Questions and Answers

Answers by Judd Walton

Q How does a pipe organ tremulant work? What effect does the volume of air have on the operation?

A In answering your question the assumption is made that you are referring to the beater-type tremulant found on Wurlitzers, Mortons, and not the valve-type which was occasionally used on Morton Voxes and some other makes. The beater-type tremolo is a box with two chambers, one above the other. There is a rigid divider between the top and bottom chamber and an inflatable pneumatic on top of the upper chamber. In the rigid divider is mounted a valve which is attached by a push rod to the pneumatic on the upper chamber. As the air enters the lower chamber from the chest, the weight of the pneumatic causes it to drop, opening the valve between the two chambers. Air enters the upper chamber through the valve between th dn at a rate faster than it can escape from an orifice or opening in the top of the upper chamber's pneumatic. This causes the pneumatic to rise, which closes the valve between the two chambers. The air under pressure in the upper chamber then escapes through the opening on top of the pneumatic thus allowing the pneumatic to fall back to a position in which it opens the valve. This completes the cycle and it starts all over again with the air rushing into the upper chamber through the valve, raising the pneumatic, etc. The air that is thus allowed to escape in short bursts or spurts, is air that is taken through the windline directly from the chest. This escape of air causes a momentary drop in pressure in the chest and if the tremolo is functioning correctly, it will operate with an even beat. The reservoir which supplies air to the chest, follows the crop in pressure caused by the operation of the tremolo, allowing more air to enter the chest to make up the escaped air. When the tremolo pneumatic rises, closing off the air, the reservoir responds to this change by shutting off the air supply to the chest. There is a lag in this operation. The lag is caused by the inertia of the reservoir top, which is sometimes weighted to provide a greater depth of tremolo. The foregoing is the basic description of the operation of a tremolo, which is, however, compounded by many factors such as pressure, length of tremolo lines, number of elbows in the tremolo lines, weight of the tremolo pneumatic, weight of the reservoir top, etc.

At the base of the tremolo there is a valve to control the amount of air entering the tremolo. The use of this valve is primarily for the purpose of adjusting the volume of air entering the lower chamber of the tremolo. Usually they are left wide open with all adjustments made on the valve located on top of the tremolo pneumatic. It has been mistakenly assumed by many that the operation of the beater tremolo results in a sine wave curve so far as tracing the resulting operation or sound of the pipe. Actually, the curve is more nearly like a cycloid curve, and many interesting experiments have been and are being conducted to plot this curve and thus better understand exactly what happens in the operation of a tremolo as it affects the speech of the pipe.

Q I have partially dismantled my pizzicato relay and am now ready to reconnect new wiring. I am puzzled by the fact that there are three wires attached to the contact blocks instead of what I assumed to be the correct number, two. Can you please tell me the purpose of the third wire and how it should be connected?

A The pizzicato relay is controlled by a coupler, coupling the registration on the solo manual to the great, for instance, for pizzicato effect. The magnets on the pizzicato relay are fired by one of the contacts under the keys. This accounts for the wire tree that is connected to the pizzicato relay magnets. The single wire on the contact block inside the relay is the hot lead that is in the coupler circuit. The other two wires which you show in your sketch connected in common, are sometimes installed on larger organs. In other words, it would appear that the pizzicato relay came from a Wurlitzer large enough to have two relay magnets per key, either first touch or second touch. To avoid overloading any of the contacts, separate wires from separate contacts were run to each of the relays.

In your case, if you have only one relay magnet per key, it will not be necessary to reconnect two wires – one wire to the single relay magnet will suffice. On your request for ten of the missing adjustment magnet caps, I do not know of any spare supply in this area. Can any of our readers help? If so, please address your reply to Questions and Answers, theatre organ, and the information will be forwarded to the inquirer.

TIBIA RECORDS ANNOUNCEMENT

Tibia Records of Canada have announced the formation of a "Custom Organ Record Club" with membership open to all interested parties. According to their press release they intend to record a good example of every make of theatre organ still in existence, with organists being selected for their ability and their experience with particular makes and/or models. Many of our readers will remember the first Tibia Record featuring Eddie Weaver at the Richmond Mosque Wurlitzer. We have just received their second album featuring Harold Ramsay in a Wurlitzer Pipe Organ Concert, recorded in the Orpheum Theatre, Vancouver, B.C. This record along with one by Reginald Stone will be reviewed in the next issue of THE BOMBARDE. Watch for it. Meanwhile anyone interested in the Tibia Record Custom Organ Club can obtain all particulars by writing TIBIA RECORDS, P.O. Box 668, Ladner, B.C., Canada.

PIZZICATO RELAY
(only 3 Pneumatics shown)