WEBSTER ELECTRIC

SS1500 consolette

installation, operation and service

bulletin 211-38549

TELETALK

COMMUNICATIONS DIVISION
WEBSTER ELECTRIC
RACINE, WIS.

1064JS2
Litho
in U.S.A.

1. FUNCTIONS

1.1 General

This system consists of a program channel plus a separate communication channel. Both of these channels may be used at the same time.

1.2 Program Sources

The Consolette is equipped to receive input signals from the built-in AM-FM radio tuner, an external record player employing crystal or ceramic pickup, and a tape recorder. Input receptacles for these, plus an anxiliary, are located on the rear apron of the amplifier. A four position selector switch on the control panel connects the selected source to the related volume control.

There is one high impedance microphone input for a crystal or other high impedance microphone with a separate volume control. There are five medium (75 to 200 Ω) impedance microphone inputs. A five position switch on the control panel selects any one of five medium impedance microphone lines, and connects it to the related volume control.

Located on top of the chassis near the front and center is an input for a time signal generator such as a Webster No. SS650A.

1.3 Intercommunication

Six types of single master intercommunication service are possible with this system--

(1) No call-in provisions but with silencing. NOTE: The silencing feature prevents the master from eavesdropping on speaker stations.
(2) Same as (1) but with silencing omitted.
(3) Voice call-in with buzzer signal, and with the silencing feature.
(4) Same as (3) but without silencing.
(5) Annunciator call-in with buzzer signal, and silencing feature.
(6) Same as (5) but without silencing.

No change in consolette wiring is required to obtain these different modes of operation; however, annunciators are included only on models with code numbers ending in A.

The intercom channel may serve also as a program channel. Up to 20 classrooms may be addressed at once from the consolette from this 8-watt unit.

1.4 Recording

At the rated input a 0.5 volt signal is available at the "tape out" jack mounted on the rear apron of the amplifier for recording use. Program signals from this jack can be used to supply the input of any tape recorder having an input impedance of not less than 100,000 ohms (high level).

2. INSTALLATION

Place the Consolette on the table or desk selected. A matching metal desk unit, Webster No. SS–706, which has provisions for a 4-speed automatic record changer assembly, Webster No. SS–705, is available. Mount the speaker line junction boxes on the wall behind and below where table is to stand. The wire entrance for all lines is through the slots in the low edge of the back panel. Remove this panel during installation. Allow at least 3 inches between back and wall to insure adequate ventilation.

2.1 Speakers and Wiring

2.11 Cable and Junction Box

The cable connecting the selector switches and the junction boxes of the Consolette consists of plastic insulated wire. Each pair of wires is color-coded and twisted. The color-coding of the wires in the cable is shown on Table 1.

An identical cable is used to connect each junction box to the Consolette. On all Consolettes, the Call-In Line (brown pair) and the Ground (black) are connected only in the junction box assigned to the lowest numbered selector keys. NOTE: This is just the opposide of other Teletalk units.

2.12 Room Lines

Provide a separate line of two-conductor, twisted, inside telephone #19 drop wire or similar from the junction box to each room speaker. Standard intercom cable with #22 or larger color-coded twisted pairs may be used as well, except that this involves the use of additional terminal strips at branch – off points which increases the possibility of cross-talk between pairs (in intercom service) due to destroying the symmetry of twisted pair lines at these points. The ideal system would employ an unbroken twisted pair running from the junction box to each room.

2.13 Ground Line -- Silencing & Annun.

For the classrooms to have control of silencing, run, in addition to the room pair, a ground wire #19 or larger from the ground terminal in the first speaker lines junction box to each classroom. This may be a single wire looped from room to room, or the circuits may be divided in any manner so long as each room has this wire ground connection. Do not use conduit grounds.

2.14 Annunciator Lines & Call-In Line

If the system of the annunciator type, an in-

dividual annunciator wire will be required from each room back to the corresponding annunciator terminal in the proper junction box at the consolette. See drawing 219-38481. Annunciator wires may be #22 for lengths up to 1,000 feet, #20 for lengths up to 1,500 feet, or #19 for lengths up to 2,000 feet, when the ground wire is #19 or larger.

Where operation is to be of the type with buzzer call-in and voice identification rather than annunciators, omit the annunciator wires and run instead a single twisted pair, #22 or larger, for the call-in line. Loop this line from room to room (parallel connection) and terminate at the call-in pair (brown pair) in the first junction box.

2.15 Line Terminations

Reference should be made to the schematic diagram of this instruction for connecting room lines to the junction boxes. On models without annunciators the first junction box starting with terminal number 1 will accommodate speaker lines 1 through 12, the second junction box starting with terminal number 1 will accommodate speaker lines 13 through 24, and so on. On models with annunciators six speaker line connections can be made per terminal strip along with the six corresponding annunciator connections. Therefore, terminals 1 through 6 of the first terminal strip will take the first pair of speaker lines, and the colored wire terminals 7 through 12 will be used to connect the corresponding first six annunciator wires. Lines & annunciators 7 through 12 are likewise connected tc the second terminal strip. The second junction box will accommodate speaker and annunciator lines for speaker stations 13 through 24 and so on.

Connections for the call-in lines and ground are to be made on the last three terminals of the first terminal strip on every model.

For connections at the room speakers reference should be made to the diagrams contained herein.

2.16 Classroom Speakers

For small rooms such as school classrooms, and for any others where the intercommunication feature is to be used, our WSS230 and WSS233 speakers are recommended. Power consumption is about 0.5 watt at full amplifier output.

The classroom speakers are usually mounted about 8 feet from the floor at the center of the front wall. Speaker-Annunciator switches, when used, should be mounted at standard wall-switch height as nearly below the speaker as possible. See speaker connection diagrams in the back of this booklet.

2.17 Larger Speakers

Auditoriums and gymnasiums require larger speakers of higher wattage rating. They are not called upon to serve as intercom speakers. Our model SS-621A 12-inch speaker in bass reflex cabinet is used here. The tapped matching transformer provides a wide range of power consumption values between 1. 1 and 14 watts.

Athletic fields or other outdoor applications require the use of high-efficiency horn type speakers. Our model WSS210 Re-entrant Horn with WSS211 driver is recommended. One matching transformer type SS-640A is required for each such speaker used. Taps are provided for power levels of 10.0, 3.16, or 1.0 watts. See speaker connection diagrams in the back of this booklet.

Run a separate twisted pair line to each such speaker or group of speakers serving a given area. Wire size required will generally be larger than that required for classroom speakers and will depend upon the number of speakers and the estimated audio power required by each speaker on the line. To avoid too great a power loss in the line the loop resistance of the line should not be more than one-fifth of the load impedance of the speakers. The load impedance for each such speaker for any one of the possible connections may be obtained from the connections diagrams for these types in the back of booklet.

Examples of selection of line wire size;

(1) One SS-621A speaker connected for 6.9 watts = 3.2 ohms. Run is 125 ft., wire length 250 ft. #14 wire will have a satisfactory resistance of 0.62 ohms.

(2) Two SS-621A auditorium speakers connected in parallel for 2.8 watts each will present a load impedance of 4 ohms. Run is 250 ft., wire length 500 ft. #12 wire will have a satisfactory resistance of 0.8 ohms.

(3) Longer runs or higher power groups of speakers would require impractical wire sizes for low impedance transmission. Write for data on line matching transformers. State number of speakers and power per speaker and length of run.

2.18 System Capacity & Booster Amplifier

The output capacity of any sound system is limited and some precautions must be taken to connect no more loudspeaker load than the amplifiers can supply. The most severe condition results when the output switch is thrown to "ALL CALL". All speakers are then connected to the one amplifier and each classroom speaker is matched to receive 0.46 watts:

A 24-room, 35-watt system uses about 11

watts, has 24 watts to spare, (or for high power speakers).

A 36-room, 35-watt system uses about 17 watts, has 18 watts to spare, (or for high power speakers).

A 48-room, 35-watt system uses 22 watts, has 13 watts to spare, (or for high power speakers).

A 60-room, 35-watt system uses 28 watts, has 7 watts to spare, (or for high power speakers).

On models having a capacity of 66 stations or more, additional power is required. A Webster Model 107-35, 35 watt booster amplifier is included in these units. The booster amplifier is connected in parallel with the primary amplifier. Should the output connections between the two amplifiers become separated, the numbered output terminals must be matched when reconnecting. A total output of 70 watts can then be obtained from this combination. (See Page 15 for schematic.)

2.19 Speakers without All-Call

It may be desired to remove certain large speakers, such as auditorium or athletic fields speakers from all-call service. This can be done at time of installation and assignment of room lines to room switches in the following way -- assign these speakers to the farthest switches along the lines from the point where the amplifier output lines connect at the center. Then cut the OFF bus copper strips just ahead of the chosen switches. The OFF bus is the second and fourth copper strips down from the top of the upper switch stacks.

Speakers connected to switches so segregated will not receive all-call service when their switches are left in OFF position.

2.2 Designation Strips

After all speakers or rooms have been assigned to their respective switches, type or write names assigned to each selector key in spaces on manila name strip card. Cut strip from card and place under the transparent covers. Insert name strip into name strip holder, then place holder on switch panel. When removing or replacing name strip holder, care should be taken not to scratch panel.

2.3 Microphones

2.31 Local Mircrophone

A high-impedance microphone, crystal or dynamic, for use close to the Consolette may be connected to the (Cannon No. XLR-3-31) MIC receptacle on the back of the amplifier. The plug connections should be as shown in (A) or (B) of the box, "Microphone Plug Connections" on the schematic diagram. Crystal microphones can tolerate an extension of not over 25 feet to their cables with only a slight loss in sensitivity. Frequency response is not affected. High-impedance dynamic microphones should not have their cables extended beyond the supplied length or high frequency response will suffer.

2.32 Remote Microphones

For microphone pickup at remote locations, beyond the maximum distance for a high-impedance microphone, it will be necessary to use a medium-impedance (75-200 Ω) dynamic microphone.

To install medium impedance dynamic microphones use only 2-conductor shielded and jacketed cable. Remove terminal strip cover located near right side of outside chassis rear. Connect the conductors to terminals "A" and "B" and the shield to terminal "G". No other ground point should be made to the cable shields. Replace terminal strip cover. Inputs will match any dynamic microphone in the range of 75 to 200 ohms.

Microphone cables must not be installed in same conduit with output circuits or power wiring. Avoid laying microphone cables in close parallel proximity to lamp cords or open power wiring as hum may be induced regardless of thorough cable shielding.

2.4 Radio Antenna

Refer to the sections on AM and FM antenna in the separate radio instruction sheet.

2.5 Tape Recorder Playback

To connect the output of a tape recorder to the consolette for the distribution of recorded programs through the system make up a cord long enough to reach from the EXTERNAL SPEAKER jack of the recorder to the TAPE IN jack on the rear of the consolette. Fit each end with required plug type, making certain that polarity is observed with tip connected to tip. A load resistor of 8 or 16 ohms and at least 5 watt capacity should be bridged across this cord (at either end) to serve as an output load for the recorder amplifier.

2.6 Power Supply Line

Consolette is equipped with a 3 wire attachment cord and plug and may be connected to any 110-120 volt, 60 cycle outlet. It is safest to have a separate circuit for the consolette so that service is not interrupted by fuse failure created by other loads or shorts.

2.7 Phonograph Connection

Your consolette is provided with a phono input

receptacle marked PHO and located on the rear apron of the amplifier. This connects through the PHONO position of the input selector switch to the PROG. SEL. VOL control.

The record player may be any changer or manual turntable provided with a crystal or ceramic pick-up. No provisions are made on the Consolette for magnetic pickup input. A 4-speed automatic changer complete with turnover ceramic cartridge, motor board, and necessary plugs and wires (Webster No. SS-705) is available.

If a booster amplifier is not used the AUX 117V AC receptacle on the back apron of the amplifier can be used to power the turntable. However, the amplifier fuse must be increased to 3 AMPS.

3. OPERATION – PROGRAM DISTRIBUTION

3.1 Radio Program

A. Turn consolette key POWER switch to ON.
B. Turn OUTPUT switch to OFF and turn the TLM SEL. to the program MONITOR position.
C. See that intercom VOL LISTEN control is turned up. This control now serves for monitor volume.
D. Turn amplifier input selector switch to RADIO.
E. Turn radio selector switch to AM or FM as required and allow 30 seconds for warm-up.
F. Tune in desired station and turn up the PROG. SEL. VOLUME control on amplifier. Adjust TONE control to suit. The proper volume setting for full power operation is that which causes the panel meter to indicate in the red band occasionally but not constantly. NOTE: exact center tuning of FM stations may be made by momentarily defeating the automatic frequency control while slowly turning across the station and selecting the center loud peak with minimum background noise. See also the OPERATION section of the radio instruction sheet.
G. Press the room switches for all rooms or speakers to receive the program to the program (down) position, or if all speakers are to be included, omit this step.
H. Throw OUTPUT switch to SELECTED OUTPUT to energize the selected speakers, or to ALL-CALL if all speakers are wanted.

3.2 Phono Records

Follow steps A, B, C as in 3.1 above.

D. Turn amplifier input selector switch to PHONO.
E. Set turntable speed, etc. to correspond to type of record to be played.
F. Press the room switches for all rooms or speakers to receive the program to the program (down) position, or if all speakers are to be included, omit this step.
G. Start turntable then quickly throw OUTPUT switch to SELECTED OUTPUTS to energize the selected speakers, or to ALL-CALL if all are desired.
H. Readjust PROG. SEL. VOLUME control as required, and set the TONE control for best sound.

3.3 Microphone Program

A. Connect high or medium (75 to 200 Ω) impedance microphone to receptacle or terminal strip, respectively, on the rear apron of the amplifier (See section 2.3 for proper connections).
B. For high impedance microphone use control marked VOL MIC 6 to adjust volume. When a medium impedance microphone is to be used, select the proper microphone 1 to 5 by means of the Mics 1 to 5 switch on control panel, and use Mics 1-5 VOLUME PROG. SEL.
C. Begin with the amplifier Mics 1-5 VOL, Mic 6 VOLUME and VOLUME controls turned off (full counter-clockwise), and TONE control in mid-position. Do not place the TLM SEL in MONITOR position if microphone is near consolette; otherwise feedback may result.
D. Place the consolette keyed power switch in the ON position and the OUTPUT switch to OFF position.
E. Press switches for the selected speakers to the program (down) position.
F. If microphone has a silencing switch move it to the ON position. While testing with voice, adjust the associated MIC VOL control to desired volume, but do not allow panel meter to register into the red section as this may produce distortion. Voice will not be transmitted to the selected speakers until the OUTPUT switch is placed in the SELECTED OUTPUTS position for selected speakers or in ALL-CALL position for all speakers. (Both high and medium impedance microphone inputs may be operated simultaneously).
G. When finished move microphone silencing switch (if any) to OFF and turn MIC VOL all the way off.
H. When microphone is used in another room by one party, the consolette monitor speaker may be used by a second party to check results. In this case, throw TLM SEL to MONITOR program and adjust intercom LISTEN VOL to suit.

Precautions against feedback must be taken where loudspeakers are used in the same room as the microphone. The usual arrangement for a hall is to have the microphone on stage with its sensitive side or face aimed to the center of the backdrop, and two loudspeakers on the front wall flanking the proscenium arch and directed to the rear of the hall. Programs originating at the re-

mote microphones may be checked on the monitor speaker by the consolette operator. Readjustments of the appropriate volume controls may have to be made frequently to keep the amplified program at proper level.

If feedback is a problem, it helps to have your people as close to the microphone as possible, for this lets you carry the volume control at a lower setting. Every effort should be made to place the microphone where it will receive the least sound from the loudspeakers.

3.4 Recorder Playback

A. Connect a cord from the tape recorder's external speaker jack to the TAPE IN receptacle on the rear of the consolette amplifier. See section 2.5
B. Turn the amplifier input selector switch to TAPE.
C. Turn PROG. SEL. VOL control up to about 2/3 full.

From here on the procedure is the same as for phono or radio operation. Use the room selector switches and OUTPUT switch in the same manner. Leave the PROG. SEL VOL control as set and adjust volume by means of the tape recorder's volume control.

3.5 Recording from Consolette

Any program material from the consolette may be tape recorded with the addition of a properly matched cord. Connect a cord (a single conductor shielded) with phono plug (Webster No. 211-23117) at one end into TAPE OUT jack located on rear apron of amplifier. At other end use plug of suitable type to fit recorder input jack. Connect this plug into the Hi-Level input jack on the recorder.

Should the use of the Hi-Level input on recorder result in too low volume recording, move plug to Low-Level microphone input jack on the recorder.

When recording from the consolette, cleaner tapes will result if the program amplifier is operated below its maximum tape output, and the recorder's "record volume" control is set at not less than 2/3 of full on.

Exercise care so as not to overload either amplifier or recorder as this will distort the recording. All consolette output signals (except TONE GEN.) are affected by the program amplifier tone control circuit, including output to tape recorder.

Recording distributed program will not affect either the program signal, or the intercom signal.

Never attempt to make recordings with the recorder's microphone placed before a loudspeaker. Compared to the direct method just described, very inferior results will be obtained due to adding the combined faults of microphone, speaker and room reverberation and noise to the final result.

4. OPERATION INTERCOMMUNCIATION

4.1 System without Call-in, with Silencing

In this type of system, calls may originate only at the consolette which cannot listen-in to the room-speaker without the operation of a switch at that location.

Operation is as follows:

A. See that intercom controls INTERCOM TALK VOLUME and LISTEN VOLUME are turned at least 2/3 on, and that power supply to consolette is turned ON.
B. Move selector switch for speaker or room desired to INTERCOM position (up).
C. Press TLM SEL lever down to INTERCOM TALK position and speak, then allow lever to return to LISTEN-INTERCOM.
D. Person at location called may now reply by first moving their speaker switch to the ANSWER position, or by pressing push-button depending on speaker type.
E. Control of conversation is now in the hands of the consolette operator who must move TLM SEL position each time to talk, then release to listen to reply.
F. At end of conversation, room selector switch at consolette should be returned to center or OFF position.

4.2 System without Call-in, No silencing

Operation is same as in section 4.1 except that room speakers have no silencing or privacy, nullifying step D above.

4.3 System with Voice Call-in and Silencing

In systems equipped with call-in switches at the remote speakers, including the silencing feature, persons at the remote speakers may signal the consolette operator that they wish to speak. Further, the consolette may not listen-in to the room until silencing switch in the room is moved to the ANSWER position. Operation is as below:

A. To be ready to receive call-in signals, consolette must be turned on, TLM SEL switch must be in MONITOR program position and intercom volume controls should be at normal operating settings so they will not be forgotten in the haste of answering a call.

B. Calls from consolette are made in the usual manner as described in section 4.1.

C. Call-in from a remote speaker is made as follows: at remote station call-in switch is held in CALL-IN position. If circuit is not busy, a hum will be heard in remote station speaker and buzzer will sound in consolette. The operator should now place TLM SEL intercom in LISTEN position causing hum in remote speaker to stop.

This is the signal for remote speaker to identify itself by name or number, holding switch in CALL-IN position, then moving switch to ANSWER position. On the 5G45RS speaker, it is also necessary to press the push-button for the duration of each reply. Consolette operator, now having identity of calling station, puts selector switch for that room in INTERCOM position and controls ensuing conversation in usual manner, section 4.1.

4.4 System with Voice Call-in, No Silencing

Operation is the same as in section 4.3 except that room speakers have no silencing or privacy, and call-in switches are of the two-position type. After the call-in step is completed, the switch is allowed to return to the normal position for the balance of the conversation.

4.5 System with Annunciator Call-in and Silencing

In this type of system annunciators on the consolette, one for each remote speaker station are used for the call-in signal. Annunciators are actuated by a switch at the speaker station. Operation is as follows:

A. Calls from the consolette are made in the usual manner as covered in section 4.1.
B. Calls from remote speakers are made by moving the SS-498-1A speaker switch to the CALL-IN position, or by pressing PRESS TO CALL push-button, depending on speaker type used. This causes buzzer in consolette to sound momentarily, and a small light to be energized behind the corresponding selector key, leaving a visual signal displayed. Consolette operator now takes the steps of initiating the call to the indicated station in the usual manner as in section 4.1. If operator is away from consolette, the registered calls may be answered upon his return. Moving the room selector key to INTERCOM position (up) turns off the annunciator light.
C. In all replies to the consolette, the person at the remote speaker must hold down the PRESS TO ANSWER push-button while speaking, or in the case of speakers equipped with SS-498-1A switch, place switch in ANSWER position. The remote speaker must hold down the PRESS TO ANSWER push-button while speaker, or in the case of speakers equipped with SS-498-1A switch, place switch in ANSWER position.

4.6 System with Annunciator Call-in, No Silencing

Operation is the same as in section 4.5 except the silencing or privacy feature is eliminated and the remote stations need do nothing but speak in reply.

5. SERVICE NOTES

A. Tubes

The tubes of a system in daily use should be removed and tested on a regular schedule at intervals of about 90 days. Any tubes found weak should be replaced. Generally, the power output tubes will have much shorter life than the smaller types. To reach the tubes remove the consolette's back panel. After testing be sure to replace all tube shields.

B. Fuse

The amplifier and radio tuner are protected by a fuse located on the rear apron of the amplifier chassis. To remove, turn cap to the left and pull out. Fuse is Bussman Type MDX 2.0 ampere, Slo Blo type.

If a booster amplifier or turntable is plugged into the 117 volt AUX receptacle, the 2 ampere fuse must be replaced by a Bussman Type MDX 3.0 ampere, Slo Blo type.

If fuse blows repeatedly DO NOT put in one of heavier rating but try to find the cause. Most common causes are shorted or defective diode or 6L6GC power tube. If these test OK then check the first or second capacitors. They are the 40MFD, 500V and 20MFD, 450V sections. Should an examination of the circuit parts show a resistor that has been overheated, look for a short circuit capacitors or other component immediately following the resistor, then replace both parts.

C. Pilot Lights

Pilot light uses #47 bulb operated at 3.1 volts and should last several years. To replace bulb, remove amplifier from cabinet. Press in on bulb, turn to left and pull out.

To replace radio dial lamps, remove radio tuner from cabinet, then remove screw holding lamp bracket in place and remove bulb. Use #47 bulbs.

D. Relay

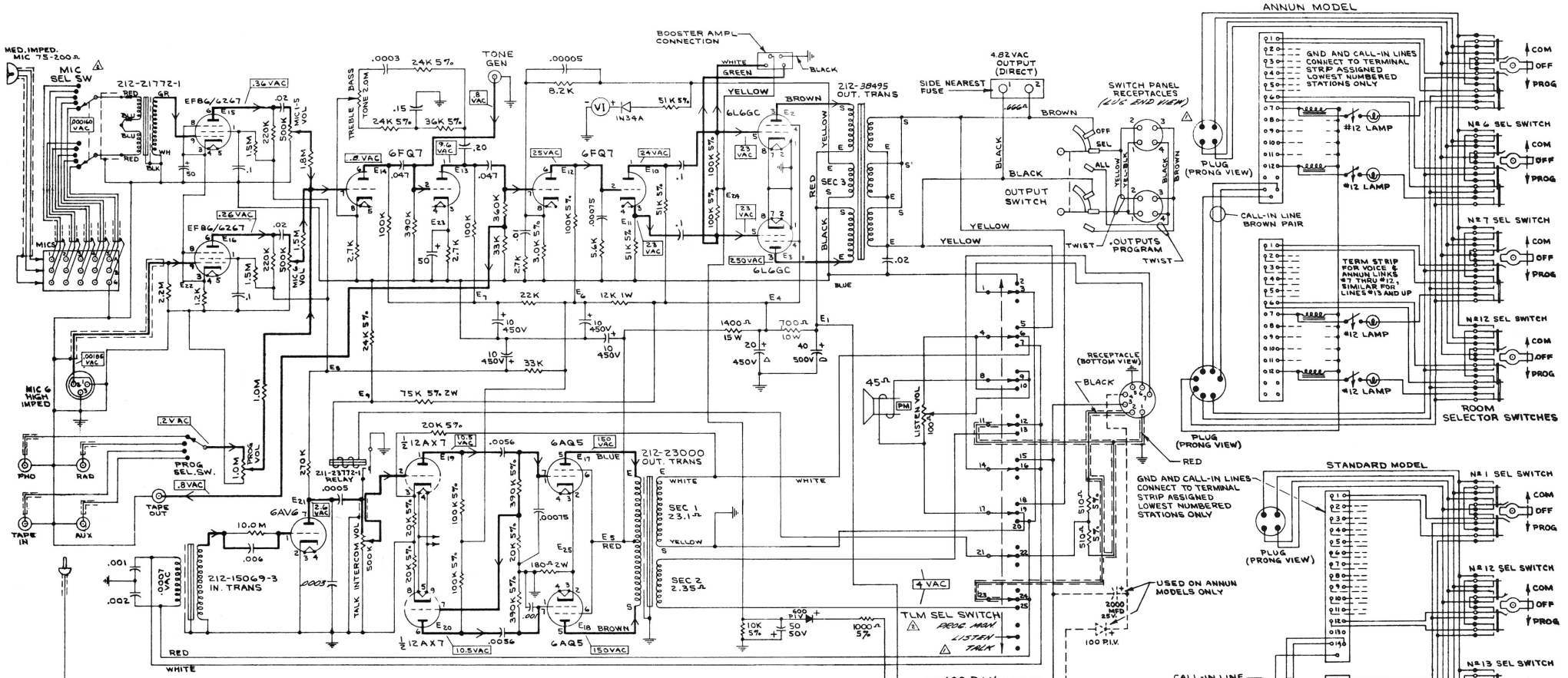
If silencing relay fails to silence amplifier when TLM SEL is in LISTEN INTERCOM position and room called has its switch in NORMAL or silencing position then check relay contacts. Contacts may be cleaned by using a contact burnishing tool. Contacts are adjusted to have about 1/64" spacing.

E. Buzzer

Call-in signal buzzer may be adjusted for best sound by carefully bending the stationary contact bracket or the armature mounting bracket slightly in or out until best spot is found.

F. Removing Chassis

If necessary to remove amplifier from cabinet for service take out the five screws from bottom of cabinet. Remove all knobs, disconnect all leads and slide out to rear. Be sure to disconnect snap



NOTE: INTERCOM IN TALK POSITION FOR SIGNAL VOLTAGES
ALL INPUT SIGNALS 1000~

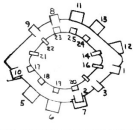
RESISTORS: ½ WATT, TOL ± 10% UNLESS OTHERWISE SHOWN
CAPACITORS: ALL VALUES ARE IN MICROFARADS (MFD)

D.C. VOLTAGES
MEASURED FROM POINT INDICATED TO GROUND
20 K Ω /V METER, NO INPUT SIGNAL, 117 V LINE

POINT	VOLTS	SCALE	POINT	VOLTS	SCALE
E1	453	500-1000	E14	92	100-250
E2,E3	448	" "	E15,E16	95	" "
E4	385	" "	E17,E18	262	500-1000
E5	266	" "	E19,E20	212	250-500
E6	287	" "	E21	95	100-250
E7	227	250-500	E22	1.6	2.5
E8	224	" "	E23	3.6	5-10
E9	80	100-250	E24	-40	50
E10	269	500-1000	E25	14.0	"
E11	111	250-500			
E12	104	" "			
E13	96	100-250			

HIGH IMPED MICROPHONE PLUG CONNECTIONS (PLUG VIEWED FROM REAR)
(A) TWO COND. (B) SINGLE COND
NO. XLR-3-12C CANNON PLUG

RADIO TUNER
ANTENNA FM & AM
PHONO INPUT OUTPUT
117 VAC. AUX ½ AMP MAX
TO RECEPT. ON AMPL



TALK - LISTEN - MONITOR SWITCH (REAR VIEW)

SCHEMATIC OF MODEL OF SS1500 CONSOLETTE

fasteners at speaker and switch panel plugs on rear apron of chassis.

G. Radio Tuner

Should it become necessary to remove radio from cabinet for service, pull off the knobs, disconnect all leads, and remove the four screws that pass up through the bottom and into the tapped holes in the radio's chassis.

Refer to separate radio service sheet for wiring diagram, parts list, etc.

H. Station Selector Switches

The selector switches are made in banks of six switches, and five banks are mounted to each switch panel. Should it become necessary to service or adjust a contact blade, the whole panel must be removed as a unit. On 12, 24 and 30 station models there is only one panel, but on 36, 48 and 60 station models there are two panels. To remove a switch panel adjacent to the control panel, disconnect the two switch panel plugs on the rear apron of amplifier. Pry off both name strip retainers on the switch panel to be removed. Then remove the screens immediately above and below the switches. To remove the screens just below the control panel, push or work screen down as well as away from cabinet. This screen is friction held under the control panel. When the proper screens are removed, 14 flat head screws will be visible around the periphery of the switch panel. Remove these screws and the panel will be ready to remove. If the panel is not adjacent the control panel, pull the panel away from the cabinet a short distance, cock the panel to the left and free the right end first. After the panel is free from the cabinet, reach in and pull out the two plugs. The panel can now be pulled out as far as the station cables will allow. Use reverse procedure to replace switch panel.

I. Adding Stations

The number of speaker stations of any Consolette system can easily be increased to 60 stations. A 12 station model can be converted to an 18, 24, or 30 station model by replacing the switch panel with the desired switch panel. A 30 station model can easily be converted to a 42, 54, or 60 station model by the addition of a 212-26304 Base Section and the appropriate switch panel.

J. Room Speaker Volume

No means is provided in this system to make individual volume adjustments on room speakers. Satisfactory operation on intercom demands that all speakers be of similar type and have 45 ohm voice coils.

(6. REPLACEMENT PARTS LIST)

PART NO.	ITEM	WHERE USED
211-24613-1	Tube socket, octal	Large tubes
241-14846	Tube socket, shield base, 9-pin	EF-86/6267 tubes
241-14226	Tube socket, shield base, 7-pin	6AV6 tube
211-18697	Tube socket, 9-pin min.	12AX7 & 6FQ7 tubes
211-17621	Tube socket, 7-pin min.	6AQ5 tubes, panel recept.
241-14845	Tube shield, 9-pin min.	EF-86/6267 tubes
241-14227	Tube shield, 7-pin min.	6AV6 tube
211-21586	Receptacle (Cannon No. XLR-3-31)	Mic input
241-12180-2	Receptacle (Cinch No. 8134)	Tone gen., tape output
211-32358	Receptacle (Cinch No. 8113)	Pho., rad, tape inputs
211-19079	Receptacle	117 volts AC
211-13182	Connector socket	Booster amplifier
S4619	Fuse Holder	
211-15926-2	Fuse, Slo-Blo, 2 AMP	
211-35521-1	Switch, rotary	Input selector-low level
211-38633	Switch, rotary	Input selector-high level
211-22983-1	Switch, rotary	Output control
P10690	Pilot light bracket	Pilot lamp
P8914-1	Pilot lamp #47	
212-38755	Power transformer	
212-38495	Output transformer	Program channel
212-23000	Output transformer	Intercom channel
212-15069-3	Input transformer	Intercom channel
211-38530	Switch, Key	117V power
211-18032	Capacitor, 40-20 MFD – 500-450V	
211-22999	Capacitor, 10-10-10-10 MFD, 450V	
241-14237	Mounting Plate for above 2 caps	
211-23772-1	Relay	Silencing circuit
211-38754	Resistor 2100 ohm tapped 700 ohm, 25W	
251-28005	Capacitor, Electro, 50 MFD, 50V	6L6 bias

211-27764	Capacitor, Electro, 50 MFD, 6V	
212-35446	Buzzer	
211-19169-2	Volume Control, 100 ohms	Listen volume
211-22980-1	Volume Control, 0.5 meghom	Mic and master volume
211-22981-1	Volume Control, 1 meghom	Phono, radio volume
211-22982-1	Tone Control, 2 meghom	
211-21490	Receptacle, 4-pin	Panel connections
241-36037	Meter	Vol. indicator
P8397-17	Mtg. Post	Meter mtg.
211-38531	Bracket, meter	Meter mtg.
211-38537	Jewel, plastic cap	Pilot lamp
211-26561	Knob, control (9 used)	
29540-3	Set screw (for above)	
211-23081	Speaker	
211-23082	Rubber grommet	Speaker mounting
241-15164	Locknut #6-32	Speaker mounting
211-23599	Cord & plug assembly, audio	Radio to amplifier
211-21629	Plug (Cannon No. XLR-3-12C)	Mic input
211-23117	Plug (Cinch No. 1338)	Phono & radio inputs
241-15097	"T" Nut	Fasten switch panels
211-23735-1	Knob	Selector switch
211-35615-1	Knob	TLM SEL.
211-37159	Knob	Tuner
212-35467	Relay assembly	Annunciator
211-23727-1	Lamp	Annunciator light
211-38246	Diode, IN2071	High voltage rect., bias
211-19988	Diode, IN34A	Meter rect.
211-35458	Diode, IN1342	Annunciator supply
211-35459	Capacitor, Electro, 1000 MFD, 25V	Annunciator supply
211-38994	Cord & plug assembly	
241-14224	Bushing, strain relief	

NOTE: Standard resistors and capacitors, available at most radio supply shops have been omitted from this list.

7. SPECIFICATIONS – CONSOLETTE

Cabinets: Walnut veneered panels and solid walnut sloping front frame in hand rubbed beige gray finish. Gold tone perforated front screens. Equipment panels are in dark green baked enamel with gold lettering.

Dimensions: 12, 18, 24 and 30 station models, 27-3/4" wide x 13" deep x 14-1/4" high. 42, 54, and 60 station models, 27-3/4" wide x 13-1/2' deep x 17-3/8" high.

Power Supply: 117 volts, 60 cycle, 1.9 amps with amplifier and radio both operating.

8. SPECIFICATIONS – AMPLIFIER

PROGRAM CHANNEL

Microphone Inputs: One high-impedance (2.2 megohm) for crystal or high impedance dynamic microphone. Cannon No. XLR-3-12C, Webster Electric No. 211-21629 Plug required. One supplied with consolette.

One medium-impedance for dynamic microphone (75 to 200 ohm). Input is fed by a 5 position microphone line selector switch. Connection is made on a 5 line screw - terminal board mounted on rear apron.

Program Inputs: Four: High impedance (1.0 megohm) for radio, phono, tape playback and auxiliary as selected by program input selector switch. Cinch-Jones No. 1338, Webster Electric No. 211-23117 Plug required. One supplied with consolette.

Auxiliary Input: One high level input for tone generator.

Input Signals for Full Output: Microphone, high impedance . . . . . 0.0018 volt
Microphone, medium-impedance (75-200 ohm) . . . . . 0.00016 volt
Program, high impedance . . . . . 0.205 volt
Tone Generator (time signal) . . 0.8 volt

Tape Output: At rated input 0.5 volt signal is available into 100,000Ω load.

Power Output: 35 watts with less than 5% T.H.D. from 45 to 10,000 cycles.

Output Impedance: 0.666 ohms for a maximum of 60, 45 ohm speakers plus a reserve of 7 watts.

Output Regulation: Rise in output level is limited to 2.2 db when load is varied from full load to open circuit. 14 db of negative feedback is used.

Frequency Response: Radio-Phono input, ± 1 db 20 to 10,000 cycles, High-impedance mic, ± 1-1/2 db 40 to 10,000 cycles.

Tone Control: Single unit with flat response in mid-position. Attenuates bass 13 db at 50 cycles or treble 14 db at 10,000 cycles at two extremes of rotation.

Booster Amplifier Connection: Connections provided for use of Webster Model 107-35 Booster Amplifier which will supply an additional 35 watts of output.

INTERCOM CHANNEL

Input: Transformer (balanced) for 45 ohm source.

Outputs: (1) 2.35 ohm for as many as 20, 45 ohm speakers. (2) 23.1 ohm for speaker in consolette.

Power Output: 8 watts at voice frequencies.

Frequency Response: Special slope for accentuation of speech frequencies when using speakers as microphones.

Silencing Circuit: Includes sensitive relay which silences amplifier unless switch in selected room is in answer position.

Call-in Signal: Has buzzer which sounds when speaker signals the wish to talk.

Speaker: 4" permanent magent type, 45 ohm.

GENERAL

Tubes Furnished: 6AV6, 12AX7, (2) 6AQ5, (2) EF86/6267, (2) 6FQ7, (2) 6L6GC.

Diodes: (4) IN2071, (1) IN34A ((1) IN1342 in Annun. models only).

Power Supply: 117 volts, 60 cycle, 1.65 amps.

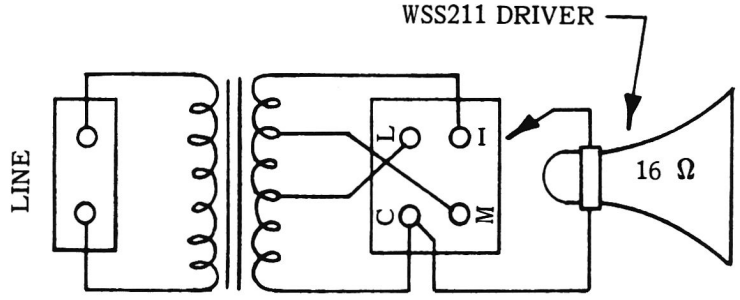
TABLE 1

	Pair No.	Conductor		Mate
	1 - 13	Light Blue		White - Red
	2 - 14	Dark Blue		White - Red
	3 - 15	Orange		White - Red
	4 - 16	Light Green		White - Red
	5 - 17	Dark Green		White - Red
	6 - 18	Light Brown		White - Red
	7 - 19	Dark Brown		White - Red
	8 - 20	Light Slate		White - Red
	9 - 21	Dark Slate	**	White - Red
	10 - 22	Pink	**	White - Red
	11 - 23	Yellow		White - Red
	12 - 24	Purple		White - Red
*	Call-In Line	Dark Brown		Light Brown
*	Ground	Black		
*	Spare	Red		

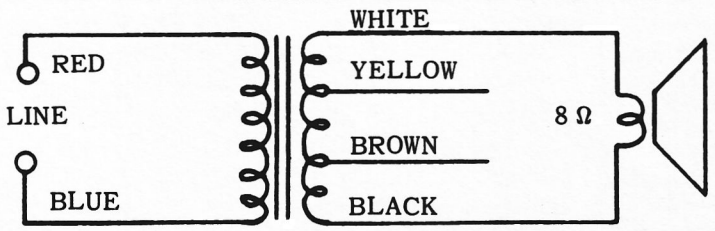
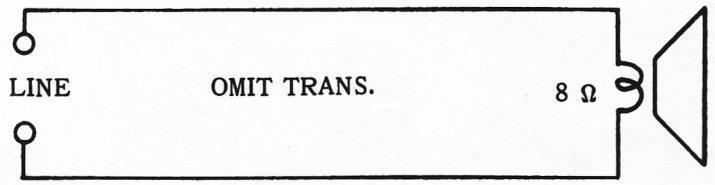
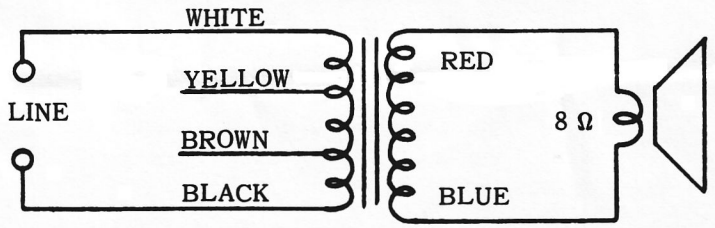
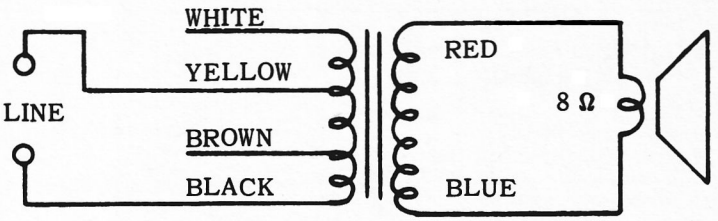
* Used only on terminal strip with station pair No. 1.

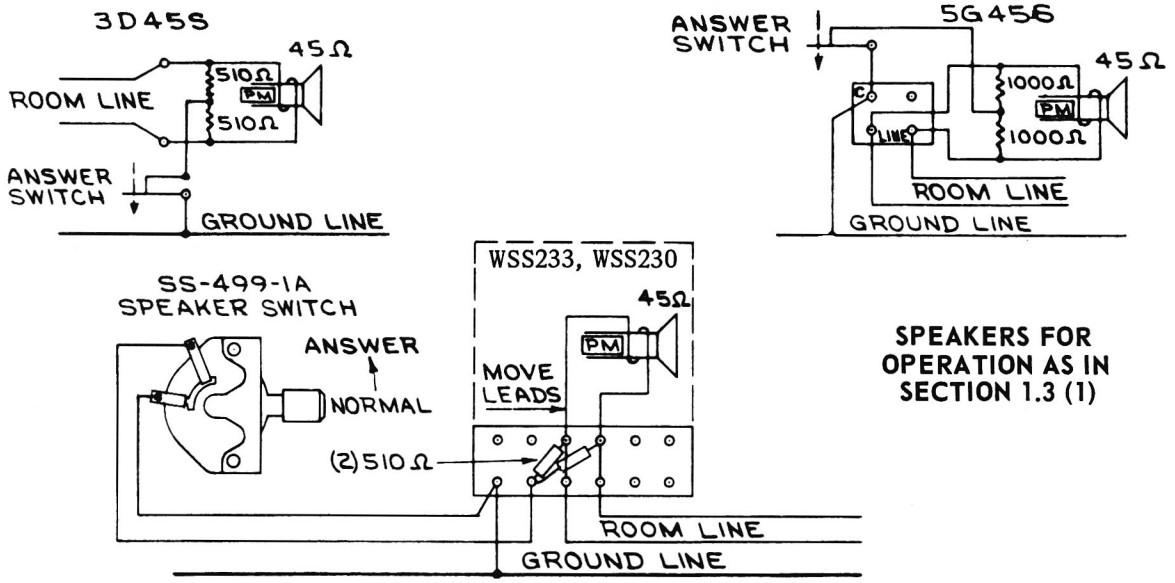
** Not used on Annun. Models.

REFERENCE SECTION 2.17

CONNECTIONS FOR SS-640A TRANS. & WSS211 HORN DRIVER			
FOR OUTDOOR OR OTHER AREAS REQUIRING HIGH VOLUME LEVELS. SEE SECTION 2.17 FOR WIRING.	**TAP USED**	**MAX. POWER INTO SPEAKER**	**LOAD IMPEDANCE TO LINE**
 MODEL WSS210 HORN SS-640A TRANS.	L	1.0 WATT	22.3 OHM
	M	3.16 WATT	7.1 OHM
	H	10.0 WATT	2.2 OHM
DIRECT TO LINE – NO TRANSFORMER		1.4 WATT	16 OHM

REFERENCE SECTION 2.17

CONNECTIONS FOR SS-621A AUDITORIUM SPEAKER			
FIG. NO.	**CONNECTION OF INTERNAL TRANSFORMER WST408**	**MAX. POWER INTO SPEAKER**	**LOAD IMPEDANCE TO LINE**
1		1.1 WATT	20.3 OHM
2		2.8 WATT	8.0 OHM
3		6.9 WATT	3.2 OHM
4		14 WATT	1.6 OHM

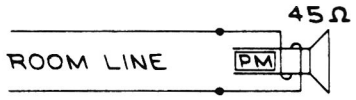


SPEAKERS FOR OPERATION AS IN SECTION 1.3 (1)

SPEAKERS SUITABLE FOR OPERATION AS IN SECTION 1.3(2)

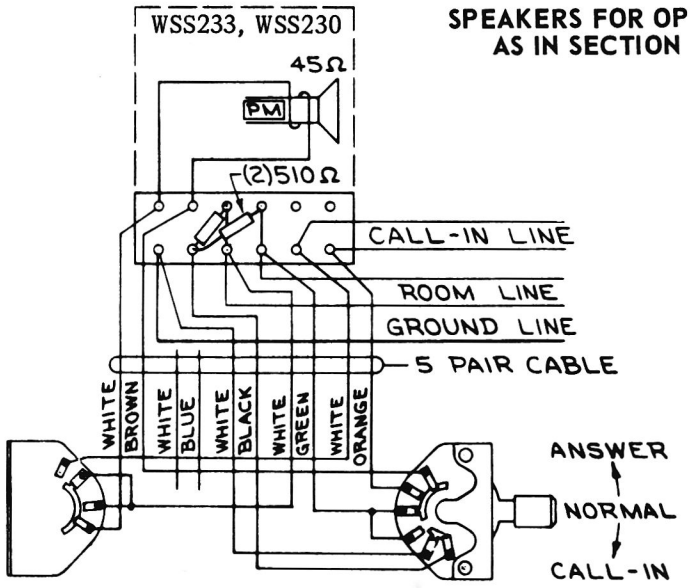
3D45	8C45-2	IBA45
5G45	10G45	WSS230
5K45	MILA45	WSS233

In all cases connect room line directly to voice coil. No ground line required.

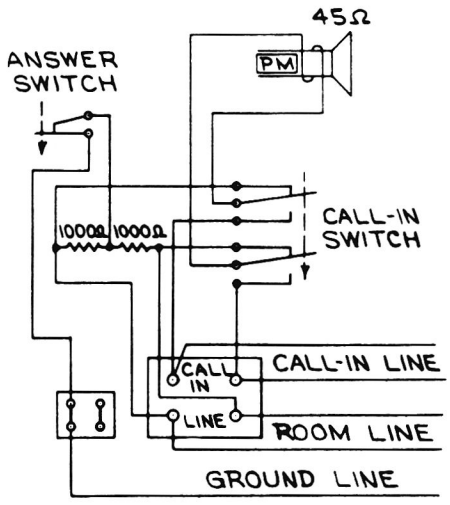


NOTE: With "S" type speakers as in Sections 1.31, 1.33 & 1.35 it is sometimes desired to leave the speaker switch in the answer position to permit replying without walking to the speaker. This is possible only when switches of the SS-498-1A, SS-499-1A and SS-119A-5 types are used. All others use switches spring returned to the silencing position.

SPEAKERS FOR OPERATION AS IN SECTION 1.3 (3)

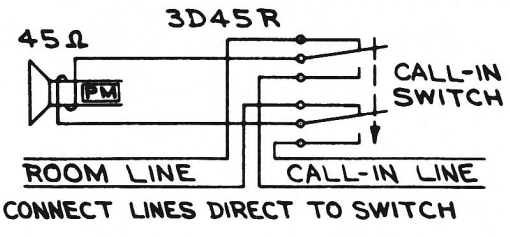


SS-119A-5 CALL-IN SWITCH

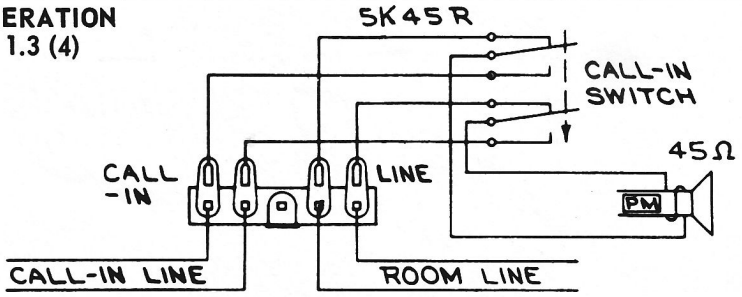


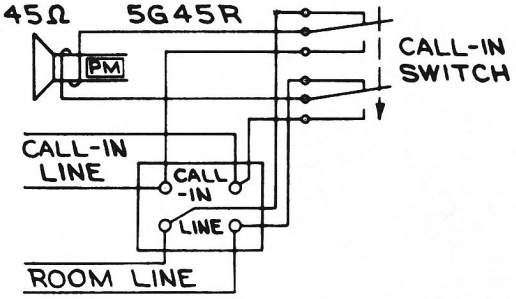
5G45RS

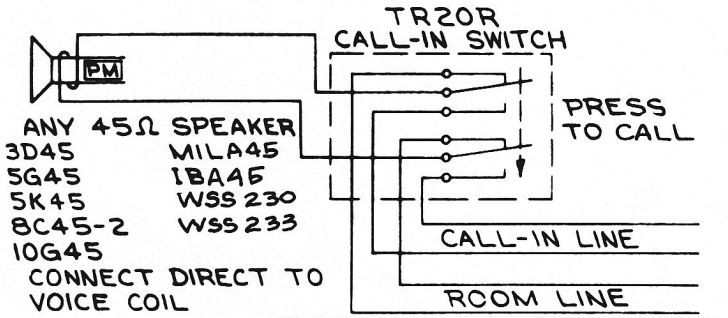
SPEAKERS FOR OPERATION AS IN SECTION 1.3 (4)



CONNECT LINES DIRECT TO SWITCH

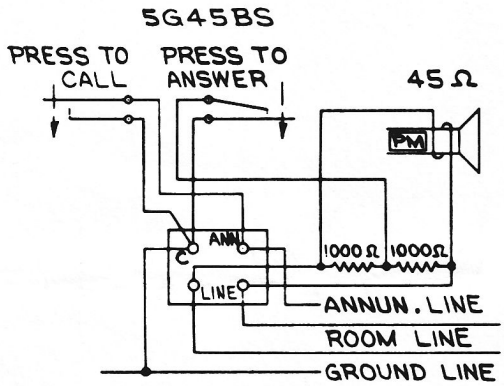


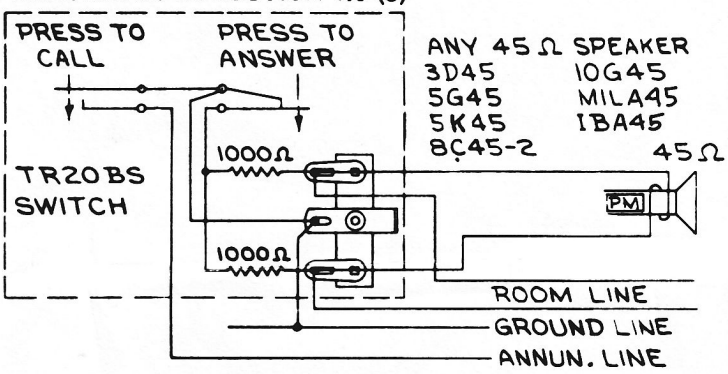


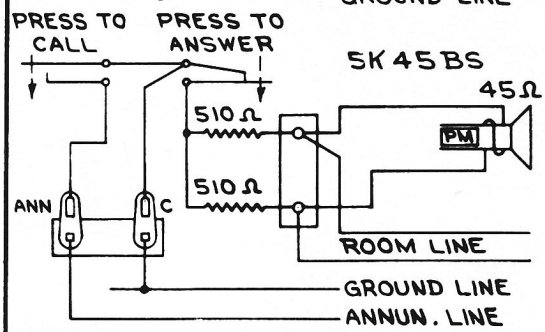


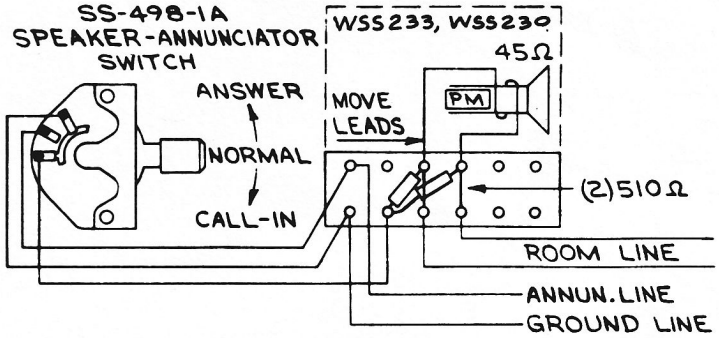
CONNECT LINES DIRECT TO SWITCH

SPEAKERS FOR OPERATION AS IN SECTION 1.3 (5)

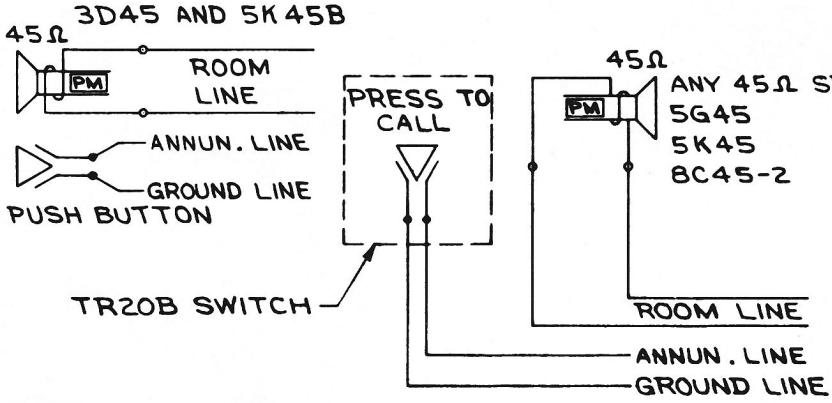


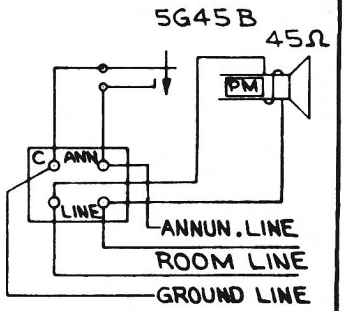


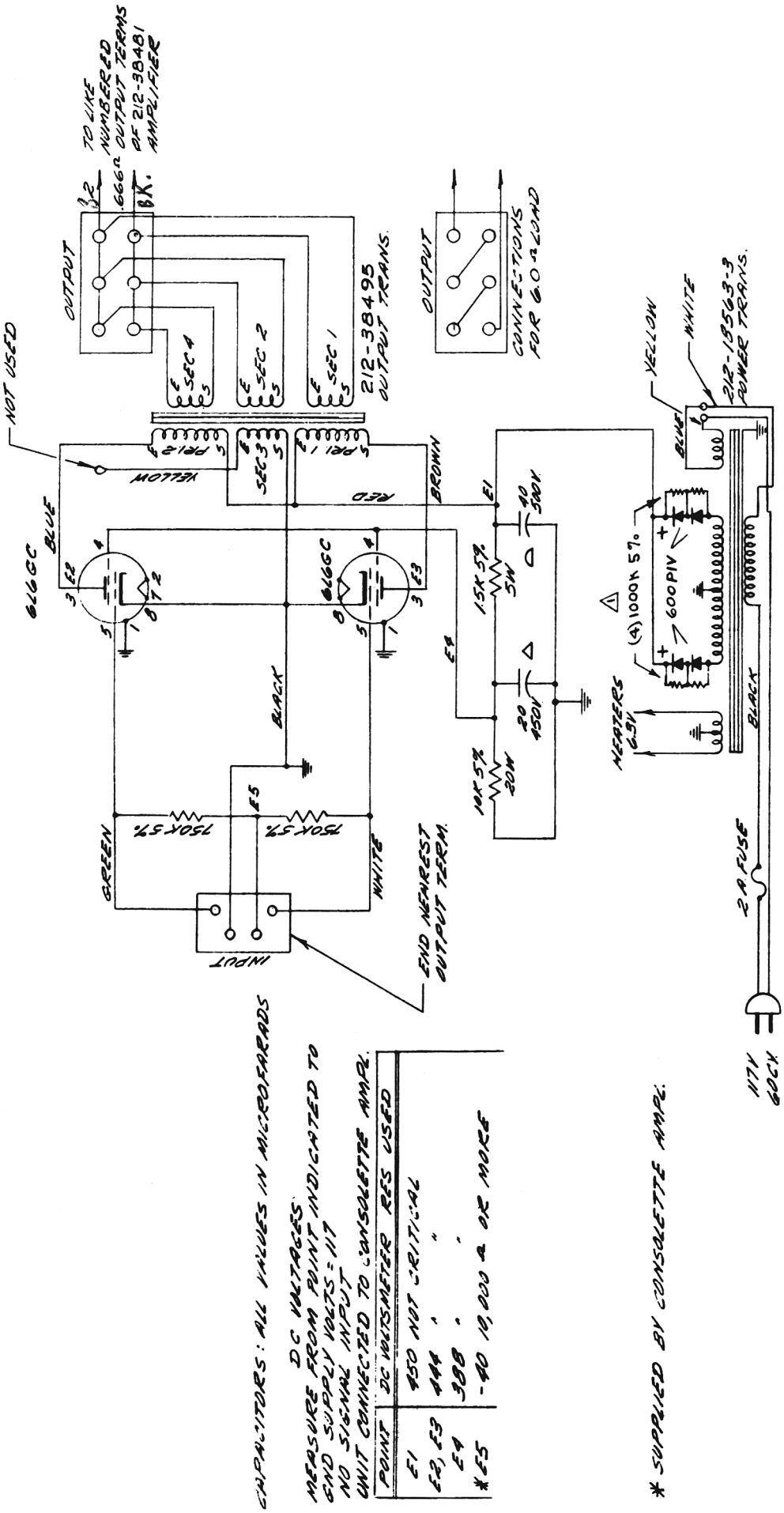




SPEAKERS FOR OPERATION AS IN SECTION 1.3 (6)







SCHEMATIC 107-35 USED ON MODELS HAVING CAPACITY OF 66 STATIONS OR MORE