

Loop Order	Noise Bandwidth B_n (Hz)	Typical Filter Values
First	$\frac{\omega_o}{4}$	ω_o $B_n = 0.25\omega_o$
Second	$\frac{\omega(1+a_2^2)}{4a_2}$	ω_o^2 $a_2\omega_o = 1.414\omega_o$ $B_n = 0.53\omega_o$
Third	$\frac{\omega(a_3b_3^2+a_3^2-b_3)}{4(a_3b_3-1)}$	ω_o^3 $a_3\omega_o^2 = 1.1\omega_o^2$ $b_3\omega_o = 2.4\omega_o$ $B_n = 0.7845\omega_o$