

**AIR-GROUND RADIO
PRIVATE SYSTEMS
ERCO 361-TB TRANSMITTER
TESTS**

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1. GENERAL

1.01 This section covers maintenance methods for the Erco Radio Laboratories type 361-TB UHF AM radio transmitter.

1.02 This section is reissued to add certain tests and requirements. Marginal arrows have not been used to indicate changes.

1.03 ***SAFETY PRECAUTIONS: VOLTAGES WHICH CAN BE FATAL ARE USED IN THIS TRANSMITTER. IT IS IMPERATIVE THAT ALL PERSONNEL PERFORMING WORK ON THE TYPE 361-TB TRANSMITTER BE AWARE OF THE HAZARDS***

AND THOROUGHLY FAMILIAR WITH THE SAFETY PRECAUTIONS OUTLINED IN SECTION 010-110-001. BEFORE MAKING RESISTANCE MEASUREMENTS OR REPLACING COMPONENTS, MAKE SURE THAT THE PRIMARY POWER IS DISCONNECTED AND THE FILTER CAPACITORS ARE DISCHARGED.

1.04 Transmitters are operated on a twenty-four hour basis, with primary power applied. A release must be obtained from the control location before work is performed which could interrupt or impair service. Most installations provide duplicate equipment operating on the same frequency which may be used while maintenance is being performed. To prevent interference, the transmitter should be operated into a dummy load during all adjustments except the final loading adjustment with the antenna connected and a test of the VSWR.

1.05 A rapid check of the over-all performance of the transmitter can be made without removing it from service and ordinary troubles can be quickly localized by comparing stage-by-stage meter readings and dial settings. It is, therefore, imperative that a record of meter readings and dial settings be maintained at the transmitter location.

2. TEST EQUIPMENT

2.01 The following test equipment, or equivalent, is required to perform the tests and adjustments in this section:

- (a) Volt-ohm-milliammeter, Western Electric Company Model KS-14510.
- (b) Terminating Wattmeter, Bird Electronics Corporation Model 67.
- (c) "Thru-Line" Wattmeter, Bird Electronics Corporation Model 43 with 250-watt element, 200 to 500 megacycles.
- (d) Audio Oscillator, Western Electric Company Model 21A Transmission Measuring Set.

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- (e) Volume Indicator, Northern Electric Model R-18568B.
- (f) Attenuator, Western Electric Company Model 5A.
- (g) Frequency Meter, for transmitter operating frequency, accurate to 0.001% or better.
- (h) Coaxial RF Attenuator, DuMont type 21-1CBA.

3. PERFORMANCE TESTS

3.01 These tests permit a rapid check of the over-all performance of the transmitter without removing it from service, either by making these checks during regular operation of the transmitter or by having the control operator key the transmitter when the channel is idle.

3.02 If the transmitter meets the following requirements, no further tests or adjustments are required. If the transmitter fails to meet the performance tests, refer to Parts 4 and 6 of this section.

(A) Meter Readings

3.03 Record the readings on the EXCITER meter for the IPA GRID and PA GRID.

Requirement: The readings shall be within two milliamperes of the readings recorded during the most recent alignment.

3.04 Record the reading on the IPA PLATE meter.

Requirement: The reading shall be within 10 milliamperes of the reading recorded during the most recent alignment but SHALL NOT exceed 200 milliamperes.

3.05 Record the reading on the PA PLATE meter.

Requirement: The reading shall be within 20 milliamperes of the reading recorded during the most recent alignment but SHALL NOT exceed 400 milliamperes.

(B) Carrier Frequency

3.06 Using the frequency meter and the coaxial RF attenuator, measure the OUTPUT frequency.

Requirement: The carrier frequency shall be within 0.002% for heated crystals and 0.005% for unheated crystals.

(C) Modulation

3.07 Record the reading on the MOD PLATE meter, both with and without modulation.

Requirement: The reading shall be 50 to 70 milliamperes without speech and between 150 and 300 milliamperes with speech modulation.

(D) Power Output

3.08 Record the reading on the EXCITER meter with the METER switch in the ANT position.

Requirement: The reading shall be within two divisions of the reading recorded during the most recent alignment.

(E) Crystal Oven Operation (where equipped)

3.09 Observe the operation of lamp I-1 on the panel of the RF unit.

Requirement: On-off operation of lamp I-1 shall be observed. (Note: The cycling time may be several minutes.)

(F) Transmission Line Pressure (where required)

3.10 Check transmission line pressure.

Requirement: There shall be no significant loss in transmission line pressure.

4. MAINTENANCE TESTS AND ADJUSTMENTS

Caution: These tests require that the transmitter be out of service. A release must be obtained from the control location. The transmitter shall be terminated in a dummy load and the remote control switch placed in the local control position to prevent keying during tests.

(A) Carrier Frequency

4.01 Connect the RF wattmeter to the output of the transmitter with the frequency meter coupled to the RF coaxial attenuator.

4.02 Couple the RF coaxial attenuator to the transmission line through the "T" connector.

4.03 With the transmitter energized, adjust the coaxial attenuator for the proper coupling.

4.04 Measure the output frequency. If the transmitter is off frequency, adjust capacitor C-1 on the RF unit chassis as required.

4.05 Remove the "T" connector from the transmission line, connect the antenna to the transmitter output and return the transmitter to service.

(B) Power Output

4.06 Operate the LOCAL-REMOTE switch to the LOCAL position and the PLATE switch to OFF.

4.07 Remove the antenna at the transmitter and connect the RF wattmeter to the transmitter output.

4.08 Operate the PLATE switch to ON to energize the transmitter.

4.09 Observe the reading on the wattmeter.

Requirement: The power output as read on the wattmeter shall be within 5 watts of the initial power.

Note: Failure of the transmitter to meet this requirement indicates the need for an alignment of the transmitter. See Part 6 of this section.

4.10 If the transmitter meets the power output requirements, operate the METER switch to ANT and record the reading on the EXCITER.

Requirement: The EXCITER meter should indicate one-third to two-thirds scale. This reading is relative and indicates the same power output shown on the RF wattmeter.

4.11 Record the reading on the PA PLATE meter.

Requirement: This reading shall not exceed 400 milliamperes.

4.12 Operate the PLATE switch to OFF and connect the output of the transmitter to the antenna.

4.13 Operate the LOCAL-REMOTE switch to REMOTE and return the transmitter to service.

(C) Modulation

4.14 Connect the RF wattmeter to the output of the transmitter.

4.15 Measure the SCREEN and BIAS voltages using the KS-14510 meter connected from ground to terminals 10 and 11 of TS2 of the modulator chassis as follows:

VOLTAGE	TERMINAL	DC VOLTS REQUIRED	ADJUST
SCREEN	10	+180	R-35
BIAS	11	-45	R-22

Note: Measurement of screen voltage requires connecting the voltmeter, passing the test leads through the space provided with the RF unit partly withdrawn and keying the transmitter.

4.16 Connect the 21A TMS to terminals 15 and 16 of TS2 on the modulator chassis using the 5A attenuator with the test leads passed through the space provided when the RF unit is partly withdrawn.

4.17 Operate the LOCAL-REMOTE switch on the modulator panel to REMOTE.

4.18 Operate the PLATE switch to ON and observe that the transmitter output is 100 watts.

4.19 Apply 1000-cycle tone at a level of -20 dbm. Operate the EYE switch on the modulator panel to GAIN position. With the transmitter energized, adjust the GAIN control for perceptible EYE closure but not more than 1/16 inch from FULL OPEN.

4.20 Increase the level to -5 dbm and operate the EYE switch to the % MOD position. With the transmitter energized, adjust the % MOD control for perceptible EYE closure but not more than 1/16 inch from FULL OPEN.

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4.21 Increase the input level to 0 dbm and +3 dbm in steps. Check that successive increases in input level do not cause a significant change in the reading on the PA PLATE meter from the value with no modulation.

4.22 Remove the 1000-cycle tone and use speech from the *facilities normally used* at the average VU level employed in service. Operate the EYE switch to the GAIN position and with the transmitter energized, adjust the GAIN control until the EYE averages ONE-HALF closure on voice peaks at this VU level. The average level should NOT exceed 0 VU.

4.23 Observe that the MOD PLATE meter reads 50 to 70 milliamperes *without* modulation and 150 to 300 milliamperes *with* voice modulation. Check that the PA PLATE meter reading does not change with speech which would indicate overmodulation.

4.24 Record the settings of the GAIN and % MOD controls, the MOD PLATE meter readings and all other meter readings.

4.25 Operate the PLATE and POWER switches to OFF, remove the RF wattmeter from the transmitter output and connect the antenna to the transmitter.

Note: Request permission from the control operator to put carrier on the air while loading the antenna.

4.26 Operate the POWER and PLATE switches to ON.

4.27 With the antenna connected, readjust the PA PLATE knob for minimum reading on the PA PLATE meter and return the transmitter to service.

(D) Tubes

4.28 Make a routine inspection for tubes that may have become loose in their sockets. Do not remove a tube unless it is a suspected source of trouble. Check tubes by substitution with a tube that is known to be good. If a substantial improvement is not obtained the original tube should be returned to its socket. Replacement of the type 4X250B tubes in the Power Amplifier (V6 and V7) should be made only with

glass-type 6979/4X250 tubes. Either glass-type or ceramic-type tubes may be used in the IPA (V5). A special tool to assist in removing the 4X250B tubes is furnished with each transmitter. A ten per cent reduction in meter readings usually indicates that a tube is near the end of its life. A tube lifelog should be maintained so that tube failures can be anticipated.

(E) Air Blower and Vane Switch

4.29 Operate the PLATE and POWER switches to OFF. Remove the accumulated dust from the buckets of the centrifugal blower and check the air vane which operates the blower interlock switch for ease of operation. If required, adjust for proper operation.

(F) Relays

Caution: DO NOT attempt to make relay adjustments with the transmitter energized. Operate the POWER switch to OFF. High voltage is at the relay contacts when energized.

4.30 Examine all relays for ease of operation and dirty or pitted contacts. The K1 relay on the RF unit is not provided after Serial No. 7666.

4.31 Check the antenna relay contacts and the operation of the relay by removing the screw-plug located in the center of the relay body.

4.32 Relay K2 shall operate on a current of 8 milliamperes maximum and release with a 3 milliampere minimum. Check the operation of the K2 relay by operating the METER switch to the PA GRID position, energize the transmitter and observe the reading on the EX-CITER meter. While observing the meter, adjust the PA GRID knob to reduce the drive to the Power Amplifier. The K2 relay shall release *before* the meter indicates less than 3 milliamperes. Readjust the PA GRID knob to increase the drive. The K2 relay shall operate *before* the meter indicates more than 8 milliamperes. Readjust the PA GRID knob for the original reading.

4.33 Adjust the spring tension, armature travel and armature air gap as required to meet operational requirements.

5. STANDING WAVE RATIO

Caution: This test requires that the transmitter be out of service. Request permission from the control location to take the transmitter out of service and to radiate carrier while reading VSWR.

5.01 Connect the "Thru-Line" wattmeter in series with the coaxial transmission line at the transmitter and load the transmitter to 100 watts output.

5.02 Observe that the VSWR is no greater than 2 to 1 or that the reflected power does not exceed ten per cent of the forward power. Record the VSWR for reference.

Note: This test shall be performed before the transmitter is placed in operation. Subsequent tests should be made after changes in the antenna or transmission line or when trouble is suspected that cannot be detected by ohmmeter measurement.

6. ALIGNMENT

Caution: These adjustments require that the transmitter be out of service. A release must be obtained from the control location. The transmitter shall be terminated in a dummy load, the local-remote switch placed in the local position to prevent keying during tests and the TUNE-OPERATE switch placed in the TUNE position.

6.01 After all alignment adjustments are completed, all meter readings should be within the limits shown in Table 1, Meter Readings.

Note: The adjustments in Paragraphs 6.02 through 6.06 are preset at the factory but should be checked at the time of installation and when frequency changes are made.

6.02 Operate the POWER switch to OFF.

6.03 Check that the coaxial balun, E-2 (short length of coaxial cable connecting the output of the two amplifier tubes) corresponds with the following lengths for a given frequency range:

FREQUENCY RANGE	OVER-ALL LENGTH
225-260 Mc	16 inches
260-295 Mc	14 inches
295-330 Mc	12 inches
330-365 Mc	11 inches
365-400 Mc	10 inches

6.04 Slide out the RF unit and check the position of the FOUR slug screws on the exciter tank inductors L1, L2, L3 and L4. For an operating frequency BELOW 300 megacycles, these slugs shall be all the way IN (with approximately 1/4" of the screw extending). For all frequencies ABOVE 300 megacycles the slugs shall be all the way OUT. (**Caution:** Do not exert excessive torque.)

6.05 Remove the shield cover from the *Multiplier/Driver* assembly. Check that the shorting bar is securely clamped and adjusted as indicated in Fig. 1. Optimum setting of the tuned line is obtained when resonance is indicated at a dial reading of 45 to 65 on the IPA PLATE control. Check and reset the shorting bar as required. Replace the shield cover after adjustment.

CAUTION: 600 VOLTS DC APPEARS ON THE TUNED LINES OF BOTH THE IPA AND POWER AMPLIFIER WHEN THE TRANSMITTER IS KEYED.

6.06 Remove the shield cover from the *Power Amplifier* assembly. Check that the shorting bar is securely clamped and adjusted as indicated in Fig. 1. Optimum setting of the tuned line is obtained when resonance is indicated at a dial reading of 45 to 65 on the PA PLATE control. Check and reset the shorting bar as required. Replace the shield cover after adjustment.

Tuning Procedure

Note: The transmitter should be energized only when making adjustments or observing meter readings. The transmitter is "keyed" by operating the PLATE switch to ON with the LOCAL-REMOTE switch in the LOCAL position. Operate the TUNE-OPERATE switch to the TUNE position except when loading the transmitter to the antenna or when the transmitter is released for service.

TABLE 1
METER READINGS
361-TB TRANSMITTER
(Delivering 100 Watts Output)

EXCITER METER SWITCH POSITIONS	METER MULTIPLIER	FULL SCALE MILLIAMPERES	READING IN MILLIAMPERES
2 GRID	X1	3	1.0 to 1.5
3 GRID	X1	3	1.0 to 1.5
3 PLATE	X100	300	30 to 40
4 GRID	X2	6	2 to 3
4 PLATE	X100	300	90 to 120
IPA GRID	X10	30	10 to 15
PA GRID	X10	30	15 to 17
ANT			*1/3 to 1/2 scale
IPA PLATE METER	X1	250	100 to 180(200 Max.)
PA PLATE METER	X1	800	320 to 400(400 Max.)
MOD PLATE METER	X1	500	
(a) Static			50 to 70
(b) Voice			150 to 300

* This reading is relative and varies with the particular diode used.

6.07 Remove the antenna connection at the transmitter and connect the RF wattmeter to the output of the transmitter.

6.08 Operate:

- (1) The LOCAL-REMOTE switch to LOCAL.
- (2) The TUNE-OPERATE switch to TUNE.
- (3) The POWER switch to ON.

The filament pilot lamp should light.

6.09 After approximately 45 seconds, operate the PLATE switch to ON. The PLATE pilot lamp should light.

6.10 Check for proper cycling of the crystal oven pilot indicator on the RF unit panel if the transmitter is equipped. The crystal oven should start to cycle within five minutes after the POWER switch is operated to ON.

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6.11 Operate the METER switch to the 2 GRID position. Adjust the 1st MULT knob for *maximum* indication in the EXCITER meter.

6.12 Operate the METER switch to the 3 GRID position. Adjust the 2nd MULT knob for *maximum* indication on the EXCITER meter.

6.13 Operate the METER switch to the 3 PLATE position. Adjust the 3rd MULT knob for *minimum* indication on the EXCITER meter.

6.14 Operate the METER switch to the 4 GRID position. Adjust the 4th MULT knob for *maximum* indication on the EXCITER meter.

6.15 Operate the METER switch to the 4 PLATE position. Adjust the 4th MULT PLATE knob for *minimum* indication on the EXCITER meter.

6.16 Operate the METER switch to the IPA GRID position. Adjust the IPA GRID knob for *maximum* indication on the EXCITER meter.

6.17 Repeat the adjustments in Paragraphs 6.15 and 6.16.

IPA AND POWER AMPLIFIER

6.18 Adjust the IPA PLATE knob for *minimum* indication on the IPA PLATE meter. Resonance should be obtained at a dial reading of 45 to 65. Repeat the adjustment in Paragraph 6.05 if necessary.

6.19 Operate the METER switch to the PA GRID position. Adjust the PA GRID knob for *maximum* indication on the EXCITER meter.

6.20 Slide out the RF unit and adjust the IPA COUPLING knob located on top of *Multipplier/Driver* assembly for *maximum* indication on the EXCITER meter. DO NOT exceed a reading of 17 milliamperes (30 milliamperes full scale).

6.21 Readjust the PA GRID knob for *maximum* indication on the EXCITER meter and readjust the IPA PLATE knob for *minimum* indication on the IPA PLATE meter.

6.22 Repeat the adjustments in Paragraphs 6.20 and 6.21.

6.23 Adjust the PA PLATE knob for *minimum* indication on the PA PLATE meter.

6.24 Operate the TUNE-OPERATE switch to the OPERATE position.

6.25 Adjust the PA PLATE knob for *minimum* indication on the PA PLATE meter. Resonance should be obtained at a dial reading of 45 to 65. Repeat the adjustment in Paragraph 6.06 if necessary.

Note: DO NOT exceed a reading of 400 milliamperes while making this adjustment. If necessary, operate the TUNE-OPERATE

switch to the TUNE position until the "dip" is found.

6.26 Slide out the RF unit and adjust the PA COUPLING knob located on top of the *Power Amplifier* assembly to produce 100 watts output as indicated by the RF wattmeter while readjusting the PA PLATE knob for *minimum* indication on the PA PLATE meter.

Note: DO NOT exceed a reading of 400 milliamperes on the PA PLATE meter. Adjust the PA COUPLING and readjust the PA PLATE knob *in small steps* until 100 watts output is obtained.

6.27 Operate the METER switch to the PA GRID position. Readjust the PA GRID knob for a reading of 15 to 17 milliamperes on the EXCITER meter. DO NOT exceed a reading of 17 milliamperes. If necessary, repeat the adjustments in Paragraphs 6.11 through 6.19 if unable to meet the minimum and Paragraph 6.20 if the maximum is exceeded.

6.28 Repeat the adjustment in Paragraph 6.26.

6.29 Operate the METER switch to the ANT position and record the reading on the EXCITER meter.

Note: The EXCITER meter should read one-third to two-thirds scale. This relative reading indicates the same power output as shown on the RF wattmeter.

6.30 Record all other meter readings.

Note: The IPA PLATE current should not exceed 200 milliamperes and the PA PLATE current should not exceed 400 milliamperes. Refer to Table I for average and maximum readings.

6.31 Disconnect the wattmeter and operate the LOCAL-REMOTE switch to the remote position.

6.32 With the antenna connected and the transmitter keyed remotely, repeat the adjustment in Paragraph 6.25.

6.33 Return the transmitter to service.

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7. REPLACEMENT PARTS

7.01 Parts which require replacement other than items readily identified are listed in the parts list.

7.02 Orders for parts which must be obtained from Erco Radio Laboratories should in-

clude the equipment type designation and serial number. The code number listed, together with the description is the order number for that particular part. The key to manufacturer designations follows the parts list. Parts not designated are available from a number of suppliers.

7.03 PARTS LIST

Symbol	Description	Part No.
RF UNIT		
C-1	3-12 mmfd; Ceramic; Trimmer Capacitor	TS-2A*EE
C-2	10 mmfd X 500WV; Ceramic Capacitor	NPO*AX
C-3	250 mmfd X 500WV; Ceramic Capacitor	DM-15*AC
C-4-11-18	50 mmfd; Variable Capacitor	PL-6004*CW
C-5-6-8-9 -10-12-14-15 -16-17-19-20 -22-23-24-25 -27-30-35	.005 mfd X 500WV; Ceramic Capacitor	BPD*AX
C-7-13	20 mmfd X 500WV; Ceramic Capacitor	NPO*AX
C-21	35 mmfd; Dual Variable Capacitor	SP*ER
C-26-34	50 mmfd; Dual Variable Capacitor	PL-6032*CW
C-28	75 mmfd; Variable Capacitor	PL-6016*CW
C-29	470 mmfd X 500WV; Ceramic Capacitor	BPD*AX
C-31	Balancing Capacitor	SP*ER
C-32	Grid Coupling Capacitor	SP*ER
C-33-36	Plate Tuning Capacitor	SP*ER
C-37A-B	Antenna Coupling Capacitor	SP*ER
C-38	50 mmfd X 7500V; Ceramic Capacitor, NPO	8505-50-Z*CL
R-1	100K ohm 1/2 watt Resistor	
R-2-4-7-9 -15-18	270 ohm 1 watt Resistor	
R-3-8-21	47K ohm 1 watt Resistor	
R-5-11	68K ohm 1/2 watt Resistor	
R-6-12-13 -19-22-26 -31-37	1K ohm 1/2 watt; 5% Resistor	
R-10	7.5K ohm 10 watt; Wirewound Resistor	10WBD*OM

Symbol	Description	Part No.
RF UNIT (Cont)		
R-14	1.5K ohm 1 watt Resistor	
R-16-27	10 ohm 1/2 watt; 5% Resistor	
R-17	15K ohm 1 watt Resistor	
R-20	10 ohm 10 watt; Wirewound Resistor	10WBD*OM
R-23-24	20 ohm 10 watt; Wirewound Resistor	10WBD*OM
R-25	250 ohm 10 watt; Wirewound Resistor	10WBD*OM
R-28	2K ohm 20 watt; Wirewound Resistor	20WBD*OM
R-29	15K ohm 2 watt Resistor	
R-30-38-39	10K ohm 2 watt Resistor	
R-32-41	110 ohm 1 watt; 5% Resistor	
R-33	10K ohm 20 watt Resistor	20WBD*OM
R-34-44-45	100 ohm 1 watt Resistor	
R-35	15K ohm 20 watt Resistor	20WBD*OM
R-36-40	6.8K ohm 1 watt Resistor	
R-42-46-47	25K ohm 20 watt Resistor	20WBD*OM
R-43	2K ohm 10 watt Resistor	10WBD*OM
BL-1	Blower; Model ERPP	KS-406*RT
E-1	Receptacle; Coax; Right Angle	UG-27B/U*AM
E-2A	225 to 260 MC; over-all length 16"	361-TB-E-2A*ER
E-2B	260 to 295 MC; over-all length 14"	361-TB-E-2B*ER
E-2C	295 to 330 MC; over-all length 12"	361-TB-E-2C*ER
E-2D	330 to 365 MC; over-all length 11"	361-TB-E-2D*ER
E-2E	365 to 400 MC; over-all length 10"	361-TB-E-2E*ER
E-3-4	Receptacle; Coax; Female T	UG-107A/U*AM
E-5	RF Monitor Assembly	2039*ER
†E-6	Crystal Oven, 6.3VAC, 75°C.	JK-109*JK
F-1-2	Fuse; 2 amp	AGC-2*BS
J-1-2-3	Receptacle; Coax; Female	UG-58A/U*AM
K-1-2	Relay; S.P.D.T.; 6500 ohm Coil (<i>Note:</i> K1 relay not provided after Serial #7666)	2QA20F2*PC
L-1	Inductor	4227*ER
L-2	Inductor	4228*ER
L-3	Inductor	4229*ER
L-4	Inductor	4230*ER

† Provided only after Serial #8432

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Symbol	Description	Part No.
RF UNIT (Cont)		
L-5	Inductor	SP*ER
L-6	Inductor	5254*ER
L-7-10	Inductor	SP*ER
L-8	Inductor	SP*ER
L-9	Inductor	SP*ER
P-1	Plug; Phone Tip	6321-E*GN
P-2	Plug; Coax	UG-536/U*AM
RFC-1	Choke; R.F.	5159*ER
RFC-2-3	Choke; R.F.	Z-144*OM
RFC-4	Choke; R.F.	Z-460*OM
RFC-5-6	Choke; R.F.	Z-235*OM
S-1	Switch; S.P.S.T.	V-4-14*MS
S-2	Switch; Rotary; Steatite	2513*CL
S-3	Switch; Rotary; Steatite	2507*CL
T-1-2	Transformer; Filament	S-27854*KY
X-5-6-7	Socket; Air System Chimney for Above Socket	124-112-1*JH 124-111-1*JH
X-8	Octal Socket	51B13490*CI
†Y-1	Crystal, Heated (Specify Frequency)	CR32/U*SV
†I-1	Pilot Lamp (Oven Indicator)	#47
V-1 to V-3	Type 5763 Electron Tube	
V-4	Type 5894 Electron Tube	5894*AR
V-5 to V-7	Type 6979/4X250B Electron Tube	6979/4X250B*AR
Xtal	Crystal, Unheated (Specify Frequency)	CR18/U*SV

CONTROL PANEL

C-1-2	150 mfd X 50WV; Electrolytic Capacitor	UP*CD
C-3	50 mfd X 150WV; Electrolytic Capacitor	UP*CD
R-1	2K ohm 10 watt Resistor	10WBD*OM
CH-1	Choke; Filter; 10 hy, 50 ohms	T-157*KY
F-1	Fuse; 1 amp	AGC-1*BS
I-1-2	Pilot Lamp; 220V	S6*GE
K-1	Relay; Mercury; 115 volt	1140-45-MM*AW
K-2	Relay; Special	6023*ER
K-3	Relay; Time-Delay; 115 volt AC	TC-60S*CC

† Provided only after Serial #8432

Symbol	Description	Part No.
CONTROL PANEL (Cont)		
S-1	Switch; D.P.S.T.; Heavy Duty	7402K4*CH
S-2	Switch; S.P.S.T.	8803K5*CH
S-3	Switch; D.P.D.T.	8373K-7*CH
SR-1-2	Rectifier; Selenium	9007*ER
T-1-2	Transformer; Rectifier	S-24135*KY
MODULATOR		
C-1	150 mfd X 50WV; Electrolytic Capacitor	UP*CD
C-2	.5 mfd X 600WV; Bathtub Capacitor	DYR*CD
C-3-4	.01 mfd X 600WV; Tubular; Oil Filled Capacitor	2106-01*SA
C-5A-B-C	15-15-15 mfd X 450WV; Electrolytic Capacitor	TVL3778-2*SP
C-6	50 mfd X 150WV; Electrolytic Capacitor	UP*CD
C-7	.05 mfd X 600WV; Tubular; Paper Capacitor	33*SA
R-1	1 Megohm 1 watt Resistor	
R-2	1 Megohm 1/2 watt Resistor	
R-4-25-26 -27-28-30 -31-32-33	100 ohm 1 watt Resistor	
R-5	150K ohm 1 watt Resistor	
R-6	5.1K ohm 1 watt; 5% Resistor	
R-3-7-38	100K ohm 1 watt Resistor	
R-8-9	47K ohm 1 watt Resistor	
R10 and 18	100K ohm Dual Potentiometer; Audio Taper	
R-11	12K ohm 1 watt Resistor	
R-12	150 ohm 1 watt; 5% Resistor	
R-13	7.5K ohm 1 watt; 5% Resistor	
R-14	27K ohm 1 watt Resistor	
R-15-16	24K ohm 1 watt; 5% Resistor	
R-17-19	1K ohm 1 watt Resistor	
R-20	22K ohm 2 watt Resistor	
R-21	3K ohm 20 watt; Wirewound Resistor	20WBD*OM
R-22	10K ohm Potentiometer; Linear Taper; SC DR	
R-23	15K ohm 1 watt Resistor	
R-24	220K ohm 1 watt Resistor	
R-29	10K ohm 2 watt Resistor	
R-34	22K ohm 1 watt Resistor	

SECTION 406-100-500

Symbol	Description	Part No.
MODULATOR (Cont)		
R-35	50K ohm Potentiometer Linear Taper; SC DR	
R-36-39-40	68K ohm 1 watt Resistor	
R-37	470K ohm 1 watt Resistor	
CH-1	Choke; Filter	T-152*KY
F-1	Fuse; 2 amp	AGC-2*BS
J-1	Jack; Microphone	JK33A*CA
S1	Switch; 4 Pole 2 Position; Rotary	1409*CL
S-2	Switch; 2 Pole 5 Position; Rotary	1405*CL
SR-1	Rectifier, Selenium	HXL-50*RR
T-1	Transformer; Input	P-202*KY
T-2	Transformer; Driver	T-22*KY
T-3	Transformer; Filament	T-54*KY
T-4	Transformer; Interstage	S-34065*KY
T-5	Transformer; Modulation	T-397*KY
V-1	Type 6E5 Electron Tube	
V-2	Type 6AL5 Electron Tube	
V-3 and V-4	Type 6BD6 Electron Tube	
V-5 and V-6	Type 12AU7 Electron Tube	
V-8 to V-11	Type 6146 Electron Tube	
V-12	Type 6AU6 Electron Tube	
V-13	Type OB2 Voltage Regulator Tube	
H. V. POWER SUPPLY		
C-1-2	10 mfd X 1000WV Capacitor	TJ*SP
C-3	10 mfd X 600WV Capacitor	TJ*SP
R-1-2	7.5K ohm 50 watt Resistor	50F*WL
R-3	10K ohm 50 watt Resistor	50F*WL
CH-1-2-3	Choke; Filter; 10 hy, 500 ma	T-159*KY
F-1-3	Fuse; 1 amp	AGC-1*BS
F-2	Fuse; 10 amp	AGC-10*BS
F-4	Fuse; 5 amp	AGC-5*BS
T-1-3	Transformer; Filament	T-360*KY
T-2	Transformer; Plate	S-34066*KY
T-4	Transformer; Plate	S-34148*KY
V-1 to V-4	Type 3B28 Rectifier Tube	

Symbol	Description	Part No.
CABINET & CABLING		
M-1	Meter; 0-800 ma; Gray Case	MM2*ME
M-2	Meter; 0-250 ma; Gray Case	MM2*ME
M-3	Meter; 0-3 ma; Gray Case	MM2*ME
M-4	Meter; 0-500 ma; Gray Case	MM2*ME
S-1	Switch; Interlock	7460330G4*GE
K-1	Relay; Antenna	CR25N*DK

ORIGINAL SUPPLIERS

AC — Arco Electronics Inc., Division of Elmenco	ER — Erco Radio Laboratories
AM — Amphenol-Borg Electronics Corporation	GE — General Electric Company
AR — Amprex Electronics Corporation	GN — General Chemical Division, Allied Chemical Company
AW — The Adams and Westlake Company	JH — E. F. Johnson Company
AX — Aerovox Corporation	JK — The James K. Knights Company
BS — Bussman Manufacturing Division, McGraw-Edison Company	KY — Kenyon Transformer Co., Incorporated
CA — Carter Parts Company	ME — Precision Meter Division, Minneapolis- Honeywell Regulator Company
CC — Cramer Controls Corporation	MS — Micro Switch Division, Minneapolis- Honeywell Regulator Company
CD — Cornell-Dubilier Division, Federal Pacific Electric Company	OM — Ohmite Manufacturing Company
CH — Cutler-Hammer Incorporated	PC — Phillips Control Company
CI — Cinch Manufacturing Corporation, H. B. Jones Division	RR — Radio Receptor Corporation
CL — Centralab Division, Globe-Union Corporation	RT — Rotron Manufacturing Company
CW — Cardwell Capacitor Corporation	SA — Sangamo Electric Company
DK — Danbury-Knudsen Division, Amphenol- Borg Electronics Corporation	SP — Sprague Products Company
EE — Erie Resistor Corporation	SP — Special (When used with ER)
	SV — Savoy Electronics Incorporated
	WL — Ward Leonard Electric Company

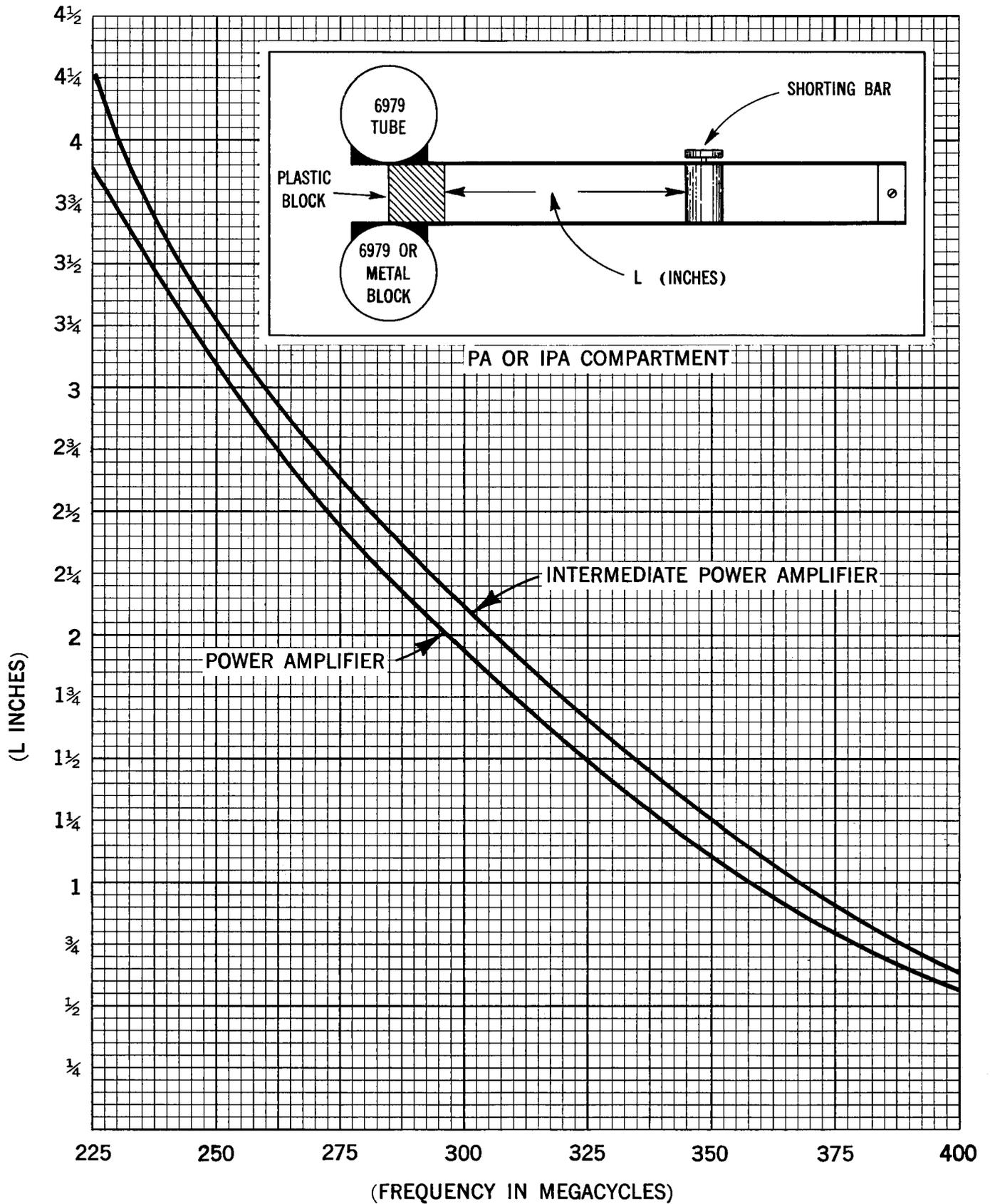


Fig. 1 - Position of Shorting Bar vs. Frequency — 361-TB Transmitter