ET 8 - guía 3

b) Ach-Pass

- Frec Notch = 50 Hz
- $\alpha_{max} = 3$ dB para un $B_W = 5$ Hz
- Ganancia de 0 dB en la banda de paso.

$$B_W = \frac{f_0}{Q} = 5\,Hz \Rightarrow Q = \frac{f_0}{B_W} = \frac{50}{5} = 10 \quad ; \quad \Omega_\omega = 2\pi\, 50\,Hz$$

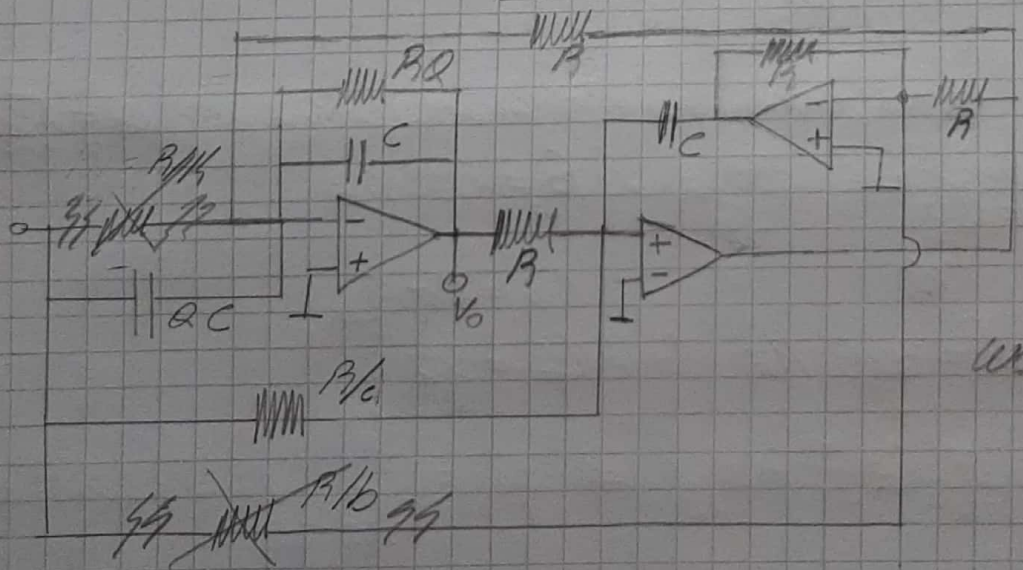
Biquad del Ach-Pass (Sch. pág 312)

$$T(s) = \frac{-as^2 + s\omega_0(k-b) + c\omega_0^2}{s^2 + s\frac{\omega_0}{Q} + \omega_0^2}$$

Para un Notch

$a = 1$; $c = 1$; $k = b = 0$

quedando entonces $\boxed{T(s) = \frac{s^2 + \omega_0^2}{s^2 + s\frac{\omega_0}{Q} + \omega_0^2}}$



$$\omega_0 = \frac{1}{CR}$$

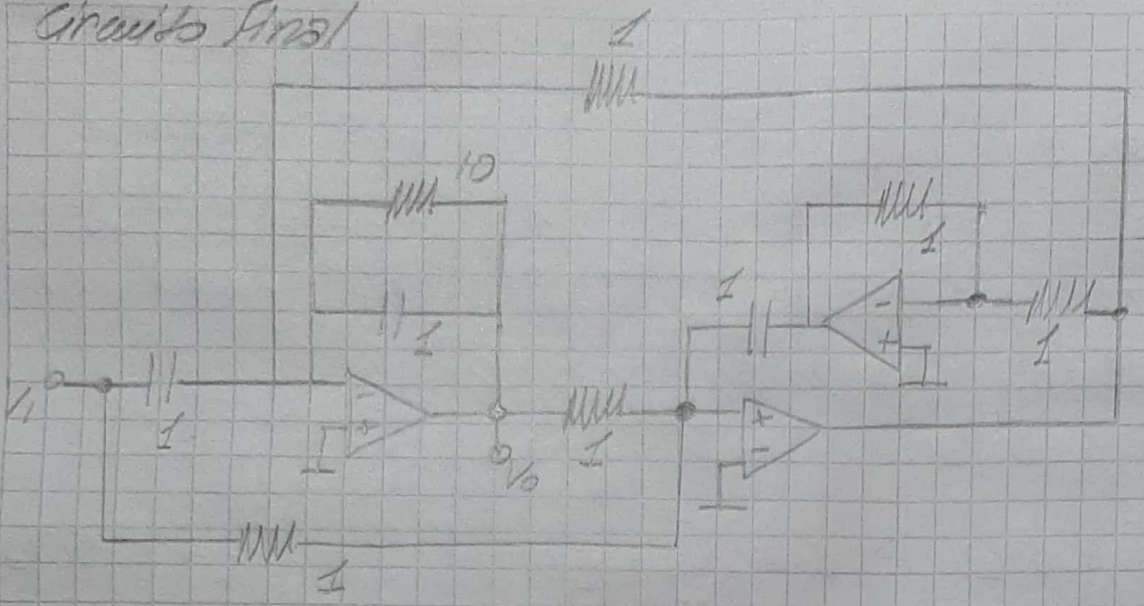
Tomo $\omega_0 = 1 \Rightarrow T(s) = \frac{s^2 + 1}{s^2 + s\frac{1}{10} + 1}$

y $R_2 = R$

$\Rightarrow R = 1$

NOTA

Circuito final



5: $C = \frac{C'}{R_\omega R_E} = 100nF \Rightarrow R_E = 31,8 K\Omega$

c)

Lowpass Notch

$|T(s)| = \frac{as^2 + c\omega_o^2}{s^2 + s\frac{\omega_o}{Q} + \omega_o}$

Q → ganancia en alta frec.

c → ganancia en baja frec.

$\Rightarrow Q = 10^{\frac{-30dB}{20}} = 0,032$

$c = 10^{\frac{3dB}{20}} = 1,41$

Siendo $b = k = 0$

En este caso como es de Max. Planicidad $\Rightarrow Q = \sqrt{2}/2$

$Bw = \frac{f_o}{\sqrt{2}/2}$

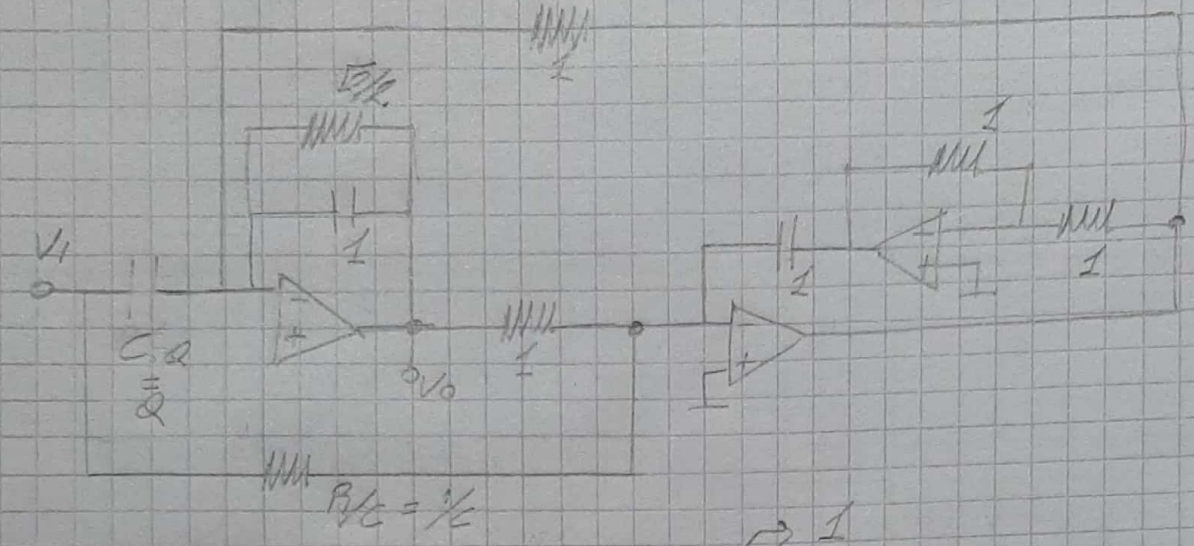
$\Rightarrow Bw = 396 Hz$

$f_{o_{LP}} = 280 Hz$

$R_\omega = 2\pi f_{o_{LP}}$

$R_E = B$

NOTA +2h



Si propongo $C = 10nF = \frac{C'}{R_w R_z} \rightarrow 1 \Rightarrow R_z = (10nF \cdot R_w)^{-1}$

$R_z = 56,8\ k\Omega \rightarrow R$

$R/2 = 40,1\ k\Omega$

$R/2 = 40,1\ k\Omega$

$C_\alpha = 320\ pF$

NOTA