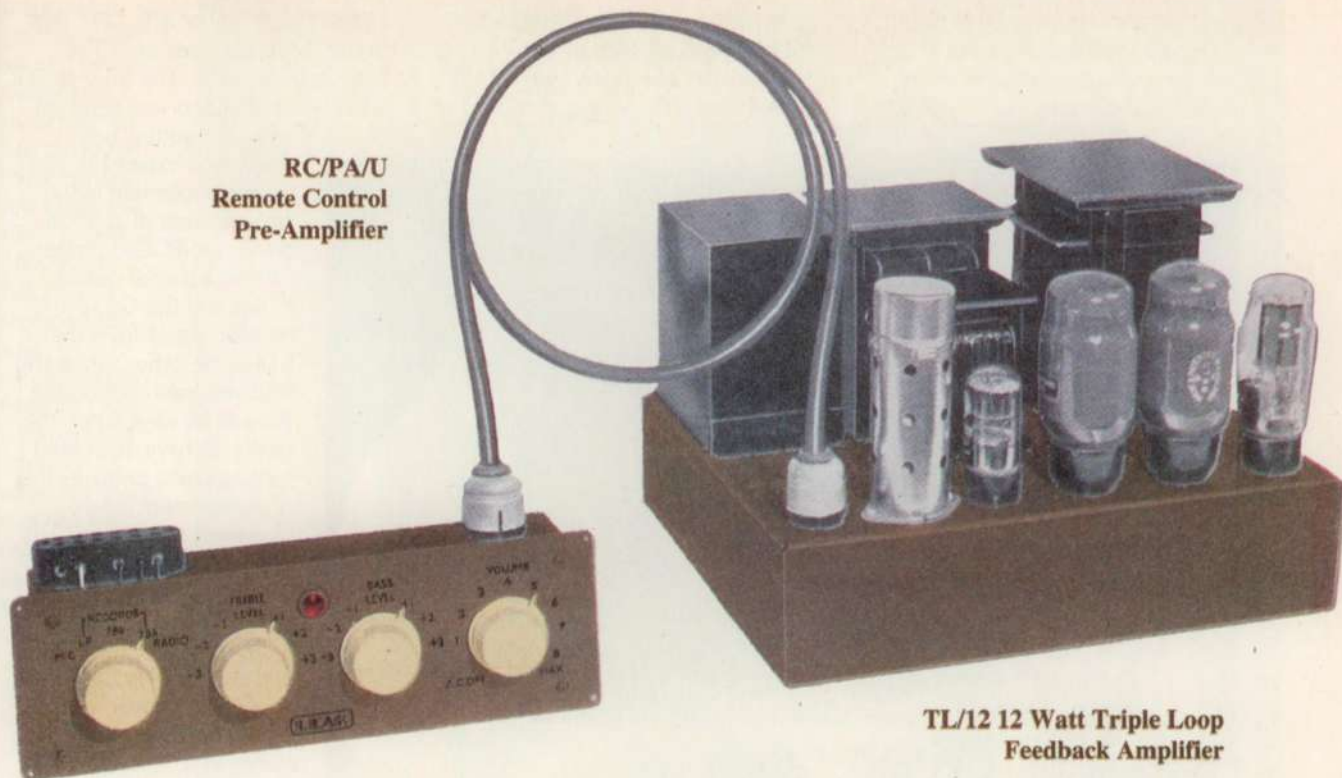


RC/PA/U
Remote Control
Pre-Amplifier



TL/12 12 Watt Triple Loop
Feedback Amplifier

LEAK "POINT ONE" AMPLIFIERS

By Graham Tricker of GT Audio.

PART I

The Leak TL12 'Point One' valve power amplifier was originally designed in 1945 and was revised in 1947. In revised form it remained in production well into the 1950s, in 1947 costing £25.15s. The 0.1 earned world acclaim as being the first amplifier able to achieve 0.1% distortion (hence the name), setting a performance standard for audio amplifiers of the time. Subsequently, 'Point One' became a trade mark of H.J. Leak and Co. Ltd.

The TL12, because of its designed-in reliability, accessibility (for replacement of parts), craftsmanship and finish was used not only for domestic music reproduction but also by professional audio engineers for broadcasting and recording and by telephone and telegraph companies.

The TL12 used Leak's triple loop feedback circuit, relying on a pair of triode connected KT66s to deliver 12 watts of power. The use of 26db of negative feedback was responsible for

its low 0.1% distortion rating. It should not be confused with the later and simpler TL12+ that had an entirely different valve line up comprising smaller EL84 output valves, an ECC81 phase splitter, an EF86 input valve and a GZ34 rectifier.

Original TL12 amplifiers are now very rare, since they've long been acclaimed by the Italians and Japanese, leaving very few left in the UK. Their dimensions are approximately 32cm x 25cm x 21cm

high and they weigh approximately 12 kilos each. They are quite a fair size for a valve amplifier, even by today's standards.

goes overseas since Britons don't really appreciate such things.

The cost of running Leak TL12s would be slightly greater than that of

a Leak Stereo 20, or a TL12+ , due to the fact that it uses the KT66 beam tetrode valve. The original GEC KT66 which the amp was designed

around is getting both scarce and expensive. The valve complement in the amp consists of an EF36 driver and ECC33 phase splitter, a pair of output KT66s and the GZ32 rectifier. Apart from the KT66s the other valves are relatively easily obtainable. As with all valve amps, the Leak's do have associated running costs, primarily that of replacement valves. However, the Leak circuits were designed to run the valves so gently that they would last up to 10 years without replacement. This was achieved because the valves were never overdriven and always designed to run well within the valve manufacturer's operating data.

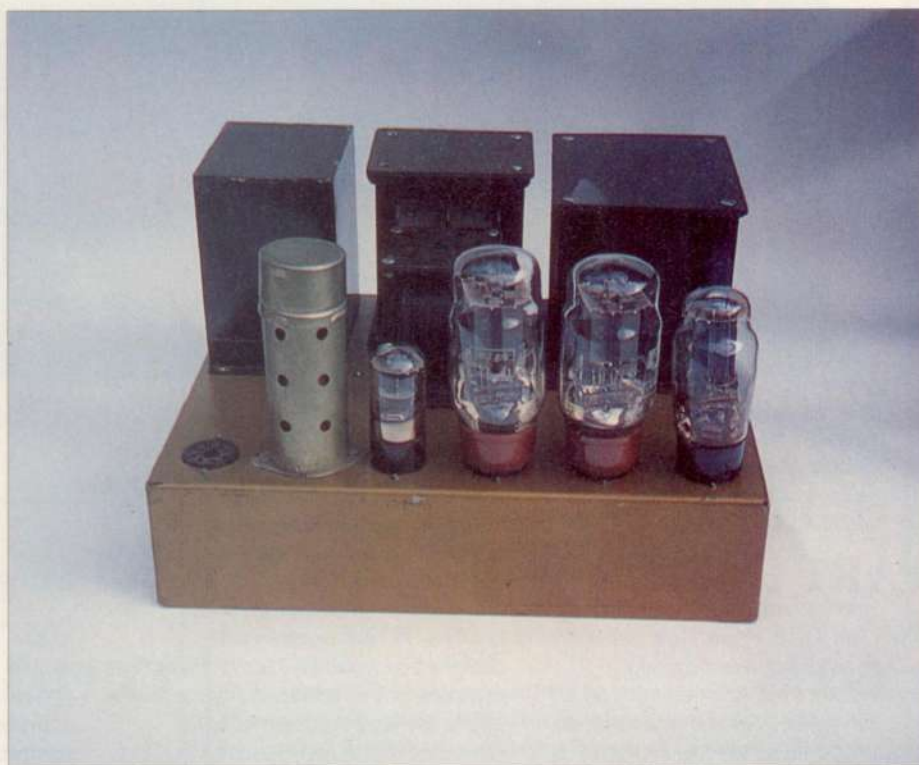
Although 12watts doesn't sound much power, when these amps were designed speakers were much more efficient, so anything more powerful was unnecessary. In the 70s and 80s, when speakers became less efficient, there was more



Early Leak TL12s are now rare. Andy Groves, our valve amp designer, had a pair and confirms they have a sweet sound. Trouble is, whilst Brits were buying Japanese hi-fi, the knowledgeable Japanese were quietly buying British hi-fi, so Graham Tricker had to wait a year before these two units were unearthed by John Howes (left). Hi-Fi World spotted a thick wedge of £20 notes changing hands and came running!

The attraction of the Leak TL12 has always been its great beauty of sound. It has the ability to reproduce music without adding any brightness or apparent unpleasant distortions to the sound. Voices, instruments orchestras are reproduced with great naturalness, without any loss of dynamics. Because of the attention paid to detail in the circuit, components and construction of the amplifier, it can reproduce a sound stage very close to that of a live performance. Although rated at just 12 watts, sensitivity is high at 150 mV to produce full power. This is good compared to many power amps, both old and new, which need between 500mV and 1V.

Most Leak TL12s have now left our shores, so when they do become available they can fetch large sums of money considering their age. This is becoming increasingly the case for a lot of classic British equipment, but it



Top view: At left is an International Octal valve holder input from the Leak preamp which carries HT (3) and heater supplies (4,5) in addition to signal (8). To its right is a can which covered and screened the EF36/37 input valve, which has a top cap. To its right lies the ECC33 phase splitter, then the KT66s and, at far right, the GZ32 HT rectifier.

Behind the valves you can see the main capacitor block at left, the output transformer in the middle and the mains transformer at right. In front of the output tranny sits a smoothing choke.

demand for greater power output, which meant that output valves had to be run much harder, reducing valve life. Typically 2-3000 hours before replacement was recommended. Because Leak paid particular attention to reliability, there was no need to use matched pairs of output tubes, as with all self-bias amplifiers, although it does help. Bias adjustment is unnecessary too.

If a classic amp is being considered, you should always budget for spare valves on top of the cost of the amp. Valves are consumables, much as tyres on cars.

When these amps were made, mono sound reproduction was the order of the day, but today you will probably want two for stereo. This is a drawback of the TL12, because during the course of its manufacture there were a number of variations and you need to find two identical units so that both channels sound the same.

Although the basic circuit stayed the same there were, for example, variations in the construction of the transformers. The early designs used an open frame design where one could see the core, as well as the wires going from core into chassis. Later types had side covers fitted to the transformers, filled with a bitumen compound. These transformers have smooth sides and look more modern. It goes further than this, as not all the transformers on one chassis were either open frame type or potted – a lot of TL12s had a combination of the two, which means getting two the same is very difficult.

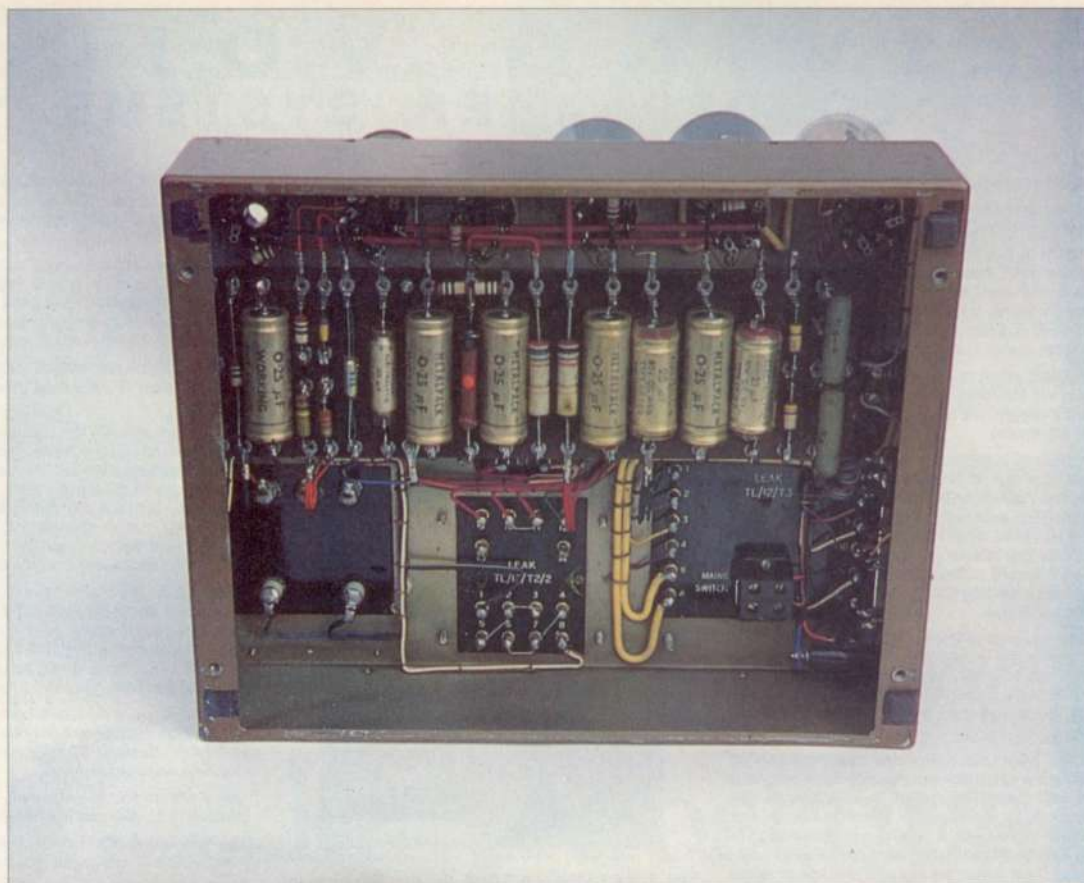
The BBC used this amp fitted inside a monitor loudspeaker. This produced a variant fitted with an attenuator unit and a sensitivity control. They were manufactured to a higher standard than the ones for domestic use and had an output transformer which has a range of

tappings better suited to present day loudspeakers.

The TL12 was designed in conjunction with an RC/PA/U control unit (preamp). There are a number of dealers who specialise in this type of equipment but scouring junk shops, book fairs, jumble sales could result in a lucky find. My pair took approximately one year for me to track down, so you may have to be patient.

Prices start at around £500 per pair for amps in working order but mint examples can cost considerably more. When purchasing amps such as this, if you are paying the above prices then they ought to be demonstrated as working. For single TL12s, expect to pay £100 – £200 depending on condition.

If you are buying without a demonstration, it may be worthwhile checking the output transformer with a multi-meter. The other major thing to look for is oil leakage from the main capacitor block. If there is a leak then the capacitor will fail. For proper restoration, a new capacitor block will have to be made, which will be costly. A further point to remember is that the amp uses metallised paper capacitors which after years of use can become 'leaky', which with the grid coupler will cause the valves to over-run, resulting eventually in failure.



Underview: Look for obvious signs of damage, either from overheating, or more likely from amateur repairs. The capacitor block at bottom left can leak oil. If so it may need replacement.

It is wise to check continuity in all transformer windings, especially in the primary of the output transformer (top four pins on central transformer unit).

LEAK TL12 SPECIFICATION

Power	12watts
Frequency response (1dB)	5-25k
Distortion (1kHz)	0.1%
(equal 2nd & 3rd harmonics)	
Hum & noise	-80dB
Sensitivity	150mV
Input Z	1MΩ//10pF
Output transformers	
TL12/T2/2 - 4/8/16/32Ω	
TL12/T2/1 - 2/4/8/16Ω	
Mains input - 200-250V a.c., 120W	
(100-125V U.S.)	
heaters - 6.3V / H.T. - 440V	
Valves	
2 x KT66, 1 x EF36 or 37, 1 x ECC33,	
1 x GX32	
Weight	12kgs
Dimensions	32 x 26 x 21cms

OTHER MODELS - TL10, TL25, TL25A, TL50.

PART - II

The cost of restoration and usage. What can and cannot be replaced. Circuit diagram and parts identification. Quality of parts. Final performance and how to get the best from the restored amp. Matching preamps and speakers.