




**COUNTRYMAN ASSOCIATES**  
 424 UNIVERSITY AVE.  
 PALO ALTO, CA. 94301

# TYPE 968 PHASE SHIFTER

The **TYPE 968** is an electronically controllable audio delay line. Used alone, the **968** can produce reel flanging and phase cancellation effects which can be controlled manually or can automatically track the level of the audio signal being flanged. Used in conjunction with an audio console or electronic music synthesizer it can duplicate the doppler frequency shifts from a rotating horn organ speaker, move a sound source in stereo as a function of its changing level, add random phase modulation to synthesized instruments or echo return signals to add subjective depth, produce voltage controlled phase shifts for stereo and quad syntheses, add tremolo to fixed pitch instruments or recorded tracks, and provide many other useful effects requiring phase or frequency modulation of an audio signal.

## SIGNAL CHARACTERISTICS

INPUT IMPEDANCE:	Greater than 10k Ohms.
OUTPUT IMPEDANCE:	Less than .5 Ohms @ 1kHz.
CLIPPING LEVEL:	Greater than +12dBm loaded with 600 Ohms.
DISTORTION:	Max. THD @ 0dBm, 100Hz, 1kHz, 10kHz: .05% DIRECT SIGNAL .1% BOTH SIGNALS .2% DELAYED SIGNAL
FREQUENCY RESPONSE:	3dB down at 25Hz and 25 kHz.
OUTPUT NOISE:	Less than -85dBm. (25Hz to 25kHz Measurement Bandwidth)
GAIN:	Unity $\pm$ 1dB.
SIGNAL CONNECTIONS:	Unbalanced, RTS jacks with signal on the Tip. Ring and Sleeve grounded.

DELAY RANGE:	From 100uS to 30mS.
CONTROL BANDWIDTH:	1kHz small signal with static delay at 1mS.
SLEW RATE:	.5mS/1mS of delay when delay is decreasing. 10mS/1mS of delay when delay is increasing. Measured from .5mS to 1.5mS of delay.
ENVELOPE FOLLOWER:	Audio from SIGNAL INPUT connector is rectified with positive polarity, then averaged with a 1mS attack time and a 100mS release time.
CONTROL CONNECTION:	TS jack with Envelope Follower output normal to Tip when no plug is inserted.
MANUAL OPERATION:	With the CONTROL SENS. pot set to ZERO, delay can be adjusted with the DELAY BIAS control.

## CONTROL CHARACTERISTICS

INPUT IMPEDANCE:	Greater than 47k Ohms.
INPUT SENSITIVITY:	.5 Volt drives delay from 100uS to 30mS with CONTROL SENSITIVITY pot set at MAX.
INPUT POLARITY:	Positive voltage decreases delay.
DELAY BIAS RANGE:	Equivalent to $\pm$ 2 Volts of control input with CONTROL SENSITIVITY pot set at MAX.

## GENERAL DATA

DIMENSIONS:	3 1/2" (8.9cm) High 7" (17.8cm) Wide 6 1/4" (15.9cm) Deep
WEIGHT:	3 1/8 lb (1.43kg) With Batteries.
BATTERY TYPE:	Two 9V Burgess D6, RCA VS306, Eveready 276 or NEDA 1603. One set of batteries is supplied.
BATTERY LIFE:	Approx. 200 Hours.



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