

Grid Bias Voltages

The following values of grid bias voltages are obtained by using an external dc voltmeter having a range of 0-150 volts, 1000 ohms per volt. Connect the negative terminal of the meter to ground and the positive terminal to the circuit as indicated. Whenever a connection of the meter is made, the plate voltage should be removed by operating the "High Voltage" switch (D5A) to the "Off" position. The bias voltages should be measured with normal output of the transmitter.

Modulating Amp. Unit (Between Ground Term. & Slider of R48A)	52 ± 2 volts
Modulating Amp. Unit (Across R48A)	70 ± 4 volts
3rd Amplifier (Center Tap of R18A)	110 ± 5 volts
4th Amplifier (Center Tap of R22A)	110 ± 5 volts

Should any of the bias voltages be incorrect when the plate currents are correct, check the values of the resistances and make the necessary adjustments. The values of the resistances are:

<u>Apparatus Designation</u>	<u>Resistance * (Ohms)</u>
* R26A (Total)	480 ± 20
* R26A (Fixed end to tap No. 1)	16 ± 2
* R26A (Fixed end to tap No. 2)	180 ± 20
* R43A	500 ± 10
R48A (Total)	1000 ± 100
R48A (Gr. to Tap)	700 ± 10

*To measure these resistors first remove both wires from second slider from left hand end of R49.1 being careful not to leave the wires connected together.

Plate Voltages

The following dc voltages should be measured with an external dc voltmeter having a range of 0-1500 volts and a resistance of 1000 ohms per volt. At each measurement the "High Voltage" switch (D5A) shall be "Off" whenever the meter is either connected or disconnected, and "On" when the observation is made. The negative terminal of the meter shall be grounded and the positive terminal shall be connected as indicated.

Oscillator (Term. 2 on Osc. Term. Strip)	250 ± 2 volts	<i>1st TAP 49.2</i> 49.2 <i>High at this point. 26</i>
1st R.F. Amplifier (Term. No. 10 on Mod. Amp. Unit)	475 ± 50 "	<i>49.2 (Tap)</i>
3rd Amplifier (Term. on D8A)	1150 ± 100 "	<i>49.6 (Tap)</i>
Audio Amplifier (Term. No. 8)	475 ± 50 "	<i>49.2 Tap.</i>
2nd R.F. Amplifier (Term. R15A)	575 ± 25 "	<i>49.3 (Tap)</i>
4th Amplifier (Term. No. 2 on L29A)	1360 ± 10 "✓	<i>49.6</i>

Should the voltages be less or more than those indicated the sliders on the plate voltage resistances R49.1A, R49.3A, R49.5A, and R49.6A for the oscillator, second R.F. Amp., 3rd R.F. Amp., and 4th R.F. Amp. plate voltages, respectively, should be adjusted until the proper voltages are obtained.

TABLE III

Recommended

SPARE PARTS

FOR

WESTERN ELECTRIC
NO. 23A RADIO TRANSMITTER

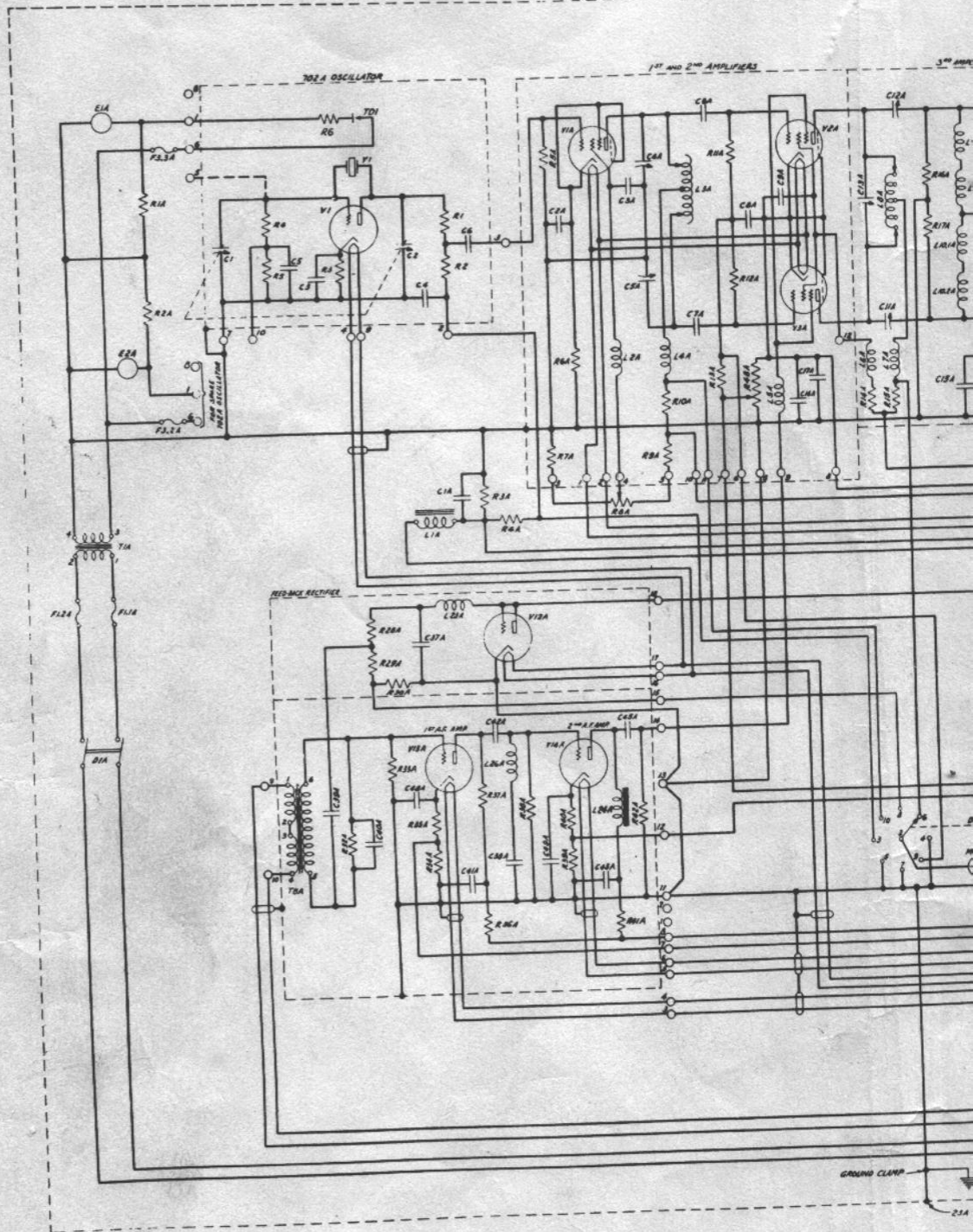
The following parts are recommended as a complement of spare equipment which may be purchased at the customer's option. Spare electrolytic condensers are not recommended since the shelf life may be less than the service life. These condensers should be purchased only when replacements are necessary.

General List of Spare Parts

- 2 - W.E. No. 230A Condensers, 0.4 mfd.
- 1 - Ward Leonard 3-1/2" Type "B" Resistance with No. 206 Terminals, 6000 ohms \pm 10%
- 2 - Ward Leonard 2" Type "O" Resistances with No. 206 Terminals, 20 ohms \pm 10% with center tap
- 1 - Ward Leonard Ring Potentiometer, 5000 ohms, 50 Watt rating, 2-1/4" D per Bulletin No. 1106
- 2 - Ward Leonard 2" Type "O" Resistances with No. 206 Terminals, 10,000 ohms \pm 10%
- 1 - Ward Leonard 2" Type "O" Resistance with No. 206 Terminals, 4000 ohms \pm 10%
- 2 - Ward Leonard 20 Watt Plaque Resistances, 2000 ohms \pm 10%
- 2 - Ward Leonard 20 Watt Plaque Resistances, 400 ohms \pm 10%
- 1 - Ward Leonard Two Deck Adjustant per K-40626, 400 ohms \pm 10%, 30 watt rating

- 1 - Ward Leonard 8-1/2" Type "D" Resistance with No. 206 Terminals, bare side for sliders, 500 ohms \pm 10%
- 1 - Ward Leonard 6" Type "WX" Resistance with No. 206 Terminals, 16 ohms \pm 10%
- 1 - Ward Leonard 2" Type "A" Resistance with No. 206 Terminals, 1250 ohms \pm 10%, bare side for sliders
- 2 - Ward Leonard 2" Type "O" Resistances with No. 206 Terminals, 3000 ohms \pm 10%
- 1 - Ward Leonard 2" Type "O" Resistance with No. 206 Terminals, 750 ohms \pm 10%
- 1 - Ward Leonard 6-1/2" Type "B" Resistance with No. 206 Terminals, 700 ohms \pm 2%, bare side for slider
- 1 - Ward Leonard 8-1/2" Type "D" Resistance, with No. 205 Terminals, set in 1/2" from end, 1300 ohms \pm 10%
- 1 - Ward Leonard 8-1/2" Type "D" Resistance with No. 205 Terminals, set in 1/2" from end, 675 ohms \pm 10%, bare side for slider
- 1 - Ward Leonard 8-1/2" Type "D" Resistance with No. 205 Terminals, set in 1/2" from end, 240 ohms \pm 10%, bare side for slider
- 4 - International Resistances, 300 ohms, 1 watt
- 1 - International Resistance, 20,000 ohms, 0.5 watt
- 1 - International Resistance, 0.5 megohm, 0.5 watt
- 1 - International Resistance, 0.25 megohms, 0.5 watt
- 1 - Ward Leonard Resistance, Cat. No. 507-213, 40000 ohms, 10 watts
- 1 - W.E. No. 38E Resistance, 20,000 ohms \pm 5%
- 1 - W.E. No. 38W Resistance, 100,000 ohms \pm 4%
- 1 - Cornell-Dubilier PC-547 Filter Condenser, 25 mfd., Manufacture Rating 1500 volts d-c., Operating Voltage 1360 volts d-c.

- 2 - R.C.A. 837 Vacuum Tubes
- 4 - W.E. No. 242C Vacuum Tubes
- 2 - W.E. No. 244A Vacuum Tubes
- 2 - W.E. No. 262A Vacuum Tubes
- 2 - W.E. No. 271A Vacuum Tubes
- 2 - W.E. No. 249B Vacuum Tubes
- 2 - W.E. No. 247A Vacuum Tubes

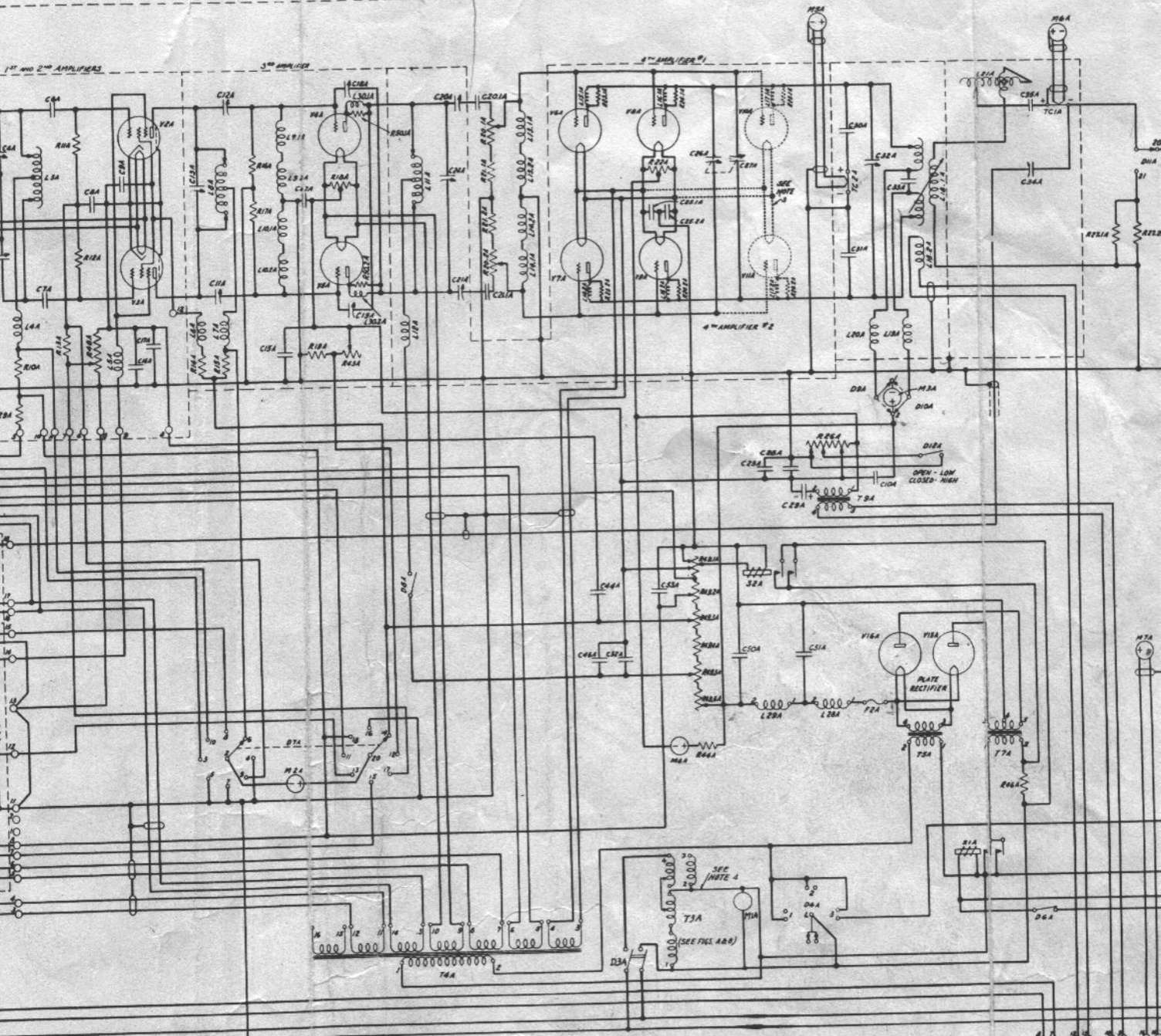


NOTES

- 1- ALL INTERCONNECTING WIRES, WIRES EXTERNAL TO THE EQUIPMENT, AND WIRES WHICH MUST BE INSTALLED INSIDE THE EQUIPMENT, ARE SHOWN THUS: _____
- 2- THESE CONNECTIONS ARE TO BE USED ONLY IN THE 310 A OR 310 B RADIO TRANSMITTING EQUIPMENT.
- 3- THE PORTION OF THE 4TH AMPLIFIER CIRCUIT, INDICATED BY THE DOTTED LINES, IS TO BE ADDED ONLY FOR THE 310 B, 310 C, AND 310 D RADIO TRANSMITTING EQUIPMENTS.

4- ON TRANSMITTERS HAVING SERIAL NO. 151 AND HIGHER CONNECT TO OUTPUT TERMINAL #2 OF T-3A FOR LINE VOLTAGES EXCEEDING 220 AND TO OUTPUT TERMINAL #3 FOR LINE VOLTAGES LESS THAN 220.

5- CAPACITY OF .02 MFD. SHUNTED ACROSS L-249 WILL ~~BE~~ GIVE FALL FREQ. CHARACTER ABOVE 7500 C.



4. ON TRANSMITTERS HAVING SERIAL NO 151 AND HIGHER
 CONNECT TO OUTPUT TERMINAL #2 OF T3A FOR LINE
 VOLTAGES EXCEEDING 220. AND TO OUTPUT
 TERMINAL #3 FOR LINE VOLTAGES LESS THAN 220.

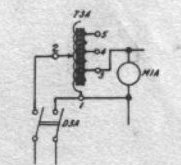
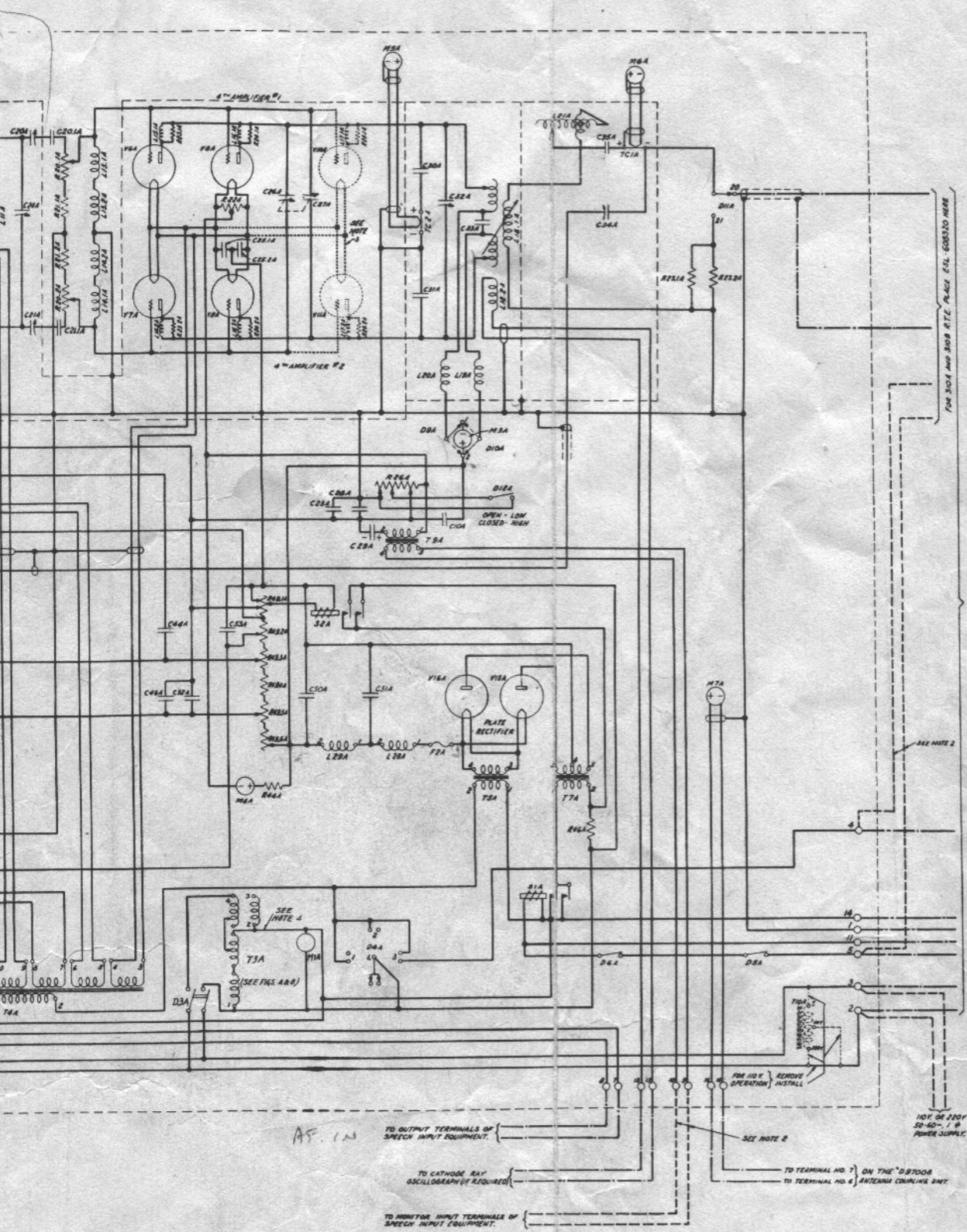
5. CAPACITY OF
 .024μd. SHUNTED
 ACROSS L-24A
 WILL ~~BE~~ GIVE FALLING
 FREQ. CHARACTERISTIC
 ABOVE 7500 CYCLES.

2A-39-2C

Printed in U.S.A.

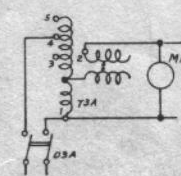
WECO-T-1574A

AF. IN
 TO OUTPUT TERMINALS OF
 SPEECH INPUT EQUIPMENT.
 TO CATHODE RAY
 OSCILLOGRAPH (IF REQUIRED)
 TO MONITOR INPUT TERMINALS OF
 SPEECH INPUT EQUIPMENT.



CONNECTIONS TO T3A FOR TRANSMITTERS WITH SERIAL NUMBERS 15 AND LOWER IN WHICH ORIGINAL VARIAC T3A HAS BEEN REPLACED BY TOROIDAL TYPE TRANSIST.

FIG. A.



CONNECTIONS TO T3A FOR TRANSMITTERS WITH SERIAL NUMBERS 150 AND LOWER IN WHICH THE VARIAC T3A HAS NOT BEEN REPLACED.

FIG. B.

AF. 1A

TO OUTPUT TERMINALS OF SPEECH INPUT EQUIPMENT.

TO CATHODE RAY OSCILLOGRAPH (IF REQUIRED)

TO MONITOR INPUT TERMINALS OF SPEECH INPUT EQUIPMENT.

SEE NOTE 2

FOR 10Y REMOVE INSTELL

TO TERMINAL NO. 7 ON THE "DISTROOM TO TERMINAL NO. 6" ANTENNA COUPLING UNIT

10Y OR 20Y 50-60-100 POWER SUPPLY

FOR 30C AND 30D R.T.E. PLACE C58F-60857 HERE

FOR 30E AND 30F R.T.E. PLACE C5L-60830 HERE

APPARATUS LIST
FOR THE
NO. 23A RADIO TRANSMITTER

Desig. No.

Apparatus

CONDENSERS

C1A	Western Electric No. 289A, 7 mfd. Filter Condenser, Manufacturer's Rating 500 volts d-c., Max. Operating Voltage 250 volts d-c.
C2A	Cornell-Dubilier 0.01 mfd. Mica Condenser, Manufacturer's Rating 1200 volts d-c., Max. Operating Voltage 25 volts d-c. Cat. No. 4-21010.
C3A	Cornell-Dubilier 0.01 mfd. Mica Condenser, Manufacturer's Rating 1200 volts d-c., Max. Operating Voltage 500 volts d-c. Cat. No. 4-21010.
C4A) C5A)	Cardwell Variable Air Condensers, Type XR480PD, Min. each 21 mmfd., Max. each 480 mmfd. Max. Operating Voltage 600 volts peak.
C6A) C7A) C8A)	Cornell-Dubilier 0.01 mfd. Mica Condenser, Manufacturer's Rating 1200 volts d-c., Max. Operating Voltage 500 volts d-c. Cat. No. 4-21010.
C9A	Cornell-Dubilier 0.003 mfd. Mica Condenser, Manufacturer's Rating 1200 volts d-c., Max. Operating Voltage 500 volts d-c. Cat. No. 4-22030.
C10A	Cornell-Dubilier PC-547 Filter Condenser, 25 mfd. Manufacturer's Rating 1500 volts d-c., Max. Operating Voltage 1360 volts d-c.
C11A) C12A) C13A)	Cardwell Variable Air Condensers, Type XR250PS, Min. 15 mmfd., Max. 250 mmfd. Max. Operating Voltage 500 volts peak.
C14A	Western Electric No. 287A Paper Condenser, 4 mfd., Manufacturer's Rating 200 volts d-c., Max. Operating Voltage 90 volts d-c.
C15A) C17A)	Cornell-Dubilier 0.01 mfd. Mica Condenser, Manufacturer's Rating 1200 volts d-c. Max. Operating Voltage 125 volts d-c. Cat. No. 4-21010.

ISSUE 1 7/23/36

CH.	TR.	TITLE
DR.	TR.	APPARATUS LIST FOR THE NO. 23A RADIO TRANSMITTER
APPL.		11 Sheets, Sheet 1 SCALE
		BELL TELEPHONE LABORATORIES, INC., NEW YORK
		ES A-741924

<u>Desig. No.</u>	<u>Apparatus</u>
C18A) C19A)	Cardwell Variable Air Condensers Type XC18XD with insulating coupling, each Min. 5 mmfd., Max. 18.0 mmfd. Max. Operating Voltage 2000 volts peak, minimum spacing 0.1875 inch between rotor and stator.
C20A) C21A)	Cardwell Variable Air Condensers, Type XT440PS Min. each 42 mmfd., Max. each 440 mmfd., Max. Operating Voltage 1000 volts d-c.
C20.1A) C21.1A)	Cornell Dubilier Condensers, Cat. #9-21011, .01 mfd.
C23A	Western Electric No. 266A Paper Condenser, 5 mfd. Manufacturer's Rating 400 volts d.c. Max. Operating Voltage 125 volts d.c.
C24A	Cardwell Variable Air Condenser, Type XT250KS Min. 15 mmfd., and a max. 250 mmfd. with a spacing between rotor and stator of 0.07". Max. Operating Voltage 1000 volts d.c.
C25.1A) C25.2A)	Cornell-Dubilier 0.05 mfd. Mica Condensers, Manufacturer's Rating 600 volts d-c. Max. Operating Voltage 15 volts peak. Cat. No. 9-11050.
C26A) C27A)	Cardwell Variable Air Condensers Type XC65XS each Min. 18 mmfd. Max. 65 mmfd. Max. Operating Voltage 2500 volts peak. Minimum spacing 0.1875 inch between rotor and stator.
C28A	Western Electric No. 293A Paper Condenser, 16 mfd. Manufacturer's Rating 400 V. d-c. Max. Operating Voltage 125 V. d-c.
C29A	Cornell-Dubilier 1000 mfd. Low Voltage Dry Electrolytic Condenser, Manufacturer's Rating 30 volts d-c., Max. Operating Voltage 20 volts peak, Cat. No. EVL-3010.
C30A) C31A)	Western Electric No. 320A Mica Condensers, 0.0006 mfd. for Frequencies from 550 to 910 kc., Current rating 2.5 amperes at 550 kc. Western Electric No. 320E Mica Condensers, 0.0002 mfd. for Frequencies from 920 to 1500 kc. Current Rating 2.3 amperes at 1330 kc., Manufacturer's Rating 2500 volts d-c., Max. Operating Voltage 1250 volts d-c.

ISSUE 2 1/5/37

CHK.	ENG.	TITLE
DR.	TR.	
APPL.		APPARATUS LIST FOR THE NO. 23A RADIO TRANSMITTER
		11 Sheets, Sheet 2 SCALE
		BELL TELEPHONE LABORATORIES, INC., NEW YORK
		ESA-741924

<u>Desig. No.</u>	<u>Apparatus</u>
C32A	Cardwell Variable Air Condenser, KS-7710, Min. 41 mmfd., Max. 330 mmfd. Max. Operating Voltage 2000 volts peak r.f.
C33A	Western Electric No. 320F Mica Condenser, 0.2 mfd. Manufacturer's Rating 250 volts d-c., Max. Operating Voltage 100 volts peak. Current Rating 2 amp. at 550 kc.
C34A	Hammarlund Variable Air Condenser. For transmitters prior to Serial #125 Type MC-250M, Min. 10 mmf. Max. 260 mmf. For transmitters Serial #126 and higher Type MC-50-S. Max. 50 mmf.*
C35A) C36A)	Western Electric Mica Condensers, Manufacturer's Rating 2500 volts d-c., Max. Operating Voltage 2500 volts peak r.f.
	No. 320A Condenser 0.0006 mfd., 2.4 amp. (550 kc to 770 kc)
	No. 320B Condenser 0.0005 mfd., 2.4 amp. (780 kc to 990 kc)
	No. 320C Condenser 0.0004 mfd., 2.4 amp. (1000 kc to 1300 kc)
	No. 320D Condenser 0.0003 mfd., 2.3 amp. (1310 kc to 1500 kc)
C37A	Cornell-Dubilier 0.00005 mfd. Mica Condenser, Manufacturer's Rating 600 volts d-c., Max. Operating Voltage 5 volts. Cat. No. 4-14050.
C38A	Cornell-Dubilier 0.002 mfd. Mica Condenser, Manufacturer's Rating 600 volts d-c., Max. Operating Voltage 25 volts peak. Cat. No. 4-12020.
C39A	Western Electric No. 230A, Paper Condenser, 0.4 mfd. Manufacturer's Rating 400 volts d-c., Max. Operating Voltage 20 volts d-c.
C40A	Cornell-Dubilier 0.0005 mfd. Mica Condenser, Manufacturer's Rating 600 volts. Max. Operating Voltage 5 volts peak. Cat. No. 4-13050.
C41A	Western Electric No. 226A Paper Condenser 1 mfd., Manufacturer's Rating 1000 volts d-c., Max. Operating Voltage 500 volts d-c.

*Not interchangeable.

ISSUE 2 1/5/37

DR.	CH.	ENG.	TITLE
	TR.		
APPL.			APPARATUS LIST FOR THE NO. 23A RADIO TRANSMITTER
			11 Sheets, Sheet 3 SCALE
			BELL TELEPHONE LABORATORIES, INC., NEW YORK
			ESA-741924

Desig. No.

Apparatus

- C42A Western Electric No. 230A Paper Condenser, 0.4 mfd., Manufacturer's Rating 400 volts d-c., Max. Operating Voltage 200 volts d-c.
- C43A Western Electric No. 288A Paper Condenser, 2 mfd. Manufacturer's Rating 1000 volts d-c., Max. Operating Voltage 500 volts d-c.
- C44A Western Electric No. 295A Paper Condenser, 5.0 mfd. Manufacturer's Rating 1500 volts d-c., Max. Operating Voltage 500 volts d-c.
- C45A Western Electric No. 226A Paper Condenser, 1 mfd. Manufacturer's Rating 1000 volts d-c., Max. Operating Voltage 500 volts d-c.
- C46A Western Electric No. 295A Paper Condenser, 5 mfd. Manufacturer's Rating 1500 volts d-c., Max. Operating Voltage 1000 volts d-c.
- C47A Western Electric No. 293A Filter Condenser, 16 mfd., Manufacturer's Rating 400 volts d-c., Max. Operating Voltage 125 volts d-c.
- C48A Cornell-Dubilier 0.004 mfd. Mica Condenser, Manufacturer's Rating 600 volts d-c., Max. Operating Voltage 10 volts d-c. Cat. No. 4-12040.
- C49A Cornell-Dubilier 0.03 mfd. Mica Condenser, Manufacturer's Rating 600 volts d-c., Max. Operating Voltage 30 volts d-c. Cat. No. 9-11030.
- C50A) Cornell-Dubilier PC-547 Filter Condensers,
C51A) 25 mfd. Manufacturer's Rating 1500 volts d-c.,
Max. Operating Voltage 1360 volts d-c.
- C52A) Western Electric 295A, 5 m.f., Manufacturer's
C53A) Rating 1500 volts d-c., Maximum Operating
Voltage 1000 volts d-c.

SWITCHES

- D1A H&H Toggle Switch, Double Pole, 3 amp., 250 volts.

ISSUE 1 7/23/36

	CH.	ENG.	DR.	TR.	TITLE APPARATUS LIST FOR THE NO. 23A RADIO TRANSMITTER
					11 Sheets, Sheet 4 SCALE
					BELL TELEPHONE LABORATORIES, INC., NEW YORK ESA-741924

Desig. No.

Apparatus

- D3A Nofuze Circuit Breaker, Two Pole, 15 amp., 230 volts.
- D4A H&H Heater Switch, Four Circuits, 1, 1 and 2, 1, 2 and 3, and off, 25 amp. 250 volts, Flush Type 21034. Non-reciprocating.
- D5A H&H Tumbler Switch, Double Pole, Cat. No. 21598-A, 3 amp., 250 volts.
- D6A H&H Door Switch, Cat. No. 3592, 3 amperes, 250 volts.
- D7A Westinghouse Meter Switch, Cat. No. S019N551 having 8 Two Wire Circuits.
- D8A)
D9A)
D10A) Link Switches Insulated for 1500 volts d-c.
- D11A Link Switch Insulated for 500 volts.
- D12A H&H Tumbler Switch, Double Pole, Cat. No. 21598-A, 3 amp., 250 volts.

LIGHTS

- E1A) G.E. Co. Type 4, 18 volts, 2 watt lamps.
- E2A)

FUSES

- F1.1A) D&W Cartridge Type Enclosed Fuses, 5 amp.,
- F1.2A) 250 volts, Cat. No. 1456.
- F2A Western Union Telegraph Fuse, 2 amp., 2500 volts, Cat. No. 2760.
- F3.1A)* D&W Cartridge Type Enclosed Fuses, 2 amp.,
- F3.2A) 250 volts, Cat. No. 91002.
- F3.3A)

*No longer used.

ISSUE 2 1/5/37

CH.	ENGR.	TITLE
		APPARATUS LIST FOR THE NO. 23A RADIO TRANSMITTER
DR.	TR.	11 Sheets, Sheet 5 SCALE
APPL.		BELL TELEPHONE LABORATORIES, INC., NEW YORK
		ESA-741924

Desig. No.

Apparatus

INDUCTANCES

L1A	Western Electric No. 148F Retardation Coil.
L2A	Western Electric No. D-98171 Retardation Coil.
L3A	Western Electric Detail 1, per ESO-609199 for 500 to 990 kc. Western Electric Detail 2, per ESO-609199 for 1000 to 1500 kc.
L4A,L5A) L6A,L7A)	Western Electric No. D-98171 Retardation Coils.
L8A	Western Electric Coil Detail 2, per ESO-609481
L9.1A,L9.2A) L10.1A,L10.2A)	Western Electric No. D-98171 Retardation Coils.
L11A	Western Electric Coil Detail 1, per ESO-609481
L12A) L13.1A,L13.2A) L14.1A,L14.2A)	Western Electric No. D-98171 Retardation Coils.
L15.1A,L15.2A) L16.1A,L16.2A) L17.1A,L17.2A)	Western Electric No. 198A Retardation Coils.
L18.1A)	Western Electric No. D-99272 Output Coil.
L18.2A)	Western Electric Coil Detail 1 per ESO-607518.
L19A) L20A)	Western Electric No. 190A Retardation Coils.
L21A	Western Electric No. D-99274 Harmonic Suppression Coil for 550 to 990 kc. Western Electric No. D-99273 Harmonic Suppression Coil for 1000 kc to 1500 kc.
L22A	Western Electric Coil Detail 4 per ESO-607518 (omitted from Transmitters after Serial #125)
L23A	Western Electric No. 200C Retardation Coil
L24A	Western Electric No. 199D Retardation Coil

Issue 2 1/5/37

CH.	ENG.	TITLE
		APPARATUS LIST FOR THE NO. 23A RADIO TRANSMITTER
DR.	TR.	11 Sheets, Sheet 6
APPL.		SCALE
		BELL TELEPHONE LABORATORIES, INC., NEW YORK
		ESA-741924

Desig. No.Apparatus

L26A Western Electric No. 196A Retardation Coil.
 L28A) Western Electric No. 222A Retardation Coils.
 L29A) Each 4 henries, 21 ohms.
 L30.1A) Same as L15.1A
 L30.2A)

METERS

M1A Weston Model 734 A.C. Voltmeter, scale 0-300 volts.
 M2A Weston Model 731 D.C. Milliammeter, scale calibrated with shunts for 1, 2, 5, 50 and 300 ma.
 M3A Weston Model 731 D.C. Ammeter, scale 0-1 ampere.
 M4A Weston Model 731 D.C. Voltmeter, scale 0-1500 volts $\pm 2\%$ furnished external multiplier.
 M5A Weston Model 733 Thermoammeter with external thermocouple, scale 0-1.5 amperes.
 M6A Weston Model 733 Thermoammeter with external thermocouple. Scale 0-3 amperes for 250 watt operation. Scale 0-2 amperes for 100 watt operation.
 M7A Range to be specified at time of installation.

NOTE: All above meters shall be calibrated to operate at 130°F. Also, all meters shall have a ground terminal which connects all internal meter parts. All meters shall be furnished with screw type terminals.

CRYSTAL OSCILLATOR

Q1A Western Electric No. 702A Oscillator.

RESISTANCES

R1A) Ward-Leonard 3 1/2" Type B Resistance, 130 ohms
 R2A) $\pm 5\%$ with No. 206 Terminals.

ISSUE 2 1/5/37

CH.	ENG.	TITLE APPARATUS LIST FOR THE NO. 23A RADIO TRANSMITTER
DR.	TR.	
APPL.		11 Sheets, Sheet 7 SCALE
BELL TELEPHONE LABORATORIES, INC. NEW YORK		
ESA-741924		

Desig. No.

Apparatus

- R3A Ward-Leonard 3-1/2" Type "B" Resistance, 6000 ohms ± 10% with No. 206 Terminals.
- R4A Weston Meter Shunt for Model 731 Meter 5 ma. range.
- R5A Western Electric Type 38D Resistance, 50,000 ohms ± 2%.
- R6A Ward-Leonard 2" Type "O" Resistance, 2,000 ohms ± 10% with No. 206 Terminals.
- R7A Ward-Leonard 2" Type "O" Resistance, 4,000 ohms ± 10% with No. 206 Terminals.
- R8A Ward-Leonard Ring Type Potentiometer, 5,000 ohms, 50 watt rating, 2-1/4" D per Bulletin No. 1106.
- R9A Ward-Leonard 2" Type "O" Resistance, 10,000 ohms ± 10% with No. 206 Terminals.
- R10A Weston Meter Shunt for Model 731 Meter 50 ma. range.
- R11A)
R12A) Western Electric No. 38AA Resistances, 10,000 ohms ± 4%.
- R13A Weston Meter Shunt for Model 731 Meter, 2 ma. range.
- R14A Ward-Leonard 2" Type "O" Resistance, 10,000 ohms ± 10% with No. 206 Terminals.
- R15A Weston Meter Shunt for Model 731 Meter, 300 ma. range.
- R16A)
R17A) Ward-Leonard 20 Watt Plaque Type Resistances, each 2,000 ohms ± 10%
- R18A Ward-Leonard 2" Type "O" Resistance with No. 206 Terminals, 20 ohms ± 10% with center tap.
- R19A Weston Meter Shunt for Model 731 Meter 300 ma. range.
- R20.1A)
R20.2A) Ward-Leonard Two Deck Adjustats per K-40626, each 400 ohms ± 10%, 30 watts.

41250 →
Ring
Resistors

ISSUE 1 7/23/36

CH.	EX.	TITLE
		APPARATUS LIST FOR THE NO. 23A RADIO TRANSMITTER
DR.	TR.	11 Sheets, Sheet 8
APPL.		SCALE
		BELL TELEPHONE LABORATORIES, INC., NEW YORK
		ESA-741924

<u>Desig. No.</u>	<u>Apparatus</u>
R21.1A) R21.2A)	Ward-Leonard 20 Watt Plaque Type Resistances, each 400 ohms \pm 10%.
R22A	Ward-Leonard 2" Type "O" Resistance, with No. 206 Terminals, 20 ohms \pm 10% with center tap
R23.1A,R23.2A) R24.1A,R24.2A) R25.1A,R25.2A)	International Resistances, 300 ohms, 1 watt
R26A	Ward-Leonard 8-1/2" Type "D" Resistance, with No. 206 Terminals and three No. 503 slider bands 500 ohms \pm 10%. (Bare side for slider)
R27.1A) R27.2A)	Ohmspun Units, 130 ohms \pm 5% each, capable of dissipating 190 watts each.
R28A	Western Electric No. 38D Resistance, 50,000 ohms \pm 2%.
R29A	Western Electric No. 38E Resistance, 20,000 ohms \pm 5%.
R30A	Weston Meter Shunt for Model 731 Meter, 1 ma. Range.
R32A	International Resistance, 20,000 ohms, 0.5 watt.
R33A	International Resistance, 0.5 megohm, 0.5 watt.
R34A	Weston Meter Shunt for Model 731 Meter 5 ma. range.
R35A	Ward-Leonard 2" Type "O" Resistance, 3000 ohms \pm 10% with No. 206 Terminals.
R36A	Western Electric No. 38AB Resistance, 30,000 ohms \pm 2%.
R37A	Western Electric No. 38W Resistance, 100,000 ohms \pm 4%.
R38A	International Resistance, 0.25 megohm, 0.5 watt.

ISSUE 1 7/23/36

CH.	ENG.	TITLE
DR.	TR.	
APPL.		APPARATUS LIST FOR THE NO. 23A RADIO TRANSMITTER
		11 Sheets, Sheet 9 SCALE
		BELL TELEPHONE LABORATORIES, INC., NEW YORK
		ESA-741924

<u>Desig. No.</u>	<u>Apparatus</u>
R39A	Weston Meter Shunt for Model 731 Meter, 50 ma. range.
R40A	Ward-Leonard 2" Type "O" Resistance, 750 ohms \pm 10% with No. 206 Terminals.
R41A	Ward-Leonard 2" Type "O" Resistance, 3000 ohms \pm 10% with No. 206 Terminals.
R42A	Ward-Leonard Resistance Cat. #507-412, 10,000 ohms, 10 watts.
R43A	Ward-Leonard 6-1/2" Type "B" Resistance with one No. 603 slider band, Total 700 ohms \pm 2%, (Bare side for slider).
R44A	Weston Voltmeter Multiplier Type 5 No. 3 for M4A.
R46A	Ward-Leonard 6" Type "WX" Resistance with No. 205 Terminals, 16 ohms \pm 10%.
R48A	Ward-Leonard Type "A" 2" Resistance with No. 206 Terminals 1250 ohms \pm 10% bare side for 2 sliders.
R49.1A) R49.2A)	Ward-Leonard 8-1/2" Type "D" Resistances with No. 205 Terminals and in a No. 703 Mounting, terminals set in 1/2" from end, 1300 ohms \pm 10%. (Bare side for two No. 603 sliders on R49.1A resistance)
R49.3A) R49.4A)	Ward-Leonard 8-1/2" Type "D" Resistances with No. 205 Terminals and in a No. 703 Mounting, terminals set in 1/2" from end, 675 ohms \pm 10% (Bare side for a No. 603 slider on R49.3A resistance).
R49.5A) R49.6A)	Ward-Leonard 8-1/2" Type "D" Resistances with No. 205 Terminals and in a No. 703 Mounting, terminals set in 1/2" from end, 240 ohms \pm 10% (Bare side for a No. 603 slider on both resistances).
R50.1A) R50.2A)	Same as R23.1A

ISSUE 2 1/5/37

CH.	ENG.	DR.	TR.	TITLE
				APPARATUS LIST FOR THE NO. 23A RADIO TRANSMITTER
APPL.				11 Sheets, Sheet 10 SCALE
				BELL TELEPHONE LABORATORIES, INC. NEW YORK
				ES A-741924

Desig. No.ApparatusRELAYS

S1A Signal Engineering Relay Double Pole Type F7
for 220 volts a-c.

S2A Signal Engineering Relay KS-5483 Double Pole
Type C7 for 110 volts d-c.

THERMOCOUPLES

TC1A Thermocouple for Meter M6A Range 0-3 amperes.

TC2A Thermocouple for Meter M5A Range 0-1.5 amperes.

TRANSFORMERS

T1A Western Electric No. 352E Transformer.

T3A General Radio Type 80 S-2 Variac - Primary Volt-
age 200-240 volts, secondary 220 volts, 10 amps.

T4A Western Electric No. 353A Transformer.

T5A Western Electric No. 352F Transformer.

T7A Western Electric No. 354A Transformer.

T8A Western Electric No. D-98771 Input Transformer.

T9A Western Electric No. 105B Repeating Coil.

VACUUM TUBES

V1A)
V2A)
V3A)
RCA 837 Vacuum Tubes. ✓

V4A, V5A)
V6A, V7A)
V8A, V9A)
V10A, V11A)
Western Electric No. 242B Vacuum Tubes. ✓

V12A- Western Electric No. 244A Vacuum Tube. ✓

V13A- Western Electric No. 262A Vacuum Tube. ✓

V14A- Western Electric No. 271A Vacuum Tube. ✓

V15A-)
V16A-)
Western Electric No. 249B Vacuum Tubes. ✓

ISSUE 2 1/7/37

CH.		ENG.		TITLE APPARATUS LIST FOR THE NO. 23A RADIO TRANSMITTER 11 Sheets, Sheet 11 SCALE BELL TELEPHONE LABORATORIES, INC., NEW YORK
DR.	TR.			
APPL.				
				ES A-741924