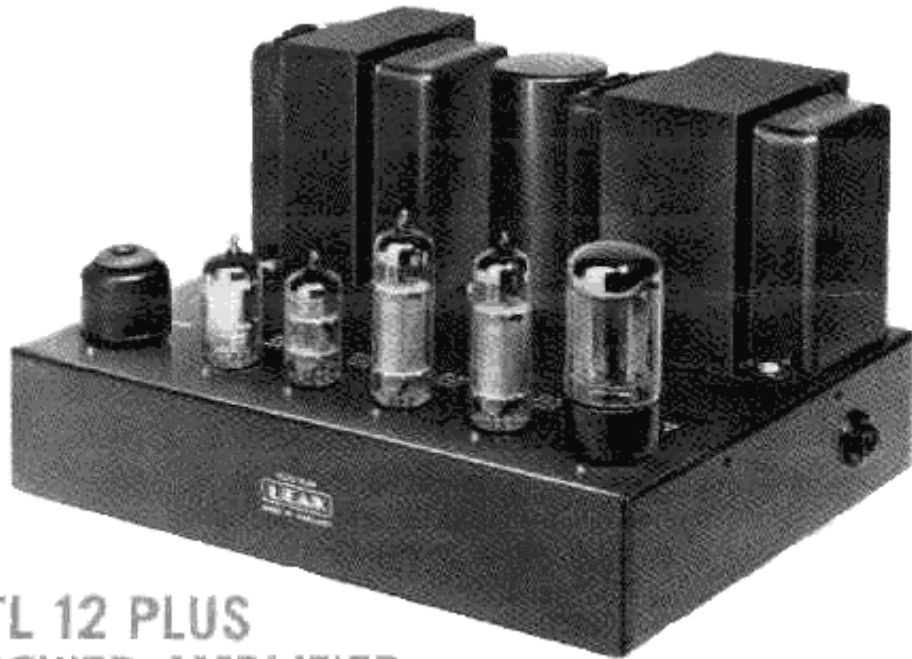


LEAK TL/12 PLUS



'TL 12 PLUS
POWER AMPLIFIER

"TL/12 PLUS" POWER AMPLIFIER
SUCCESSOR TO
THE WORLD-FAMOUS TL/12 "POINT ONE" POWER AMPLIFIER
DESIGNED BY HAROLD J. LEAK
FOR
THE PROFESSIONAL ENGINEER and THE MUSIC-LOVER AT HOME
TRADITIONAL LEAK ENGINEERING AND CRAFTSMANSHIP

"I can most certainly say at this stage that the workmanship and finish are of a quality which I have never before encountered in the radio industrie, despite the fact that my association with the industrie in one capacity or another extends back over 27 years. I think you are to be congratulated all the more on this achievement in view of the increasing tendency nowadays towards inferior workmanship and design."

Part of a letter from a purchaser of the TL/12 amplifier who is a very well-known engineer and whose identity is known to the Editor of "Wireless World"

FUNCTION

The TL/12 PLUS power amplifier has been designed to give the highest possible fidelity. In electrical performance, reliability, appearance and craftsmanship, it is in advance of the earlier TL/12 and similarly acceptable to the professional communications engineer.* For broadcast monitoring, recording etc., the amplifier can be supplied with line input transformer, input gain control, base plate and top cover.

For use by the music-lover at home, this amplifier will normally follow a Leak Varislope III or "Point One" pre-amplifier. The power output of 12 watts is ample for home use and adequate for own lecture-demonstrations to audiences of several hundreds in small halls.

APPEARENCE AND FINISH

The TL/12 PLUS is finished in beige-gold stoved paint; and all visible accessory fittings are in black. The general finishes are similar to the TL/12 and TL/10, which have operated for years in high-humidity, high-temperature locations such as Malaya and Hong-Kong.

It is appropriate here to mention one of the basic principles of LEAK design. From long experience and by extreme attention to design details during development work on the pre-production models, we enable our craftsmen to achieve a high output per man-hour. The labour costs thus saved offset the increased costs incurred for high-grade materials, components and finishes, and this together with quantity production (made possible only by a world wide market) explains how quality products may be sold at reasonable prices.

CIRCUITRY

This is almost identical with the world-famous Leak TL/12, using a 3-stage triple loop feedback circuit, the main loop applying 26db of negative voltage feedback over the complete amplifier from input to output terminals. A low-noise, high-gain pentode feeds into a second-stage double-triode phase-splitter, which in turn feeds two push-pull output valves (tubes) arranged in the distributed-load condition. The output transformer is the same size as on the original TL/12, but the innovation of grain orientated steel enables us to provide an even superior component.

* LEAK amplifiers are the choice of professional engineers such as the B.B.C. (over 500 delivered), the South African Broadcasting Corporation (600), ITV and many other Commonwealth and overseas broadcasting and TV systems, who use them for transmitting and/or monitoring (quality checking) the broadcasts to which you listen. Also, many of the gramophone records you buy are cut via LEAK amplifiers.

TL/12 PLUS POWER AMPLIFIER

Installation, Operation and Maintenance

Notes on the choice and performance of Loudspeaker systems

The **TL/12 Plus** may be fed from **LEAK "VarislopeIII"** and **"Point One Plus"** pre-amplifiers, or from any other suitable source. A source impedance higher than 25kOhms will tend to raise the hum level above the advertised figure of 85 db below 12 watts.

An input of 125mV r.m.s. will give a power output of 12 watts.

1. Check that all valves (tubes) are correctly seated in their holders and that the markings on the valves correspond with those on the chassis adjacent to the holders. The amplifier will work equally well with any of the alternative valves.
2. The amplifier should stand on its base in a well-ventilated position. If placed in a case or cabinet, ventilation must be provided. Four separate fixing feet with screws are provided with the amplifier.
3. On the British model the mains transformer is tapped for voltages of 205, 225 and 245 and the fused voltage selector on the top of the mains transformer (see "Top Chassis" drawing) should be set appropriately. On the U.S. model the mains transformer is tapped for voltages of 105, 110 and 117 and the fused voltage selector plug should be set appropriately. The A.C. power supply should be connected to the two terminals nearest to the guide key on the removable plug portion of the mains connector marked "A.C. Power". In order that the amplifier may be remotely controlled we have provided two terminals marked "switch" underneath the mains transformer (see "Under chassis" drawing). The amplifier will not work unless these terminals are electrically joined, and when the amplifier leaves our factory a wire link joins the terminals. A remote switch may be run from the "Switch" terminals, after removing the line, the flex being passed through the adjacent grommet marked "Switch Cable". The flex should be knotted behind the grommet to avoid strain on the "Switch" terminals. Most users will wish to make use of a switch incorporated in the volume control of an associated Leak pre-amplifier, which is supplied with a plug and twin flex for this purpose. Full details are given in the installation sheets which accompany every pre-amplifier.
4. A double socket marked "A.C. Outlets" is fitted as a convenient source of power supply for gramophone motors, self-powered radio tuners, etc. The power taken from this socket should be limited to 100 watts or thereabouts. This socket is not controlled by the amplifier switch or fuse.
5. Many British tuner units have no built-in power supplies and require a source for heater and anode currents. The octal socket marked "Spare Supplies" on the back of the amplifier is provided for this purpose. The pins are numbered as indicated on the circuit diagram, and connections should be made to the pins similarly numbered on the removable plug which is supplied. The high tension voltage is 350V and on the tuner units it may be necessary to provide a dropping resistor of suitable value, and some units may also require a condenser for smoothing and/or decoupling after the dropping resistor. An earth connection should not be made directly to the tuner units, as this is automatically effected by the above connections via the power amplifier. The maximum current available from the 6.3V terminals is 2.1A and the maximum high tension current is 40mA.
6. A connection to earth (ground) should be taken from the third terminal on the removable plug portion of the "A.C. Power" connector. This terminal is the one furthest away from the guide key and its corresponding terminal on the fixed portion of the connector is marked on the chassis by the symbol \ominus . It is very bad practice to omit this connection, which may be made to the water system or to the steel conduit encasing the house wiring, providing that these systems themselves are properly grounded. No other earth connection should be made elsewhere, particularly when a pre-amplifier is also used, if freedom from "earth loops" and hum is to be obtained.
7. The loudspeaker should be connected by a twisted pair of wires to the terminals marked "Loudspeaker." It will be seen from the circuit drawing that one side of the loudspeaker winding is connected to the chassis, and no part of the loudspeaker wiring should be earthed elsewhere. The D.C. resistance of the connecting wires should be as low as possible, and not more than one-tenth the D.C. resistance of the loudspeaker. It is bad practice to operate any power amplifier without a loudspeaker, and if it is desired to mute the loudspeaker by switching it out of circuit this should be accomplished by use of a change-over switch which replaces it with a resistor of the corresponding value and rating. The selector plug on top of the output transformer (see "Top Chassis" drawing) should be adjusted for the nearest match to the advertised impedance of the loudspeaker.

GENERAL NOTES ON MAINTENANCE

The circuit diagram provides a qualified engineer with all information required for servicing. However, the following points may be of interest:-

1. The TL/12 Plus does depend on the output valves (tubes) being a matched pair to give the stated performance, and if one output valve fails it is not necessary to replace both.
2. Should it ever be necessary to replace the reservoir capacitor C14 (which is in the same can as C13) note that C14 must be of a type capable of handling a heavy ripple current. The C14 fitted has a very high margin of safety, being capable of handling 380mA. The values of 60mfd and 100 mfd are made high for the sole of minimising the hum resulting from unavoidable "earth loop" which must be occasioned by the connection of non-powered tuner units.

NOTES ON LOUDSPEAKER SYSTEMS

Space does not allow for detailed explanations on this vast subject, but the following points should be noted:-

1. You cannot get high-fidelity results if you mount a loudspeaker in the same cabinet as the turntable and pickup.
2. The assembly commonly called a "loudspeaker" consists of a magnet, a moving-coil, and a diaphragm (or "cone"). This assembly is a "motor" You do not listen to a motor; you listen to a loudspeaker system, which consists of one or more motors mounted in a housing, (baffle, box, cabinet or horn). The housing plays a profound part in determining the quality of reproduction. The effects of various housings are discussed by L.L. Beranek in "Acoustics" McGraw-Hill Publishing Co., Ltd., 1st Edition.
3. One good motor properly housed is capable of giving good results. Two good motors properly housed will give noticeably better results: in this case one motor is designed to reproduce bass, and the other, tremble. A filter ("dividing network") must be used in conjunction with the two motors.

Specification

Valves(Tubes)

First stage	1	EF86	or Z729	or 6267
Second stage	1	ECC81	or B309	or 12AT7
Output stage	2	EL84	or N709	or 6BQ5
Rectifier	1	GZ34	or 5V4	or 5AR4

Power Output

14 watts r.m.s. maximum

Total Harmonic Distortion

0.1% at 12 watts output (±1db) at 1kHz

Hum and Noise

85dB, ±3db, below 12 watts with a source impedance of 25k ohms

Sensitivity

An input of 125mV at 1 kHz gives 12 watts output

Frequency Response

±0.5db 20Hz to 20kHz

Damping Factor

25, measured at 1kHz

Input Impedance

1 megohm, plus approximately 5 pF

Stability Margins

Gain, 10db ±3db Phase, 20° ±10°

Loudspeaker Impedances

Loudspeakers of any impedance between 3 ohms and 20 ohms may be used. An adjustable plug on top of the output transformer selects three tapings, nominally 16ohms, 8 ohms and 4 ohms.

Power Supply

200 - 250VAc 50Hz - 100Hz

or (alternative model)

100 - 125VAc 50Hz - 100Hz

A fused voltage selector plug is fitted on top of the mains transformer

Consumption

75 watts (80 watts with Leak pre-amplifier).

Spare Supplies

The following supplies are available for a radio tuner unit from a socket at the rear:

Heater: 6.3 V 2.1 A A.C. max

H.T. 350V 40mA D.C. max highly smoothed (0.2V r.m.s. ripple).

A double socket marked "A.C. Outlets" is fitted as a convenient source of power supply for gramophone motors, etc.

Corresponding plugs, with 6-ft, (2 metre) cables are supplied with the amplifier.

Dimensions

25,4 * 20 * 15,2 cms

Weight

14.5 lbs or 6,58 kg

Fixing

Four brackets and screws are supplied for fixing the amplifier to a baseboard.

Price :

18£ (good ol day's uhh?)

Klaus Schiffer, Oktober 1998

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