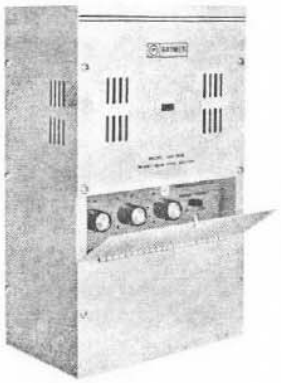
RAYMER

OPERATING INSTRUCTIONS



UNIVERSITY SOUND, INC.
13278 Ralston Ave.
Sylmar, CA 91342
(818) 362-9516

MODEL 806-35W AMPLIFIER

WARNING – TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS AMPLIFIER TO RAIN OR MOISTURE

DESCRIPTION

The Raymer Model 806-35W is a multi-purpose 35 watt RMS monaural all silicon solid state amplifier for surface wall mounting. It is designed for dependable, continuous operation in background music, paging, or public address systems. The unit has provisions for a high impedance microphone input and a high impedance music input. The microphone input may be converted to a balanced low impedance microphone input by the use of a Model MT-3 transformer or to a telephone line input by means of a Model TT-4 transformer. Either one of these input transformers plug into an octal socket on the chassis. The music (auxiliary) input is for use with a tuner, a high output ceramic or crystal phono, a tape recorder with its own preamp, or other auxiliary equipment. Model 806-35W has a tone control that can be turned to the position most pleasing to the listener. The amplifier has speaker outputs for 4 and 8 ohms, or 25 volt and 70 volt balanced or unbalanced lines. A special switch is provided to protect trumpet speaker diaphrams from low frequency power.

The amplifier also features an electronic switching (music mute) circuit in place of a relay to quickly fade out the music while paging; after the page, the music is smoothly restored.

Model 806-35W is equipped with an interlock feature which permits connecting together two or more 806-35W amplifiers or any Raymer 35 watt amplifier or receiver, so that they may be operated simultaneously to deliver a total power in multiples of 35 watts into a single speaker line.

The amplifier is housed in a steel cabinet with keyhole slots which permit wall mounting. All controls are located behind a hinged door to prevent tampering.

UNPACKING

The unit is to be removed carefully from the carton and inspected for any possible damage in transit. If there is any evidence of any damage which might have occurred in shipment, immediately notify your supplier, or the transportation company which delivered it. Claims for damage sustained in transit must be made upon the carrier. Save all packing material for inspection by the claim agent who will furnish you with the proper forms and will also give you the necessary instructions for filing a claim.

INSTALLATION

IT IS NOT NECESSARY TO REMOVE THE CHASSIS FROM ITS CASE TO WALL MOUNT. The enclosed template should be used when wall mounting the unit. Position the template on the wall where the unit is to be mounted. Mark the position of the two mounting screws, then insert two No. 8 round head or equivalent screws of the type appropriate for the wall material at these marks. Leave a space of no greater than 1/16" between the wall and the screwhead. Hang the unit on these two screws, using the keyhole openings on the back of the unit. Insert a No. 8 screw through the hole at the bottom of the case to lock the unit firmly to the wall.

Although the unit is designed to be wall mounted, it may also be placed on a shelf or table. When mounted in either way, sufficient space must be allowed around it to permit free air flow. Allow at least 1 inch on each side for adequate ventilation. DO NOT place on top of vacuum tube equipment. DO NOT store or operate in areas where the ambient temperature exceeds 140^{o}F. DO NOT PLACE ANYTHING ON TOP OF UNIT OR BLOCK VENTS.

CONNECTIONS

In order to connect to the unit it is necessary to remove the lower portion of the front cover. This is done by removing the two screws at the bottom of the front panel and then unscrewing the screw holding the hinged door.

The AC cord has been plugged into the accessory socket to protect it during shipment. Remove this cord and plug into any outlet furnishing 105 to 120 volts, 60 Hz AC. The accessory socket is furnished to supply power to other components such as a tuner, etc. The auxiliary equipment connected to this accessory socket is controlled by the POWER on-off switch so that turning off the unit turns off the equipment.

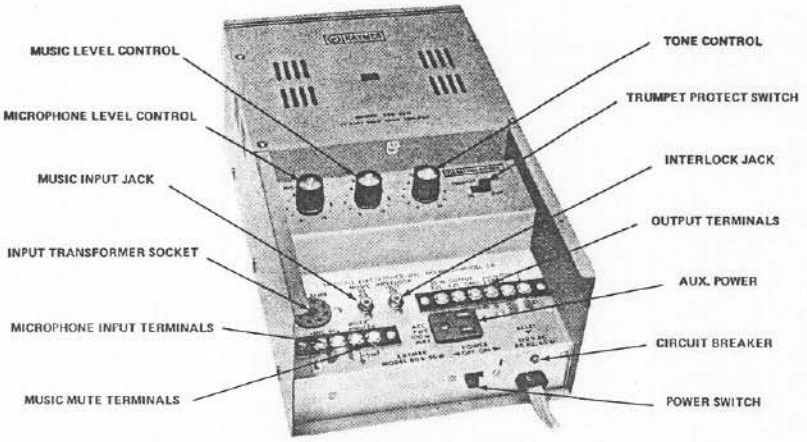


FIGURE 1. VIEW OF AMPLIFIER WITH LOWER COVER REMOVED

INPUT CONNECTIONS

The MUSIC INPUT is high impedance with a maximum sensitivity of 300 millivolts and will accommodate the output of a tuner, a ceramic phono cartridge or the output from a preamplifier such as tape, phono, etc. If the source into the MUSIC input is from leased telephone lines, a Raymer TM-2 telephone adaptor is required to match the telephone lines to this input.

MICROPHONE INPUT

The MICROPHONE INPUT is designed to accommodate a high impedance microphone, a low impedance microphone with Model MT-3 input transformer, or a telephone line with Model TT-4 input transformer. The input transformer socket is jumpered at the factory for high impedance microphone input only. If it is desirable to fade out the music while paging, a "dispatcher" type of microphone (such as Raymer Model 201) or an equivalent microphone with an auxiliary switch should be used. The control circuit of this microphone is to be connected to the MUSIC MUTE terminals. Typical microphone input wiring is shown in Figure 2. When it is desirable to use a low impedance microphone or a telephone line input these jumpers must be removed and the appropriate input transformer plugged into the INPUT XFMR socket.

When the microphone input is connected to a low impedance microphone, the Raymer Model MT-3 microphone input transformer must be used. The input wiring should be the same as shown in Figure 2 except the MT-3 transformer is used instead of the jumpers on the socket.

When the paging source is from telephone lines, the Raymer Model TT-4 telephone input transformer must be used. Typical input wiring from telephone lines is shown in Figure 3. The two pair of lines furnished by the telephone company are identified as RING AND TIP (voice transmission pair) and CONTACT CLOSURE (normally open relay contacts). When it is not necessary to mute the music during page or the music channel of the amplifier is not used, the CONTACT CLOSURE pair is not required.

Interconnection to a private telephone system is shown in Figure 4.

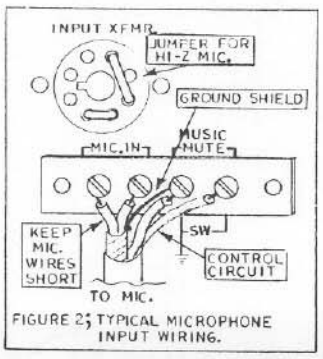


FIGURE 2; TYPICAL MICROPHONE INPUT WIRING.

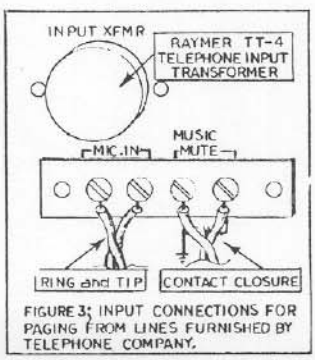


FIGURE 3; INPUT CONNECTIONS FOR PAGING FROM LINES FURNISHED BY TELEPHONE COMPANY.

INTERLOCK

The INTERLOCK OUTPUT jack is connected electrically between the preamplifier and power amplifier section of Model 806-35W. It may be used either as the output of the preamplifier into an external amplifier or tape recorder, or to connect to additional Raymer 35 watt amplifiers or receivers for increased power to a speaker line. By inter-connecting the INTERLOCK jacks of two or more Raymer 35 watt amplifiers or receivers with a patchcord, they may be operated simultaneously to deliver a total output power in multiples of 35 watts into one speaker line.

As an example: The 70 volt outputs of two 35 watt Raymer amplifiers or receivers may be connected in parallel to deliver 70 watts to a 70 volt line. If a system requires 105 watts of power, the 25 volt outputs of three Raymer 35 watt units may be connected in series to drive a 70 volt line with no appreciable mismatch.

The output terminals of Model 806-35W have been phased at the factory so that each terminal is in phase with the corresponding terminal of any other Raymer 35 watt amplifier or receiver. To connect two amplifiers in parallel a jumper wire should be connected between the terminals of each amplifier marked 0 (common). Another jumper wire should be placed between the 25 volt or 70 volt terminal of each amplifier according to the output desired.

CAUTION:

THIS UNIT IS EQUIPPED WITH A CIRCUIT BREAKER DESIGNED TO PROTECT THE TRANSISTORS AND OTHER COMPONENTS AGAINST DAMAGE CAUSED BY OVERLOAD. ONLY A CIRCUIT BREAKER WITH THE RATINGS INDICATED ON THE SCHEMATIC MUST BE USED IN THIS UNIT. DO NOT SUBSTITUTE A CIRCUIT BREAKER WITH A HIGHER RATING OR BY-PASS THE BREAKER IN ANY WAY AS SERIOUS PERMANENT DAMAGE TO THE UNIT MAY RESULT. IN THE EVENT THAT THE CIRCUIT BREAKER CONSTANTLY "KICKS OUT", CHECK THE LOAD ON THE OUTPUT OF THE AMPLIFIER FOR EITHER A SHORT CIRCUIT OR AN IMPEDANCE LOWER THAN THE VALUE RECOMMENDED. IF THERE IS NO SHORT CIRCUIT AND THE LOAD IS CORRECT, CHECK TO SEE IF POSSIBLY THE INPUT AND OUTPUT LEADS ARE RUNNING CLOSE TOGETHER. IF THEY ARE, THEY SHOULD BE SEPARATED TO PREVENT SUPERSONIC OSCILLATION CAUSED BY FEEDBACK FROM THE OUTPUT INTO THE INPUT CIRCUIT. IF THE CIRCUIT BREAKER CONTINUES TO "KICK OUT" AFTER MAKING THE ABOVE CHECKS, DO NOT ATTEMPT TO MODIFY THE UNIT IN ANY MANNER, BUT REFER THE UNIT TO A QUALIFIED TECHNICIAN OR RETURN IT TO THE FACTORY FOR SERVICE.

WARRANTY

THIS UNIT HAS BEEN VERY CAREFULLY INSPECTED AND IS WARRANTED TO BE FREE FROM DEFECTS IN MATERIAL AND WORKMANSHIP UNDER NORMAL USE AND SERVICE FOR A PERIOD OF ONE YEAR FROM DATE OF SALE TO THE ORIGINAL PURCHASER. THIS WARRANTY DOES NOT EXTEND TO ANY UNIT WHICH BEEN SUBJECT TO ABUSE, MISUSE, NEGLECT, ACCIDENT, IMPROPER INSTALLATION, OR ALTERATIONS. THE OBLIGATION OF CETEC RAYMER UNDER THIS WARRANTY IS LIMITED TO THE REPAIR OF ANY DEFECT IN MATERIAL OR WORKMANSHIP AND/OR THE REPLACEMENT OF ANY DEFECTIVE PART, PROVIDED THE UNIT IS RETURNED TO CETEC RAYMER TRANSPORTATION PREPAID.

IT IS RECOMMENDED THAT ANY UNIT ON WHICH SERVICE IS REQUIRED BE PROCESSED THROUGH YOU DISTRIBUTOR OR INSTALLATION COMPANY WHEREVER POSSIBLE.

THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, AND OF ALL OTHER OBLIGATIONS OR LIABILITIES ON OUR PART. WE NEITHER ASSUME NOR AUTHORIZE ANY OTHER PERSON TO ASSUME FOR US ANY OTHER LIABILITY IN CONNECTION WITH THE PRODUCTS MANUFACTURED BY CETEC RAYMER.

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Cetec Raymer

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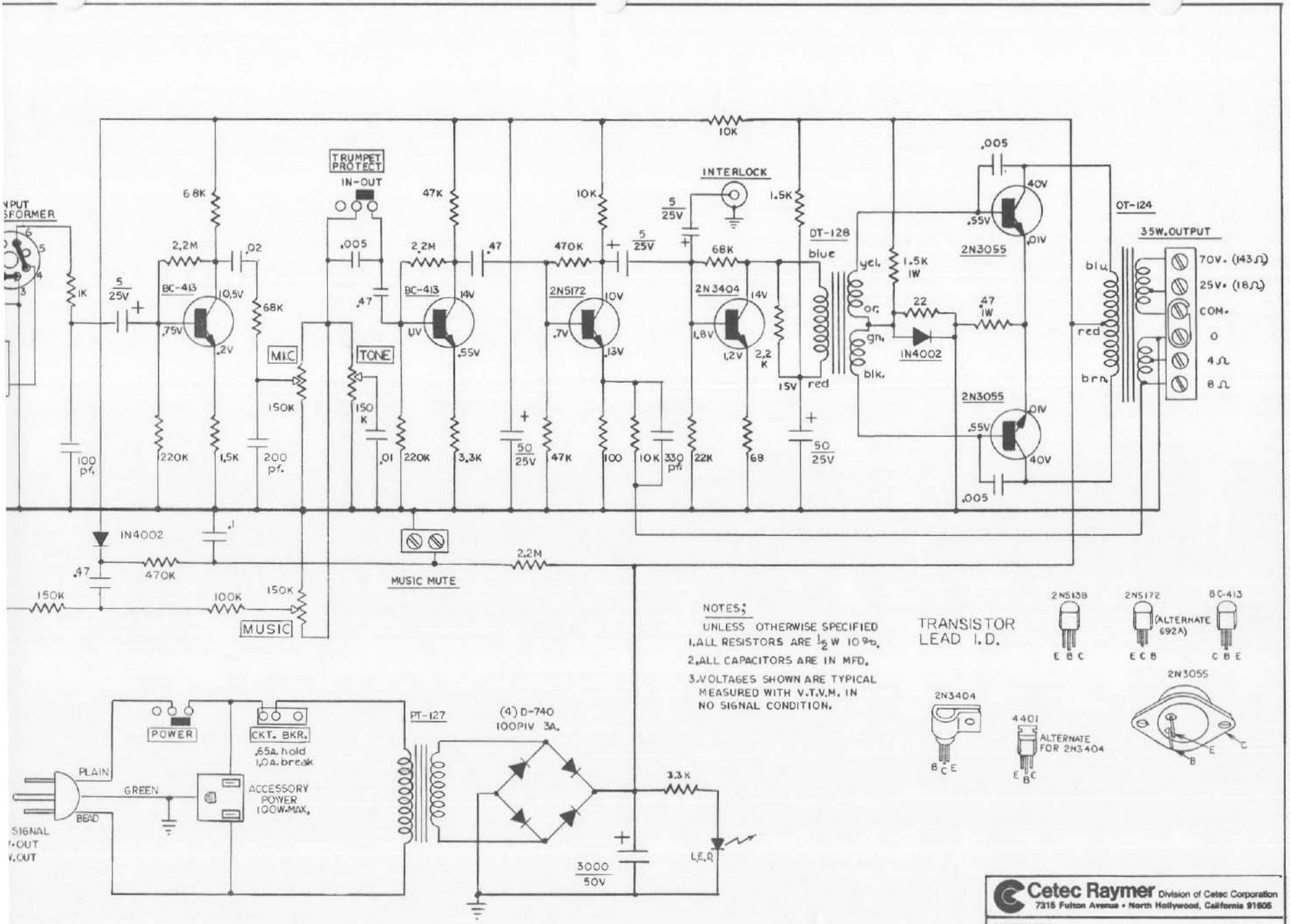

NOTES:

UNLESS OTHERWISE SPECIFIED

1. ALL RESISTORS ARE ½ W 10%.
2. ALL CAPACITORS ARE IN MFD.
3. VOLTAGES SHOWN ARE TYPICAL MEASURED WITH V.T.V.M. IN NO SIGNAL CONDITION.

TRANSISTOR LEAD I.D.

Cetec Raymer Division of Cetec Corporation
7315 Fulton Avenue • North Hollywood, California 91605

SCHEMATIC:

RAYMER MODEL 806-35W
35 WATT AMPLIFIER

ENGINEER: C. KOGGE | DATE: 1 / 17 / 83

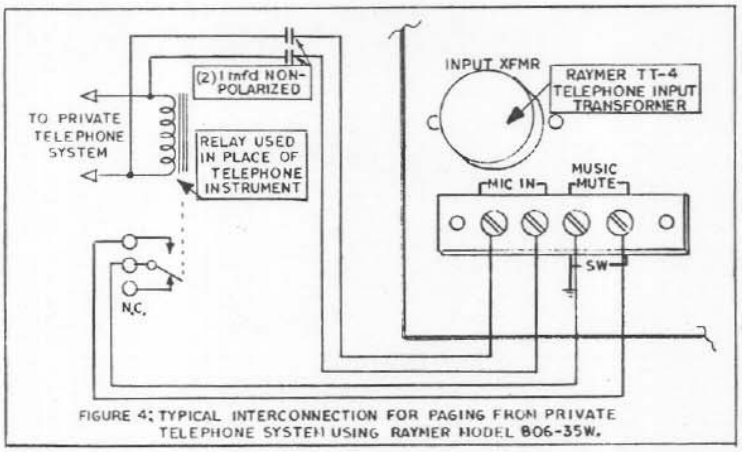

FIGURE 4: TYPICAL INTERCONNECTION FOR PAGING FROM PRIVATE TELEPHONE SYSTEM USING RAYMER MODEL 806-35W.

OUTPUT CONNECTIONS

The output connections are made by means of a screw terminal board. The wires connected to the output should be dressed directly downward and out of the cabinet. Under no circumstances should these leads be allowed near the microphone input terminals or the input wiring. Because of the high gain of the amplifier, any capacitive coupling between the input and output leads will cause the unit to go into oscillation and as a result the circuit breaker will "trip".

The 4 OHM or 8 OHM output is used when connecting directly to the speaker voice coils. When a speaker with an impedance of 8 ohms is connected to the amplifier, use the terminals on the amplifier marked GND and 8Ω. For a 4 ohm speaker or two 8 ohm speakers in parallel, use GND and 4Ω. The impedance value of the 25 volt tap is 18 ohms; however, a 16 ohm speaker or speaker system may be connected to the 25 volt tap without damage to the unit.

The 25 VOLT or 70 VOLT output is used when connecting to speakers which have line matching transformers. Connecting to the 25 volt or 70 volt tap on the unit permits the use of a number of speakers each with its own corresponding line matching transformer, thereby eliminating the necessity of calculating impedances. The tap on the line matching transformer is selected to give the power desired for each speaker. The total of all the power settings should be no greater than the amplifier output rating. If the speaker uses a 25 or 70 volt line transformer, connect the speaker transformer to the terminals marked COM and 25V (or 70V) according to the line desired. For an unbalanced line the jumper remains connected between COM and GND as supplied; if a balanced output line is used, disconnect the jumper between COM and GND.

Optimum performance of any transistor amplifier depends on the proper current delivered at the output terminals. Connecting a total load impedance at any tap less than the impedance indicated on the back panel of the amplifier will cause the transistors to deliver more current than they were designed for and will deteriorate the performance of the unit and cause damage to the transistors. To prevent this from occurring and to protect the components, the unit is equipped with a circuit breaker that will trip if the output impedance is below the specified rated value; for example, if two 8 ohm speakers are connected in parallel (resulting in a 4 ohm impedance), and in turn connected to the 8 ohm output terminal, the circuit breaker will trip as soon as the volume control is turned up to the unit's maximum output.

Long lines have an appreciable resistance with a resultant power loss. The use of parallel matching transformers on either 25 volt or 70 volt lines is recommended for long distances. When it is desired to have less than 15% power loss on 8 ohm line and 5% on high impedance lines, the following table may be used as a guide for the proper wire size to be used. In all cases, it is advisable to run as heavy a wire as possible consistent with the requirements.

WIRE SIZE B & S	MAXIMUM LENGTH OF LINE BETWEEN OUTPUT AND LOAD			
	4 Ohms	8 Ohms	18 Ohms (25V)	143 Ohms (70V)
14	125'	250'	490'	1500'
16	75'	150'	330'	1000'
18	50'	100'	220'	600'
20	25'	50'	110'	400'