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Tape  
Unit

M-5862

RDC-10C REMOTE CONTROL

# INSTRUCTION BOOK



**GATES**

**GATES RADIO COMPANY**

A Subsidiary of Harris-Intertype Corporation

QUINCY, ILLINOIS

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ADDENDA

C-78556 Functional Diagram  
C-78485 Wiring Diagram, Studio Unit

Add C5, 3 mfd., Capacitor across  
K2 Coil, Terminals 1 & 2.

Although the RDC-10C was designed primarily for use over telephone lines of ten miles or less, it has been used over lines as long as twenty miles successfully. In order to allow its use over the longer lines, and to insure more positive pulsing over shorter lines; a 3 mfd. condenser (C5) has been added across the coil (Terms. 1 & 2) of K2 relay. This condenser serves to slow the pulse rate of the stepping relay to approximately 10 pps.

RDC-10C

ECN-8229

5/12/60

INSTRUCTION BOOK  
FOR  
GATES' M5862 RDC-10-C  
REMOTE CONTROL & METERING SYSTEM

IB-1615  
10/8/59

Gates Radio Company  
Quincy, Illinois

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- B-13417 Installation Instructions Motor and Rheo. Assembly
- C-19233 Installation Instructions, P.A. Plate Volt. Ext. Kit;  
P.A. Plate Cur. Ext. Kit, Ant. Cur. Kit, AC Overload.
- C-79369 Schematic Transmitter Unit
- C-78485 Schematic Studio Unit
- C-19381 Installation Instructions D.C. Overload, Tower Lights  
Current Transformer
- C-78071 Remote Control Interconnections to Provide ON-OFF,  
Fail-Safe, and AC Overload Protection.

M5862 REMOTE CONTROL SYSTEM - RDC-10-C

I SPECIFICATIONS

(A) Electrical

1. Control

- (a) Continuous D.C.
- (b) Number of Functions:   Fil. On - Holding Key  
                                  Plate On - Momentary  
                                  Plate Off - Momentary  
                                  Raise - Momentary  
                                  Lower - Momentary
- (c) Additional control functions using interlocking relays.

2. Metering

- (a) Ten Metering Positions.
- (b) Voltage Standard in OFF Position
- (c) Three 4 inch meters; Dual Scales
- (d) Meters - 100 ua, 10,000 ohms per volt
- (e) Metering Selected by Switch Operating Stepper Switch.
- (f) Personnel and Telephone Line Protective Features

3. Fail Safe Provisions - Continuous DC Voltage Holds Transmitter ON (Required by the FCC)

4. Telephone Line Requirements - Two Lines - Both providing a continuous D.C. path.

5. 115 V. A.C. 60 Cycles

- (a) Studio Unit, Normal 52 Watts, Fl - 3 Amp. with stepper operating 61 watts.
- (b) Transmitter Unit - Normal 16 Watts, Fl - 1 Amp. with stepper operating 25 watts.

6. All electrical connections to terminal boards on rear of chassis.

(B) Mechanical

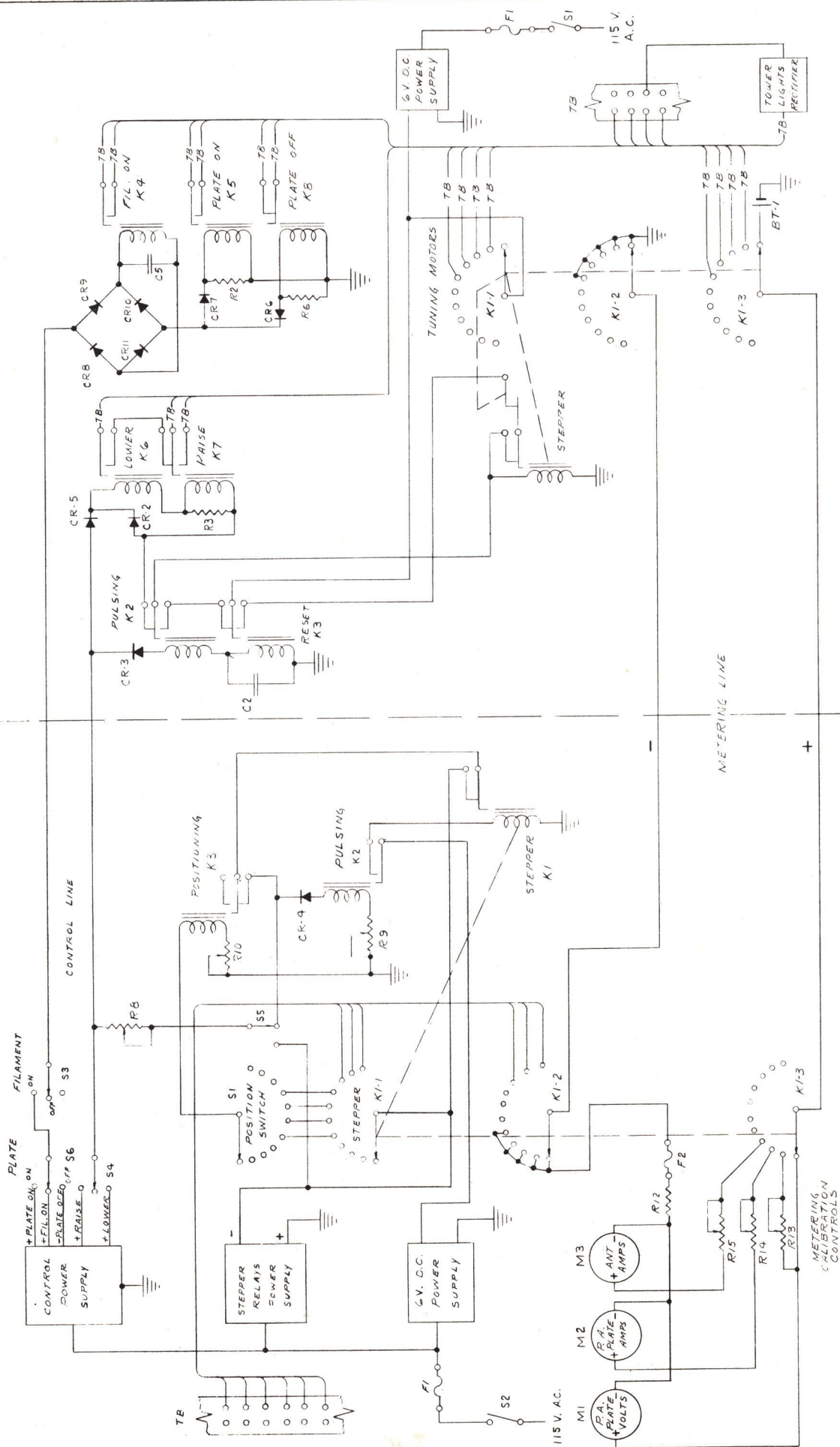
1. Rack Mounting - Standard 19" Panel Mounting.

- (a) Studio Unit 8-3/4" Panel Height  
                  7-1/4" Depth in Rack
- (b) Transmitter Unit 8-3/4" Panel Height  
                  7-1/4" Depth in Rack

NOTE: Front panel removable for mounting inside the transmitter.

TRANSMITTER UNIT

STUDIO UNIT



DR BY: [Signature] CH BY: ENG KING  
 DATE: 1/2/54

MTL FIN

C-785-36

TITLE: FUNCTIONAL DIAGRAM FOR RDC-10 C  
 REMOTE CONTROL M5862

## INTRODUCTION

The basic M5862 remote control system was designed for controlling and metering of transmitters from a remote point.

The M5862 consists of:

- M5864 - Studio Unit
- M5863 - Transmitter Unit
- M4719A - P.A. Plate Voltage Extension Kit
- M4720A - P.A. Plate Current Extension Kit
- M5143 - Tower Light Indication Current Transformer

The M5862 remote control system consists of a voltage supply for control purposes and ten (10) metering positions. By interlocking a control function with a position on the transmitter stepper switch, it is possible to get ten (10) control functions with the Raise-Lower switch. The Plate On position may also be interlocked with a stepper position giving ten (10) functions with this position. Three positions on the stepper are set up as balanced pairs and may be used for metering, telephone or as a spare program loop.

Ten calibrating controls are provided on the studio unit to adjust meter readings. Meters are 10,000 ohms per volt (100 ua.) and normal line variations will not affect accuracy of readings. Meters are provided with dual scales so direct readings may be taken.

A mercury battery is connected in the OFF position of the position switch to provide a reference voltage to indicated sources of trouble such as low line voltage at the transmitter, defective telephone lines, or transmitter difficulties. Stepper synchronization is also accomplished in the OFF position by holding the reset button in for a couple of seconds. This sets the stepper switch on the transmitter unit only to calibrate position.

Control is accomplished by using different voltages from each leg of the control line to ground. One leg is used for FIL. ON, PLATE ON and PLATE OFF, and the other leg is used for RAISE, LOWER and pulsing voltages for the transmitter stepper operation.

The studio unit contains three (3) power supplies, a 6 V. -8 V. D.C. supply for the stepper relay and two (2) -115 V. D.C. supplies for control purposes.

The transmitter unit contains one (1) 6 - 8 V. D.C. supply for operation of the stepper switch. A current transformer is provided for remote indication of the tower lights. The voltage from the current transformer is rectified in the transmitter unit providing a D.C. voltage for remote purposes.

A P.A. plate voltage and a P.A. plate current extension kit is also provided to remote read plate voltage and plate current on the final power amplifier.

Positions 2 to 8 Metering  
9 to 11 Balanced pair.

The balanced pairs may be used for some of the following purposes:

1. Telephone
2. Spare Program Loop
3. Remote Metering Kits - For Modulation  
& Frequency Monitor
4. Transmitter Located Receiver Outputs
5. Air Monitor Feedback to Studio

All control relay contacts are wired to the normally open contacts. When the control switch is thrown, the relay is energized and the contacts close. Numerous methods of using the Plate On and Raise-Lower keys may be used.

### INSTALLATION

The Gates Radio Company recommends that only the allowable minimum of control and metering be used, if possible, for the following reasons:

1. Non-technical personnel should not have access to the transmitter controls that could cause damage to the transmitter, or that result in the violation of FCC regulations.
2. Fewer controls result in simpler operating procedure, less transmitter modifications, less maintenance, and more reliable operation.

It is recognized that there are many differences in the large variety of transmitters now in use and the final word on which controls and meters are **necessary** must come from the station's Engineering Staff who know the equipment best. In any case the Engineering Department of the Gates Radio Company is always available to give advice or suggestions on special problems encountered either in the initial installation or afterwards in operation.

This instruction book is written using the knowledge gained from hundreds of previous installations of Gates' remote control equipment.

Both units should be unpacked on arrival and inspected for possible damage in shipment. In case of damage the shipping agent should be notified immediately.

#### I STUDIO UNIT

The studio unit may be mounted in a rack along with the R.F. amplifier, modulation monitor and frequency monitor, or with extension meters, if used, instead of an R.F. amplifier. In some installations it may be desired to use a table cabinet for the studio unit and



placing it at the operators position, mounting other items in racks. The studio unit requires an a.c. outlet for 115 volts, 60 cycles. The two telephone lines should be connected to the terminals provided on the rear of the chassis, one line to terminals 1 and 2 identified as control line and the other line to terminals 3 and 4 identified as metering line. Refer to drawing C-78485. The metering line must be properly polarized but this can be done on the installation of the transmitter unit. A driven ground rod or water piped ground should be connected to terminal 16. In some instances it is possible to use the telephone ground. Since the reliability of the equipment depends on a good ground connection, it is suggested that two different types of grounds be used at the studio unit.

## II INSTALLATION OF TRANSMITTER UNIT

The transmitter unit may be mounted in available rack space at the transmitter and provided with 115 volts a.c.

All connections are to be made to the rear of the chassis. Refer to drawing C-78484. A good ground should be provided to terminal 25.

### (A) Filament Contactor

The FCC requires an automatic means of removing the transmitter from the air in case of failure of the telephone line or remoting equipment. This is accomplished by controlling the transmitter's filament or P.A. plate power with a contactor that has no holding contacts and that is continuously energized by the "Filament On" key in a locking position.

For transmitters without contactors the circuit shown can be used, by adding a contactor. See drawing A-10990.

### (B) Plate Contactor

To wire the plate contactor for remote control operation connect wires from terminals 29 and 30 on the transmitter unit in parallel with the plate "ON" button. Do not disconnect the holding contacts. A plate contactor must be added if one is not in the transmitter. See drawing A-10990.

### (C) Motor and Rheostat Assembly

The FCC requires that means must be provided for controlling the transmitter power output from the remote control point. The Gates Radio Company provides one of the following means for controlling the transmitter power output.

- (1) Motor Rheostat Assembly M4703 to adjust the P.A. plate voltage for transmitter of 250W to 1KW.

- (2) Motor and Relay Assembly to motor drive existing transmitter Output Loading Coils.
- (3) Relay assembly to control existing motor driven rheostats or output loading coils.

Space can usually be found on one of the decks or sides to mount the motor rheostat assembly. In some cases, it may be necessary to strap the assembly to power components.

In all instances the rheostat must be on the power supply side of the P.A. plate voltage meter multiplier. High voltage cable should be used to connect the rheostat. Packard cable or equal.

The rheostat may be connected as shown on Fig. 1, drawing C-19233 in series with the P.A. plate voltage between the modulation reactor or transformer and the P.A. tank or choke.

If the transmitter has a rheostat for controlling the power output remove one lead and connect the remote control rheostat in series with the transmitter rheostat and set the transmitter rheostat to maximum voltage. Some transmitters have the rheostat connected in the cathode circuit and the remote control rheostat may be connected in series in this case also with the transmitter rheostat left at maximum power output position. Some transmitters meter the P.A. plate voltage on the power supply side of the modulation reactor. It is again necessary to connect the rheostat ahead of the meter multipliers.

Control wiring should be connected as follows: See drawing B-13417.

Motor Rheostat Assembly, M4703

M5241 Remote Control, TB-2

Terminals 1		26
2	115 V. A.C.	
3		28
4		15, 16 or 17 as required (See note on B-13417)
5	Ground	8 and 25
	115 V. A.C.	27

(D) Plate Voltage Extension Kit, M-4719-A

The plate voltage extension kit, M-4719-A, should be mounted on the standoffs at a convenient point preferably near the high voltage point to which it will be connected. Packard cable or a good high voltage cable should be used to connect terminal marked H.V. to the transmitter. This connection can be made to the hot end of the existing meter multiplier, or to a lug on the high voltage rheostat, if the connection is made to the rheostat the wiring should be made to the power amplifier side of the rheostat and not the power supply side.

Terminal marked "G" should be connected to a good ground point in the transmitter. The metering terminal should be connected to terminal #1 on the remote control transmitter unit.

(E) Plate Current Metering Kit - M-4720-A

Plate current metering is accomplished by metering the voltage drop across a resistor in series with cathode return of the metered stage. Metering kit M-4720-A must be inserted at the ground end of any other metering circuits or overload relays. Resistors R1, R2 and R3 are connected into the circuit as needed. The kit as shipped was R1 and R2 connected. This value is correct for an average 1 KW final. For a 250 W final, use only R1 or R2 according to the plate current to be metered. For 5 KW finals, R1, R2 and R3 must all be used. About 4 or 5 volts should be available across R4. R4 is then adjusted to give approximately half scale deflection on the appropriate meter in the studio unit. Final calibration can then be made using the calibrating potentiometer at the studio location.

(F) Antenna Current Metering

A standard antenna diode unit is furnished, and it is installed at the tuning house in series with the present diode or thermocouple. It requires a source of continuous 115 V. A.C. connected to the terminals so marked. See Fig. 4, drawing C-19233. Two other sets of terminals are provided, one labeled "remote meter" and the other "local meter". The remote meter terminals are used in conjunction with remote control. The positive terminal is wired to terminal number 3 on the remote control unit. For further information refer to the separate instruction sheet.

(G) Tower Lights Indicator

A M-5143 current transformer is furnished to remote read tower lights current. Refer to Fig. 2, 3 or 4, drawing C-19381.

The current transformer can be installed in the power box for tower lights by feeding one leg of the tower light circuit through the transformer. The transformer can be disassembled and installed without disconnecting the tower light wiring.

It is recommended that the current transformer have its own ground return back to the remote control unit. Either lead can be connected to ground. The other lead must connect to terminal number 25. If it is desired to read the current of additional towers, a M-5145 tower light current extension kit is required.

For single small tower installations, it is recommended that the tower light feed line be looped through the opening 3 or 4 times to give additional voltage. Tighten the wing nuts snug for maximum output.

(H) D.C. Overload Relays M-5129

Overload relays are usually of three types

1. Electrical Reset
2. Magnetic Reset
3. Manual Reset

Relays of the first type are usually reset by re-energizing the plate contactor, or they reset automatically if the overload was transient.

Relays of the second type are held open by a latching device after an overload and are reset by energizing an auxiliary coil. This type requires an interlocking relay (6 V. D.C. relay) and the Raise-Lower switch can be used. All of the reset coils can be connected in parallel and energized at once, since there will be no effect on the relays that have not tripped.

Relays of the third type cannot be reset by remote control and must be replaced by one of the other two types. The first type is the best choice in this case, since it does not require an extra relay for reset, and it is more easily adapted to remote control.

Stages in which overload relays are usually used are the driver, P.A. and modulator. The relay coil is placed in the cathode circuit of each and shunted with an adjustable resistor to adjust for the desired tripping current.

It is usually recommended to set overload relays to trip with 25% overload on the P.A. and with the modulators, 50% overload above 100% modulation. Some station engineers may prefer other settings.

The normally closed contacts of the overload relays are usually wired in series with the plate contactor. See Fig. 1 of drawing C-19381 for typical wiring of overload relays.

(I) A.C. Overload Relays

Some transmitters with manual operating circuit breakers in the A.C. line trip often and are reset manually. With remote control these circuit breakers should be replaced making it possible to electrically reset the overload. See Fig. 2 of drawing C-19233. With 220 volt filament

contactors, return the relay E4 to 115 volts or series it with a resistor to give proper operating voltage. With this circuit, to electrically reset after an A.C. overload, turn filament hold switch off and back on again.

### OPERATION

The studio unit consists of three D.C. power supplies for control purposes. One supply consisting of T1, CR-1 and C1 provides voltages for the following operation:

<u>Function</u>	<u>Adjust</u>	<u>Normal Operation</u>	<u>Measured at</u>
Raise	R2	<del>4</del> 80 V. D.C.	TB1-2
Lower	R4	<del>4</del> 38 V. D.C.	TB1-2
Filament On	R3	<del>4</del> 26 V. D.C.	TB1-1
Plate On	R2	<del>4</del> 80 V. D.C. (same as Raise)	TB1-1
Plate Off	(From T2)	-75 V. D.C.	TB1-1

Stepper operating relay supply consisting of T2, CR-2 and C2, provided voltages for the positioning relays and the pulsing relays. Power supply T-3, CR-3 and C3 provides 6 - 8 volts D.C. for the stepper switch coils. The operating relay supply voltage is adjusted by R6 to provide approximately -75 V. D.C. to ground.

#### I STEPPER OPERATION

All positions of S1 are connected to corresponding positions on the front level of Stepper, K1. Positioning relay, K-3, is normally energized until S1 is switched. When K3 opens, voltage is applied to the pulsing relay, K2, through the pulsing contacts of the stepper switch. The contacts on relay K2 apply 6 - 8 volts D.C. to the coil of the stepper switch, K1. The stepper switch makes one step and opens the pulsing contacts returning the stepper to normal. If voltage is still present through relay K3, it will continue to pulse itself until this voltage is removed by K3 being energized with S1 and K1 in the same position. R10 adjusts the voltage to relay K3 and R9 to relay K2. R9 should be set at approximately 1/2 total resistance or 5,000 ohms, and R8 at approximately 1/2 or 2500 ohms. R9 is adjusted so the transmitter stepper switch follows the studio stepper compensating for telephone line resistance.

The pulsing and reset voltage for the transmitter stepper switch relays is applied through R8 to the raise-lower leg of the control line. This voltage is connected through rectifier CR3 in the transmitter unit to the reset and pulsing relays. Rectifier CR3 polarizes K2 and K3 so they operate only with a negative voltage. This system depends upon an earth ground between the two units for positive return; making a good ground essential at both ends. Reset relay, K3, is shunted with an 8 mfd. capacitor, C2, which is too large to charge up on a momentary pulse and acts as a short circuit. When the reset button is pushed, the voltage is constant charging C2 and then closing K3.

With K3 energized, voltage from power supply T1, CR5 and C1 are applied through one level of contacts on the stepper switch and to the pulsing contacts. The stepper pulses itself until it reaches "OFF" position at which position an arm opens a set of contacts on K1, always stopping it at home position when K3 is energized. By setting the studio position switch in the "OFF" position and pressing the reset button for a couple of seconds, the transmitter stepper will automatically home to "OFF" position synchronizing both stepper switches.

## II CONTROL

Control functions are obtained by applying a D.C. voltage to one side of the control line to ground. Different voltages are applied to obtain more than one function on each leg of the telephone line.

On one leg of the line, 26 V. is applied for Filament On operation and this voltage is increased momentarily to 80 V. for Plate On. The Plate On relay K5 is shunted with a 2K ohm resistor to prevent it from operating at the lower voltage. The Filament Hold relay K4 is shunted with a 40 mfd., capacitor to prevent it from dropping out as switch S6 on the studio unit is returned to Center position. The contacts on this switch break before making. This assures the dropping out of relay K5. When S6 is thrown down (PLATE OFF), -75 volts is applied to the line to operate K8 in the transmitter unit through blocking diode CR6. Blocking diode CR7 prevents K5 from operating when negative voltage is applied to the line. The "bridge" diodes CR8, CR9, CR10 and CR11 supplies positive voltage to K4 whether positive or negative voltage is on the line.

On the other leg of the control line 38 V. is applied to energize "Lower" relay K6 and 80 V. is applied to energize the "Raise" relay K7. Relay K7 is shunted with a 2K ohm resistor to prevent it from operating at the lower voltage. The voltage being applied to the Raise-Lower relays is polarized by CR1 to prevent these relays from energizing with negative voltage. Rectifier CR2 is shunted across K6 and K7 to short inductive pulses from the relays in opposite polarity.

This prevents the pulsing of relay K2. The ground return for relays K6 and K7 and rectifier CR2 is through the contacts of the pulsing relay K2 and through the stepping switch coil K1 to prevent interaction of the control relays with the pulsing relays.

Provisions should be made to turn off tower lights in conjunction with Conelrad. This can be accomplished by using a 6 V. D.C. relay and a 115 V. A.C. latching relay. By interlocking the 6 V. relay with a stepper position as is done with the motor rheostat assembly, the Raise-Lower switch will then apply voltage to either coil of the latching relay turning the lights on or off. Other equipment may be switched off an on in this same manner.

## METERING

A mercury battery is permanently connected in the calibrate position as a voltage standard. This gives a reference voltage to help identify sources of trouble. If all voltages vary including the voltage standard it would be an indication of possible defective telephone lines. If only transmitter voltage varied, it would be an indication of transmitter line voltage variation or possible trouble in the transmitter.

Two of the three levels on the stepper switches are used for metering. Level 2 is the negative and level 3 is the positive side. In the transmitter unit, level 2 metering positions are jumpered together and grounded. In the studio unit, level 2 is also jumpered but returns to the common of all three meters through a 50K ohm precision resistor and a meter fuse. The transmitter stepper switch selects the desired voltage to be read and the studio switch selects the desired meters.

### I BASIC

The meters are 10,000 ohms per volt (100 ua) movements and with the 50K series resistor, requires 5 volts to give full scale deflection. The metering kits should be adjusted to give only a small amount of voltage larger than that required to give the proper reading on the scale more nearly matching the meter scale on the transmitter. The calibrating controls on the rear of the studio unit can then be adjusted to read the same as the transmitter meters. Normal variations in telephone line resistance will not affect meter readings.

### II PLATE VOLTAGE EXTENSION KIT - M-4719-A

The plate voltage extension kit is a meter multiplier, R1 to R6 in series with dropping resistors R7 and R8. The resistance of the multiplier is calculated on the basis of 2 ma. flowing through it when used in a 6 KV circuit. R1 to R6 are 500K resistors and R7 and R8 are 15K resistors. When the 0 - 12 KV scale of M1 is used, it will be necessary to connect two extension kits in series.

### III P. A. PLATE CURRENT EXTENSION KIT - M-4720-A.

Plate current metering is accomplished by metering the voltage drop across a resistor in series with cathode return of the metered stage. Metering kit M-4720-A must be inserted at the ground end of any other metering circuits or overload relays. Resistors, R1, R2 and R3 are connected into the circuit as needed. The kit as shipped has R1 and R2 connected. This value is correct for an average 1 KW final. For a 250 W final, use only R1 or R2 according to the plate current to be metered. For 5 KW finals, R1, R2 and R3 must all be used. About 4 or 5 volts should be available across R4. R4 is then adjusted to give approximately half scale deflection on the appropriate meter in the studio unit. Final calibration can be made then by using the calibrating potentiometer at the studio location.

#### IV TOWER LIGHTS CURRENT TRANSFORMER

A small A.C. voltage is sampled from the tower lights circuit and applied to a half wave rectifier on the transmitter unit. Control R5 is provided to adjust the D.C. voltage output of the rectifier. For one tower installations, this control should be set to maximum. If additional voltage is needed, loop the tower light lead through the opening in the current transformer as needed. Since this is only for indication of the condition of the tower lights, one or two volts is all that is necessary. The D.C. voltage is connected to position 4 of the stepper switch.

#### V BALANCED POSITIONS

Balanced positions on the stepper may be used for metering by grounding the uneven numbers on the transmitter unit and applying the voltage to the even number. On the studio unit, connect a lead from the uneven number to meter common, terminal 11, and a lead from the even terminal to meter plus, 12, 13 or 14 depending upon which meter scale is desired.

#### MAINTENANCE

##### I WEEKLY

All meter readings should be checked for calibration (required by FCC)

##### II MONTHLY

Check all relay contacts for corrosion. If necessary, clean carefully with a burnishing tool.

##### III QUARTERLY

Check voltages. Clean and lightly oil the stepping switch contacts with Davenol. Levels 2 and 3 are gold plate to insure stable readings. Apply a small amount of lubriplate on ratchet teeth of stepper switch if needed.

##### IV YEARLY

Replace mercury battery. Do not dispose of battery in incinerator. Clean positioning switch. Clean all lever key switches.

#### TYPICAL VOLTAGES

Line Voltage 117 A.C.

Measured with 20K ohms per volt meter to chassis ground.

10/9/59

-11-

RDC-10-C



<u>Transmitter Unit</u>	<u>Measured at</u>	<u>Adjust Studio Unit</u>
Fila. On /26.5 Volts	TB1 Terminal #5	R3
Plate On /80 volts *	TB1 Terminal #5	R2
Plate Off -50 V. D.C.*	TB1 Terminal #5	R6
Lower /38 Volts *	TB1 Terminal #6	R4
Raise /80 Volts *	TB1 Terminal #6	R2
Reset -35 Volts *	TB1 Terminal #6	R8
7-8 V. D.C.	C3	

\*While holding momentary Key or Button on.

### REMOTE CONTROL PROTECTIONS

It is realized that most remote control transmitters are located at some unattended point and additional protective devices are recommended.

Since most of the transmitter building will be locked, it is advisable to put in some type of ventilation system. An air intake at floor level on one side of the building and a fan at ceiling height on the other side of the room drawing air through the building is usually very satisfactory. An inexpensive disposal type air filter on the air intake to keep dust and dirt out of the transmitter and a building thermostat on the fan should also be used. This gives clean air movement through the transmitter building automatically, at a small cost. It will more than pay for itself in maintenance cost or replacement parts cost due to overheat or dirt.

For fire protection from grass fires and/or other sources, several carbon-tet type fire extinguisher bombs may be hung around the transmitter room. It may be desired to install a fire alarm system, the Worner Electronic Devices-Smoke Detector would be fine for this application. In case of excessive smoke, the detector would turn the transmitter and exhaust fan off, preventing the fans from drawing smoke and fire into the transmitter or building.

It may also be desirable to install a remoting kit for remoting transmitter building temperature back to the studio.

### ORDERING REPLACEMENT PARTS

When ordering replacement components please refer to the parts list in this instruction book. Identify the component by its symbol number and, where given, Gates drawing number. The type of equipment in which the part is used and the serial number is also necessary.

This procedure will insure the customer receiving the correct component and at the earliest possible date.

## ACCESSORY ITEMS FOR REMOTE CONTROL

EXA-2, M-5144A AM RF Amplifier

EXF-1, M-4791 FM RF Amplifier

M-4703A Motor tuned plate rheostat, 1000 ohm, 100 watts for 250 watt transmitter.

M-4703B Motor tuned plate rheostat, 750 ohm, 150 watt, for 500 watt transmitter.

M-4703C Motor tuned plate rheostat, 400 ohm, 300 watt for 1000 watt transmitters.

M-4800 Motor only for customer's rheostat.

M-5066 Tuning motor only for customer's coil or capacitor (requires one M-4806).

M-4996 One RPM motor kit for panel mounting.

M-4801 Relay assembly to control one, three wire motor.

M-4801A Relay assembly to control two, three wire motors.

M-4801B Relay assembly to control three, three wire motors.

M-4806 Relay assembly to control one, five wire motor.

M-5129 D.C. overload relay assembly

M-4719A Plate voltage extension unit.

M-4845 FM output power indicator.

M-3759 Antenna diode for 1 KW or less.

M-2765B Antenna diode for over 1 KW.

M-5208 Extension meter for GR 1181A or RCA WF-48A frequency monitors.

M-5206 Extension meter for GR 1931A or RCA WM-43A modulation monitors.

M-5210 Extension meter for Gates' M-2639 modulation monitor.

M-5631 Extension meter for Gates' M-4990 frequency monitor.

M-5207 Extension meter for RCA 66 Series modulation monitors.

M-4720A Plate current extension unit.

M-4848 Output power tuning motor assembly for Gates BC-5B and BC-10B transmitters.

M-4850 Adaptor kit for remote reading GR 25A frequency monitor.

M-4825 A.C. voltage extension unit.

M-5248 auxiliary relay assembly to provide one on-off holding switching facility.

M-5249 auxiliary relay assembly to provide one on-off momentary switching facility.

Contactor, 2 pole, 25 amperes.

Contactor, 2 pole, 45 amperes.

Contactor, 3 pole, 45 amperes.

Contactor, 3 pole, 90 amperes.

Contactor, 4 pole, 15 amperes.

Overload Relay A.C. (Fig. 2, C-19233)

Thermostat for controlling building exhaust fan.

Fire extinguisher Carbon-Tet, Bomb type - Transmitter Building.

Remote reading building temperature kit.

Smoke detector, Fotoelectric Combustion Supervisor to Detect Smoke in Transmitter Building, Model 71B Worner Electronic Devices.

Time Delay Relay Assembly.

TYPICAL QUESTIONNAIRE USED BY TELEPHONE COMPANIES IN  
GATHERING DATA OF CUSTOMER OWNED EQUIPMENT CONNECTED  
TO TELEPHONE COMPANY FACILITIES.

THIS QUESTIONNAIRE HAS BEEN COMPLETED FOR YOUR CONVENIENCE  
TO THE EXTENT OF SUPPLYING REQUIRED INFORMATION FOR THE

RDC-10-C

CUSTOMERS'S NAME \_\_\_\_\_ Tel.No. \_\_\_\_\_

Address of sending end of circuit \_\_\_\_\_

Address of receiving end of circuit \_\_\_\_\_

Number of Lines 2 A. Line #1 Control

B. Line #2 Meter

GENERAL

1. Company or Individual providing equipment and/or service.

A. Name \_\_\_\_\_ Tel.No. \_\_\_\_\_

B. Address \_\_\_\_\_

2. Who can be called for technical information on this circuit  
and equipment?

A. Name \_\_\_\_\_ Tel.No. \_\_\_\_\_

3. Manufacturer of equipment.

A. At sending end Gates Radio Company

B. At receiving end Gates Radio Company

4. Trade names and/or Model Nos. of equipment.

A. At sending end RDC-10-C Remote Control

B. At receiving end RDC-10-C Remote Control

5. Will control signal be applied to the Tel. circuit Metallic  
(between wires) or to Ground (earth used as a return  
conductor)?

A. Line #1 Ground

B. Line #2 Metallic

12/2/59

-1-

RDC-10-C

6. If control signal is applied metallic
- A. Will there be a ground connection to the Tel. circuit?
- I. Line #1 Does Not Apply
- II. Line #2 Yes - Unbalanced
7. Where relay coils are connected in the Tel. circuit, what is the maximum voltage applied to the relay contacts? 95 Volts D.C.
8. Rating of customer's fuses (if any) between the equipment and Tel. line
- A. Line #1 None
- B. Line #2 1/200 A. (at studio end)
9. When the telephone company tests into the equipment from the Tel. line, approximately what will the following measurements be?
- A. Line #1
- Sending end: Voltage 30 V. D.C. Res. 1,000 ohm
- Receiving end: Voltage 0 D.C. Res. 5,000 ohm
- B. Line #2
- Sending end: Voltage 0 D.C. Res. 10,000 ohm
- Receiving end: Voltage 10 V. D.C. Res. 10,000 ohm
- NOTE: The above readings are "fail-safe" on line #1 and meter sample on line #2 - No. Operating Functions.

IF DC SIGNALS ARE USED

10. Source of signal voltage rectifier
11. If rectifier, is output filtered yes
12. Maximum open circuit voltage applied to Tel. line
- A. Line #1
- I. Between wires 0 II. To ground 95 V.
- B. Line #2
- I. Between wires 10 V. II. To ground neg. grounded

13. Maximum line current on short circuit (Mils.)  
A. Line #1 66 M.A.  
B. Line #2 1.4 M.A.
14. Maximum operating line current (Mils.)  
A. Line #1 16 M.A.  
B. Line #2 .024 M.A.
15. Maximum allowable loop resistance (ohms) 2500 ohm
16. If pulses are sent, maximum impulse (interruption) rate 15 p.p.s.

IF AC SIGNALS ARE USED

(Does Not Apply)

IF TONE SIGNALS ARE USED

(Does Not Apply)

IF VOICE CHANNEL IS USED

(Does Not Apply)

## WARRANTY

This equipment is warranted by Gates Radio Company of Quincy, Illinois to be free from defects in workmanship and material and will be repaired or replaced in accordance with the terms and conditions set forth below:

1. Gates Radio Company believes that the purchaser has every right to expect first-class quality, materials and workmanship and has created rigid inspection and test procedures to that end, and excellent packing methods to assure arrival of equipment in good condition at destination.
2. Gates Radio Company will endeavor to make emergency shipments at the earliest possible time giving consideration to all conditions.
3. Gates Radio Company warrants new equipment of its manufacture for one (1) year and (six (6) months on moving parts), against breakage or failure of parts due to imperfection of workmanship or material, its obligation being limited to repair or replacement of defective parts upon return thereof f.o.b. Gates Radio Company's factory, within the applicable period of time stated. Electron tubes shall bear only the warranty of the manufacturer thereof in effect at the time of the shipment to the purchaser. Other manufacturers' equipment covered by a purchaser's order will carry only such manufacturers' standard warranty. These warranty periods commence from the date of invoice and continue in effect as to all notices, alleging a defect covered by this warranty, received by Gates Radio Company prior to the expiration of the applicable warranty period.

The following will illustrate features of the Gates Radio Company warranty:

Transmitter Parts: The main power or plate transformer, modulation transformer, modulation reactor, main tank variable condensers all bear the one (1) year warranty mentioned above.

Moving Parts: As stated above, these are warranted for a period of six (6) months.

Electron Tubes: As stated, electron tubes will bear such warranty, if any, as provided by the manufacturer at the time of their shipment. Gates Radio Company will make such adjustments with purchasers as given to Gates Radio Company by the tube manufacturer.

All other component parts (except as otherwise stated): Warranted for one (1) year.

Abuse: Damage resulting from abuse, an Act of God, or by fire, wind, rain, hail, in transportation, or by reason of any other cause or condition, except normal usage, is not covered by this warranty.

4. Operational warranty - Gates Radio Company warrants that any new transmitter of its manufacture, when properly installed by purchaser and connected with a suitable electrical load, will deliver the specified radio frequency power output at the output terminal(s) of the transmitter, but Gates Radio Company makes no warranty or representation as to the

coverage or range of such apparatus. If a transmitter does not so perform, or in the event that any equipment sold by Gates Radio Company does not conform to any written statement in a contract of sale relative to its operating characteristics or capabilities, the sale liability of Gates Radio Company shall be, at the option of Gates Radio Company, either to demonstrate the operation of the equipment in conformance with its warranty, or to replace it with equipment conforming to its warranty, or to accept its return, f.o.b. purchaser's point of installation and refund to purchaser all payments made on the equipment, without interest. Gates Radio Company shall have no responsibility to the purchaser under a warranty with respect to operation of equipment unless purchaser shall give Gates Radio Company a written notice, within one (1) month after arrival of equipment at purchaser's shipping point, that the equipment does not conform to such warranty.

5. Any item alleged by a purchaser to be defective, and not in conformance with a warranty of Gates Radio Company shall not be returned to Gates Radio Company until after written permission has been first obtained from the Gates Radio Company home office for such return. Where a replacement part must be supplied under a warranty before the defective part can be returned for inspection, as might be required to determine the cause of a defect, purchaser will be invoiced in full for such part, and if it is determined that an adjustment in favor of the purchaser is required, a credit for an adjustment will be given by Gates Radio Company upon its receipt and inspection of a part so returned.

6. All shipments by Gates Radio Company under a warranty will be f.o.b. Quincy, Illinois or f.o.b. the applicable Gates Radio Company shipping point.

7. Gates Radio Company is not responsible for the loss of, or damage to, equipment during transportation or for injuries to persons or damage to property arising out of the use or operation of Gates equipment. If damage or loss during transportation occurs, or if the equipment supplied by Gates Radio Company is otherwise damaged, Gates will endeavor to make shipment of replacement parts at the earliest possible time giving consideration to all conditions. It is the responsibility of a purchaser to file any claim for loss or damage in transit with the transportation company and Gates will cooperate in the preparation of such claims to the extent feasible when so requested.

8. Gates Radio Company, in fulfilling its obligations under its warranties, shall not be responsible for delays in deliveries due to depleted stock, floods, wars, strikes, power failures, transportation delays, or failure of suppliers to deliver, acts of God, or for any condition beyond the control of Gates that may cause a delayed delivery.

9. This warranty may not be transferred by the original purchaser and no party, except the original purchaser, whether by operation of law or otherwise, shall have or acquire any rights against Gates Radio Company by virtue of this warranty.

10. Gates Radio Company reserves the right to modify or rescind, without notice, any warranty herein except that such modification or rescission shall not affect a warranty in effect on equipment at the time of its shipment. In the event of a conflict between a warranty in a proposal and acceptance and a warranty herein, the warranty in the proposal and acceptance shall prevail.

11. This warranty shall be applicable to all standard Gates catalog items sold on or after March 1, 1960.

Gates Radio Company  
Quincy, Illinois

1/6/60



ELECTRICAL PARTS LIST FOR RDC-10C  
REMOTE CONTROL SYSTEM

<u>Symbol No.</u>	<u>Drawing No.</u>	<u>Description</u>
A1		Lamp
C1		Cap., 40 mfd., 150 V.
C2		Cap., 40 mfd., 150 (W) V.
C3		Cap., 3000 mfd., 15 (W) V.
C4		Cap., .5 mfd., 200 (W) V.
C5		Cap., 3 mfd., 150V.
CR1, CR2		Silicon Rectifier,
CR3		Selenium Rectifier
CR4		Silicon Rectifier
F1		Fuse, 2 amp.
F2		Fuse, 1/200 amp
K1		Stepper Relay
K2, K3	AK-11935	Relay
M1	A-30567-101	P.A. Plate Voltage Meter
M2	A-30566-101	P.A. Plate Current Meter
M3	A-30568-101	Antenna Current Meter
R1		Res., 50 ohm, 10 W.
R2		Adj. Res., 250 ohm, 25 W.
R3, R4		Adj. Res., 2000 ohm, 10 W.
R5		Res., 100 ohm, 10 W.
R6		Adj. Res., 3000 ohm, 10 W.
R7		Res., 10 ohm, 10 W.
R8, R10		Adj. Res., 5000 ohm, 25 W.
R9		Adj. Res., 10K ohm, 25 W.
R11		Res., 10 ohm, 1 W., 10%
R12		Res., 50K ohm, 1/2 W., 1%
R13; R14, R15, R16; R17; R18, R19, R20, R21, R22	A-3404-26	Control, 20K ohm
S1		Selector Switch
S2		Toggle Switch
S3	A-10900-6	Lever Switch
S4, S6	A-10900-7	Lever Switch, 3 position, 2 pole, spring return top and bottom.
S5		Pushbutton Switch
T1, T2		Isolation Transformer
T3		Fil. Transformer
TB1		Terminal Board
TB2	A-32529-101	Rectifier Board Assembly
W1	A-10307-1	6 ft. A.C. Line Cord
XA1		Pilot Light Assy. (Red)
XF1		Fuseholder
XF2		Meter Fuseholder

TRANSMITTER UNIT

<u>Symbol No.</u>	<u>Drawing No.</u>	<u>Description</u>
BT1		Mercury Battery
C1		Cap., 3000 mfd., 15 V.
C2		Cap., 8 mfd., 150 V.
C3		Cap., .5 mfd., 200 V.
C4, C5, C6		Cap., 40 mfd., 150 V.
CR1, CR2, CR3, CR4, CR6, CR7, CR8, CR9, CR10, CR11 CR5		Rectifier Rectifier
F1		Fuse, 1 amp.
K1		Stepper Switch
K2, K3, K4, K5 K6, K7, K8	AK-11935	Relay
R1		Res., 10 ohms, 10 W.
R2, R3, R6		Res., 2000 ohms, 2 W., 5%
R4		Res., 10 ohms, 1 W., 10%
R5	A-3404-27	Control, 25K ohms
S1		Switch
T1		Filament Transformer
TB1		Terminal Board
TB2		Terminal Board
TB4	B-66174-101	Rectifier Board Assembly
TB5		Terminal Board
XF1		Fuseholder

PLATE VOLTAGE EXTENSION KIT

R1, R2, R3, R4, R5, R6		500 K ohm, 2 W., 1% Resistor
R7		20K ohm, 10 W., Resistor
R8		15K ohm, 10 W., Resistor
R9		Control, 10K ohm
R10		5100 ohm, 1/2 ohm, 5%, Resistor
TB1		Terminal Board

PLATE CURRENT EXTENSION KIT

R1		Res., 20 ohm, 10 W.
R2		Res., 25 ohm, 10 W.
R3		Adj. Resistor, 5 ohm, 50 W.
R6, R7		Res., 5.1K ohm, 1/2 W. 5%

TOWER LIGHTS CURRENT TRANSFORMER

M-5143	Tower Lights Current Transformer
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## Remote Control of AM and FM Transmitters

### simultaneously with RDC-10C System

The RDC-10 remote control system is readily capable of controlling FM and AM transmitters located at the same site. There is some confusion as to precisely how this can be done, and it is the purpose of this bulletin to clarify the methods which can be used to perform these functions.

In as much as AM and FM operation hours seldom coincide, it is essential that operation of the two transmitters be completely independent of each other. It is also necessary, in complying with FCC Rules and Regulations, to incorporate the "fail-safe" feature in the event of control line failure, so that either or both transmitters are removed from the air.

The filament and plate "on/off" operation of transmitters fall into two general groups:-1) Those requiring "momentary" switch operation. (All current Gates transmitters are in this category), and 2) those requiring that switch contacts remain closed for "on" operation, and opened for "off" operation.

You will note that in both cases a "fail-safe" slave relay is required. This relay, which is operated by K-4 in the RDC-10 transmitter unit, basically isolates the filament "on" control circuits of the two transmitters. For those transmitters requiring only "momentary" switch operation, Drawing A-35689 applies. Typical operation would be as follows:-

When the "Filament on" switch at the Studio Unit is operated, K4 at the transmitter will close, in turn energizing the "fail-safe" slave relay. For the purpose of illustration, assume that the filament "on" operation is assigned to Stepper Position #1. In this case, terminal #2 of TB-1 on the M-5249 relay assembly on Drawing A-35689 (Upper assembly on print) would be connected to RDC-10C transmitter unit, TB2-15.

When the selector switch on the Studio Unit is switched to position #1, the control relay in the upper M-5249 relay assembly is energized. Now, if the "Raise-Lower" switch is thrown momentarily to the "Lower" position, the FM transmitter filaments will come on. If thrown to "Raise" position, the AM transmitter filaments will come on.

Again, for purpose of illustration, assume that filament "off" operation is assigned to Stepper Position #2. In this case terminal #2 of TB-1 on the M-5249 relay assembly on Drawing A-35689 (center assembly on print) would be connected to RDC-10C transmitter unit, TB2-16.

When the selector switch on the Studio Unit is switched to position #2, the control relay in the center M-5249 relay assembly is energized. Operating the Studio Unit "Raise-Lower" switch in the "Lower" position will turn the FM transmitter filaments "off". If thrown to "Raise" position, the AM transmitter filaments will be turned off.

Operation of the AM transmitter plate "on/off" functions is normal, using the assigned switch functions on the Studio Unit for this purpose.

However, for the added FM transmitter plate "on/off" operation, an additional M-5249 relay assembly is required. This is shown as the lower assembly on Drawing A-35689. For purposes of illustration again, assume this operation is assigned to Stepper position #3.

In the same general manner as outlined above, if terminal #2 of TB-1 on the lower M-5249 assembly is wired to TB<sup>2</sup>-17 of the RDC-10C transmitter unit, the FM transmitter plate may be turned on and off by operation of the "Raise-Lower" switch on the Studio Unit.

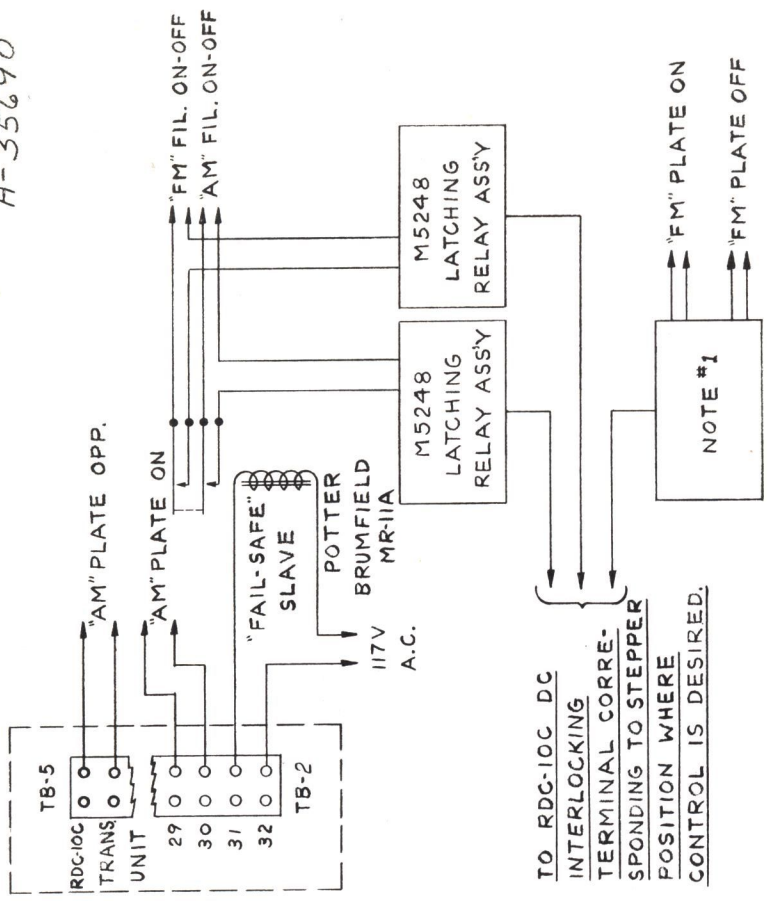
Drawing A-35690 follows the same general approach except that M-5248 "Latching" type relay assemblies are used where "hold" contacts are not an integral part of the transmitter design.

It is impossible to devise a "hard and fast" rule for controlling all transmitters of every manufacture and type, however, the above should be helpful in outlining the general solution to multiple transmitter control in working out customer proposals.

For the sake of simplicity, other control functions for loading, tuning and output have been omitted. Caution has to be exercised in some rare cases, but up to ten control functions of this general nature can be accommodated with the standard RDC-10C system. These are more than adequate in all except the most extreme cases.

It is emphasized that stepper positions #1, #2, and #3 were used above only for illustration purposes. The control functions can, of course, be assigned to any of the selector positions.

A-35690



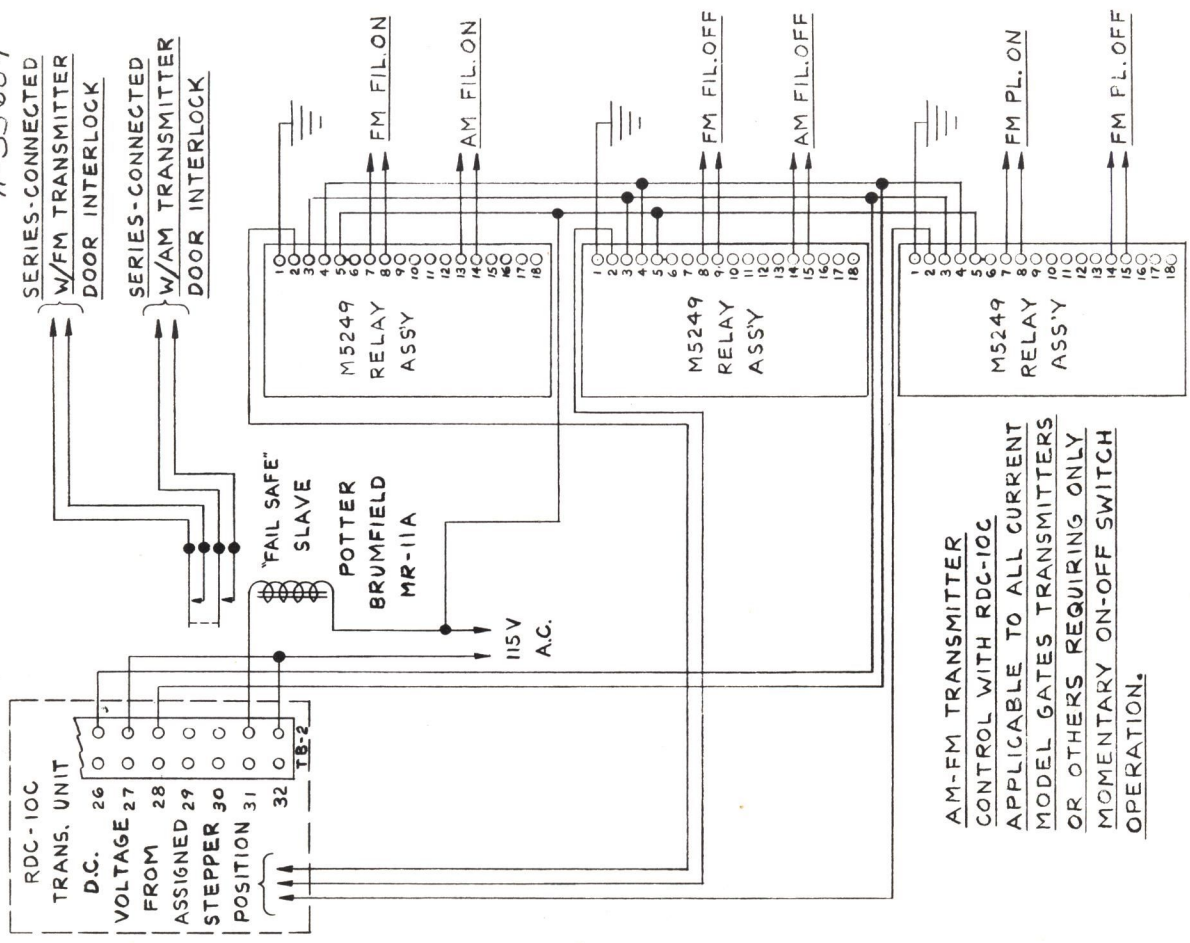
NOTE #1: M5248 "LATCHING" RELAY ASS'Y. REQ'D IF "HOLDING" CONTACTS NECESSARY FOR PLATE CONTROL.  
 M5249 "MOMENTARY" RELAY ASS'Y. REQ'D IF MOMENTARY "ON-OFF" SWITCHING NECESSARY FOR PLATE CONTROL.

GENERAL AM-FM TRANSMITTER CONTROL WITH RDC-10C. (ALLOWS COMPLETELY INDEPENDENT CONTROL OF FILAMENT AND PLATE "ON-OFF" FUNCTIONS.)

A-35690

ECN 8574  
 RAJ 3-3-61

A-35689



AM-FM TRANSMITTER CONTROL WITH RDC-10C APPLICABLE TO ALL CURRENT MODEL GATES TRANSMITTERS OR OTHERS REQUIRING ONLY MOMENTARY ON-OFF SWITCH OPERATION.

A-35689

ECN 8574  
 RAJ 3-3-61

## RDC-10

M-5248 Terminal	Connect to Remote Control Xmtr. Unit
TB1-1	See Note 1.
TB1-2	To DC interlocking terminal corresponding to stepper position where control is desired
TB1-3	To TB2-26
TB1-4	To TB2-28
TB1-5 and 6	Jumper and connect to A.C. neutral of 115 A.C. Raise - lower circuit.

NOTE 1:  
This terminal may be connected to station ground to pick up negative of 6 volt D.C. remote control supply.

## RDC-200

M-5248 Terminal	Connect to Remote Control Xmtr. Unit
TB1-1	See Note 2.
TB1-2	To DC interlocking terminal corresponding to stepper position where control is desired
TB1-3	TB1-16
TB1-4	TB1-18
TB1-5 and 6	Jumper and connect to TB1-17

NOTE 2:  
Connect to station ground to pick up negative of 10 volt D.C. remote control supply.

M-5248 Latch Relay Assembly.  
Interconnections with RDC-10 and RDC-200 Remote Control Systems.

MTL		FIN.		UNLESS OTHERWISE SPECIFIED, ALL TOLERANCES PER GATES SPEC 65H102.
DR. BY	CH. BY	ENG. APR.		
DATE	DATE	DATE		DRAWING NUMBER
GATES RADIO COMPANY QUINCY, ILLINOIS				A-31161

ECN-8365  
9/23/60 Sub.1

## RDC-10

M-5249 terminal:	Connects to Remote Control Transmitter Unit to:
TB1-1	See Note - 1
TB1-2	D.C. Interlocking Terminal corresponding to stepper position where control is desired
TB1-3	TB2-26
TB1-4	TB2-28
TB1-5 and 6	Jumper together and return to neutral of 115 V. AC Raise - lower source

NOTE 1: This terminal can be connected to station ground to pick up negative of remote control 6 V. D.C. supply.

## RDC-200

M-5249 terminal:	Connects to Remote Control Transmitter Unit to:
TB1-1	See Note - 2
TB1-2	D.C. Interlocking Terminal corresponding to stepper position where control is desired.
TB1-3	TB1-16
TB1-4	TB1-18
TB1-5 and 6	Jumper together and connect to TB1-17

NOTE 2: This terminal can be connected to station ground to pick up negative of remote control 10 V. D.C. supply.

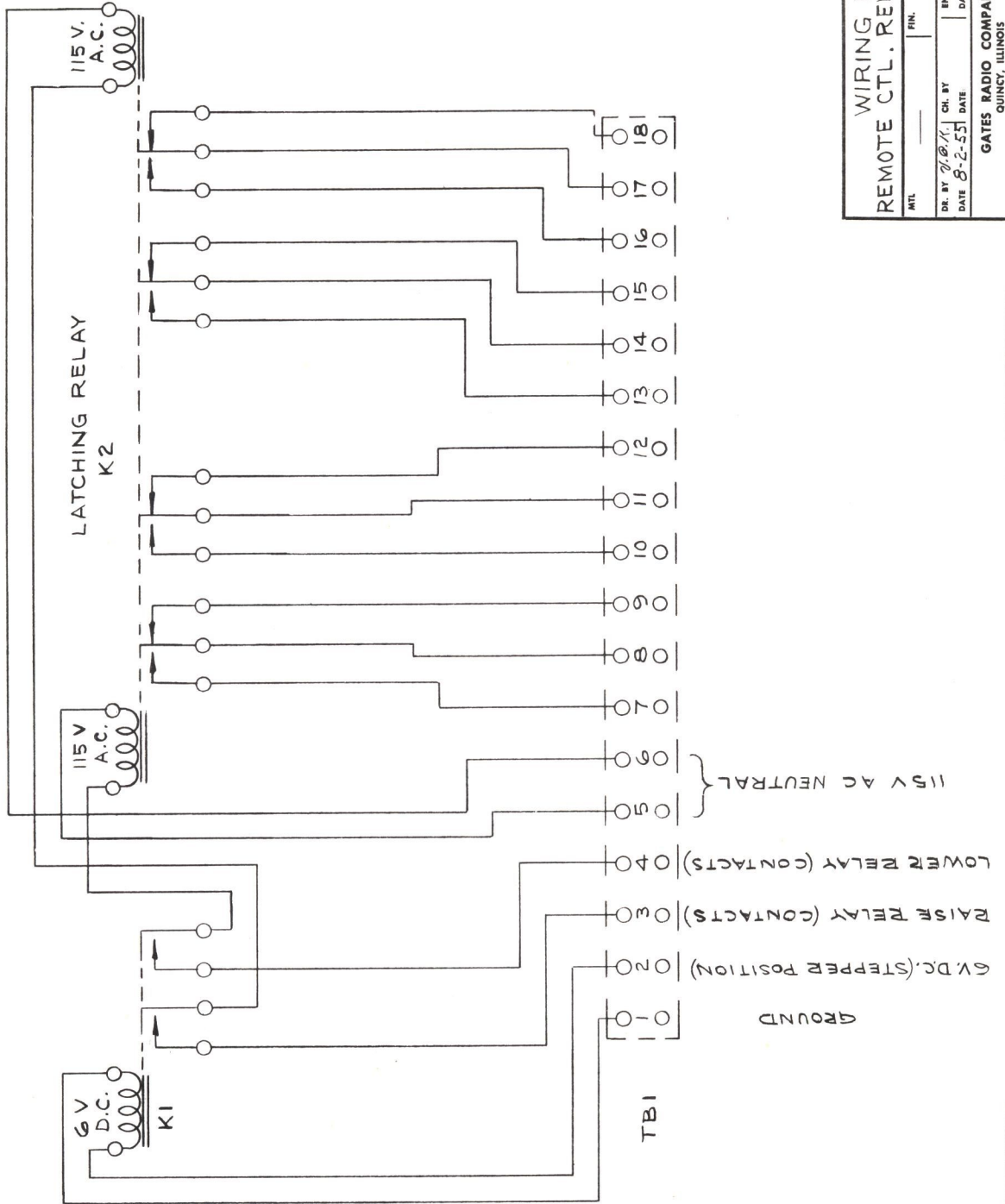
M-5249 Relay Assembly (Momentary) Interconnections for use with Gates RDC-10 and RDC-200 Remote Control System.

MTL		FIN.		UNLESS OTHERWISE SPECIFIED, ALL TOLERANCES PER GATES SPEC 65H102.
DR. BY	CH. BY	ENG. APR.		
DATE	DATE	DATE		DRAWING NUMBER
GATES RADIO COMPANY QUINCY, ILLINOIS				A-31168

ECN-8365  
9/23/60 Sub.1

DRAWING NUMBER

B-13409



WIRING DIAGRAM  
REMOTE CTL. RELAY ASSY. M5248

UNLESS OTHERWISE SPECIFIED,  
ALL DIMENSIONS PER GATES  
SPEC. G5M102.

MTL. \_\_\_\_\_ FIN. \_\_\_\_\_

DR. BY J.P.A. CH. BY REM ENG. AFR. REM

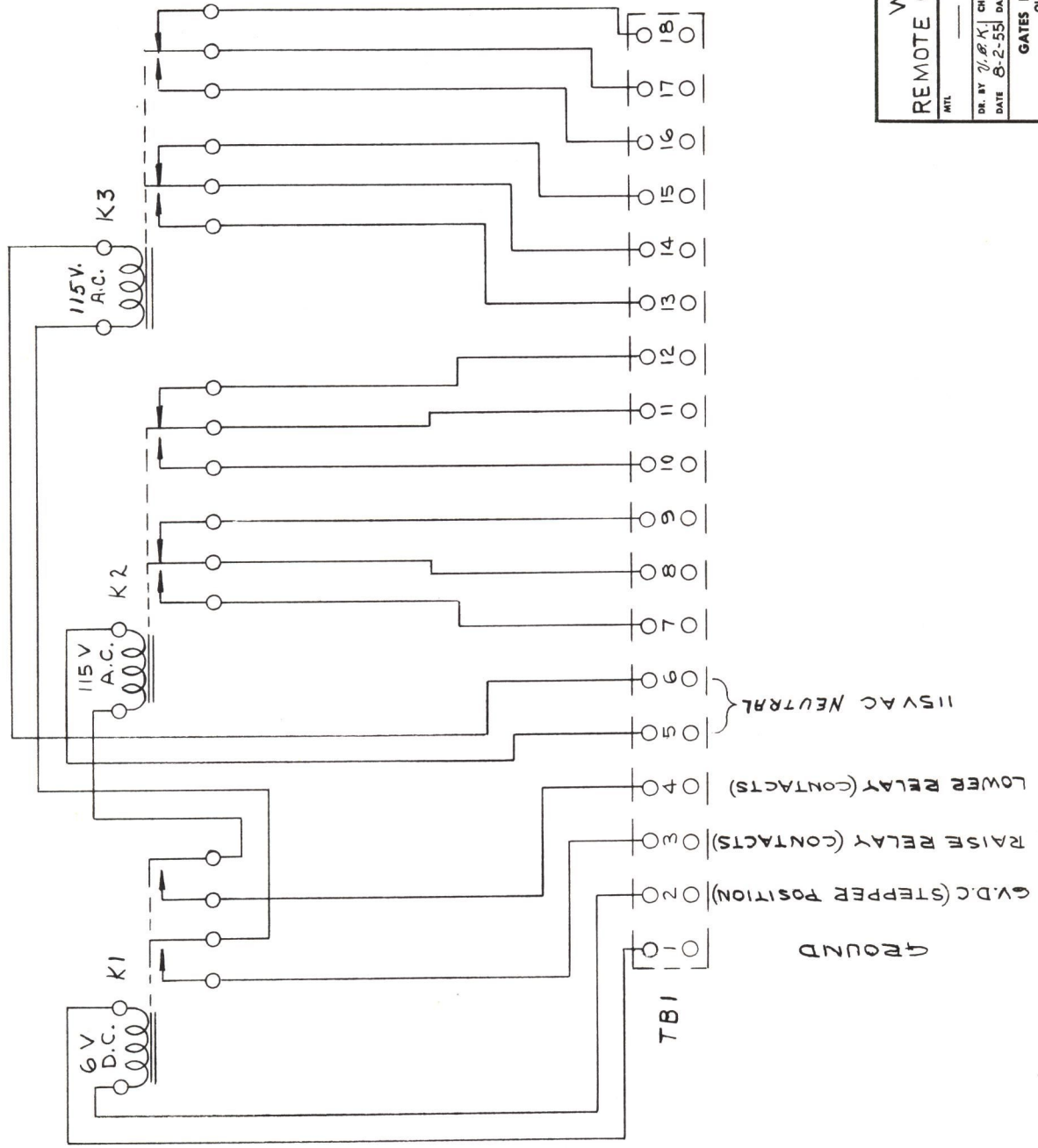
DATE 8-2-55 DATE 9-7-55

DRAWING NUMBER

B-13409

GATES RADIO COMPANY  
QUINCY, ILLINOIS

DRAWING NUMBER  
**B-13410**



**WIRING DIAGRAM**  
**REMOTE CTL. RELAY ASS'Y M5249**

UNLESS OTHERWISE SPECIFIED,  
 ALL TOLERANCES PER GATES  
 SPEC. COMPANY.

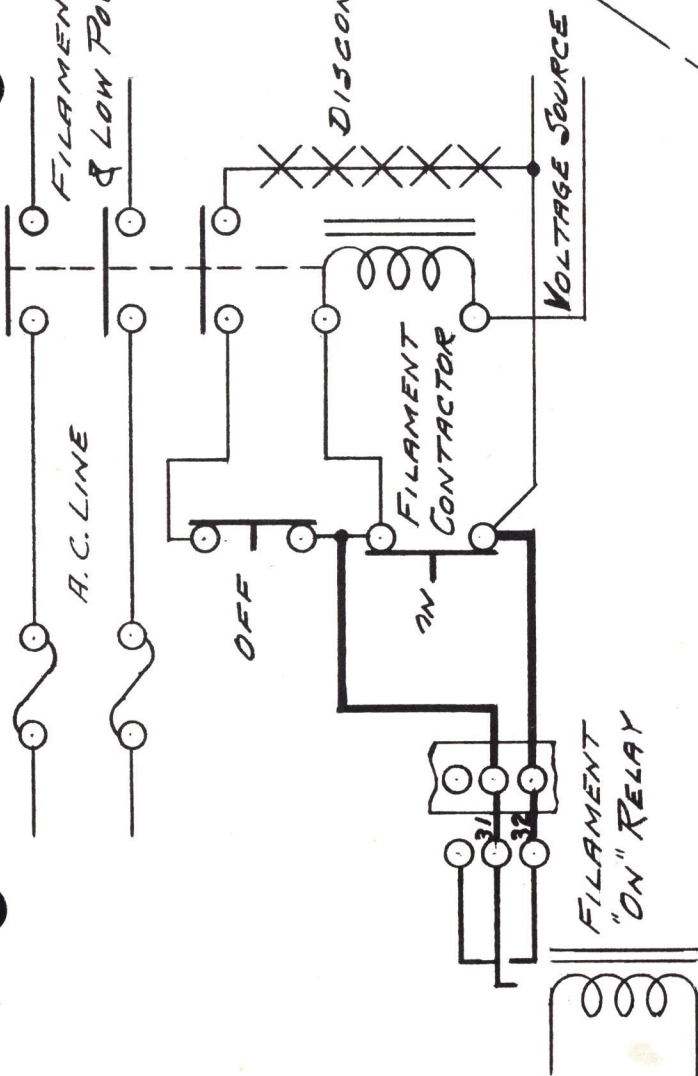
MTL.	FIN.	ENG. APPR.	CHK. BY
			REM
DATE	DATE	DATE	DATE
8-2-55	9-7-55		

DRAWING NUMBER  
**B-13410**

**GATES RADIO COMPANY**  
 QUINCY, ILLINOIS



FILAMENT TRANSFORMER & LOW POWER STAGES



FILAMENT CONTACTOR CONNECTIONS FOR REMOTE CONTROL

PLATE CONTACTOR CONNECTIONS FOR REMOTE CONTROL

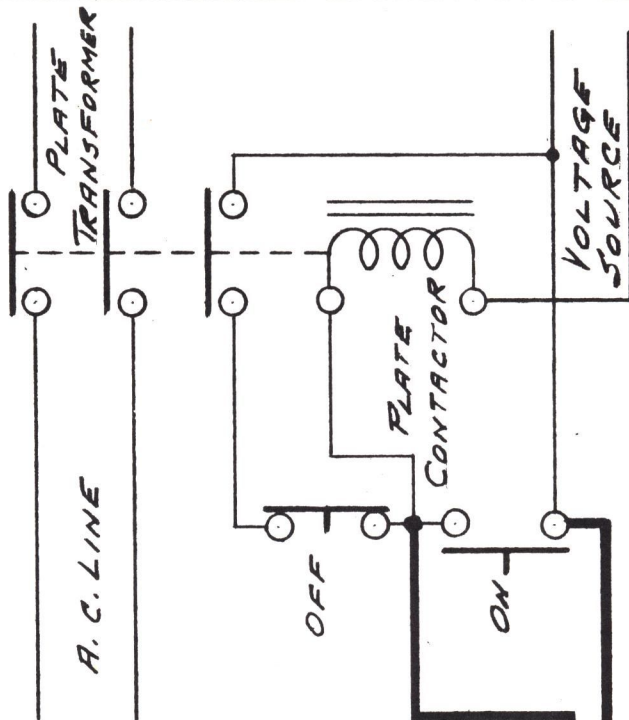
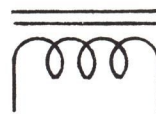


PLATE "ON" RELAY



INSTALLATION INSTRUCTIONS  
RDC-10 REMOTE CONTROL M5214

MTL

FIN.

UNLESS OTHERWISE SPECIFIED,  
ALL TOLERANCES PER GATES  
SPEC GSMT02.

DR. BY DRA Z CH. BY ENG. APR. REM  
DATE 8-2-55 DATE 8-3-55

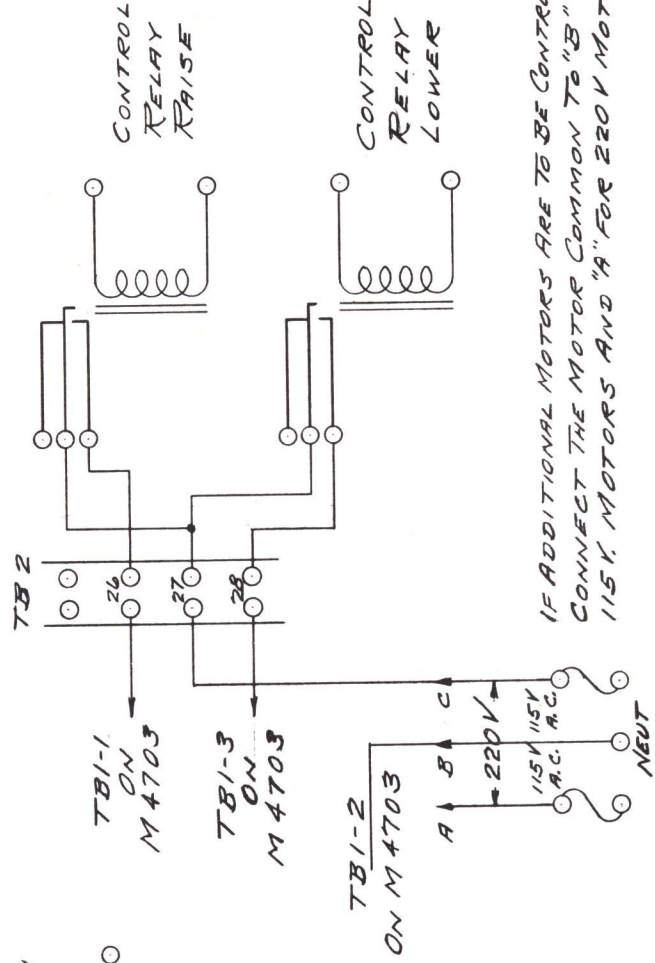
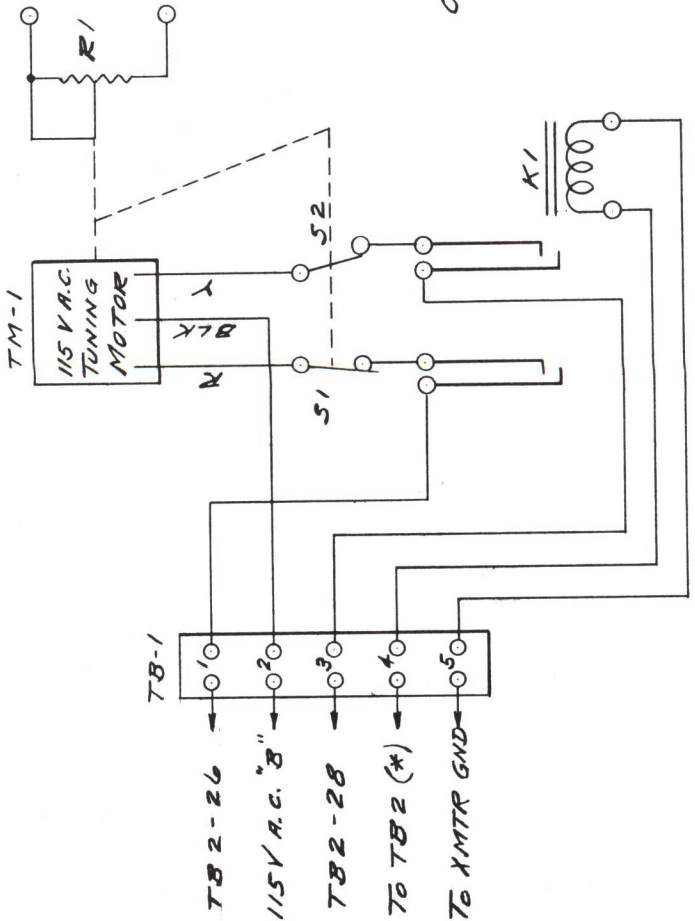
GATES RADIO COMPANY  
QUINCY, ILLINOIS

DRAWING NUMBER

A-10990

M 5214 REMOTE CONTROL SYSTEM

M 4703 TUNING MOTOR & RHEOSTAT ASSEMBLY



IF ADDITIONAL MOTORS ARE TO BE CONTROLLED CONNECT THE MOTOR COMMON TO "B" FOR 115V MOTORS AND "A" FOR 220V MOTOR

(\*) THIS SHOULD BE CONNECTED TO TERMINAL CORRESPONDING TO POSITION ON SELECTOR THAT CONTROL IS DESIRED. EXAMPLE:- IF IT IS DESIRED TO CONTROL MOTOR, (1) WHILE READING PLATE VOLTAGE, CONNECT TO TB 2-15 (2) WHILE READING ANT CURRENT, CONNECT TO TB 2-17 (3) IF IT IS DESIRED TO BE ABLE TO READ EITHER PLATE VOLTAGE OR ANT. CURRENT WHILE CONTROLLING THE MOTOR, JUMPER TB 2-15 TO TB 2-17 AND CONNECT TB 1-4 ON TUNING MOTOR ASSEMBLY TO TB 2-17

P.C.N. 7-30-57		F.G.S.	
M.T.		P.M.	
DR. BY 200A 3/5		ING. APL. R.E.M.	
DATE 8-2-55		DATE 8-4-55	
GATES RADIO COMPANY QUINCY, ILLINOIS			
DRAWING NUMBER B-13417			

INSTALLATION INSTRUCTIONS FOR TUNING MOTOR & RHEOSTAT ASSEMBLY FOR M 5214  
UNLESS OTHERWISE SPECIFIED, ALL TOLERANCES PER GATES SPEC OMBT02.

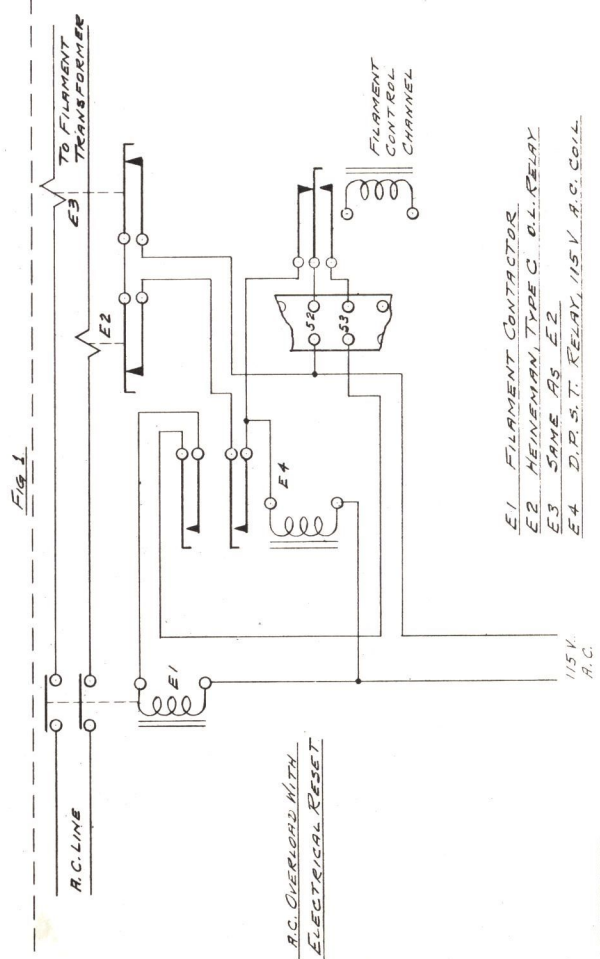
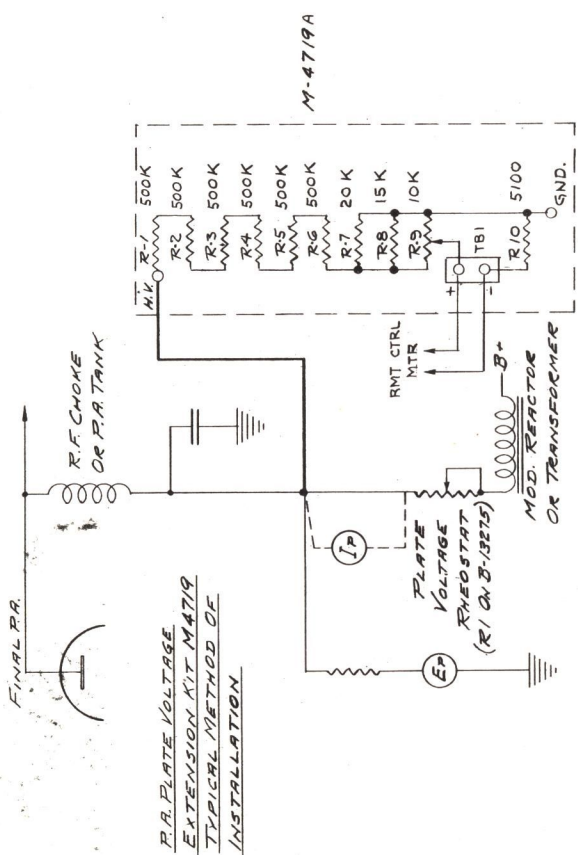


Fig. 1

E1 FILAMENT TRANSFORMER  
 E2 HEINEMAN, TYPE C D.C. RELAY  
 E3 SAME AS E2  
 E4 D.P.S.T. RELAY, 115 V. A.C. COIL.

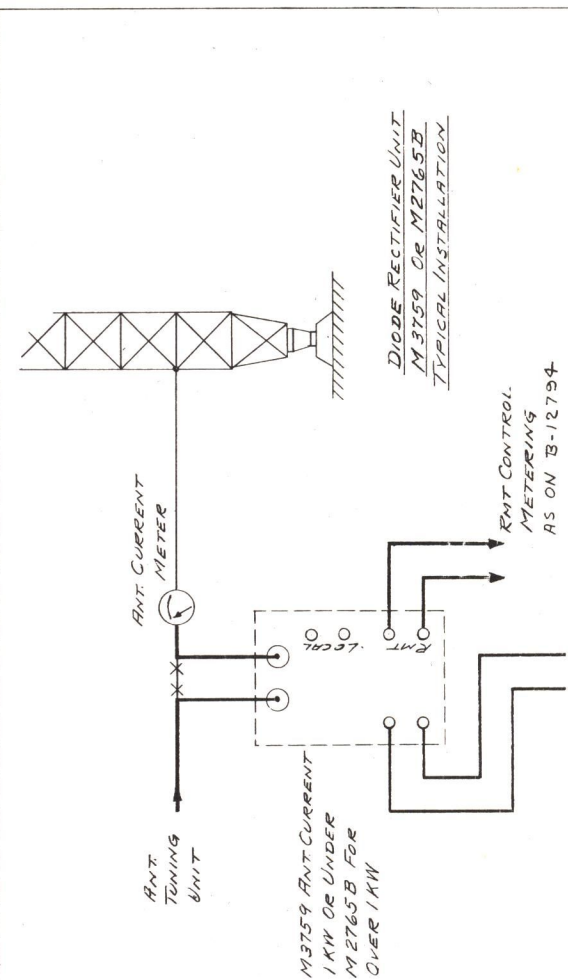
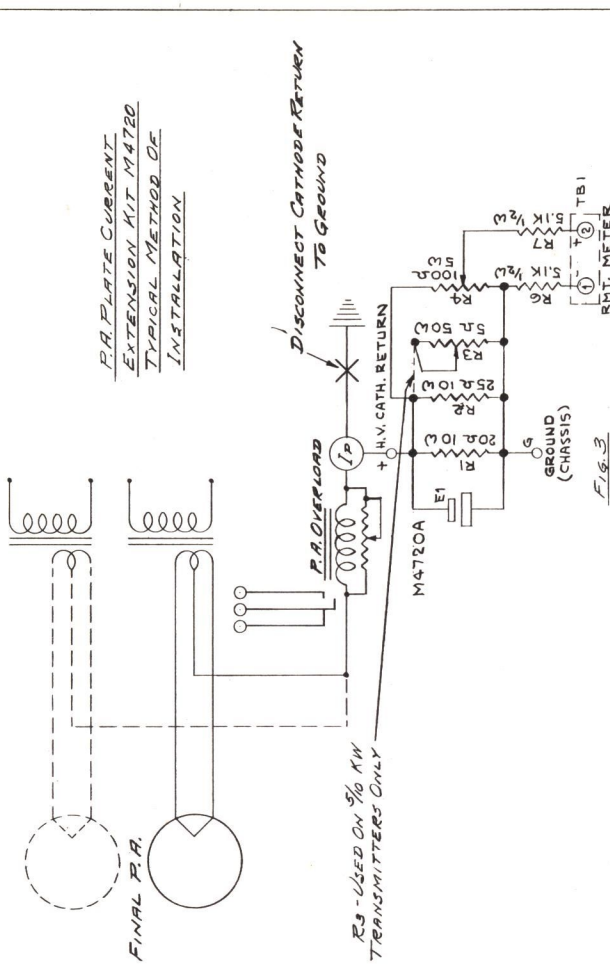


Fig. 3

Fig. 4

M3759 ANT CURRENT METER  
 M2765B FOR OVER 1 KW  
 ANT. CURRENT METER  
 ANT. TUNING UNIT  
 115V A.C.  
 RMT CONTROL METERING AS ON B-12794

P.A. PLATE CURRENT  
 EXTENSION KIT M4720  
 TYPICAL METHOD OF  
 INSTALLATION

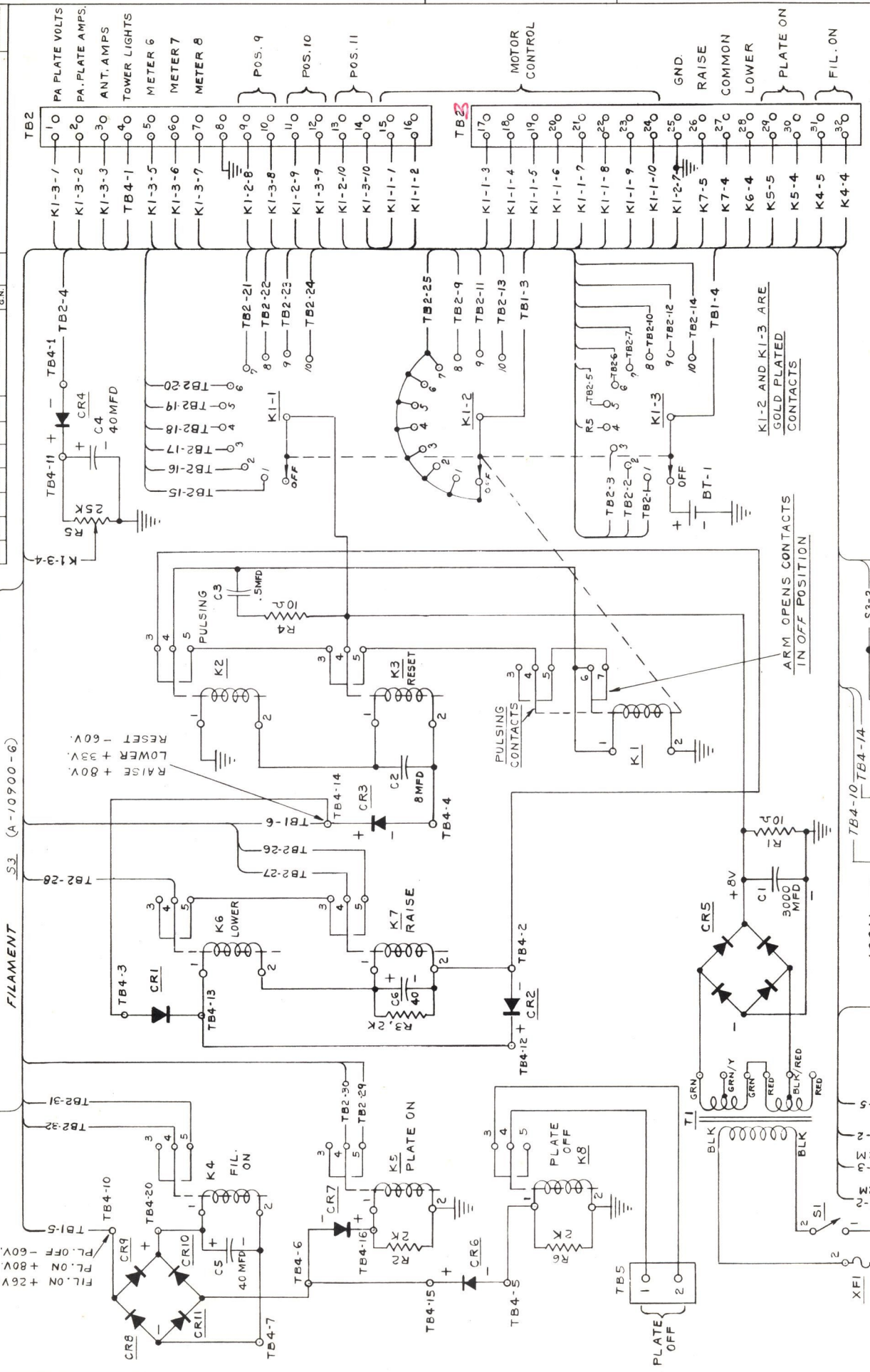
P.A. PLATE VOLTAGE  
 EXTENSION KIT M4719  
 TYPICAL METHOD OF  
 INSTALLATION

DIODE RECTIFIER UNIT  
 M3759 OR M2765B  
 TYPICAL INSTALLATION

C-79369  
SCALE

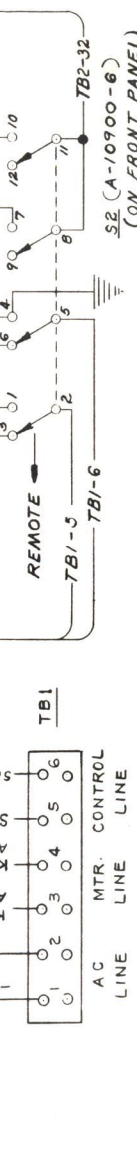
GATES RADIO COMPANY  
QUINCY, ILLINOIS

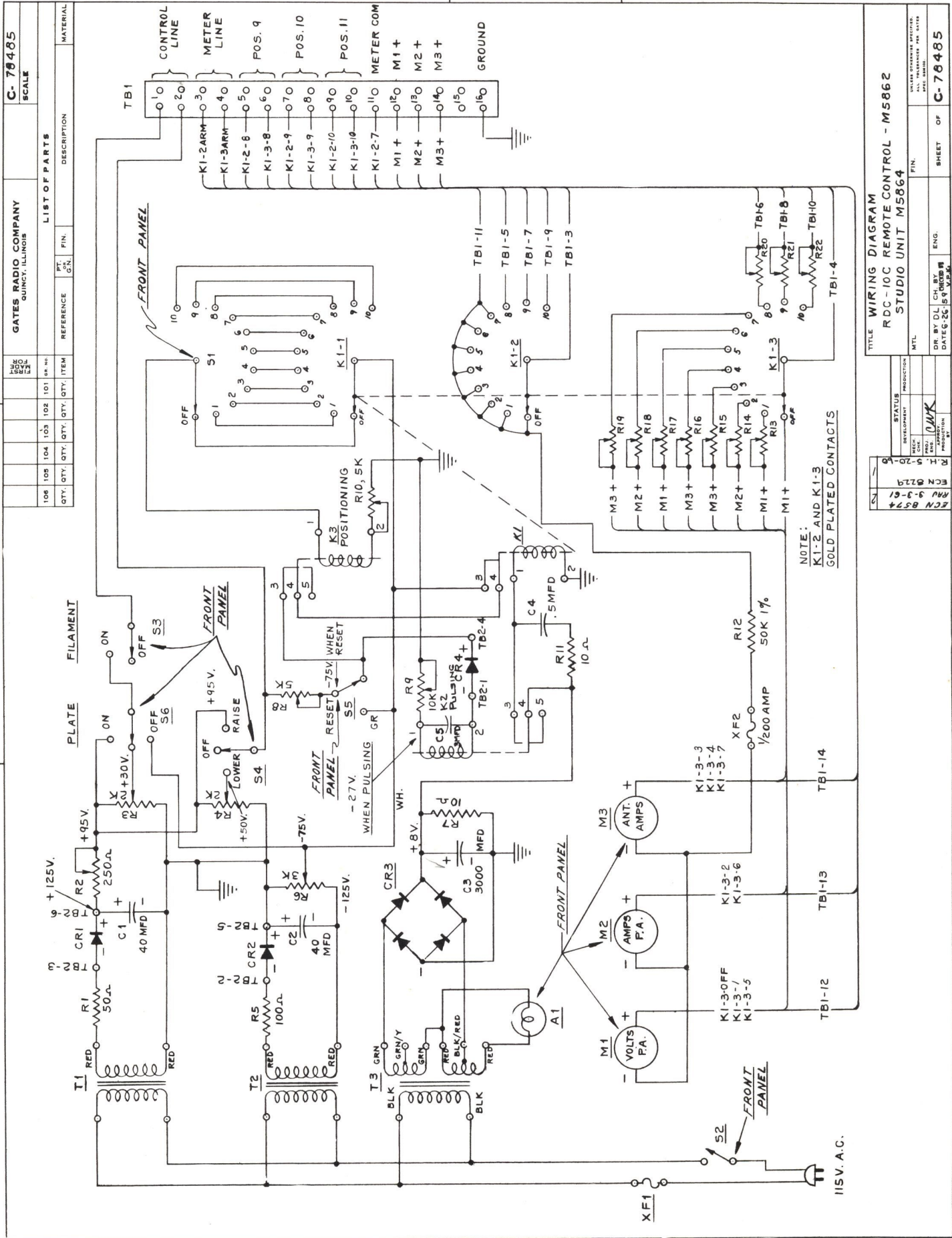
LIST OF PARTS		DESCRIPTION	MATERIAL						
QTY.	QTY.	REF.	PT. QTY. QTY. QTY.						
106	105	104	103	102	101	100	99	98	97



TITLE WIRING DIAGRAM  
RDC-10C REMOTE CONTROL - M5862  
TRANSMITTER UNIT M5863A

STATUS	PRODUCTION	FIN.	SHEET	OF
DEVELOPMENT	PRODUCTION	DR BY DL	CHK BY RE	ENG.
DATE 1/2/40	DATE 1/2/40	DATE 1/2/40	DATE 1/2/40	DATE 1/2/40





C-78485  
SCALE

GATES RADIO COMPANY  
QUINCY, ILLINOIS

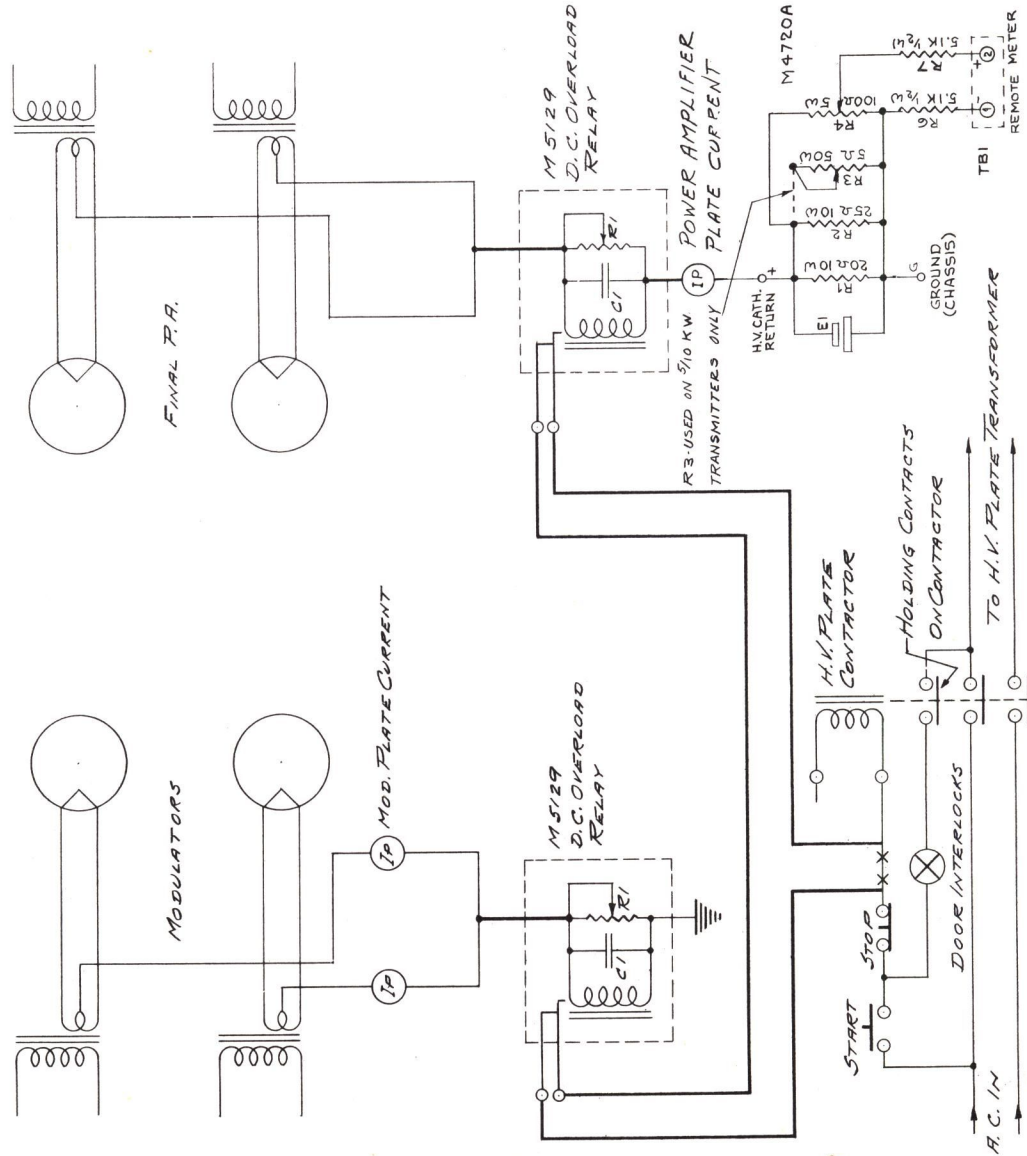
LIST OF PARTS		DESCRIPTION		MATERIAL	
QTY.	REF.	QTY.	ITEM	QTY.	FIN.
106	108	104	103	102	101
107	109	105	104	103	102

TITLE WIRING DIAGRAM  
RDC-10C REMOTE CONTROL - M5862  
STUDIO UNIT M5864

STATUS		PRODUCTION	
DESIGN	DEVELOPMENT	PRODUCTION	TESTING
ECN 8574	ECN 8219	ECN 9-3-61	ECN 9-3-61
DR. BY DL	CH. BY WM	ENG.	DATEG-26-59

NOTE:  
K1-2 AND K1-3  
GOLD PLATED CONTACTS

TYPICAL D.C. OVERLOAD RELAYS FOR MODULATORS & POWER AMPLIFIER



2 ECN 7981  
 REV 10-14-57  
 1 ECN 47317  
 REV 2-21-57

FIG 1

TOWER LIGHTS CURRENT M5143 CURRENT TRANSFORMER OR M5145 TOWER LIGHT EXT. KIT (M5145 NOT FURNISHED WITH BASIC REMOTE CONTROL.)

SINGLE TOWER

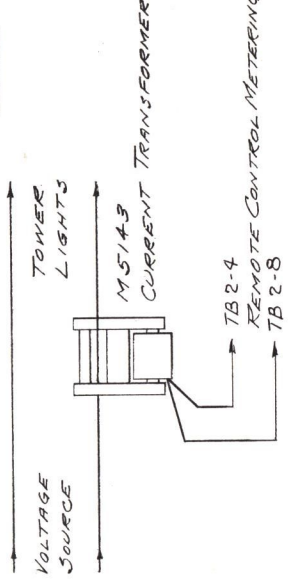


FIG 2

MULTIPLE TOWERS

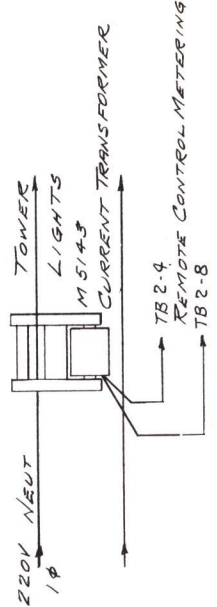


FIG 3

MULTIPLE TOWERS

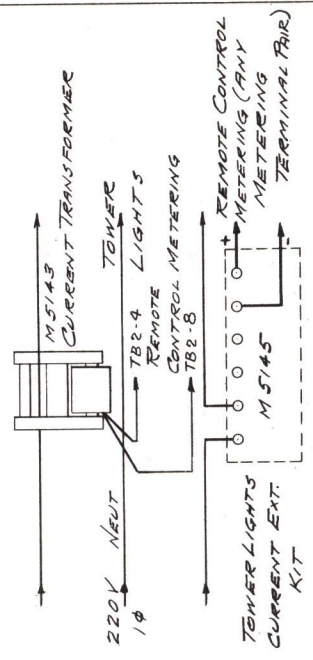
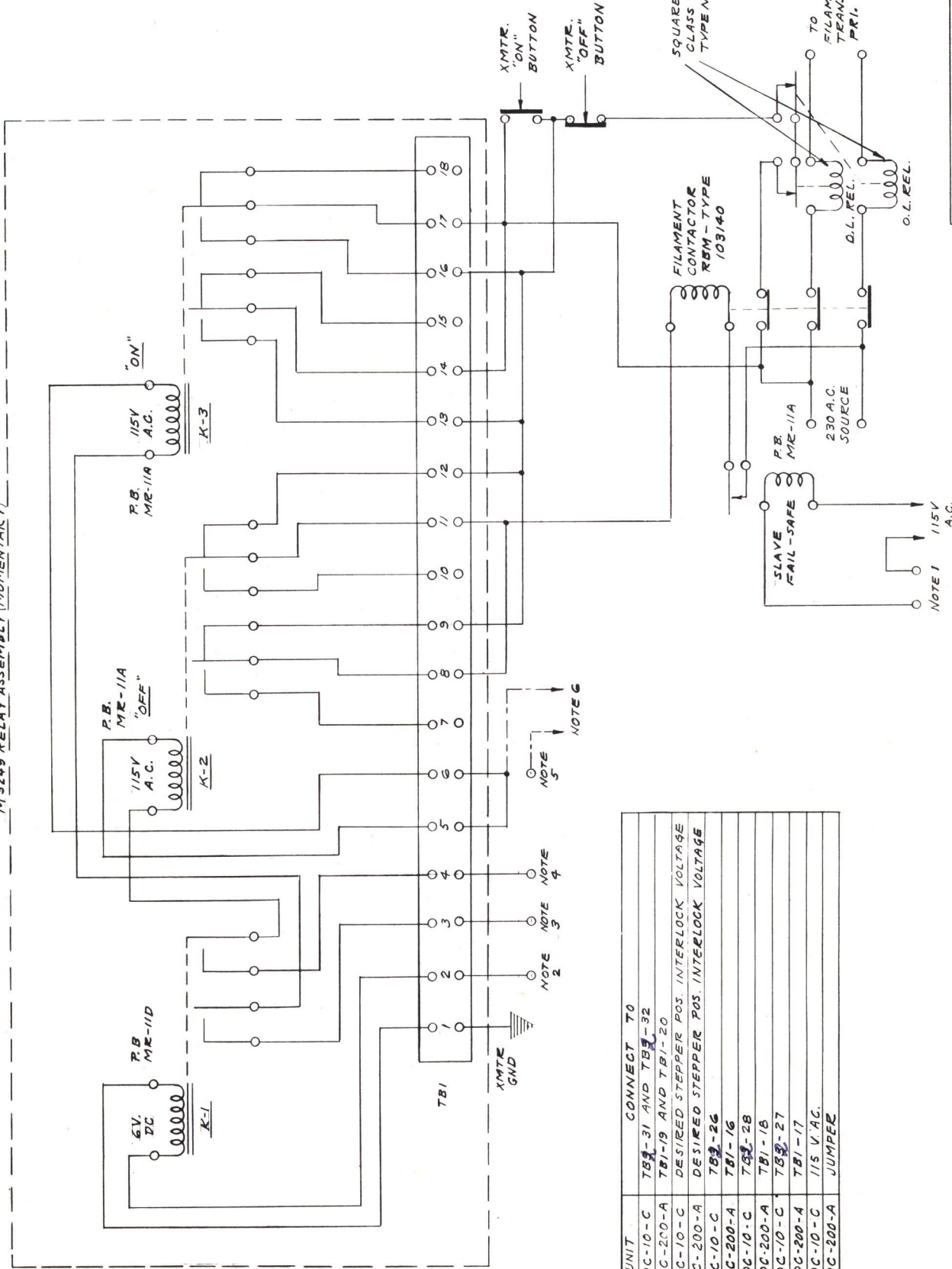


FIG 4

M 5249 RELAY ASSEMBLY (MOMENTARY)



NOTE	UNIT	CONNECT TO
1	RDC-10-C	TB1-31 AND TB1-32
	RDC-200-A	TB1-19 AND TB1-20
2	RDC-10-C	DESIRED STEPPER POS. INTERLOCK VOLTAGE
	RDC-200-A	DESIRED STEPPER POS. INTERLOCK VOLTAGE
3	RDC-10-C	TB1-26
	RDC-200-A	TB1-16
4	RDC-10-C	TB1-28
	RDC-200-A	TB1-18
5	RDC-10-C	TB1-27
	RDC-200-A	TB1-17
6	RDC-10-C	115 V. A.C.
	RDC-200-A	JUMPER

GATES RADIO COMPANY  
QUINCY, ILLINOIS

INTERCOM. FOR REMOTE CONTROL TO  
PROVIDE FILAMENT ON-OFF, FAIL-SAFE &  
A.C. O.L. PROTECTION, RDC-10-C & RDC-200A

DR BY *AWC* DATE 10-18-59  
CH BY *W.H.* ENG

CC-78071