

These equations are derived and the concepts are explained in Appendix A.

Finally, it will become clear in the chapters to follow that ordinarily there is no unique solution to a design problem. One of the decisions that the designer will have to make is that of element size. Skill in such choices will come with experience. Until then, the following guidelines are offered for the passive elements:

1. *Capacitors*

	<u>Largest</u>	<u>Smallest</u>
Readily realizable	1 μF	5 pF
Practical	10 μF	0.2 pF 0.5 pF
Marginally practical	500 μF	0.5 pF 0.2 pF

2. *Inductors*

	<u>Largest</u>	<u>Smallest</u>
Readily realizable	1 mH	1 μH
Practical	10 mH	0.1 μH
Marginally practical	1 H	50 nH

3. *Resistors.* Resistor size will depend on the quality of the operational amplifier used and on power dissipation considerations. As a guideline,

Preferred range	1K-100 k Ω
Lower limit	0.1K-1 k Ω
Upper limit	100K-500 k Ω

These choices are tentative and depend on the state of the art.