

MAINTENANCE MANUAL
for
MASTR REMOTE/REPEATER STATIONS WITH CHANNEL GUARD
(with and without Repeater-Disable)
(Options 7659 & 7660)

CONTENTS

Description	1
Remote/Repeater with Channel Guard (without repeater-disable)	1
Remote/Repeater with Channel Guard (with repeater-disable)	4
Installation	4
Initial Adjustment	4
System Wiring Changes	4
Interconnection Diagram	5

The General Electric MASTR Progress Line Remote/Repeater Station may be keyed by either an incoming RF signal (repeater operation), or by a control current from the dispatcher's control console (remote operation). Remote operation from the dispatcher's control maintains priority over all repeater operations. The dispatcher's remote control console is connected to the station by telephone line.

REMOTE/REPEATER WITH CHANNEL GUARD (Option 7659)
(without repeater-disable)

Option 7659 provides Remote/Repeater control of stations equipped with Channel Guard. The option adds a 19C303972-G6 Circuit Board to the KC-16-A Remote Control Panel and changes the Channel Guard and Carrier-Operated Switch (COS) circuits. Normally, the output of the receiver Channel Guard decoder connects directly to the DC amplifier on the IF/Audio & Squelch Board, but for this application the output is applied through circuits of the KC-16-A panel.

Stations with 2-Watt Receivers

When stations contain 2-watt receivers, the 19C303972-G6 Circuit Board is modified as indicated on the Service Sheet for Option 7659. The output from the Channel Guard decoder connects through normally-closed (NC) contacts of K1 to the DC amplifier to provide Channel Guard operation (see Figure 1).

Pressing the Channel Guard monitor switch at the remote control console applies +6 ma to the control pair, energizing K1. Contacts 14 and 15 of K1 disconnect the Channel Guard output from the DC amplifier. Contacts 6 and 7 close, applying a positive voltage to the DC amplifier. This disables the Channel Guard so that all signals on the receiver frequency are monitored at the remote control console. Contacts 11 and 12 of K1 open the normal COS feed circuit to prevent signals without Channel Guard from operating the station transmitter,

however, signals with Channel Guard are repeated. When Channel Guard tone is present, the positive voltage from the Channel Guard decoder is fed through contacts 15 and 16 of K1 to the COS feed circuit. This voltage operates the COS to key the station transmitter.

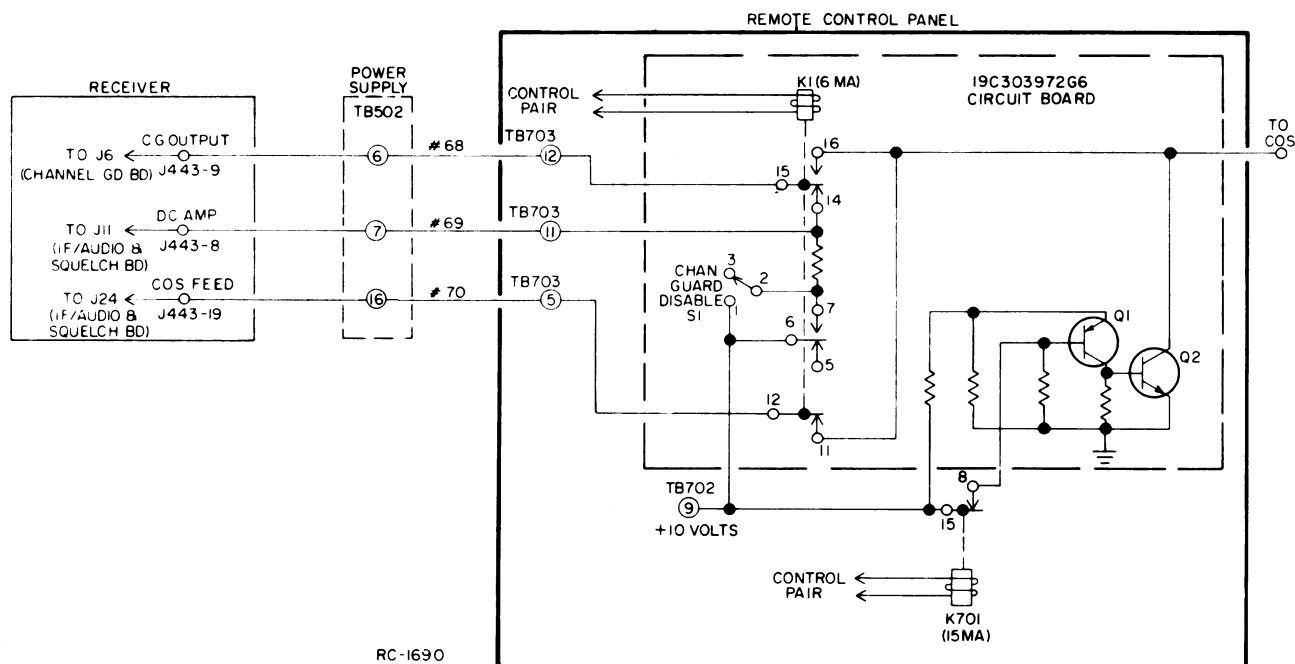


Figure 1 - Remote/Repeater Control with Channel Guard (Option 7659 with 2-Watt Receiver)

The remote control console has priority over the repeater function. Keying the transmitter from the remote control console applies +15 ma to the control pair, energizing K701. Contacts of K701 open, removing the voltage connected to the base of Q1 and turning Q1 on. This turns on Q2 and shorts the COS feed circuit to ground. The COS turns off, disabling the repeater function and giving the remote control console complete control of the station.

Stations with 5-Watt Receivers

When stations contain 5-watt receivers, the output from the Channel Guard decoder is connected to the base of Q3 on the 19D303972-G6 Circuit Board (see Figure 2). Normally, with no incoming call, the output is positive and Q3 conducts. While Q3 is conducting, Q4 is turned off and the resultant positive voltage at the collector of Q4 is connected to the DC amplifier to squelch the receiver.

When the incoming signal contains the Channel Guard tone, no output is provided by the Channel Guard decoder and Q3 turns off. This permits Q4 to conduct removing the positive voltage from the DC ampli-

fier to unsquelch the receiver. While the receiver is unsquelched, COS feed voltage connects through normally-closed (NC) contacts 11 and 12 of K1 to operate the COS and key the station transmitter.

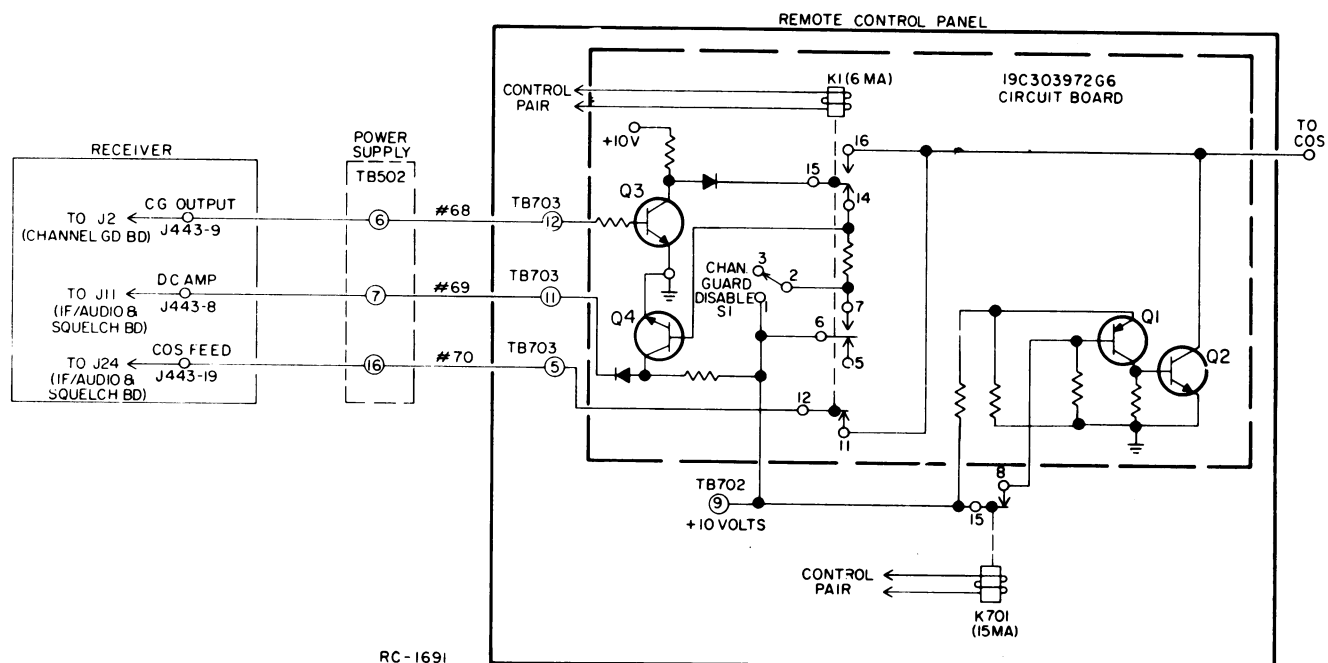


Figure 2 - Remote/Repeater Control with Channel Guard (Option 7659 with 5-Watt Receiver)

Pressing the Channel Guard monitor switch at the remote control console applies +6 ma to the control pair, energizing K1. Contacts 6 and 7 of K1 connect a positive voltage to the base of Q4, turning Q4 on and removing the positive voltage from the DC amplifier. This disables the Channel Guard function so that all signal on the receiver frequency are monitored at the remote control console. Contacts 11 and 12 of K1 open the normal COS feed circuit to prevent signals without Channel Guard from operating the transmitter, however, signals with Channel Guard are repeated. When the Channel Guard tone is present, Q3 turns off and the positive voltage at its collector is connected through contacts 15 and 16 of K1 to the COS feed circuit. This voltage operates the COS to key the station transmitter.

The remote control console has priority over the repeater function. Keying the transmitter from the remote control console applies +15 ma to the control pair, energizing K701. Contacts of K701 open, removing the voltage connected to the base of Q1 and turning Q1 on. This turns on Q2 and shorts the COS feed circuit to ground. The COS turns off, disabling the repeater function and giving the remote control console complete control of the station.

REMOTE/REPEATER WITH CHANNEL GUARD (Option 7660)
(with repeater-disable)

Option 7660 utilizes a 19C303972-G6 Circuit Board to provide the functions described for Option 7659. In addition, a 19C303972-G7 Circuit Board containing relays K2 (for Repeater Disable) and K3 (for Channel Guard Disable) is provided. When -6 ma is applied from the control pair, relay K2 energizes to disable the Carrier Operated Switch. When -15 ma is applied from the control pair, relay K3 also energizes and disables Channel Guard. Refer to the Service Sheet for Option 7660.

INSTALLATION

Follow the installation instructions described in the INSTALLATION MANUAL for Repeater Stations, except for the following: Connect the telephone lines as described for "Remote Only-".

INITIAL ADJUSTMENT

The adjustment procedures contained in the Maintenance Manuals for the Remote Control Panel and The Repeater Panel are applicable for Remote/Repeater stations, except that power to the station is controlled by S701 on the Repeater Panel.

SYSTEM WIRING CHANGES

WIRES REMOVED FROM STANDARD HARNESS

1. Remote/Repeat with Channel Guard.
(a) Wire #10 between TB502-16 and TB703-6 (KC-19-A)
2. Remote/Repeat with Channel Guard and Repeater Disable.
(a) Wire #10 between TB502-16 and TB703-6 (KC-19-A)
(b) Wire #16 between TB502-11 and TB501-11 (EP-38-A)
(c) Wire #73 between TB703-1 and TB703-4 (KC-19-A)

WIRES REMOVED FROM STANDARD RECEIVER

1. Wire between J2 (J6 on 2 watt receiver) of the Channel Guard Board and J11 of the If Audio and Squelch Board.
2. Wires connected to J443-8 or J443-9, clipped close to the harness.

WIRES ADDED TO STANDARD RECEIVER

1. Green wire between J11 of IF-Audio and Squelch board and J443-8.
2. Blue wire between J2 (J6 on 2-watt receiver) of the Channel Guard board and J443-9.

MOBILE RADIO DEPARTMENT
GENERAL ELECTRIC COMPANY
LYNCHBURG, VIRGINIA 24502



- ## REMOTE/REPEATER OPTIONS 7659 & 7660

7