

Chapter 8 - Installation

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8.1 UNPACKING

8.1.1 Packaging Data.

When packed *for* shipment, the components of the receiver are placed in a water-vapor-proof container and packed in a wooden box. An exploded view of the wooden box and its contents is shown in figure 8-1. The dimensions of the box are approximately 24-1/4 inches high, 20-1/2 inches wide, and 14-3/4 inches deep. The packed box weighs approximately 100 pounds, with a volume of 3.9 cubic feet.

8.1.2 Removing Contents.

Select a location where the equipment may be unpacked without exposure to the weather, and which is convenient to the place of installation.

Caution:	Be careful when un-crating, unpacking, and handling the equipment, because it is easily damaged.
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1. Place the packing case conveniently near the installation location.
2. Cut and fold back the metal straps.
3. Remove the nails with a nail puller.
4. Remove the top and one side of the wooden box.
5. Remove the desiccant bags, the cardboard tray, and the plywood board.
6. Take out the outer cardboard carton that contains the receiver.
7. Open the carton and withdraw the inner carton that is enclosed in the moisture-vapor-proof barrier.
8. Slit open the seams of the moisture-vapor-proof harrier and open the inner cardboard carton.
9. Remove any spacers or padding from the inner cardboard carton.
10. Withdraw the receiver from the inner carton and place It on a workbench near Its final location.
11. Remove the technical manuals and the running spares.

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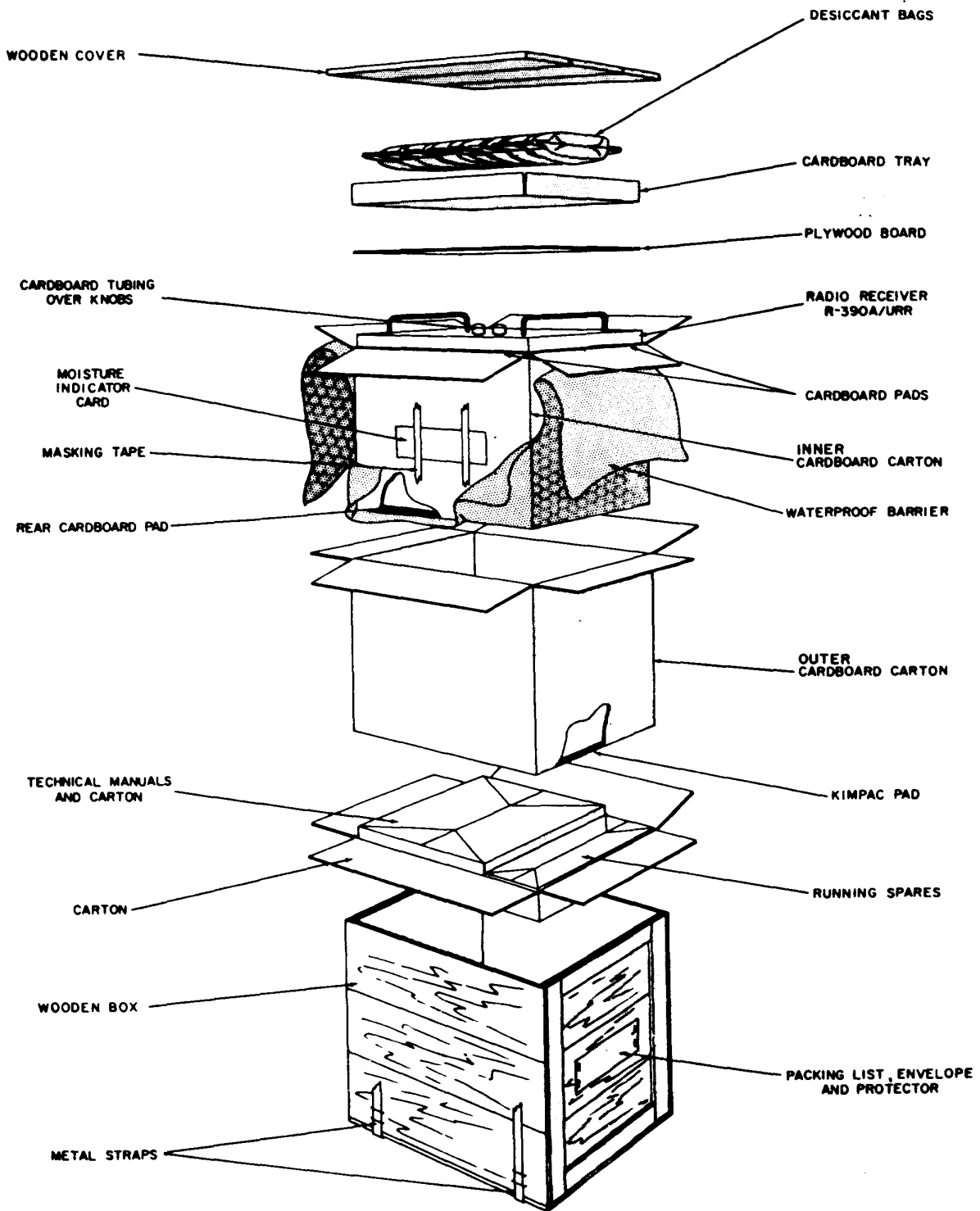
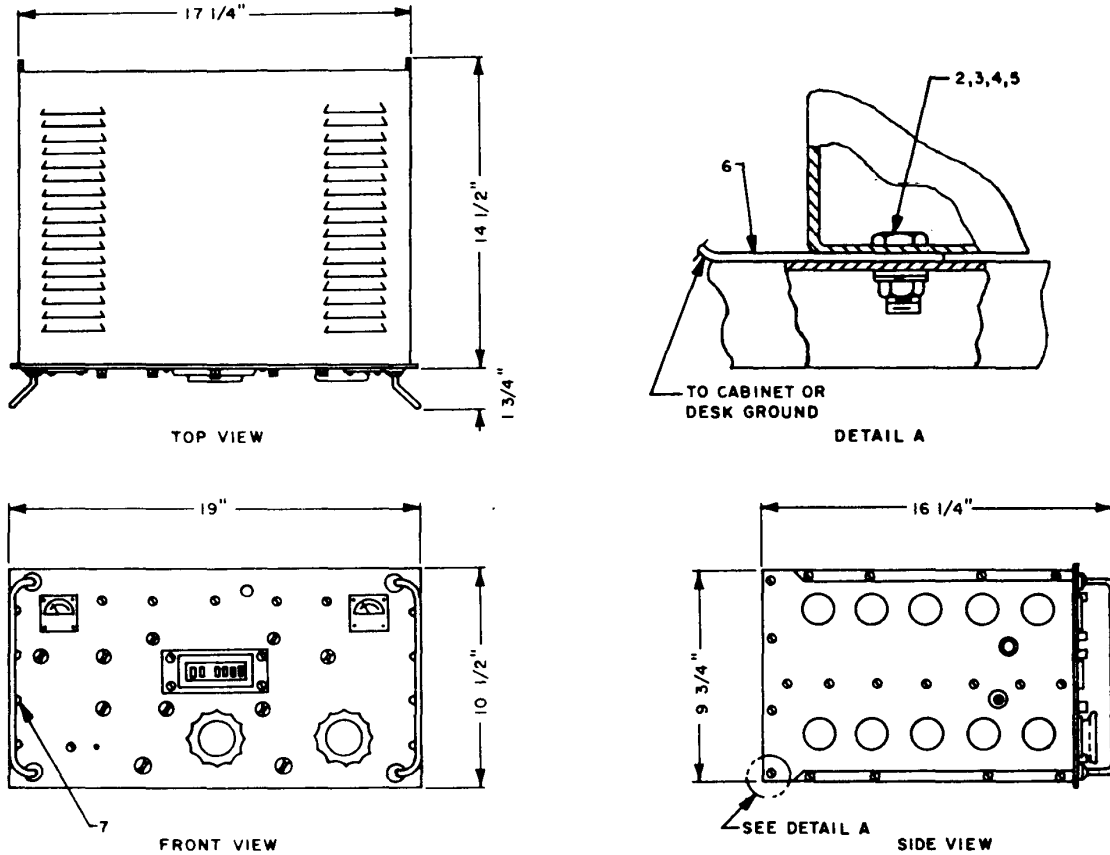


Figure 8-1. Packaging

Figure 8-1 - Packaging

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ITEM NUMBER	QUANTITY		NOMENCLATURE	PART TYPE OR MODEL NUMBER	MANUFACTURE OR FED SUPPLY CODE	REMARKS
	GF	CF				
1	1		RADIO RECEIVER	R-390A/URR	F5820-538-7355	
2		4	BOLT, MACH 5/16" -18 X 1-1/2" HEX HD		65308-227-0670	(SEE NOTE 2)
3		4	NUT, HEX, 5/16" -18		65310-271-4612	"
4		8	WASHER, FLAT 5/16"		65310-276-2716	"
5		4	WASHER, SPLIT 5/16"		65310-261-7415	"
6		4	STRAP, COPPER 1/16" X 1"			"
7		8	SCREW #10 - 32 X 5/16" BHMS			FOR RACK MTG.
8			COAXIAL PLUGS AND CONNECTORS			(SEE NOTE 1)

NOTES:

1. ALL COAXIAL PLUGS AND CABLES FURNISHED BY INSTALLATION ACTIVITY. REFER TO FIGURE 8-3 FOR PLUG AND CABLE TYPES.
2. ITEMS 2 THROUGH 8 TO BE FURNISHED BY INSTALLATION ACTIVITY.

Figure 8-2. Outline and Dimensions

Figure 8-2 - Outline and Dimensions

8.2 SITE INFORMATION

8.2.1

The receiver is designed for mounting in a standard 19-inch rack or cabinet. Refer to figure 8-2 for outline and mounting dimensions. The site location should be sufficiently weather-tight to protect the equipment. Allow enough room for free air.

8.3 MATERIAL REQUIRED FOR INSTALLATION

1. Hand Tools - as required
2. Antenna patch cable
3. 600-ohm speaker and connecting cable
4. Balanced 600-ohm audio line to auxiliary equipment - as desired.
5. Coaxial Cable, RG-58C/U - if receiver is to be connected to converter.
6. #10-32 x 5/8 inch screws (8 each) - if receiver is rack mounted or installed in CY-4516A/S cabinet.

8.4 INPUT REQUIREMENTS

Caution:

The power transformer can be damaged if 230 volts is applied to it when it is connected to operate on 115 volts.

8.4.1

The receiver will operate from either 115 or 230 volts ac, 50/60 Hz. To check to see that the TB801 is connected for the correct ac voltage, connect the receiver to a 115-volt ac line, turn the receiver on, and proceed as follows:

1. If the pilot lamps light at full brilliance, the receiver is connected for 115-volt operation.
2. If the pilot lamps light at half brilliance, the receiver is connected for 230-volt operation.
3. If the pilot lamps light at full brilliance and the receiver is to be used on 230 volts, disconnect the receiver and remove the power supply sub-chassis from it (paragraph 6.3.13.1). Connect T801 for 230-volt operation (figure 8-3).

Caution:

The voltages used in this receiver are high enough to endanger human life. To prevent shock hazard to personnel touching outside metal parts of the receiver, connect GND terminal 16 on the rear panel to the same ground as that of the power source. Do not depend on the front panel screws or the antenna transmission line to ground the chassis.

8.5 INSTALLATION PROCEDURES

8.5.1

The receiver is shipped as a complete unit. No assembly of units is required. 8.5.2 The receiver may be installed by one man, requiring approximately two hours to complete the installation. Slide the receiver into the rack or cabinet previously designated. Insert the eight #10-32 x 5/8 inch screws into cabinet or rack holes matching the cutouts on receiver face plate.

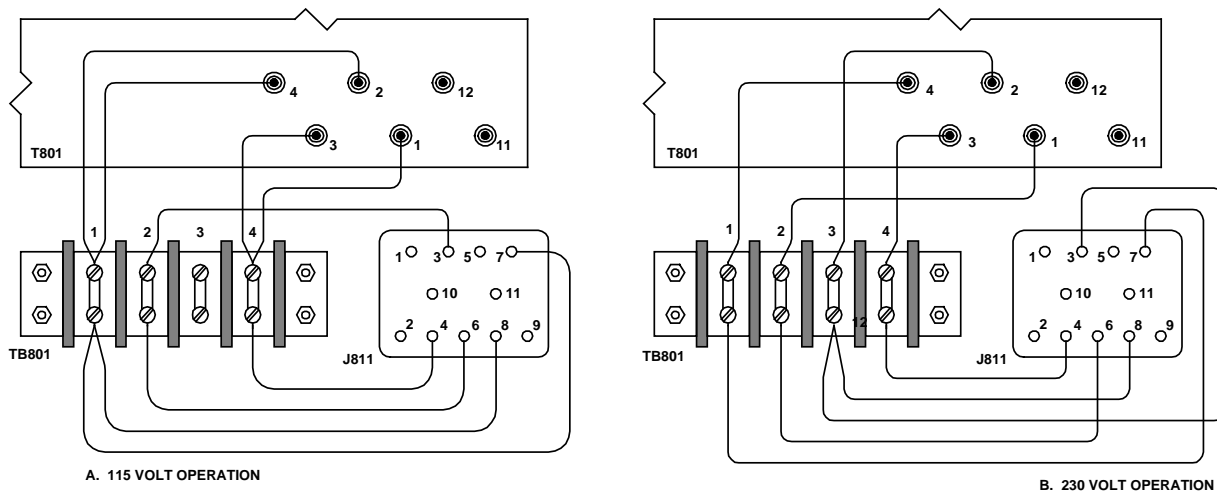


Figure 8-3 - Connections for 115-Volt or 230-Volt Operation¹

8.5.3

Fabricate coaxial fitting to ends of cables using Electronics Information and Maintenance Book, Installation Standards, NAVSHIPS 0967-000-0110, Section 3 as reference. After completion of cable connection fabrication, measure from shield to center conductor with a multi-meter set on R x 1000 scale. Reading obtained should be infinity. Any reading less than 500K ohms should be investigated for improper fabrication of coaxial fitting.

8.5.4

Connecting Procedure. Each receiver is shipped with jumpers on Terminal Boards 102 and 103 connected between terminals 1 and 2, 3 and 4, 11 and 12, and 14 and 15. These four jumpers are required for normal operation.

¹Courtesy of Pete Wokoun, KH6GRT

8.5.4.1

For connecting 50 to 200-ohm balanced antennas, such as a balanced doublet to the BALANCED ANTENNA connector, use Radio Frequency Cable RG-22 with Connector Plug UG-421/U, or use Radio Frequency Cable RG-86/U with Connector Plug 969/U.

8.5.4.2

For adapting unbalanced coaxial leadin to the BALANCED ANTENNA connector, use Adapter Connector UG-971/U with leadin terminated in Connector Plug 573/U whenever possible; if these are not available, use Adapter Connector UG-970/U with leadin terminated in Connector Plug PL-259.

8.5.4.3

For connecting a whip antenna or a random length single-wire antenna to the UNBALANCED ANTENNA connector, use Connector Plug UG-943B/U. Make the antenna lead-in (figure 8-4) as short as possible.

8.5.4.4

Perform step 1, 2, or 3 below, depending on the type of listening device used.

1. Plug the headset into the PHONES jack.
2. Connect the headset terminals to PHNS terminal 8 and terminal 7 (ground) on TB 102.
3. Connect the loudspeaker terminals to LOCAL AUDIO terminals 6 and 7 on TB 102.

8.5.4.5

For balanced line operation, connect the balanced line to LINE AUDIO terminals 10 and 13 on TB 103. If a balancing bridge is to be used for long-distance applications, perform steps 1 and 2 below.

1. Remove the jumper from terminals 11 and 12 on TB 103.
2. Connect the balancing bridge between terminals 11 and 12 on TB 103.

8.5.4.6

If a transmitter is being used with the receiver for break-in operation, connect the control lines from the transmitter to BRK IN terminal 9 and GND terminal 16 on TB 103.

8.5.4.7

For external gain control, remove the jumper from RF GAIN terminals 1 and 2 on TB 102 and connect an external 5, 000-ohm potentiometer to RF GAIN terminal 1 and terminal 7 (ground).

8.5.4.8

To use an external diode load, remove the jumper from DIODE LOAD terminals 12 and 15 on TB 103 and connect the lines from the external diode load to terminals 14 and 15.

8.5.4.9

For external automatic gain control (AGC), remove the jumper from AGC NOR terminals 3 and 4 on TB 102 and connect the negative terminal of the external AGC source to terminal 4, and the positive terminal of the AGC source to terminal 7 (ground).

8.5.4.10

For frequency-shift converters that require an intermediate frequency (IF) output in a teletypewriter system, connect the coaxial transmission cable terminated in Radio Frequency Plug UG-88 to if OUTPUT jack.

8.5.5

Lubrication Procedure. The only parts of the receiver that require lubrication are the mechanical tuning system, which includes the radio-frequency (RF) gear train assembly and cam racks, and the BFO PITCH control shaft bearing. The receiver is lubricated at the factory and should be lubricated every 6 months thereafter. If inspection indicates the need for more frequent lubrication, shorten the interval accordingly.

Over-lubrication may cause trouble and should be avoided.

8.5.5.1

Lubrication Inspection. Check the condition of the mechanical tuning system every time the receiver is withdrawn from its cabinet or case. Proceed as follows:

1. Turn the MEGACYCLE CHANGE and the KILOCYCLE CHANGE controls throughout their ranges; observe the operation of all gears, cams, shafts, bearings, and guide slots.
2. Look for grit, sand, and dust in the moving parts.
3. Check the operation of the BFO PITCH control. If it does not operate freely, check the lubrication of the control shaft bearing.

⇒Caution:	Do not attempt to lubricate the sealed tuning unit of the variable frequency oscillator (VFO) sub-chassis; unstable operation may result.
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4. Use a suitable brush dipped in cleaning compound to remove any dirt, grit, sand, grease, and oil from the gears, cams, guide slots, shafts, and bearings.
5. Rotate the MEGACYCLE CHANGE and the KILOCYCLE CHANGE controls so that all parts of the mechanical tuning system can be reached.
6. Thoroughly dry all parts with a clean lint-free cloth before lubrication.

⇒Caution:	Remove excess cleaning compound from the brush so that none is dropped on wires and cables.
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⇒Caution:

Do not attempt to lubricate the sealed tuning unit of the variable frequency oscillator (VFO) sub-chassis; unstable operation may result.

8.5.5.2

Detailed Lubrication Instructions. Lubricate the gears, cams, bearings, slug racks, and guide slots.

1. Dip a short length of bare wire into lubricating oil, MIL-L-7870 and touch the end of the wire to the bearing. One or two drops of oil per bearing is sufficient.
2. Put a small amount of grease, MIL-G-7421 on the gear teeth, the cam edges, and the guide slots.
3. Turn the MEGACYCLE CHANGE and KILOCYCLE CHANGE controls during lubrication to spread the lubricant to all gear teeth and wearing surfaces.

8.6 INSTALLATION CHECKOUT

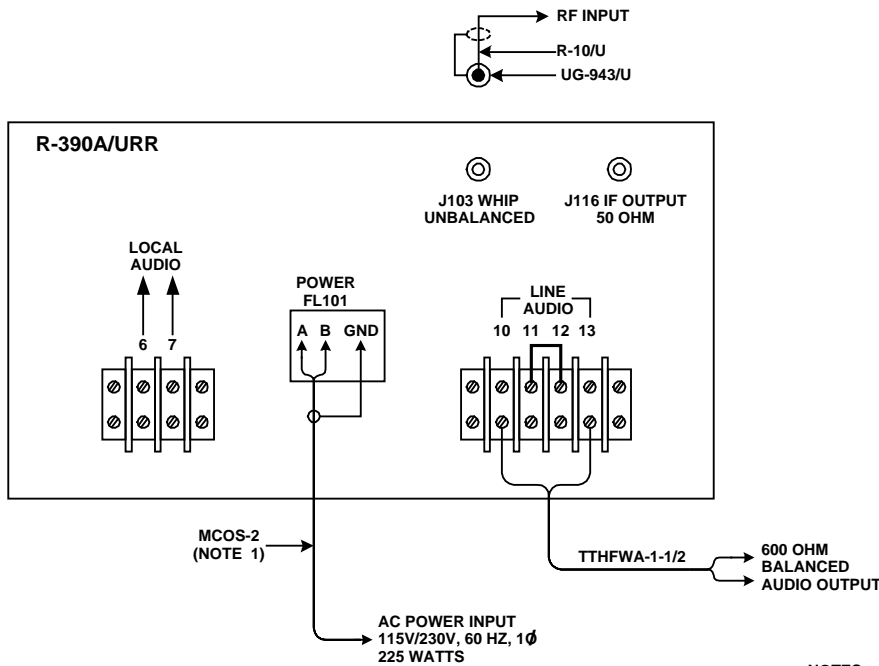
8.6.1

When it has been determined that the receiver is connected to the correct power source (paragraph 8.4.1) and that all external connections have been made correctly (figure 8-3), refer to paragraph 2.4 for initial turn-on and installation verification.

8.6.2

Conduct Scheduled Maintenance Procedures given in paragraph 4.3 through 4.3.3 in order to insure the receiver is operating at peak performance

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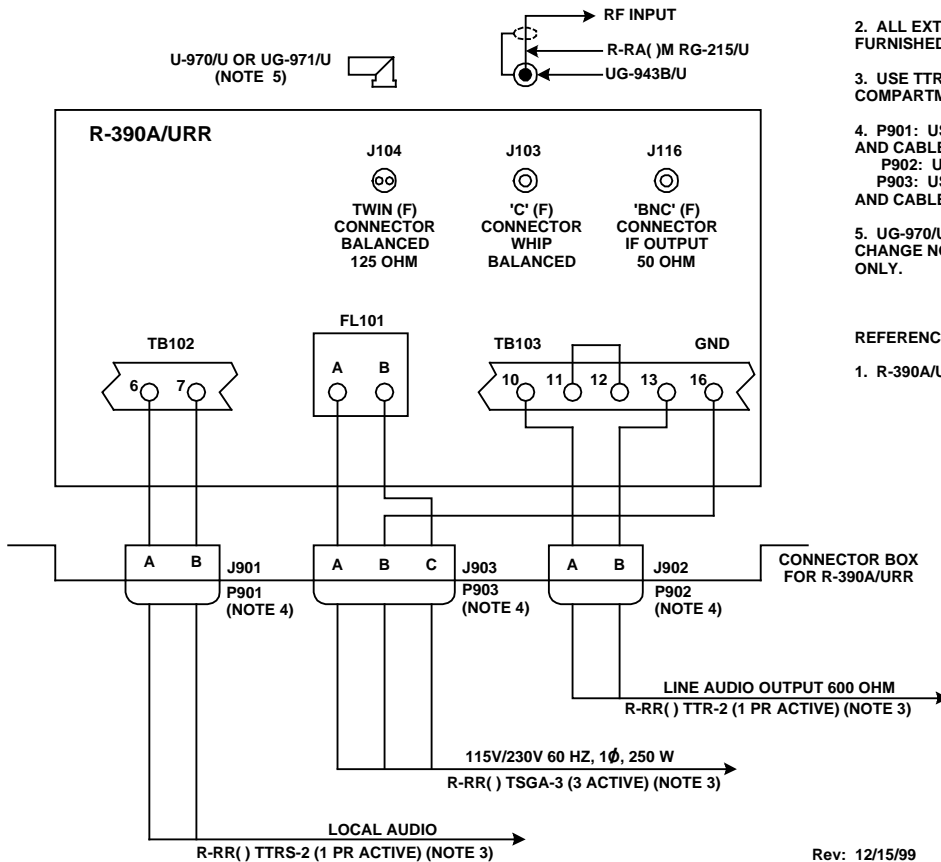


NOTES:

1. REMOVE 2 CONDUCTOR CABLE FURNISHED WITH R-390A/URR AND INSTALL 3-CONDUCTOR CABLE TSGA-3 GROUNDING RED WIRE AT J903-B AND OTHER END TO SHIP'S HULL.
2. ALL EXTERNAL CABLES AND CONNECTORS FURNISHED BY INSTALLING ACTIVITY.
3. USE TTRSA-2 FOR AUDIO CABLE RUNS BETWEEN COMPARTMENTS.
4. P901: USE MS3106B-10SL-4S OR MS3108B-10SL-4S AND CABLE CLAMP MS3057-4.
P902: USE SAME AS P901.
P903: USE MS3106B-16S-5S OR MS3108B-16S-5S AND CABLE CLAMP MS3057-8.
5. UG-970/U OR UG-971/U TO BE MODIFIED PER FIELD CHANGE NO. 5 FOR SHIPBOARD INSTALLATIONS ONLY.

REFERENCES:

1. R-390A/URR CONNECTOR BOX RE43F3003.



DWG BY KH6GRT

Figure 8-4 - Interconnecting Cabling²

²Courtesy of Pete Wokoun, KH6GRT