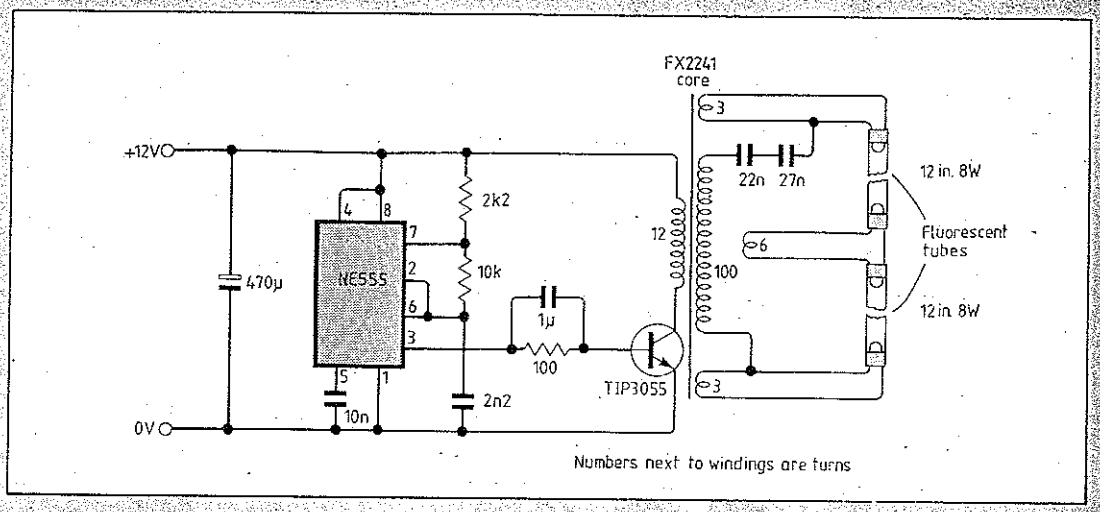
Fluorescent lamp inverter for 12V supply



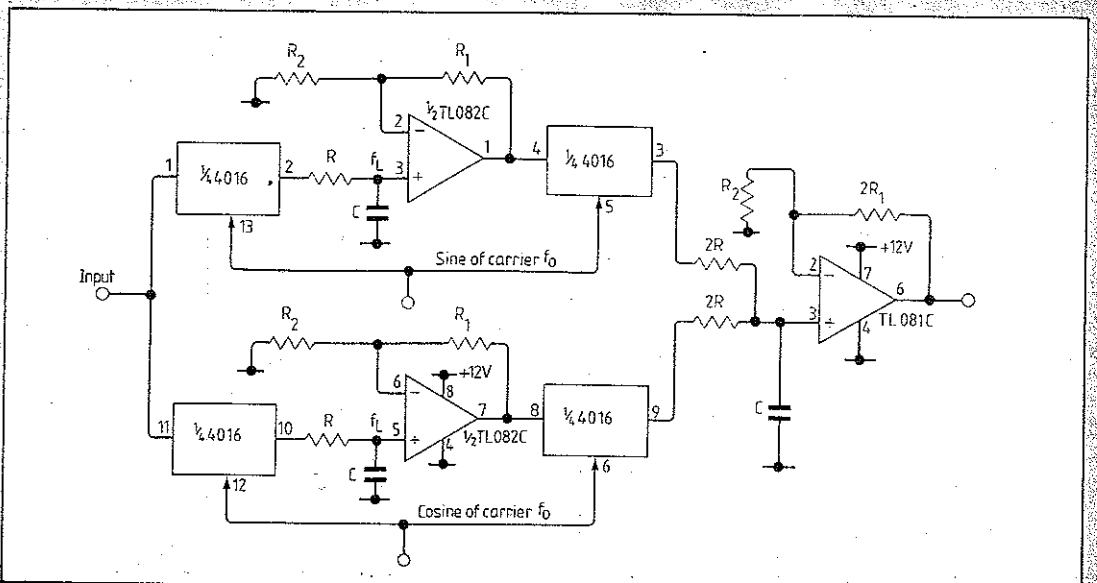
Rather than using the usual power oscillator, my fluorescent lamp inverter has a 2N3055 power transistor driven by a 555 timer acting as an oscillator with a 1:1 mark/space ratio. This makes the circuit simple, efficient and easy to adapt for different tubes up to 20W. As shown, the inverter drives two 8W, 300mm tubes.

The transformer is wound on an FX2241 pot core with the 12-turn primary next to the core. Next is the main 100-turn condary winding in three or our neatly-wound layers, followed by three cathode heating coils, two of three turns and one of six. A small paper 'air' gap should be formed between the core segments and adjusted to give maximum lamp brightness. Larger cores such as the FX2242 should work equally well.

To run other sized lamps, just alter the number of secondary turns and the size of the ballast capacitor, while keeping an eye on current consumption, light output and ease of starting. As shown the circuit takes about 1.6A. A Thorn-EMI 16W 2D lamp could also be used with its starter and capacitor removed, but at £7.50 they are rather expensive.

P. G. Bennett
Bristol

Bandpass filter



Many telecommunications systems require bandpass with a Q factor which can be set to a desired value without changing the circuit. This solution is a quadrature amplitude modulator consisting of two identical balanced mixers which operate under control of sine or cosine-related carriers of the desired pass-band centre frequency, f_0.

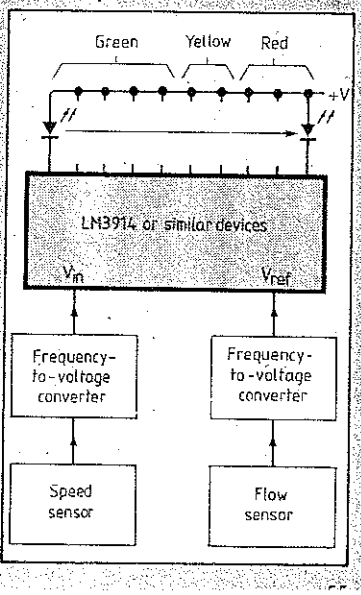
Operation of the circuit is similar to that of an n-path filter, Q-factor is around 100 and small variations in Q due to changing f_0 are negligible.

Two low-pass filters with cut-off frequency f_L only pass, unattenuated, input components from the mixers within $\pm f_L$ of centre frequency f_0. After low-pass filtering, each signal is remodulated by the same carrier frequency f_0 in quadrature. Another low-pass filter at the output of the summing point removes higher harmonics resulting from the second mixing.

Hence bandwith Δf is determined by cut-off frequency f_L and the Q factor can be set by the choice of f_0 only. For example, choosing an f_L of 10kHz and f_0 of 10MHz yields $\Delta f = 2f_L = 20$kHz; resulting in $= f_0/\Delta f = 500$. The value of is thus controlled by f_0 with Δf fixed. Values of R and C determine the pass bandwith.

Kamil Kraus
Rokycany
Czechoslovakia

Rate indication using LM3914 bargraph i.c.



In some applications it is desirable to indicate a product or ratio. The popular LM3914 bargraph can be used for this purpose, the number of leds lit being proportional to V_{in}/V_{ref}.

Displaying petrol consumption directly in a car is inconvenient, possibly even a dangerous distraction; a bargraph indication using different colours can be noticed even when one is not looking directly at it.

Feeding, say V_{in} with a voltage representing km/h and V_{ref} with a representation of l/h, the bargraph could indicate km/l. I have tried the principle by feeding the two inputs with variable voltages and it works fine.

Bart Scholten
Lerenskog
Norway