

DATE 7/30/54
SH. 1 OF 2
COMPILED BY
A.B.

TMC SPECIFICATION NO. S-218

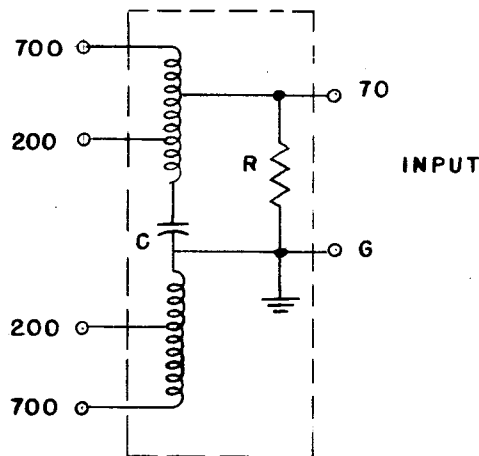
TITLE: ANTENNA COUPLER, MODEL RAC -- DESCRIPTION

JOB

APPROVED, AMB

The TMC Antenna Coupler Model RAC has been designed to couple an unbalanced 70Ω line to a balanced rhombic antenna of either 700 or 200 ohms, nominal impedance.

The coupler consists essentially of a broad-band auto-transformer of the following configuration.



The resistor R across the 70Ω input has a value of $10K \pm 20\%$ and since $10K \gg 70$ its shunting effect on the 70Ω winding is negligible. The purpose of this resistor is to allow a leakage path to ground for static charges which may accumulate on the antenna.

The capacitor C connecting the halves of the transformer is a .05 uf $\pm 10\%$ condenser. Its reactance over the frequency range is also negligible, acting as a short circuit to radio frequencies. Its purpose is to isolate the windings for DC current to permit resistance measurements of antenna termination.

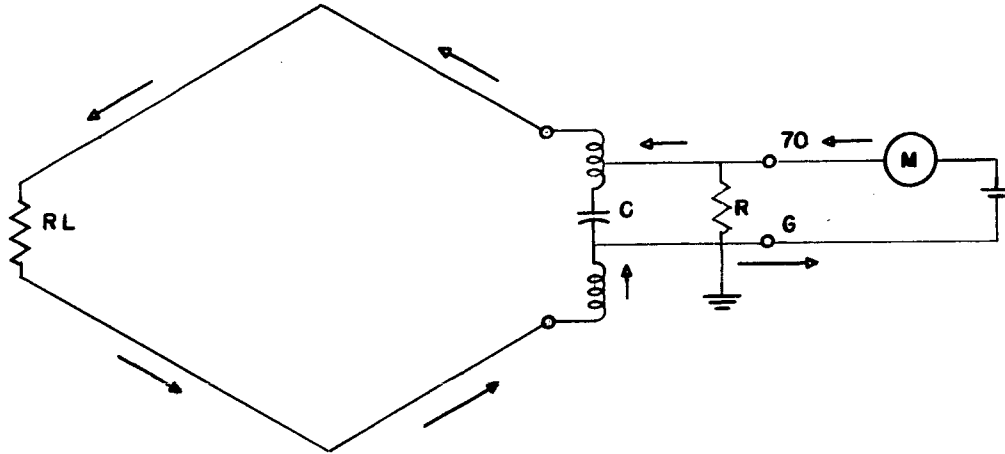
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A simplified diagram is shown above showing capacitor function in DC measurements.

If a DC ohm meter (M & B) is connected to the 70 ohm terminals, the current will be limited by RL (since $R \gg RL$) therefore the ohm-meter will record essentially the termination resistance RL, 700 Ω , or 200 Ω as the case may be.

DC ohm meter measurements on the RAC with both input and output terminations open-circuited should give the following results:

70-G	10K $\pm 20\%$
700-700	" "
200-200	" "

A short circuit across either the 700 Ω or 200 Ω terminations should produce a short circuit at the 70 Ω input.