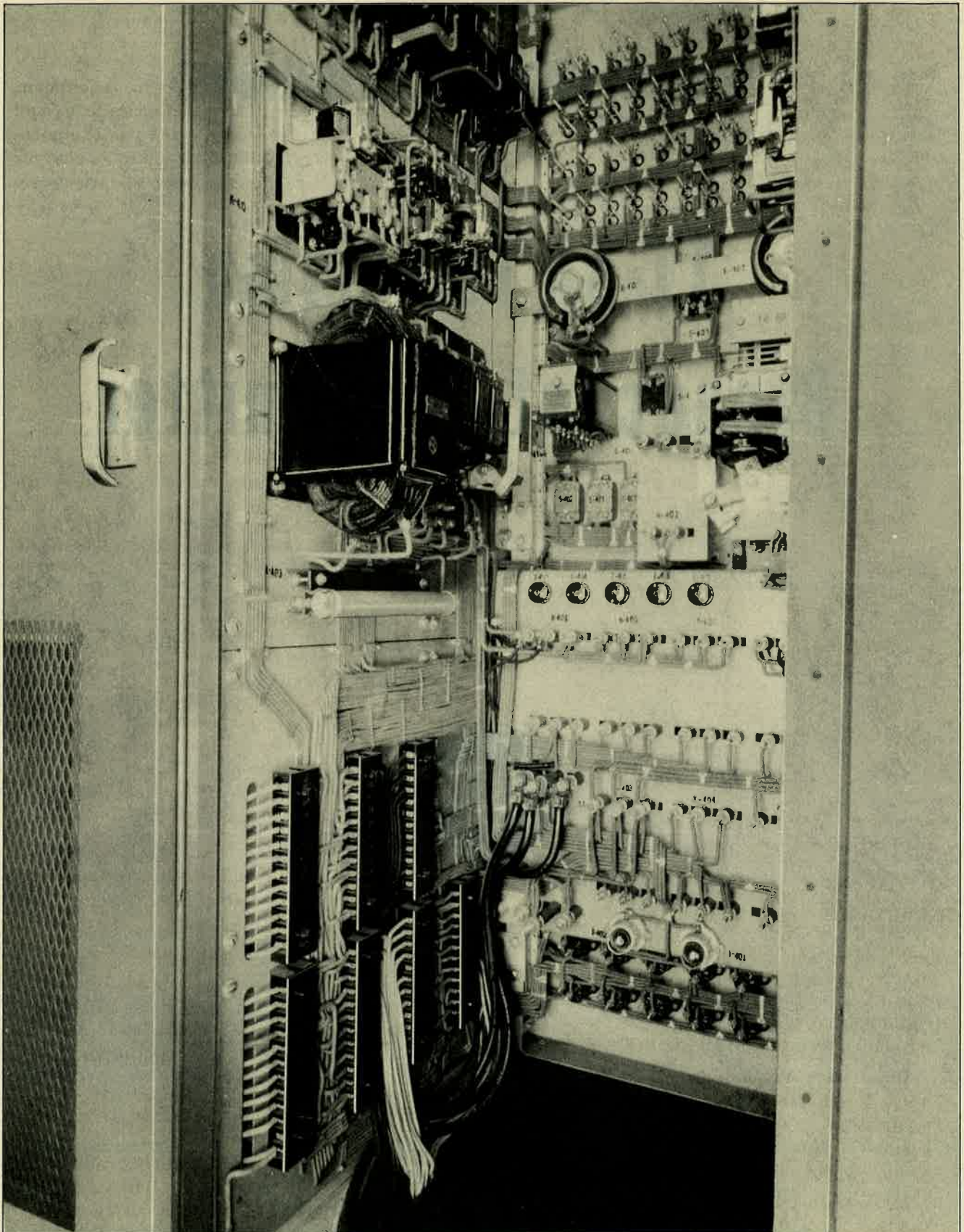


Installation Instructions
for
TT-5A Television
Broadcast Transmitter



Manufactured by
RADIO CORPORATION OF AMERICA
ENGINEERING PRODUCTS DEPARTMENT
Camden, New Jersey



PH-61489-1

FIGURE 1, Typical Cable "Forms" and Terminations

PLANNING THE INSTALLATION

Each Type TT-5A Television Transmitter includes a complete set of installation drawings showing construction details and suggested typical equipment layouts. The numbers of all drawings required for installation are tabulated on drawing list, K-8881678, furnished with the

equipment. These drawings give equipment dimensions, terminal locations, wire sizes and types, conduit requirements, and trench dimensions. Utilizing this information, it is possible to lay out a floor plan to meet a station's requirements.

LOCATION

GENERAL

The transmitter should be installed in a well-ventilated room where there is free circulation of clean dry air and where the ambient temperature does not exceed 45 degrees centigrade (113 F).

If an exhaust fan is utilized, it is desirable to install automatic louvers to prevent rain seepage and reversal of the air flow while the fan is idle.

Other factors to consider in choosing a location are: provision for incoming power supply lines; accessibility of a good ground connection; direction of transmission line; and adequate illumination. For controlling the light in the control console area a switch, or dimming rheostat, should be installed at or near the console.

Provision should be made for installing the external wiring, but it is not necessary to run the wires before the equipment is in place.

The location of components should follow the general plan outlined in Typical Installation drawing, W-307783. This grouping will insure the most direct interconnections and will require a minimum of floor space. The control console and the monitoring equipment racks may be placed at any convenient location without affecting the transmitter operation.

In locating the equipment, sufficient space must be allowed in the front and rear of the transmitter to permit opening and closing the cabinet doors. Refer to drawing number W-307784 for dimensions with doors open.

In some installations, it may be desirable to set the transmitter in a wall to prevent radiation of heat to the operating area.

The water circulating system, MI-19041, may be located adjacent to the transmitter as shown,

or on the floor below. **DO NOT PLACE THE WATER-COOLER ON A LEVEL ABOVE THE TRANSMITTER.**

After all water lines have been installed, they should be flushed in accordance with the notation on W-307784. This should be accomplished before they are connected to the transmitter.

The water-cooler noise is approximately 75 db above threshold at a distance of five feet. An enclosure will insure a lower noise level. In this case, it is necessary to provide a minimum of two square feet of vent area for air exhaust from the room.

It is recommended that outside air intake ducts be installed and connected to at least one side of the water cooler (there are air intakes on both sides of the unit), unless a louvered intake through an adjacent outside wall can be obtained. This duct, or opening, should have an area of at least six square feet.

To keep the length of interconnecting transmission line to a minimum, the Vestigial Sideband Filter should be located as close to the transmitter as possible.

The Dummy Load, Diplexer, WM-12A Picture Monitor, WM-13A Modulation Monitor, and Triplexer (if used), may be located on the floor above the transmitter room, or in adjoining rooms.

Alternate arrangements of the transmitter are shown on drawing W-307784. It is possible to install the transmitter cabinets to form several "U" type arrangements, but the smallest overall width when using a "U" type arrangement is 150 inches. If an F-M broadcast transmitter is to be installed in the same room, it is desirable to place it to the right of the television transmitter.

UNPACKING AND ASSEMBLING

Each transmitter is accompanied by a shipping voucher which lists the contents of that shipment. Groups of components are identified by MI (master item) numbers. Overall MI-19204A lists the equipment for the low-frequency (channels 2 to 6), five-kilowatt, television transmitter. For the high-frequency (channels 7 to 13) equipment, MI-19204B, the counterpart of MI-19204A, is assigned.

The packing cases for all units are stenciled with an MI number and its subdivisions. Thus, it is possible to identify the contents of all packing cases and to plan the uncrating systematically. All items listed on the MI sheets should be located before any crates or boxes are destroyed to prevent loss of small items during unpacking. In some instances, the MI sheet for small equipment is packed in the carton containing the equipment, rather than with the shipping voucher.

Some components are removed from their operating positions, and packed separately for safe shipment. All such parts are individually tagged, with the MI and item number of the component. The electrical symbol of the part will also be found on the MI sheet. For example, the high-voltage filter capacitor for the Picture Rectifier Unit, MI-19036, has been removed from its operating position and shipped in a separate crate. This capacitor is identified as MI-19036, item 3, by the tag attached to it. Locating item 3 on MI-19036 will give the electrical symbol of this capacitor, in this case C605. After finding the electrical symbol number from the MI sheet, it is necessary to locate the space provided for this capacitor in the individual frame. The first digit (6) following the letter (C) indicates

the frame in which the component is to be located. The symbol number is stenciled on the inside wall of frame six where the capacitor is to be installed. All component parts may similarly be identified and installed in the transmitter.

NOTE: IT IS DESIRABLE TO PERMANENTLY LOCATE ALL TRANSMITTER FRAMES BEFORE RE-INSTALLING COMPONENTS REMOVED FOR SHIPMENT.

The necessary hardware for re-assembly is packed with each unit and in addition, an MI-19108 hardware kit is included in all transmitter shipments. This kit contains a complete set of nuts, bolts, washers, lockwashers, and miscellaneous hardware necessary for transmitter frame and base assembly.

Details for placement of the channel base sections and assembly of the equipment are shown on drawings W-307784 (Transmitter Assembly), P-728225 (Console), P-727789 (Monitoring Equipment Racks), and W-307783 (Typical Installation).

The channel base of the TT-5A Transmitter is supplied in five sections, shown in drawing W-307784. If the floor is not level, the base should be shimmed to obtain proper alignment.

The base assembly, MI-19108, is composed of five sections. Item one of this MI covers two identical, single base sections for frames three and six. Item two is a double section base for frames seven and eight. Item three is another double section base for frames one and two. The remaining double base section (item four) is for frames four and five. These double base sections are not interchangeable, and must be placed as indicated.

WIRING

Transmitter frames one to eight inclusive have been so designed that all interconnecting wiring, between the non-adjacent frames, may be installed in wire ducts which are an integral part of the equipment. The necessity for trenches (for inter-cabinet wiring) is thus eliminated. Slots are provided through which jumper connections can be made between adjacent frames. To simplify installation, RCA

provides a wire kit containing all necessary wiring material for the complete installation shown on drawing W-307783. The wire kit is furnished as MI-19109. The intended use of this material is listed in a tabulation at the rear of this leaflet.

Before starting the interconnection wiring, a layout plan should be drawn up so that the

cables may be formed in the trench or the transmitter base ducts. Removal of the deck plates and base cover plates will facilitate cabling between frames. Wire ducts are formed around the outside edges of the base sections through which the wiring is to be run.

When planning a layout, provisions must be made for electrical circuits for the various units of equipment. Separate circuits should be provided for the main line switches, console power, crystal heaters, tower light, exhaust fan, etc., as noted on the wire chart, T-619552.

Only one outside circuit is required for the tower light which may be controlled from the console through a relay. An indicator lamp is provided in the console, to be connected across the tower lighting circuit. Refer to the console schematic, T-619545, and wire chart, T-619552 for details.

Wire material for the tower light is not furnished with the wiring kit.

Care should be taken that all units of the equipment are well grounded. The grounding system used in high-frequency equipment, such as frequency-modulation, and television, is not a part of the radiating system, but serves chiefly as a safety precaution. Ground straps are supplied in the wiring kit for bonding the equipment together.

After all units are in their permanent position, jumper connections should be installed between the terminal blocks of adjacent frames, as shown on Interconnection Diagram, W-307772. For a straight-line arrangement of the transmitter, this wiring will connect through the slots in the side panels. All such

connections are made directly between terminals having like designations. The cables shown in the base duct between non-adjacent frames may dress to the front or rear of the transmitter as explained on W-307772.

To secure a properly "dressed" appearance, it is desirable to install the cable neatly at the various terminal positions. Typical cable "forms" at multiple terminal blocks are shown in Figure 1. High-voltage cable terminations and primary power supply lines at their respective terminals, are also shown in this photograph.

For angle arrangements of the transmitter frames, dress all wires in the base duct to the front. All wiring between adjacent frames positioned at an angle should be run from the terminal blocks, down through the slots in the deck plates, along the side and front of the section (or sections), and return along the side to the terminal blocks. The make-up of all cables should be planned to avoid unnecessary cross-overs as they enter and leave the trench or transmitter bases.

Several spare wires should be run in each cable, to avoid possible shortage of connecting wires due to errors in planning, or to permit the inclusion of additional circuits. As the wires are laid, each wire should be tagged at its ends with the terminal connection identification.

When cutting lengths of heavy cables designed for conduit runs, allow some excess length. It is better for a cable to be a foot too long than two inches short. Also, having some surplus facilitates forming of individual cables.

FIFTY CYCLE CONVERSION KIT

If it is necessary to operate this equipment from a 50-cycle power source, the frequency conversion kit, MI-19107, should be ordered.

This kit contains all parts which are affected by the change in power frequency such as relay coils, time meter, etc.

MI-19109 INSTALLATION WIRING MATERIAL

Item	Quantity and Type	Use
1	110 feet, RG-8U coaxial cable.	R-F input to frequency monitor.
2	360 feet, RG-11U, coaxial cable.	Picture program line, picture monitoring equipment.
3	8 feet, RG-58U, coaxial cable.	Transmitter interconnection between FM exciter, and low-frequency driver.
4	75 feet, one conductor, shielded.	Sound monitoring equipment.
5	35 feet, lead sheath cable, No. 8 A.W.G., 5000 volt.	Transmitter high voltage (plate) interconnections.
6	330 feet, twisted pair, shielded, No. 20 A.W.G., 300 volt.	Program lines.
7	2150 feet, G.E. "SNA" Flamenol, No. 12 A.W.G., 600 volt.	Transmitter, water-cooler unit, dummy load, sideband filter, picture monitoring equipment, sound monitoring equipment interconnections.
8	150 feet, PS-540, 26/.010, 2000 volt (flame proof).	Transmitter low voltage (plate) interconnections.
9	36 feet, PS-21 soft copper strip, .0253 x 1½ inches.	Ground to sideband filter, water-cooler unit, monitoring equipment racks, console.
10	78 feet, PS-21 soft copper strip, .0253 x 3 inches.	Station ground.
11	30 feet, PS-499, braid, tinned copper, 40/.005 x ¼ inch.	Bonding to ground.
12	1000 feet, PS-294, cord, lacing, No. 12.	Lacing cables.
13	<p>1 Suitable container, containing the following terminals:</p> <ul style="list-style-type: none"> 1 Connector, P202 (for item 3 above). 1 Adapter, P202 (for item 3 above). 6 Terminals ¾, tubular "eye" type (for incoming power line). 40 Terminals, No. 8, "eye" type, ¾ inch long (for items 4, 6, and 11 above). 3 Terminals, ¼, "eye" type, ⅜ inch long (for item 5 above). 85 Terminals, No. 8, "eye" type, 15/16 inch long (for item 7 above). 3 Terminals, ¼, "eye" type, 1⅞ inch long (for item 5 above). 30 Terminals, No. 10, "eye" type, 1½ inch long (for item 7 above). 3 Terminals, No. 6, "eye" type, 1 1/16 inch long (for item 3 above). 	



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