

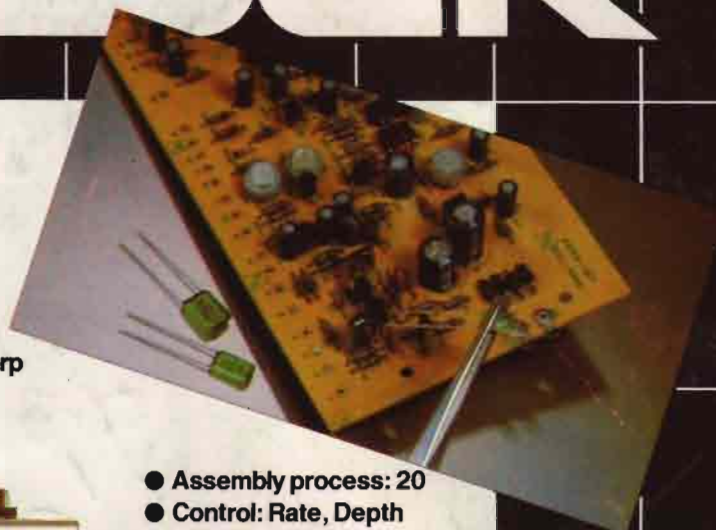
**NEW**

**Creative Kits  
for Creative Musicians...**

# AMDEK

## Chorus Kit (CHK-100)

Two controls for rate and depth freely allow deep chorus effects and clear, sharp tremolo expressions. A stereo jack to create more natural, three dimensional chorus effects.



- Assembly process: 20
- Control: Rate, Depth
- Function: Effect changeover switch, Effect indicator
- Terminals: Input, Output (2 channels: Mono and Stereo), External power source
- Input impedance: 470k $\Omega$
- Max. input level: 0dBm (100Hz) – 10dBm (1kHz)
- Output load impedance: Over 10k $\Omega$
- Power source: 006P battery or external power source
- Consumption current: 9.5mA (DC 9V)
- Dimensions: 95(W) x 64(H) x 143(D)mm (3.74" x 2.52" x 5.63")
- Weight: 500g (1.1 lbs.)
- Modifiable points: 0

Consumers: Questions, Problems, Suppliers?, Retailers: Supplies and Re-orders?

**USE THE AMDEK  
HOTLINE!**

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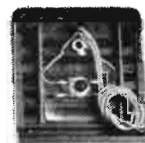
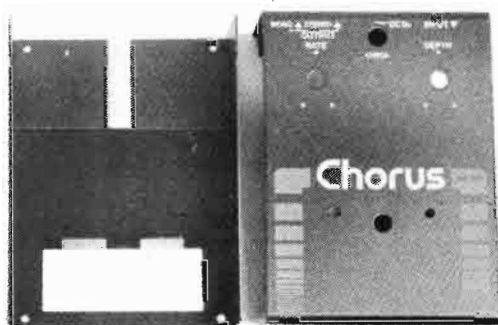
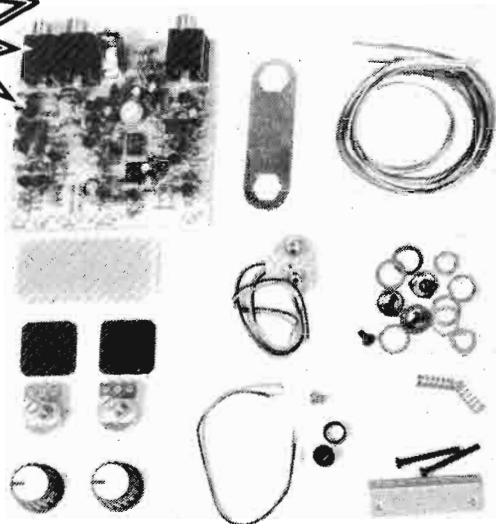
Roland (UK) Ltd., Great West Trading Estate  
983 Grest West Road, Brentford, Middx. TW8 9DN

from the manufacturers of: Roland / BOSS

**AMDEK  
HOTLINE!  
01-847 1671**



PARTS COST  
GUIDE £51



The complete set of parts laid out for checking prior to construction.

# AMDEK

This month we look at the second of an exciting series of kit projects from the Roland/Boss Corporation in Japan that enable electro-musicians to build and customise effects units with the minimum of technical difficulty. E&MM's research team have also provided modifications that greatly extend the use of the Chorus.

- ★ Variable speed chorus
- ★ Stereo or mono output
- ★ Rate and depth controls
- ★ LED effect on and battery check indicator
- ★ Pre-assembled circuit board
- ★ Complete kit with detailed instructions

The Chorus must be one of the most widely used effects processors, particularly on recordings of modern music. Its main use is for 'thickening' the sound of a mono instrument signal or for spreading this signal between left and right channels in a stereo system to give a moving image that adds depth and richness.

It's ideal for treating most instruments including miked up acoustic types, electronic keyboards and synths (several of these already have chorus built-in), guitars and voices (and even for widening mono drum machine outputs!). One point to remember is that, in common with most analogue units, the Amdek Chorus

has filter circuits that reduce the top frequency range - hence very bright signals may lose their edge slightly. This is overcome by employing both outputs of the unit, one straight through (but electrically pre-amp'ed) and the other with the modulating chorus effect.

## The Kit

The Chorus kit is available in bubble-pack form, complete with all parts, a spanner for tightening nuts and detailed instruction sheet. The extra tools required are a 15 to 30 watt soldering iron with a reasonably fine tip, wire cutters and strippers, small pliers (not essential), and a cross-head screwdriver. You'll also need a 9

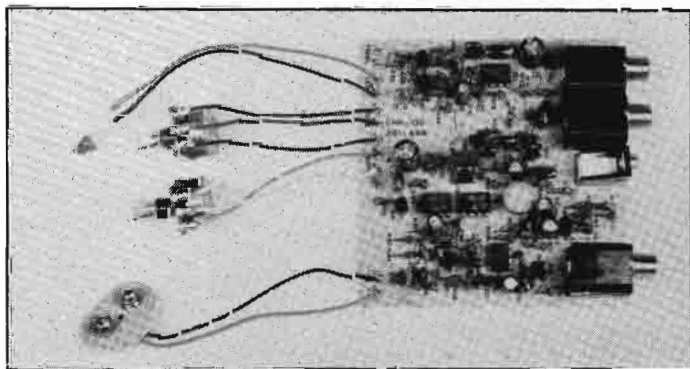
volt PP3 battery to power the unit unless you use an external power pack (DC 9V, such as the E&MM Synpac or Roland pack).

Parts identification is easily done from the component drawings in the instructions and, once you've laid them out on your work area, they can be checked off one by one.

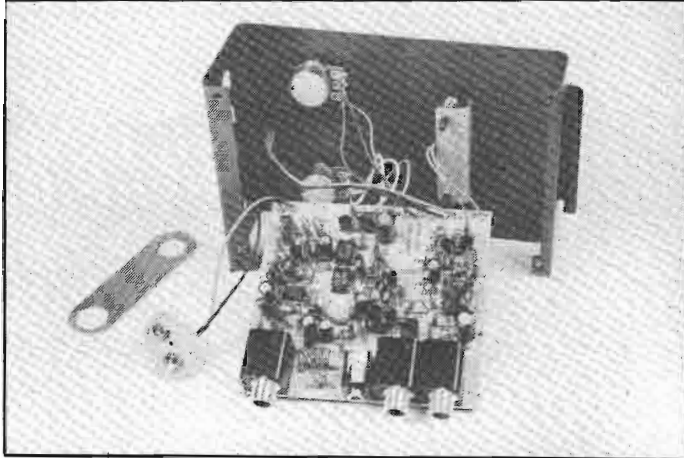
Step by step assembly commences with the preparation of 6 lengths of connecting wire for attaching to the two pots - made easy by the provision of a scale and specified lengths for each wire. Useful soldering tips are also given. In steps 3 to 5 the battery connector, LED and footswitch leads are cut to the specified length. Then all the necessary soldering to the factory-built PCB (which

includes 3 ready-mounted IN/OUT sockets) is done (steps 6-8) and the footswitch and LED holder are mounted in the diecast case (steps 8-10). This completes the soldering work.

Now the main components are inserted in the case, following steps 11-15. The small hexagonal spanner provides easy fastening of the pots and sockets. Care must be taken when inserting the PCB and a plastic insulation sheet provided sticks to the base plate to avoid shorting out the circuit board against the case. A rubber sponge insert holds the battery in place. The base plate screws neatly into place and the rubber battery cover gives simple and effective access without the use of screws (Steps 16-18). The unit is completed



Step 7. LED, pots and battery clip wired to the factory-built board.



Step 12. Last wiring work completed with pots and LED secured.

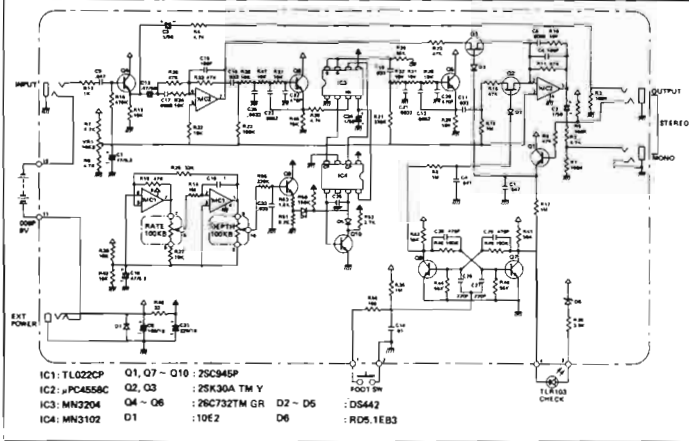
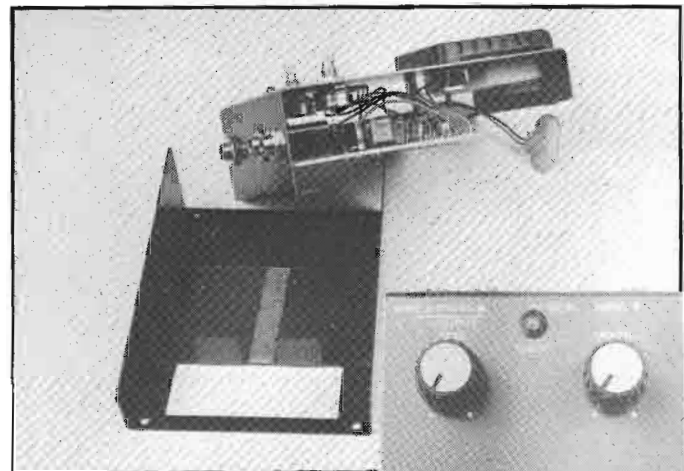


Figure 1. Chorus kit circuit diagram.



Step 14. PCB installed in case and insulation added to base plate.

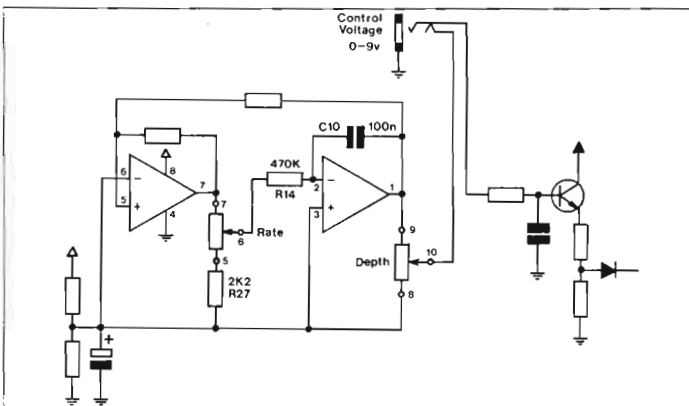


Figure 2. Modifications discussed in text.

Step 19. Final step fits on knobs to complete.



by the addition of two stick-on feet and control knobs.

## The Circuit

The chorus effect is produced by mixing a pitch deviated signal with the direct signal. The pitch change is made using a Bucket Brigade device (MN3204) to delay the signal and a modulator LFO (TLO 22) to vary the rate of delay. A Depth control increases the amount of modulation.

Filter circuits are used in the Pre and Post processing signal path to remove the high frequency clocking signals which could be present on the audio output otherwise. Because the BBD is inherently a noisy device, pre-emphasis and de-emphasis circuitry is used to reduce process noise. Both straight and chorus signals are electronically amplified and FET switching gives virtually silent changeover from effect (LED on) to straight.

## Operation

The Chorus kit supplied was assembled and worked first time with no difficulties encountered. However, should you have any trouble, a 'Hot Line' at the Roland UK factory will lend assistance on 01-847 1671. Examples of the Chorus unit in operation are given on E&MM Cassette No. 8.

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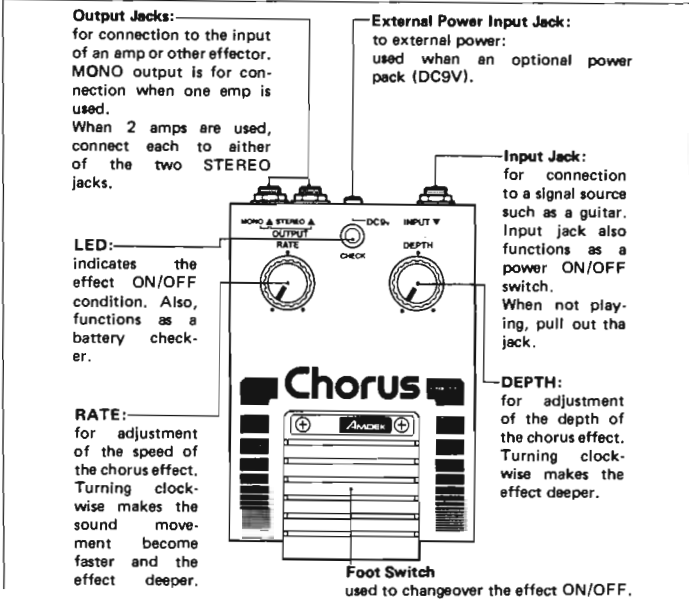
no difficulties encountered. However, should you have any trouble, a 'Hot Line' at the Roland UK factory will lend assistance on 01-847 1671. Examples of the Chorus unit in operation are given on E&MM Cassette No. 8.

The unit works well and provides an effective Chorus sound. The Rate control could be widened for best effect and our research team have tested and provided two useful modifications. [Please note that these modifications are made entirely at your own risk and neither E&MM nor Amdek can take any responsibility for any damage caused by your circuit changes].

## Modifications

The rate of the delay produced by the BBD chain is set by the speed of the Low Frequency Oscillator built around IC1. With the components supplied, this oscillator operates from approx. 0.33Hz to 5Hz. If you feel that this range is too limited you can vary this by making the following changes, as shown in Figure 2.

**Mod 1** The frequency of the LFO



## Panel description.

is dictated by the time taken to charge capacitor C10 to a set threshold. By decreasing the value of R14 to 470k we can approximately double the top frequency which can be obtained. However, this charge doubles the whole range so to decrease the lower frequency the minimum charging current must be reduced. This can be done by altering R27 to 2k2. The oscillator will now run from 0.15Hz to 10Hz.

**Mod 2** The versatility of the unit can be increased even more by using an external control voltage. By disconnecting the internal LFO and taking the CV input to an external socket we can now modulate the delay time

with a variety of control sources, e.g. VCOs, ADSRs, Random Sample and Hold, Sequencers, etc.

To do this you will have to drill a hole in the case and fit another jack socket. Take a connection from the wiper of the Depth control to the switched side of the socket, then connect the other side of the socket to Pin 10 on the board.

If no jack is inserted, the circuit operates as before. When a jack is inserted, the external source takes over. The control voltage must be in the range 0-9V.

E&MM

E&MM's special offer price for the Amdek Chorus Kit is £51.00 inc. VAT and p.p. Please order as: Amdek CHK-100 kit.

