

Stereo Reproduction

Over the past ten years stereo sound reproduction has become as much a part of our lives as the motor car and jet travel. In view of the astonishing sense of realism and the lack of listening fatigue it is not surprising that stereo should have attained such great popularity.

What may surprise many people is how long stereo has been known to communication engineers.

H. J. Leak carried out his first stereo microphone transmission (with D. W. Turpin) in 1931 and subsequent experiments proved the feasibility of stereo sound as we know it today.

What is relatively new about stereo is its availability to the general public by high-quality records and the increasing use of stereo radio.

Old or new, H. J. Leak & Company has always been acknowledged as the leader in the field. And our products prove it.

Stereo 70

This brand new unit from the world's best known amplifier manufacturer is simply bristling with exciting new features.

To start with there's the power output — a genuine 35 watts per channel. Furthermore, there's the distortion (or the lack of it) — a mere 0.1% at 1000 Hz for all power outputs up to 25 watts per channel.

And, what's more, in addition to the features the discerning audiophile expects on a LEAK amplifier we have made provision for the following :—

The use of two turntables and pickups, selection between the two being made by the input switch on the front panel.

The use of a pair of loudspeakers in a location other than the main listening room.

The use of stereo headphones for personal listening as an alternative to loudspeakers.

The use of a portable tape recorder which can be plugged into the DIN socket on the front panel.

All this, backed by the famous LEAK craftsmanship and reliability, makes the Stereo 70 the most technically advanced amplifier available.

And it sounds it.

Ease of Installation

The compactness of the Stereo 70 and its availability in either chassis form or in a teak case solve any problems about location. The chassis model can be fitted into a panel of any thickness and the special design makes this easier than with any other amplifier. The case model can be used freestanding on a shelf, on a table, or in a bookcase. We have taken a great deal of care over the electrical connections to the Stereo 70. All LEAK Tuners, and Loudspeakers, and most auxiliary equipment (pickups, etc.) are now supplied with standard cables and plugs which are simply plugged into the Stereo 70. In this way it is possible to set up a complete stereo system and have music within ten minutes.

Function

The function of an ordinary mono amplifier is to accept the tiny electrical signals from the input device (pickup, tape amplifier, tuner or microphone) and to build them up to a magnitude capable of operating a loudspeaker system, and to achieve this with negligible distortions.

The LEAK Stereo 70 amplifier is simply two identical mono amplifiers electronically separate, but physically combined. This amplifier reproduces stereophonically and monophonically from records, tape, radio and microphone, using any pickup, any tape amplifier, any tuner and any microphone available in the world. This comprehensiveness gives the important advantage of compatibility with the finest pickups and microphones available in the world: this is not the case with cheaper low-gain amplifiers.

The Stereo 70 functions electronically to the highest standards obtainable by present techniques — to the performance standards demanded by communications engineers for broadcasting and recording. There is nothing we can add to the circuitry or the price to improve the fidelity of reproduction obtainable from the Stereo 70.

Ease of Operation

You don't have to be a skilled electronic engineer to get the best from your Stereo 70. Though comprehensive and flexible, it has been created by the world's best-known amplifier designer specifically for the use and enjoyment of the music-lover at home, for his wife and for his children. Simple-to-follow operating instructions are enclosed with the amplifier, and five minutes' practice will give you easy mastery.

All controls are of the single knob, dual-ganged, close-tolerance type which gives much greater ease of handling than the cheaper twin knob, dual-concentric, un-ganged type.

Appearance

The appearance is of elegant and functional simplicity whether the unit is used free-standing in its teak case or whether it is cabinet mounted when the front panel will blend with any wood. The front panel decor is black and silver.

Circuitry

The two identical circuits are designated "L" (for the left-hand input signal) and "R" (for the right-hand input signal). Each circuit uses a low-noise, low-distortion 2 stage (5 transistors) feedback tone control pre-amplifier section.

The first stage (3 transistors) provides low-noise amplification and frequency selective negative feedback equalisation for record reproduction. The second stage (2 transistors) embodies feedback tone control circuits which give continuously variable control of both bass and treble frequencies.

The circuitry of this tone control stage and power amplifier input stage is arranged to incorporate a high-pass filter which sharply attenuates the low frequency response below 20 Hz. This removes all unwanted signals which do not contribute any useful information and may cause audible interference or amplifier overload at sub-sonic frequencies (the turn-over frequency is 17 Hz and the attenuation rate is 18 dB per octave).

The power amplifier section has been designed in a 4 stage (6 transistors) directly coupled transformer-less, push-pull configuration with over 60 dB of negative feedback, thus reducing all forms of distortion to inaudibility.

Heavy DC negative feedback in conjunction with diode temperature and voltage stabilisation ensure

that the high specifications are always maintained at extremely low and high temperatures.

Specification and Performance

Transistors and Diodes:

4 — BC149, 4 — BC148 or BC115, 2 — BC107 or BC115, 2 — BC154, 4 — 2N2102, 2 — 2N4036, 4 — 2N3055, 4 — 1N3754, 1 — USD1399Y.

Power Output (Both Channels Sine Wave Driven):
35 watts r.m.s., each channel into 8 ohm loudspeakers.

28 watts r.m.s., each channel into 15 ohm loudspeakers.

Music Power Output:

45 watts r.m.s., each channel into 8 ohm loudspeakers.

30 watts r.m.s., each channel into 15 ohm loudspeakers.

Total Harmonic Distortion:

0.1% for ALL power levels up to 25 watts r.m.s., each channel at 1 kHz into an 8 ohm or 15 ohm loudspeaker.

Total Intermodulation Distortion:

Input — 70 Hz and 7 kHz in ratio of 4 : 1.

Less than 0.3% for ALL power levels up to 28 watts into 15 ohm loudspeakers.

Less than 0.5% for ALL power levels up to 35 watts into 8 ohm loudspeakers.

Overload distortion less than 0.1% for input signals up to 20 dB above stated sensitivities from 30 Hz to 15 kHz.

Damping Factor:

40 measured at 1 kHz for 15 ohm loudspeakers, 20 measured at 1 kHz for 8 ohm loudspeakers.

Crosstalk:

Between "L" and "R" channels,—50 dB up to 1 kHz and —30 dB at 10 kHz.

Hum and Noise:

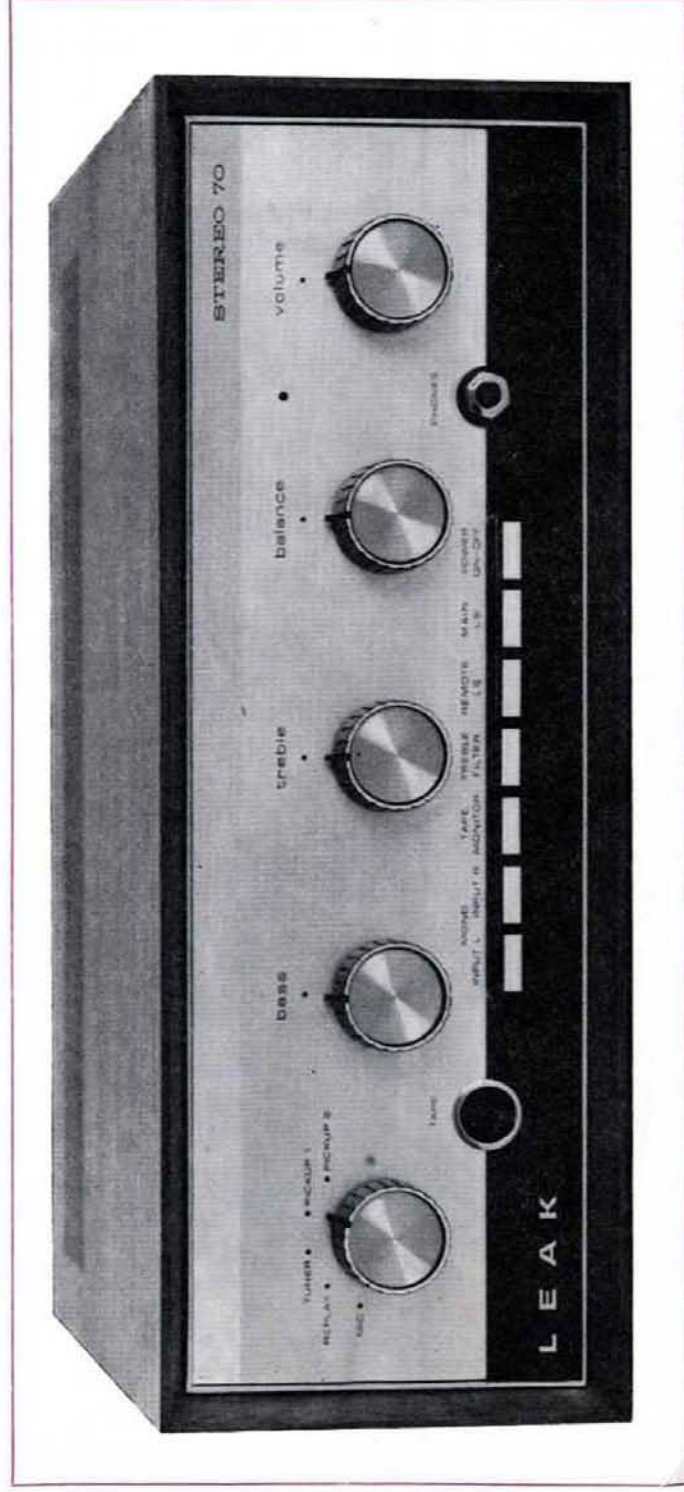
66 dB below 30 watts output on "Tuner" and "Tape Amp", and 56 dB below full output on other inputs with tone controls at 12 o'clock and volume control at maximum. With the volume control turned to minimum, the residual hum and noise is 90 dB below 30 watts power output.

Power Supply:

110V, 117V, 130V, 210V, 230V, 250V: 40-60 Hz.

Consumption:

150 volt-amps.



Controls and Facilities on Front Panel

Input Selector:

This five-position switch allows the choice of inputs from:

- (1) PICKUP 1 stereo or mono.
- (2) PICKUP 2 stereo or mono.
- (3) TUNER 1/MICROPHONE stereo or mono.
- (4) TUNER 2 stereo or mono.
- (5) REPLAY stereo or mono.

Bass Control:

Single knob, close tolerance, operative on both channels simultaneously. Continuously variable, ± 16 dB at 50 Hz.

Treble Control:

Single knob, close tolerance, operative on both channels simultaneously. Continuously variable, ± 16 dB at 14 kHz.

Volume Control:

Single knob, close tolerance, operative on both channels simultaneously.

Balance Control:

Single knob, close tolerance. Any degree of balance may be obtained as either channel can be faded to zero output without affecting the other.

Push-button Switches:

MONO — INPUT L — INPUT R

When the INPUT L button is depressed mono reproduction will be obtained through both loudspeakers from the signal connected to the input socket marked "L".

When the INPUT R button is depressed mono reproduction will be obtained through both loudspeakers from the signal connected to the input socket marked "R".

When both buttons are depressed the "L" and "R" inputs are connected in parallel and this enables a stereo pickup to play mono LP records giving mono reproduction through both loudspeakers.

When neither button is depressed stereo operation will be obtained.

Tape Monitor:

By pressing this button it is possible to obtain an instantaneous comparison between the original and the recorded signal (with tape recorders having a separate replay head and separate record and replay amplifiers).

Treble Filter:

When this button is depressed a filter is switched into circuit having a turnover frequency of 6 kHz (i.e. the frequency at which the response falls 3 dB) and a rate of attenuation above this frequency of 12 dB per octave.

Remote LS:

When this button is depressed the loudspeaker sockets marked "Remote LS" on the rear panel may be used for the connection of loudspeakers in rooms other than the main listening room. When operation of these loudspeakers is not required the button is left "Out".

Main LS:

When this button is depressed the loudspeaker sockets marked "Main LS" on the rear panel will be operative. If these loudspeakers are required to be muted while using the remote loudspeakers or headphones, then this switch button should be left "Out".

Power On/Off:

When this button is depressed the AC power is switched on. The red panel lamp is alight when the power supply is switched on.

Phones Socket:

A 3-contact jack socket is provided to enable the user to connect a pair of stereo headphones for personal listening as an alternative to a pair of loudspeakers.

DIN Socket:

This socket provides a convenient form of connection for a portable tape recorder. This facility is in addition to the normal tape recorder input and output connections on the rear panel.

Inputs:

All input connections are made by standard international type sockets and plugs.

Selection between HI and LO sensitivities is made by the slide switch adjacent to the inputs.

The quoted sensitivities give 30 watts output at 1 kHz into 8 ohm loudspeakers with tone controls at 12 o'clock and the volume control at maximum.

Pickup 1:

Sensitivity: 2mV at 47k ohm for all high quality low output magnetic pickups.

Characteristic, RIAA, the world standard for stereo and mono records.

Pickup 2:

HI Sensitivity 10mV at 33k ohm for high output magnetic pickups

LO Sensitivity 30mV at 100k ohm for crystal and ceramic pickups.

Characteristic, RIAA, the world standard for stereo and mono records.

Tuner 1/Mic:

Sensitivity 25mV at 47k ohm, but by cutting two leads the input is made suitable for use with high impedance microphones — the sensitivity being increased to 2mV at 47k.

Characteristic, Flat ± 1 dB 30 Hz to 20 kHz.

Tuner 2:

HI Sensitivity 60mV at 50k ohm.

LO Sensitivity 250mV at 50k ohm.

Characteristic, Flat ± 1 dB 30 Hz to 20 kHz.

Replay:

Sensitivity, 400mV at 47k ohm.

For: (1) The output from equalised tape recorders.

(2) TV sound receiver, or

(3) Any other "flat" input.

Characteristic, Flat ± 1 dB 30 Hz to 20 kHz.

Connection for tape replay and tape record may be made to either the 5 contact DIN socket on the fascia panel, or to the phono sockets on the rear panel.

Facilities on Rear Panel

- (1) A 13 ft (4 metres) power supply cable is fitted to the Stereo 70 to facilitate connection to the domestic power supply.
- (2) A voltage selector is fitted which allows the Stereo 70 to be connected to power supplies in the range of 105 to 250V, 40 to 60 Hz.
- (3) A double socket marked "AC Outlets" is fitted as a convenient source of power supply for gramophone motors, etc. The power from these sockets is not fused but is controlled by the POWER ON/OFF switch on the front panel. Corresponding plugs with 6 ft (2 metres) cable are supplied with the amplifier.
- (4) Standard 20 mm quick-acting fuses for both AC and DC circuits give maximum protection under fault conditions. A spare fuse is provided, clipped to the rear panel.
- (5) Non-reversible loudspeaker plugs and sockets for each channel permit loudspeakers of any impedance from 4 to 15 ohms to be connected to the Stereo 70.

(6) Outlets for tape recording marked "Record" permit recording from records, tape, radio or microphone. The normal output level is 400mV. These sockets should be used when permanently installing a tape recorder and are connected in parallel with contacts on the 5-way DIN socket located on the front panel which is for use with portable tape recorders.

Dimensions:

Chassis Model 13 in \times 4 $\frac{1}{2}$ in \times 8 $\frac{1}{2}$ in deep.

Case model 13 $\frac{1}{2}$ in \times 4 $\frac{1}{2}$ in \times 9 $\frac{1}{2}$ in.

The chassis model, which is intended for cabinet mounting, may be fitted in a panel of any thickness through a cut-out of 12 $\frac{1}{8}$ in \times 3 $\frac{1}{8}$ in.

Weight:

Chassis model 12 lb 8 oz.

Case model 15 lb 2 oz.

Prices:

Chassis model £63 0s. 0d.

Case model £69 10s. 0d.

