INSTRUCTIONS

COLLINS 30H SERIES TRANSMITTERS

INSTRUCTIONS

COLLINS 30H TRANSMITTER

Serial No. 3365-1

TABLE OF CONTENTS

I DESCRIPTION OF APPARATUS

GENERAL

The 30H Series Collins Transmitters are designed for mobile service where compact construction and the general specifications of 50 to 100 watts nominal output rating are indicated. Interchangeable radio frequency units permit ready adaptation to wide frequency limits.

The 19DH cabinet used in the 30H Series Transmitters is constructed of heavy gage sheet steel. Riser strips welded to each side form a substantial framework and provide a mounting support for the units. The cabinet is attractively finished with black crystalline baked enamel on the outside and aluminum lacquer on the inside. The front of the cabinet is drilled and tapped to take standard 19" relay rack panels. The external dimensions of the 30H Transmitter cabinet proper are 19 inches wide, 43 inches high and 13 inches deep. Welded steel brackets for shock-proof mounting are supplied which increase the over-all width to 25 inches. A door is provided on the rear of the cabinet allowing access to tubes, coils, etc. This door is provided with perforated grilles to furnish adequate ventilation.

The mechanical layout of the component parts of the transmitter is such that all coils, tubes, crystals and such parts that need adjustment, are readily accessible. The component units of the transmitter are each mounted on individual panels and chassis so that each unit may be removed separately from the cabinet.

RADIO FREQUENCY SECTION

1. The Type 10Z R-F Unit

The type 10Z R-F Unit is constructed on a standard rack width panel, having a vertical height of 8-3/4". It employs a C-100D oscillator, two 6L6 buffer or frequency multiplier stages, CK70 Intermediate Amplifier and C-201 Power Amplifier. The oscillator is crystal controlled. The crystal may be mounted in either the type 292 or 294 crystal holders. The 6L6 stages operate either as straight amplifier-buffer stages or as frequency multiplier stages, depending upon the required output frequency. The CK70 operates as a driver to furnish excitation to the C-201 power amplifier output stage. Tuning controls for the two 6L6 stages are located on the plug-in coil units. These controls may be set and

need not be changed when shifting frequency. All other tuning controls are on the front panel and dial locks are supplied as standard equipment. The output circuit of the power amplifier includes an output coupling coil which may be tapped to match the output of the transmitter to any non-reactive transmission line having an impedance between 70 and 600 ohms, depending upon the operating frequency. An antenna coupling network may be used if desired. The 10Z R-F Unit may be used on any frequency between 1500 and 10,000 kc. Frequency may be changed rapidly by means of plug-in coils.

The nominal plate input to the C-201 Power Amplifier is 200 ma. at 1250 volts, equivalent to 250 watts. An efficiency of 70% is realized, giving an output of 175 watts. The plate input may be reduced to any required value to limit the output of the transmitter to the power for which an installation is licensed. 52.5 off 50 watts 750 volts

2. The Type 10X R-F Unit

For certain services, it is desirable to operate the 30H Series Transmitters on ultra-high frequencies in which cases the type 10X R-F Unit is supplied. This unit requires the same panel space as the 10Z and is interchangeable with the 10Z, but it employs a special tube and circuit arrangement adapted to the higher frequencies.

The tube complement of the 10X Unit is as follows:

1 - C-100D Crystal Oscillator
1 - 6L6 First Buffer-Doubler
1 - 6L6 Second Buffer-Doubler
1 - 6L6 Third Buffer-Doubler
2 - 6L6 Fourth Buffer-Doubler
2 - C-101 Power Amplifiers

The frequency range of the 10X R-F Unit is 20,000 to 60,000 kilocycles. The nominal plate input to the C-101 tubes in the power amplifier is 250 watts, providing an output of 150 watts at the lower radio frequency limit and 125 watts at the highest radio frequency. The output circuit of the type 10X R-F Unit is similar to that of the 10Z and may be used with non-reactive high frequency lines, or it may be supplied with a matching network. Frequency change may be effected by means of

plug-in coil assemblies. Both the grid circuit and the plate circuit of the final amplifier are tuned by front panel controls. All dials are fitted with locks for fixing the position of the tuning condensers.

SPEECH AMPLIFIER MODULATOR

The 9RB Modulator-Speech Amplifier is furnished as standard equipment with the 30H Series Transmitters. The unit is constructed on a standard rack type chassis and is placed in the transmitter cabinet in such a manner that the gain control is adjustable from the front panel.

The 9RB Modulator Unit employs the following tubes:

1 - 6C5G Voltage Amplifier
2 - 6F6G Drivers
2 - C120 Class B Modulators

Input provision is made for a balanced 500 ohm line. Connections are provided so that a double button carbon microphone may be used and the microphone current is supplied by the modulator.

The 9RB Modulator Unit has a uniform frequency response between 60 and 6,000 cycles and is capable of fully modulating a plate input of 250 watts.

POWER SUPPLY

The type 415B series of power supplies incorporated in the 30H Series Transmitters delivers up to 1250 volts to the plate circuits of the intermediate amplifier, power amplifier and modulator tubes. A second rectifier supplies plate power for the crystal oscillator, the buffer-doubler stages and the speech amplifier. Two filament transformers supply the necessary filament voltages for the various tubes in the transmitter.

The type 415B Power Supply is of very rugged and compact construction, yet each component is of adequate size to insure good voltage regulation and minimum temperature rise. The smaller iron core units and filter condensers are mounted beneath the chassis. Oil filled filter condensers are used. Individual fuses are employed to afford overload protection for each rectifier and

filament circuit. All terminals are brought out at the rear of the chassis and connected with the inter-unit cable.

In instances where the output of the transmitter must be limited, different high voltage plate transformers are used so that the high voltage supply may be set at 1250 volts, 1000 volts or 750 volts. In general, the 1250 volt supply is used for 175 watt operation, the 1000 volt supply for 100 watt operation and 750 volts for 50 watt operation.

CONTROL CIRCUIT

The power controls for the 30H Series Transmitters have been very carefully worked out to afford greatest convenience in operation. Three switches control the filament power, 400 volt plate power and the high voltage plate power. The switches are connected in such a way that the plate power cannot be turned on until after the filament circuit is closed. The 400 volt plate power switch serves as a "stand-by" control to disable the transmitter during reception. Operation of this switch disconnects both rectifiers so that there is no possibility of interference from mercury rectifier tubes during periods of reception. The power switches are located on the front panel of the transmitter, and when the transmitter is located near the operating position, no external switch connections are needed. Application of filament and plate voltage is indicated by two large pilot lights. When a quick change from telegraph to telephone is desired, a further convenience in operation is afforded by the "PHONE-CW" switch which is located on the transmitter panel. This switch disconnects the modulator tubes and shorts the modulation transformer in the "CW" position.

ANTENNA TERMINATION

As the 30H Series Transmitters are designed for installation in automobiles and similar modes of conveyance, the antenna systems are necessarily of a special nature and vary considerably over the frequency range.

The antenna system recommended for the ultra-high frequency model 30H Transmitter is a grounded quarter wave vertical radiator shunt-fed by a single wire feeder connected to the transmitter

through a series variable condenser.

The 2Z and the 2ZA Units are supplied with the ultra-high frequency 30H Transmitters. The 2Z Unit is mounted in the transmitter cabinet and contains a coupling for 3/8" concentric line. The connections for the concentric line are made directly to the pick-up coil on the plate tank circuit of the power amplifier. The 2ZA Unit consists of a small metal box containing a variable condenser and a radio frequency ammeter. This unit is designed to be mounted near the base of the antenna system and serves as a coupling unit between the concentric line and the antenna.

The antenna system recommended for low-frequency mobile operation is a Marconi antenna tuned against ground. The 2ZB antenna coupling unit is supplied with the low frequency 30H Transmitters and consists of a variable condenser and radio frequency ammeter mounted on a panel in the transmitter. An inductance is supplied for loading the antenna to obtain resonance.

II INSTALLATION

UNCRATING

Remove the transmitter from the crate and inspect it carefully to be certain it has not been damaged in shipment. All claims for damage should be filed promptly with the transportation company. It is necessary to preserve the original packing material in case a claim is to be filed with the transportation company.

Inspect cables and wiring and be sure all cable connections are tight. Inspect each unit for loose screws and bolts. Make certain that all controls such as switches, dials, etc., work properly.

ASSEMBLY

If all parts are found to be in good condition, the transmitter is ready for assembly and installation. The power supply and modulator units are removed from the transmitter and are boxed separately for shipment. They are readily inserted in place and the proper cable connections made. Each cable lead is properly marked so that the correct connection may be made. See the transmitter panel arrangement drawing for the proper placing of the two units.

The layout of mounting holes for bolting the transmitter to the floor is shown on Drawing 4823-1. The mounting holes are drilled and the Lord shockproof mounting feet are bolted to the floor. The transmitter is then set upon the shockproof feet and bolted securely. The top of the SOH cabinet should be braced to the top of the truck or to a wall. Two 10-pound Lord shockproof mountings are furnished for this purpose. A special bracket will be required for each installation. This bracket is not furnished with the transmitter.

EXTERNAL CONNECTIONS

The external connections to the SOH Transmitter are made as follows:

(1) 110 volt 60 cycle power for the filament and low voltage plate circuit - to terminals No. 1 and 2 on the terminal strip.

(2) 110 volt 60 cycle power for the high voltage plate circuit - to terminals No. 3 and 4 on the terminal strip.

(3) Speech input - to the six-pin receptacle on the 9RB Modulator chassis. (See 9RB schematic drawing No. 3033-1.)

(4) Antenna connections are made to the antenna panel at the top of the transmitter. In case of concentric line coupling for the high frequency unit, the 3/8" concentric line is inserted in the bushing and locked in place by tightening up on the knurled nut. The center conductor is connected to the flexible lead. In the case of low frequency operation, the antenna connection is made to the external loading coil, which is then connected to the right-hand terminal at the 2ZB panel. The left-hand terminal is connected to ground.

(5) Connect terminal number 9 on the power supply to ground.

III ADJUSTMENTS

FUSES

The 415B Power Supply contains the following fuses:

1 - 15A plug type - High Voltage Primary
1 - 3A plug type - Low Voltage Primary
1 - 5A plug type - 10V. Fil. Pri.
1 - 3A plug type - 2.5 V. Fil. Pri.

All fuse positions are designated showing the proper value of fuse for a particular location. It is very important that fuses of specified ratings only be used.

POWER SUPPLY

The 415B Power Supply requires no attention whatever except the insertion of tubes and inspection of fuses. The rectifier tubes are inserted as follows:

Rectifier Tubes
415B Power Supply

2 - 866A High Voltage Plate Power
2 - 5Z3 Low Voltage Plate Power

The type 5Z3 rectifiers are inserted in the four-prong sockets at the left of the chassis and the 866A tubes are inserted in the navy type sockets near the center of the chassis. Insulated leads with plate cap connectors are provided for connecting to the top caps on the 866A tubes.

MODULATOR

The 9RB Modulator Unit requires no adjustments other than insertion of tubes and the setting of the gain control. The gain control is mounted in such a manner that it may be adjusted from the front of the transmitter. The tubes are inserted as follows:

ADJUSTMENTS

Audio Frequency Tubes
9RB Modulator

1 - 6C5G Input Tube
2 - 6F6G Driver Tubes
2 - C120 Class B Modulators

The 6C5G tube and the 6F6G tubes are inserted in the octal socket near the right end of the chassis. The 6F6G tubes are placed in the two sockets nearest the panel. The 6C5G tube is placed in the remaining octal socket. The two C-120 tubes are inserted in the large sockets near the left end of the chassis.

10Z RADIO FREQUENCY UNIT

Tubes

The 10Z R-F Unit employs the following tubes:

1 - C-100D Crystal Oscillator
1 - 6L6 First Buffer-Doubler
1 - 6L6 Second Buffer-Doubler
1 - CK70 Intermediate Amplifier
1 - C201 Power Amplifier

Viewing the 10Z R-F Unit from the rear, the C-100D and the two 6L6 tubes are inserted in sockets placed in a row at the left end of the chassis. The C-100D is placed in the six-prong socket at the rear and the 6L6 tubes are placed in the two octal sockets nearer the panel. The CK70 is inserted in a five-prong Isolantite socket next to the panel. A plate cap connector is provided for making the plate connection. The C-201 power amplifier tube is inserted in the large socket near the center of the chassis. A plate connector must also be placed on the cap of the C-201 tube.

Coils

The type 10Z Radio Frequency Unit employs a negative resistance oscillator. The frequency of operation of this oscillator is controlled by a quartz crystal placed in the plate circuit of the oscillator tube. In this position, the crystal performs as a very high "Q" tank circuit. This feature together with the inherent stability of the negative resistance type oscillator, provides a high degree of frequency stability.

No oscillator coils are required in the negative resistance oscillator circuit employed in the 10Z R-F Unit.

The tank coils for the two frequency multipliers are of the plug-in type and are inserted in the two seven-prong sockets just to the rear of the CK70 tube. The First Buffer-Doubler coil is inserted in the first 7-prong socket from the rear of the chassis. The Second Buffer-Doubler coil is inserted in the second 7-prong socket from the rear of the chassis.

ADJUSTMENTS

The tank circuits for the intermediate and power amplifiers are mounted on a single plug-in unit which is plugged into the jack strip on the 10Z chassis.

Crystal

A crystal mounted in either a type 292 or a type 294 holder is recommended. The crystal holder is plugged into a 5-prong socket at the extreme left rear of the unit. The type 292 holder is of the micrometer adjustable airgap type with bimetal thermostatic temperature control. The type 294 holder is of the adjustable airgap type, but without the temperature control.

TUNING PROCEDURE - 10Z UNIT

(1) Place the STAND-BY and the PLATE switches in the OFF positions. Open the knife switch in the roof of the cabinet and place the GRID SW. in the EX. GRID position. Turn the PHONE-CW switch to the PHONE position.

(2) Place the FILAMENT switch in the ON position. Note whether the glass tubes are lighted to normal brilliancy. The modulator tubes will light only when the Phone-CW switch is placed in the Phone position. After checking the tubes, turn the Phone-CW switch to the CW position. Adjust the filament rheostat (the lower knob on the bottom panel) so that the filament voltmeter reads exactly 10 volts.

NOTE: Permit the equipment to operate in this manner, with filament power only turned on for a period of thirty minutes. This will permit the 866A rectifier tubes to attain proper operating conditions. Such procedure is necessary only when new rectifier tubes are placed in service.

(3) Turn on the STAND-BY switch and adjust the first buffer-doubler tank circuit for maximum grid current.

NOTE: The tuning controls for the two buffer-doubler stages are located on the top of the plug-in coil boxes.

(4) Adjust the second buffer-doubler tank circuit for maximum excitation grid current.

(5) Place the grid switch in the AMP. GRID position and turn ON the PLATE switch, first making certain the knife switch in the roof of the cabinet is open.

(6) Adjust the INT. AMPLIFIER tuning control for maximum amplifier grid current. A setting of this control which gives maximum grid current will also give minimum Int. Amp. Plate current. A grid current reading of 60 to 70 ma. should be obtained.

(7) Check neutralization by rotating the "POWER AMPLIFIER" tuning control to determine if a dip in grid current may be obtained. If an appreciable dip is obtained, it is an indication that the power amplifier is not completely neutralized. To neutralize the power amplifier, turn OFF the STAND-BY switch and adjust the neutralizing coil on the power amplifier plug-in coil unit backward or

forward a fraction of an inch. Then turn ON the Stand-By switch and note whether the amount of grid current dip has been increased or reduced. Repeat this process until the position of the neutralizing coil is found where the grid current dip is negligible. The neutralizing coil may be locked in place by tightening the locking device on the rear coil guide. Turn OFF the Stand-By switch.

(8) After neutralization has been checked, close the knife switch in the roof of the cabinet and turn ON the stand-by switch. Promptly adjust the POWER AMPLIFIER tuning control until the power amplifier plate current drops to a minimum value, which will be about 20 ma.

(9) Readjust the intermediate amplifier for maximum grid current and the power amplifier for minimum plate current.

The transmitter is now ready to be connected and tuned to the antenna. Turn to the section on antenna adjustment.

As there is no coil switching mechanism in the 10Z R-F Unit, the tuning procedure for operating the 6L6 buffer stages as doublers is identical to the procedure described above. It is necessary, however, to insert proper doubler coils.

ADJUSTMENTS

ANTENNA ADJUSTMENT

The antenna terminal on the 2ZB panel which is connected to the r-f ammeter should be connected to the antenna in series with the external loading inductance. The terminal fastened to the tuning condenser should be connected as directly as possible to ground. The antenna adjustments are made as follows:

(1) Turn the transmitter ON and adjust the power amplifier for minimum plate current. Lock the dial in place.

(2) Fasten the flexible antenna leads from the 2ZB Unit to the pickup coil on the power amplifier coil unit. Include only a few turns.

(3) Set the antenna tuning condenser at maximum capacity, turn on the transmitter and adjust the taps on the antenna loading inductance until maximum antenna current is obtained. Tune the antenna condenser until exact antenna resonance is obtained. This will be indicated by a further peak in antenna current. If the antenna condenser tunes at maximum capacity, increase the turns in the loading coil and retune.

(4) Note the plate current. If the value of amplifier plate current is other than the proper value for the rated output, adjust the turns in the pickup coil until the rated plate current is obtained when the antenna is tuned to exact resonance.

V GENERAL INSTRUCTIONS

PRECAUTIONARY MEASURES

Operation of this equipment involves the use of high voltages which are dangerous to life. No interlocks are provided on any of the equipment, consequently no adjustments should be attempted while the plate power is on. Under no circumstances should coils, tubes or other components be removed or inserted in the transmitter unless the stand-by switch is in the off position.

MODULATION

It is important that the modulator be operated only when the power amplifier is adjusted for the rated plate current as follows:

(1) 133 ma. for 50 watt operation

(2) 200 ma. for 100 watt operation

(3) 225 ma. for 175 watt operation

The modulator plate current for 100% modulation from a pure tone source such as a sine wave oscillator is approximately 180 ma. for 175 watt operation, 160 ma. for 100 watt operation and 110 ma. for 50 watt operation. These values, however, are not reached for 100% voice modulation because of the wave form error of the plate current instrument. For this reason, it is extremely bad practice to allow the plate current to greatly exceed 60% of these values, under operating conditions. Greater values of modulation plate current will result in overmodulation causing serious distortion and interference on adjacent channels. It is suggested that close talking to the microphone be employed and that the gain control be adjusted for proper modulation when the operator is speaking in a normal tone of voice. The advantage gained by adjusting the level for close talking is that the variation in level due to movement of the operator would be much less than if the gain control is increased so that the operator has to stay at a considerable distance from the microphone to obtain the desired level. Once the gain control has been adjusted for normal service, no further adjustment will be necessary.

GENERAL INSTRUCTIONS

The type C-120 modulator tubes used in the 30H Transmitter require no "C" bias. For this reason, no bias battery connections are provided.

The Phone-CW switch should never be changed from one position to another without first turning off the plate power switch.

RADIOTELEGRAPH

Radiotelegraph operation is effected by turning the Phone-CW switch to the CW position and placing a telegraph key in the jumper between terminals No. 9 and 13 on the power supply.

The transmitter should never be keyed for telegraph operation when the Phone-CW switch is in the Phone position.

TRANSMITTER PERFORMANCE

Each transmitter is individually tested for uniform frequency response and power output. If tubes in good condition are used, high quality performance should be expected over a period of years. All parts are manufactured with extreme care to avoid damaging effects of climate and ample margin of safety is used to assure reliable operation on the rated power. If low output or distortion occurs, the first step is to test all of the tubes in the transmitter. If the difficulty is not located as being due to a defective tube, it is suggested that the user communicate with the manufacturer.

GUARANTEE

Any parts which prove, after factory inspection, to be of defective manufacture within a year from date of purchase will be replaced without charge upon return to the factory, all transportation charges to be borne by the customer. Before returning any item believed to be defective a report must be submitted, giving detailed technical information as to the exact nature of the defect. Upon receipt of such a report a returned equipment tag will be sent which must accompany the shipment.

NO ACTION WILL BE TAKEN ON EQUIPMENT RETURNED WITHOUT OUR RETURN TAG.

V SUPPLEMENTARY DATA

DRAWINGS

PANEL ARRANGEMENT - - - - - - - - - - - - 4831-1
LAYOUT OF FLOOR MOUNTING- - - - - - - - 4823-1
CABLE DIAGRAM - - - - - - - - - - - - - 4528X-2
ANTENNA SCHEMATIC - - - - - - - - - - - ~~4829-1~~ 4830-1
10Z R-F UNIT SCHEMATIC- - - - - - - - - 4786X-2
9RB SCHEMATIC - - - - - - - - - - - - - 3033-1
415B SCHEMATIC- - - - - - - - - - - - - 4130X-2
COLOR CODE SHEET- - - - - - - - - - - - 2-26-37

ENGINEERING TEST DATA

(Attached)

STANDARD CABLE WIRE CODE

Ravine Wire (#18 - 3 Amp. Max.)

R - Red Ravine
B - Black Ravine
G - Green Ravine
L - Blue Ravine
Y - Yellow Ravine
W - White Ravine
N - Brown Ravine

Remote Wire (#16 - 6 Amp. Max.)

RR - Red Remote
RB - Black Remote
RG - Green Remote
RL - Blue Remote
RY - Yellow Remote

Chrysler Wire (#12 - 20 Amp. Max.)

CA - Brown with Black Tracer
CB - Green with White Tracer
CC - Red with White Tracer
CD - White with Black Tracer
CE - Yellow with Black Tracer
CF - Black with White Tracer

Miscellaneous

H - High Voltage Cable
P - 2 Conductor Shielded Audio Airview
S - Shielded Audio
F - Airspeed (#6 Stranded - 50 Amp. Max.)

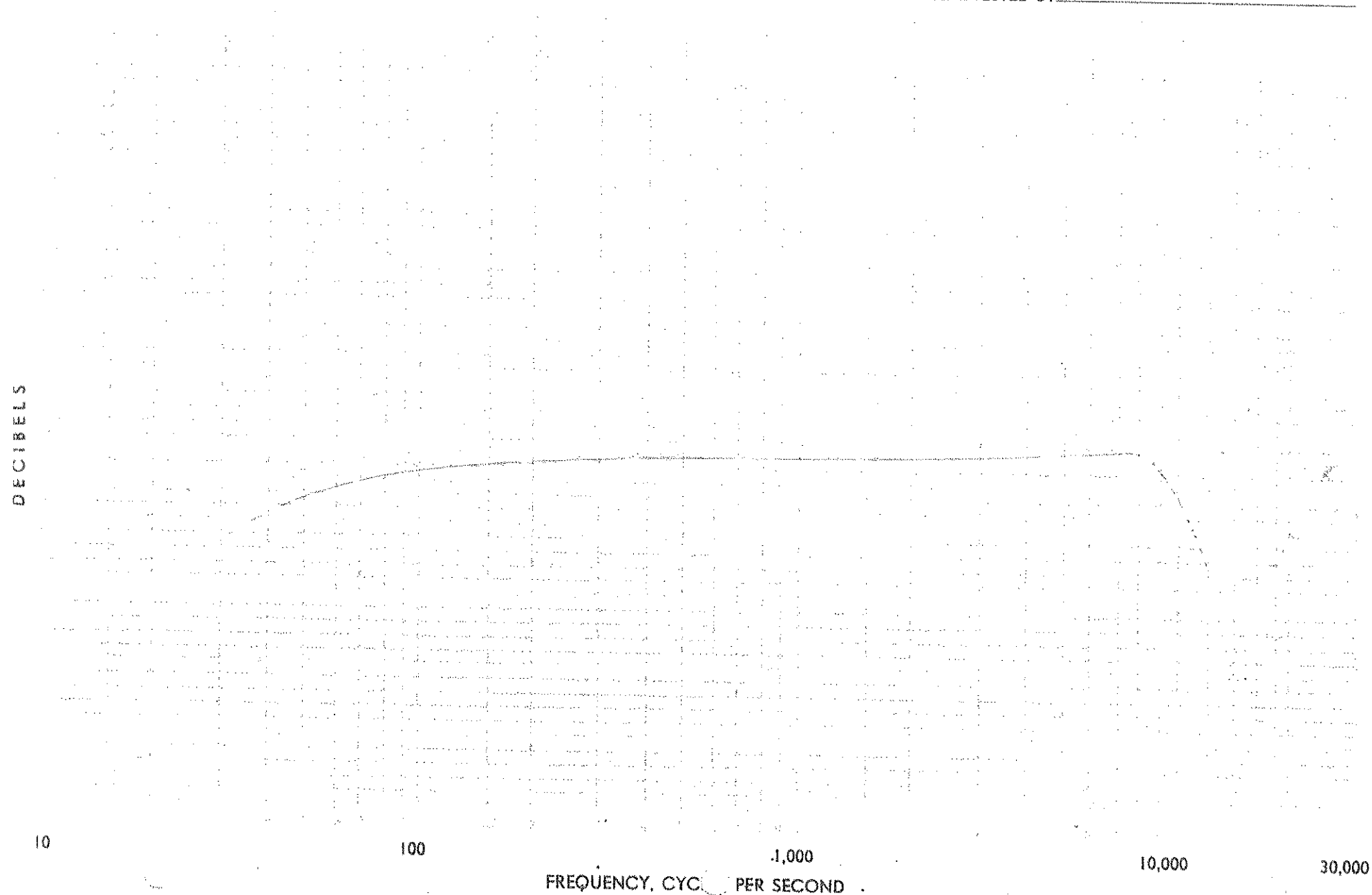
2-26-37

FREQUENCY RESPONSE CURVE SHEET

COLLINS RADIO COMPANY

CEDAR RAPIDS, IOWA

TYPE_____ SERIAL_____ DATE_____ TESTED BY_____



F.C.C. Form No. 452

UNITED STATES OF AMERICA
FEDERAL COMMUNICATIONS COMMISSION

File no. B2-RRY-87

Call letters W A A J

RADIO STATION LICENSE

RELAY BROADCAST (Class of station) — BROADCAST (Nature of service)

Portable-Mobile (Location of station)

Subject to the provisions of the Communications Act of 1934, subsequent acts, and treaties, and all regulations heretofore or hereafter made by this Commission, and further subject to the conditions and requirements set forth in this license, the LICENSEE, THE FORT INDUSTRY COMPANY

is hereby authorized to use and operate the radio transmitting apparatus, hereinafter described, for radio communication for the term beginning October 1 (3 a.m. Eastern Standard time), 1938, and ending October 1 (3 a.m. Eastern Standard time), 1939

1. (a) On the following frequencies (in kc):

1646, 2090, 2190 and 2830 kilocycles.

(b) Types of emission:

A-3

(c) The frequency must be maintained within the tolerance limits specified in column 7 of paragraph 5.

2. With an output power not in excess of 100 watts.
3. To communicate as a relay broadcast station in accordance with Rules 1000 and 1001 (b).

4. Hours of service: In accordance with Rule 1004.
5. Apparatus authorized to be used is described as follows:

1 MANUFACTURER	2 TYPE	3 SERIAL NO.	4 RATED POWER (WATTS)	5 EMISSION	6 FREQUENCY RANGE (KC)	7 TOLERANCE PER CENT
Collins	30H	3365-1	100	A-3		0.04

This license is issued on the licensee's representation that the statements contained in licensee's application are true and that the undertakings therein contained, so far as they are consistent herewith, will be carried out in good faith. The licensee shall, during the term of this license, render such service as will serve public interest, convenience, or necessity to the full extent of the privileges herein conferred.

This license shall not vest in the licensee any right to operate the station nor any right in the use of the frequencies designated in the license beyond the term hereof, nor in any other manner than authorized herein. Neither the license nor the right granted hereunder shall be assigned or otherwise transferred in violation of the Communications Act of 1934. This license is subject to the right of use or control by the Government of the United States conferred by section 606 of the Communications Act of 1934.

Dated this 20th day of September, 1938

BY DIRECTION OF THE FEDERAL COMMUNICATIONS COMMISSION,

T. J. Slowie
Secretary.

SMC

[SEAL]

U.S. GOVERNMENT PRINTING OFFICE 16—897

F.C.C. Form No. 452

UNITED STATES OF AMERICA
FEDERAL COMMUNICATIONS COMMISSION

File no. B2-RRE-204

Call letters W 8 X K D

RADIO STATION LICENSE

RELAY BROADCAST (EXPERIMENTAL) — (Class of station)

BROADCAST — (Nature of service)

Portable-Mobile — (Location of station)

Subject to the provisions of the Communications Act of 1934, subsequent acts, and treaties, and all regulations heretofore or hereafter made by this Commission, and further subject to the conditions and requirements set forth in this license, the LICENSEE, THE FORT INDUSTRY COMPANY

is hereby authorized to use and operate the radio transmitting apparatus, hereinafter described, for radio communication for the term beginning DECEMBER 19 (~~12 noon Eastern Standard time~~), 1938, and ending DECEMBER 1 (3 a.m. Eastern standard time), 1939

1. (a) On the following frequencies (in kc): 31100, 34600, 37600 and 40600 kilocycles.
This license is granted upon an experimental basis only, and upon the express condition that it is subject to change or cancellation by the Commission at any time, without advance notice or hearing, if in its discretion the need for such action arises. Nothing contained herein shall be construed as a finding by the Commission that the operation of this station upon the frequencies authorized is or will be in the public interest beyond the express terms hereof.

(b) Types of emission: A-3

(c) The frequency must be maintained within the tolerance limits specified in column 7 of paragraph 5.

2. With an output power not in excess of 50 watts.

3. To communicate as a relay broadcast station in accordance with Rules 1000, 1001 (b) and 1003 (e).

4. Hours of service: in accordance with Rules 983 and 1004.

5. Apparatus authorized to be used is described as follows:

1 MANUFACTURER	2 TYPE	3 SERIAL NO.	4 RATED POWER (WATTS)	5 EMISSION	6 FREQUENCY RANGE (KC)	7 TOLERANCE PER CENT
Collins	30 H	#3365-2	50	A-3		0.05

This license is issued on the licensee's representation that the statements contained in licensee's application are true and that the undertakings therein contained, so far as they are consistent herewith, will be carried out in good faith. The licensee shall, during the term of this license, render such service as will serve public interest, convenience, or necessity to the full extent of the privileges herein conferred.

This license shall not vest in the licensee any right to operate the station nor any right in the use of the frequencies designated in the license beyond the term hereof, nor in any other manner than authorized herein. Neither the license nor the right granted hereunder shall be assigned or otherwise transferred in violation of the Communications Act of 1934. This license is subject to the right of use or control by the Government of the United States conferred by section 606 of the Communications Act of 1934.

Dated this 19th day of December, 1938

BY DIRECTION OF THE FEDERAL COMMUNICATIONS COMMISSION,

T. J. Slowie
Secretary.

[SEAL]

WC

U.S. GOVERNMENT PRINTING OFFICE 16—397

F.C.C. Form No. 454

File No. B2-MPRY-10

Call Letters W A A J

UNITED STATES OF AMERICA

FEDERAL COMMUNICATIONS COMMISSION

RADIO STATION CONSTRUCTION PERMIT

(Other than Broadcasting)

AS MODIFIED - SEPTEMBER 7, 1937

Subject to the provisions of the Communications Act of 1934, subsequent acts, treaties, and all regulations heretofore or hereafter made thereunder, and further subject to the conditions set forth in this permit, authority is hereby granted to the grantee,

THE FORT INDUSTRY COMPANY

to construct a radio-transmitting station in accordance with the following specifications:

RELAY BROADCAST (Class of station) — BROADCAST (Nature of service)

1. Location of transmitters: State - Mobile -, County -

City or town -, Street and number -

Latitude -, Longitude -

2. Description of transmitting apparatus:

1 MANUFACTURER	2 TYPE	3 SERIAL NUMBER	4 RATED POWER (WATTS)	5 EMISSION	6 FREQUENCY RANGE (KC)	7 TOLERANCE PERCENT
Collins	30H	3365-1	100	A-3		0.04

3. Date of required commencement of construction By November 7, 1937

4. Date of required completion of construction May 7, 1938.

5. Upon the completion of the station, in accordance with the terms of this permit, the grantee shall, on the forms and in the manner prescribed from time to time by the Commission, make it appear to the satisfaction of the Commission that all the terms, conditions, and obligations set forth in the application and in this permit have been fully met, and shall apply for a radio-station license; upon such showing and application, and upon a finding by the Commission that since the granting of this permit no cause or circumstance has arisen which, in the judgment of the Commission, makes the operation of the station against the public interest, a radio-station license will be issued by the Commission for the operation of the station. The license will contain the conditions specified in section 309 of the Communications Act of 1934 and such other terms and conditions as the Commission may prescribe.

6. Equipment and service tests are authorized in accordance with rules 217 and 218 of the Rules and Regulations of the Commission.

16—198

Form No. 36-1

GENERAL TRANSMITTER TEST RECORD

Date Started ______ Date Completed ______ Engineer CML.
Type 30H Serial No. 1 Prod. Order No. 3365 Date ______
Customer Fort Industry Co. Inv. No. 546-B Date Shipped ______
Desc. of Spec. Equip. A Std. 244 2090 KC. - shockproof transmitter mtg. (102 RF Unit)

POWER CONSUMPTION

Freq. Cry. 2090 Op. 2090	Watts	V-A	P.F.	Watts (Phone)	V-A	P.F.	Watts	V-A	P.F.
Filaments and Exciter	[illegible]	[illegible]		183	291				
Full Carrier	[illegible]	[illegible]		500	872				
100% Modulation	[illegible]	[illegible]		830	627				

FREQUENCY RESPONSE - Taken at const. input level at 100% modulation at 1000 cy.

Frequency	DB	Mod. Current	Frequency	DB	Mod. Current	Frequency	DB	Mod. Current
1000	0	110	500	0	110	8000	+.7	130
30	+6.7	125	1000	0	110	10000	+2.2	100
60	+2.5	120	2000	+.1	110	12000	+7.3	60
120	+.1	110	3000	+.4	115	15000	+13	45
200	+.2	110	5000	+.5	120	18000		
300	+.5	110	6000	+.7	125	1000	0	110

FREQUENCY RESPONSE - Taken at const. input level at ___ % modulation at 1000 cy.

Frequency	DB	Mod. Current	Frequency	DB	Mod. Current	Frequency	DB	Mod. Current
1000			500			8000		
30			1000			10000		
60			2000			12000		
120			3000			15000		
200			5000			18000		
300			6000			1000		

Audio Level for 100% modulation -20DB
Distortion at 100% modulation RMS 6.9 % ARITH ___ %
Noise level on carrier: -54 Decibels below 100% modulation
Carrier shift at 100% modulation -2. %

CRYSTALS Serial 14950

Furnished By	Collins									
Frequency	2090									
Type Holder	294									
Crystal Heat	No									

UNIT RECORD

TYPE UNIT	SERIAL NO.	Date Pro. Test	Remarks	Test Engr.
102	3363-1			
30H	3364-1		750 volt 312 plate trans.	
4RD	2187-5			
415B	3156-2		Int. cond. added to Ct. 1	
			on choke in 7AB	

Form No. 36-1

Page 2.

TRANSMITTER METER READING RECORD

Frequency/Power	2090				
Oscillator	6100				
Fil. Voltage	6.5				
Plate Voltage	75				
Plate [illegible] Grid E.	135				
1st Doubler/Amp.	6L6				
Fil. Voltage	6.3				
Bias Voltage	-33				
Screen Voltage	270				
Plate Voltage	370				
Grid Current	0				
Plate Current	17 ma				
2nd Doubler/Amp.	6L6				
Fil. Voltage	6.3				
Bias Voltage	-36				
Screen Voltage	315				
Plate Voltage	370				
Grid Current	0				
Plate Current	18 ma				
3rd Doubler/Amp					
Fil. Voltage					
Bias Voltage					
Screen Voltage					
Plate Voltage					
Grid Current					
Plate Current					
4th/Int. Amp.	CH70				
Fil. Voltage	11.5				
Bias Voltage	-125				
Screen Voltage	+150				
Plate Voltage	750				
Grid Current	0.3 ma				
Plate Current	40 ma				
Final Amplifier	[illegible]				
Fil. Voltage	10				
Plate Voltage	730				
CW Bias Voltage	-100				
Ph. Bias Voltage	-100				
R.F. Grid Voltage					
C.W. Grid Current	40 ma				
Ph. Grid Current	40 ma				
C.W. Plate Current	133				
Ph. Plate Current	133				
Ant. or Line Current					
Load					
Power Output					
C. W.					
Ph.					

TRANSMITTER TUNING DATA

FREQUENCY/POWER	2090				
Oscillator	C100P				
Condenser	/				
Coil	/				
Dial Reading					
Dial Reading					
1st Doubler/Amp.	6L6				
Condenser	75 mm				
Coil A1F	2090				
Dial Reading	75°				
Dial Reading					
2nd Doubler/Amp.	6L6				
Condenser	75 mm				
Coil A2F	2090				
Dial Reading	80°				
Dial Reading					
3rd Doubler/Amp.	/				
Condenser					
Coil					
Dial Reading					
Dial Reading					
4th/Int. Amplifier	CK70				
Condenser	133 mm				
Coil	2090 RCF				
Dial Reading					
Dial Reading	63.3				
Final Amplifier	C201				
Condenser	223 mm				
Coil	2090 RCF				
~~Dial Reading~~					
Dial Reading	81.5				
Antenna Network					
Coil					
Padding Cond. Pos. / Value					
Load					
Dial Reading Condenser					
Inductor or Cond.					

WSPD
NEWSRADIO 1370

101.5 fm
"the RIVER"

FAX Transmission

Date:	7 May 96
To:	Mike Deranja KOGNM
Company:	
From:	Bill Rossin KEREP
Regarding:	Collins 30 H

92.5 KISS fm

Here is some of the doc's. I had the letter wrong - it is "H", not "V". It will take some dedication to restore it, but I believe all parts are there. CUL

73,

Bill rust on it.

Noble Broadcasting of Ohio
FAX: (419) 244-7631
Please call (419) 244-8321
if there are any problems
with this fax transmission.

FAX: (818) 348-2527

No. of pages: 10
(including this cover sheet)

I DESCRIPTION OF APPARATUS

GENERAL

The 30K Series Collins Transmitters are designed for mobile service where compact construction and the general specifications of 50 to 100 watts nominal output rating are indicated. Interchangeable radio frequency units permit ready adaptation to wide frequency limits.

The 19XH cabinet used in the 30K Series Transmitters is constructed of heavy gage sheet steel. Riser strips welded to each side form a substantial framework and provide a mounting support for the units. The cabinet is attractively finished with black crystalline baked enamel on the outside and aluminum lacquer on the inside. The front of the cabinet is drilled and tapped to take standard 19" relay rack panels. The external dimensions of the 30K Transmitter cabinet proper are 19 inches wide, 45 inches high and 15 inches deep. Welded steel brackets for shock-proof mounting are supplied which increase the over-all width to 25 inches. A door is provided on the rear of the cabinet allowing access to tubes, coils, etc. This door is provided with perforated grilles to furnish adequate ventilation.

The mechanical layout of the component parts of the transmitter is such that all coils, tubes, crystals and such parts that need adjustment, are readily accessible. The component units of the transmitter are each mounted on individual panels and chassis so that each unit may be removed separately from the cabinet.

RADIO FREQUENCY SECTION

1. The Type 10Z R-F Unit

The type 10Z R-F Unit is constructed on a standard rack width panel, having a vertical height of 8-3/4". It employs a C-100D oscillator, two 6L6 buffer or frequency multiplier stages, CK70 Intermediate Amplifier and C-201 Power Amplifier. The oscillator is crystal controlled. The crystal may be mounted in either the type 2?? or ??? crystal holders. The 6L6 stages operate either as straight amplifier-buffer stages or as frequency multiplier stages, depending upon the required output frequency. The CK70 operates as a driver to furnish excitation to the C-201 power amplifier output stage. Tuning controls for the two 6L6 stages are located on the plug-in coil units. These controls may be set and

need not be changed when shifting frequency. All other tuning controls are on the front panel and dial locks are supplied as standard equipment. The output circuit of the power amplifier includes an output coupling coil which may be tapped to match the output of the transmitter to any non-reactive transmission line having an impedance between 70 and 600 ohms, depending upon the operating frequency. An antenna coupling network may be used if desired. The 10Z R-F Unit may be used on any frequency between 1500 and 10,000 kc. Frequency may be changed rapidly by means of plug-in coils.

The nominal plate input to the C-801 Power Amplifier is 200 ma. at 1250 volts, equivalent to 250 watts. An efficiency of 70% is realized, giving an output of 175 watts. The plate input may be reduced to any required value to limit the output of the transmitter to the power for which an installation is licensed. 52.5 eff 50 watt 750 V on P

2. The Type 10X R-F Unit

For certain services, it is desirable to operate the 20H Series Transmitters on ultra-high frequencies in which cases the type 10X R-F Unit is supplied. This unit requires the same panel space as the 10Z and is interchangeable with the 10Z, but it employs a special tube and circuit arrangement adapted to the higher frequencies.

The tube complement of the 10X Unit is as follows:

1 - C-1000 Crystal Oscillator
1 - 6L6 First Buffer-Doubler
1 - 6L6 Second Buffer-Doubler
1 - 6L6 Third Buffer-Doubler
2 - 6L6 Fourth Buffer-Doubler
2 - C-101 Power Amplifiers

The frequency range of the 10X R-F Unit is 20,000 to 60,000 kilocycles. The nominal plate input to the C-101 tubes in the power amplifier is 250 watts, providing an output of 165 watts at the lower radio frequency limit and 125 watts at the highest radio frequency. The output circuit of the type 10X R-F Unit is similar to that of the 10Z and may be used with non-reactive high frequency lines, or it may be supplied with a matching network. Frequency change may be effected by means of

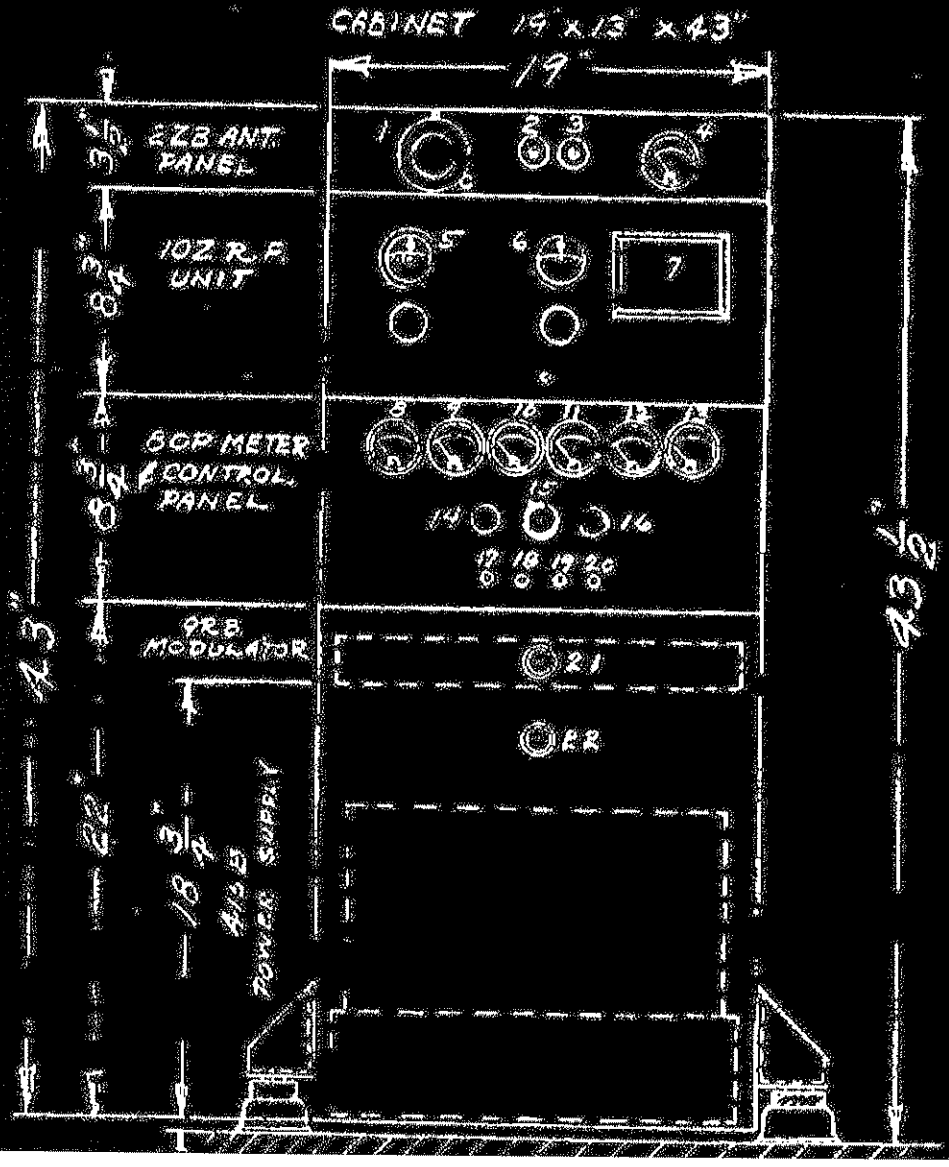
INSTRUCTIONS

COLLINS 90H TRANSMITTER

Serial No. 9564-1

TABLE OF CONTENTS

MAT.	GRADE.	TRACED BY.	DRAWN BY. M.S.S.	COLLINS RADIO COMPANY
FINISH.		DATE.	CHECKED BY. DATE 5-10-37	CEDAR RAPIDS, IOWA
UNIT. 30 M LOW FREQUENCY PANEL ARRANGEMENT			SCALE	DRAWING NO. 4831-1



1. ANTENNA TUNING
2. GROUND TERMINAL
3. ANTENNA TERMINAL
4. ANTENNA CURRENT
5. POWER AMP. TUNING
6. INT. AMP. TUNING
7. TUNING CHART
8. POWER AMP PLATE TUNING
9. GRID CURRENT
10. INT. AMP. PLATE CURRENT
11. MODULATOR PLATE CURRENT
12. FILAMENT VOLTAGE
13. PLATE VOLTAGE
14. FIL. POWER PILOT
15. PHONE-CW SWITCH
16. PLATE POWER PILOT
17. FIL. POWER SWITCH
18. GRID METER SWITCH
19. STAND BY SWITCH
20. PLATE POWER SWITCH
21. GAIN CONTROL
22. FIL. VOLTAGE ADJUSTMENT

DESCRIPTION OF APPARATUS

filament circuit. All terminals are brought out at the rear of the chassis and connected with the inter-unit cable.

In instances where the output of the transmitter must be limited, different high voltage plate transformers are used so that the high voltage supply may be set at 1250 volts, 1000 volts or 750 volts. In general, the 1250 volt supply is used for 175 watt operation, the 1000 volt supply for 100 watt operation and 750 volts for 50 watt operation.

CONTROL CIRCUIT

The power controls for the 50H Series Transmitters have been very carefully worked out to afford greatest convenience in operation. Three switches control the filament power, 400 volt plate power and the high voltage plate power. The switches are connected in such a way that the plate power cannot be turned on until after the filament circuit is closed. The 400 volt plate power switch serves as a "stand-by" control to disable the transmitter during reception. Operation of this switch disconnects both rectifiers so that there is no possibility of interference from mercury rectifier tubes during periods of reception. The power switches are located on the front panel of the transmitter, and when the transmitter is located near the operating position, no external switch connections are needed. Application of filament and plate voltage is indicated by two large pilot lights. When a quick change from telegraph to telephone is desired, a further convenience in operation is afforded by the "PHONE-CW" switch which is located on the transmitter panel. This switch disconnects the modulator tubes and shorts the modulation transformer in the "CW" position.

ANTENNA TERMINATION

As the 50H Series transmitters are designed for installation in automobiles and similar modes of conveyance, the antenna systems are necessarily of a special nature and vary considerably over the frequency range.

The antenna system recommended for the ultra-high frequency model 50H Transmitter is a grounded quarter wave vertical radiator shunt-fed by a single wire feeder connected to the transmitter

-6-

Form No. 35-1

Page 1

GENERAL TRANSMITTER TEST RECORD

Date Started ______ Date Completed ______ Engineer *EMK*

Type *30H* Serial No. *1* Prod. Order No. *3363* Date ______

Customer *[illegible] Co.* Inv. No. *5646-B* Date Shipped ______

Desc. of Spec. Equip. *[illegible] 8090 KC. – [illegible] transmitter [illegible] (152 RF Unit)*

POWER CONSUMPTION

Freq. Cry. *8090* Op *8090*	Watts	V-A	P.F.	Watts (*Phone*)	V-A	P.F.	Watts	V-A	P.F.
Filaments and Exciter	[illegible]	[illegible]		*163*	*201*				
Full Carrier	[illegible]	[illegible]		*500*	*676*				
100% Modulation	[illegible]	[illegible]		*830*	*827*				

FREQUENCY RESPONSE - Taken at const. input level at *100*% modulation at 1000 cy.

Frequency	DB	Mod. Current	Frequency	DB	Mod. Current	Frequency	DB	Mod. Current
1000	*0*	*110*	500	*0*	*110*	8000	*+.7*	*120*
30	*-6.7*	*125*	1000	*0*	*110*	10000	[illegible]	[illegible]
60	*-2.5*	*120*	2000	*+.1*	*110*	12000	*-7.5*	*60*
120	*-1.*	*110*	3000	*+.4*	*115*	15000	*-12*	*45*
200	*-.7*	*110*	5000	*+.5*	*120*	18000		
300	*-.5*	*110*	6000	*+.7*	*125*	1000	*0*	*110*

FREQUENCY RESPONSE - Taken at const. input level at ___% modulation at 1000 cy.

Frequency	DB	Mod. Current	Frequency	DB	Mod. Current	Frequency	DB	Mod. Current
1000			500			8000		
30			1000			10000		
60			2000			12000		
120			3000			15000		
200			5000			18000		
300			6000			1000		

Audio Level for 100% modulation *-20 DB*

Distortion at *100*% modulation RMS *6.9* [illegible] ARITH ______ %

Noise level on carrier: *-54* Decibels below 100% modulation

Carrier shift at 100% modulation *-2.%*

CRYSTALS *serial. 14950*

Furnished By	*Collins*								
Frequency	*8090*								
Type Holder	*E9A*								
Crystal Heat	*No*								

UNIT RECORD

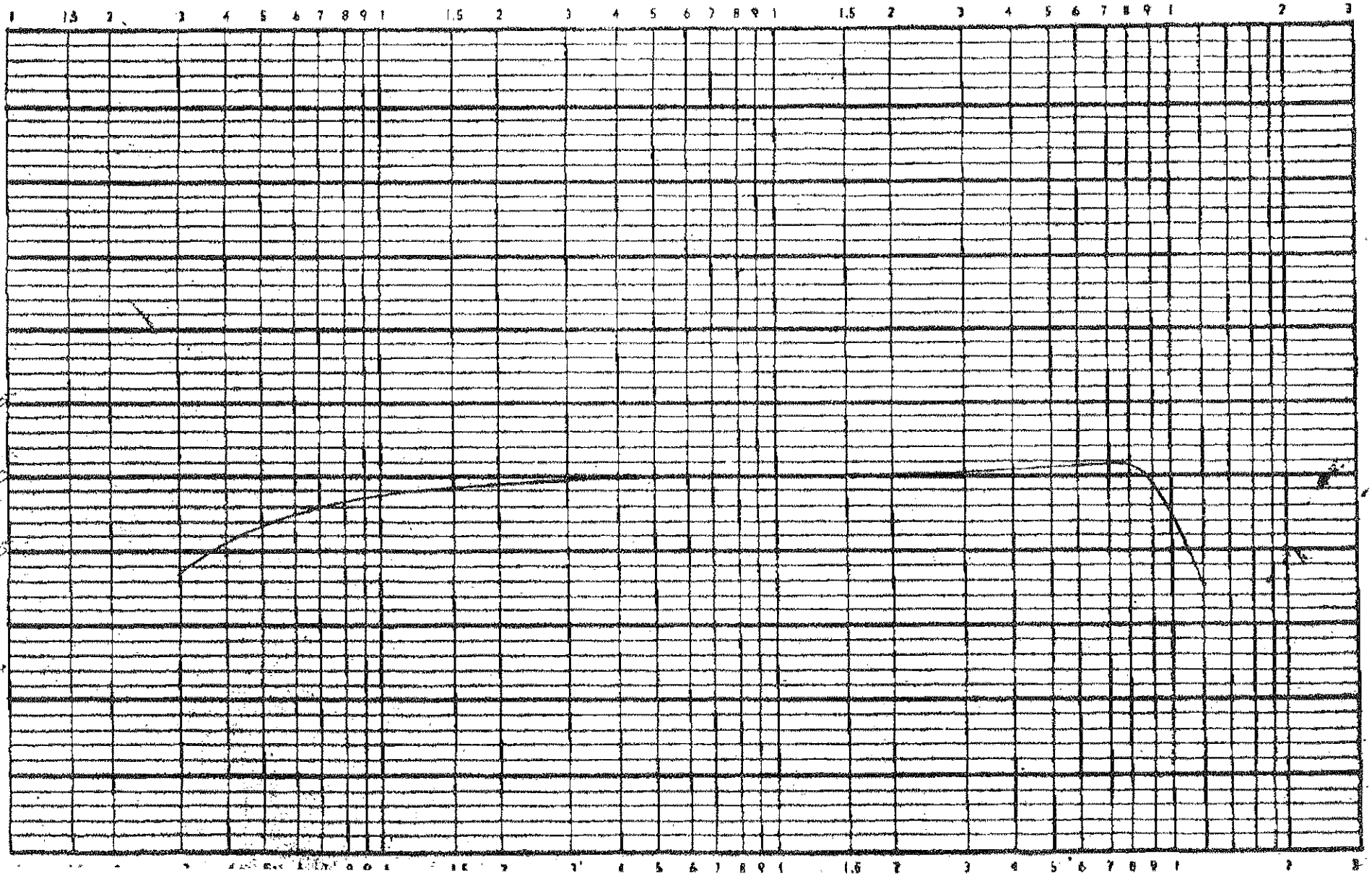
TYPE UNIT	SERIAL NO.	Date Pro. Test	Remarks	
M2	*3363-9*			
30H	*3364-3*		*750 volt 912 plate trans.*	
9R6	*3187-5*			
415B	*3136-4*		*2 uf. cond. added to [illegible]*	
			on choke in 9RB	

FREQUENCY RESPONSE CURVE SHEET

COLLINS RADIO COMPANY

CEDAR RAPIDS, IOWA

TYPE 30H SERIAL 3303-1 DATE 5-10-37 TESTED BY



DRAWING

Schematic 1882C

11-22-39

2901

F.C.C. Form No. 454 — File No. B2-MPRE-13

Call Letters W 8 X K D

UNITED STATES OF AMERICA

FEDERAL COMMUNICATIONS COMMISSION

RADIO STATION CONSTRUCTION PERMIT

(Other than Broadcasting)

AS MODIFIED - SEPTEMBER 7, 1937

Subject to the provisions of the Communications Act of 1934, subsequent acts, treaties, and all regulations heretofore or hereafter made thereunder, and further subject to the conditions set forth in this permit, authority is hereby granted to the grantee,

THE FORT INDUSTRY COMPANY

to construct a radio-transmitting station in accordance with the following specifications:

RELAY BROADCAST (Experimental) (Class of station) — BROADCAST (Nature of service)

1. Location of transmitters: State - Mobile -, County -

City or town -, Street and number -

Latitude -, Longitude -

2. Description of transmitting apparatus:

1 MANUFACTURER	2 TYPE	3 SERIAL NUMBER	4 RATED POWER (WATTS)	5 EMISSION	6 FREQUENCY RANGE (KC)	7 TOLERANCE PERCENT
Collins	30 H	#3365-2	50	A-3		0.05

3. Date of required commencement of construction By November 7, 1937

4. Date of required completion of construction May 7, 1938.

5. Upon the completion of the station, in accordance with the terms of this permit, the grantee shall, on the forms and in the manner prescribed from time to time by the Commission, make it appear to the satisfaction of the Commission that all the terms, conditions, and obligations set forth in the application and in this permit have been fully met, and shall apply for a radio-station license; upon such showing and application, and upon a finding by the Commission that since the granting of this permit no cause or circumstance has arisen which, in the judgment of the Commission, makes the operation of the station against the public interest, a radio-station license will be issued by the Commission for the operation of the station. The license will contain the conditions specified in section 309 of the Communications Act of 1934 and such other terms and conditions as the Commission may prescribe.

6. Equipment and service tests are authorized in accordance with rules 217 and 218 of the Rules and Regulations of the Commission.

16—198

7. This permit shall not vest in the grantee any right to operate the station, nor any right to a license authorizing the use of the particular frequency or the amount of power, or the time of operation, hereinafter specified. The Commission, in issuing this permit, reserves the right to assign whatever frequency, power, or time of operation it deems best calculated to serve public interest, convenience, or necessity. Subject to the exercise of said reserved right, the terms of said license will include the following:

Frequencies (kc.)

31100, 34600, 37600 and 40600 kilocycles, on an experimental basis, subject to change without prior notice or hearing.

Power 50 watts.

Emission A-3

Time of operation In accordance with Rules 983 and 1004.

To communicate ~~with~~ In accordance with Rules 1000, 1001 (b) and 1003 (e).

8. This permit shall become automatically forfeited if the said station is not ready for operation within the time above specified, unless prior to the expiration of said period the Commission shall have granted an extension of time. Upon proper showing, however, made to it by the grantee, after the expiration of such period, the Commission will grant an extension if it finds that the grantee was prevented from completing the construction of said station by causes not under grantee's control.

9. Neither this permit nor the right granted herein shall be assigned or otherwise transferred to any person, firm, company, or corporation without the written consent of the Commission.

Dated this 7th day of September, 19 37.

[SEAL] By direction of the Federal Communications Commission,

fg

Secretary.

U.S. GOVERNMENT PRINTING OFFICE 16—198

7. This permit shall not vest in the grantee any right to operate the station, nor any right to a license authorizing the use of the particular frequency or the amount of power, or the time of operation, hereinafter specified. The Commission, in issuing this permit, reserves the right to assign whatever frequency, power, or time of operation it deems best calculated to serve public interest, convenience, or necessity. Subject to the exercise of said reserved right, the terms of said license will include the following:

Frequencies (kc.) 1646, 2090, 2190 and 2830 kilocycles.

Power 100 watts.

Emission A-3

Time of operation In accordance with Rule 1004.

To communicate with In accordance with Rules 1000 and 1001 (b).

8. This permit shall become automatically forfeited if the said station is not ready for operation within the time above specified, unless prior to the expiration of said period the Commission shall have granted an extension of time. Upon proper showing, however, made to it by the grantee, after the expiration of such period, the Commission will grant an extension if it finds that the grantee was prevented from completing the construction of said station by causes not under grantee's control.

9. Neither this permit nor the right granted herein shall be assigned or otherwise transferred to any person, firm, company, or corporation without the written consent of the Commission.

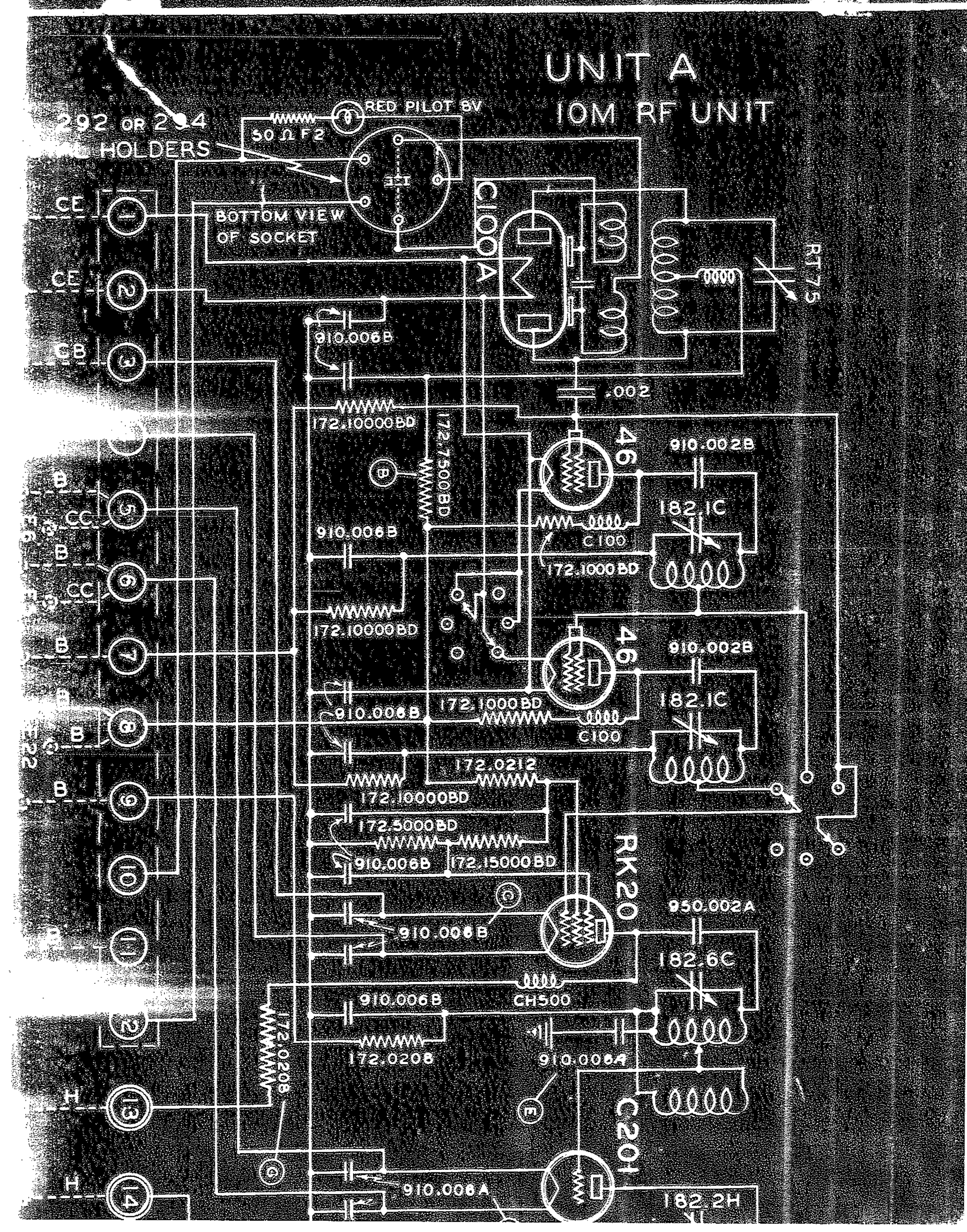
Dated this 7th day of September 19 37

[SEAL] By direction of the Federal Communications Commission,

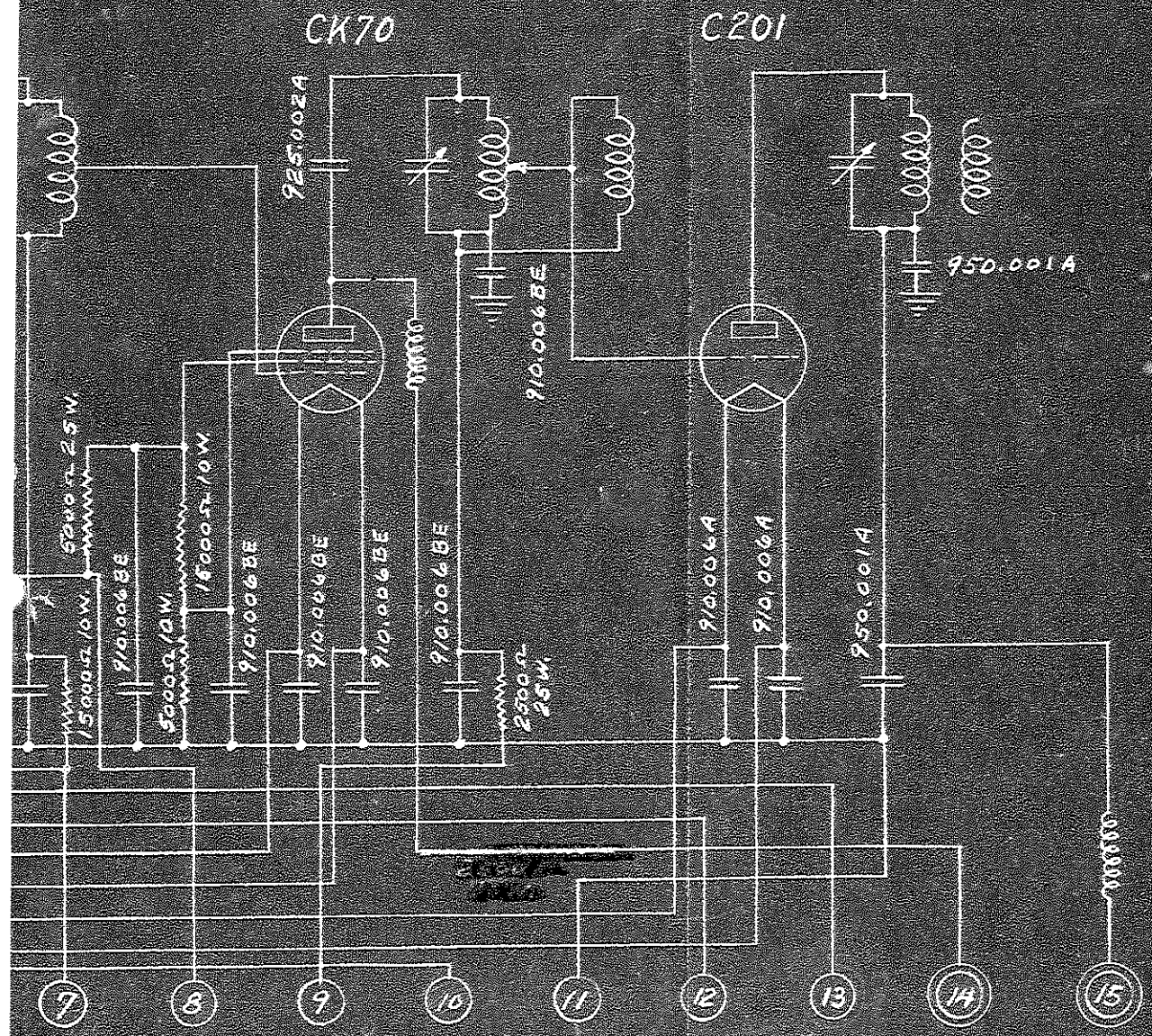
fg

Secretary.

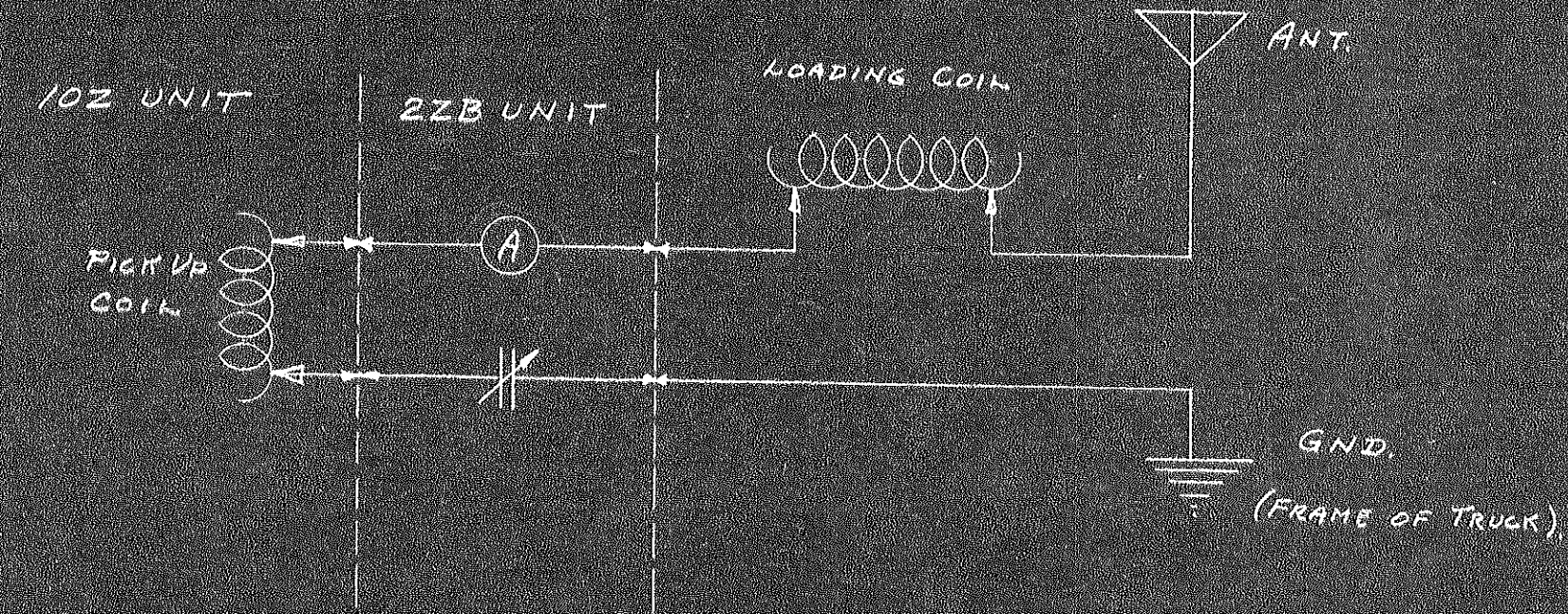
U. S. GOVERNMENT PRINTING OFFICE 16—198


UNIT A
10M RF UNIT
292 OR 294
HOLDERS
RED PILOT 6V
50 Ω F2
BOTTOM VIEW
OF SOCKET
C100A
RT75
CE
CE
CB
B
CC
B
CC
B
B
B
B
H
H
910.006B
910.006B
172.10000BD
172.7500BD
.002
46
910.002B
182.1C
C100
172.1000BD
910.006B
172.10000BD
46
910.002B
910.006B
172.1000BD
182.1C
C100
172.0212
172.10000BD
172.5000BD
910.006B
172.15000BD
RK20
950.002A
910.006B
182.6C
CH500
910.006B
172.0208
172.0208
910.006A
C201
910.006A
182.2H

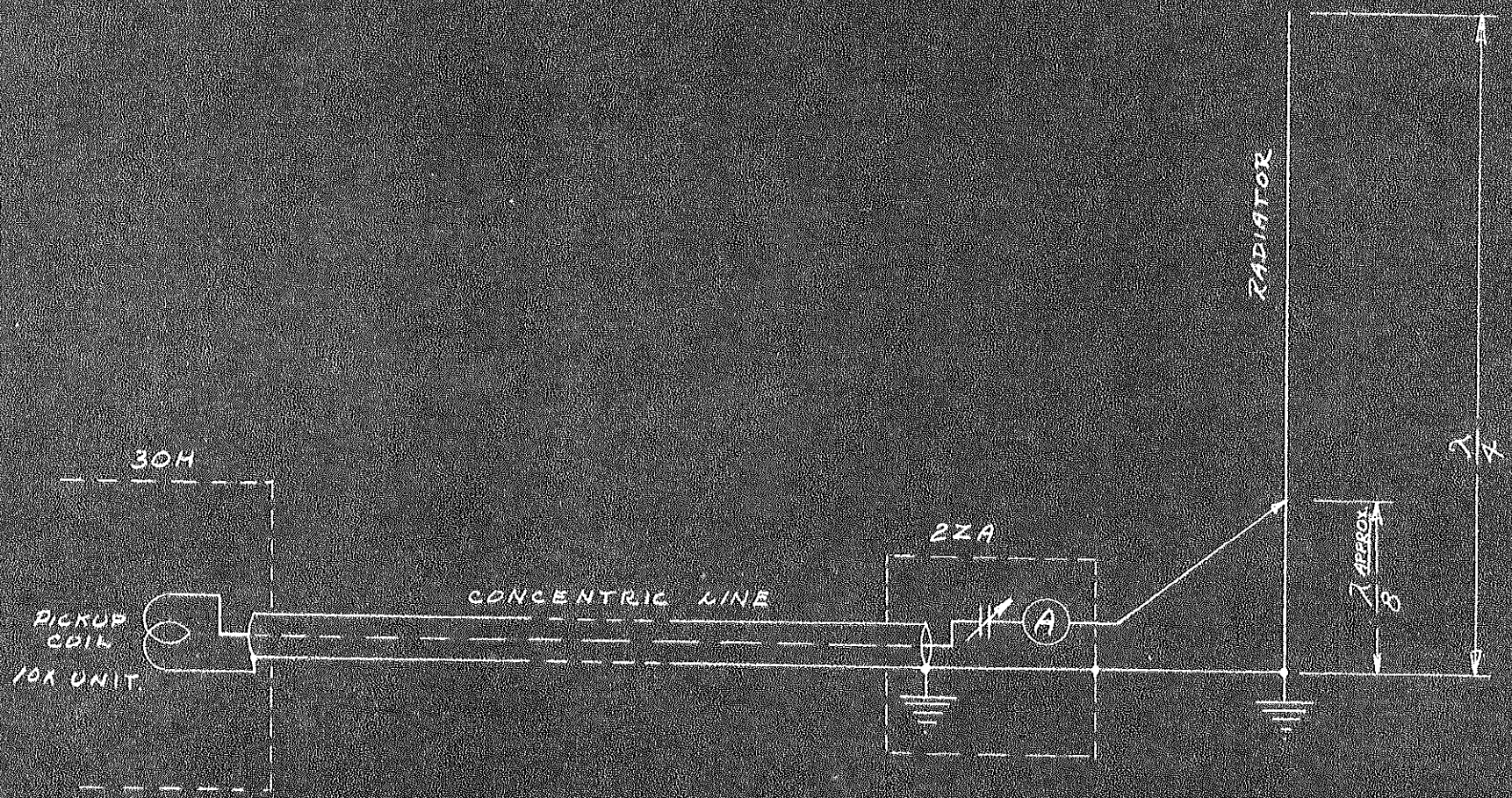
GRADE:	TRACED BY:	DRAWN BY: M.S.S.	COLLINS RADIO COMPANY
	DATE:	DATE: 4-26-37	CEDAR RAPIDS, IOWA
EMATIC.			DRAWING NO. #786x-2



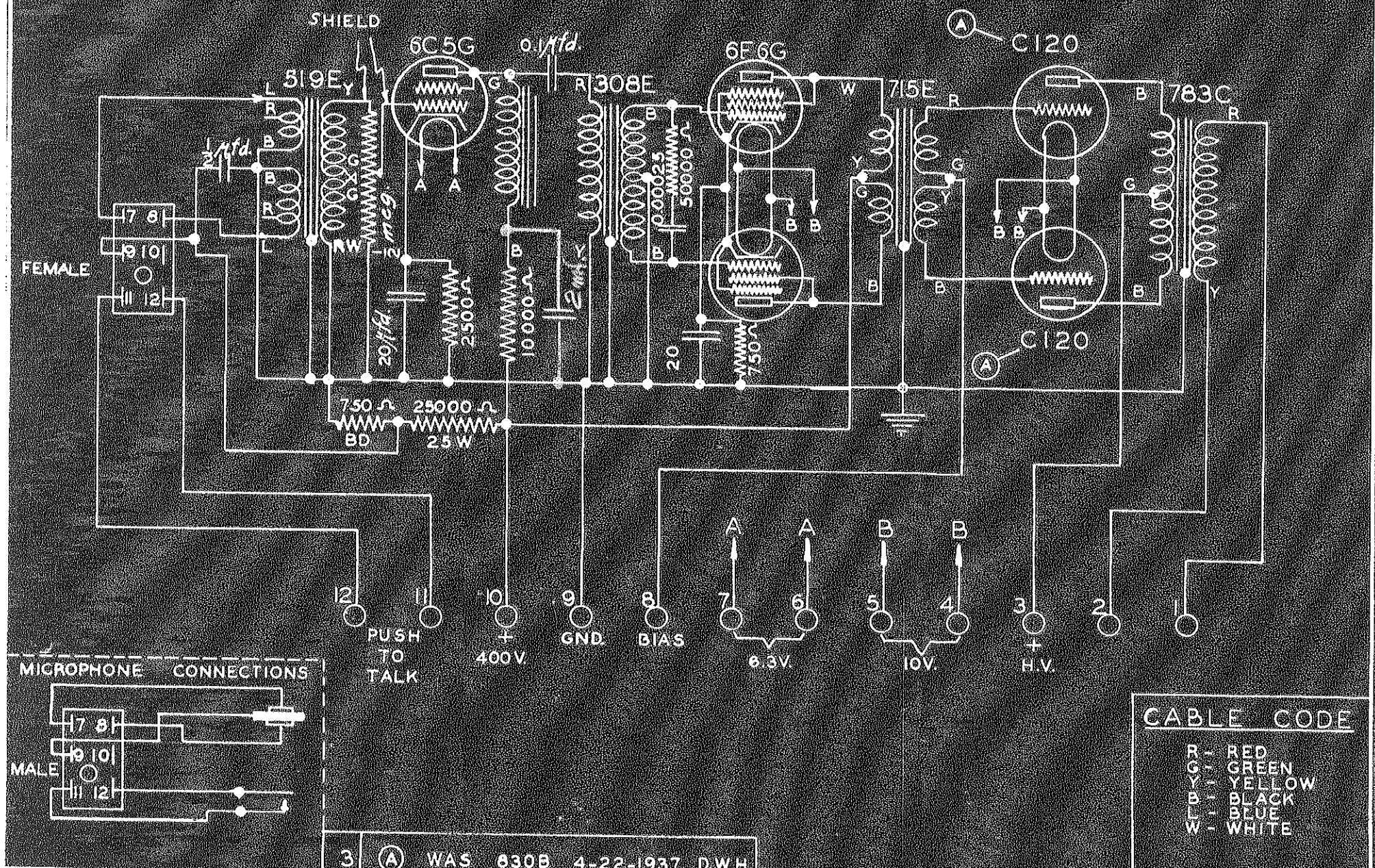
MAT.:	GRADE:	TRACED BY:	DRAWN BY: M.S.S CHECKED BY:	COLLINS RADIO COMPANY CEDAR RAPIDS, IOWA
FINISH:		DATE:	DATE 5-10-37	
UNIT: 30H LOW FREQUENCY ANTENNA			SCALE	DRAWING NO. 4830-1



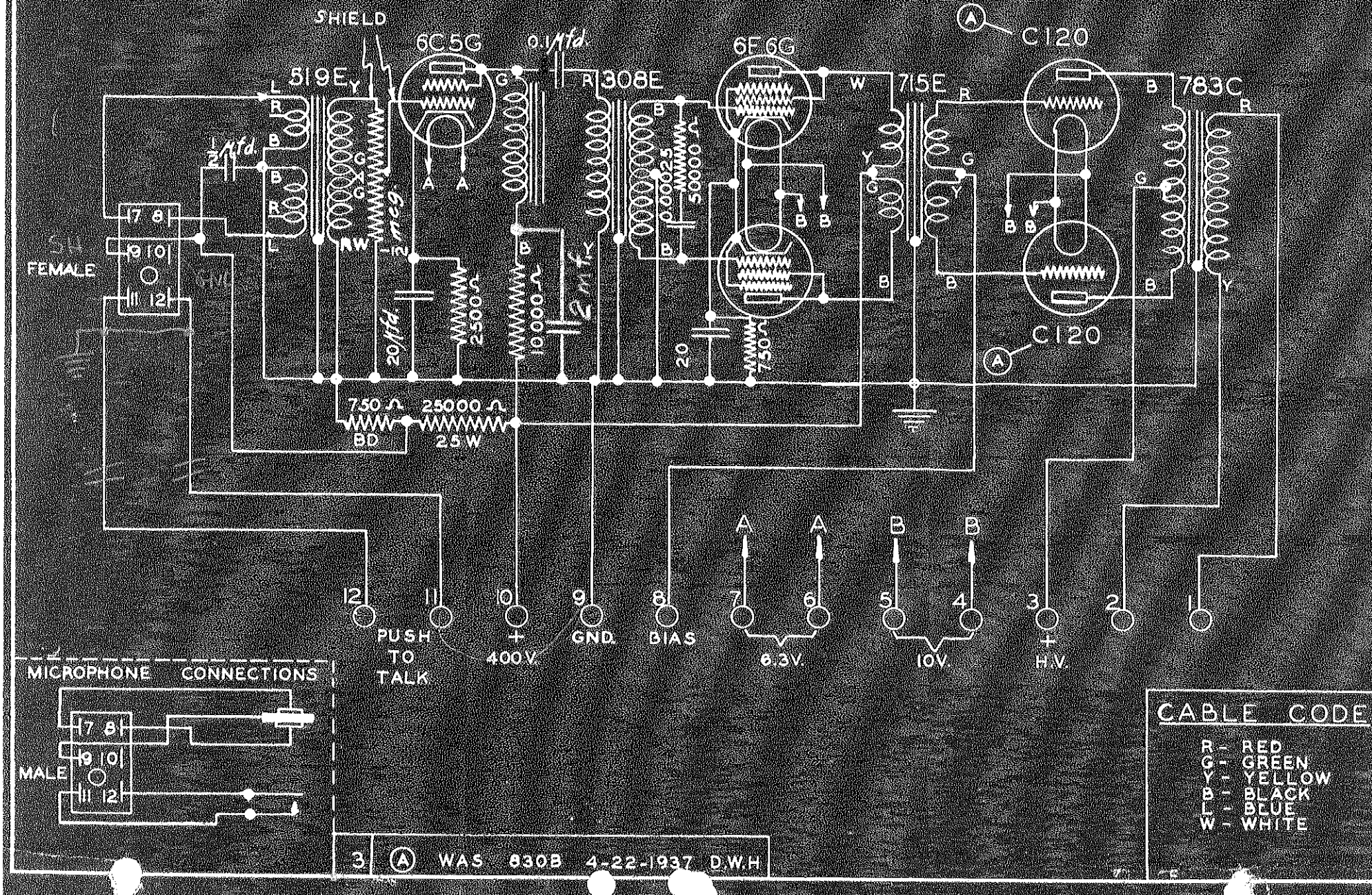
MAT.:	GRADE:	TRACED BY:	DRAWN BY: MSS	COLLINS RADIO COMPANY
FINISH:		DATE:	CHECKED BY:	CEDAR RAPIDS, IOWA
UNIT: 30M ULTRA-HIGH FREQUENCY ANTENNA			DATE: 5-10-37	
			SCALE	DRAWING NO. 4829-1



MAT:	GRADE:	TRACED BY: M.R.W.	DRAWN BY: F.D.	COLLINS RADIO COMPANY
FINISH:		DATE: 2-23-37	DATE: 3-24-36	CEDAR RAPIDS, IOWA
UNIT: SCHEMATIC: 9RB MODULATOR				DRAWING NO. 3033-3



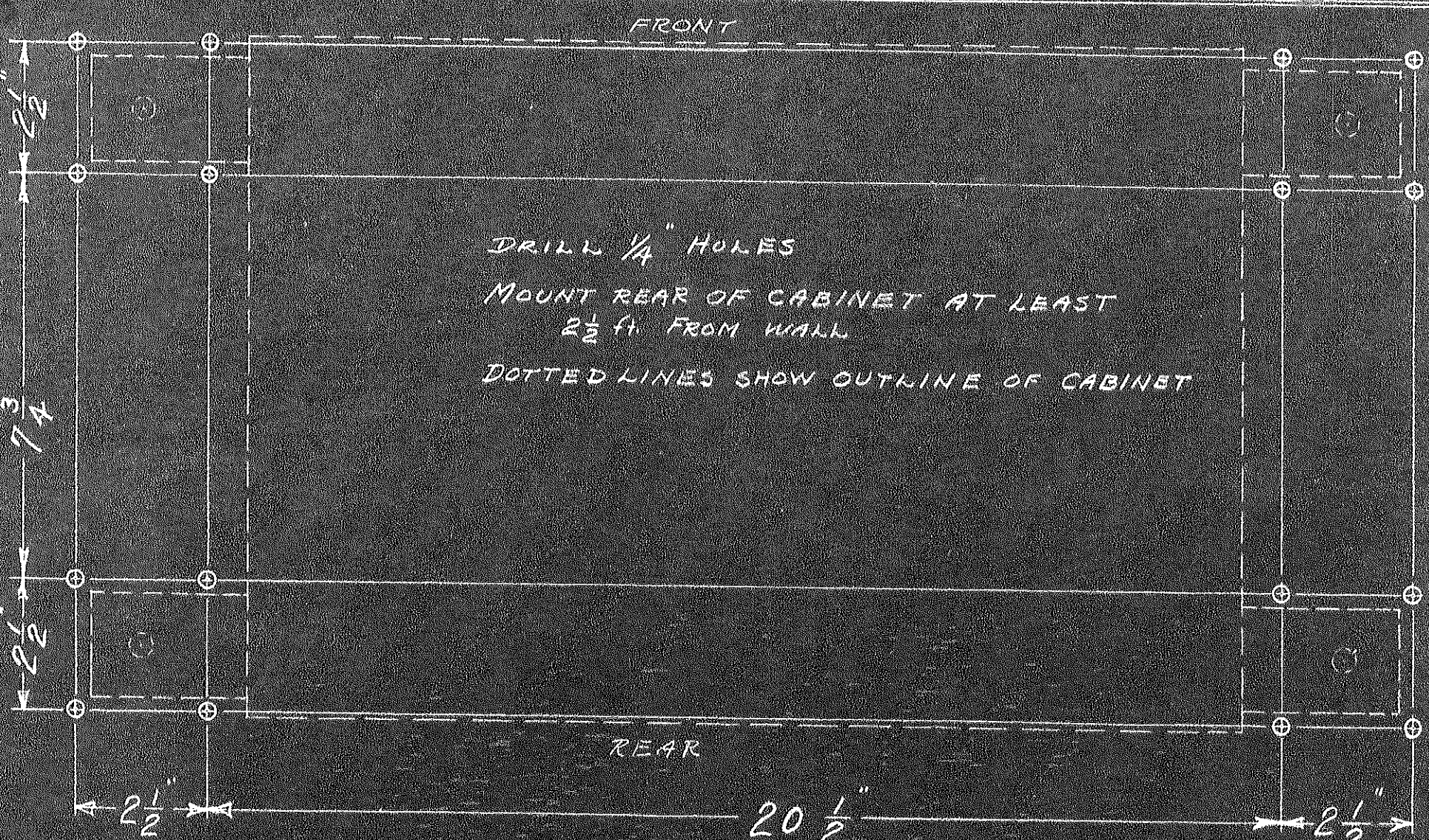
MAT.:	GRADE:	TRACED BY: M.R.W.	DRAWN BY: F.D.	COLLINS RADIO COMPANY
FINISH:		DATE: 2-23-37	DATE: 3-24-36	CEDAR RAPIDS, IOWA
UNIT: SCHEMATIC: 9RB MODULATOR				DRAWING NO. 3033-3



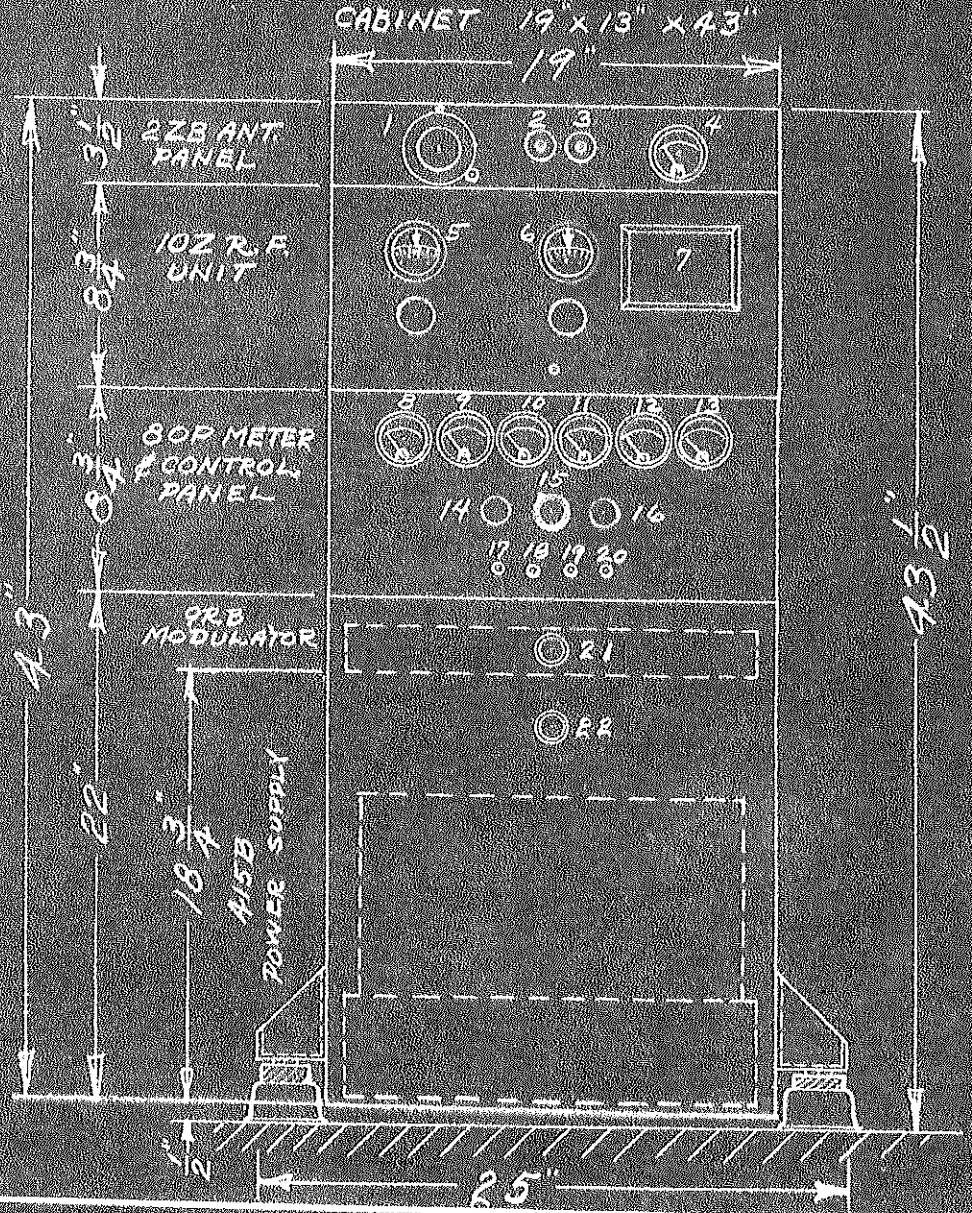
CABLE CODE

R - RED
G - GREEN
Y - YELLOW
B - BLACK
BL - BLUE
W - WHITE

MAT:	GRADE:	TRACED BY:	DRAWN BY: MSS	COLLINS RADIO COMPANY
FINISH:		DATE:	CHECKED BY: DATE: 6-10-37	CEDAR RAPIDS, IOWA
UNIT: LAYOUT OF SHOCKPROOF MOUNTING HOLES, 50H TRANSMITTER			SCALE 3/8 = 1"	DRAWING NO. 4823-1



MAT.:	GRADE:	TRACED BY:	DRAWN BY: M.S.S.	COLLINS RADIO COMPANY
FINISH:			CHECKED BY:	CEDAR RAPIDS, IOWA
		DATE:	DATE: 5-10-37	
UNIT: 30H LOW FREQUENCY PANEL ARRANGEMENT			SCALE	DRAWING NO. 4831-1

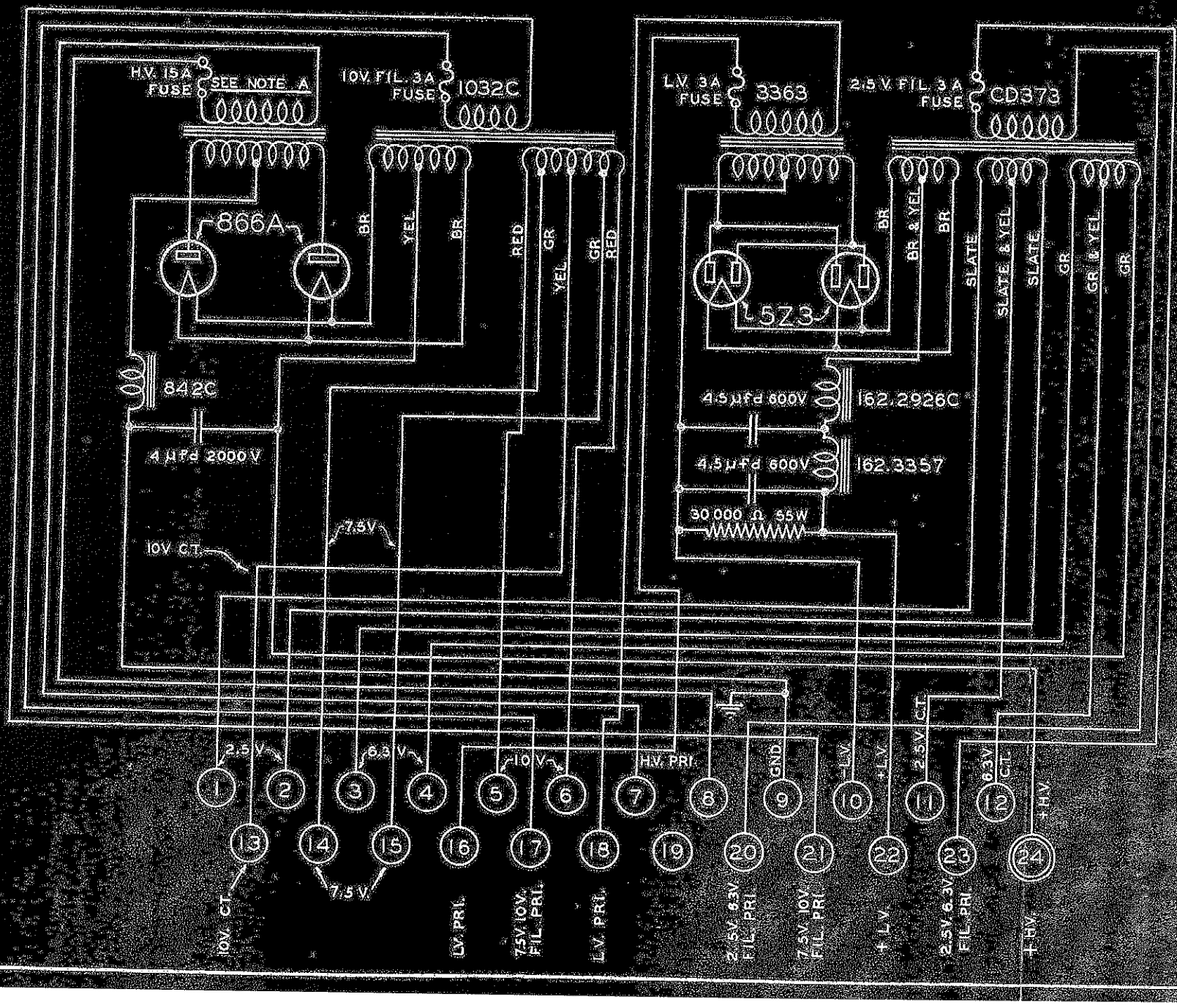


1. ANTENNA TUNING
2. GROUND TERMINAL
3. ANTENNA TERMINAL
4. ANTENNA CURRENT
5. POWER AMP TUNING
6. INT. AMP. TUNING
7. TUNING CHART
8. POWER AMP PLATE TUNING
9. GRID CURRENT
10. INT. AMP PLATE CURRENT
11. MODULATOR PLATE CURRENT
12. FILAMENT VOLTAGE
13. PLATE VOLTAGE
14. FIL. POWER PILOT
15. PHONE-CW SWITCH
16. PLATE POWER PILOT
17. FIL. POWER SWITCH
18. GRID METER SWITCH
19. STAND BY SWITCH
20. PLATE POWER SWITCH
21. GAIN CONTROL
22. FIL. VOLTAGE ADJUSTMENT

MAT.:	GRADE:	TRACED BY: R.G.A.	DRAWN BY: M.S.S.	COLLINS RADIO COM
FINISH:		DATE: 1-21-1937	DATE: 12-2-1936	CEDAR RAPIDS, IOW

UNIT: 415B POWER SUPPLY SCHEMATIC — DRAWING NO. 413

SUPERSEDES 2635X-4

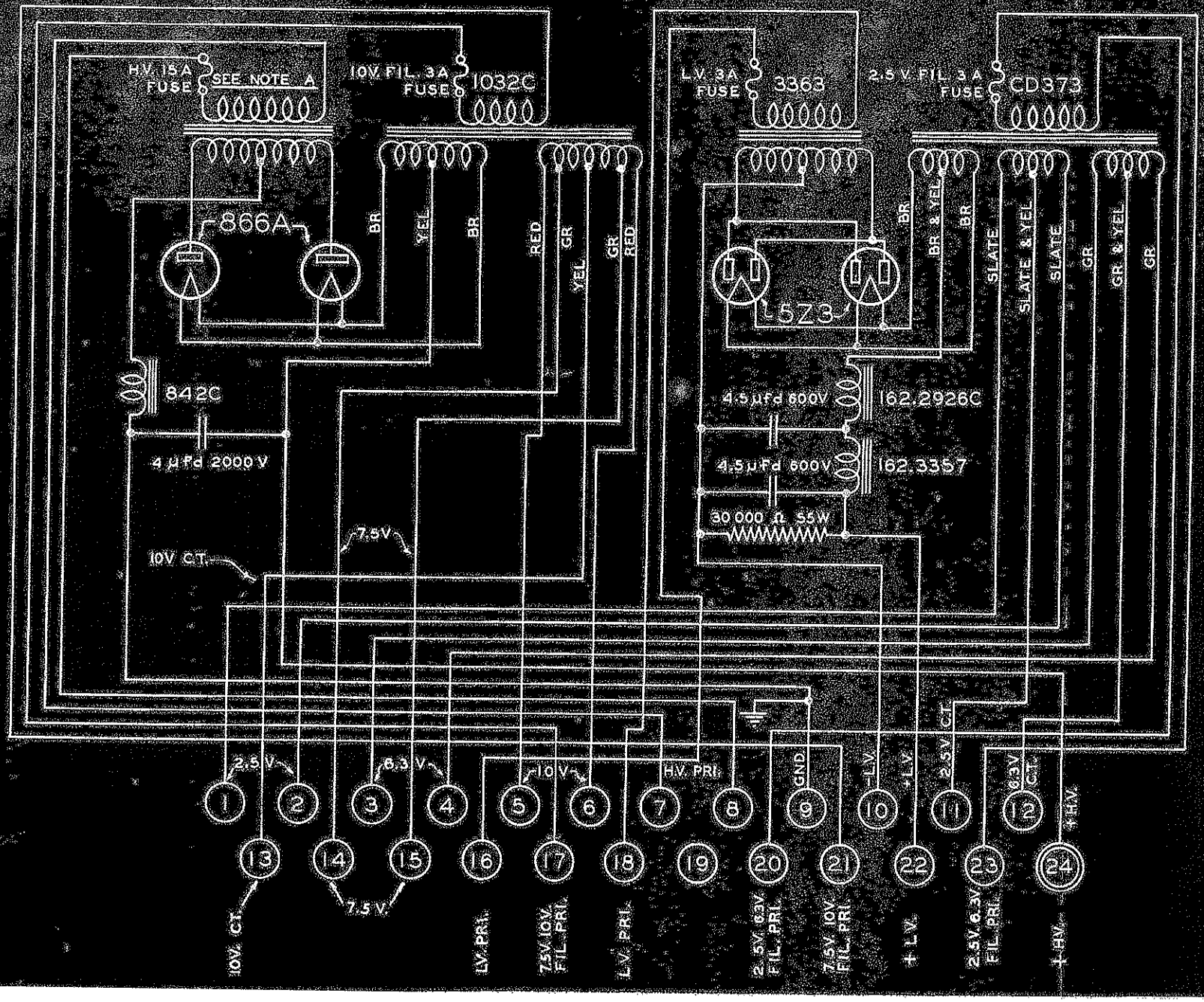


NOTE A

415B-1	CD273	TRANSFORM
415B-2	914	"
415B-3	912	"

MAT.:	GRADE:	TRACED BY: R.G.A	DRAWN BY: M.S.S.	COLLINS RA
FINISH:		DATE: 1-21-1937	DATE: 12-2-1936	CEDAR R
UNIT: 415B POWER SUPPLY SCHEMATIC				DRAWING

SUPERSEDES 263

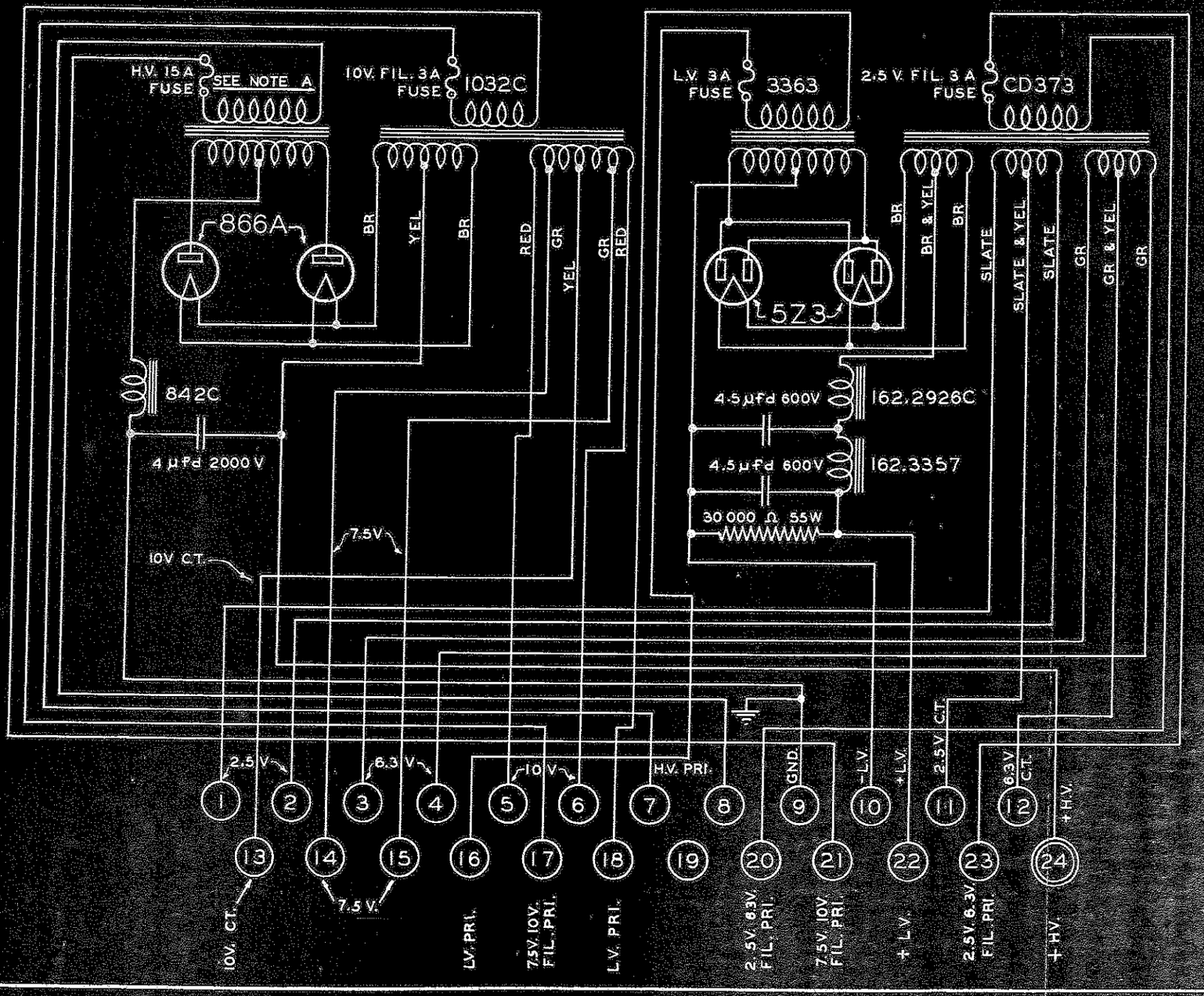


NOTE

415B-1	CD273
415B-2	914
415B-3	912

MAT.:	GRADE:	TRACED BY: R.G.A.	DRAWN BY: M.S.S.	COLLINS RADIO COMPANY
FINISH:		DATE: 1-21-1937	DATE: 12-2-1936	CEDAR RAPIDS, IOWA
UNIT: 415B POWER SUPPLY SCHEMATIC				DRAWING NO. 4130X-2

SUPERSEDES 2635X-4

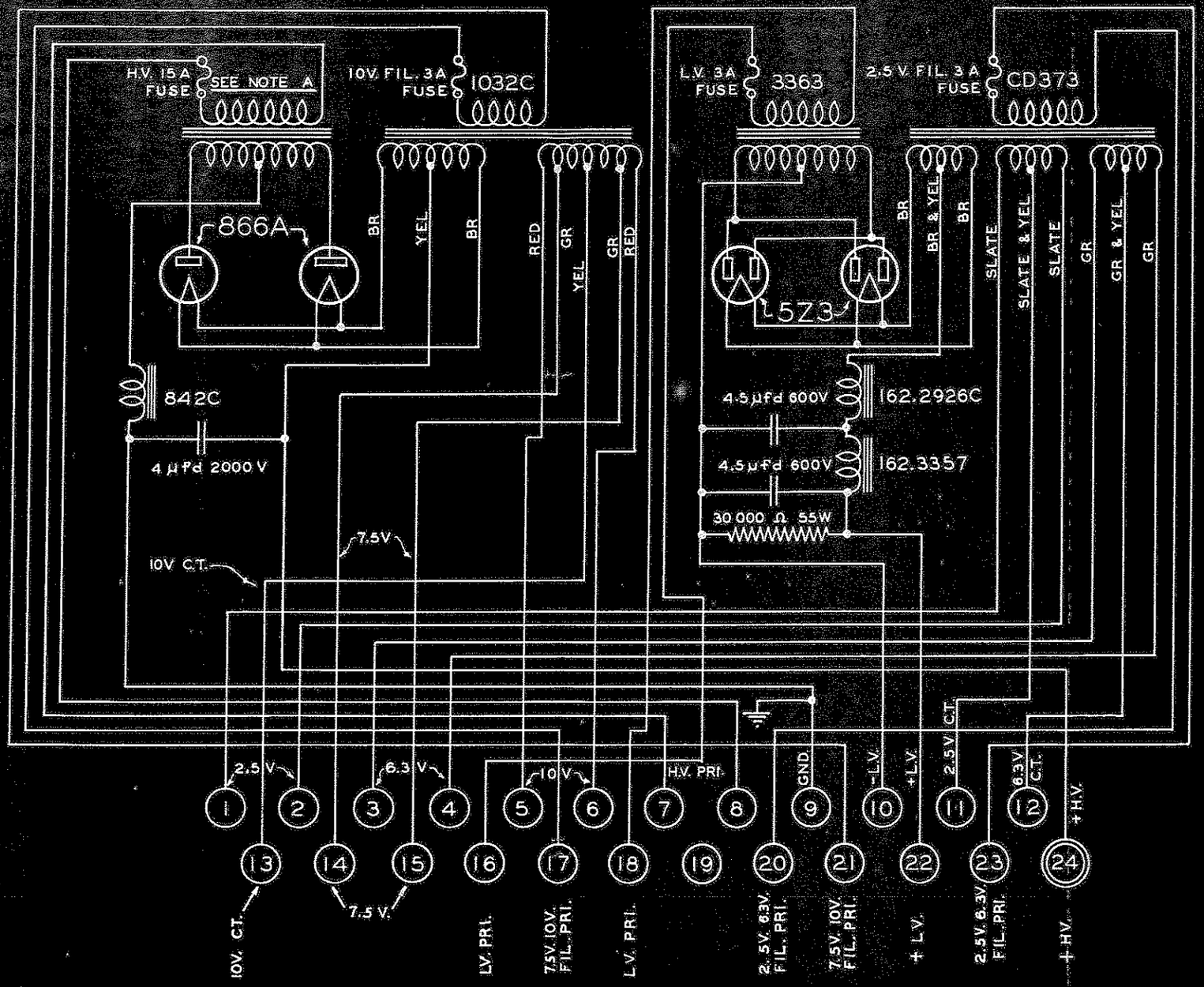


NOTE A

415B-1	CD273	TRANSFORMER
415B-2	914	"
415B-3	912	"

MAT.:	GRADE:	TRACED BY: R.G.A.	DRAWN BY: M.S.S.	COLLINS RADIO COMPANY
FINISH:		DATE: 1-21-1937	DATE: 12-2-1936	CEDAR RAPIDS, IOWA
UNIT: 415B POWER SUPPLY SCHEMATIC				DRAWING NO. 4130X-2

SUPERSEDES 2635X-4



NOTE A

415B-1	CD273	TRANSFORMER
415B-2	914	"
415B-3	912	"