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TELECOMMUNICATIONS REGULATION CIRCULAR

SUPPRESSION OF INDUCTIVE INTERFERENCE
SUPPRESSION CAPACITORS FOR TELEVISION FREQUENCIES

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TELECOMMUNICATION REGULATORY SERVICE

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SUPPRESSION OF INDUCTIVE INTERFERENCESUPPRESSION CAPACITORS FOR TELEVISION FREQUENCIES

1. Large capacitors often are not very effective in the suppression of radio noise at very high frequencies, from household appliances and other apparatus. Particularly if interference is arising on only a single television channel, or a small band of frequencies, much better results can be obtained by using a small capacitor whose capacitive reactance will just equal, and cancel out, the inductive reactance of its leads, which amounts to something like 10 ohms per centimeter of lead at 100 megahertz.
2. The curves of Figure I give the capacitor size which will series resonate the inductance of various lengths of lead, at any given frequency.
3. Best suppression occurs when a given capacitor, with leads, is at its series resonant frequency. At frequencies above resonance it is more effective than larger capacitors would be, with the same length leads. It is also more effective (impedance is less) at frequencies somewhat below resonance, than much larger capacitors would be, down to about three-quarters of its resonant frequency, but not lower.
4. On commutator motors, suppression capacitors may be most effective if connected from each brush holder to the frame, or across the brush holders, or from each line to the frame, or a combination of these. They should always be installed with the shortest possible leads and the appropriate capacitance to resonate this length should be used. While the lead length may not greatly affect the suppression obtained at the resonant frequency, it should be noted that the impedance of the capacitor-plus-leads at frequencies above or below resonance is directly proportional to the reactance, and hence length, of the leads at resonance. For this reason the shortest possible leads should always be used, and the capacitor size chosen accordingly.
5. The Canadian Electrical Code specifies the allowed leakage currents in order to limit shock hazard. This Code must always be met when attempting to suppress radio noise.

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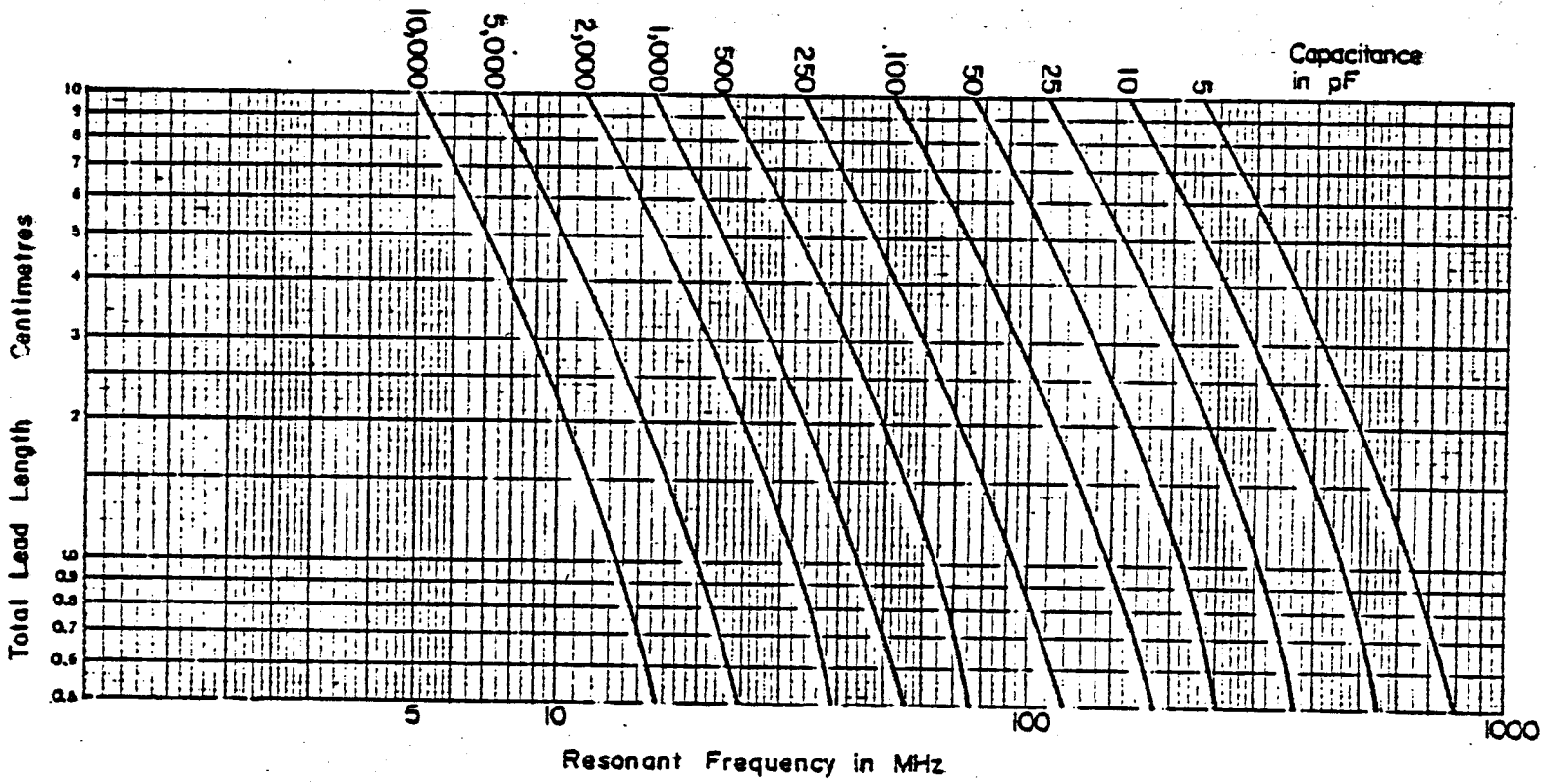


FIGURE 1