

SECTION 3 - RADIO TRANSMITTERS

3.1 AN/WRT-2 GENERAL DESCRIPTION

The AN/WRT-2 provides complete frequency coverage in one KC steps over the frequency range of 2.0 to 30.0 megacycles. The equipment is capable of delivering a nominal average power output of 500 watts and a peak envelope power (PEP) of 1000 watts in a 50 ohm, non-reactive load, with a voltage standing wave ratio (VSWR) lower than 4 to 1. The transmitter is capable of continuous full load operation under ambient temperature conditions. The AN/WRT-2 provides continuous wave (CW) independent sideband (ISB), single sideband (SSB), amplitude modulation (AM) phone, and frequency shift keyall emission.

3.2 REFERENCE DATA

- a. Table of Technical Publications - Table 3-1
- b. Primary Power Requirements - Table 3-2
- c. Heat Dissipation - Table 3-3
- d. Unit Weight - Table 3-3

3.3 INSTALLATION REQUIREMENTS

a. Arrangement - The AN/WRT-2 radio set is designed for mounting in an upright position. See Figure 3-1 for typical foundation details. The TN-342/WRT-2 turner can be mounted in either vertical or horizontal position close as possible to the antenna. See Figure 3-2 for typical foundation details.

b. Outline and Mounting Dimensions

- (1) AN/WRT-2 Figure 3-3
- (2) TN-342/WRT-2 Figure 3-4

c. Grounding Specifications - All bonding and grounding to be in accordance with Table 3-1, Item No. 2.

3.4 CABLE DIAGRAM AND CONNECTION DETAILS

- a. Elementary Connections - Figure 3-5.
- b. Electronics Installation and Maintenance Standards - To be in accordance with Table 3-1, Item No. 17.
- c. Security Requirements - To be in accordance with Table 3-1, Item No. 10.

3.5 FIELD CHANGE REQUIREMENTS - Table 3-4



ITEM NO.	NAVSHIPS NO. DRAWING NO. MIL. STD. NO.	TITLE
1	0967-073-3010	Technical Manual for Radio Transmitter Set AN/WRT-2
2	Mil. Std. 1310A (NAVY)	Shipboard Bonding and Grounding Methods for Electromagnetic Compatibility
3	0981-052-8090	Data Pertaining to Electrical Shipboard Cable
4	*RE-F2688014	Outline and Mounting Data
5	*RE-F2688312	Outline and Mounting Data
6	*RE-H2688328	Outline and Mounting Data
7	*RE-D2688398	Summary List of Installation Material
8	*RE-D2695731	Interconnecting Cabling Diagram
9	*RE-D2688278	Interconnecting Wiring Diagram
10	NAVSHIPS INST. 05510.33B	Installation Criteria for Shipboard Secure Electrical Information Processing Systems
11	*RE-H2688384	Production Drawing Assembly

*These plans are not essential for installation but if available, use as reference.

TABLE OF TECHNICAL PUBLICATIONS
TABLE 3-1 (Continued)

ITEM NO.	NAVSHIPS NO. DRAWING NO. MIL. STD. NO.	TITLE
12	*RE-F2688313	Interconnecting Wiring Diagram
13	*RE-H2688315	Primary Power Distribution Diagram
14	*RE-D2688316	Pictorial System Diagram
15	*RE-D2688329	Pictorial System Diagram
16	*RE-H2688330	Primary Power Distribution Diagram
17	0967-000-0000	Electronics Installation and Maintenance Books

*These plans are not essential for installation but if available, use as reference.

TABLE OF TECHNICAL PUBLICATIONS

TABLE 3-1

EQUIPMENT	VOLTAGE	CURRENT	POWER	REMARKS
AN/WRT-2	115/220/440 VAC, 60 HZ Single Phase		2.7 KVA	85% Power Factor

TABLE OF PRIMARY POWER REQUIREMENTS
TABLE 3-2

EQUIPMENT	HEAT DISSIPATION	UNIT WEIGHT
AN/WRT-2	1500 WATTS	930 LBS.
MT-2170A/WRT		100 LBS.
TN-342/WRT-2		135 LBS.

TABLE OF MISCELLANEOUS DATA

TABLE 3-3

FIELD CHANGE NUMBER AND SERIAL NO. EFFECTIVITY	NAVSHIPS BULLETIN #	BRIEF DESCRIPTION OF CHANGE	INSTALLING ACTIVITY & MANHOURS	KIT FSN	IDENTITY
1-AN/WRT-2 Serial 1 through 234	0967-073-3060	Mod. of printed circuit boards E-1301 and E-1303	FA-3		
2-AN/WRT-2 Serial 1 through 355	0967-073-3070	Removal of diodes CR-1342 and CR-1343	FA- $\frac{1}{2}$		
3-AN/WRT-2 Serial 1 through 289		Cancelled			
4-AN/WRT-2 Serial 1 through 417		Oven insulation and bandswitch replacement	FA-40	RFO Insulation: F5820-856-3451 RFO Bandswitch: F5820-856-3450 EFC Insulation: F5820-856-3449 EFC Bandswitch: F5820-856-3448	Any neoprene coated fiberglass insulation material replaced with clean uncoated fiberglass. This uncoated fiberglass can be detected by the uniform canary yellow color of both sides of the fiberglass as opposed to neoprene coated fiberglass which has one surface of light tan, burnt brownish or black color. The neoprene coating also feels sticky to the touch.

FIELD CHANGE REQUIREMENTS
TABLE 3-4 (Continued)

FIELD CHANGE NUMBER AND SERIAL NO. EFFECTIVITY	NAVSHIPS BULLETIN #	BRIEF DESCRIPTION OF CHANGE	INSTALLING ACTIVITY & MANHOURS	KIT FSN	IDENTITY
5-AN/WRT-2 Serial: Equipments authorized to use AN/WRA-3 (XN-1) as the exciting unit	981514	Control and drive of of AN/WRT-2 from Transmitter Group (AN/WRA-3 (XN-1))	FA-16		Transmitter-Transfer Control G-4359 (XN-1)/WRT-2 mounted near AN/WRT-2
6-AN/WRT-2	0967-067-3080	Information relative to this change is secret	FA-21	2N5820-884-2120	
7-AN/WRT-2 Serial: All WRT-2's installed in Nuclear Submarines	0967-073-3110	Replacement of thermostatic switches S-305 and S-602	FA-4	F5820-056-7148	New Thermostatic Switches are contained in 4 sided Aluminum capsules mounted in same general area as initially installed switches.
8-AN/WRT-2		Cancelled			
9-AN/WRT-2 RF Tuners TN-342/WRT-2, Serials C1-C4, C6-C13, C15, C16-C20, C22, C26	0967-073-3120	Replace defective Ledex switch actuator B-3303	FA-6	F5820-788-8421	A letter "R" stamped on the exterior of the drive and casting adjacent to pressure gauge M3301.

FIELD CHANGE REQUIREMENTS
TABLE 3-4 (Continued)

FIELD CHANGE NUMBER AND SERIAL NO. EFFECTIVITY	NAVSHIPS BULLETIN #	BRIEF DESCRIPTION OF CHANGE	INSTALLING ACTIVITY & MANHOURS	KIT FSN	IDENTITY
10-AN/WRT-2 All Serials	0967-050-5080	Relocation of phase splitter capacitor for tuner blower motor	FA-4	None	Blower motor capacitor removed from RF Amp. chassis.
11-AN/WRT-2 Serials 1 through 702, E1 through E151, C1 through C20.	0967-073-3100	Replaces RG-58/U cable with RG-141A/U cable in RF Amplifier AM-2121/WRT-2.	FA-1	F5820-909-3901	Presence of RG-141A/U between C and C882 in RF Amplifier AM-2121
12-AN/WRT-2 Serials 1 through 60	0967-073-3150	Replacement of 90° Phase Shift Network FL-603	FA-2		FL-603 marked with Westing- Dwg. No. 3376A439H01
13-AN/WRT-2 Serials 1 through 263	0967-073-3160	AM-2121/WRT-2 Power Amplifier Cathode Current Equilization	FA-4		Four cathode adjust potentiometers located on left side of AN-2121/WRT-2
14-AN/WRT-2 Serials 1 through 154	0967-073-3170	Replacement of Printed Circuit Board E1404 with new Board E1412	FA-1		E1412 the new printed circuit board does not have L1401 and Q1411 mounted on the front right corner.
15-AN/WRT-2 Serials 1 through 263, A1 through A178 D1 through D327	0967-073-3200	Eliminates constant key in the FSK mode	FA- $\frac{1}{2}$		Tune transmitter using normal tuning procedure and place Emission Selector switch to FSK position, if transmitter becomes keyed the change has not been accomplished.

FIELD CHANGE REQUIREMENTS
TABLE 3-4 (Continued)

FIELD CHANGE NUMBER AND SERIAL NO. EFFECTIVITY	NAVSHIPS BULLETIN#	BRIEF DESCRIPTION OF CHANGE	INSTALLING ACTIVITY & MANHOURS	KIT FSN	IDENTITY
16-AN/WRT-2 Serials All TN/342/WRT-2 Tuners	0967-073-3190	Prevents carbonization damage to tuner coil form caused by melted nylon from unvented guide shoes	FA- $\frac{1}{2}$		A 1/32" hole drilled in the guide shoe on the TN/342/WRT-2.
17-AN/WRT-2 All Serial Numbers	0967-073-3180	Coil form improvement	FA-4	2N5820-879 7671	Installation of improved coil form L3302 Alt A.
18-AN/WRT-2 Serials 1 through 122	0967-073-3190	FSK modification	FA-4	2N5820-054 3465	Two potentiometers marked space and mark in AM-2122/WRT-2
19-AN/WRT-2 Serials 1 through 702	0967-073-3210	Replaces transistor Q502 and Resistor R505	FA-1	2N5820-226 3108	Addition of Q502 (2N657) and R505 (39,000) on board E507 in AM-2122/WRT-2
20-AN/WRT-2 Serials 1 through 702, B1 through B151, C1 through C129	0967-073-3220	Frequency Comparator mixer diode replacement on Circuit Board E601	FA-3	2N5820-226 3109	Diodes CR601 through CR604 on Circuit Board E601 are type 1N914.
21-AN/WRT-2 Serials 1 through 444	0967-073-3230	Addition of capacitors C1363 and C1364 on Circuit Board E1301	FA-3	2N5820-226 3112	Added capacitors: C1363 (.01UF) and C1364 (470UUF) on Circuit Board E1301 Electrical Freq. Control C-2764/WRT-2

FIELD CHANGE REQUIREMENTS
TABLE 3-4 (Continued)

RADIO TRANSMITTERS

NAVSHIPS 0967-306-1010

TABLE 3-4

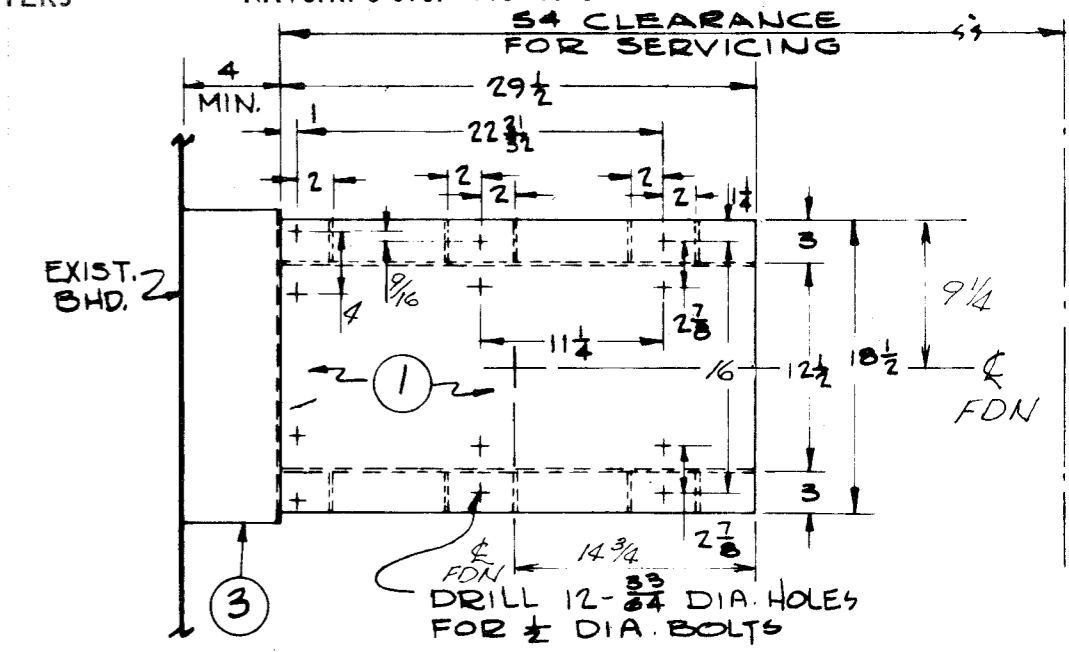
FIELD CHANGE NUMBER AND SERIAL NO. EFFECTIVITY	NAVSHIPS BULLETIN #	BRIEF DESCRIPTION OF CHANGE	INSTALLING ACTIVITY & MANHOURS	KIT FSN	IDENTITY
22-AN/WRT-2	0967-073-3240	Provides stainless steel mounting clamp assemblies for TN-342/WRT-2 RF Tuners	FA-1		Retainer straps of the clamp assembly are secured with slotted hex head cap screws instead of Allen (hex) head cap screws.
23-AN/WRT-2 All	0967-073-3250	Modification of PA grid bias and screen voltage circuits. Addition of button hole plug.	FA-24		Three zener diodes, 1N3007B and 500 ohm resistor in AM-2122/WRT-2. Four PA bias controls and installation of a button hole plug of AM-2121/WRT-2
1-TN-342/WRT-2 All	EIB 626	Eliminate slipping of shaft on tuner drive assy.	FA- $\frac{1}{2}$	FSN for pin KZ5315-221-1207	Presence of tapered pin on output coupling of MP-3301

ORIGINAL

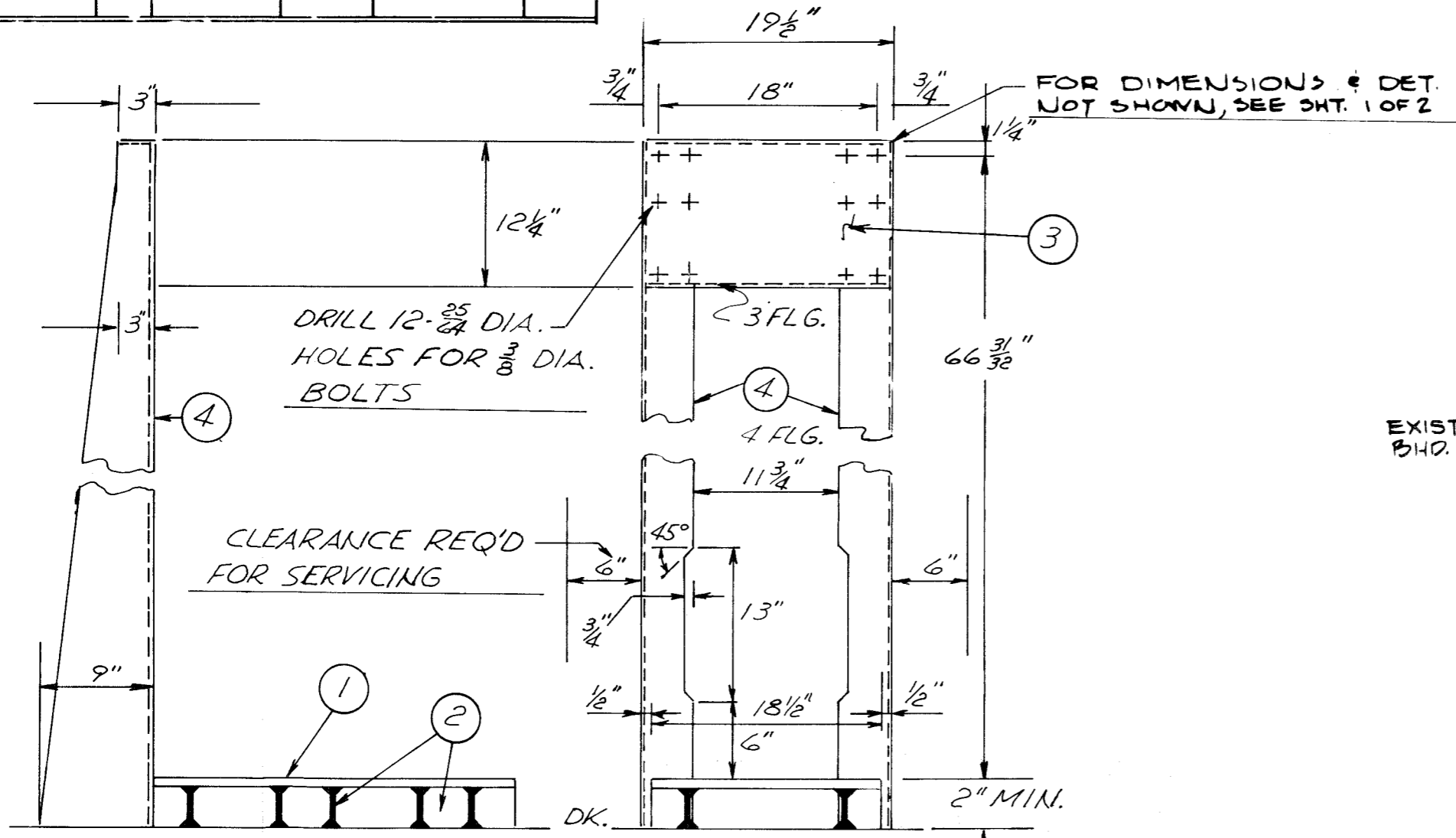
FIELD CHANGE REQUIREMENTS
TABLE 3-4

3-10

LIST OF MATERIAL - QUANTITIES FOR ONE FDN						
PIECE NO.	NAME	NO. REQ'D	MATERIAL	MT'L SPEC.	REMARKS	SHOP ROUTING
1	BED PLATE	1	MED. STL.	MILS-16113	20.4" * RT.	
2	CHOCKS	12	MED. STL.	MILS-16113	10.2" * RT.	
3	HEAD PLATE	1	MED. STL.	MILS-16113	10.2" * RT.	
4	UPRIGHT	2	MED. STL.	MILS-16113	10.2" * RT.	
1	BED PLATE	1	AL A	MIL-A-19842	1/2" THK	
2	CHOCKS	12			1/4" THK	
3	HEAD PLATE	1			1/4" THK	
4	UPRIGHT	2			1/4" THK	



PLAN VIEW: DRILLING PATTERN FOR AN/WRT-2
SCALE 1"=1'-0"

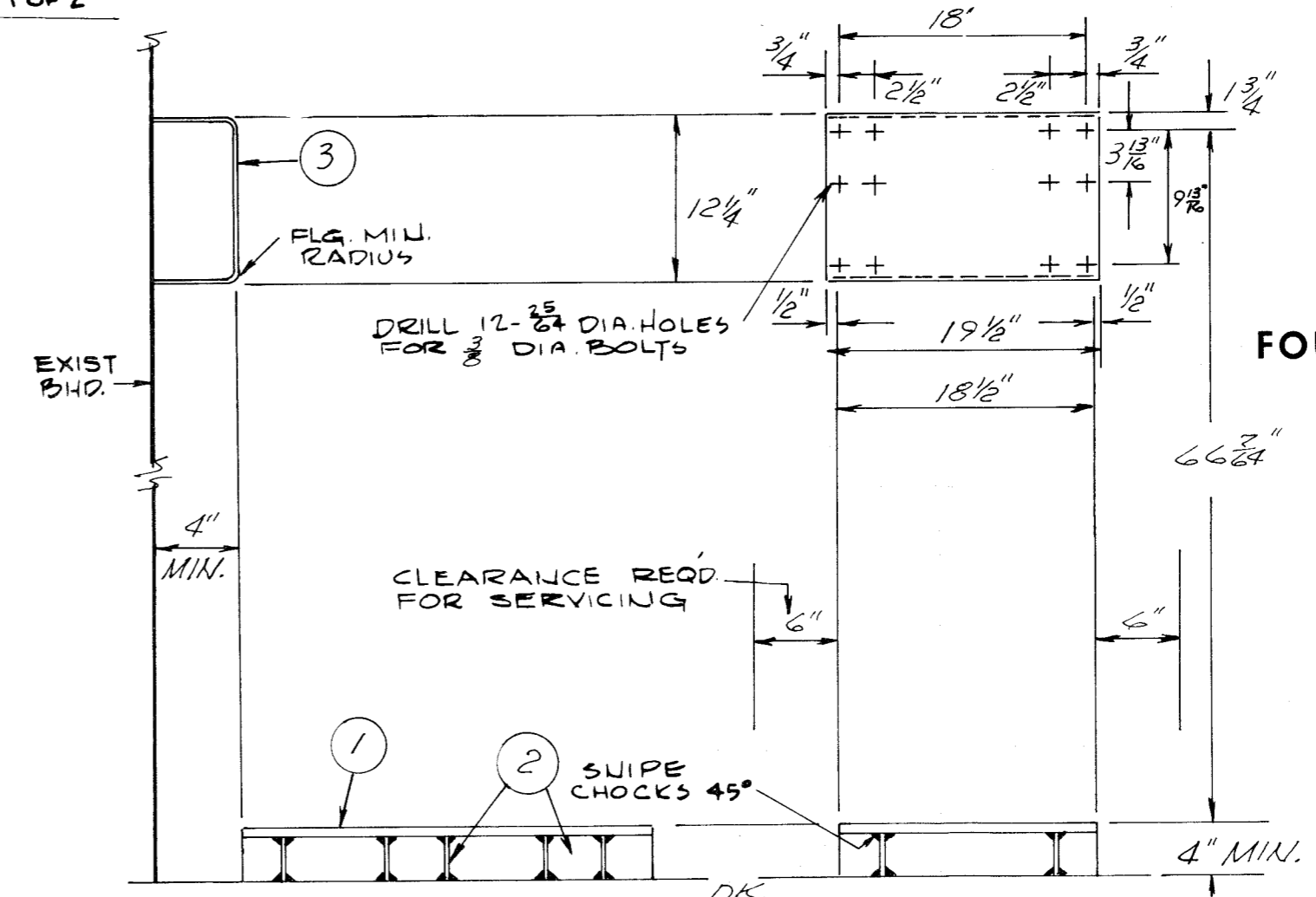


SIDE ELEV.
SCALE: 1"=1'-0"

FRONT ELEV.
SCALE: 1"=1'-0"

AN/WRT-2 FREE STANDING INSTALLATION

AN/WRT-2 BULKHEAD INSTALLATION



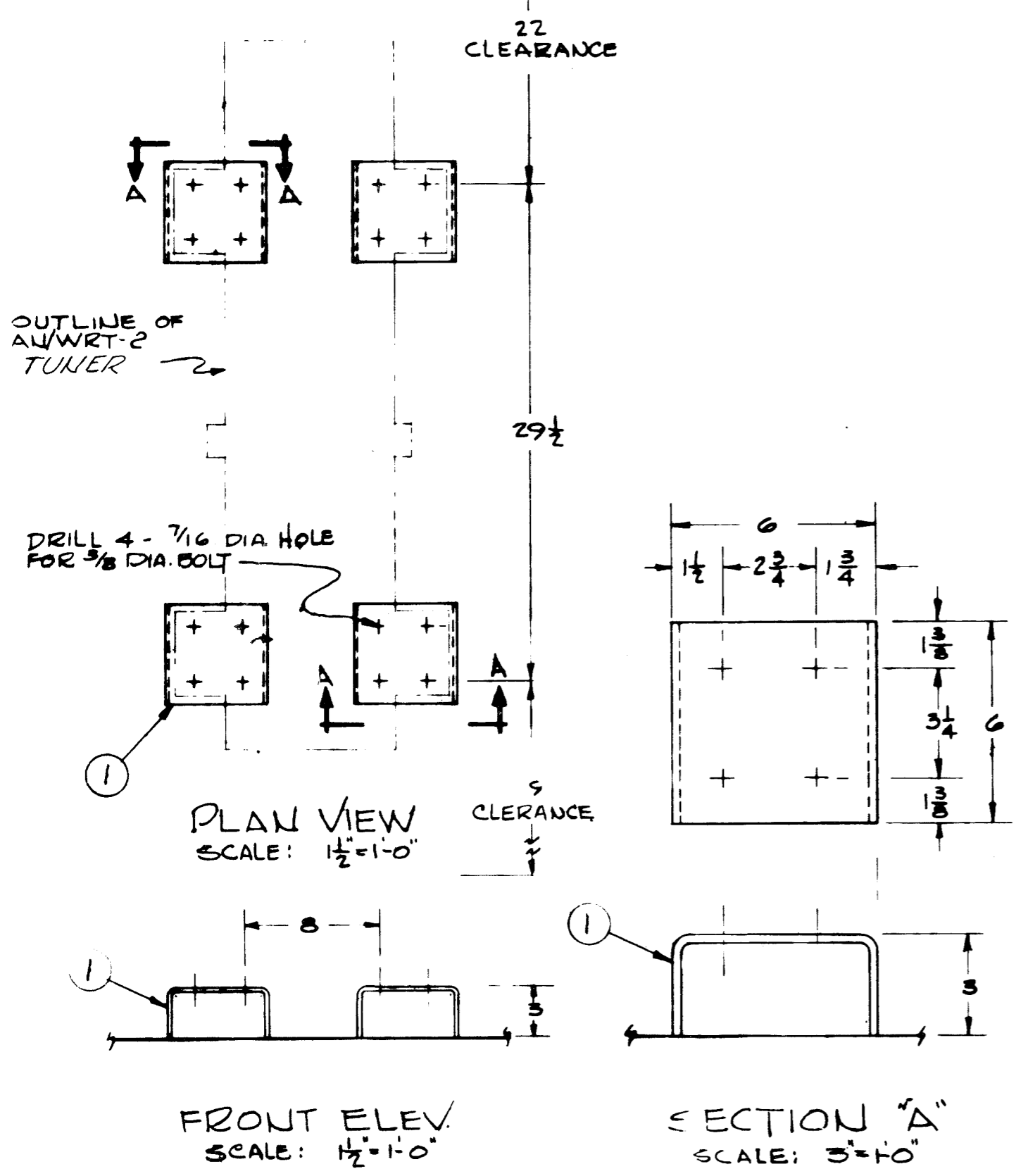
SIDE ELEV.
SCALE: 1"=1'-0"

FRONT ELEV.
SCALE: 1"=1'-0"

ORIGINAL

AN/WRT-2
TYPICAL
FOUNDATION DETAILS
FIGURE 3-1

LIST OF MATERIAL - QUANTITIES FOR ONE FOUNDATION					
PIECE NO.	NAME	NO. REQ'D.	MATERIAL	MT'L SPEC.	REMARKS
1	PAD	4	STEEL	Mil-S-16113	10.2 #Plt.

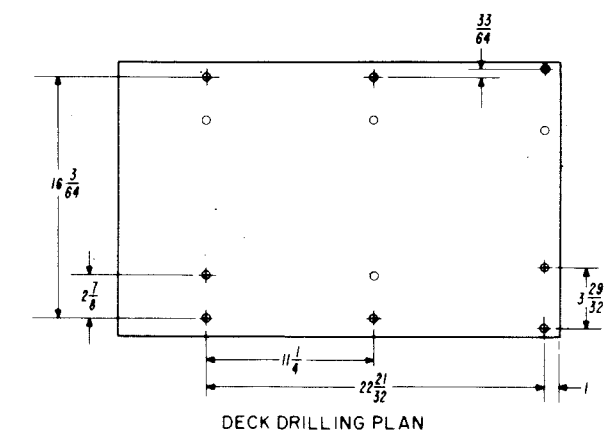
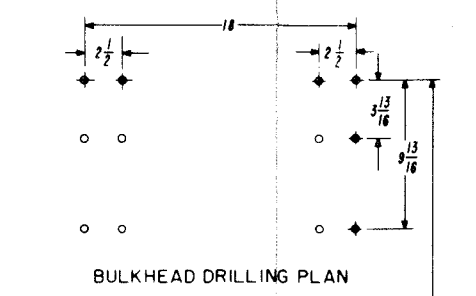
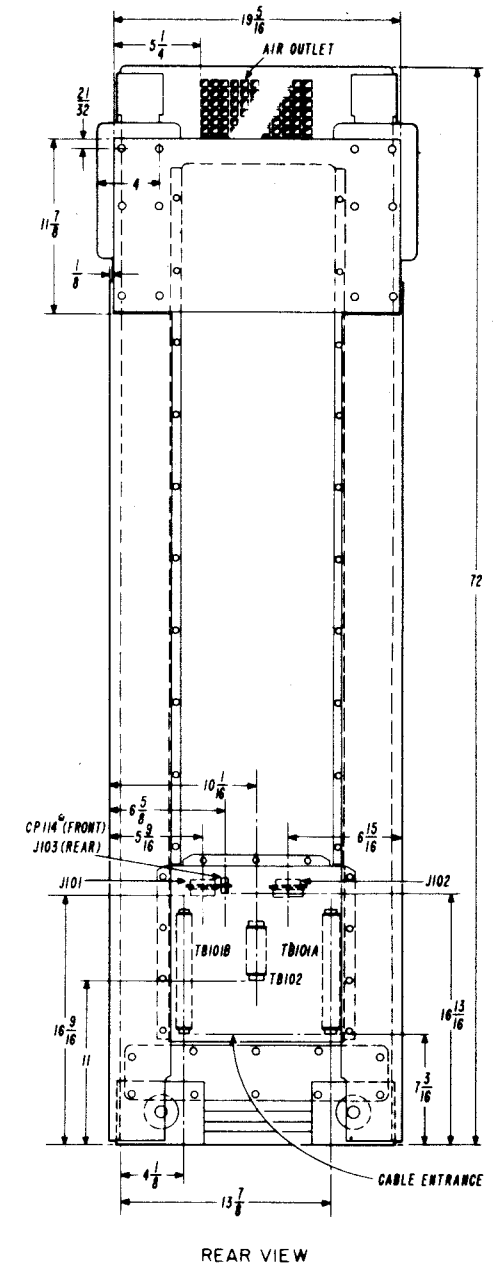
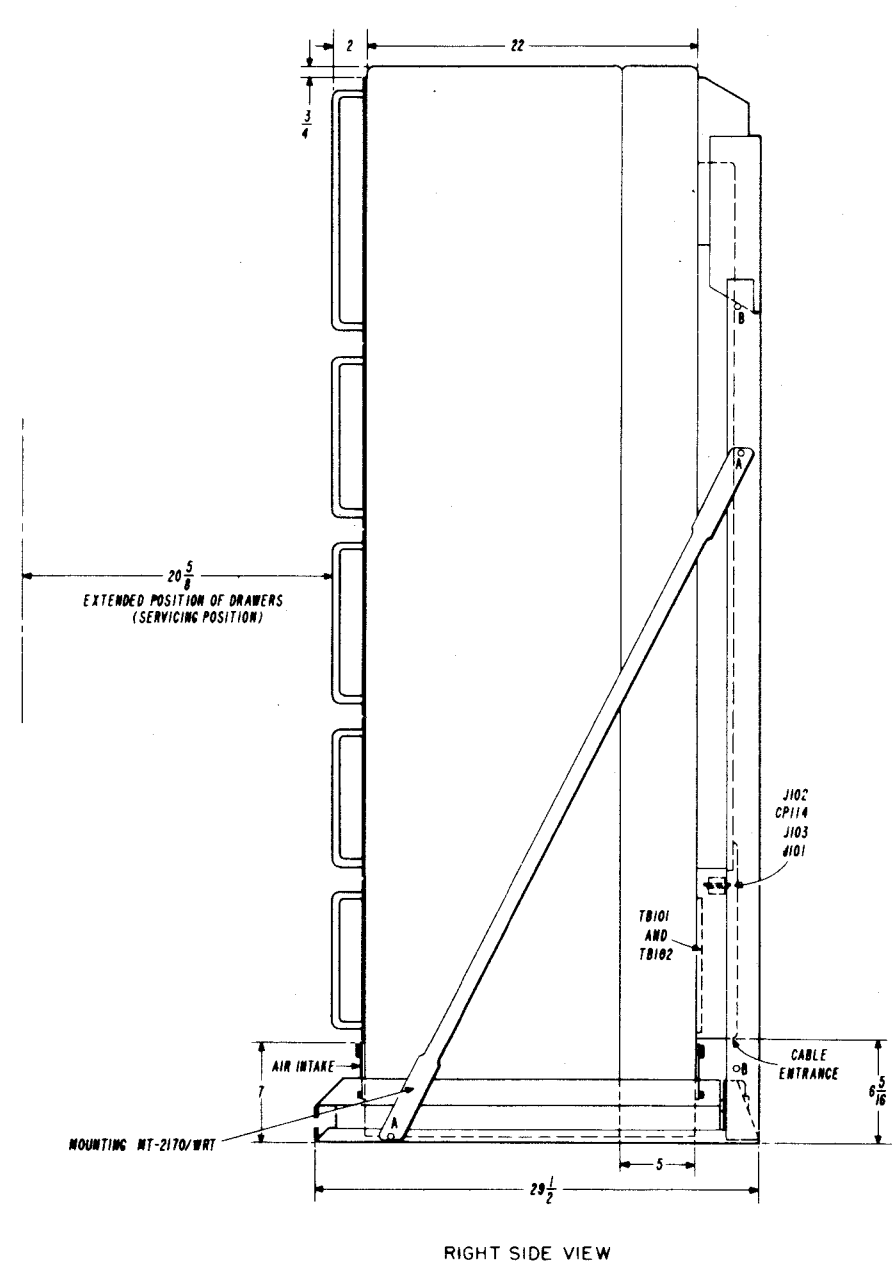
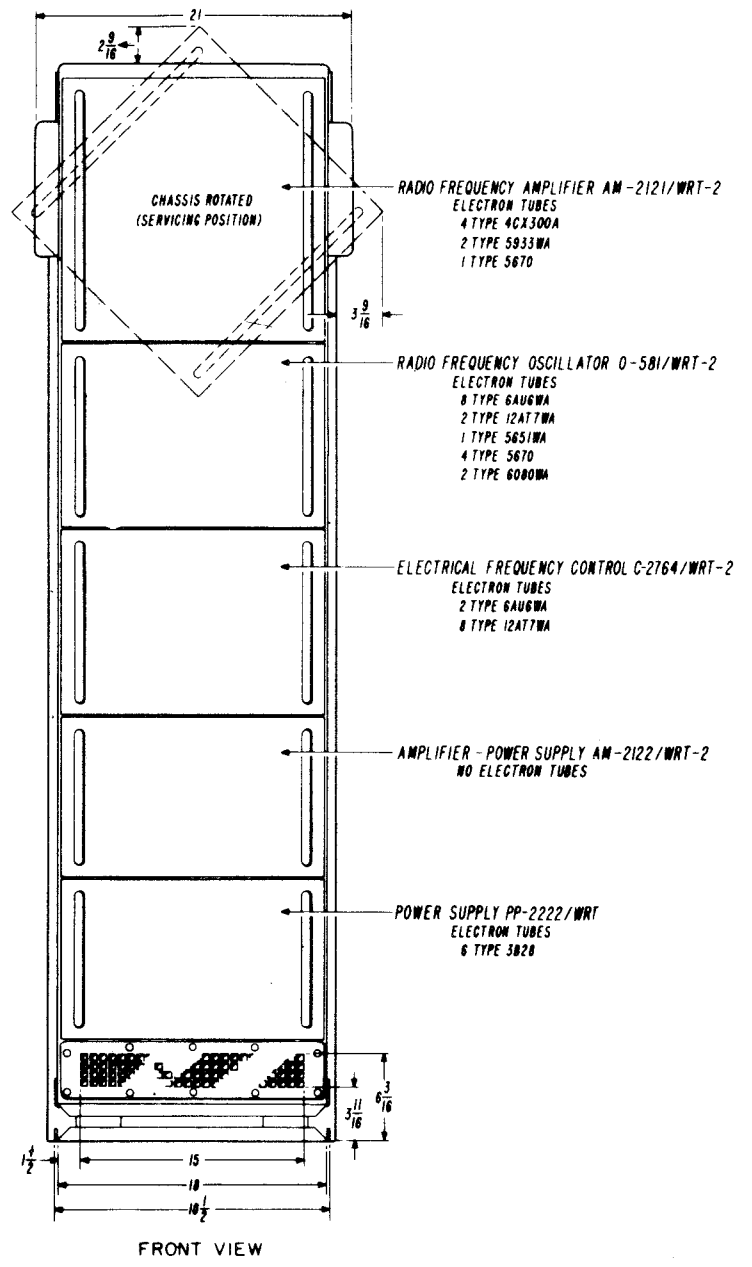


SPECIAL NOTES

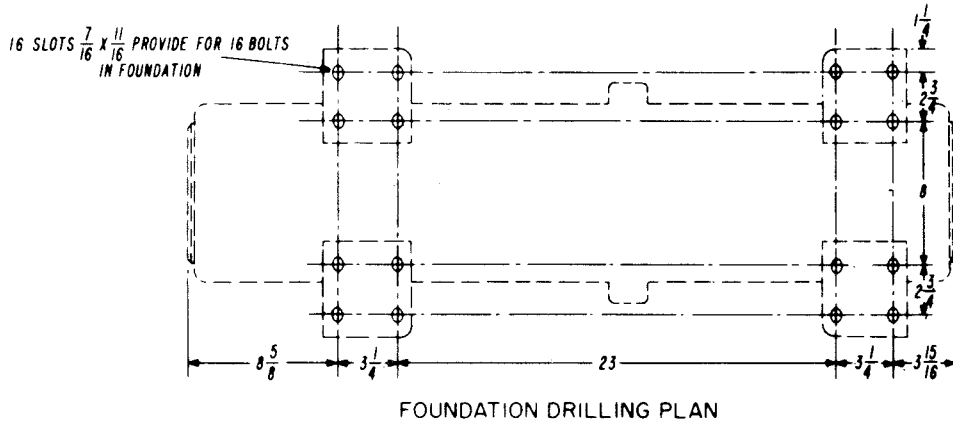
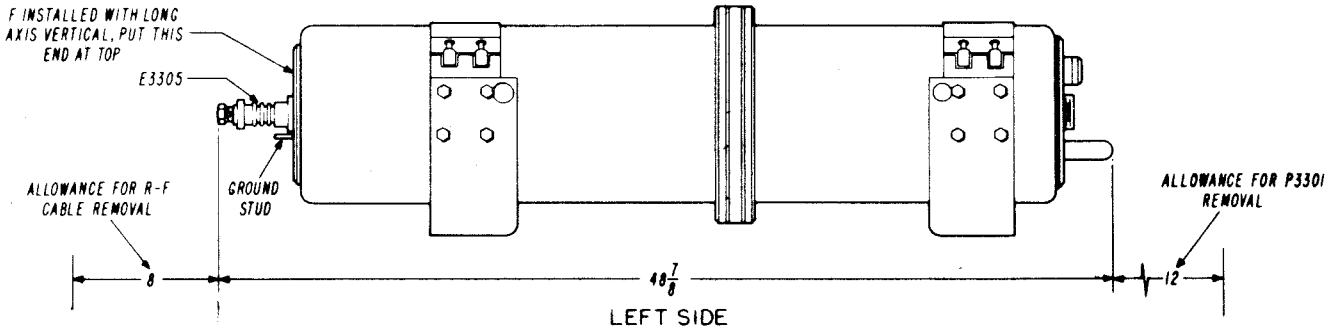
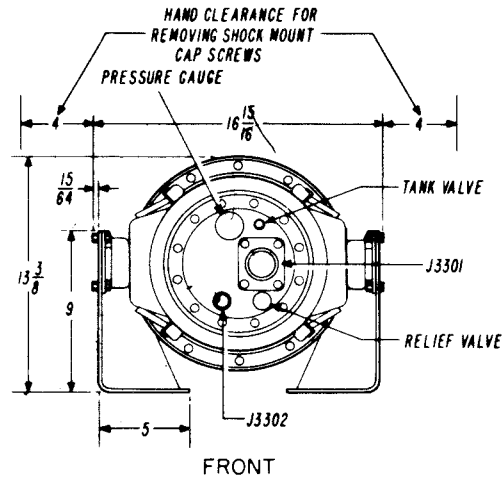
1. ALL WELDS TO BE 100 %
2. UNITS MAY BE MOUNTED EITHER VERTICALLY OR HORIZONTALLY

TN-342/WRT-2 RADIO FREQUENCY TUNER
TYPICAL FOUNDATION DETAILS

FIGURE 3-2

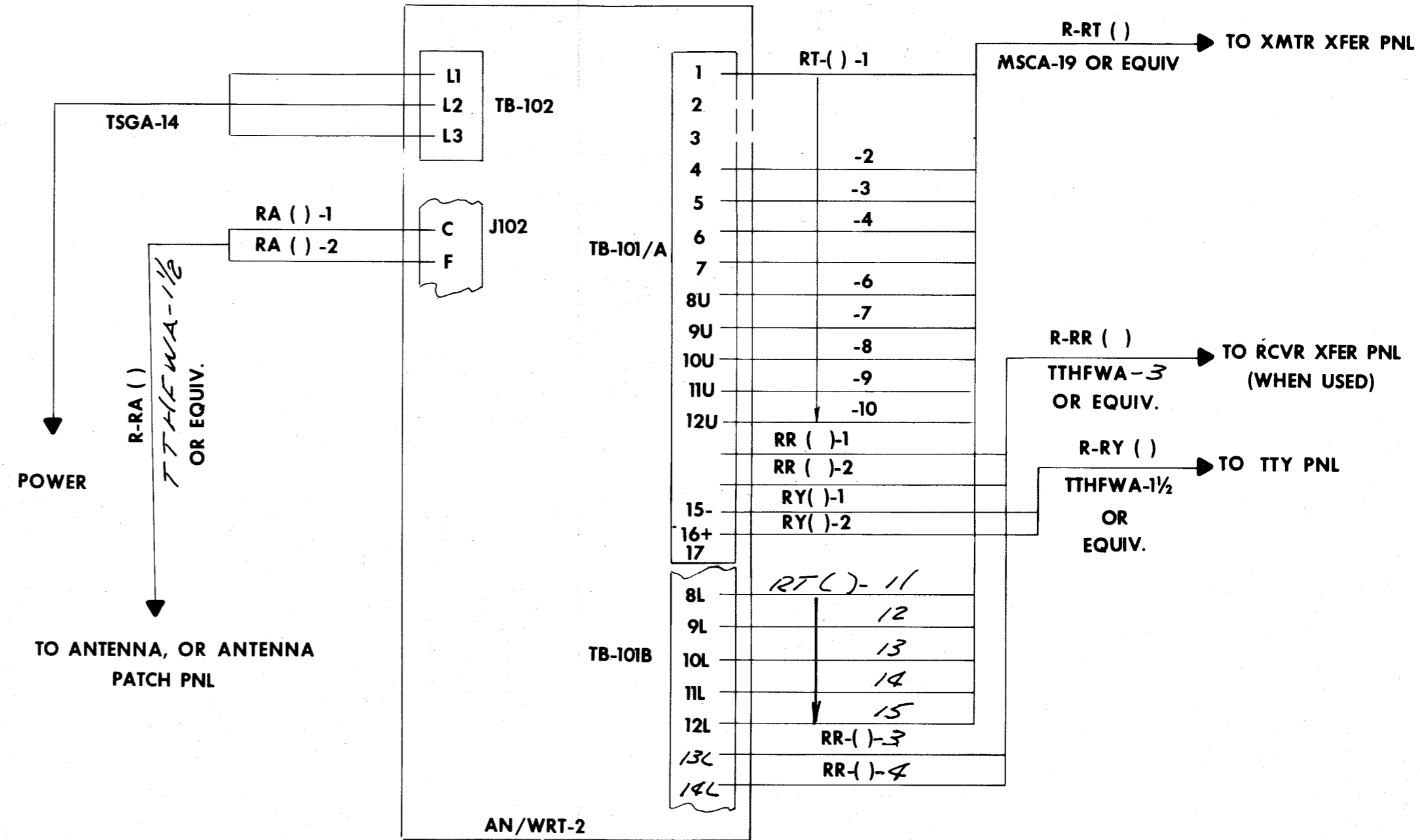
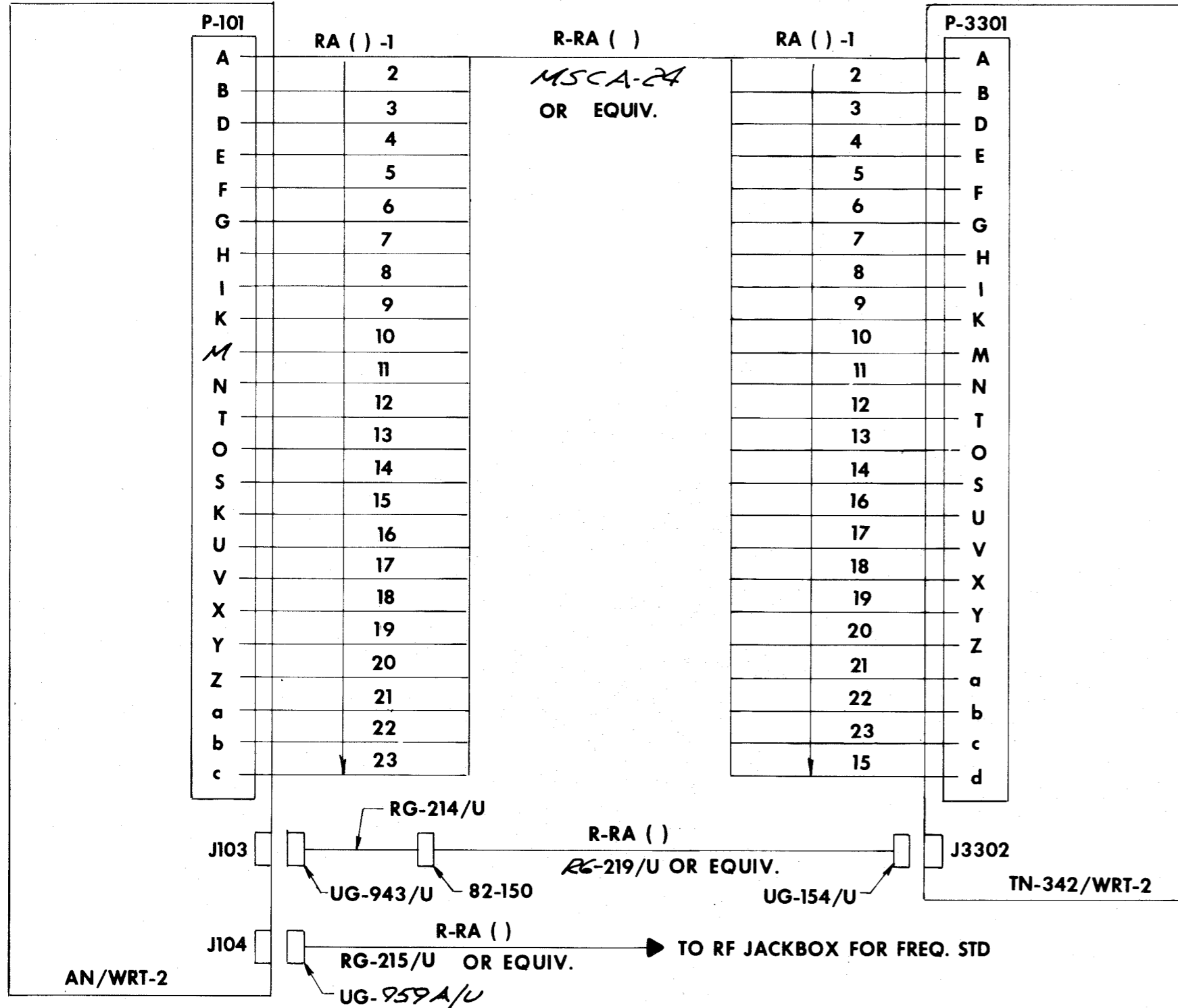


AN/WRT-2 RADIO TRANSMITTER
OUTLINE AND MOUNTING DIMENSIONS
FIGURE 3-3



**TN-342/WRT-2 RADIO FREQUENCY TUNER
OUTLINE AND MOUNTING DIMENSIONS**

FIGURE 3-4



AN/WRT-2 XMTR ANT. CONN.

AN/WRT-2 TRANSMITTER CABLE DIAGRAM
FIGURE 3-5