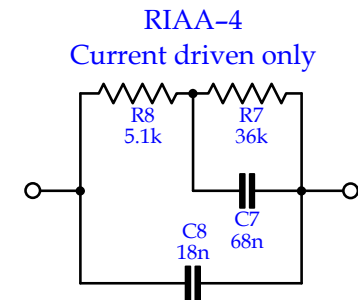
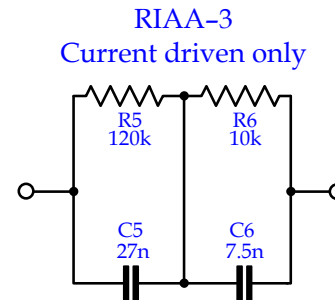
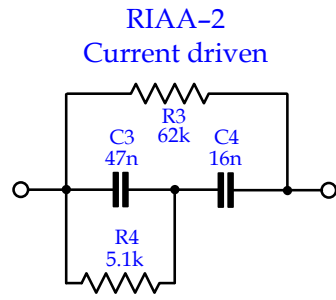
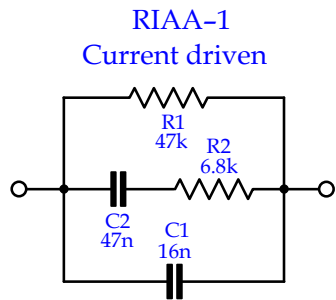


These tables give the relative values of R and C for 'lumped' networks capable of performing RIAA or similar equalisation where T_3 is the break point of the lowest frequency and T_1 that of the highest. The results are based on calculations published in Wireless World 1957 by W. H. Livy of E.M.I Studios London (now Abbey Road Studios). In 1982 I expanded the calculations to include a 4th variant and to show the numerical results of all the combinations of R and C to make choosing components easier. In 1985 the results were used to make a simple iterative program that enabled entry of any one component to calculate the other three. The voltage driven networks should be inserted between a low output impedance amplifier and high input impedance amplifier to create a passive RIAA 'phono stage'. The 2 terminal variants are suitable for inclusion in amplifier negative feedback loops or when driven from a current source the output voltage is developed across the network and can be amplified by a high input impedance amplifier. **Keith Snook** ~ www.keith-snook.info



$$\frac{R_1}{R_2} = \frac{T_1 + T_3 - T_2 - \frac{T_1 \cdot T_3}{T_2}}{T_2} = 6.87736$$

$$\frac{R_3}{R_4} = \frac{T_1 + T_3 - T_2}{T_2 - \frac{T_1 \cdot T_3}{T_1 + T_3 - T_2}} = 12.40315$$

$$\frac{R_5}{R_6} = \frac{T_3 - T_2}{T_2 - T_1} = 11.77$$

$$\frac{R_7}{R_8} = \frac{T_1 + T_3 - T_2 - \frac{T_1 \cdot T_3}{T_2}}{T_2} = 6.87736$$

$$R_2 \cdot C_1 = \frac{T_1 \cdot T_3}{T_1 + T_3 - T_2 - \frac{T_1 \cdot T_3}{T_2}} = 109.053 \mu\text{S}$$

$$R_4 \cdot C_3 = T_2 - \frac{T_1 \cdot T_3}{T_1 + T_3 - T_2} = 236.7947 \mu\text{S}$$

$$R_6 \cdot C_5 = T_3 \cdot \frac{T_2 - T_1}{T_3 - T_2} = 270 \mu\text{S}$$

$$R_8 \cdot C_7 = T_2 \cdot \frac{T_1 + T_3 - \frac{T_1 \cdot T_3}{T_2}}{T_1 + T_3 - T_2 - \frac{T_1 \cdot T_3}{T_2}} = 364.2387 \mu\text{S}$$

$$R_2 \cdot C_2 = T_2 = 318 \mu\text{S}$$

$$R_4 \cdot C_4 = \frac{T_1 \cdot T_3}{T_1 + T_3 - T_2} = 81.2053 \mu\text{S}$$

$$R_6 \cdot C_6 = T_1 = 75 \mu\text{S}$$

$$R_8 \cdot C_8 = \frac{T_1 \cdot T_3}{T_1 + T_3 - \frac{T_1 \cdot T_3}{T_2}} = 95.20958 \mu\text{S}$$

$$R_1 \cdot C_1 = \frac{T_1 \cdot T_3}{T_2} = 750 \mu\text{S}$$

$$R_3 \cdot C_3 = T_1 + T_3 - T_2 = 2937 \mu\text{S}$$

$$R_5 \cdot C_5 = T_3 = 3180 \mu\text{S}$$

$$R_7 \cdot C_7 = T_1 + T_3 - \frac{T_1 \cdot T_3}{T_2} = 2505 \mu\text{S}$$

$$R_1 \cdot C_2 = T_1 + T_3 - T_2 - \frac{T_1 \cdot T_3}{T_2} = 2187 \mu\text{S}$$

$$R_3 \cdot C_4 = \frac{T_1 \cdot T_3}{T_2 - \frac{T_1 \cdot T_3}{T_1 + T_3 - T_2}} = 1007.2 \mu\text{S}$$

$$R_5 \cdot C_6 = T_1 \cdot \frac{T_3 - T_2}{T_2 - T_1} = 883.33$$

$$R_7 \cdot C_8 = \frac{T_1 \cdot T_3}{T_2} \cdot \frac{T_1 + T_3 - T_2 - \frac{T_1 \cdot T_3}{T_2}}{T_1 + T_3 - \frac{T_1 \cdot T_3}{T_2}} = 645.79 \mu\text{S}$$