

**GATES**  
**M6112**  
**R. F. DIODE**

**INSTRUCTION BOOK**



***GATES RADIO COMPANY***

*A Subsidiary of Harris-Intertype Corporation*  
**QUINCY, ILLINOIS**

Offices: NEW YORK, HOUSTON, LOS ANGELES, WASHINGTON, D. C. Export: ROCKE INTERNATIONAL CORP., NEW YORK CITY. In Canada: CANADIAN MARCONI COMPANY, MONTREAL

## SPECIFICATIONS

Power Range:

250 to 50 Kw.

Frequency Range:

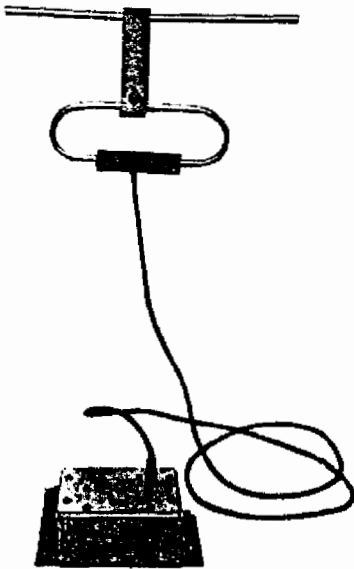
540 to 1600 Kc.

## DESCRIPTION

The M6112 RF diode is designed for use as a remote R.F. indicating device in standard broadcast installations. It is not a directly calibrated R.F. ammeter, but is adjustable to indicate current linearly with the R.F. meter.

The RF Diode is designed to handle the maximum operating voltages normally encountered in installations of from 250 watts up to 50 kilowatts.

It is not necessary to break the lead to the antenna to install the unit. The M6112 RF Diode consists of a pickup loop attached to a rectifier assembly through a short length of coaxial cable. The loop is clamped to the antenna lead.



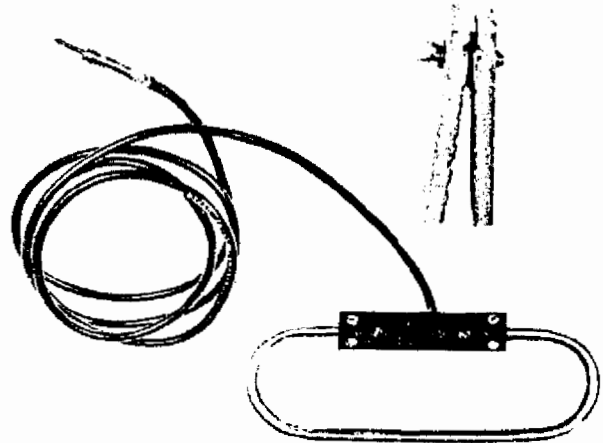
TYPICAL INSTALLATION

The scale range of the recommended indicating meter may be varied, determined only by the requirements of the installa-

tion. The meter should be a 1 ma. D.C. movement.

## INSTALLATION

The Gates' RF Diode unit is designed primarily for the remote indication of antenna current. The unit is normally connected on the transmitter side of the R.F. ammeter and next to the ammeter. The R.F. ammeter should, of course, be the last device inserted in the antenna lead as prescribed by the FCC.



PICKUP LOOP WITH MOUNTING CLAMP

Using the clamp provided, clamp the loop to the antenna lead so that the antenna lead is in the groove nearest the pickup loop for installations of 5 Kw. or less. For higher power installations, the loop should be installed so that the antenna lead is in the slot that is farthest from the pickup loop. The antenna lead and the two sides of the pickup loop should lie in the same plane.

Mount the diode rectifier assembly near the pickup loop (within 4 feet). The diode rectifier assembly may be mounted in any position. Care should be taken, however, to keep each of the three screw-driver adjustment controls easily accessible for adjustment. The box should be grounded either by a good mechanical

connection to the cabinet if it mounts in a metal cabinet or by a separate ground strap when mounted on insulating material. Cut the cable on the pickup loop to the proper length and solder the connector, which is provided, to the end of the cable. Plug the cable connector into the jack on the diode rectifier assembly.

Two pairs of output terminals are provided. The indicating meter at the transmitter connects to the terminals marked "3" and "4". A shielded pair should be used to connect the meter to the rectifier assembly. Terminal "4" is negative. When remote control is used, the line for the remote meter connects to terminals "1" and "2". Terminal "2" is negative.

#### CALIBRATION

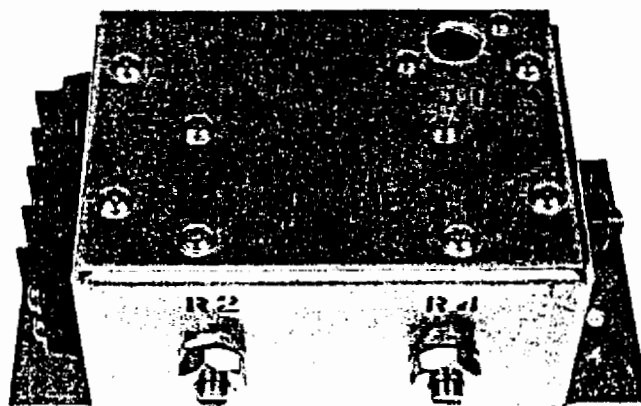
Turn the RF Level Control (R1) full counterclockwise. Set Local Meter Calibrate Control (R4) and Remote Meter Calibrate Control (R2) full clockwise. Turn on the transmitter. Turn R1 clockwise until the indicating meter reads full scale. If the pickup loop was initially installed with the antenna lead in the slot farthest from the loop, it may not be possible to obtain full scale reading even with R1 in full clockwise position. In this case, turn off the transmitter and clamp the antenna lead one slot closer to the pickup loop. Turn R1 full counterclockwise. Turn on the transmitter and turn R1 clockwise until a full scale reading is obtained or R1 is full clockwise. Repeat this procedure until a full scale reading can be obtained. For low power installations below 900 Kc, it may be necessary to solder a small capacitor in parallel with R1. In most cases a 500 mmf. silvered-mica capacitor will do the job.

If a local meter is being used, adjust R4 for calibration. If a remote meter is used, adjust R2.

After the unit is calibrated, tighten the locking nuts on R1, R2 and R4. This will prevent accidental movement of the potentiometers.

#### THEORY OF OPERATION

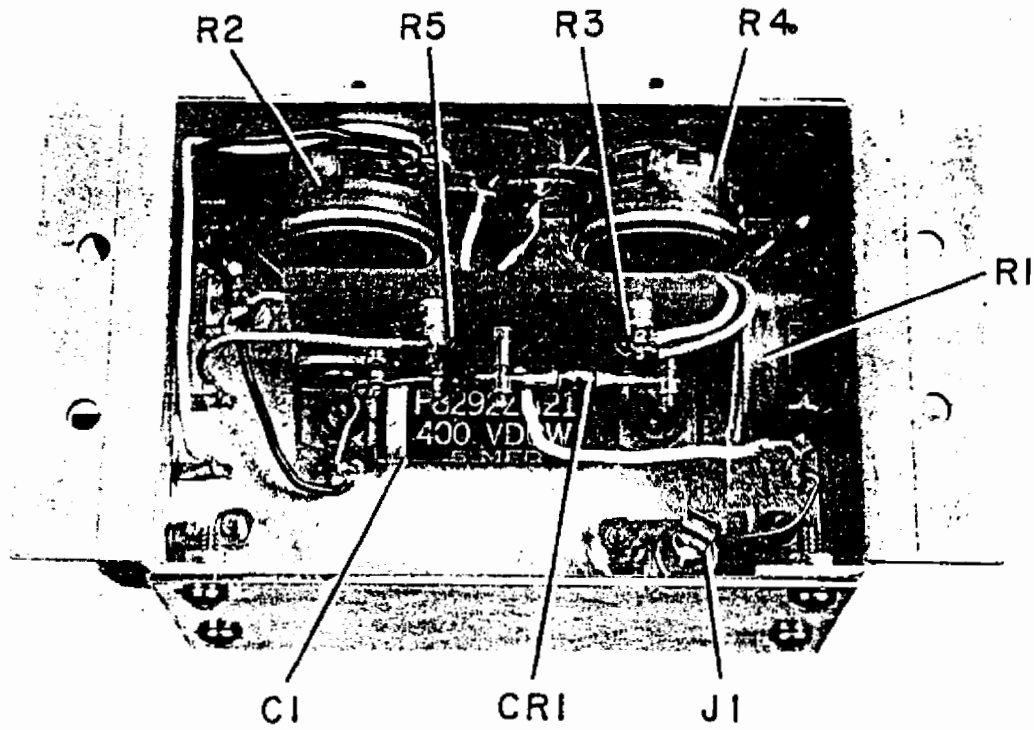
The pickup loop is the secondary of a transformer with the antenna lead as the primary. The voltage developed across potentiometer R1 is directly proportional to the current in the antenna lead. This voltage is rectified and the R.F. component is filtered out by means of capacitor C1. The D.C. voltage developed across C1 is measured by either or both of two meter circuits. One meter circuit consists of R3 in series with a 1 ma. D.C. meter (local meter) which is shunted by the rheostat R4. The rheostat is used to calibrate the meter. The other meter circuit consists of R2, R5 and the line resistance, all in series with a 1 ma. D.C. meter (remote meter). Using a resistor on each side of the line provides for a balanced output. Calibration of the remote meter is accomplished by adjusting R2.



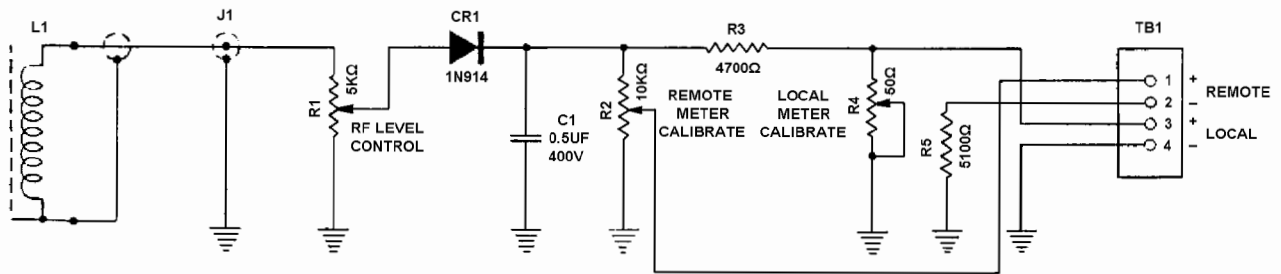
RECTIFIER ASSEMBLY

### PARTS LIST

Symbol No.	Gates Part No.	Description
C1	506 0016 000	Capacitor, .5 uf., 400 V.
CR1	384 0134 000	Diode, 1N914
J1	612 0359 000	RF Input Jack
L1	926 7632 001	Pickup Loop Assembly
P1	610 0370 000	Coax Cable Connector
R1	550 0065 000	Potentiometer, 5000 ohm
R2	550 0067 000	Potentiometer, 10K ohm
R3	540 0065 000	Resistor, 4700 ohm
R4	550 0054 000	Potentiometer, 50 ohm
R5	540 0066 000	Resistor, 5100 ohm
TB1	614 0071 000	Terminal Board



PARTS LOCATION



SCHEMATIC