issue 1
January 1978

CHANGES

MICROPHONE AMPLIFIER

Introduction
The AM9/19A and AM9/19B are rack-mounted microphone amplifiers, originally designed for Local Radio, but suitable for other applications. Both accept an input at −25 to −75 dB and provide an output at 0 dB or −20 dB (the output level is preset on the rear connector panel). The input sensitivity can be varied in 10-dB steps by means of a gain control switch on the front panel.

The B version includes a 15.625 kHz notch filter to remove acoustic pick-up caused by 625-line picture monitors. Both the A- and B-versions include a bass-cut filter. The bass-cut and notch filters can be bypassed by means of internal links. An output muting circuit is included in both versions, this can be used to cut the output if necessary.

TEST PROCEDURE

Apparatus Required
EP14/1 Audio Test Set
Oscilloscope
Repeating Coil; 600-ohm input and output impedances, 1:1 turns ratio; e.g. LL/63R
±12V Power Supplier; e.g. PS2/163
FL1/14 Filter
Digital Frequency Meter (for AM9/19B only)
Avo Model 8 or similar meter
Resistors as follows: 2 at 150 ohms (±2 per cent)
1 at 5 ohms (±2 per cent)
2 at 510 ohms (±2 per cent)
1 at 300 ohms (±2 per cent)
1 at 12 kilohms (±2 per cent)

Note: If an EP14/1 is not available, a TS/10 Tone Source and an ATM/1 Test Programme Meter can be used for the Gain, Output Muting, Frequency Response and Noise tests.

D.C. Test
Check that the amplifier draws 25 ±5 mA from both rails of the power supplier.

Voltage Gain
1. Set the sensitivity control of the amplifier to the −75 dB position.
2. Check that PLA12 and PLA13 are open circuit.
3. Adjust the attenuator controls on the EP14/1 to give −55 dB, at 1 kHz, across points A – B of the test circuit.
4. Check that the output level of the amplifier is 0.7 ±1 dB.
5. Set the sensitivity control successively to −65, −55, −45, −35 and −25 dB.
6. Check that the respective output levels are −9, −18.4, −28.4, −38.2 and −48.1 dB (all to within ± 1 dB).
7. Connect PLA13 to PLA9 and check that the gain of the amplifier increases by 18.8 ±0.5 dB. If necessary, reduce the input level to prevent overloading.

Output Muting
With the apparatus connected to measure voltage gain, connect PLA12 to PLA17 (+12V). Check that the output signal is attenuated by more than 80 dB.

Frequency Response
1. Maintain a constant level of −55 dB across points A-B.
2. Check that the frequency response is as shown in the specification.
   (a) Before checking the frequency response of an AM9/19B, set the input frequency to 15.625 kHz (with the aid of a digital frequency meter) and adjust L3 in the amplifier for minimum output.
   (b) The AM9/19A and AM9/19B are not designed to feed long tie-lines and the high-frequency response may be adversely affected if measurements are carried out over such lines.

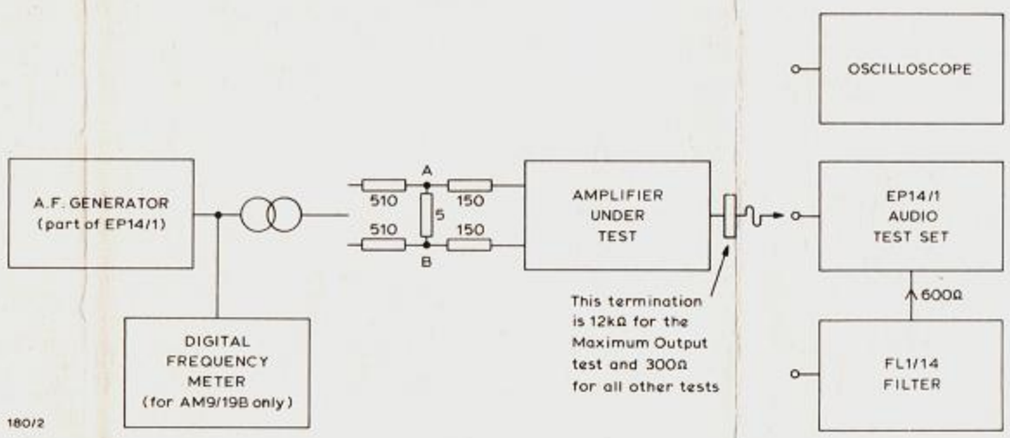
Maximum Output
1. Display the output on an oscilloscope.
2. Increase the input until peak clipping is just perceptible.
3. Check that this does not occur at a level of less than +22 dB.

Distortion
1. Adjust the input level of a 1-kHz signal until the output level is +16 dB.
2. Check that the total harmonic distortion measured at the output is less than 0.1 per cent.
3. Repeat the test at 100 Hz and check that the total harmonic distortion is less than 0.3 per cent.

Note: For this test the Bass Cut components must be short-circuited by means of link LK1.

Noise
1. Ensure that the Bass Cut components are short-circuited.
2. Set the sensitivity control of the amplifier to −75 dB.
3. Set the FL1/14 to the band-pass condition.
4. Feed the output from the FL1/14 to the Test Programme Meter section of the EP14/1.
5. Apply a 1-kHz signal to the amplifier and adjust its level to give −55 dB across A – B.
6. Measure the output from the FL1/14 and calculate the overall gain of the system.
7. Disconnect the circuit to the left of the repeating coil and peak the noise to 4 on the Test Programme Meter of the EP14/1.
8. The Test Programme Meter setting minus the system gain should be less than −122 dB.

T.E. Stafford
December 1977



Test Circuit for AM9/19A and AM9/19B

MICROPHONE AMPLIFIER – CIRCUIT

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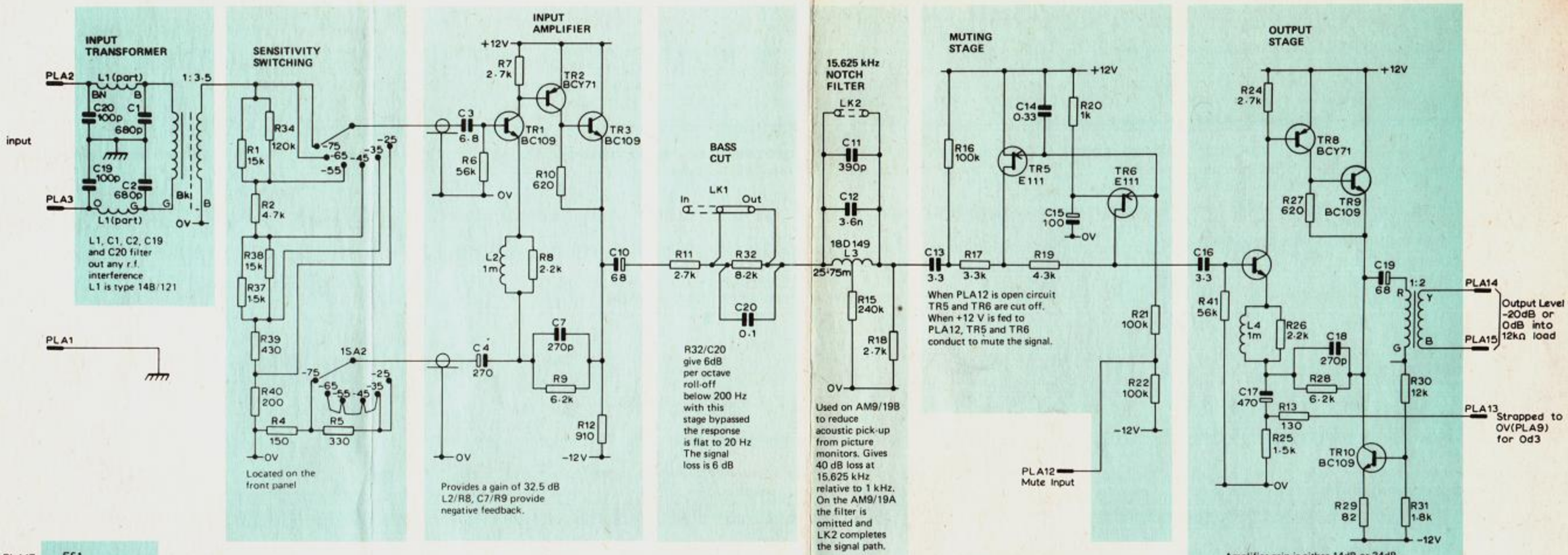
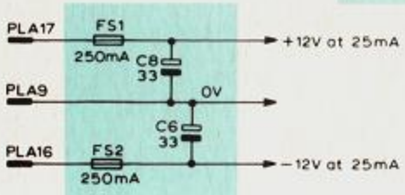
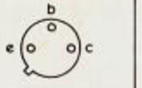
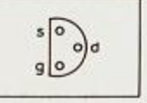
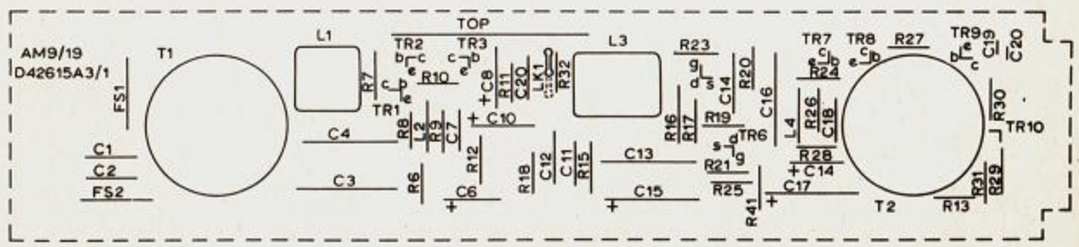




SPECIFICATION
(all dB levels are relative to 0.775V)

Input Sensitivity:	−75 dB to −25 dB in 10-dB steps
Nominal Output Level:	0 dB or −20 dB
Max Output Level:	+20 dB into a 12-kilohm load
Frequency Response: (see test procedure overleaf) These figures are for an output of −20 dB. For a 0 dB output, the response at 20 Hz is about 0.5 dB lower.	AM9/19A without Bass Cut −1(±1) dB at 20 Hz 0 dB at 2 kHz +0.25(±0.5) dB at 20 kHz with Bass Cut −8.8(±1) dB at 20 Hz 0 dB at 2 kHz +0.25(0.5) dB at 20 kHz AM9/19B figures at 20 Hz, 2 kHz and 20 kHz are similar to those given for the AM9/19A without Bass Cut with Bass Cut −40 dB at 15.625 kHz
Muting:	output attenuated by more than 80 dB
Total Harmonic Distortion: (see test procedure overleaf)	0.1 per-cent with an output of +16 dB into a 12 kilohm load at 1 kHz
Noise Figure (unweighted) (see test procedure overleaf)	better than 4 dB for a 300-ohm source at maximum gain.
Power Requirements:	25(±5) mA at +12V and at −12V

Type	Base (view on leads)
BC 109 BCY 71	
E 111	



COMPONENT LOCATION

180/1