



## NEW VOICES FOR YOUR ORGAN

THE desirability of a large range of interesting voices is an indispensable requirement for all organists. This presents no problem when unlimited funds are available since the ubiquitous chip has provided the means to produce an almost infinite range of sounds controllable by tabs, drawbars, peddles, knee switches, etc. However, in the more modest range of organs, as few as three tabs only may be available on each manual, together with presets such as vibrato, wha, banjo, etc. This does allow a dozen or so combinations but it will soon become desirable to have more.

The new sounds are achieved by the use of two filter circuits either singly or in combination, both employing LM741 operational amplifiers to provide band pass characteristics. Both filters provide gain over a narrow band of frequencies but filter A has a gain of unity at low frequencies. By connecting adjusting resistors, the band pass frequency can be varied over a wide range whilst the band width remains constant.

Filter A will pass the fundamental frequency of the note played plus the harmonics which lie within the pass band. These harmonics being boosted by the gain in the pass band.

Filter B provides very similar boosting

characteristics to the harmonics but does not pass the fundamental.

Use of filter A or both will provide a basic flute-like tone but with the addition of the selected higher harmonics. The effect will be to considerably brighten the tone and particularly to increase the attack on the leading edge of the envelope. The addition of the upper harmonics will not produce edgy string-like sounds since the width of the pass band is insufficient, the sound being more bell-like.

By setting S4 to auto, VR8 is replaced by a field effect transistor used as a variable resistor, so that voltage control of the pass band frequency can be achieved. This allows the use of a waveform generator to control the filter frequency and provide repetitive effects of almost infinite variety.

The waveform generator circuit is based on the 8038. It can provide sine, square, triangular and ramp-type waveforms over a frequency range of 0.1 to 100 Hz approximately.

The chosen waveform is applied to filter B via the f.e.t. TR1 together with a d.c. bias which sets the nominal pass band frequency. The amplitude control sets the extent of the frequency sweep. Many combinations of pass band frequency sweep amplitude and repetition rate are possible.

Using the filters with their nominal pass band frequencies set by VR7 and VR8 will provide very bright voices when used on their own or will brighten any combination of the organs existing voices. Vibrato will enhance all the voices as desired. If the waveform generator is used with a sine wave to drive filter B an effect similar to vibrato will occur but only on the upper harmonics. With very small amplitudes this can be a very subtle and musical effect, particularly when the sweep frequency is matched to the tempo of the music being played. Many other modern effects can be produced with large amplitudes of sweep frequency, for example, when matched to the beat of the music or when very slow, allowing the pass band to sweep the whole range.

Some combinations of the controls will not be musical but many new voices and combinations of effects will enhance the performance of your organ.

The complete unit should be installed in parallel with the existing organ filters. The bus bar connections should be made to the filter inputs with the outputs going to the summing amplifiers.

B. F. Smith,  
Humberstone,  
Leicester.