounding. High-pressure wind may be seeping into the overly-tight chest and preventing the Schwimmer from regulating. A bleeder tube should be added to the chest.

Early Ventil Actions

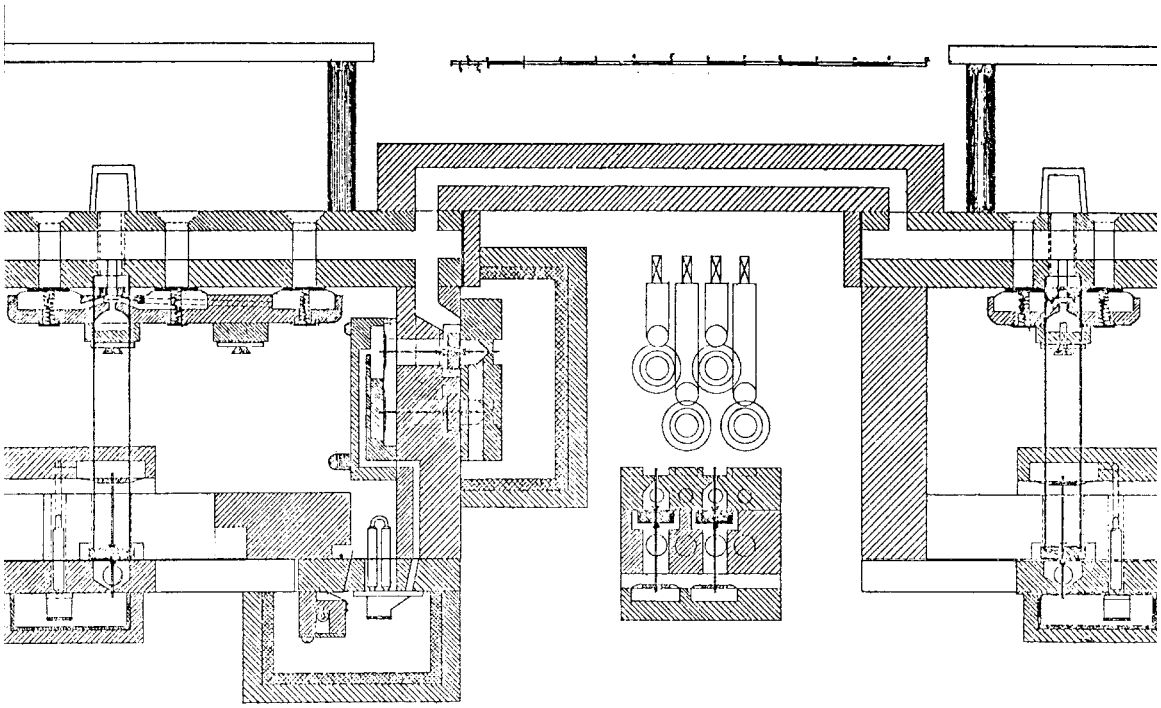
Our first Toronto Casavant, at the Church of the Redeemer, and several others prior to 1908, has electropneumatic ventil chests with a remarkably compact stop action. The ventil, magnet, primary, secondary and bleed valve are all in one block located inside the ventil box. They do work and are very quiet, but any adjustments that cannot be made from the outside present a problem.

Ventil chests were used until 1930, although there were some pitman chests built as early as 1919. As you know, ventil chests are divided into cells, one per stop, and these are depressurized when the stops are off. Pressure remains in the key action channels and pouches. This puts plenty of pressure on the pipe hole pallets, but also causes the pouches to belly and seep air into the cells. Pipes will murmur if the bleed valve is not working. The lambskin pneumatics used for these bleed valves are not enclosed and deteriorate more quickly than all of the other pneumatics. Releathering the bleed valves is the most common repair on ventil chests.

The distributor action used in the 1920's consists of removable blocks with a primary and secondary pneumatic in each. The lambskin, being tightly enclosed and usually of the "eggshell" type, may actually have double the life of the pouchboard leather. Before quoting a "complete" releathering job, this primary leather should be checked to avoid needless replacement work.

Pitman Actions

Casavant pitman chests became the standard after 1930. The exhaust channels are in the topboards between the pipe holes. Channeling is made with a saw cut and then covered with a plate or a glued veneer. Having the channels in the topboard makes them as short as possible, and there is little chance of leaking. The bottomboards are very easy to remove and pouchboards are readily accessible. As illustrated in a drawing from 1958, the stop action goes up to the topboard and back down to the pouchboard. More recent Casavant chests have a short, detachable flexible tube going directly to the bottom of each pouchboard.



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Although these chests are quite reliable, sometimes a cypher occurs when a pitman punching curls or dirt prevents proper seating. If a service or concert is about to start, you can clear the trouble at least temporarily by putting a tube in the exhaust hole of the distributor valve and sucking or blowing while someone works the stop.

Early Magnet Designs

The wood-capped, hand-wound magnets described by Jan Rowland at our Nashville convention were used until 1918. Most of these magnets in the Toronto area have been replaced by Reisner magnets. Where they still exist, they seem to work quite well. The fine green magnet wire was carried right to the connecting pins and sometimes corroded. This is a problem that can be easily fixed.

Residual magnetism occurred when the iron was too hard and the notes would hang on or cypher. Punching the ends of the core back slightly into the wood should fix it. In an attempt to overcome residual magnetism, current reversers were mounted on a reservoir in organs up to 1924 or even later. These devices reversed the direction of the magnetism again the first time the magnet was played. They should be bypassed and the contacts should be removed from the circuit.

In the 1920s, the “pot metal” type of magnet was used. They were still hand wound with fine green cotton-covered wire, but had smaller cores. These give almost no trouble except in a dirty or sooty place where the two little holes between the core ends clog. A pipe cleaner is useful for unclogging them.

Swell Shutters

Servicing swell shutters involves cleaning the pins in the shutter ears and applying motor grease. Keyboard pins are a different matter; I hope everyone knows that they should never be greased. The keys will work for a week or two and are then sluggish for life.

If any shutters begin to touch the shutter frame, the pins can be pulled and a short bit of dowel put in ahead of the pin. Care is needed whenever lifting shutters around because they are very heavy. Most large swell engines from the early 1900’s to about 1935 have nine stages, and we are using a lightweight player action cloth to re-cover the accordions. Time will tell if it outlasts the thin percussion leather that is often used. The current standard expression engine has 16 stages and two accordions, and is not overly difficult to recover.

Consoles

By the early 1920’s, Casavant consoles had become self-contained with the combination action, switches and couplers all packed in and electropneumatically operated. The rocker bar capture-type combination action was always in the console and connected to the drawknobs directly through levers, including an eccentric lever with a “bendable” leg to prevent breakage. That safety feature is now a part of the drawknob bracket and square.

Under-key contacts were superseded by the roller key contact system for manuals and pedals with self-aligning silver key contacts. Removing the keyboards can be heavy work in consoles built before about 1958. Current consoles are designed so that removing keyboards is as simple as raising the lid, unclipping the piston contact splice blocks and walking away with the keyboard.

Note the piston action contact design (fig. 1.) These contacts work in two stages. The first contact activates the “selector hook” or pick magnet in the combination machine, moving it into the “set” position. The second contact operates the “satchel and bar” in the combination machine that pulls the hook down and either closes a pair of fan springs to move a combination, or, if in the “set” mode, pulls a “setter bar” to snap the rockers for the various stops and pistons into the “on” or “off” position.

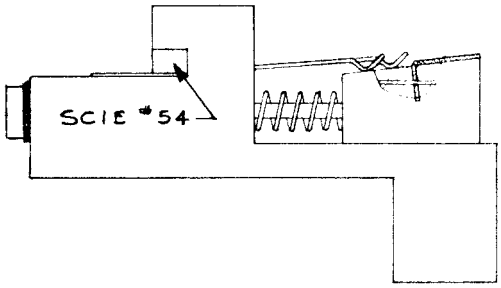

Fig. 1

The combination machine itself is quite simple, and although repairs are not always so easy, there are ways to simplify things. A factory-made tool is available for replacing broken fan springs, the little compass springs that hold the “fans” apart. The legs of the springs fit into indents about half way along the fans. All of these parts are available from Casavant.

The small rocker tablet consoles since 1965 have a hold-set action designed and patented by Casavant. Parts will not be found anywhere else. We have had very little call for parts; they are ordered mainly for stop additions when there is space in the frames. Larger consoles are now being built with electric drawknobs and SSL memories. We have also started converting rocker bar actions to electric action where multiple combination levels are wanted.

Tracker Action Parts

Casavant tracker organ parts are generally from the European suppliers. In the early 1970s, a few tracker organs had sliders lubricated with silicon. Since this is not a permanent lubricant, these sliders have been recoated with graphite paint, and this is now the standard. If you have an odd slider that is not moving freely, try turning the stop off and injecting graphite on the slider through some of the larger pipe holes. Suck powdered graphite into a rubber bulb and tube, insert the tube in the pipe hole and put a puff of graphite down each hole, and with the wind off, move the slider back and forth.

Tools for Service Work

An old man I assisted in my first year of organ work told me that a screwdriver and an extension cord are the only things needed to service a Casavant organ. What he meant, of course, was that repairs were simple. He was a “screwdriver tuner,” and I did not learn the finer side of organ service work from him. I now travel with two suitcases full of tools and a clutch-bag to carry the needed tools into the organ. I believe that if you have the tool handy, the problem will get fixed. Keeping the proper tools in your suitcase can mean the difference between having organs that get better and better... or worse and worse.

Conclusion

The organ service profession deserves more respect than it has had in the past. There seems to be an imbalance today as we get more and more builders while service work falls behind. The quality of the instruments being built makes all the difference to the service trade. If an organ can be effectively repaired in a reasonable length of time, then the client can be charged a fair amount while still providing the tuner with a decent hourly wage.

Much could be done through the AIO to elevate the service end of the trade. It is also up to the builders to follow up on their work and to keep in touch with those who take care of their instruments, digesting the feedback they provide. However well built, there is always something to be learned from the later performance of an organ’s action and pipework. The builder who is really proud of what he has produced will never stop caring for the health of his “children” and will be eager to visit them whenever possible. I believe that the Casavant firm has set an example as a builder who cares about the instruments that have been built and uses feedback of every kind to uphold a very high standard of construction.

Alan Jackson has been a district sales and service representative for Casavant since 1961, and is also active in the Royal Canadian College of Organists.