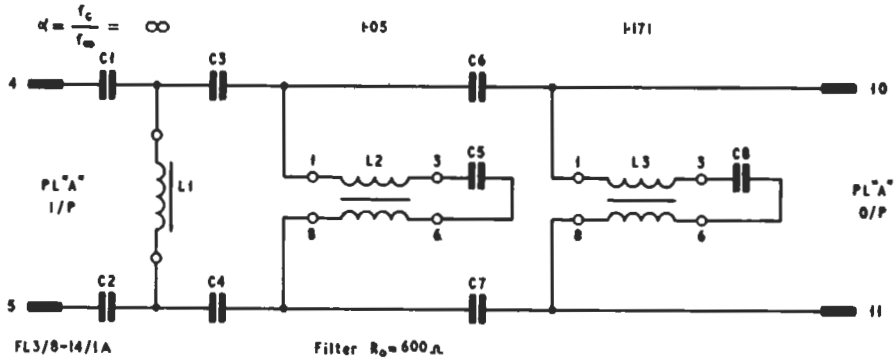
HIGH–PASS FILTERS FL3/8 TO FL3/14



Filter	*FL3/8*	*FL3/9*	*FL3/10*	*FL3/11*	*FL3/12*	*FL3/13*	*FL3/14*
L1*	18A/195 (1 – 8) 5·03 mH	21A/143 (1 – 3) 4·55 mH		21A/141 (1 – 3) 3·83 mH	21A/138 (1 – 3) 3·3 mH	21A/187 (1 – 6) 6·4 mH	21D/100 (1 – 8) 5·6 mH
L2	18A/194	21A/151		21A/148	18A/193	21A/196	21D/104
L3	18A/196	21A/153		21A/150	21A/149	21A/197	21D/105
C1, C2	0·0348	0·0315		0·0264	0·02275	0·0441	0·0386
C3, C4	0·0429	0·0386		0·0326	0·028	0·054	0·04782
C5	0·01882	0·0168		0·0142	0·01227	0·0238	0·0213
C6, C7	0·068	0·0616		0·0517	0·0437	0·0859	0·0762
C8	0·0198	0·018		0·01518	0·013	0·0253	0·0222

* On the inductor forming L1, connections are made to terminal 1 and terminal 3, 6 or 8. When terminal 8 is used, 3 and 6 are linked.

Fig. 1. Circuit of Filters FL3/8 to FL3/14

Introduction

The filters FL3/8 to FL3/14 are 600–ohm high-pass networks, originally designed for use in sound automatic monitoring equipments MN2M/4 and MN2M/6. Their cut-off frequencies are shown in Table 1. The units are constructed on standard plug-in equaliser chassis CH2/2 and may be mounted in a PN3/23-type housing.

TABLE 1

Code	*Cut-off Freq. kHz*
FL3/8	9·5
FL3/9	10·5
FL3/10	11·5
FL3/11	12·5
FL3/12	14·5
FL3/13	7·5
FL3/14	8·5

The FL3/8 to FL3/14 were intended for use with their inputs connected in parallel with the inputs of low-pass filters FL4/23B to FL4/29B (or FL4/23D to FL4/29D) respectively, the two filters in a pair being complementary and together having an input impedance of about 600 ohms. Where later sound automatic monitoring equipments are connected to three-winding repeating coils at the receiving ends of lines, high-pass filters FL3/8 to FL3/14 are used in conjunction with *Receive* forms of FL4/23A to FL4/29A respectively, the two filters in these instances being connected to separate windings of the repeating coils.

The circuit of filters FL3/8 to FL3/14 is shown in Fig. 1.

Adjustment and Testing

Apparatus

Tone source TS/10 (or, preferably, a source with finer frequency adjustment for trimming the higher-frequency filters)
Frequency counter
A.C. test meter ATM/1
Two 600–ohm 1:1 repeating coils
Inductance bridge

Adjustment

1. Connect the tone source, via a repeating coil, to PLA4 and PLA5. Join the ATM/1 (connected to present 600 ohms input impedance) via a repeating coil to PLA10 and PLA11.
2. Adjust L3 and L2 for maximum rejection, as shown by the ATM/1, at the frequencies given in Table 2. In each instance set the tone source exactly to the frequency to be rejected by measurement on the counter, but disconnect the counter before adjusting the inductor. With each inductor, ensure that it is true resonance that is obtained rather than the condition of maximum inductance (which may be obtained when an associated tuning capacitor is incorrect in value).
3. Check the frequency response of the filter, as described later, and readjust L2 and L3 if necessary.

Note that L1 should not require adjustment, but should have been preset at manufacture to the inductance shown in Fig. 1, measured at 1 kHz. This can be checked on an inductance bridge.

Testing Frequency Response

Connect the tone source, via a repeating coil, to PLA4 and PLA5. Join the ATM/1 (connected to present 600 ohms input impedance) via a repeating coil to PLA10 and PLA11. Check that the insertion loss characteristic conforms to the figures given for the type of filter under test in Tables 3 to 9, after an allowance has been made for loss in the repeating coils.

TABLE 2

Frequencies at which Inductors are Tuned for Maximum Rejection, kHz

Filter	*L3*	*L2*
FL3/8	8·12	9·05
FL3/9	8·97	10·0
FL3/10		
FL3/11	10·67	11·9
FL3/12	12·38	13·82
FL3/13	6·4	7·15
FL3/14	7·26	8·1

Continued overleaf

TABLE 3

Frequency Response of FL3/8

Frequency (kHz)	*Attenuation (dB)*
15·0	0·5 ±0·2
11·0	1·0 ±0·5
9·8	3·0 ±1·0
9·6	7·0 ±1·0
9·05	>45
8·12	>48
6·5	30·0 ±3·0
<3·0	>40

TABLE 4

Frequency Response of FL3/9

Frequency (kHz)	*Attenuation (dB)*
16·0	0·5 ±0·2
12·0	1·0 ±0·5
10·8	4·0 ±1·0
10·6	8·0 ±1·0
10·0	>45
8·97	>48
7·5	30·0 ±3·0
<4·0	>40

TABLE 5

Frequency Response of FL3/10

Information not available

TABLE 6

Frequency Response of FL3/11

Frequency (kHz)	*Attenuation* (dB)
>15·0	1·0 ±0·5
14·0	2·6 ±1·0
12·8	6·0 ±1·0
12·6	10·0 ±2·0
11·9	>40
10·67	>40
10·0	>28
<5·0	>28

TABLE 7

Frequency Response of FL3/12

Frequency (kHz)	*Attenuation (dB)*
18·0	0·75 ±0·5
16·0	4·0 ±1·0
14·8	6·0 ±1·0
14·6	11·0 ±2·0
13·82	>40
12·38	>40
12·0	>40
7·0	34·5 ±2·0

TABLE 8

Frequency Response of FL3/13

Frequency (kHz)	*Attenuation (dB)*
15·0	<0·2
9·0	0·5 ±0·2
7·8	3·7 ±1·0
7·6	7·0 ±1·0
7·15	>40
6·4	>40
<7·0	>28
<2·5	>40

TABLE 9

Frequency Response of FL3/14

Frequency (kHz)	*Attenuation (dB)*
>15·0	<0·2
10·0	0·5 ±0·25
8·8	3·0 ±1·0
8·6	5·0 ±1·0
8·1	>40
7·26	>40
<7·0	>28
<4·0	>40

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