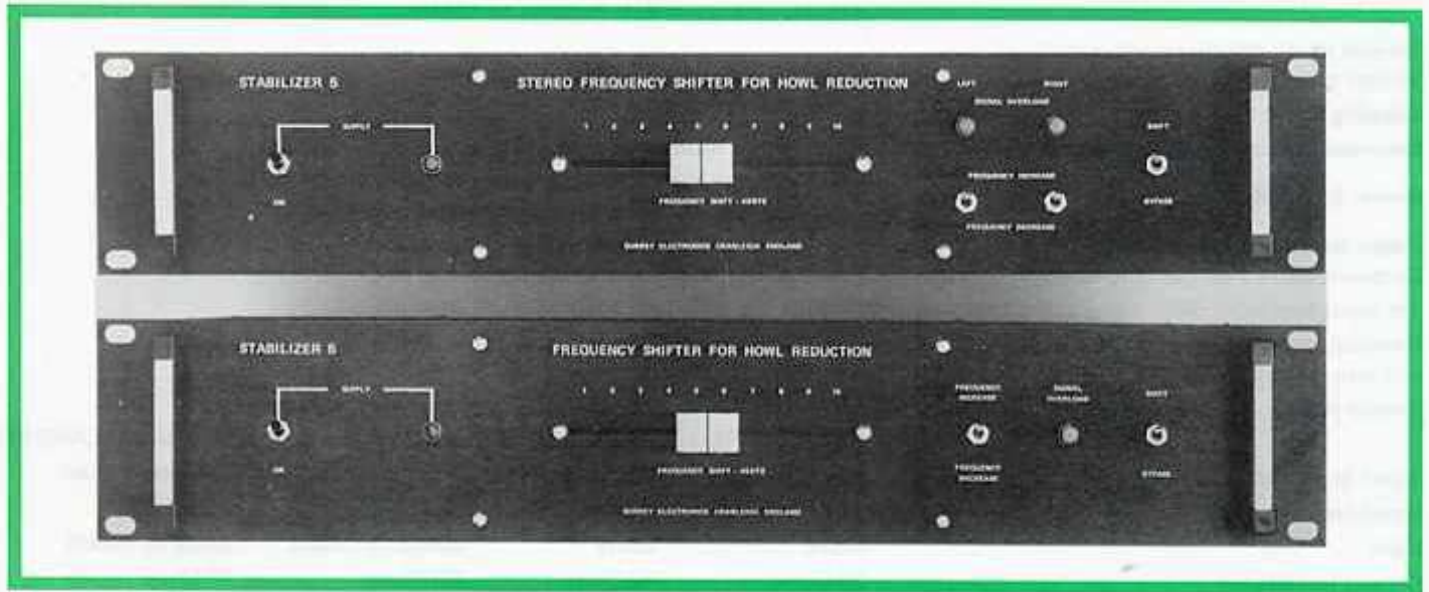


STABILIZER 5

● FREQUENCY SHIFTERS FOR HOWL REDUCTION



Stereo and Mono rack mounting version

In any public address system where microphones and loudspeakers are in the same vicinity, acoustic feedback (howlround) occurs if the amplification exceeds a critical value. By shifting the audio spectrum fed to the speakers by a few Hertz, the tendency to howl at room resonance frequencies is destroyed and increased gain is available before the onset of feedback.



Box version

The Stabilizer includes all the features which have shown themselves to be desirable in a unit for howl reduction. It provides shifts between 1 and 10 Hertz either upwards or downwards and has a signal overload LED and SHIFT/BYPASS switch as well as a mains switch and pilot light. These units have low noise and distortion while hum pickup within the small case is avoided by the mains transformer being in a mumetal screening can. The input amplifier is protected from high voltage spikes on the signal line, whether from valve equipment or occurring through static or earth leakage voltages while a system is being plugged up. Both input and output will withstand mains voltages on the signal lines either individually or common mode. The output line driving amplifier is preceded by a 24Hz high pass filter which not only provides further rejection of the shifting oscillator but is general good practice before feeding into a power amplifier.

The Rack mounting type offers a studio quality SHIFT control, duplicated output XLR connectors and is available in Stereo or Mono versions. A frequency increase or decrease may be selected independently on the two stereo channels as different directions of shift may sometimes be preferred.

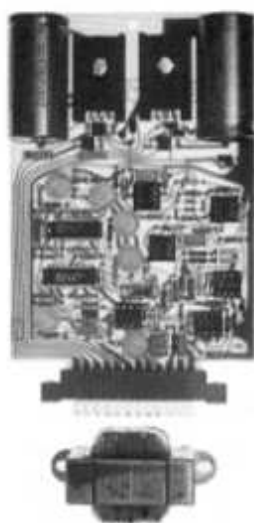
SPECIFICATION Output Loaded 600 Ohms

Frequency response (SHIFT)	+0.5/-1dB 35Hz–20kHz.			
L.F. Filter	24Hz, 18dB/octave.			
Total harmonic distortion Output +12dBu	BYPASS 30Hz–1kHz –80dB, 0.01%; 20kHz –60dB, 0.1%. SHIFT 30Hz–20kHz –60dB, 0.1%.			
Dynamic intermodulation distortion	3.18kHz square wave (single pole–3dB at 100kHz). +15kHz sine wave, 4:1. Relative to 15kHz component.			
Output pk-pk amplitude equivalent to that of a +6dBu RMS sine wave	BYPASS–60dB, 0.1%; SHIFT–55dB, 0.18%.			
Clipping Point	BYPASS +17dBu; SHIFT +16dBu.			
Overload indicator—peak detecting	First lights +10dBu, fully on +12dBu.			
Noise: BYPASS; SHIFT	–89; –78dBu 20Hz–20kHz mean reading meter. –78; –67dBu CCIR468–2 weighting and peak meter.			
Radio frequency breakthrough	Output level in a carrier field strength of +120dB μ V/m, 84MHz, 100% amplitude modulated with 1kHz sine wave. 1m input lead with 600 Ohm source. Less than –60dBu.			
Residual amplitude modulation at any output level	Less than 1dB pk-pk 220Hz–12kHz. Less than 0.5dB pk-pk 250Hz–3kHz.			
Supply input	47–65Hz, 110 or 200–250V @ 5VA. IEC connector.			
Input impedance	RACK STEREO	RACK MONO	BOX BALANCED	BOX UNBALANCED
Input connectors	25k Ohms bal.	25k Ohms bal.	25k Ohms bal.	30k Ohms unbal.
Gain	XLR–3 females	XLR–3 female	XLR–3 or 3p jack	2 pole jack
Output impedance	Unity	Unity	Unity to +20dB	Unity to +20dB
Output connectors	50 Ohms	50 Ohms	50 Ohms	25 Ohms
Dimensions and weight	XLR–3 males	XLR–3 males	XLR–3 or 3p jack	2 pole jack
	W483, H88, D305mm; 3.2kg		W190, H70, D240mm; 1.4kg	

2 metres mains lead to BS6500 with IEC connector supplied along with instructions and servicing details.



Stereo rack version, rear panel



Shifters are proving effective in the following situations:

- Sound reinforcement for television studio audiences
- Foldback monitoring on stage
- Telephone conference systems with a 5Hz shift each way giving 10Hz round the loop, which is effective in the small non-reverberant rooms involved
- Group hearing aid systems for teaching deaf children
- Microphones or radio microphones for discussion groups or 'floor questioners' who are within the intended coverage of the PA loudspeakers

as well as for straightforward sound reinforcement and public address.

+5Hz FIXED SHIFT CIRCUIT BOARDS for Wireless World July 1973 article but modified for lower noise and distortion

Designer approved, Frequency Shifter 5 is a compact board which is small enough to be built inside the cabinets of many existing amplifiers or mixers. The board is supplied complete with mains transformer and edge connector and has 15V regulators and power supply components on the board. Up to 80mA at ± 15 V may be drawn from the edge connector for external use and the gain may be increased from unity to +26dB for use on low level lines.

Frequency response	+0.5/-1dB 70Hz–20kHz; –3dB 30Hz–40kHz.
Input impedance	47k Ohms unbalanced.
Output impedance	50 Ohms unbalanced, minimum load 4k7 Ohms.
THD and Dynamic IMD with 4k7 Ohms load, Noise, Residual modulation and Supply	as for Stabilizers.