

## SPECIFICATION

### TRANSPORT SYSTEM (DECK)

3 outer rotor motors (Hysteresis Synchronous Capstan Drive for utmost speed stability).  
Large Dynamically Balanced Flywheel (for minimising wow and flutter in the transport system).  
4 Tape Speeds — 15, 7½, 3½ and 1½ i.p.s.  
Reel sizes — up to 8½ in. (21cms.) diameter.  
Heads — 3 heads (Erase, Record, Replay), ½ track mono.  
Tape Tension — Light friction brake (adjustable from top of deck, to ensure correct tension for all reel sizes).  
Fast Rewind — Wind-on times — under 60 secs. for 1200ft. (360m.) tape.  
Braking System — Positive, reliable system, self compensating with lining wear.  
Pause Mechanism — Robust, simple to operate, lockable.  
Position Indicator — 4 digit revolution counter, Push Button cancellation.  
Wow and flutter measured on Gaumont Kalee wow and flutter meter.

15 i.p.s.	less than	0.05%
7½	"	0.08%
3½	"	0.10%
1½	"	0.12%

End of tape or tape breakage auto-stop.

### TAPE AMPLIFIERS

Separate record and replay amplifiers.

#### Record Amplifier:—

Inputs for magnetic Pickup.

Ceramic Pickup.

Microphone (Sensitivity 100 microvolts — overload 55dB).

(Optimum mic. impedance 200-250 ohms).

Auxiliary Signals (Sensitivity 5 millivolts — impedance 250K ohms).

(Radio — Hi Fi Pre-amps, etc.)

Compensation for pickups selected by single push button.

Mixing of inputs — by pressing appropriate buttons, mic and pickup signals may be mixed for recording and P.A. purposes.

Record Level Metering — A large, edgewise scaled, illuminated meter enables precise recording levels to be maintained.

#### Replay Amplifier:—

Power Output — 15 watts into 8 ohms @ 1% distortion.

8 watts into 15 ohms @ 1% distortion.

Bass Control — 18dB to +18dB @ 50Hz (c/s).

Treble Control — 15dB to +15dB @ 12KHz (Kc/s).

Output Sockets for Ext. Speaker (8 to 15 ohms) Type BS666.

Ext. Amplifier (220mV from fully modulated tape) BS666.

### GENERAL

Frequency responses (Record/Replay):—

15 i.p.s. (38cms.) 40Hz to 22KHz ±2dB.

7½ i.p.s. (19cms.) 40Hz to 20KHz ±2dB.

3½ i.p.s. (9.5cms.) 50Hz to 15KHz ±3dB.

1½ i.p.s. (4.75cms.) 60Hz to 8KHz ±3dB.

Signal to noise ratio — 56dB unweighted.

A/B Switching — Provision is made for "off the tape" monitoring and direct comparison of recording with the original signal. The replay signal level may be independently controlled by the A/B balance control in order to obtain the correct replay level at all speeds for critical comparison of recorded signal with the original.

Internal Speaker — A high quality speaker is fitted—this will be automatically disconnected when ext. speaker is used.

Amplifier Tape Speed Compensation — 4 push buttons are provided to enable the correct recording and replay compensation circuits to be selected. These are deliberately not linked to the speed change switch so that individual requirements of operators may be met.

### STRAIGHT AMPLIFIER

By pressing the "A" button the preamplifier circuits of the recording amplifier (prior to recording compensation circuits) are coupled to the main amplifying circuits of the replay amplifier, thus there becomes available a versatile, powerful Hi-Fidelity amplifier such as one would normally purchase as a separate unit. The Specifications under these conditions are as follows:—

Power Output — 15 watts into 8 ohms for 0.02% distortion.  
8 watts into 15 ohms for 0.02% distortion.

Input sensitivities for above output levels:—

Mic. 2 millivolts

Mag. P.up 3 " 47K ohms

Cer. " 160 " 1.5 megohms

Radio 95 " 250K ohms

Bass Range @ 50Hz — 18dB to +18dB.

Treble Range @ 12KHz — 15dB to +15dB.

Overall Frequency Response (with Bass and Treble controls to central (flat) position):

±2dB 20Hz (c/s) to 30KHz (Kc/s).

Signal/Noise Ratio of Straight Amp. — Auxiliary position 78dB.

The recorder is designed for vertical or horizontal operation.

Size of Cabinet — 17½ in. X 16½ in. X 8 in.

Weight — 37 lbs. nett.

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# Brenell Engineering Co. Ltd.

231/235 Liverpool Road, London, N.1

Speed Changing

The switch provided has 3 positions but the tape speed will depend also upon the size of capstan sleeve in use.

# Brenell

## Mark 6 Stereo Unit

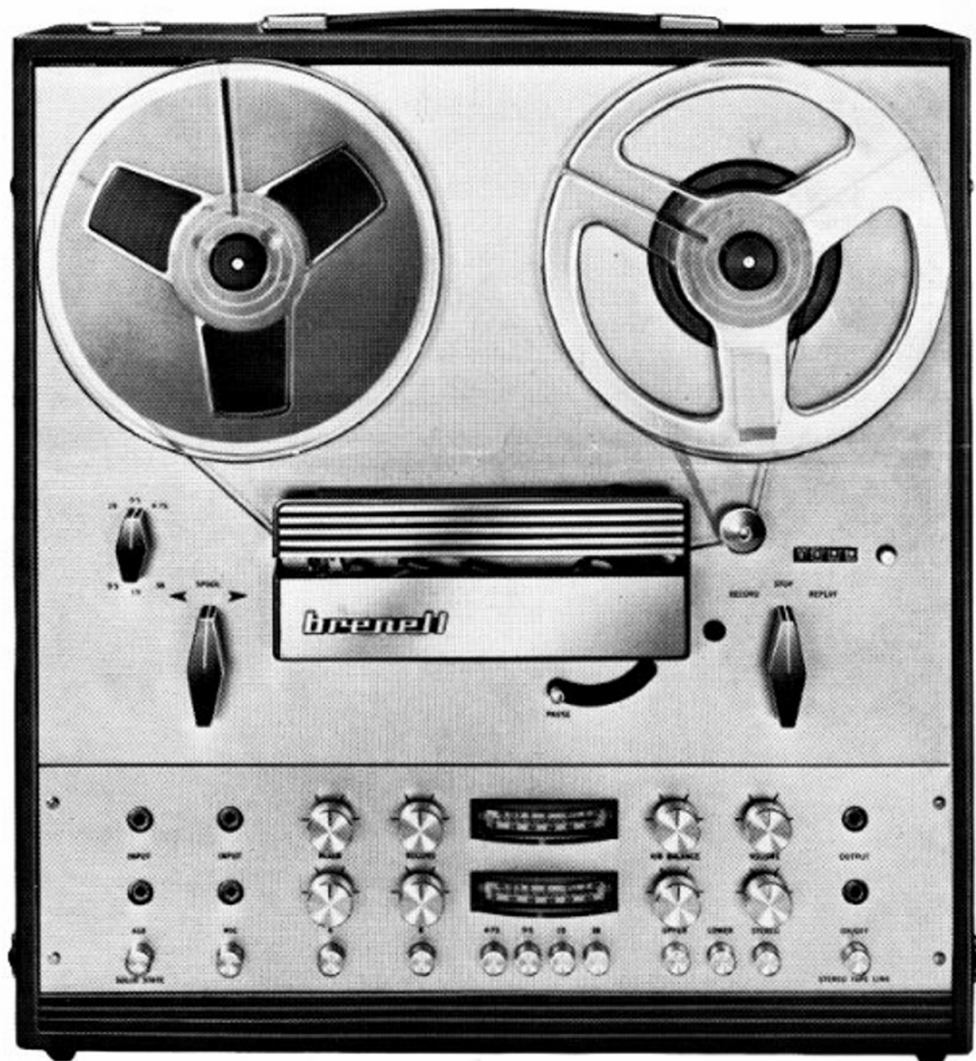
The pleasures obtained from Hi-Fi sound reproducing systems can be greatly enhanced by the addition of really top quality tape recording equipment—but we must emphasise that the tape machine must be a quality item if it is to do justice to the Hi-Fi installation and give satisfactory results.

Brenell, who have a world-wide reputation for manufacturing high quality tape recorders, have designed a new Tape Unit especially for the Hi-Fi enthusiast and confidently offer this unit as a worthy addition to any Hi-Fi installation.

Apart from the clean, modern styling, a great deal of attention has been devoted to the important parameters of signal to noise ratio, frequency response, wow and flutter, cross-talk and erasure levels to produce a QUALITY unit. A/B switching is incorporated to enable an immediate comparison between the recorded and the original sound. Mixing facilities enable comments to be included in the recording.

A three-motor deck mechanism, the system demanded by professional recording engineers, gives quiet tape transport at very constant speeds. The electronics — two recording and two tape replay pre-amps, are fully silicon transistorised and compensated for four tape speeds.

Large-scale illuminated meters clearly indicate the recording level. The unit may be used in the horizontal or vertical positions or mounted in your Hi-Fi system.



## Specification

### Tape Deck

Three outer rotor motors (Hysteresis Synchronous Capstan Drive for utmost speed stability).

Large dynamically balanced flywheel (for minimising wow and flutter in the transport system).

Four Tape Speeds — 15, 7½, 3½, 1½, i.p.s. (38, 19, 9.5, 4.75 cms).

Heads — Three heads (Erase, Record and Replay) Stereo. (State whether twin 2/2 track or quarter 2/4 track system is required when ordering.)

Reel Sizes — All sizes up to 8½" (21 cms) diameter. (To order:— model to accommodate up to 10½" dia. (27 cm) reels).

Fast Re-wind, and Wind-on times — under 60 secs. for 1200' (360 m) of tape.

Pause Mechanism — Robust, easy to operate, lockable.

Braking System — Positive, reliable system which is self-compensating for lining wear.

Position Indicator — 4-digit revolution counter.

Tape Tension — Light friction brake, adjustable from top of deck to ensure correct tension for all reel sizes.

Wow and Flutter measured on Gaumont Kalee W/F meter:—

15 i.p.s. (38 cms) less than 0.05%  
7½ i.p.s. (19 cms) less than 0.08%

3½ i.p.s. (9.5 cms) less than 0.1%  
1½ i.p.s. (4.75 cms) less than 0.12%

Fitted with end-of-tape or tape-break auto-stop.

Adjustable bias.

### Electronics

#### Recording Amplifiers

Inputs	Sensitivities
A Microphones	200 microvolts
B Auxiliary	8 millivolts (Front)
C Auxiliary	8 millivolts (Internal)

Impedance	Sockets
A for 200-600 ohm mics.	Jack BS666
B 50 K/ohms	Jack BS666
C 50 K/ohms	Phono

Mixing — Between microphone and auxiliary inputs: cross fade system.

Modulation Level Indicators — Two illuminated edgescale meters.

Frequency Compensation — For four tape speeds: 15, 7½, 3½, 1½ i.p.s. (38, 19, 9.5, 4.75 cms)

Record Mode Selection — Upper, Lower, Stereo (Push Buttons).

#### Playback Pre-Amplifiers

Output Level — Variable to maximum of 1.4v from tape recorded to 0dB meter level.

Output Sockets — 2 Jack (BS666) on front panel and 2 Phono internally for impedances of 600 ohms and over.

Frequency Compensation — For four tape speeds: 15, 7½, 3½, 1½ i.p.s.

(Record and Replay compensation circuits both selected by 1 push button).

A/B Switching — Comparison of recording with original signal.

A/B Balance — Balance of levels for comparison purposes. (Covers input levels from 50 millivolts to 300 millivolts).

#### Record/Playback

Frequency Responses —  
15 i.p.s. (38 cms) 40Hz to 22KHz ± 3dB  
7½ i.p.s. (19 cms) 40Hz to 20 KHz ± 3dB  
3½ i.p.s. (9.5 cms) 50Hz to 14 KHz ± 3dB  
1½ i.p.s. (4.75 cms) 60Hz to 7 KHz ± 3dB

Signal/Noise ratio—Unweighted 56dB below 2% distortion levels of recording.

Recommended Tapes — BASF SP52 and LP35LH, EMI 815/12, Scotch 803/18W2

Voltage Ranges — 115v, 210v, 240v, 50 c/s. (60 c/s to order.)

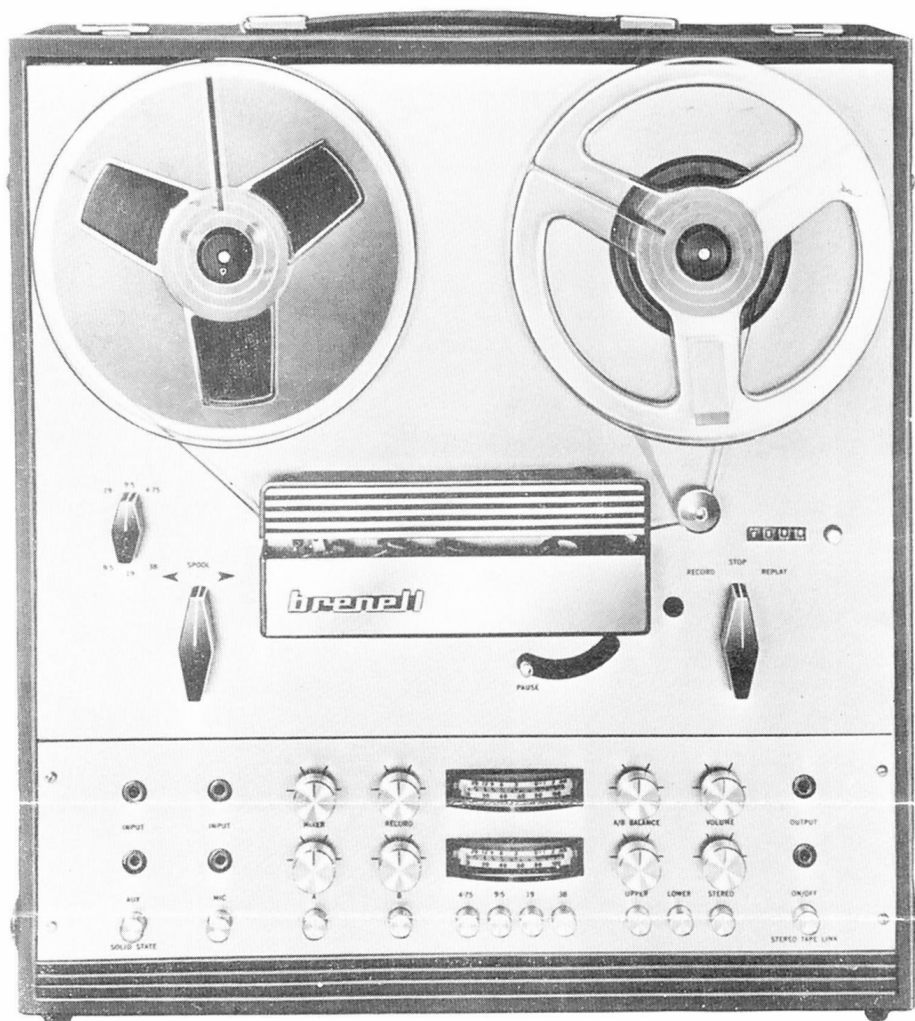
Size — 17½" x 16¼" x 8"

Weight — 33 lb nett.

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**Brenell Engineering Co. Ltd.**  
231/235 Liverpool Road,  
London, N1 1LY  
Tel. No. 01-607 8271

# Brenell Mark 6 Stereo Unit.



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Brenell, who have a world-wide reputation for manufacturing high quality tape recorders, have designed a new Tape Unit especially for the Hi-Fi enthusiast and confidently offer this unit as a worthy addition to any Hi-Fi installation.

Apart from the clean, modern styling, a great deal of attention has been devoted to the important parameters of signal to noise ratio, frequency response, wow and flutter, cross-talk and erasure levels to produce a QUALITY unit. A/B switching is incorporated to enable an immediate comparison between the recorded and original sound to be made. Mixing facilities enable comments to be included in the recording.

A three-motor deck mechanism, the system demanded by professional recording engineers, gives quiet tape transport at very constant speeds. The electronics—two recording and two tape replay pre-amps, are fully silicon transistorised and compensated for four tape speeds.

Large-scale illuminated meters clearly indicate the recording level. The unit may be used in the horizontal or vertical positions.

## SPECIFICATION

### TAPE DECK

Three outer rotor motors (Hysteresis Synchronous Capstan Drive for utmost speed stability).  
Large dynamically balanced flywheel (for minimising wow and flutter in the transport system).  
Four Tape Speeds—15,  $7\frac{1}{2}$ ,  $3\frac{3}{4}$ ,  $1\frac{7}{8}$  i.p.s. (38, 19, 9.5, 4.75 cms).  
Heads—Three heads (Erase, Record and Replay) Stereo. (State whether twin 2/2 track or quarter 2/4 track system is required when ordering.)  
Reel Sizes—All sizes up to  $8\frac{1}{4}$ " (21 cms) diameter.  
Fast Re-wind, and Wind-on times—under 60 secs. for 1200' (360 m) of tape.  
Pause Mechanism—Robust, easy to operate, lockable.  
Braking System—Positive, reliable system which is self-compensating with lining wear.  
Position Indicator—4-digit revolution counter.  
Tape Tension—Light friction brake, adjustable from top of deck to ensure correct tension for all reel sizes.

Wow and Flutter measured on Gaumont Kalee W/F meter:—

15 i.p.s. (38 cms)	less than	0.05%
$7\frac{1}{2}$ i.p.s. (19 cms)	" "	0.08%
$3\frac{3}{4}$ i.p.s. (9.5 cms)	" "	0.1%
$1\frac{7}{8}$ i.p.s. (4.75 cms)	" "	0.12%

Fitted with end-of-tape or tape-break auto-stop.

### ELECTRONICS

#### RECORDING AMPLIFIERS

<i>Inputs</i>	<i>Sensitivities</i>	<i>Impedance</i>	<i>Sockets</i>
Microphones	200 microvolts	for 200–600 ohm mics.	Jack BS666
Auxiliary	8 millivolts (Front)	50 K/ohms	Jack BS666
Auxiliary	8 millivolts (Rear)	50 K/ohms	Phono

Mixing—Between microphone and auxiliary inputs: cross fade system.

Modulation Level Indicators—Two illuminated edgescala meters.

Frequency Compensation—For four tape speeds: 15,  $7\frac{1}{2}$ ,  $3\frac{3}{4}$ ,  $1\frac{7}{8}$  i.p.s.  
(38, 19, 9.5, 4.75 cms)

Record Mode Selection—Upper, Lower, Stereo (Push Buttons).

#### PLAYBACK PRE-AMPLIFIERS

Output Level—1.4v from tape recorded to CdB meter level.

Output Sockets—2 Jack (BS666) on front panel and 2 Phono at rear.

Frequency Compensation—For four tape speeds: 15,  $7\frac{1}{2}$ ,  $3\frac{3}{4}$ ,  $1\frac{7}{8}$  i.p.s.  
(Record and Replay compensation circuits both selected by 1 push button)

A/B Switching—Comparison of recording with original signal.

A/B Balance—Balance of levels for comparison purposes.

Covers maximum input levels from 50 millivolts to 300 millivolts.

#### RECORD/PLAYBACK

Frequency Responses—15 i.p.s. (38 cms) 4CHz to 22 KHz  $\pm$  3dB  
 $7\frac{1}{2}$  i.p.s. (19 cms) 40Hz to 20 KHz  $\pm$  3dB  
 $3\frac{3}{4}$  i.p.s. (9.5 cms) 50Hz to 14 KHz  $\pm$  3dB  
 $1\frac{7}{8}$  i.p.s. (4.75 cms) 60Hz to 7 KHz  $\pm$  3dB

Signal/Noise Ratio—Unweighted 56dB below 2% distortion levels of recording.

Recommended Tapes—BASF SP52 and LP35LH

EMI 815/12

Scotch 803/18W2

Voltage Ranges—115v, 210v, 240v, 50 c/s.

(60 c/s to order.)

Size— $17\frac{1}{2}$ "  $\times$   $16\frac{3}{4}$ "  $\times$  8"

Weight—33 lb nett.

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231/235 Liverpool Road, London, N.1

Tel. No.: 01-607 8271



The recording requirements of many people have not developed beyond the elementary stages of making the recording, rewinding the tape and then listening to the recorded programme, but others are far from satisfied with such a procedure and the ability to hear the recording as it is made is an essential facility. This latter system must, of course, employ an extra head and amplifier for Playback purposes thus adding to the cost of the machine—an additional cost which is worth while in order to know immediately the quality of the recording.

Brenell have found such machines to be in great demand so it is not surprising to find in their range of new equipment a superb model giving such a facility—and in addition this model (MK 6 Type "M") has switching provided to enable the recorded material to be immediately compared with the programme material being fed to the recorder (a system known as A/B comparison). In addition to facilities for recording from microphone, Radio, etc., special compensation circuits are incorporated in the recording amplifier to enable recordings to be made *directly* from magnetic and ceramic gramophone pickups (normally one has to feed pickups via separate pre-amps) and mixing facilities between microphone and pickup is possible by means of a cross-fade system (a single control fades out one signal as it fades in the other).

Modern transistors and techniques have enabled high powered amplifiers to be designed at a fraction of the weight of their valved counterparts, it is not surprising therefore to find in this superb portable recorder, a power output of 15 watts available. Wide range Bass & Treble control circuits are also incorporated. Whilst we think principally of this machine as a tape recorder, it must be remembered that its amplifier may be used independently of the recording facilities for reproduction of Radio, Gramophone and microphone signals in the home or hall (Public Address).

The tape deck incorporated in the Brenell MK 6 "M" recorder has 3 motors, 4 tape speeds, pausing mechanism, digital revolution counter, end of tape (or tape breakage) stop and 3 heads of the highest quality. The low wow and flutter content, wide frequency range and excellent signal to noise ratios are all important factors which make this machine so technically superior.

**INVOICE**

D 040628

**BRENELL ENGINEERING CO. LTD****231/235 LIVERPOOL ROAD****LONDON, N.1**

TERMS : NETT MONTHLY

YOUR ORDER No. verbal	DESPATCHED collect	DATE OF INVOICE 22.2.72	UNIT PRICE		TRADE TERMS	NET PRICE		PURCHASE TAX				
			£	p		£	p	£	p	£	p	
.....												
1 - Mark6 2/2 Deck with 3 heads			67	69	net			15	17	66	69	
1 - Case			11	70	net					11	70	
<i>re cancelled at 50 on o/c.</i>												
Despatch Address if different from above :-												
POSTAGE & PACKING												
SUB TOTAL											79	39
PURCHASE TAX											15	17
<b>TOTAL</b>											93	56

**IMPORTANT**

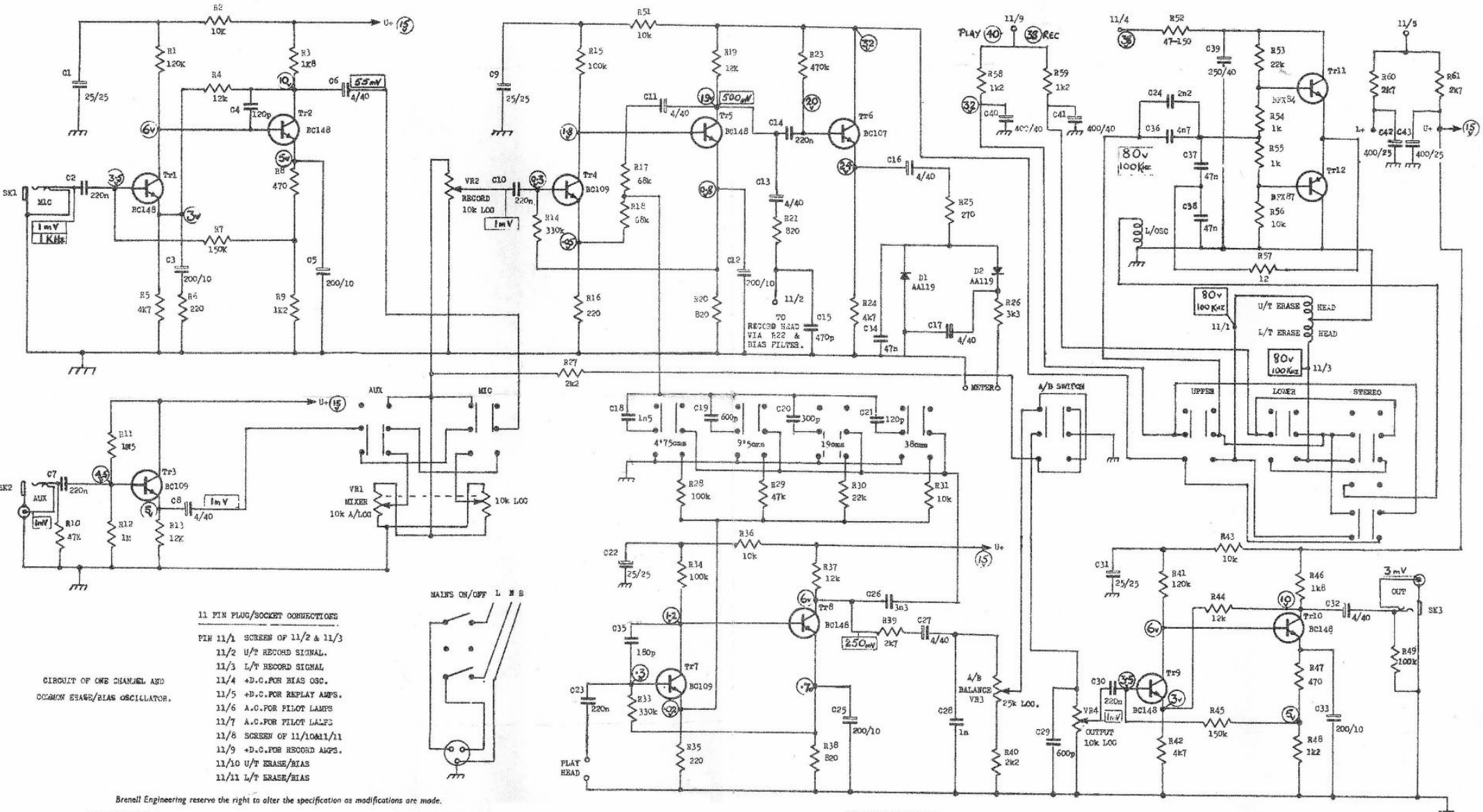
Goods on this Invoice were despatched on.....No claim for shortage or damage can be allowed unless carriers and ourselves are notified in writing **WITHIN 3 DAYS** from receipt of goods. No claim for non-delivery can be recognised unless we or the carriers are notified within 14 days of said date.

# Mark 6 Stereo Unit

# BRENELL

# Mark 6 Stereo Unit

## Transistorised Hi-Fi Tape Link

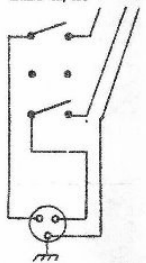


**11 PIN PLUG/SOCKET CONNECTIONS**

- 11/1 SCREEN OF 11/2 & 11/3
- 11/2 U/T RECORD SIGNAL.
- 11/3 L/T RECORD SIGNAL
- 11/4 +D.C.FOR BIAS OSC.
- 11/5 +D.C.FOR REPLAY AMPS.
- 11/6 A.C.FOR PILOT LAMPS
- 11/7 A.C.FOR PILOT LAMPS
- 11/8 SCREEN OF 11/10&11/11
- 11/9 +D.C.FOR RECORD AMPS.
- 11/10 U/T ERASE/BIAS
- 11/11 L/T ERASE/BIAS

CIRCUIT OF ONE CHANNEL AND COMMON BIAS/BIAS OSCILLATOR.

**MAINS ON/OFF L N B**



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Sole Manufacturers

**BRENELL ENGINEERING CO LTD**

231-235 Liverpool Road London N1 Telephone NORTH 8271 (5 lines)  
Suppliers to: British Government Ministries, BBC, ATV, Pathé, Rank, Kodak, Universities and Schools etc., etc.

**VOLTAGE MEASUREMENTS.**

- DC. DECK TO RECORD. AVO MODEL 3.
- SIGNAL. DECK TO RECORD. LEVELL TM2 (DIS.DC.FROM OSC.).
- BIAS. LEVELL TM2 METER.