Film-Tech

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SIMPLEX

Type C-60 TUBE Sound System

Consists of the following component equipment as a package:

AM-101 Volume Control Amplifier
AM-1000 Volume Control Amplifier
AM-1001 Amplifier (Power)
AM-1003 Amplifier (Monitor)
AM-2013 Switch (Amplifier selector)
AM-2023 Cabinet (36" high)
AM-2032 Legs (for AM-2023 Cabinet)
AM-2033 Cabinet (15" high)
AM-2069 Switch (Non-sync, Film, and Mic input selector)
LU-1018 Monitor Unit (passive)
LU-1024 Monitor Loudspeaker (folded, exponential horn type)
LU-1026 Network (speaker crossover)
LU-1040 Wings (for Simplex/Altec "Voice of the Theater" speaker cabinets)
PU-1000 Power Unit (exciter supply, 9 volt, 4 ampere)
PU-1003 Power Unit (speaker field coil supply, 220 volts DC output)
SH-1000 Soundhead (stereo and mono)
SH-2100 Shielded Cable (for connecting SH-1000 to AM-101 preamplifier)

Repair parts may be obtained from:
ANTIQUE ELECTRONIC SUPPLY
6221 South Maple Avenue
Tempe, Arizona 85283
Phone: (480) 820-5411
Fax: (480) 820-4643 or 1-800-706-6789
Website: www.tubesandmore.com

SIMPLEX SOUND SYSTEMS

Simplex

REG. U.S. PAT. OFF.

INSTALLATION INSTRUCTIONS

FOR

TYPE C-60 SIMPLEX SOUND SYSTEM

60 Watt. 4 X 15.

ASSOCIATED DRAWINGS

Conduit Layout - WD-192

Projection Room Layout - WD-139

International Projector Corporation
88-96 Gold Street
New York, N. Y.
Printed in U.S.A.

FOREWORD

Simplex Sound Systems are developed and manufactured by the International Projector Corporation, makers of the well known Simplex Projector Mechanisms and associated projection equipment. The name "Simplex" has always denoted dependability, reliability, long life and high quality. Simplex Sound Systems carry on this worthy tradition.

Manufactured under Western Electric Company and Radio Corporation of America licenses, they are available for all sizes of auditoriums. All systems are of the same high quality with adequate reserve power to reproduce life-like sound with true fidelity.

For continued high quality sound reproduction, proper operation and careful maintenance, in accordance with the instructions on the following pages, are necessary.

TO PURCHASERS OF SIMPLEX 4 STAR SOUND SYSTEMS:

The undersigned hereby agrees that, upon notice and request so to do, it will undertake the defense, and pay the legal expenses of all suits that may be instituted against the Purchaser for alleged infringement of patents because of use by the Purchaser of the Simplex 4-Star Sound Systems, except use in homes, and will pay any judgment or decree for the payment of money which may be entered by a court of last resort against the Purchaser in any suit on account of such alleged infringement.

INTERNATIONAL PROJECTOR CORPORATION

TYPE "C-60"

SIMPLEX SOUND SYSTEM

EQUIPMENT INSTRUCTIONS

An Equipment Instruction is packed with each major piece of apparatus shipped with the Type "C-60" System. Each Equipment Instruction describes the apparatus, includes technical details and contains installation, operation and maintenance information. It is recommended that these instructions be retained for reference purposes and filed in alphabetical-numerical order by code number in this book.

The following Equipment Instructions are packed with the Type "C-60" System apparatus:

AM-101	Volume Control Amplifier
AM-1001	Amplifier (Power)
AM-1003	Amplifier (Monitor)
AM-2013	Switch
AM-2023	Cabinet
AM-2032	Legs
AM-2033	Cabinet
AM-2069	NS-Ann. Switching Attachment
LU-1018	Monitor Unit
LU-1024	Monitor Loudspeaker
LU-1026	Network
LU-1040	Wings
PU-1000	Power Unit
PU-1003	Power Unit
SH-1000	Sound Mechanism
SH-2100	Coaxial Cable

International Projector Corporation
New York
Printed in U.S.A.

Simplex Sound Systems are developed and manufactured by the International Projector Corporation, makers of the well known Simplex Projector Mechanisms and associated projection equipment. The name *SIMPLEX* has always denoted dependability, reliability, long life and high quality. Simplex Sound Systems carry on this worthy tradition.

It is desirable to contract for the necessary labor and material required for the complete installation of the sound system far enough in advance of the arrival of the Installation Inspector so that there will be no delays in completing the installation.

Labor and material should be provided to:-

A. Mount all cabinets in the Projection Room, install the equipment therein, and install the stage speaker equipment shown on the associated conduit layout drawing.

B. Install all conduit and wiring shown on the associated conduit drawing.

C. Install the sound mechanisms.

D. Make all connections.

E. Assist the Installation Inspector in making the final adjustments.

Before beginning the installation, it is suggested that the suitability of the Projection Room for the proper operation of the system be determined. The power supply should be adequate, and the projection equipment in good condition.

This Simplex Sound System should be installed in accordance with the instructions herein. If special conditions indicate the necessity for any deviation from these instructions, it is suggested that the nearest National Theatre Supply Company branch be advised.

1. SPACE REQUIRED.

A. Projection Room: If there are no local, city and state ordinances governing the size of the Projection Room and the clearances around projectors, the following may be considered as the minimum requirements. They should not be construed to supersede or alter any such ordinances, and larger Projection Rooms are desirable where space permits. If further information is desired, it is suggested that the report of the Projection Practice Committee of the Society of Motion Picture Engineers, entitled "Projection Room Planning", be consulted. Copies may be obtained from the Society at the Hotel Pennsylvania, New York.

For two projectors only, in accordance with the above, the Projection Room should be at least -

9' long (parallel to the screen) 8' deep and 7' high
or
11' long (parallel to the screen) 7' deep and 7' high.

The space between and around projectors should be:-

Between projector centers - 54" desirable, 52" minimum.
From center of left projector to nearest obstruction on the left - 30" desirable, 25" minimum.
From center of right projector to nearest obstruction on the right - 36" desirable, 31" minimum.

If a spotlight, rewind bench, arc generator set or other auxiliary equipment is in the Projection Room, additional space will be required.

B. STAGE: For proper installation, operation and maintenance of the stage speaker equipment, the space behind the screen should not be less than 12' high x 13' wide x 4' deep.

2. POWER REQUIRED.

The main power feeders to the Projection Room should be of adequate size to obtain good regulation, and the voltage and frequency should be within the limits given below during operating hours. High quality sound reproduction and equipment life are dependent upon these factors.

The power supply in the Projection Room should be 105-125 volts AC, 60 cycles plus or minus 3%. The main power feeders to the Projection Room should be of sufficient size to carry the regular load of the projector arcs and other projection room equipment, and in addition a starting load of 50 amperes for the sound system.

The existing conduit and wiring to the projector motors may be used whenever suitable. It is recommended that each motor be separately fused, preferably with a 5 ampere fusetron. If fusetrons are not available, a 20 ampere fuse may be used temporarily.

If the power supply is other than that given above, special equipment is required.

3. INSTALLATION MATERIAL SUPPLIED BY THE CUSTOMER.

Before ordering the installation material the associated conduit and Projection Room Layout drawings should be carefully studied, the location of the equipment determined, and the conduit runs planned. Existing conduit may be used if suitable.

The number of feet of conduit, and the length of wire required, will depend upon the size of the Projection Room, the location of the equipment, and the distance from the Projection Room to the stage. The number of condulets required will depend upon the number of bends in the various conduit runs. Condulets are recommended so that wires may be more readily pulled through the conduit. The following material list is given as an indication of the various items required.

QUANTITY	MATERIAL
4	Box. 4" square outlet with blank cover.
As required	Conduit, 1/2", 1", 1-1/4" rigid.
Approx. 20'	Conduit, 3/8", 1/2" flexible.
As required	Condulets, 1/2", 1" 1-1/4".
8	Connectors, 3/8", 1/2" flexible conduit
2	Fusetrons, 5 amp or 20 amp fuse (For motor circuits.)
As required	Wire, #10 (white), #12, #14 and #16 BRC black and white.
Approx. 50'	Wire, #14 twisted pair BRC.
Approx. 50'	Wire, #16 twisted 3-Conductor BRC.
Approx. 10'	Wire, #16 twisted 4-Conductor BRC.
Approx. 50'	Microphone cable - Belden #8401.
As required	Locknuts, bushings, 1/4" toggle bolts or expansion bolts. shields, straps, etc., for equipment mounting.
Approx. 50'	Tirex Cable, #16 4-Conductor.
Approx 25'	Tirex Cable, #16 6-Conductor
1 Pint	Oil SAE #40.

4. INSTALLATION OF EQUIPMENT.

A. Mounting: All equipment, outlet boxes and condulets should be fastened to brick or concrete walls with bolts and expansion shields; to tile walls with toggle bolts; and to gypsum block or transite walls with through bolts.

B. Conduit: The rigid conduit used should not be smaller than specified on the associated conduit layout, but larger conduits should be used if required to conform to local ordinances.

NOTE: "BX" or flexible conduit (Greenfield) may be used instead of rigid conduit for all runs if local, city and state regulations permit.

C. SH-2100 Coaxial Cable: Special care should be taken in the handling and installation of the coaxial cable, coupling the sound mechanism output to the volume control amplifier input, as sharp bends or kinks may damage it and make replacement necessary. A fixed length of coaxial cable is shipped completely assembled with a flexible conduit connector at each end. The connector clamping screws may be loosened for installation, but *DO NOT DISSEMBLE THE CABLE OR SHORTEN IT.*

D. Wiring: The wires should be of the sizes specified on the above drawings.

The three #16 BRC wires from the PU-1000 Power Unit to the AM-101 Volume Control Amplifier, and the four wires in the exciter lamp circuit between the AM-101 Volume Control Amplifiers, should be twisted tightly for the entire run.

The color code for wiring should be as follows:-

White Conductor - Negative, common or ground.
Black Conductor - Positive.

All connections should be soldered with rosin core solder. No flux of any kind should be used.

5. CONCEALED CONDUIT INSTALLATIONS.

The AM-101 Volume Control Amplifier, AM-2023 and AM-2033 Cabinets and LU-1024 Monitor Loudspeaker may be partially recessed in the wall for concealed conduit installations and the concealed conduits brought into knockouts on the sides of the cabinets (See Fig. 1,2,3 and 4) or they may be surface mounted and the conduits brought into knockouts in the back or into a surface outlet box mounted below the cabinet (See Fig.5).

When the conduits from the AM-101 to the sound mechanisms (see associated conduit layout) are concealed, Belden #8401 Microphone Cable (provided by the customer) should be substituted for the SH-210C Coaxial Cable supplied with the equipment.

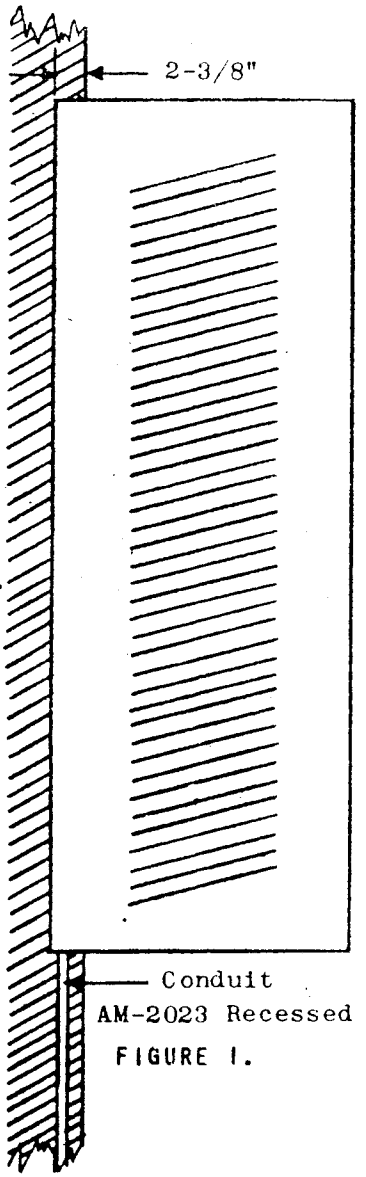


FIGURE 1.

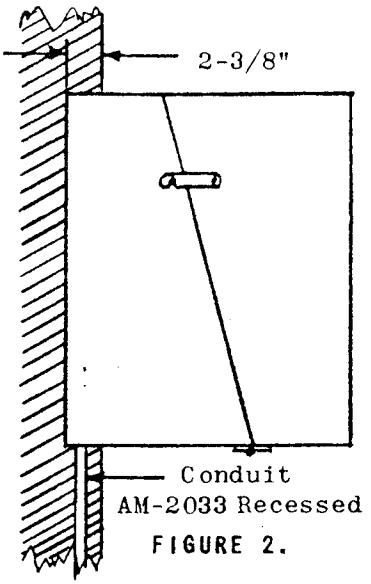


FIGURE 2.

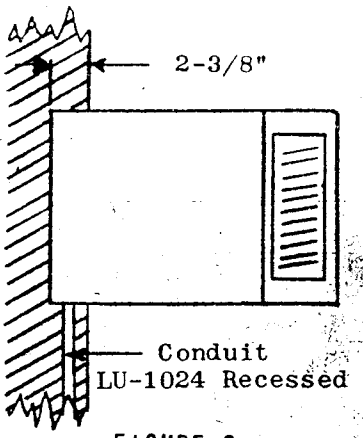


FIGURE 3.

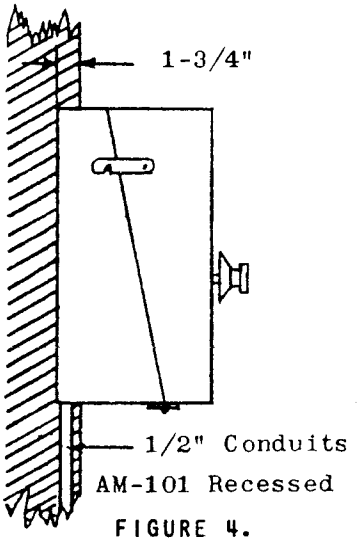


FIGURE 4.

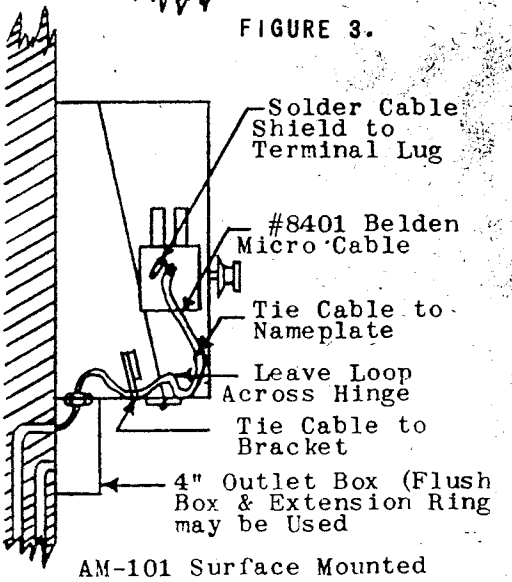
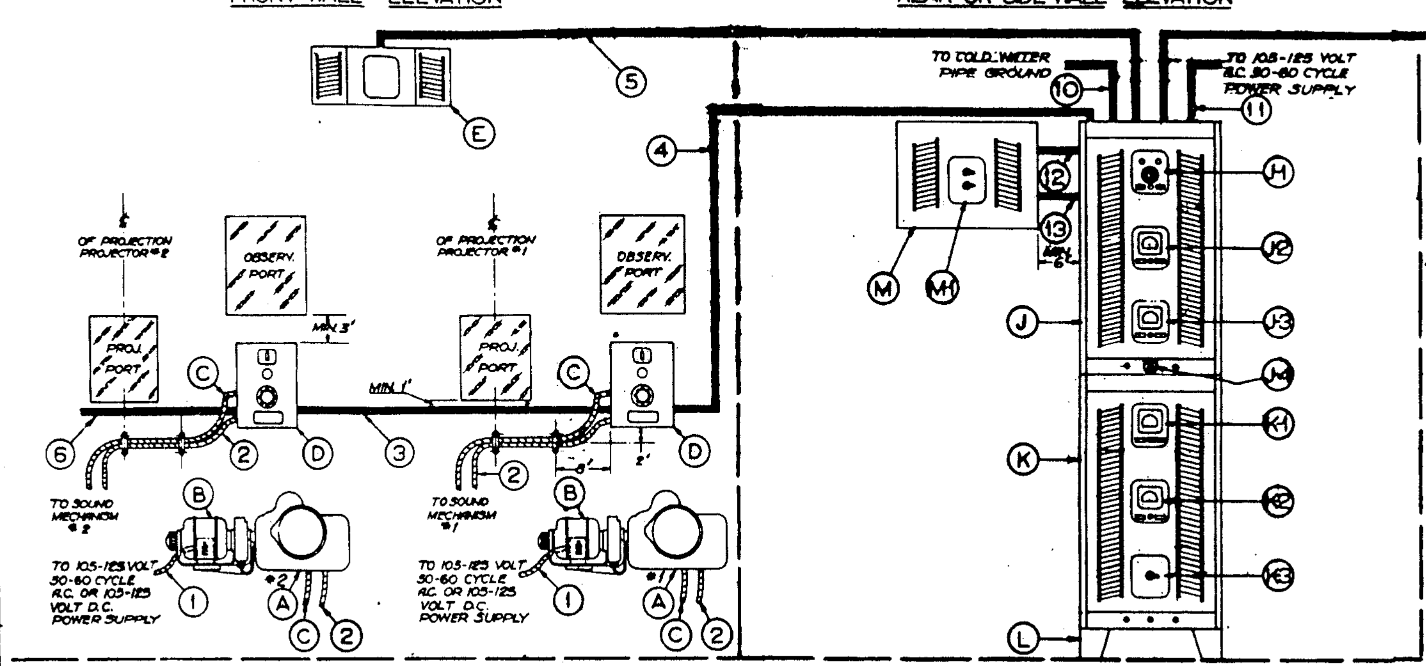
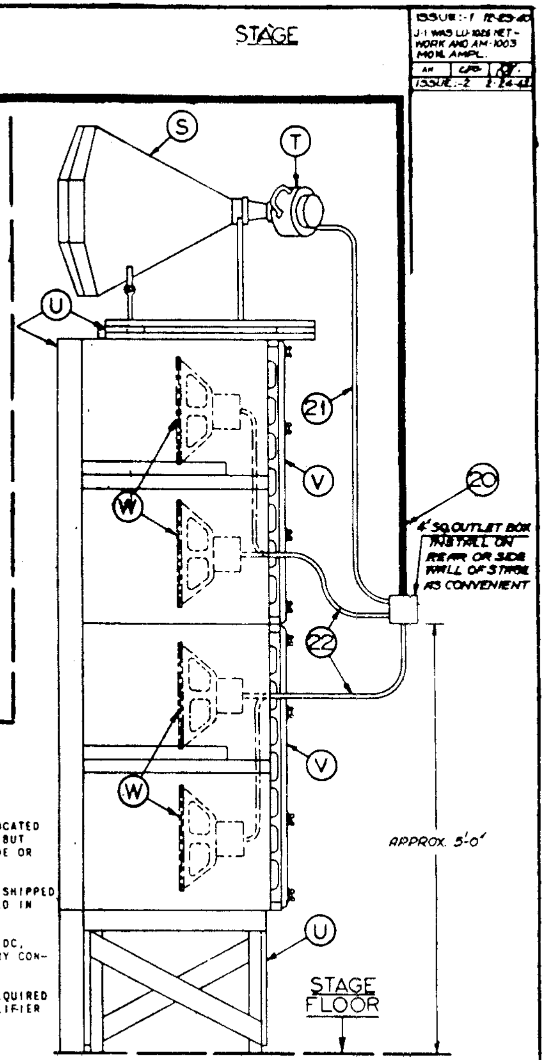


FIGURE 5.

WD-192





EQUIPMENT

(A) SOUND MECHANISM
(SH-1000 (60 CYCLE & DC)
(SH-1001 (50 CYCLE)
(11-5/8" H x 27-3/8" LG x 14" W)
(110 LBS. COMPLETE WITH MOTOR ASSEMBLY)

(B) MOTOR ASSEMBLY
SH-2055 (60 CYCLE)
SH-2062 (50 CYCLE)
SH-2064 (DC)

(C) SH-2100 COAXIAL CABLE

(D) AM-101 VOLUME CONTROL AMPLIFIER
(12-1/2" H x 9" W x 6-1/2" D)
(11 LBS. COMPLETE)

(E) LU-1018 MONITOR UNIT & LU-1024 MONITOR HORN
(8-1/2" H x 20" W x 12-1/2" D)
(17 LBS. COMPLETE)

(J) AM-2023 SYSTEM CABINET
(36" H x 20" W x 12-1/2" D)
INSTALL THE FOLLOWING:-
J-1 LU-1005-X NETWORK & AM-1003 MON. AMPL.
J-2 AM-1001 POWER AMPLIFIER
J-3 AM-1001 POWER AMPLIFIER
J-4 AM-2013 SWITCH
(160 LBS. COMPLETE)

(K) AM-2023 SYSTEM CABINET
(36" H x 20" W x 12-1/2" D)
INSTALL THE FOLLOWING:-
K-1 AM-1001 POWER AMPLIFIER
K-2 AM-1001 POWER AMPLIFIER
K-3 PU-1003 POWER UNIT
(165 LBS. COMPLETE)

(L) AM-2032 LEGS (SET OF 4)

(M) AM-2033 SYSTEM CABINET
(15" H x 20" W x 12-1/2" D)
INSTALL THE FOLLOWING:-
M-1 PU-1000 POWER UNIT
(95 LBS. COMPLETE)

(S) HIGH FREQUENCY HORN (1)
LU-1012, LU-1013, LU-1014 OR LU-1019
(MAX. 23-1/2" H x 45" W x 31" D)
(228 LBS. WITH 2 UNITS)

(T) LU-1011 HIGH FREQUENCY UNIT (2)

(U) LU-1040 WINGS (800 LBS. COMPLETE)
INCLUDE:- WING DETAILS (4)
LU-2019 STAND (1)
LU-2020 HORN CRADLE (1)
(141" W x 106" H WHEN ASSEMBLED)

(V) LU-1016 LOW FREQUENCY HORN (2)
(40" H x 84" W x 33" D EACH)
(260 LBS. - 1 HORN WITH 2 UNITS)

(W) LU-1010 LOW FREQUENCY UNIT (4)

CONDUIT AND WIRING

(1)	1/2" FLEXIBLE CONDUIT	2 - #12 BRC
(2)	3/8" FLEXIBLE CABLE	4 - #16 BRC
(3)	1" CONDUIT	1 - #14 TW. PR. BRC 6 - #16 BRC 4 - #16 BRC (TWIST TIGHTLY) 1 - SHIELDED CABLE *
(4)	1" CONDUIT	1 - #14 TW. PR. BRC 2 - #16 BRC 3 - #16 BRC (TWIST TIGHTLY) 1 - SHIELDED CABLE *
(5)	1/2" CONDUIT	2 - #16 BRC
(10)	1/2" CONDUIT	1 - #10 BRC
(11)	1/2" CONDUIT	2 - #14 BRC
(12)	1/2" CONDUIT	2 - #14 BRC
(13)	3/4" CONDUIT	1 - #16 BRC 3 - #16 BRC (TWIST TIGHTLY)
(20)	1-1/4" CONDUIT	1 - #10 BRC 2 - #14 BRC (NOTE: 5. 220 V. DC FIELD) 6 - #14 BRC (2 SPARES)
(21)	#16 - 6 CONDUCTOR TIREX CABLE	
(22)	#16 - 4 CONDUCTOR TIREX CABLE (2)	

* #8401 BELDEN MICROPHONE CABLE
(CAPACITY NOT TO EXCEED 30 MMF PER FT.)

NOTES:-

1. THE MONITOR LOUD SPEAKER (E) SHOULD BE LOCATED SO THAT IT IS AUDIBLE AT THE PROJECTORS, BUT NOT IN THE BALCONY. IT MAY BE ON THE SIDE OR FRONT WALL OR ABOVE THE SYSTEM CABINETS.
2. THE AM-2023 AND AM-2033 SYSTEM CABINETS ARE SHIPPED UNEQUIPPED. THE UNITS SHOULD BE INSTALLED IN THE LOCATIONS SHOWN.
3. WHEN THE POWER SUPPLY IS 105 - 125 VOLTS DC, CONDUIT (11) RUNS TO A ONE KILOWATT ROTARY CONVERTER SUPPLIED BY THE CUSTOMER.
4. CONDUIT (6) AND WIRING, SHOWN BELOW, ARE REQUIRED ONLY FOR THIRD AM-101 VOLUME CONTROL AMPLIFIER AND SOUND MECHANISM.

   1" CONDUIT: 1 - #14 TW. PR. BRC; 8 - #16 BRC; 4 - #16 BRC (TWIST TIGHTLY); 1 - SHIELDED CABLE *

5. THE 220 V. DC STAGE SPEAKER FIELD SUPPLY WIRE (2 - #14 BRC) SHOULD BE INSTALLED IN A SEPARATE CONDUIT IF REQUIRED TO CONFORM TO LOCAL ORDINANCES.

ISSUE:-1 12-23-40
J-1 WAS LU-1025 NETWORK AND AM-1003 MON. AMPL.
ISSUE:-2 2-24-41

WD-193 WIRING DIAGRAM
ASSOCIATED DRAWINGS

TYPE 'C-60'
SIMPLEX SOUND SYSTEM
TYPICAL CONDUIT LAYOUT

INTERNATIONAL PROJECTOR CORPORATION
90 GOLD STREET NEW YORK

WD-192

ISSUE 1 10-28-38 PROJECT PORT WAS 10" W FIG. PROJECTION & DIM. WAS 4'-5" 14" DIM. AT PORT & FIG. 1 ADDED. ISSUE 2 8-16-39

LEGEND

(A) AM-101 VOLUME CONTROL AMPLIFIER

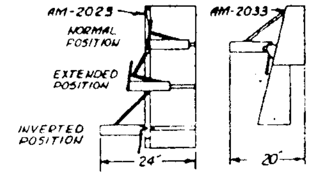
• (B) AM-2023 CABINET

• (C) LU-1024 HORN

• (D) AM-2033 CABINET

• PREFERRED LOCATION SHOWN SOLID. TYPICAL OPTIONAL LOCATIONS SHOWN DOTTED.

(E) CLEARANCES BETWEEN PROJECTION EQUIPMENT AND SOUND SYSTEM EQUIPMENT MUST CONFORM TO LOCAL ORDINANCES AND SPACE REQUIREMENTS IN FIG 1. ACTUALLY THE LOCATION OF SOUND EQUIPMENT WILL BE DETERMINED BY THE SIZE OF THE PROJECTION ROOM.



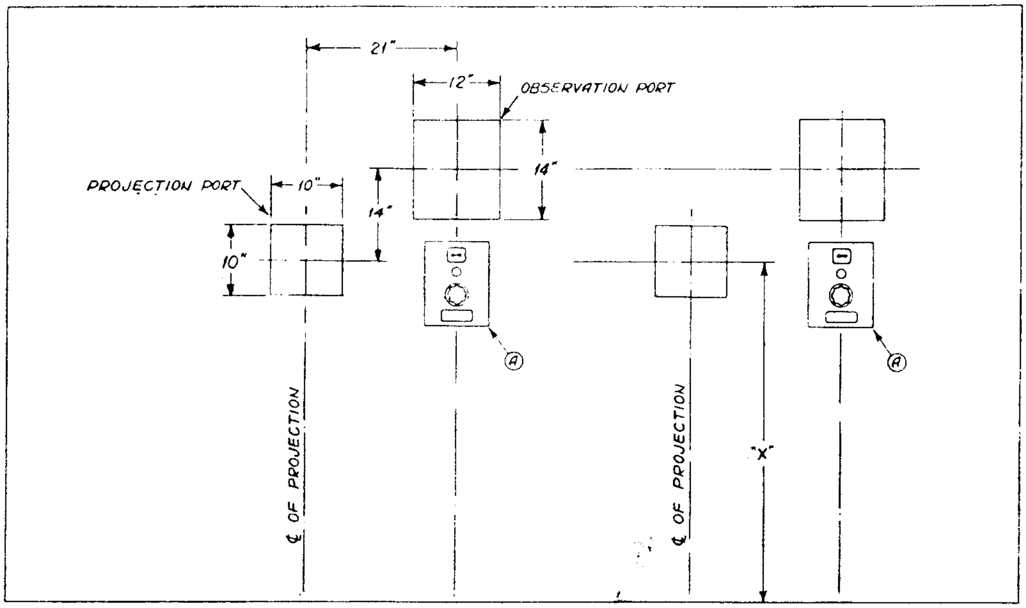
SIDE VIEW OF AM-2023 AND AM-2033 CABINETS SHOWING POSITIONS OF INSTALLED UNITS.

NOTE:- THE AM-2023 AND AM-2033 CABINETS SHOULD BE LOCATED SO THAT THERE IS ADEQUATE CLEARANCE IN FRONT FOR INVERSION OF AND ACCESS TO THE UNITS.

FIG. 1

PROJECTION PORT HEIGHTS (DISTANCE FROM FLOOR TO CENTER OF PORT - INCHES) SIMPLEX SOUND MECHANISM AND PEDESTALS

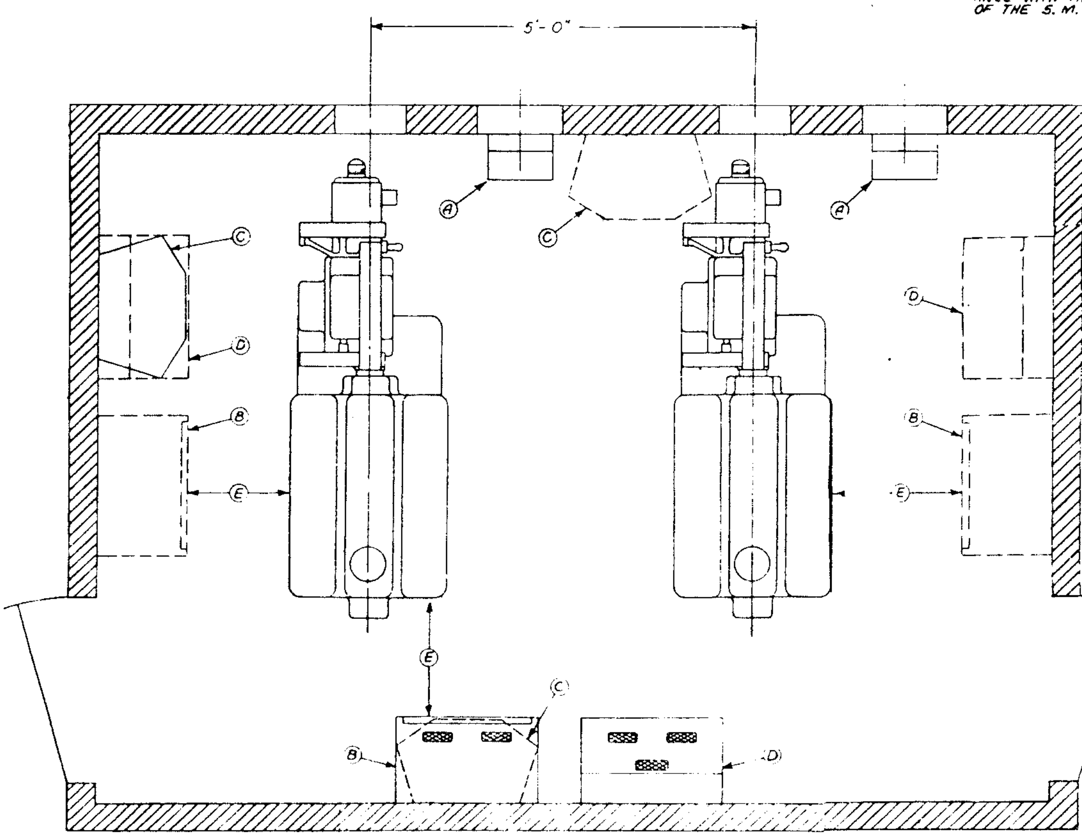
DIMENSION "X"			
PROJ. ANGLE DEGREES	SIMPLEX PEDESTAL		
	SUPER SIMPLEX	TYPE L&M	TYPE R
0	48	48	48
2	46 13/16	47	47½
4	45 9/16	46	47
6	44 5/16	45	45½
8	43 1/8	44	44
10	41 15/16	43	42
12	40 3/4	42	40
14	39 5/8	41	39
16	38 9/16	40	37½
18	36 15/16	38½	35½
20	35 1/4	37½	34
22	32 1/8	36½	33
24	30 3/8	35½	32
26	28½	34	31½



ELEVATION OF FRONT WALL

NOTE:-

PROJECTION AND OBSERVATION PORT SIZES ARE IN ACCORDANCE WITH THE RECOMENDATIONS OF THE S.M.P.E.



PROJECTION ROOM LAYOUT TYPICAL FOR LARGE SIMPLEX SOUND SYSTEM

INTERNATIONAL PROJECTOR CORPORATION

WD-139

SIMPLEX SOUND SYSTEMS

TUNING-UP

High quality sound reproduction is dependent upon the careful tuning-up of the system after the equipment has been mounted and connections made per the Installation Instructions and System Wiring Diagram. The procedure is described in the following sections.

It is recommended that the following equipment be available for tuning-up:

(a) A standard test reel, such as the Academy Test Film.

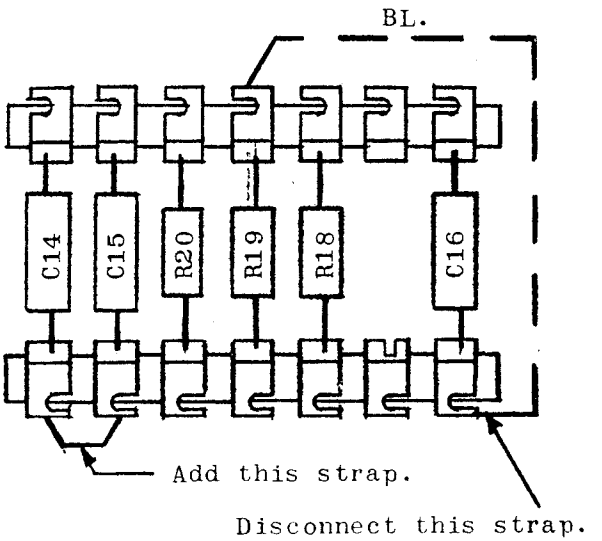
(b) A standard multi-frequency film.

(c) A volume indicator, voltmeter and ammeter.

1. SOUND MECHANISM SCANNING SYSTEM.

The exciter lamp, lens tube, reflector lens and lateral guide roller are adjusted for optimum response at the factory and should be received ready for operation. If however, there is definite evidence that the scanning system is out of adjustment, readjustments should be carefully made in accordance with the procedure in Equipment Instruction "SH-1000 Sound Mechanism".

A. To facilitate adjustments of the lens tube, using a 9,000 cycle test film, as described in Equipment Instruction "SH 1000 Sound Mechanism", the temporary wiring changes (referred to factory adjustment) in the warping circuit of the AM-1001 Amplifier, shown at the right, are recommended. These changes raise the characteristic at the high end in contrast to the normal droop, and thereby increase the accuracy of the adjustment. The warping circuit should be restored to normal after the adjustments have been completed.



2. ADJUSTMENT OF GAIN CONTROL IN THE AM-1001 AMPLIFIER.

This adjustable gain control is provided so that adequate volume level may be obtained in an auditorium with a normal setting of step 9 of the main volume control in the AM-101 Volume Control Amplifier. To set this gain control, turn the main volume control in the AM-101 to step 9, run an average standard print (Academy Test Reel may be used), and adjust the gain control in the amplifier so that adequate volume is obtained in the auditorium. Once adjusted there should be no necessity for readjustment, as the main volume control in the AM 101 should be adjusted to take care of variations in prints, size of audience, etc.

3. PHASING OF STAGE LOUD SPEAKERS.

A. Connections. Two HF speakers are connected in parallel across the high frequency leg of the network. Two LF speakers are connected in series or four LF speakers in series-parallel across the low frequency leg of the network.

B. Testing. The high and low frequency speakers should be in phase electrically with respect to each other. Each should be tested by connecting a DC voltmeter across the speech terminals, the same lead to the same terminal of each unit, and a battery across the field terminals, the negative and positive battery terminals being connected to the negative and positive terminals of each speaker field coil respectively. The voltmeter should show a deflection in the same direction on each speaker when the battery supply is opened. Do not break the loud speaker field supply circuit to test polarity as the speakers may be damaged.

C. Positioning of Horns. The horns should be positioned initially in accordance with the Equipment Instruction packed with the set of wings. After the horns have been finally set for distribution (See Section 5), a standard test reel should be run and the high frequency horn and cradle moved back and forth until best quality is obtained. Then nail the cradle securely in position.

D. High and Low Frequency Loud Speaker Units.

(1) The LU-1010 Low Frequency Loud Speaker Unit is an energized, moving coil, cone type speaker, 15" in diameter and weighing 27 lbs. The voice coil impedance is 6 ohms. The field coil resistance is 1600 ohms and field excitation of 220 volts DC. is obtained from the PU-1003 Power Unit. Two of these units mount in each LU-1015 Low Frequency Horn. The LU-1015 is a wooden, folded, exponential horn.

(2) The LU-1011 High Frequency Loud Speaker Unit is an energized, metal diaphragm, moving coil speaker, 6-1/2" in diameter and weighing 26 lbs. The voice coil impedance is 22 ohms. The field coil resistance is 2500 ohms and field excitation of 220 volts DC, is obtained from the PU-1003 Power Unit. Two units mount on the LU-1012 (3 x 4), LU-1013 (3 x 5), LU-1014 (3 x 6) or LU-1019 (2 x 5) High Frequency Horn. The high frequency horns are multicellular, exponential horns made of lead coated metal.

4. FREQUENCY RESPONSE ADJUSTMENTS.

A. The Warping Circuit in each AM-1001 Amplifier is set for the L_2 H_2 curve (See drawing SC-21). If, after carefully positioning the horns in accordance with Sections 3 and 5, careful listening tests indicate the necessity for a change in the frequency response characteristic, the warping circuit may be adjusted per drawing SC-21.

B. In Concealed Conduit Installations #8401 Belden Microphone Cable should be substituted for the SH-2100 Coaxial Cable furnished for exposed conduit installations. Due to a difference in the capacity of the two cables, a compensating capacitor should be added in each volume control amplifier, when #8401 Belden is used, to obtain the frequency response characteristics shown on drawing SC-21. Refer to Equipment Instruction "Cable, #8401 Belden Microphone" for the size and method of connecting the additional capacitor.

5. ACOUSTICS OF AUDITORIUMS.

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The shape of the auditorium, the material used on the walls and ceiling, the decorative drapes on the walls and the type of seats and carpeting used determine the acoustic properties of the auditorium and the final positioning of the stage horns When reverberation and reflections are encountered, special considerations apply

A. Reverberation. When the contours of the walls and ceiling are such that there is no concentration of sound but reflections from many surfaces, due to the non absorption qualities of the surfaces, the multiple reflections result in a general mass of sound known as reverberation. It may be recognized by the persistence of sound after the source has stopped.

In such auditoriums, the stage horns should be set so that direct sound is projected into the seating area and does not strike any reflective surfaces.

B. Reflection. In auditoriums, having large reflective surfaces such as flat or curved walls, ceiling domes, etc., reflected sound may be concentrated in certain areas within the seating section of the auditorium. Such a condition depending upon the source of the reflected sound, is known as side wall, back wall or ceiling "slap", and results in distorted sound in those areas.

(1) Side Wall "Slap". To eliminate side wall "slap", the two upper, outside cells of the high frequency horn may be plugged with wool yarn. Do not pack tight. The yarn should be in a loosely formed cone.

(2) Ceiling "Slap". Tilting the high frequency horn downward so that the direct sound is projected into the seating area and does not strike the ceiling will generally eliminate ceiling "slap".

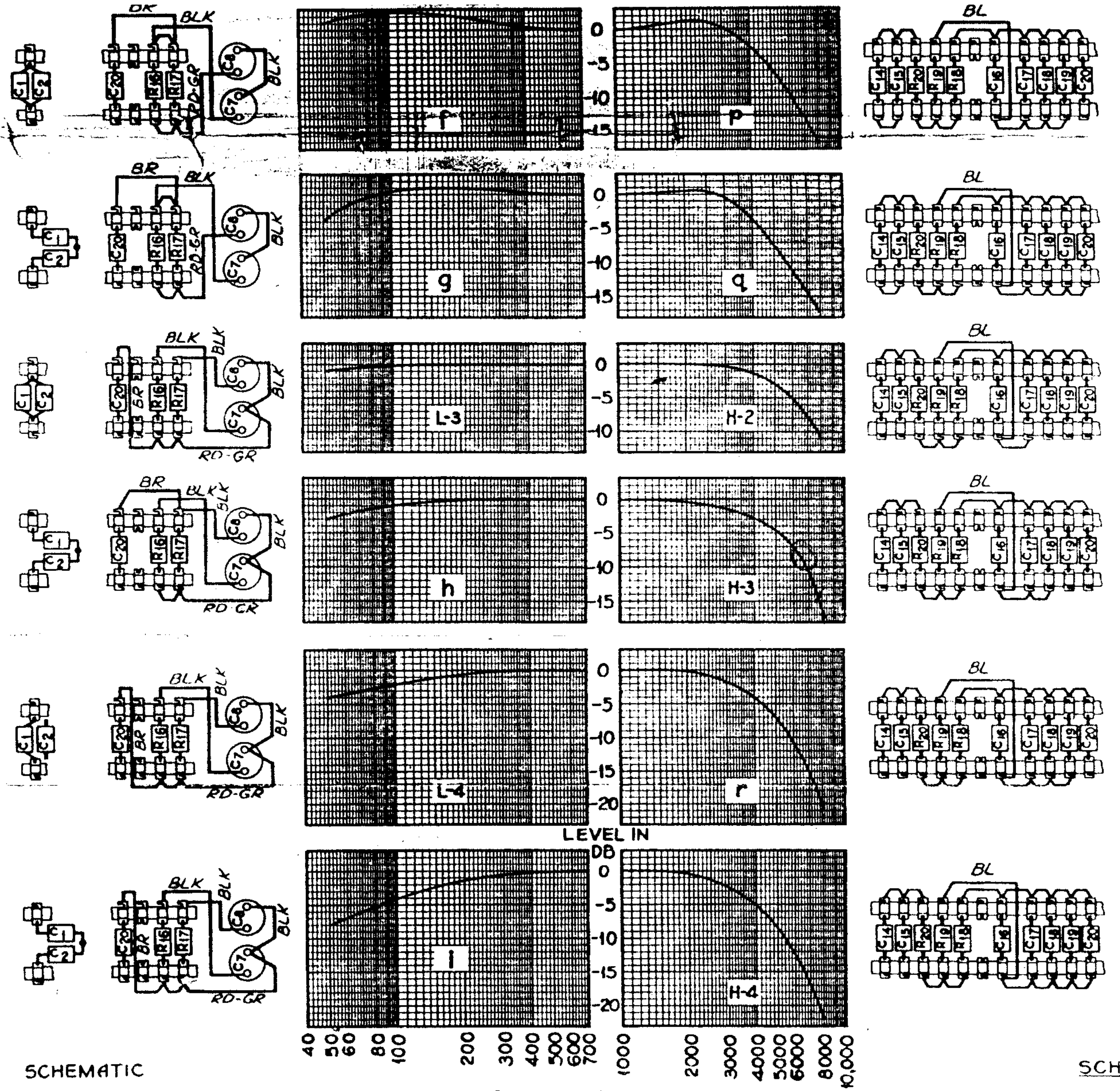
(3) Back Wall "Slap". This condition is probably the most difficult to clear, especially in houses with high balconies or large unbroken back wall areas as the direct sound may be reflected from the back wall to the seating area, or to the ceiling and then into the seating area Under these conditions the following adjustments are suggested

(a) If possible, the high frequency horn should be tilted downward so that direct sound is just heard in the last row of seats, in which case the audience and seats will usually absorb the sound and avoid reflections.

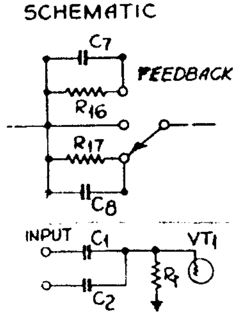
(b) If the condition still exists, the entire loud speaker system should be moved off center on the stage and adjusted to give proper distribution. This change alters the reflection pattern, and back wall "slap" may not be noticeable.

(c) Another method of altering th reflection pattern is to angle the loud speaker system with respect to the screen. The amount of rotation necessary for effective results depends upon the size and shape of the auditorium and the nature of the surfaces.

International Projector Corporation
New York
Printed in U.S.A.



SCHEMATIC



LOW END CURVE DATA

CYCLES & DEVIATIONS FROM REFERENCE IN DB.

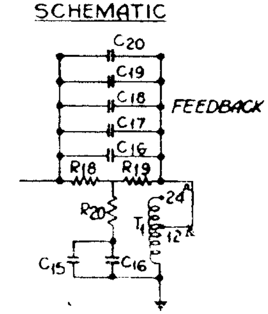
CURVE DESIG	50	55	100	150	200	300	600
a	10	9.5	6	4.8	3	1.5	0
L-1	8	7.4	4.5	3.5	2	1.0	0
L-2	4	3.8	2.2	1.7	0.9	0.4	0
b	4	3.5	1.5	1.0	0.5	0.2	0
c	1.2	1.0	0.2	0	0	0	0
d	6.6	6.5	5.2	4.6	3.0	1.5	0
e	5.1	5.1	4.7	4.2	3.0	1.5	0
f	1.0	1.5	2.5	2.5	2	1.2	0
g	-4.0	-2.8	0.6	1.0	1.2	1.0	0
L-3	-1.0	-0.8	-0.2	0	0	0	0
h	-3.0	-2.5	-0.8	-0.5	0	0	0
L-4	-4.2	-4.0	-2.2	-1.7	-0.8	-0.4	0
i	-8.2	-7.7	-4.2	-3.0	-1.5	-0.5	0

HIGH END CURVE DATA

CYCLES & DEVIATIONS FROM REFERENCE IN DB.

CURVE DESIG	1000	1500	2000	3000	5000	7000	8000
j	0	0.2	0.5	1.2	2.8	4.2	2.8
k	0	-0.2	-0.4	-1.4	-1.5	- 0.6	- 1.0
H-1	0	0.2	0.5	1.0	1.0	- 2.5	- 6.5
l	0	-0.2	-1.0	-2.5	-5.0	- 7.0	- 7.8
m	0	-0.2	-0.5	-1.7	-5.0	- 8.8	-10.4
n	0	0.6	1.9	3.0	-0.4	- 6.6	-10.4
o	0	0.5	1.8	2.0	-3.4	- 9.7	-13.4
p	0	0.5	1.2	0.5	-5.8	-13.5	-17.5
q	0	0.5	0.8	-0.2	-7.5	-14.5	-17.5
H-2	0	0	0	-0.2	-2.8	- 7.5	-10.5
H-3	0	0	-0.2	-1.2	-4.6	-10.8	-17.0
r	0	0	-0.5	-2.0	-7.2	[illegible]	[illegible]
H-4	0	-0.2	[illegible]	[illegible]	-8.8	-17.5	-22.2

SCHEMATIC



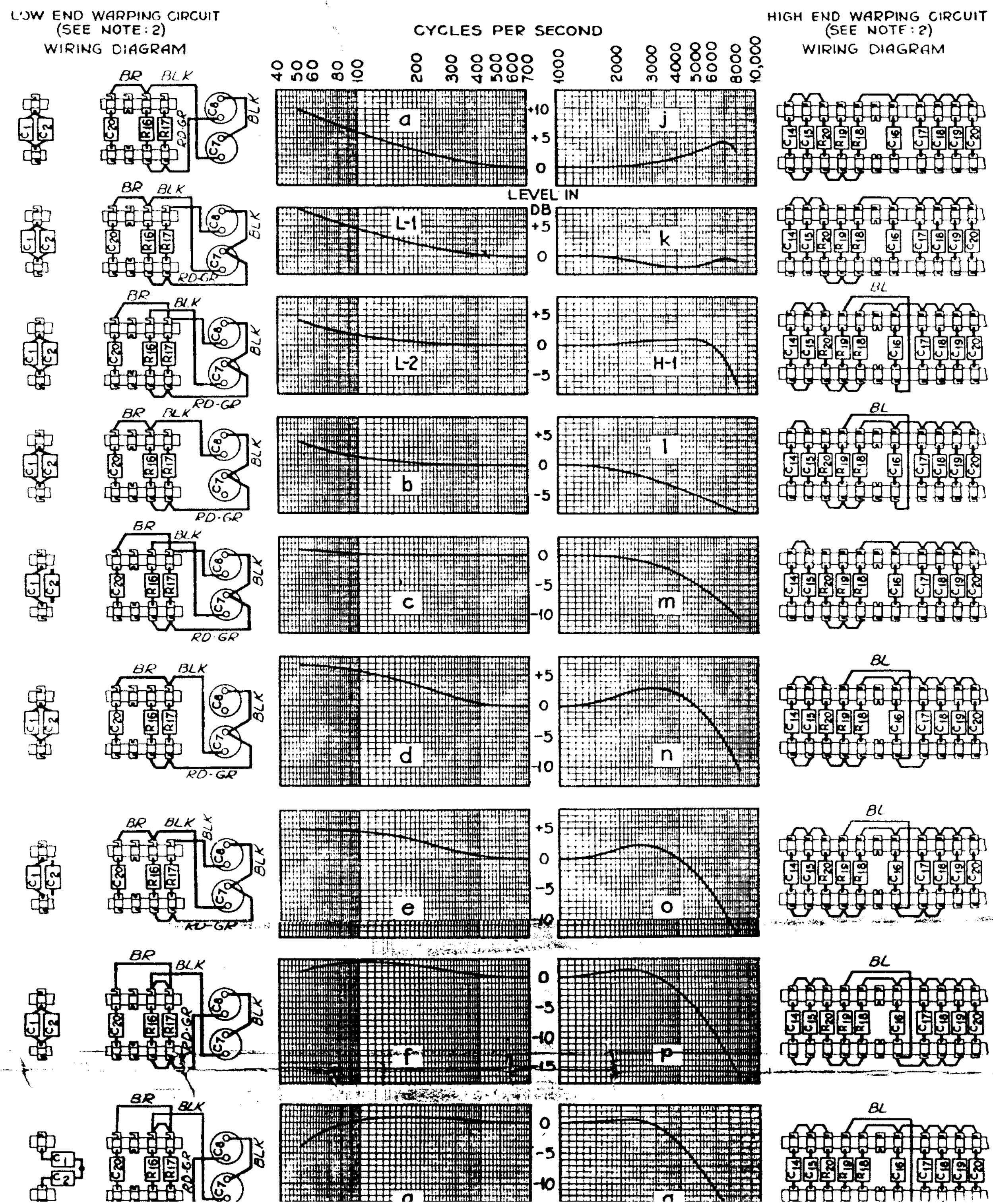
S:-

1. THE FREQUENCY RESPONSE CHARACTERISTIC CURVES ...N ARE OBTAINED BY ADJUSTMENT OF THE WARPING CIR- ... IN THE AM-1001 AMPLIFIER (SEE DRAWING WD-113). ...ES L-1 TO L-4 AND H-1 TO H-4 ARE STANDARD. OTHER ...ES ARE FOR USE ONLY WHEN UNUSUAL ACOUSTIC CONDI- ...S ARE ENCOUNTERED). ANY LOW END CURVE MAY BE AS- ...ATED WITH ANY HIGH END CURVE.

2. THE FIGURE, ASSOCIATED WITH EACH CURVE, SHOWS WARPING CIRCUIT STRAPPING REQUIRED TO OBTAIN THE ...E. RECONNECT STRAPS, AS NECESSARY, AND REMOVE ...R EXISTING STRAP, NOT SHOWN IN THE FIGURE. THE ... AND BLACK WIRES FROM 11 AND THE RED-GREEN WIRE ... TB1 SHOULD REMAIN CONNECTED TO R19, C14 AND R16 ...ECTIVELY AS SHOWN ON DRAWING WD-113.

FREQUENCY RESPONSE CHARACTERISTICS SIMPLEX SOUND SYSTEMS
INTERNATIONAL PROJECTOR CORPORATION
90 GOLD STREET — NEW YORK
DR. E.G.Moore — APPD. AF — SC-21

REDRAWN TO SHOW WIRING DIAGRAMS
DR. E.G.M. APPD. C.F.A.
ISSUE: 2 12- -38

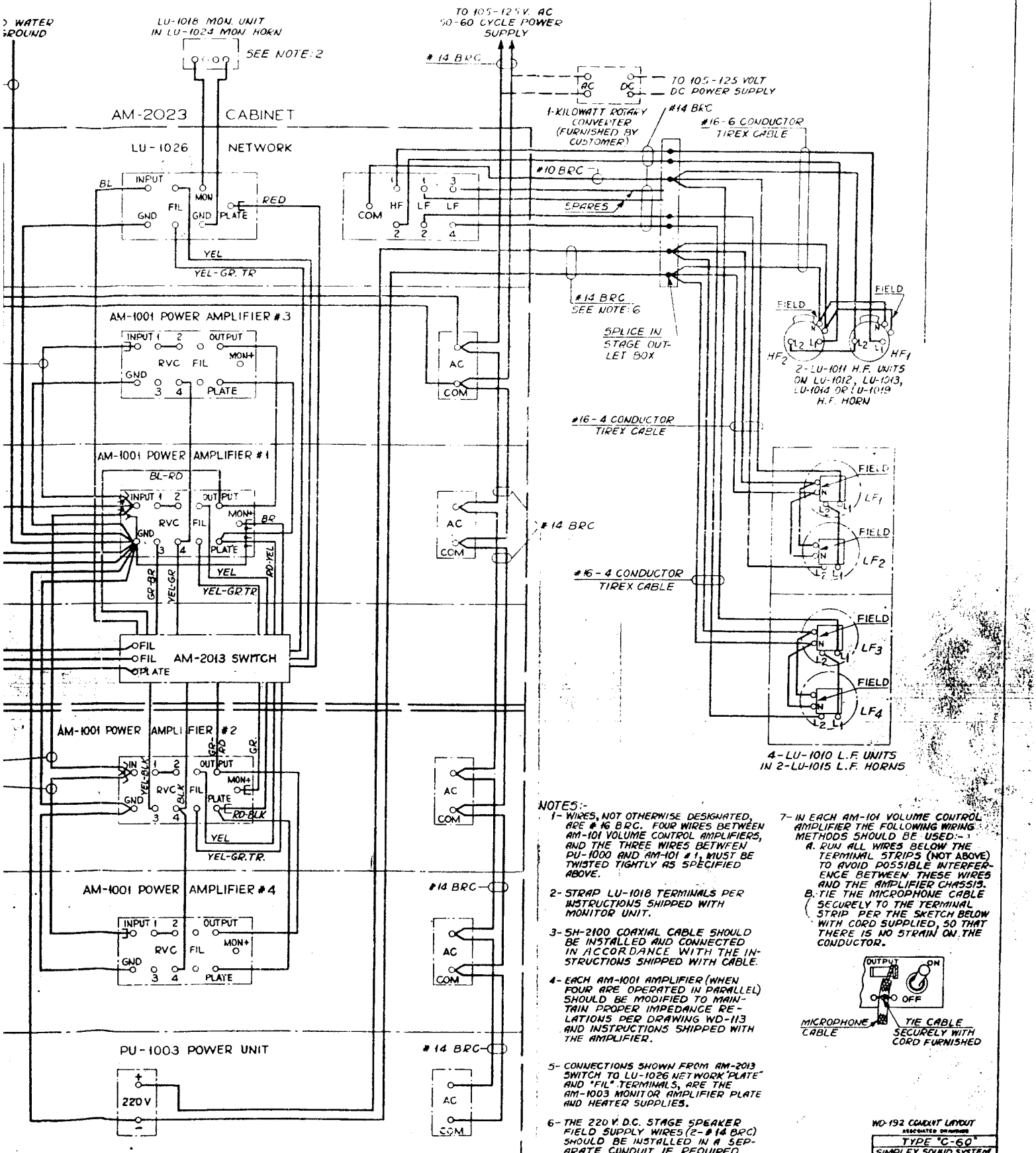


NOTES:-

1. THE FREQUENCY RESPONSE CHARACTERISTIC SHOWN ARE OBTAINED BY ADJUSTMENT OF THE WARPIN CUIT IN THE AM-1001 AMPLIFIER (SEE DRAWING WD- CURVES L-1 TO L-4 AND H-1 TO H-4 ARE STANDARD. CURVES ARE FOR USE ONLY WHEN UNUSUAL ACOUSTIC TIONS ARE ENCOUNTERED. ANY LOW END CURVE MAY SOCIATED WITH ANY HIGH END CURVE.

2. THE FIGURE, ASSOCIATED WITH EACH CURVE, THE WARPING CIRCUIT STRAPPING REQUIRED TO OBTA CURVE. RECONNECT STRAPS AS NECESSARY, AND OTHER EXISTING STRAP NOT SHOWN IN THE FIGURE BLUE AND BLACK WIRES FROM T1 AND THE RED-GREE FROM TB1 SHOULD REMAIN CONNECTED TO R19, C14 AN RESPECTIVELY AS SHOWN ON DRAWING WD-113.

ISSUE: 1 11-12-40



NOTES:-

1- WIRES, NOT OTHERWISE DESIGNATED, ARE # 16 BRC. FOUR WIRES BETWEEN AM-101 VOLUME CONTROL AMPLIFIERS, AND THE THREE WIRES BETWEEN PU-1000 AND AM-101 # 1, MUST BE TWISTED TIGHTLY AS SPECIFIED ABOVE.

2- STRAP LU-1018 TERMINALS PER INSTRUCTIONS SHIPPED WITH MONITOR UNIT.

3- SH-2100 COAXIAL CABLE SHOULD BE INSTALLED AND CONNECTED IN ACCORDANCE WITH THE INSTRUCTIONS SHIPPED WITH CABLE.

4- EACH AM-1001 AMPLIFIER (WHEN FOUR ARE OPERATED IN PARALLEL) SHOULD BE MODIFIED TO MAINTAIN PROPER IMPEDANCE RELATIONS PER DRAWING WD-113 AND INSTRUCTIONS SHIPPED WITH THE AMPLIFIER.

5- CONNECTIONS SHOWN FROM AM-2013 SWITCH TO LU-1026 NETWORK "PLATE" AND "FIL" TERMINALS, ARE THE AM-1003 MONITOR AMPLIFIER PLATE AND HEATER SUPPLIES.

6- THE 220 V. D.C. STAGE SPEAKER FIELD SUPPLY WIRES (2-# 14 BRC) SHOULD BE INSTALLED IN A SEPARATE CONDUIT IF REQUIRED TO CONFORM TO LOCAL ORDINANCES.

7- IN EACH AM-101 VOLUME CONTROL AMPLIFIER THE FOLLOWING WIRING METHODS SHOULD BE USED:-

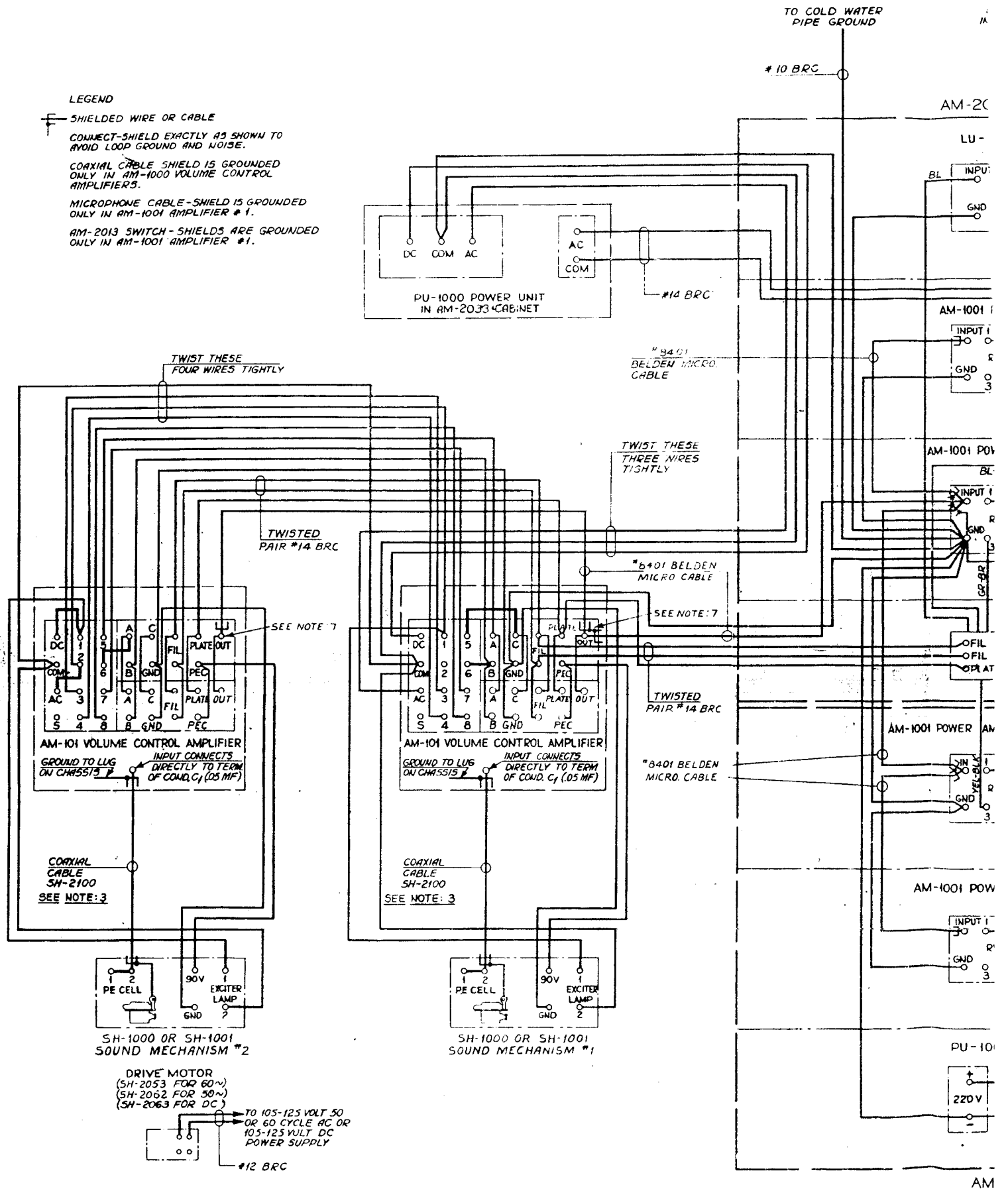
A. RUN ALL WIRES BELOW THE TERMINAL STRIPS (NOT ABOVE) TO AVOID POSSIBLE INTERFERENCE BETWEEN THESE WIRES AND THE AMPLIFIER CHASSIS.

B. TIE THE MICROPHONE CABLE SECURELY TO THE TERMINAL STRIP PER THE SKETCH BELOW WITH CORD SUPPLIED, SO THAT THERE IS NO STRAIN ON THE CONDUCTOR.

WD-192 CONDUIT LAYOUT

TYPE "C-60"
SIMPLEX SOUND SYSTEM
WIRING DIAGRAM
INTERNATIONAL PROJECTOR CORPORATION
90 GOLD STREET NEW YORK
WD-193

WD-193


LEGEND
SHIELDED WIRE OR CABLE
CONNECT-SHIELD EXACTLY AS SHOWN TO AVOID LOOP GROUND AND NOISE.
COAXIAL CABLE SHIELD IS GROUNDED ONLY IN AM-1000 VOLUME CONTROL AMPLIFIERS.
MICROPHONE CABLE-SHIELD IS GROUNDED ONLY IN AM-1001 AMPLIFIER # 1.
AM-2013 SWITCH-SHIELDS ARE GROUNDED ONLY IN AM-1001 AMPLIFIER #1.
TO COLD WATER PIPE GROUND
10 BRC
PU-1000 POWER UNIT IN AM-2033 CABINET
DC COM AC
AC COM
#14 BRC
TWIST THESE FOUR WIRES TIGHTLY
#8401 BELDEN MICRO. CABLE
TWIST THESE THREE WIRES TIGHTLY
TWISTED PAIR #14 BRC
SEE NOTE 7
AM-101 VOLUME CONTROL AMPLIFIER
GROUND TO LUG ON CHASSIS #
INPUT CONNECTS DIRECTLY TO TERM OF COND. C_1 (.05 MF)
COAXIAL CABLE SH-2100
SEE NOTE: 3
PE CELL
90V
EXCITER LAMP
GND
SH-1000 OR SH-1001 SOUND MECHANISM #2
SH-1000 OR SH-1001 SOUND MECHANISM #1
DRIVE MOTOR
(SH-2053 FOR 60~)
(SH-2062 FOR 50~)
(SH-2063 FOR DC)
TO 105-125 VOLT 50 OR 60 CYCLE AC OR 105-125 VOLT DC POWER SUPPLY
#12 BRC
AM-20
LU-
AM-1001
AM-1001 POW
AM-1001 POWER
PU-10
220V

SIMPLEX SOUND SYSTEMS

OPERATION

It is recommended that the projectionist read the following instructions carefully, and become thoroughly familiar with the contents in order to insure continued high quality reproduction. The details of the test and operating procedure are contained in the individual Equipment Instructions on the apparatus. Filing of these instructions in the Operating Instruction Book is recommended for ready reference.

1. STARTING THE SYSTEM.

A. AC Power. Turn on by setting "AC" switches on the AM-1001 Amplifier(s) and the Power Unit(s) in "ON" position.

NOTE:- If a master switch is provided in the main power supply to the System Cabinet(s), these "AC" switches may be left in the "ON" position, and the AC power supply controlled by the master switch.

If the main power supply is DC, the rotary converter should be started before the "AC" switches are thrown in "ON" position.

B. AM-1001 Amplifier. Test the Vacuum Tubes in each amplifier daily. Replace any defective tubes at once.

C. PU-1000 Power Unit. Set "Output" switch in "REC" position. Tungar bulbs should begin to glow immediately, the exciter lamp and pilot lamp in one AM-101 Volume Control Amplifier should be bright (4 amps. 9 volts DC). In the other AM-101 Amplifier the pilot lamp should be out, and the exciter lamp dim (2 volts AC).

D. SH-1000 Sound Mechanism.

(1) Lubrication. Lubricate per the "Sound Mechanism Lubrication Chart".

(2) Optical System. Clean exciter lamp, photo-electric cell, reflector lens and lens tube lenses carefully each day with lens tissue. Be sure that all dirt, oil and finger prints are removed.

Check the spot of light on the photo-electric cell daily. It should be 7/16" in diameter and centered on the cathode. Readjust if necessary.

E. Drive Motor. Run each motor for five minutes before starting the show to thoroughly distribute the oil in the gear box. In cold weather, turn the motor over by hand a few times before turning on the power.

F. AM-101 Volume Control Amplifier. Be sure the switch on one of the amplifier terminal strips in each cabinet is set in "ON" position. The switch on the other amplifier terminal strip in each cabinet should be set in "OFF" position. Check the changeover switch during the sound test by changing over at each position twice.

G. Network. Set "H.F." and "L.F.." and "Monitor Ampl." switches in "ON" position.

H. AM-2013 Switch.

A. Set in position "1-2" for normal operation. All AM-1001 amplifiers operate in parallel.

B. In systems having two AM-1001 Amplifiers, Amplifier #1 (lower) only is operative when the switch is in position "1" Amplifier #2 being disconnected. Amplifier #2 (upper) only is operative when the switch is in position "2", Amplifier #1 being disconnected.

C. In systems having four AM-1001 Amplifiers, amplifiers #1 and #3 (upper cabinet) only are operative when the switch is in position "1", amplifiers #2 and #4 being disconnected. Amplifiers #2 and #4 (lower cabinet) only are operative when the switch is in position #2, amplifiers #1 and #3 being disconnected.

D. Set the switch in all three positions each day and test for sound quality.

I. Sound Test. For a preliminary sound test, move a card rapidly in and out of the light beam (exciter lamp bright) between the reflector lens and the photoelectric cell in each mechanism. A "thump" should be heard from the stage and monitor speakers. If possible, a short reel should be run in each machine to test for sound quality, and at the same time test the stage loudspeakers.

J. Stage Speaker Testing. Stage speakers should be tested each day by means of the switches on the network panel. The procedure is described in Equipment Instruction packed with the network.

2. RUNNING THE SHOW.

A. Threading the Mechanism. The film should be threaded in an "OFF" sound mechanism (exciter lamp dim) in accordance with Equipment Instruction "SH-1000 Sound Mechanism". This applies especially to the first reel of the show, to prevent threading noises reaching the audience.

Be sure that the lateral guide roller is closed after film is threaded. If the mechanism door does not close, the lateral guide roller is open. Pull the lateral guide roller assembly outward, after threading is completed, until it is in firm contact with the knurled adjusting nut. In some instances the assembly may be pushed inward as it is closed, and may not return to its proper position due to friction. Sprocket hole noise will occur, and cannot be remedied by adjustment.

B. Starting the Projector. Turn the power switch on the motor to "ON", and when the motor is up to speed make sound changeover.

C. Changeover. To make sound changeover, operate the changeover switch in either Volume Control Amplifier. The three-way circuit used permits changeover at either machine.

3. STOPPING THE SYSTEM.

A. Set "AC" switches on the AM-1001 Amplifiers and the Power Unit(s) (or the master power switch) in "OFF" position.

B. In the SH-1000 Sound Mechanism leave the lateral guide roller open. If it is left closed flat spots will develop on the felt roller, cause flutter and make replacement necessary.

SIMPLEX SOUND SYSTEMS

MAINTENANCE

Careful, systematic maintenance of the apparatus is essential to obtain continued high quality sound reporduction. The following instructions warrant careful study in order that the system may at all times be in good operating condition. The details of the maintenance procedure are contained in the individual Equipment Instructions on the apparatus. Filing of these instructions in the Operating Instruction Book is recommended for ready reference.

1. SH-1000 SOUND MECHANISM.

A. Lubrication. Lubricate per the "Sound Mechanism Lubrication Chart".

B. Lateral Guide Roller Assembly.

(1) Adjustment. Check each day. The spring at the rear should hold the assembly in firm contact with the knurled adjusting nut. In some instances it may be pushed inward when the roller is closed, after film is threaded, and may not return to normal position due to friction. Sprocket hole noise will result, and cannot be remedied by adjustment. If there is a tendency to "stick", the procedure in the Equipment Instruction should be followed.

(2) Felt Roller. Each month clean carefully with carbon tetrachloride, using a clean soft cloth.

Inspect for flat spots and, if found, replace per the Equipment Instruction as flutter will develop.

(3) Flanges. Inspect each month and, if scored, replace as flutter will develop.

C. Optical System. Check the adjustment of the exciter lamp, lens tube and reflector lens each day. The spot of light on the photo-cell should be 7/16" in diameter and centered on the cathode of the cell. The exciter lamp and lens tube should be adjusted for best response.

D. Clean the Sound Mechanism Thoroughly Each Day. The exciter lamp, photoelectric cell and lenses should be carefully cleaned with lens tissue. The stabilizer drum should be thoroughly cleaned with a clean, soft, lintless cloth. Oil, dirt and other foreign material in the mechanism will impair the quality of reproduction, increase wear, and eventually cause interruptions in the show and an increase in replacements.

E. Motor Coupling. Check the Allen set screws monthly, and tighten if necessary.

2. VOLUME CONTROL AMPLIFIER.

A. Vacuum Tubes. Test each month by substituting a new tube, and replace the old tube(s) if volume and quality are impaired. The Vacuum Tube (6J7, B-31 with an "X" on the bottom or #1620) installed in the first stage (left tube) is specially selected for low noise level.

Vacuum tubes should be seated firmly in their sockets, the prongs and socket contacts should be clean and bright and should make good contact. The prongs may be burnished with crocus cloth, and careful bending of the contacts resorted to, if necessary.

B. Capacitors. Check all clamping rings and nuts periodically, and tighten if necessary.

C. Pilot Lamp. If the pilot lamp does not light, check the fuse on the terminal strip mounting bracket, as removal of the exciter lamp while the PU-1000 Power Unit is operating may cause the fuse to blow. Otherwise replace the pilot lamp remove the socket from the inside of the cabinet. A flickering pilot lamp indicates a defective tungar bulb in the PU-1000 Power Unit.

3. AM-1001 AMPLIFIER.

A. Vacuum Tubes. Test each day, and replace defective tube(s) at once.

Vacuum tubes should be seated firmly in their sockets, the prongs and socket contacts should be clean and bright and should make good contact. The prongs may be burnished with crocus cloth, and careful bending of the contacts resorted to, if necessary.

B. Capacitors. Check all clamping rings and nuts periodically, and tighten if necessary.

4. STAGE SPEAKER TESTING.

Stage loudspeakers should be tested daily by means of the switches on the network panel, and the units replaced if quality is impaired. The procedure is described in Equipment Instruction packed with the network.

5. LU-1024 MONITOR LOUDSPEAKER.

Check cover and partition screws, and tighten if necessary. For quality reproduction, it is essential that all screws be tight. If the threads in the partitions become stripped, replace the screws with the larger Parker Kalon screws shipped loose with the horn. If the grille in front of the speaker vibrates, insert a narrow strip of felt between the left and right edges of the grille and the cabinet.

6. PU-1000 POWER UNIT.

A. Exciter Lamp Current Adjustment. Check the exciter lamp current per the Equipment Instruction "PU-1000 Power Unit".

B. Tungar Bulbs. Check performance, and replace a burned out bulb. The bulbs should normally begin to glow as soon as the "AC" switch is set in "ON" position. One tube will not start if the other is burned out or "hard". A "hard" tube may, in most instances, be started by operating the "AC" switch several times. "Hard" tubes should be replaced as soon as possible.

Make sure that the bulbs are tight in their sockets, and that the springs make good contact. Loose bulbs will cause heating of the springs and crystallization, followed by spring breakage.

C. Ballast Lamp. The lamp should be firmly seated in its socket, the prongs and socket contacts should be clean and bright and should make good contact. Careful bending of the socket contacts, and burnishing of the prongs with crocus cloth, may be resorted to, if necessary.

A sagging filament is an indication of an approaching burn out, and the lamp should be replaced.

D. Capacitors. Check all clamping rings and nuts periodically, and tighten if necessary.

7. PU-1003 POWER UNIT.

A. Output. Check output voltage. If below 220 volts, a vacuum tube is defective or the line voltage has decreased. Check the line voltage, and be sure the transformer is connected for the average line voltage during operating hours. To locate a defective tube, replace one tube at a time.

If the voltage is above 227 volts, check the connections to primary and secondary of the transformer.

B. Sockets. Make sure that the tubes are firmly seated in their sockets, the tube prong and socket contacts are clean and bright and make good contact. Careful bending of the socket contacts, and burnishing of the prongs with crocus cloth, may be resorted to, if necessary.

C. Capacitor. Check clamping ring and nut periodically and tighten if necessary.

8. AM-2013 SWITCH.

A. In systems having two AM-1001 Amplifiers, Amplifier #1 or #2 may be disconnected for testing and parts replacements by means of the AM-2013 Switch.

B. In systems having four AM-1001 Amplifiers, Amplifier #1 and #3, or #2 and #4 may be disconnected for testing and parts replacements by means of the AM-2013 Switch.

C. The Amplifier inputs are all connected in parallel at all times. Tests should be made in the first stage, therefore, only when absolutely necessary and then only after VT_1 has been removed as disturbances will be introduced into the system. Vacuum Tube VT_1 should be removed with the grid cap connected.

D. To make frequency response measurements, connect terminal "RVC 3" to "RVC 4" of one Amplifier. Also check the output transformer connection (BL. wire to TS.) and terminate the amplifier in a resistor of the same value as the terminal designation (12 or 24 ohms) if one amplifier only is being measured. If two amplifiers in parallel are being measured, the termination will be one half the above, that is, 6 or 12 ohms.

International Projector Corporation
New York
Printed in U.S.A.

EQUIPMENT INSTRUCTION - AM-101 VOLUME CONTROL AMPLIFIER WITH TWO AM-1000 VOLUME CONTROL AMPLIFIERS

1. DESCRIPTION.

This AM-101 consists of two AM-1000 Volume Control Amplifiers, a sound and exciter lamp changeover switch and a pilot lamp in a wall mounting metal cabinet, 12½" high x 9" wide x 6½" deep, total weight 13 lbs. The cabinet is surface mounted for exposed conduit installations, and may be partially recessed in the wall when the conduit is concealed.

A. Each AM-1000 Volume Control Amplifier is a two-stage, resistance coupled, inverse feed-back amplifier using one #1620 and one 6J7 tube, which are furnished separately. The #1620 is a low noise level tube and should be installed in the first stage. The maximum gain is 46 db., input impedance 150,000 ohms, output impedance 10,000 ohms. Each contains a main system volume control, consisting of a potentiometer having nineteen 2 db steps, which regulates the volume by varying the signal voltage applied to the grid of the second tube. The two potentiometers are coupled together mechanically, so that the knob on the front of the cabinet controls the volume, irrespective of the AM-1000 in use.

An adjustable resistor (R_3), range of 6 db., is provided in the cathode circuit of the first tube of each amplifier for equalization of PEC outputs by adjustment of the gain of the amplifier. Plate and filament supply are obtained from the power amplifier, and a voltage divider in each AM-1000 provides PEC polarizing potential. A terminal strip on an external cable form is provided for external connections. An "ON", "OFF" switch is provided on each terminal strip to disconnect an inoperative amplifier.

B. Changeover is made at either machine by operating the switch lever on the front of either cabinet, sound and exciter lamp being transferred at the same time. The circuit used is of the three-way type. An electronic type of sound changeover is employed. In the "ON" amplifier the second tube has normal bias, whereas in the "OFF" amplifier the bias of this tube is increased beyond cut-off and the amplifier is inoperative. There is no switching in the sound circuit, and the changeover is instantaneous and noiseless.

The exciter lamp changeover provides for preheating of the standby lamp on AC to eliminate thermal lag in the filament. The pilot lamp indicates the machine in use.

2. INSTALLATION OF AM-101.

One AM-101 should be mounted approximately 3" below the bottom of each observation port, or at such height that the 1" conduit between the two cabinets is below the projection port. Since a fixed length of SH-2100 Coaxial cable is shipped with system for coupling between the PEC output and AM-101 input, it is essential that the volume control amplifier be so located that the coaxial cable can be properly connected.

A. External Connections. The connections to the terminal strips should be made per the system wiring diagram. All wires connected to terminals in the cabinet should run below the terminal strips AND NOT ABOVE, to avoid possible interference between these wires and the AM-1000 chassis.

The microphone cable, connected to the output terminal, should be securely fastened, by means of cord through tie cord holes in the terminal strip, in such a manner that there is no strain on the conductor.

Like terminals on the two AM-1000 should be strapped together per Figure 1 below. The input should be strapped by connecting a wire between the lower terminals of C_1 in each amplifier (See Figure 2). Be sure that the circuit changes have been made in each AM-1000 per section 3-A below.

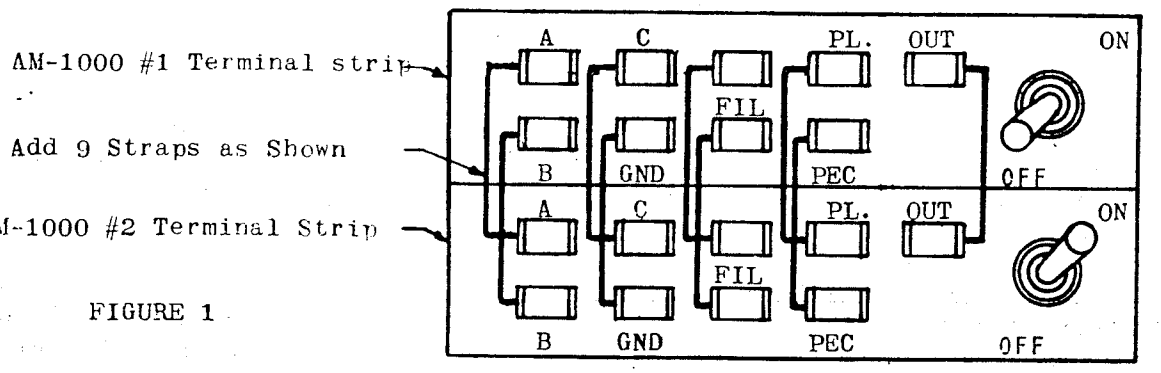


FIGURE 1

B. Equalization of PEC Outputs. Resistor R_3 in each AM-1000 should be adjusted so that the output of all volume control amplifiers is the same, with the same setting of the main volume control. This resistor should be adjusted after all adjustments have been made in the sound mechanism, and when carefully made will accurately equalize outputs.

C. Volume Control. The main volume control should be adjusted as required to compensate for variations in prints, size of audience, etc. In establishing normal operating level initially for specific auditorium, set the volume control on step 9, run a standard recording, such as the Academy Test Reel, and adjust the gain control in the power amplifier as required to obtain adequate volume level in the auditorium.

3. INSTALLATION OF SECOND AM-1000.

When the second AM-1000 is added after the initial installation the procedure is as follows:-

A. Modifications. IN THE SECOND AMPLIFIER in each cabinet disconnect R_1 from C_1, and the tape the lead. This change should not be made in the first amplifier in the cabinet.

B. The Installation Procedure for the second amplifier (modified per Section 3-A above) is as follows (See Figure 2):-

(1) Install fibre washer (required to avoid grounding) and AM-2029 Coupling on potentiometer shaft of first amplifier.

(2) On second amplifier remove potentiometer from bracket. Do not disconnect wires. Reverse potentiometer mounting bracket to provide space for the AM-2029 Coupling, and remount potentiometer.

(3) Attach second amplifier to first, using four #8-32 x 3/8 R.H.I.M.S., nuts and lockwashers supplied.

(4) Line up second potentiometer with first. A slotted hole is provided in the bracket for this purpose. Tighten coupling set screw and the potentiometer locknut.

(5) Mount the second amplifier terminal strip below the first (See Figure 1) using two #8-32 x 3/8 R.H.I.M.S., nuts and lockwashers supplied.

(6) Form the second amplifier cable toward the cabinet so that it clears the terminal strip when the cover is closed. Adjust the cable clamp as required.

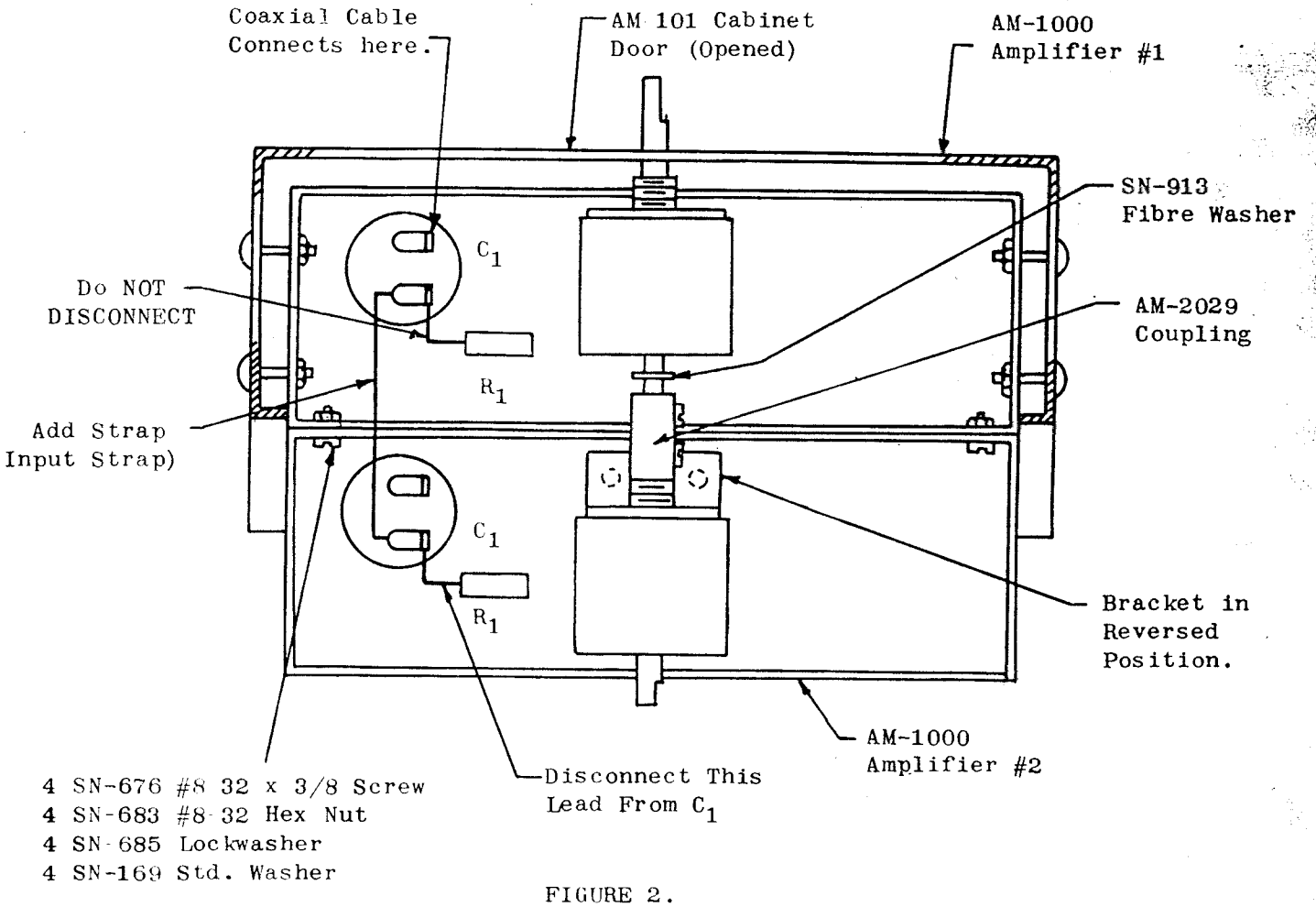


FIGURE 2.

C. Equalization of Photo-electric Cell Putputs and Volume Control Setting should be in accordance with Sections 2-B and 2-C.

4. OPERATION.

A. Normal. Set the switch on the terminal strip of Amplifier #1 in "OFF" position, and the similar switch on Amplifier #2 in "ON" position. The second amplifier, which is slightly more accessible for tube replacements and servicing, is then the regular, and the first standby amplifier. Set the changeover switch so that the projector being threaded is inoperative (pilot lamp is out) and make the changeover, when the in-coming machine is up to speed, by depressing the switch button on either cabinet. As noted in Section 2-C above, the volume control should be set as required by the specific installation conditions.

B. Emergency. If the regular amplifier becomes inoperative in either cabinet:-

(1) Set the volume control in that cabinet on step 1. This is important to prevent disturbances in the sound circuit when the switches are operated as described below.

(2) Set the switch on the regular amplifier in that cabinet in "OFF" position.

(3) Set the switch on the standby amplifier in that cabinet in "ON" position.

(4) Return the volume control to normal setting, and the system may be operated in the regular way.

5. MAINTENANCE.

A. Vacuum Tubes. The prongs should make good contact, and should be clean and bright. Careful bending of the socket contacts may be resorted to and the prongs burnished with crocus cloth, if necessary, to provide good contact.

B. Capacitors. Check all clamping rings and nuts periodically, and tighten if necessary.

C. Pilot Lamp. If the pilot lamp does not light check the fuse mounted on the terminal strip mounting bracket, as removal of the exciter lamp while the power unit is in operation may cause the fuse to blow. Otherwise the pilot lamp should be replaced by removing the socket from the inside of the cabinet. A flickering pilot lamp indicates a defective tungar bulb in the exciter lamp power unit.

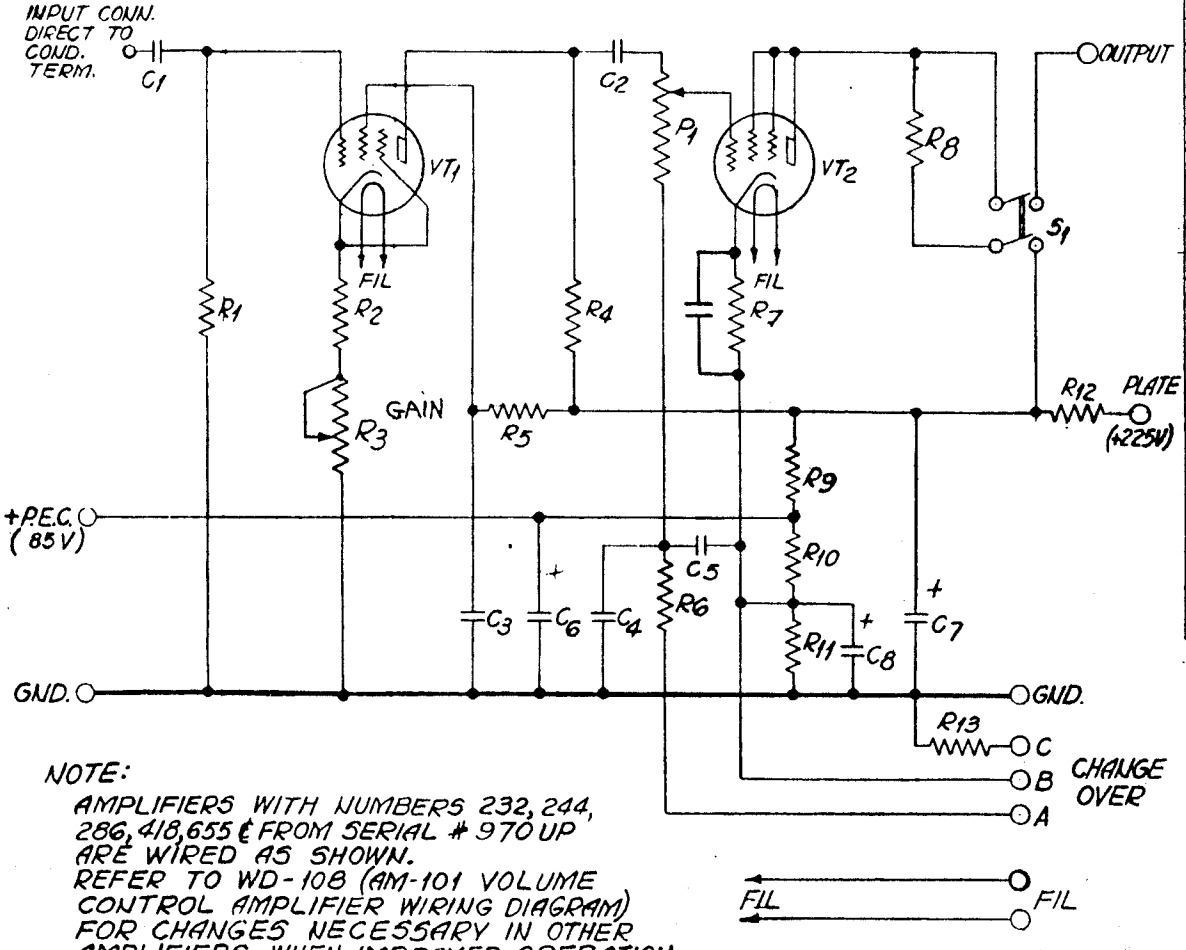
6. ORDERING. A second amplifier for one cabinet should be ordered as:-

1 AM-108 Amplifier Equipment — It consists of:-

1 AM-1000 Volume Control Amplifier
1 SN-707 Vacuum Tube (6J7)
1 SN-792 Vacuum Tube (#1620)
1 AM-2016 Mounting Parts, consisting of:-
1 AM-2029 Coupling
1 SN-913 Fibre Washer
6 SN-676 Screw (8-32 x 3/8 R.H.I.)
8 SN-683 Nut (8-32)
8 SN-685 Lockwasher (#1108)
4 SN-169 Standard Washer

7. ASSOCIATED DRAWINGS. WD-100 Schematic
WD-108 Wiring Diagram
WD-109 Changeover Switch Schematic

WD-100



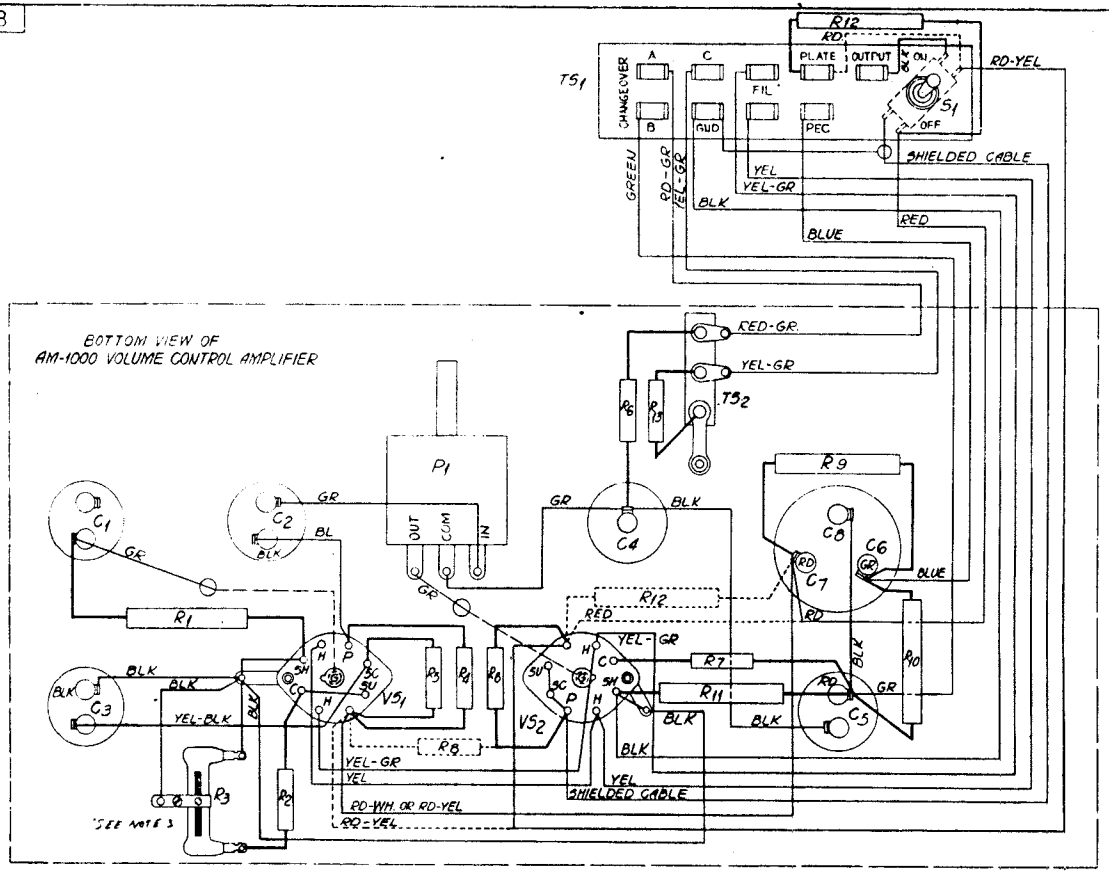
NOTE:
AMPLIFIERS WITH NUMBERS 232, 244, 286, 418, 655 & FROM SERIAL # 970 UP ARE WIRED AS SHOWN.
REFER TO WD-108 (AM-101 VOLUME CONTROL AMPLIFIER WIRING DIAGRAM) FOR CHANGES NECESSARY IN OTHER AMPLIFIERS, WHEN IMPROVED OPERATION IS DESIRED.

DESIG.	PART No.	APPARATUS
C1, C2, C3	SN-514	.05 MF-400 V CAP AEROVOX TYPE 2EM
C4	"503	10 MF-30 V " " " EM
C5	"505	10 MF " " " " 2EM WITH PAPER TUBE
C6, C7 C8	"506	8-8-10 MF AEROVOX TYPE 8E ~~150 250 30~~ 8 8 10
R1	"539	500,000Ω-1 WATT RES. I.R.C. TYPE BT-1
R2	"1129	5,000Ω-1 WATT " " " WW
R3	"532	5,000Ω-10 WATT " " " AB-A
R4	"538	200,000Ω 1 WATT " " " BT-1
R5	"537	2 MEG - " " " " BT-1/2
R6, R7	"530	6,000Ω - " " " " "
R8	"540	25,000Ω - " " " " "
R9	"522	70,000Ω-1 WATT " " " BT-1
R10	"523	55,000Ω - " " " " "
R11	"689	15,000Ω - " " " " "
R12	"527	25,000Ω - " " " " "
R13	"688	50,000Ω 1/2 WATT " " " BT-1/2
P1	"541	500,000Ω 20-2 DB STEPS POT.
VT1	"792	6J7 METAL VT (6J7-B31 OR #1620)
VT2	" 707	6J7 METAL VACUUM TUBE
S1	"608	D.P.S.T. SWITCH

ISSUE: 1 3-24-38
S1 WAS BETWEEN R12 & "PLATE" TERM. R4 & R5 WERE TO OTHER SIDE OF SWITCH. NOTE ADDED. R9 & R10 WERE 75,000Ω & 45,000Ω RESPECT.
DR. EGM. APP'D CFA
ISSUE: 2 10-28-38
R9 & R10 WERE SHOWN AS SN-521 & 579 RESPECT.
DR. EGM. APP'D CFA
ISSUE: 3 12-2-38
SN-1129 WAS SN-531. SN-538 WAS BT-1/2
DR APP'D CFA
ISSUE: 4 6-5-40

ASSOCIATED ITEMS
AM-1000 AMPLIFIER
VOLUME CONTROL
SCHEMATIC
INTERNATIONAL PROJECTOR CORPORATION
90 GOLD STREET NEW YORK
DR. EGM CHKD APP'D
WD-100

WD-108



AM-1000 VOLUME CONTROL AMPLIFIER

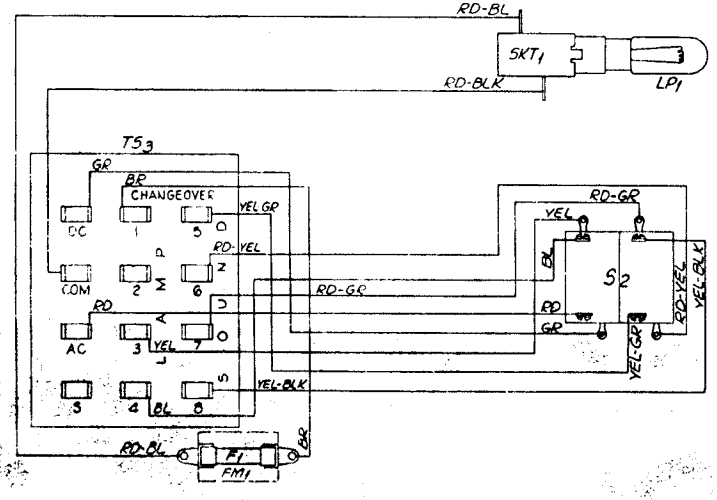
DESIGNATION	CONSTRUCTION	
C1, C2, C3	SU-516	.05 MFD. 600 V CAPACITOR
C4	" 503	10 MFD. 50 V "
C5	" 505	10 MFD. " " WITH PAPER TUBE
C6, C7, C8	" 506	.5-10 MFD. CAPACITOR C6 .5, C7 2.5, C8 10
R1	" 539	500,000Ω 1 WATT RES. IRC TYPE BT-1
R2	" 529	3,000 Ω - 1 WATT " " WW
R3	" 531	5,000 Ω - 10 WATT " " " AB-A
R4	" 538	200,000Ω 1 WATT " " " BT-1
R5	" 537	2 MEG - " " " " BT-1/2
R6, R7	" 530	6,000Ω - " " " " "
R8	" 540	25,000Ω " " " " "
R9	" 522	70,000Ω 1 WATT " " " BT-1
R10	" 523	55,000Ω " " " " "
R11	" 689	15,000Ω " " " " "
R12	" 527	25,000Ω " " " " "
R13	" 688	50,000Ω ½ WATT " " " BT-1/2
P1	" 541	500,000Ω 10-20B STEPS POT
TS1	AM-2019	TERMINAL STRIP
TS2	SW-611	TERMINAL STRIP
S1	SW-608	DPST SWITCH (PART OF AM-2019 TERM STP)
VS1, VS2	" 561	SOCKET

AM-2034 CABINET

S2	AM-2065	SWITCH
TS3	AM-2018	TERMINAL STRIP
F1	SW-881	FUSE - (½ AMP)
FM1	" 737	FUSE MOUNTING
SKT1	" 563	LAMP SOCKET
* LP1	" 894	LAMP (9 VOLT - .2 A.MP.)

* INDICATES NON-COMPONENT ITEM WHICH MUST BE ORDERED SEPARATELY.

AM-2034 CABINET



NOTES:-

1- AMPLIFIERS WITH NUMBERS 232, 244, 286, 418, 655 AND FROM 970 UP ARE WIRED AS SHOWN.

2- WHEN AMPLIFIERS BELOW SERIAL No. 541 ARE INSTALLED AS DUAL VOLUME CONTROL AMPLIFIERS, THE WIRING OF EACH SHOULD BE CHANGED. REMOVALS INDICATED BY DOTTED (-----) LINES, AS FOLLOWS:-

A. SERIAL #317 TO #340

(1) DISCONNECT R8 AND RD-YEL WIRE (TO TS1) FROM VS1 AND RECONNECT TO VS2.
(2) RUN NEW RD-WH WIRE FROM C7 (RED TERMINAL) TO VS1 (TERMINAL FROM WHICH R8 WAS DISCONNECTED).

B. SERIAL NUMBERS BELOW #317

(1) REMOVE R12 AND RECONNECT ON TS1 AS SHOWN.
(2) REMOVE RED WIRE FROM VS2 AND RECONNECT TO C7 (RED TERMINAL)
(3) DISCONNECT R8 FROM VS1 AND RECONNECT TO VS2.
(4) RUN NEW RD-YEL WIRE FROM VS2 TO S1.
(5) ON TS1 REMOVE RED STRAP BETWEEN "PLATE" AND S1.

THE NEW RD-YEL WIRE MAY BE RUN INSIDE THE COTTON SLEEVING COVERING THE CABLE FORM OR ON THE OUTSIDE. TO RUN INSIDE, REMOVE THE WHIPPING AT EACH END, ADD THE WIRE AND REWHIP. IF THE WIRE IS RUN OUTSIDE, IT SHOULD BE TIED AT INTERVALS AND SO LOCATED THAT IT WILL NOT CHAFE.

3- ADJUST RESISTOR R3 (RANGE 6 DB) SO THAT OUTPUT OF EACH VOLUME CONTROL AMPLIFIER IS THE SAME WITH THE SAME SETTING OF THE VOLUME CONTROL (P1). MOVE THE SLIDER AWAY FROM THE CHASSIS TO INCREASE THE GAIN.

4- VACUUM TUBES REQUIRED.
VS1 - SW-792 VACUUM TUBE (6J7, 8-91 STOCK). SPECIALLY SELECTED TUBE DISTINGUISHED BY AN "X" ON THE BOTTOM OF THE TUBE.
VS2 - SW-707 VACUUM TUBE (STANDARD 6J7). SOME TUBES MAY BE MARKED WITH AN "M" ON THE BOTTOM.

ISSUE 7 3-19-38
NOTE 1 REVISED, NOTE 2 ADDED & WIRING CHANGED ACCORDINGLY. NOTES 3 & 4 ADDED. F1 & LP1 WERE SW-738 & SW-839 RESPECT.
DR EGM APPD CFA
ISSUE 2 8-5-38
R8 & R10 WERE 75,000Ω & 45,000Ω RESPECT. NOTE 1 READ "FROM SERIAL #541 UP"
DR EGM APPD CFA
ISSUE 3 10-28-38
R9 & R10 WERE SHOWN AS SW-521 & 519 RESPECT. BLK WIRE BETWEEN GND LUGS ON VS1 & VS2 WAS NOT SHOWN. YEL-GR WIRE FROM VS2 TO TS1 (FIL) WAS YEL. YEL & YEL-GR WIRES FROM VS1 TO VS2 WERE REVERSED. S2 WAS SW-567 SWITCH
DR EGM APPD CFA
ISSUE 4 12-2-38
SW-1129 WAS SW-531
SW-538 WAS BT-½
DR APPD CFA
ISSUE 5 6-5-40

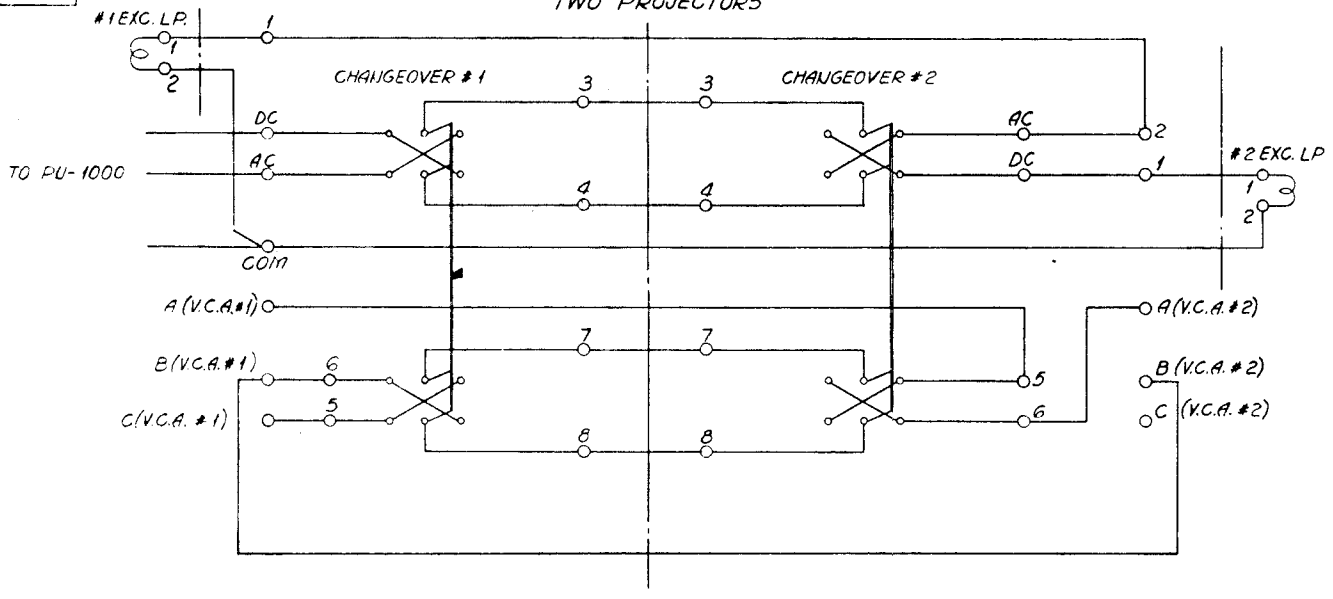
ASSOCIATED ITEMS
AM-101
VOLUME CONTROL AMPLIFIER
WIRING DIAGRAM
INTERNATIONAL PROJECTOR CORPORATION
90 GOLD STREET NEW YORK
DR EGM APPD CFA
APPD
WD-108

R-4-42

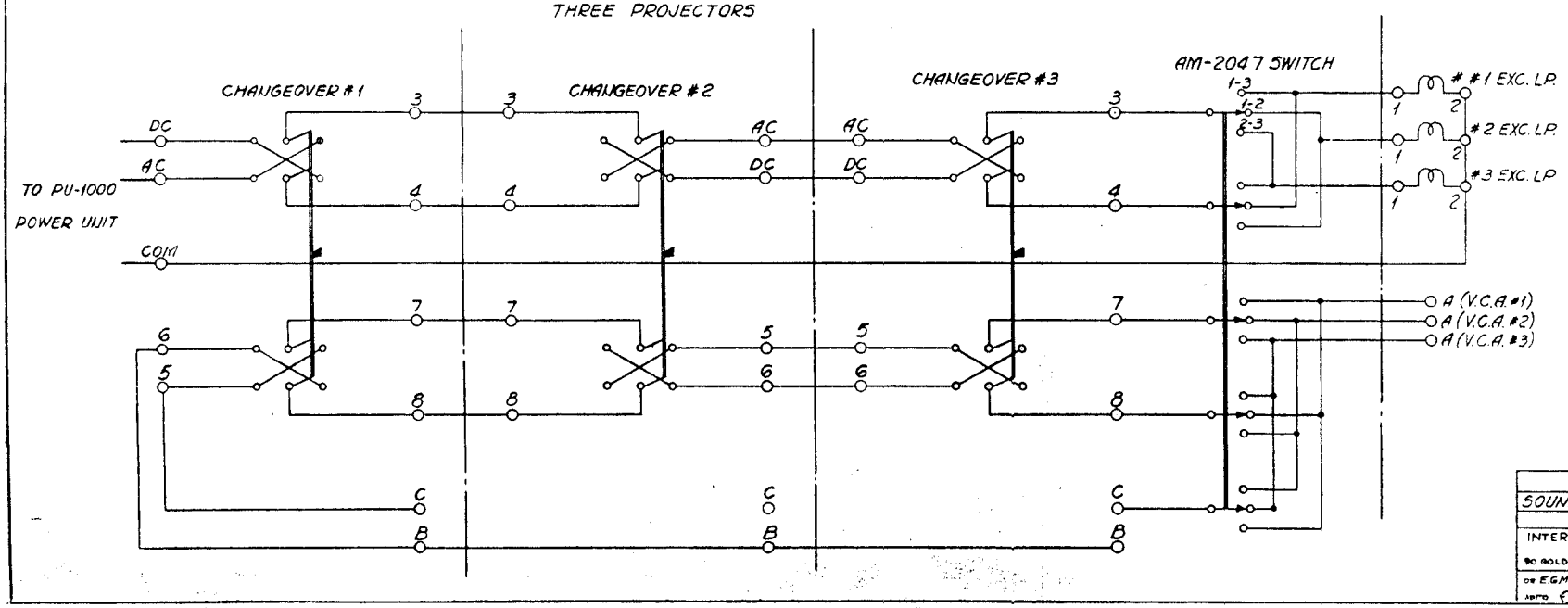
WD-109

ISSUE: 1 5-18-38

TWO PROJECTORS



THREE PROJECTORS



ASSOCIATED ITEMS

CHANGEOVER SOUND AND EXCITER LAMP SCHEMATIC

INTERNATIONAL PROJECTOR CORPORATION
90 GOLD STREET NEW YORK

DR E.G.M. CHK C.F.A. APPD

WD-109

EQUIPMENT INSTRUCTION - AM-1001 AMPLIFIER

1. DESCRIPTION.

The AM-1001 is an all AC operated two-stage, inverse feed-back, resistance coupled, push-pull amplifier on a chassis 7-1/2" high x 17" long x 10" deep, weighing 30 lbs. Two terminal strips on extension cable forms are provided for external connections. Maximum gain 60 db., input impedance 10,000 ohms, output impedance 12 or 24 ohms, output 15 watts, maximum noise level 35 db. Gain control potentiometer (range 12 db) is adjustable from the front of the panel by means of a screw driver. A warping circuit is provided in the inverse feed-back circuit which may be adjusted to increase or decrease the high and low end response to compensate for varying acoustic conditions in auditoriums.

Two metal 6J7 (VT_1, driver, and VT_2, inverter), two glass 6L6 (push-pull) and one 5Z3 (rectifier) vacuum tubes, which are furnished separately, are required.

An AC switch, a tube testing switch and a meter with a special scale to indicate directly the condition of the tubes are located on the front panel. The AM-1001 includes heater and plate supply circuits for the AM-101 Volume Control Amplifiers and AM-1003 Monitor Amplifier.

2. POWER SUPPLY.

105 - 125 volts AC., 50 - 60 cycles. Power consumption 115 watts. One SN-549 (2 amp.) Fusetron is supplied. Fusetrons are recommended as they give increased protection.

3. INSTALLATION.

The AM-1001 should be installed in the AM-2023 Cabinet in the location shown on the system conduit layout drawing and per the Equipment Instruction "AM-2023 Cabinet", which is packed in the cabinet. Connections should be made to the terminal strips per the system wiring diagram.

A. Power Transformer Connection. Connections should be made to the "125 V", "115 V" and "105 V" taps of transformer (T_2) as follows (See WD-113):-

Average Line Voltage	Connect to T_2 Tap
120 - 130	125 V (Connection as shipped)
110 - 120	115 V
100 - 110	105 V

Average line voltage is the average of line voltage readings taken at regular intervals during operating hours.

If the average line voltage is above or below these limits, the cooperation of your power company should be solicited to bring the voltage within the recommended 105 - 125 volt limits, or a voltage regulator (furnished by the customer) is required.

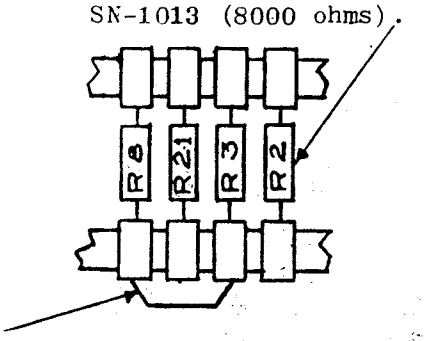
B. Output Transformer Connections should be in accordance with the following table. Check connections and reconnect as required:-

NUMBER AM-1001 IN PARALLEL	NETWORK USED	FEED-BACK (BL Wire to R_{19})	OUTPUT (BL Wire to TS_1)
1	LU-1002	12 ohms	12 ohms
2	LU-1002	12 ohms	24 ohms
2	LU-1003	12 ohms	12 ohms
4	LU-1003	12 ohms	24 ohms
4	LU-1026	24 ohms	24 ohms

C. Resistor R_3 (2000 ohms). When only one amplifier operates at a time, this resistor should be strapped out (as shipped). When two amplifiers normally operate in parallel, the strap (red jumper from R_3 to R_8) should be removed in each amplifier to maintain a constant impedance.

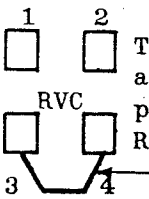
D. Resistor R_2 (2000 ohms). When four amplifiers normally operate in parallel, this resistor should be replaced by an SN-1013 Resistor (8000 ohms) to maintain constant impedance. No wiring changes are necessary.

Four amplifiers in parallel. Change to SN-1013 (8000 ohms).



Two amplifiers in parallel. Remove red jumper.

E. Strap Between Terminals "RVC 3" and "RVC 4". When only one amplifier operates at a time, this strap should be connected. When two or more amplifiers operate in parallel, disconnect this strap as the amplifier selector switch, supplied in such cases, makes the necessary connections to these terminals.



Two or more amplifiers in parallel. Remove strap.

F. Gain Control. The gain control of each amplifier in the system should have the same setting, and be adjusted to obtain adequate volume level in the specific auditorium in accordance with Equipment Instruction "AM-101 Volume Control Amplifier". Counter-clockwise rotation increases the volume. The setting should be as low as possible and never in the extreme counter-clockwise position. Thereafter, no adjustment of this control should be necessary as the main volume control in the AM-101 should be used to compensate for variations in prints, size of audience, etc.

G. Vacuum Tubes. The grid leads of the 6J7 vacuum tubes, VT_1 and VT_2, should be wrapped around the tubes in such a manner that the grid caps do not point toward the 6L6 tubes, VT_3 and VT_4. Otherwise oscillations may be set up.

H. Warping Circuit is connected for L_2 H_2 frequency response curve as shipped. If careful listening tests indicate necessity for a change, adjust per Tuning-Up Instructions included in the Instruction Book shipped with the system. In systems having more than one amplifier the warping circuit setting in each amplifier must be the same since only one warping circuit is used at a time, and the amplifier selector switch supplied selects a warpi circuit in an operative amplifier.

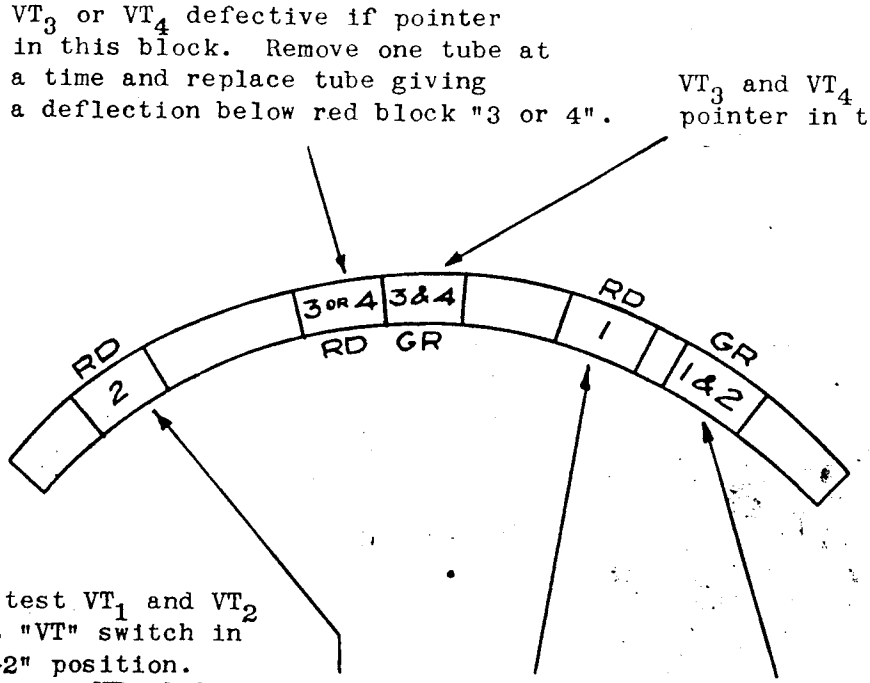
4. OPERATION.

A. To Place in Operation set the "AC" switch in "ON" position.

B. Tube Testing. Vacuum tubes should be tested each day as follows, by means of the "VT" switch and plate meter, and defective tubes replaced at once:-

Be sure the power transformer connection is in accordance with Paragraph 3-A above.

(1) To test VT_3 and VT_4 set "VT" switch in "3-4" position.



(2) To test VT_1 and VT_2 set "VT" switch in "1-2" position.

VT_2 defective if pointer in this block.

VT_1 defective if pointer in this block.

VT_1 and VT_2 good if pointer in this block.

In border-line cases remove one tube at a time.

VT_1 (with VT_2 removed) is good if pointer is in red block "2".

VT_2 (with VT_1 removed) is good if pointer is in red block "1".

If the pointer is below proper block in either test, install a new tube.

CAUTION:- To avoid disturbances in the system, remove the tube with the grid cap attached. In case of a replacement, attach the grid cap before installing the tube.

(3) Replace the rectifier tube if the pointer is below both green blocks "1 & 2" and "3 & 4" in the above tests and repeat the tests.

C. Plate Meter. Slight movement of the pointer of the plate current meter may be observed before overload. It may occur as much as 8 db before full load and is *not an indication* of distortion in the output stage but merely of variation in signal strength.

D. Frequency Response and Power Output Measurements. For these measurements the amplifier(s) should be terminated in a resistor equivalent to their load impedance. The LU-1002, LU-1003 and LU-1026 Networks, associated with these amplifiers, provide this termination for system measurements. If, however, measurements are made on only one amplifier, in systems having more than one AM-1001, check the output transformer connection (B1 wire to TS_1) and terminate the amplifier in a resistor of the same value as the terminal designation (12 or 24 ohms). See tabulation in Section 3-B. For two amplifiers operating in parallel, in a system normally using four AM-1001, the resistor should be 12 ohms and connected across the output of the two AM-1001 in parallel. In the LU-1003 and LU-1026 networks, having two 12 ohm terminating resistors normally connected in parallel, 12 ohms may be obtained by disconnecting one of these resistors for measurements. Be sure that terminal "RVC 3" is connected to "RVC 4" during these measurements (See Paragraph 3-E).

5. MAINTENANCE.

A. Dual or Emergency Amplifiers. When two or more amplifiers normally operate in parallel, or emergency amplifier equipment is installed, a selector switch is supplied to disconnect the output, external heater and plate circuits and warping circuit of the inoperative amplifier(s) and connect similar circuits of the operative amplifier(s). Only one warping circuit is used at a time.

The input is not disconnected and the AC power supply is controlled by the switch on the panel. Tests, parts replacements and frequency response measurements may, therefore, be made on the inoperative amplifier while the system is operating. Only when absolutely necessary should tests be made in the first stage, and then only after VT_1 is removed, as described in Paragraph 4-B, as disturbances will be introduced into the system.

B. Vacuum Tubes. Tubes should be tested daily as described in paragraph 4-B, and the following checked periodically to prevent noise:-

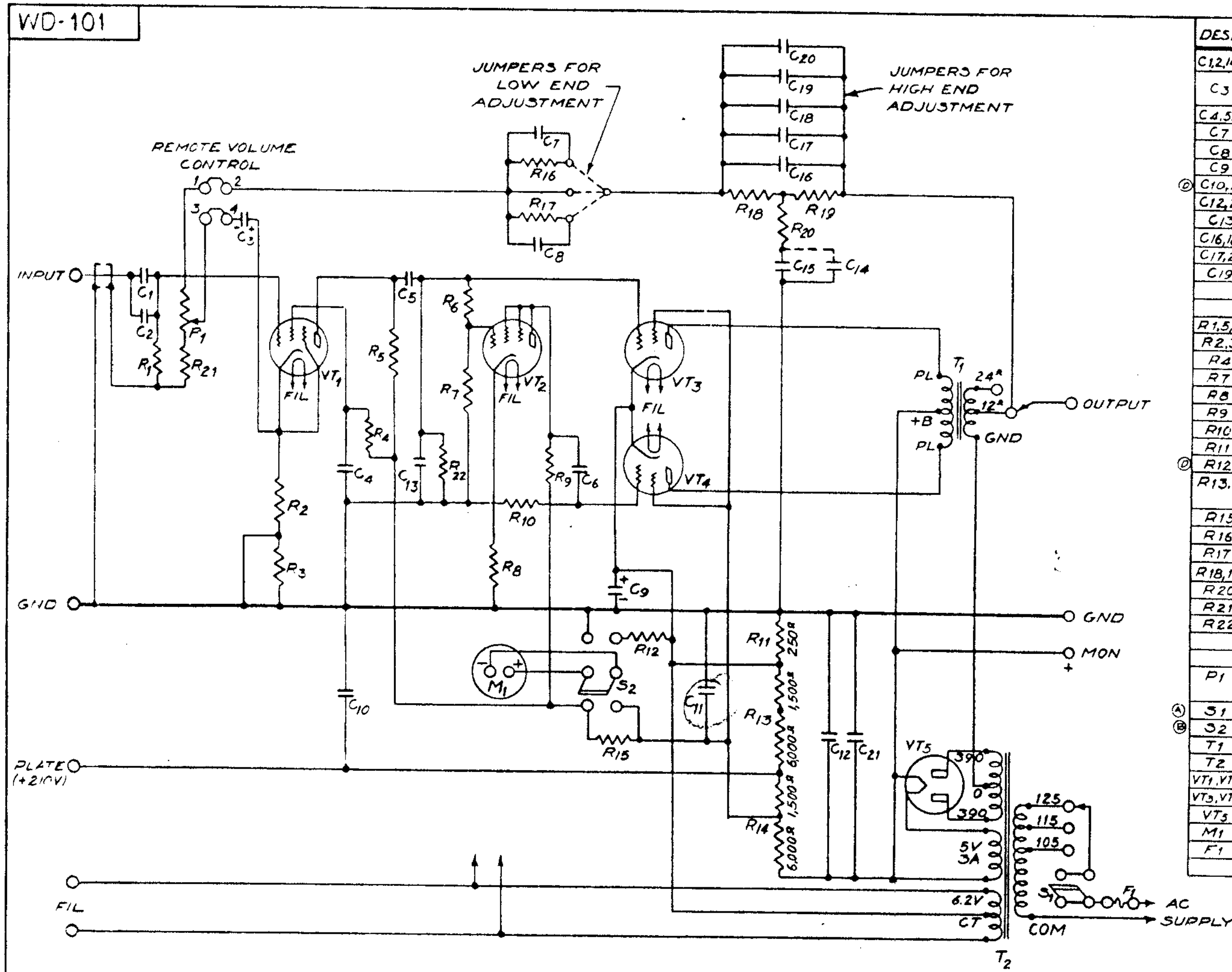
(1) Tube prongs should make good contact. Careful bending of the socket contacts may be resorted to if necessary.

(2) Tube prongs and socket contacts should be clean and bright. Burnish with crocus cloth if necessary.

C. Capacitors. Check all clamping rings and nuts periodically and tighten if necessary.

D. Power Transformer Tap Connection. Be sure that the connection is made to the proper tap for the average line voltage during operating hours.

6. ASSOCIATED DRAWINGS. WD-101 Schematic
WD-113 Wiring Diagram.



LEGEND:- DESIGNATES SHIELDED CABLE

DESIG.	PART No.	APPARATUS
C1,2,14,15	SN-515	.005MF-500V CAPACITOR
C3	" 504	25MF - 25V " (WITH PAPER TUBE)
C4,5,6	" 514	.05MF-400V CAPACITOR
C7	" 511	.1MF - 200V "
C8	" 510	.2MF "
C9	" 502	25MF - 50V "
Ⓓ C10,11	" 507	8/250 - 20/350 "
C12,21	" 508	4 MF - 600V
C13	" 516	.0003MF 500V "
C16,18	" 581	.00075MF "
C17,20	" 512	.0005MF "
C19	" 582	.001 MF
R1,5,6	" 539	500,000Ω 1 WATT RESISTOR
R2,3	" 1130	2,000Ω " (WIRE WOUND)
R4	" 517	2 MEG "
R7	" 521	75,000Ω "
R8	" 533	2,500Ω "
R9	" 520	50,000Ω "
R10	" 580	250,000Ω "
R11	" 535	250Ω 10 WATT
Ⓓ R12	" 971	43,500Ω 1 WATT
R13,14	" 529	7,500Ω 17 WATT TAPPED AT 1500Ω
R15	" 536	46Ω 1 WATT RESISTOR (WIRE WOUND)
R16	" 604	75,000Ω ½ WATT
R17	" 526	30,000Ω "
R18,19	" 528	7,500Ω "
R20	" 772	500Ω "
R21	" 613	280Ω "
R22	" 539	500,000Ω "
P1	" 583	1720Ω 2 WATT POT. IRC TYPE CPS WITH TAPER "A"
Ⓐ S1	" 608	D.P.S.T. SWITCH
Ⓑ S2	" 988	D.P.D.T. "
T1	" 575	OUTPUT TRANSFORMER
T2	" 576	POWER "
VT1,VT2	" 707	6J7 METAL VACUUM TUBE
VT3,VT4	" 706	6L6G VACUUM TUBE
VT5	" 708	5Z3 VACUUM TUBE
M1	" 556	WESTON D.C. MILLIAMETER MODEL 301
F1	" 549	# 702 FUSETRON (2 AMP)

ISSUE
REDRAWN FROM ISSUE #4 WITH THE FOLLOWING CHANGES
Ⓐ SN-608 WAS SN-566
Ⓑ SN-988 WAS SN-565
Ⓒ NOTE 1 REVISED NOTES 2 & 3 ADDED
Ⓓ SUPPLIERS OF CAPACITORS & RESISTORS REMOVED
AH CFR
ISSUE # 5 10-22-41

1. AMPLIFIERS FROM 1289 UP ARE AS SHOWN.
2. Ⓒ SCHEMATIC OF AMPLIERS NOS 151, 152, 162, 207, 210, 221, 227 230, 238, 347, 418, 431, 432, 433, 434, 436, 491, AND FROM 509 TO 1288 ARE AS SHOWN EXCEPT THAT S_1 AND S_2 ARE SN-566 AND SN-565 RESPECTIVELY.
3. REFER TO WD-113 (AM-1001 AMPLIFIER, WIRING DIAGRAM) FOR WIRING CHANGES IN OTHER AMPLIFIERS WHEN IMPROVED OPERATION IS DESIRED.

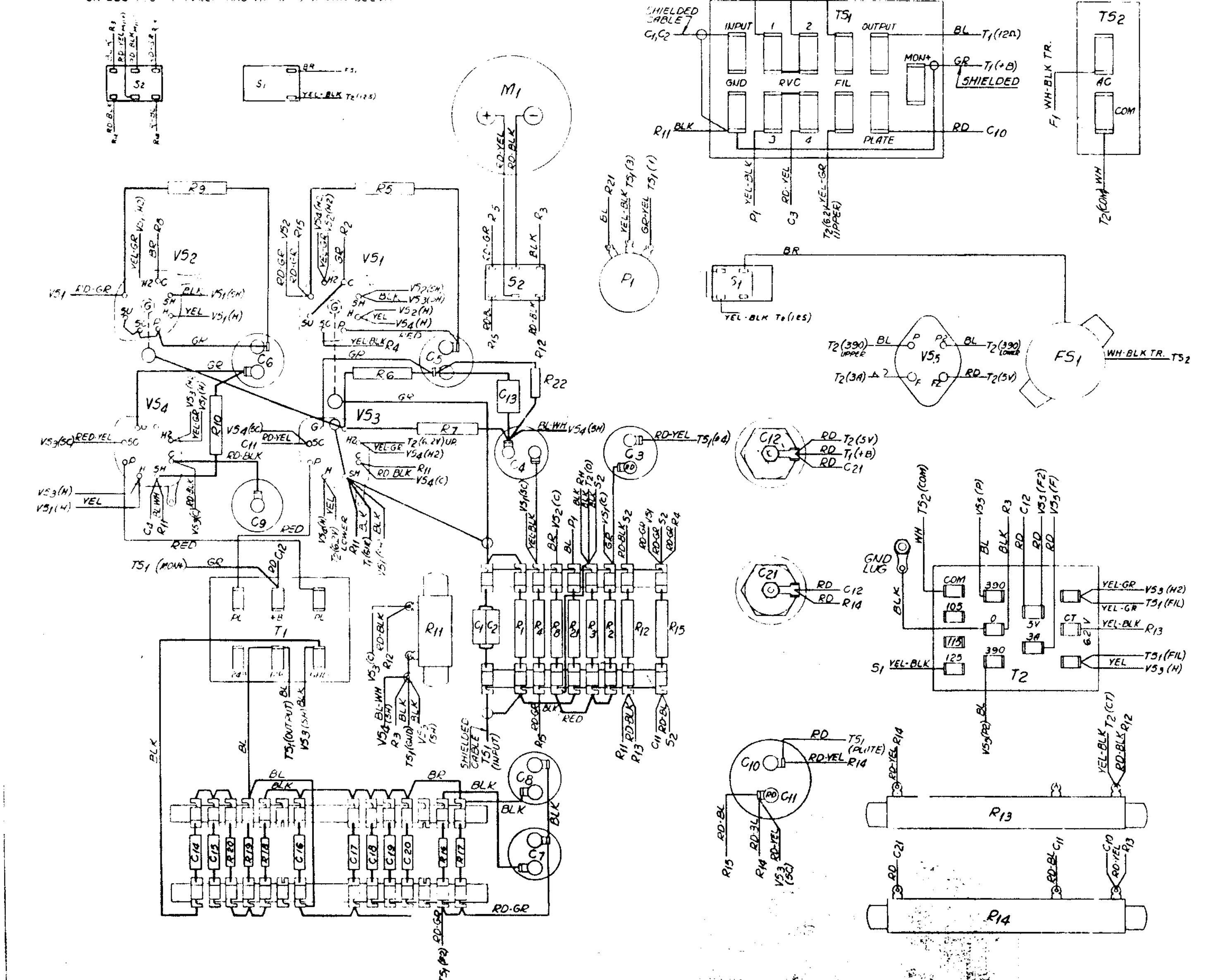
UNLESS OTHERWISE SPECIFIED TOLERANCES OF ALL FRACT. DIM. TO BE ± 1/64 TOLERANCES OF ALL DECIMAL DIM. TO BE ± .005

SCALE

AM-1001 AMPLIFIER
POWER AMPLIFIER
SCHEMATIC
INTERNATIONAL PROJECTOR CORPORATION 90 GOLD STREET NEW YORK
DR. AH CHK. APPD.
WD-101

WD-113

NOTE:
1- AMPLIFIERS FROM 1289 UP ARE WIRED AS SHOWN -
2- AMPLIFIERS 151, 152, 162, 207, 210, 221, 227, 230, 238, 347, 418, 431, 432, 433, 434, 436, 491 AND 509-1288 ARE WIRED AS SHOWN EXCEPT THAT S_1 AND S_2 ARE SN-566 AND SN-565 RESPECTIVELY AND WIRED AS SHOWN BELOW



DESIG.	PART No.	APPARATUS
$C_1, 2, 14, 15$	SN-515	.005 MF-300V CAPACITOR
C_3	" 504	25 MF-25V CAPACITOR (WITH PAPER TUBE)
$C_4, 5, 6$	" 514	.05 MF 400V CAPACITOR
C_7	" 511	.1 MF.-200V "
C_8	" 510	.2 MF.- " "
C_9	" 502	25 MF - 50V "
C_{10}, C_{11}	" 507	4/250-20/350 "
C_{12}, C_{21}	" 506	4 MF- 600 " "
C_{13}	" 516	.0003 MF 500V "
C_{16}, C_{18}	" 381	.00075 MF " "
C_{17}, C_{20}	" 512	.0005 MF " "
C_{19}	" 502	.001 MF " "
R_1, R_5, R_6	" 539	500,000Ω 1 WATT RESISTOR
R_2, R_3	" 1130	2000Ω " RESISTOR (WIRE WOUND)
R_4	" 517	2 MEG " RESISTOR
R_7	" 521	75,000Ω " "
R_8	" 533	2,500Ω " "
R_9	" 520	50,000Ω " "
R_{10}	" 580	250,000Ω " "
R_{11}	" 535	250Ω 10 WATT "
R_{12}	" 971	43,500Ω 1 WATT "
R_{13}, R_{14}	" 529	7,500Ω 17 WATT RESISTOR TAPPED AT 1,500Ω
R_{15}	" 536	46Ω - 1 WATT RESISTOR (WIRE WD)
R_{16}	" 604	75,000Ω - 1/2 WATT "
R_{17}	" 526	30,000Ω " "
R_{18}, R_{19}	" 528	7,500Ω " "
R_{20}	" 772	500Ω " "
R_{21}	" 613	280Ω " "
R_{22}	" 539	500,000Ω " "
P_1	" 583	1720Ω 2 WATT POT. IRC TYPE CP5 WITH TAPER "A"
S_1	" 608	D.P.S.T. SWITCH
S_2	" 988	D.P.D.T. SWITCH
T_1	" 575	OUTPUT TRANSFORMER
T_2	" 576	POWER TRANSFORMER
TS_1	AM-2017	TERMINAL STRIP ASSEMBLY.
TS_2	AM-2015	TERMINAL STRIP ASSEMBLY
$V5_{1,2,3,4}$	SN-561	EBY OCTAL SOCKET
$V5_5$	" -562	STANDARD 4 PRONG SOCKET
M_1	" -556	WESTON D.C. MILLIAMETER MODEL-301
FS_1	" 554	FUSE RECEPTACLE

ISSUE 1 6-29-38
NOTE - 3 ADDED AND WIRING CHANGED TO AGREE
EGM [illegible] CFA

ISSUE: 2 10-19-38
C_5 WAS SN-513, .01 MF COND.
BL-WH WIRE AT R_{11} WAS SHOWN CONNECTED TO R_1.
EGM [illegible] CFA

ISSUE: 3 12-2-38
R_1, R_5, R_6 WERE SN-518. R_2, R_3 WERE SN-534.
R_{11} WAS TYPE MW 1/2
R_{22} WAS SN-884.
AT TS_2 & FS_1 WH-BLK TR. WAS YEL.
[illegible]

ISSUE: 4 3-7-40
S_1 & S_2 WERE SN-566 & SN-565 RESPECTIVELY.
WIRING AND NOTES REVISED TO CONFORM
NAMES OF SUPPLIERS OF CAPACITORS & RESISTORS REMOVED
[illegible]

ISSUE NO 5 10-20-41

3- IN AMPLIFIERS NOT LISTED IN NOTES 1 & 2, IMPROVED OPERATION WILL BE OBTAINED BY THE WIRING CHANGES GIVEN BELOW.

A- REMOVALS
(1) AT $V5_1$, $V5_2$, $V5_3$, & $V5_4$ DISCONNECT GROUND LUG FROM "SH" TERM
(2) BLACK WIRE FROM C_4 TO R_3
(3) BLACK STRAP FROM R_1 TO R_8 (LOWER TERMINALS)
(4) BLACK STRAP FROM R_8 TO R_{21}
(5) BLACK WIRE FROM R_{13} TO $T_2(0)$

B- RECONNECTIONS
(1) AT T_1 TRANSFER BLUE WIRE FROM 24Ω TAP TO 12Ω TAP
(2) AT R_{14} TRANSFER YEL-BLK WIRE FROM CENTER TAP TO END TAP AT RIGHT.
(3) AT C_{10} TRANSFER RD-YEL WIRE [$V5_4$(SC)] TO C_{11}
(4) AT C_{11} TRANSFER RED WIRE TO C_{10}
(5) REPLACE R_{15} (55Ω) & R_{12} (30,000Ω) BY 46Ω & 43,500Ω 1 WATT RESISTORS RESPECTIVELY.
(6) AT $V5_4$ (SH) TRANSFER BLACK WIRE TO $V5_3$ (SH). OTHER END CONNECTS TO T_1 (GND).
(7) AT $V5_4$ (SH) TRANSFER BLACK WIRE TO R_3 (UPPER TERM). OTHER END CONNECTS TO R_{11}.
(8) AT C_4 TRANSFER BLACK WIRE TO R_3 (UPPER TERM). OTHER END CONNECTS TO S_2
(9) AT C_{21} TRANSFER GREEN WIRE TO T_1 (+B). OTHER END CONNECTS TO TS_1 (MON+).*
(10) REROUTE RED WIRE FROM C_{12} TO T_1 (+B). REMOVE FROM CABLE FORM AND REROUTE AND RUN IN FRONT OF WARPING CIRCUIT CLOSE TO FRONT CORNER OF CHASSIS.
(11) AT R_{12} TRANSFER RED STRAP TO R_8 (LOWER TERM.)

C- ADDITIONS
(1) CONNECT SHIELD OF INPUT CABLE TO R_1 (LOWER TERM.).
(2) R_1 TO R_{21} (LOWER TERM.). BLACK STRAP.
(3) $V5_4$ (SH) TO C_4 - BLUE-WHITE.
(4) $V5_4$ (SH) TO R_1 (LOWER TERM.) - BLUE-WHITE.
(5) $V5_3$ (SH) TO R_{11} (GND LUG) - BLACK.
(6) $V5_3$ (SH) TO $V5_1$ (SH) - BLACK.
(7) $V5_1$ (SH) TO $V5_2$ (SH) - BLACK.
(8) T_2 (0) TO GND LUG ON T_2 - BLACK.
(9) R_{22} - CONNECT ACROSS C_{13}.
(10) R_{12} TO R_{13} - RD-BLK WIRE

* GREEN WIRE, FROM TS_1 (MON +) TO T_1 (+B), IS SHIELDED IN AMPLIFIERS SHIPPED SINCE JUNE 29 TH 1938. THIS SHIELDED WIRE, IF NECESSARY IN EARLIER AMPLIFIERS TO IMPROVE OPERATION, IS RUN OUTSIDE THE EXTERNAL CABLE FORM, PROTECTED SUITABLY AGAINST ABRASION.

ASSOCIATED ITEMS
AM-1001
POWER AMPLIFIER
WIRING DIAGRAM
INTERNATIONAL PROJECTOR CORPORATION
NEW YORK
CFA
FD
WD-113

SIMPLEX SOUND SYSTEMS

EQUIPMENT INSTRUCTION - AM-1003 AMPLIFIER

1. DESCRIPTION.

The AM-1003 is a chassis type, single stage, push pull amplifier, 4 1/2" H x 3" W x 7" D, weighing 4 1/2 lbs. One 6N7 vacuum tube, which is furnished separately, is required. The gain is 16 db., output 6 watts, input and output impedance each 50 ohms. External connections terminate in a 6-prong plug, which may be plugged into a standard 6-prong socket, thus facilitating installation. Heater and plate supply are obtained from the AM-1001 Amplifier.

The AM-1003 is used as a bridging amplifier across the input of the loudspeaker network to provide added power for the monitor loudspeaker. As a bridging amplifier draws practically no power, the full output of the amplifiers is available for the stage speakers. It may also be used to drive auxiliary speakers and hearing aid attachments. Refer to Equipment Instructions "Attachment, Acousticon Hearing Aid" and "Attachment, Loud Speaker for Cry Room or Similar Use" for the recommended procedure.

2. INSTALLATION.

As a monitor amplifier, the AM-1003 should be plugged into the socket on the chassis of the loudspeaker network and the two screws furnished, threaded into the tapped holes in the chassis and tightened.

NOTE:- Be sure that the external wires are connected to the "Fil" and "Plate" terminals of the network per the system wiring diagram. These three wires are the heater and plate supply for the AM-1003. Refer to Equipment Instruction "LU-1018 Monitor Unit" for connections to monitor loud speaker

3. OPERATION.

Set the monitor amplifier switch on the network chassis in "ON" position, turn on the AM-1001 amplifier and the monitor amplifier is ready for operation. Adjust the monitor speaker volume control on the network panel as required.

4. EMERGENCY.

If the amplifier becomes inoperative, set the monitor amplifier switch in "OFF" position. The amplifier is disconnected and the monitor loudspeaker connected across the network input through the monitor volume control. Volume is there fore controlled in the same way as when the amplifier is used.

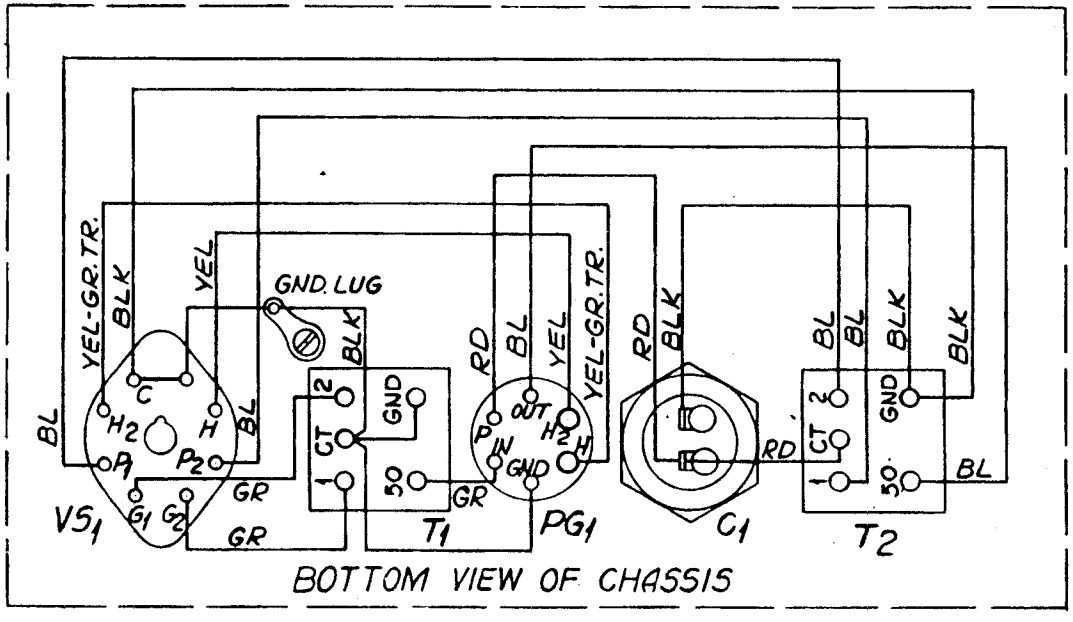
5. ASSOCIATED DRAWING.

WD-141 Schematic and Wiring Diagram.

International Projector Corporation
New York
Printed in U. S. A.

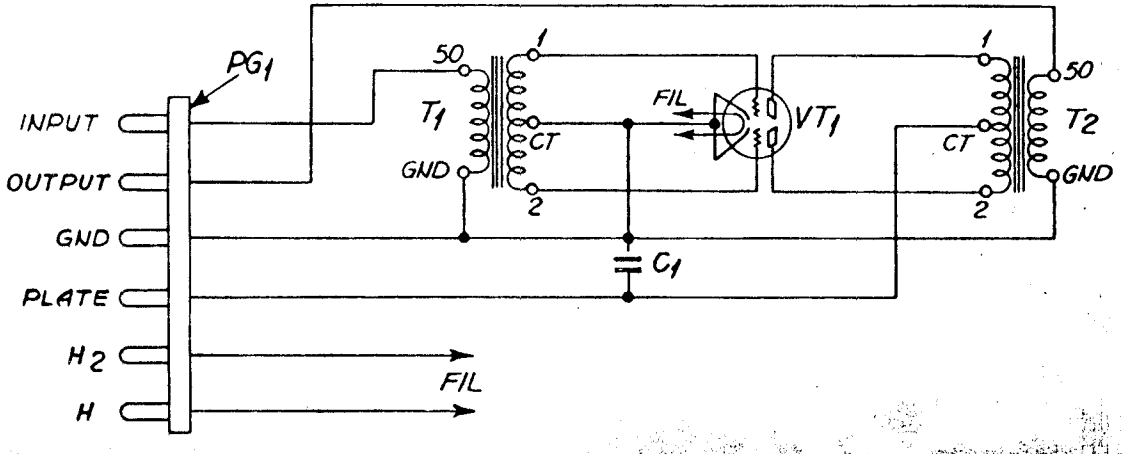
WD-141

ISSUE:1 10-28-38



DESIG.	PART No.	APPARATUS
C_1	SN-780	CAPACITOR 1MF-600V
T_1	" 577	INPUT TRANSFORMER
T_2	" 578	OUTPUT TRANSFORMER
VS_1	" 561	SOCKET
PG_1	" 560	STANDARD 6 PRONG PLUG
* VT_1	" 796	6N7 VACUUM TUBE

* INDICATES NON-COMPONENT ITEM WHICH MUST BE ORDERED SEPARATELY



AM-1003
MONITOR AMPLIFIER
WIRING DIAGRAM & SCHEMATIC
INTERNATIONAL PROJECTOR CORPORATION
90 GOLD STREET NEW YORK
DR. EGM CHK. CFA APP'D
WD-141

SIMPLEX SOUND SYSTEMS

EQUIPMENT INSTRUCTION - AM-2013 SWITCH

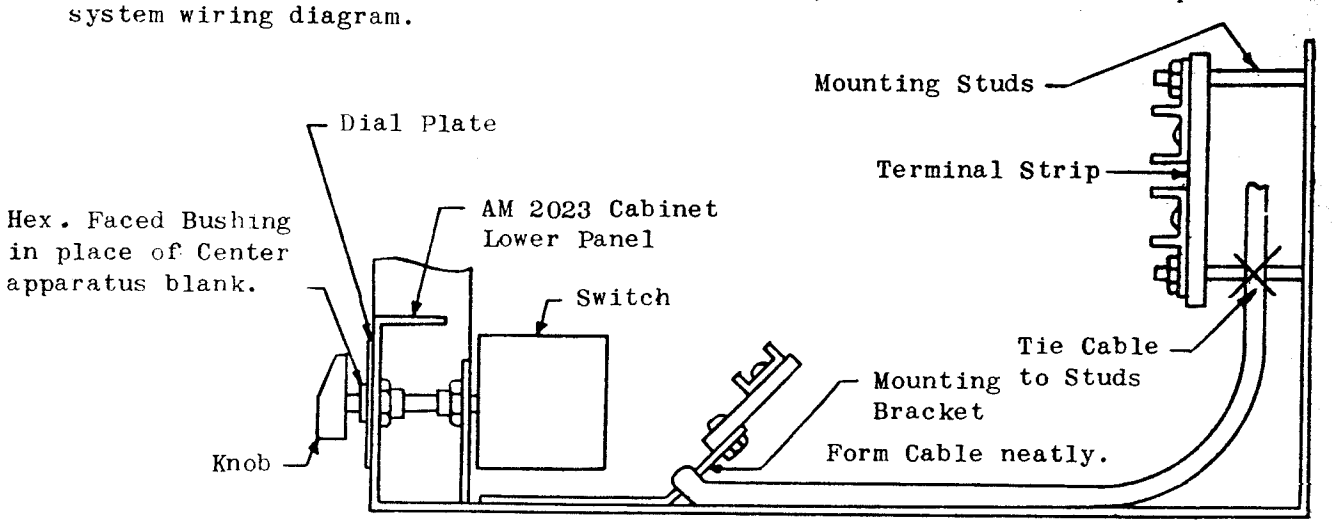
1. DESCRIPTION.

The AM 2013, supplied when two or more AM-1001 Amplifiers operate in parallel, is a three position amplifier selector switch assembled on a bracket, provided with cables for equipment inter-connections and a terminal strip for external connections. A dial plate and knob are supplied. The switch, exclusive of the cables, is 4¼" high x 2½" wide x 9" deep and weighs 2 lbs.

In the mid-position all system amplifiers operate in parallel. In the left position amplifier #1 or amplifiers #1 and #3 operate, and amplifier #2 or amplifiers #2 and #4 are disconnected. In the right position amplifier #2 or amplifiers #2 and #4 operate, and amplifier(s) #1 or amplifiers #1 and #3 are disconnected. Inoperative amplifier(s) (output, external heater and plate circuits and "warning" circuit) may, therefore, be disconnected, and the system operated on the remaining amplifier(s) Only one warping circuit is used at a time. The input is not disconnected in order that the inoperative amplifier(s) may be tested and serviced while the system is operating.

2. INSTALLATION.

The AM-2013 should be installed in the bottom of the AM-2023 Cabinet in place of the center apparatus blank per the sketch below, and connections made per the system wiring diagram.



A Grounding of Shielded Wires. The shields of the five shielded wires are bonded together at the switch, but are not grounded To avoid loop grounds and noise, the shields should be grounded, during installation, only at the amplifier to which the cold water pipe ground wire is connected.

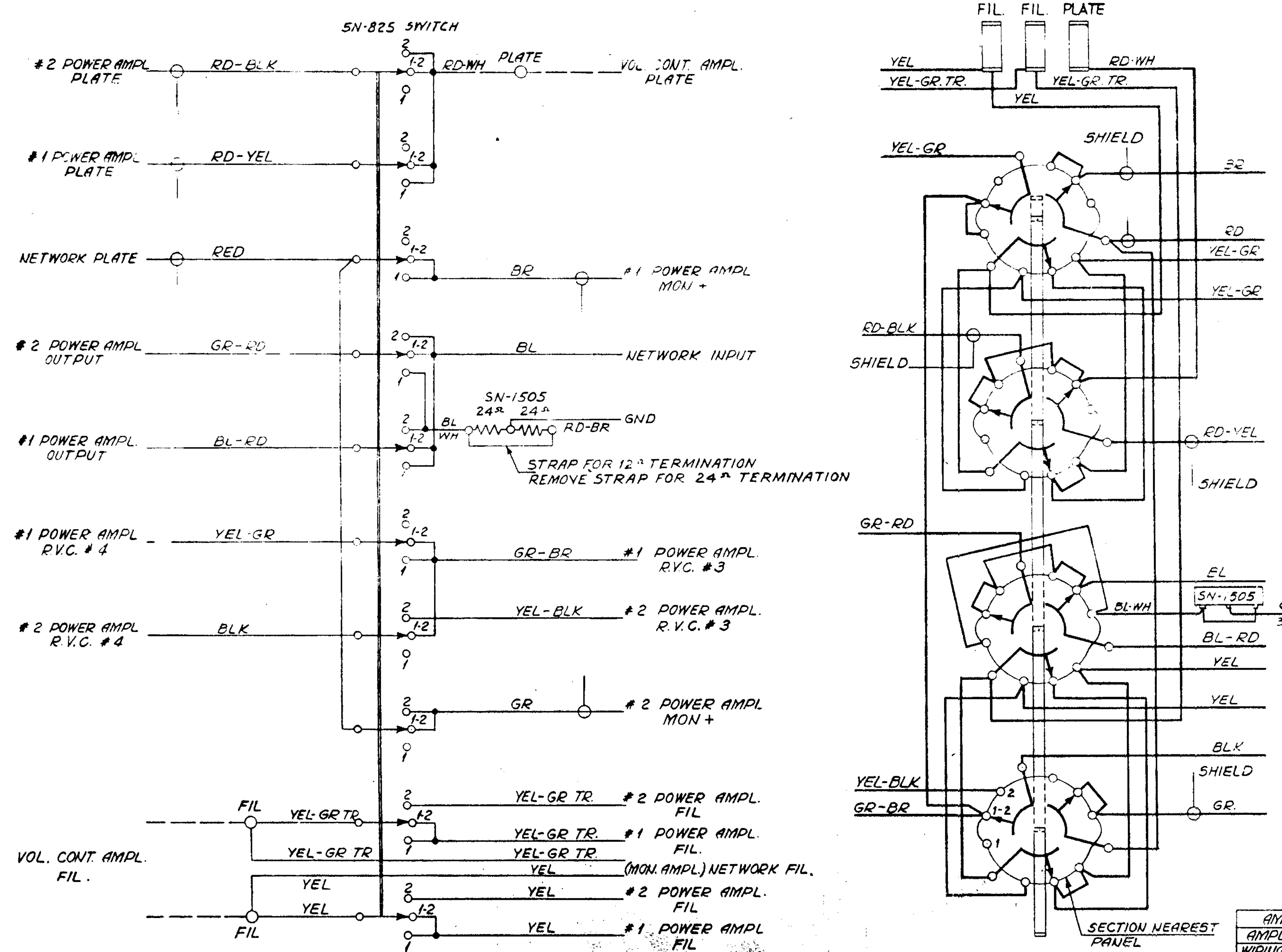
3 OPERATION.

A. Normal. Set switch "1-2" (mid) position.

B. Emergency. If #1 (or #3) Amplifier fails, set switch in position "2" (right). If #2 (or #4) Amplifier fails, set switch in position "1" (left).

4. ASSOCIATED DRAWING. WD 111 Schematic and Wiring Diagram.

WD-111



NOTE:
SHIELDS ARE BONDED AT THE SWITCH AND GROUNDED AT ONE POINT IN THE SYSTEM.

REDRAWN FROM ISS:1 WIRING DIAGRAM WAS NOT SHOWN. REF TO SCHEMATIC 5 SHIELDS ADDED; 3RD SECTION FROM TOP WAS:
3RD SECTION FROM BOTTOM WAS: #2 PWR AMPL RVC #2 … RVC #1
ISSUE:2 3-5-38 NOTE ADDED & SHIELD TERMINATIONS REMOVED
DR EGM CFA
ISSUE:3 12-13-38 SN-1505 RESISTOR ADDED.
JLS CFA
ISSUE:4 9-22-41

AM-2013 SWITCH
AMPLIFIER SWITCHING
WIRING DIAGRAM-SCHEMATIC
INTERNATIONAL PROJECTOR CORPORATION
90 GOLD STREET NEW YORK
DR EGM CH CFA
APPD
WD-111

EQUIPMENT INSTRUCTION - AM-2023 CABINET

1. DESCRIPTION.

The AM-2023 is a ventilated metal cabinet 36" high x 20" wide x 12-1/2" deep, weighing 63 lbs., and is finished in aluminum gray. It is surface mounted on the wall for exposed conduit installations, and may be partially recessed in the wall when the conduit is concealed. The cabinet has a removable front cover, and any three of the standard chassis units (power amplifier, loudspeaker network or power unit) may be installed in it. The complete weight is approximately 175 lbs.

Each chassis unit is mounted in the cabinet on pivoted slides so that it may be partially withdrawn as a drawer is pulled out, and then rotated 180°. A trigger pin on each slide limits the forward travel of the unit, and it cannot be rotated until the limit of travel is reached. All equipment above and below the chassis is accesible for inspection and test without removal of the unit from the cabinet.

One to three selector switches for amplifier selection or similar use may be mounted behind the bottom panel upon removal of the apparatus blanks.

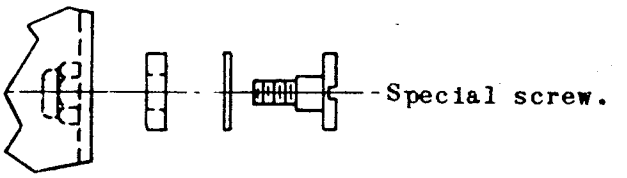
2. INSTALLATION.

A. Cabinet. The AM-2023 should be mounted in a convenient accessible location on one of the walls of the Projection Room.

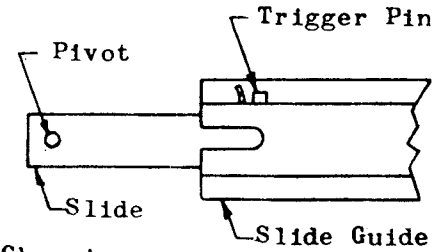
B. Units. Each unit should be installed in the cabinet in the location shown on the system conduit layout drawing. The selector switch (when supplied) should be installed first in accordance with the Equipment Instruction packed with the switch..

Each unit, beginning at the bottom, should be installed as follows:-

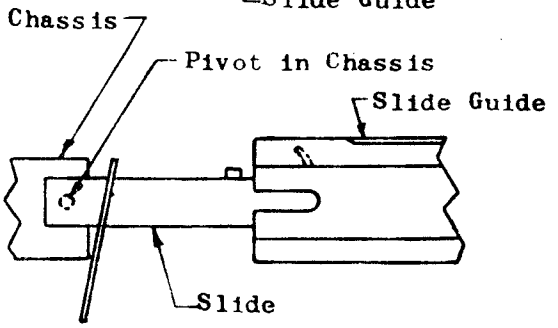
(1) Remove the two special screws from the chassis. These screws fasten the hinge to the chassis.



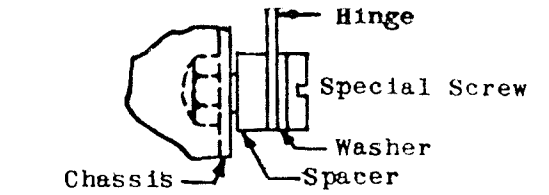
(2) Remove the associated left and right slides from the cabinet by depressing the slide trigger pin (visible in rectangular opening on top of the guide assembly) until the slide releases. The slides are lubricated with grease during manufacture, but should be given a light coating of vaseline, if necessary.



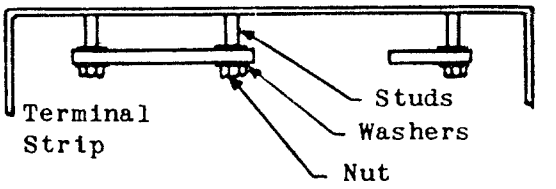
(3) Invert the unit, and with its panel toward the cabinet insert the pivot on each slide in the pivot holes in the chassis (trigger pin up), place the slides in the guides in the cabinet, depress the trigger pin to slide under the front edge of the guides, and push the assembly until the slides lock.



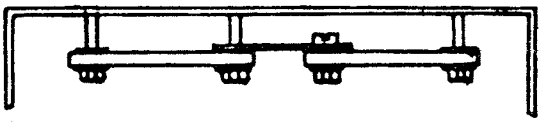
(4) Attach the hinges to the chassis, using the two special screws removed under (1) above.



(5) Mount the terminal strip(s) on the studs on the back of the cabinet, just above the unit installed, with the fibre spacers under the strip, a washer above and below the strip, and the nuts above.

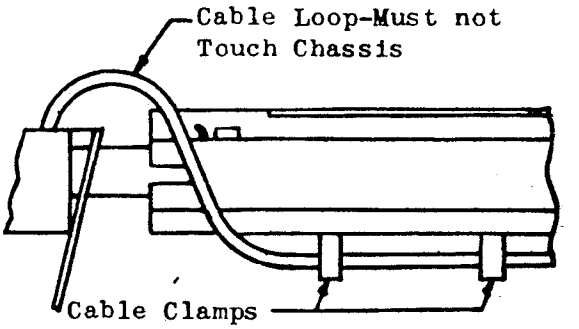


NOTE:- The cable form(s) should be installed so that they have a natural tendency to lead toward the side of the cabinet, thus being out of the path of the chassis below when it is rotated. Avoid twisting the cables

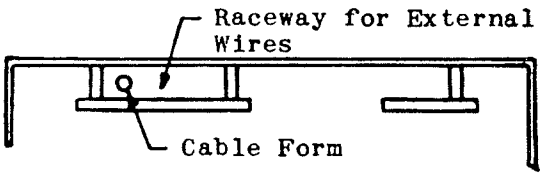


LU-1026 Network Only

(6) Insert the cable form(s) in the cable clamps beneath the guides, and form neatly. The cable at the chassis end should be formed in a loop to clear the edge of the chassis when it is in its inverted position. Some of the cables are reinforced to indicate their normal position with respect to the cable clamps.



(7) Make all external connections to the terminal strip(s) per the system wiring diagram. All inter-connecting and external wiring should be routed behind the terminal strip(s) in the raceway formed by the terminal strip mounting studs and beneath the cable form to facilitate removal of the unit.



(8) Rotate the unit to normal position, slide into the cabinet, and proceed with the assembly of the next unit.

NOTE:- Due to the light weight of the network, it may be necessary to put a slight pressure on the top of the chassis to depress the trigger sufficiently to release the unit so that it may slide into the cabinet.

3. OPERATION.

All normal operating controls on the three units installed in the cabinet are visible through openings in the cover. It is necessary to remove the cover only to replace tubes or to service and test the units.

To invert a chassis, pull it out until stopped by the trigger pins, and then rotate. The chassis cannot be rotated before it has reached the limit of the forward travel.

Be sure that the cable form(s) are formed toward the sides of the cabinet, and out of the path of the chassis below.

4. MAINTENANCE

A thin coat of vaseline should be applied to the slides periodically so that they will slide more easily.

If a trigger pin tends to slide by the rectangular opening in the top of the guide assembly, the front or rear edge of this opening should be depressed slightly - but care should be taken that there is sufficient clearance between the slide and the guide, otherwise binding will occur.

SIMPLEX SOUND SYSTEMS

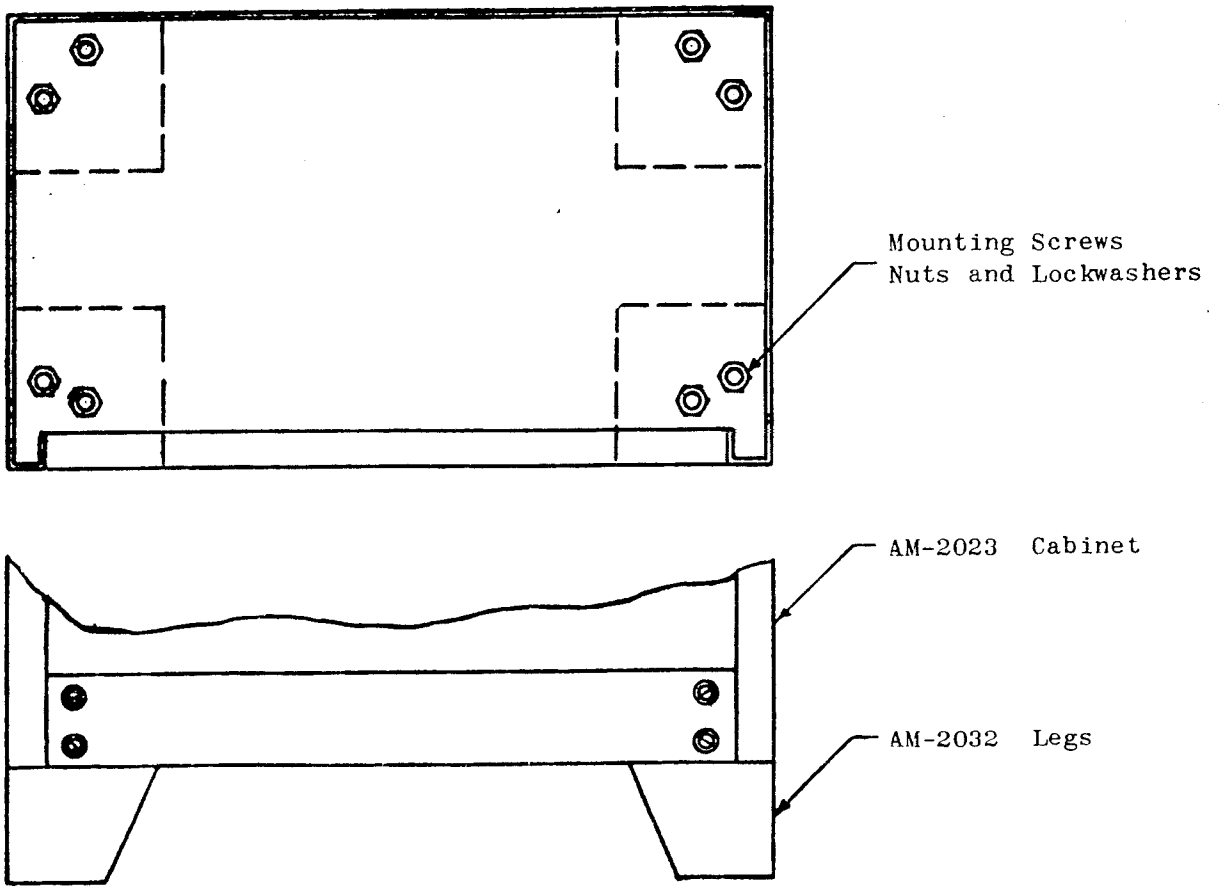
EQUIPMENT INSTRUCTION- AM-2032 LEGS

1. DESCRIPTION.

The AM-2032 is a set of four legs, and associated mounting screws, nuts washers and lockwashers. The legs are for attachment to the bottom of the AM-2023 Cabinet when the latter is to be mounted on the floor of the Projection Room.

2. INSTALLATION.

The AM-2032 should be fastened to the bottom of the AM-2023 Cabinet, per the following sketch, and the cabinet securely fastened to the wall.



SIMPLEX SOUND SYSTEMS

EQUIPMENT INSTRUCTION - AM-2033 CABINET

1. DESCRIPTION.

The AM-2033 is a ventilated metal cabinet, finished in aluminum gray, with a door hinged at the bottom. It is 15" high x 20" wide x 12½" deep and weighs 30 lbs. It is surface mounted on the wall for exposed conduit installations, and may be partially recessed when the conduit is concealed. The power amplifier, loud speaker network or power unit may be mounted in this cabinet - the complete weight then being approximately 95 lbs.

The chassis may be rotated 180° so that all equipment mounted above and below the chassis is readily accessible for inspection and test without removal of the unit from the cabinet.

2. INSTALLATION.

A. **Cabinet.** The AM-2033 should be installed on one of the walls of the Projection Room in a convenient accessible location, preferably adjacent to the AM-2023 Cabinet as shown on the system conduit layout drawing.

B. **Unit.** The installation procedure for the unit (install the unit shown on the system conduit layout drawing) is as follows:-

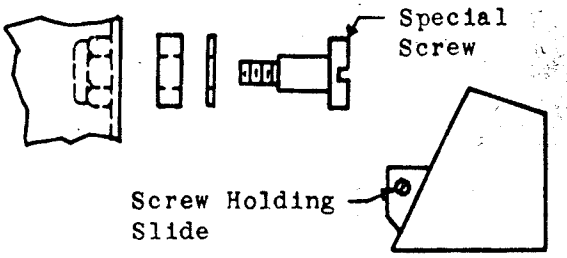
(1) Remove the two special screws from the chassis. These screws fasten the hinge to the chassis.

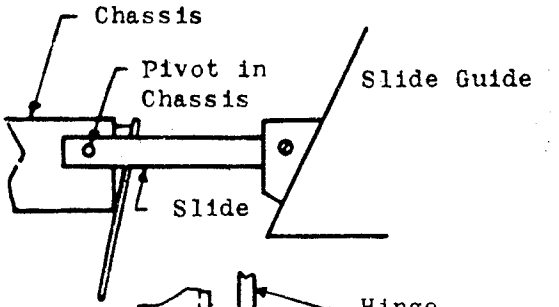
(2) Remove the two screws holding the slides in place, and remove the slides.

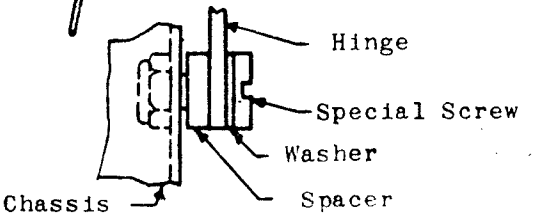
(3) Invert the unit, and with its panel toward the cabinet insert the pivot on each slide in the pivot holes in the chassis, place the slides in the guides in the cabinet, slide into the cabinet, and replace the screws removed under (2) above.

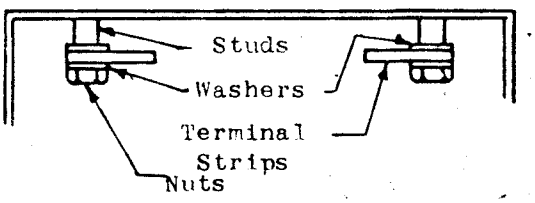
(4) Attach the hinges to the chassis, using the two special screws re moved under (1) above.

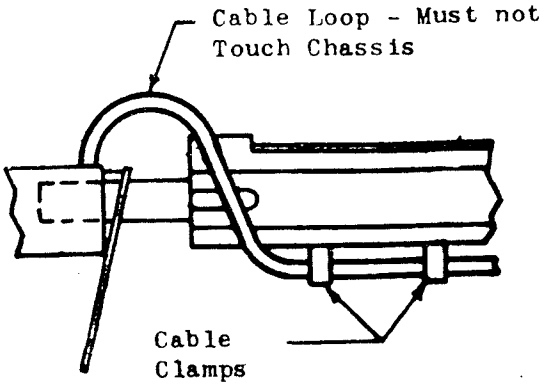
(5) Mount the terminal strip(s) on the studs on the back of the cabinet with the fibre spacers under the strips, a washer above and below the strips and the nuts above.











(6) Insert the cable forms in the cable clamps beneath the guides, and form neatly. The cable at the chassis end should be formed in a loop to clear the edge of the chassis when it is in the inverted position.

(7) Make all external connections to the terminal strips per the system wiring diagram, and rotate the unit to normal position.

3. OPERATION.

All normal operating controls on the unit are visible through the opening in the door of the cabinet. It is necessary to open the door only to replace tubes or to service and test the unit.

Microphone - Film - Phonograph input selector

AM-2069

SIMPLEX SOUND SYSTEMS

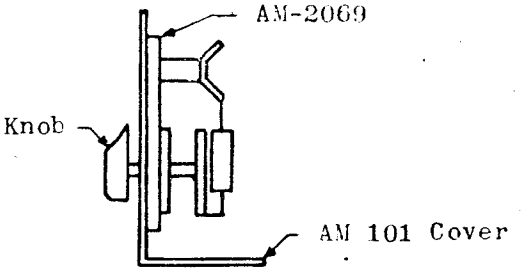
EQUIPMENT INSTRUCTION - AM-2069 N.S.-ANN. SWITCHING ATTACHMENT

1. DESCRIPTION.

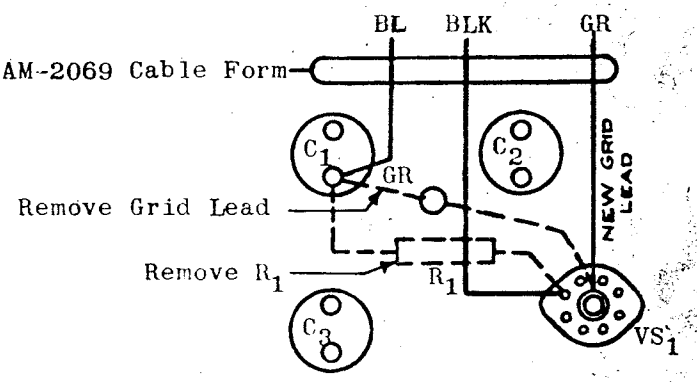
The AM-2069 consists of a three-position selector switch and knob, two single circuit jacks and four resistors on a mounting plate. A cable form is provided for external connections. When mounted in an AM-101 Volume Control Amplifier it selects any one of three inputs: film in middle position, microphone in left position (500,000 ohms) and phonograph in right position (500 ohms).

2. INSTALLATION.

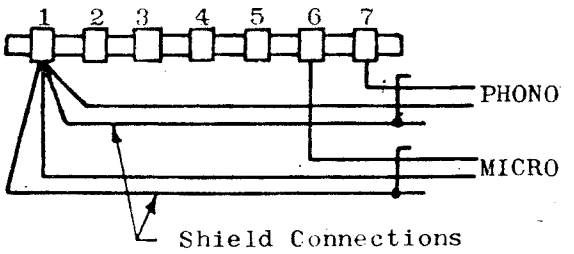
The AM-2069 should be installed in one of the AM-101 Volume Control Amplifiers in place of the nameplate on the cover, per the sketch at the right, using the present mounting screws, nuts and washers. Change R_1 or R_3, if required, to match phonograph or microphone impedance.



The AM-101, in which the AM-2069 is installed, should be modified and AM-2069 connections made to it as shown in the sketch at the right. Note that R_1 and the existing VT_1 grid lead are removed. The new grid lead is the green wire in the AM-2069 cable form, and should be routed to VT_1 between the cover and the chassis.



The special inputs may be plugged into the jacks provided, or for a permanent installation these inputs may be connected to terminals 1 & 6 (Microphone) and 1 & 7 (Phonograph) as shown. Flexible shielded cable should be used and installed so that it does not interfere with the opening and closing of the cabinet door.



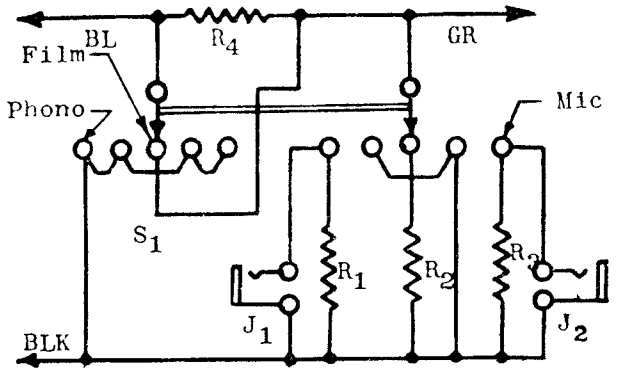
3. OPERATION

A. **Film Reproduction.** Set the selector switch in "Film" position. System operation is normal and the special inputs are disconnected.

B. **Microphone or Phonograph Reproduction.** Set the selector switch in left or right position respectively. Also set the changeover switch in the same cabinet so that the associated AM 1000 Volume Control Amplifier is operative (pilot lamp lighted). If plug connections are used, be sure the plug is in the jack. With the switch in either left or right position, the associated sound mechanism is inoperative.

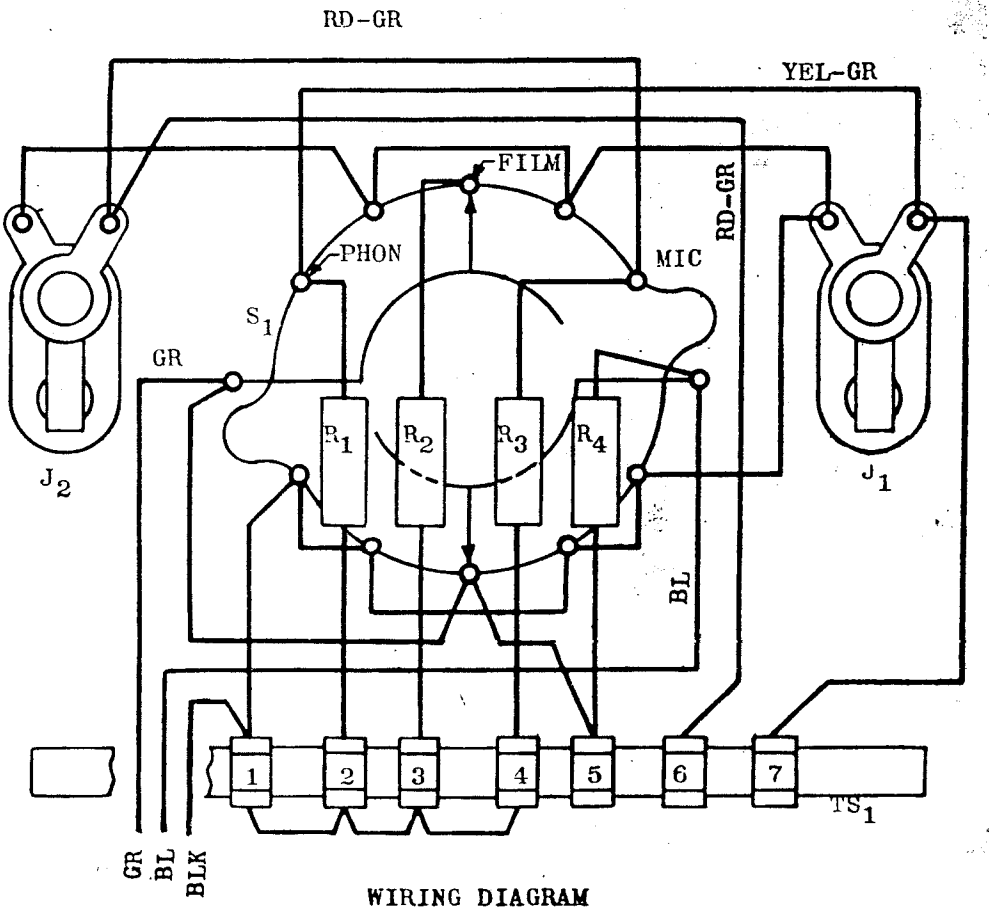
4. ASSOCIATED DRAWING.

Wd-154 Schematic and Wiring Diagram.



SCHEMATIC

DESIG.		ITEM
J_{1-2}	SN-610	Jack
R_1) R_2)	SN-1030	Resistor 500 ohms 1 Watt
R_3) R_4)	SN-539	Resistor 5000,000 ohms 1 Watt
S_1	SN-1063	Switch
TS_1	SN-571	Terminal Strip



WIRING DIAGRAM

(WD-154)

International Projector Corporation
New York
Printed in U. S. A.

SIMPLEX SOUND SYSTEMS

EQUIPMENT INSTRUCTION - LU-1018 MONITOR UNIT

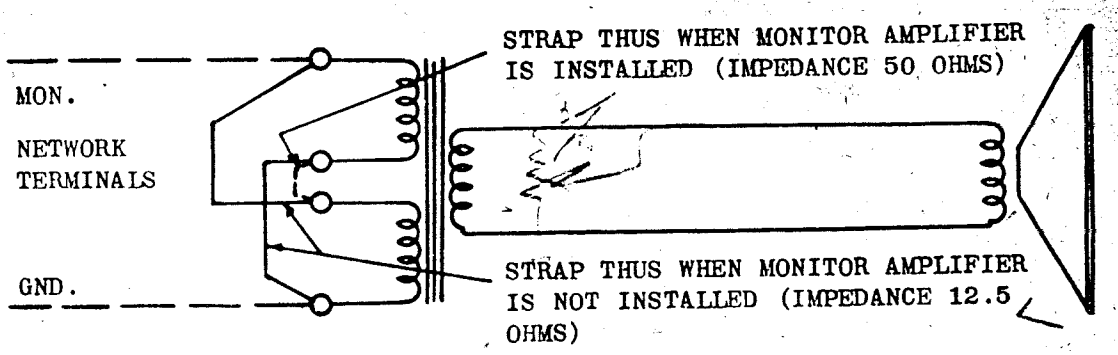
1. DESCRIPTION.

The LU-1018 is a permanent magnet, cone type loudspeaker, 8" in diameter, 4" deep, weighing 11 lbs. The input transformer has two primary windings, which may be connected in series or in parallel to give an input impedance of 50 or 12½ ohms, and a secondary winding with an impedance of 6 ohms. The impedance of the voice coil is 6 ohms.

2. INSTALLATION.

The LU-1018 should be installed in the LU-1024 Horn in accordance with the Equipment Instruction "LU-1024 Horn", which is packed with the horn.

A. Connections to Input Transformer. The primary windings should be connected in parallel when a monitor amplifier is *not* installed, and in series when a monitor amplifier *is* installed, in accordance with the following sketch:



NOTE:- If a monitor amplifier is installed after the initial installation, the transformer connections should be carefully checked, and reconnections made per the above sketch.

3. OPERATION.

The monitor volume control, located on the front panel of the network, should be adjusted for proper volume.

EQUIPMENT INSTRUCTION - LU-1024 MONITOR LOUDSPEAKER

1. DESCRIPTION.

The LU-1024 is a metal, folded, exponential type horn (8½" high x 20" wide x 12½" deep, weight 17 lbs.) equipped with a removable front cover, formed to three sides of a hexagon. The monitor speaker unit mounts behind the opening in the center section of the cover, and is protected by a metal grille. The other two sides of the cover are provided with louvres. Two vertical partitions in the horn are of aluminum to avoid weakening the magnetic field of the monitor unit. High frequency sound is radiated from the front of the speaker cone and low frequency sound from the rear through the louvres, thus giving full range high quality reproduction.

2. INSTALLATION.

The LU-1024 should be located in the Projection Room so that sound is audible at both projectors but is not projected through the ports into the balcony. It may be installed on the front or side wall (preferably left) by means of two holes in the rear, on the ceiling or on top of the system cabinet, using the mounting bracket provided. (See sketch on Page 2.)

NOTE:- Three holes are provided in the AM-2023 Cabinet for mounting the SN-713 Angles and SN-875 Leg. Similarly three holes are provided in the LU-1024 Monitor Loudspeaker for mounting the SN-714 Bracket and SN-875 Leg. It is not necessary to drill holes in the AM-2023 or LU-1024.

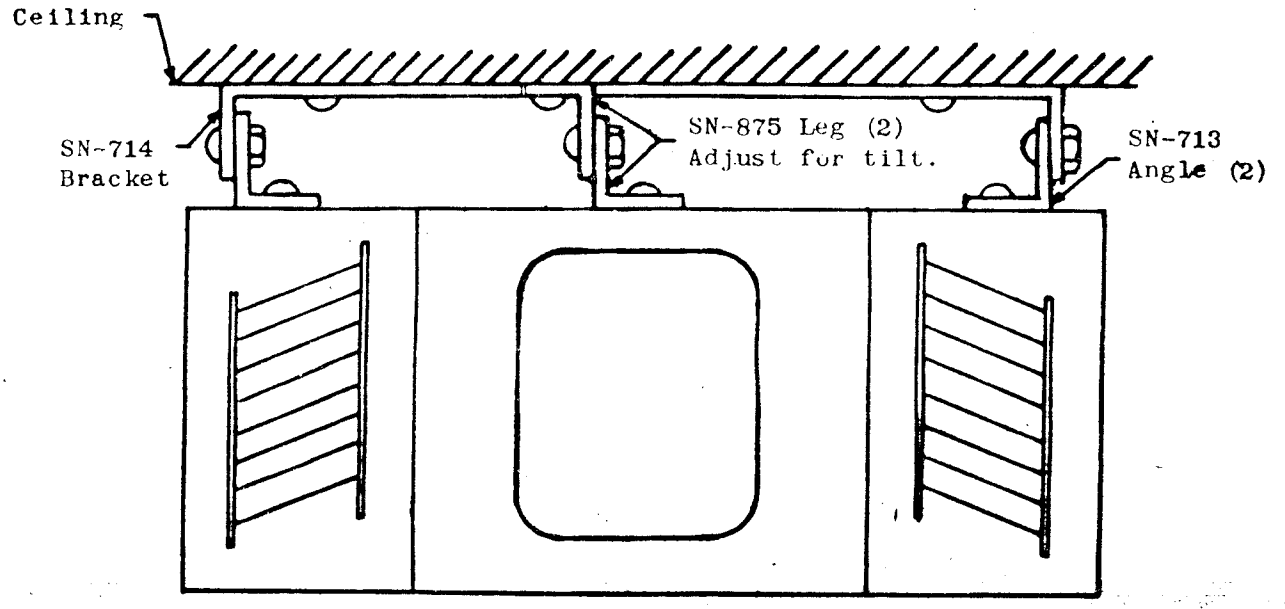
Five mounting holes are provided in the SN-714 Bracket for convenience in mounting on the ceiling or on the LU-1024. Two of the holes line up with holes in the LU-1024. Four holes are provided in the long side of the SN-875 Leg so that the LU-1024 may be tilted as required for sound distribution.

A. Installation of LU-1018 Monitor Unit. Take off the cover of the LU-1024, remove the nuts and washers from the four screws on the front of the cover, mount the monitor unit, replace washers and nuts, and tighten. Strap the terminals of the unit per Equipment Instruction "LU-1018 Monitor Unit", and make connections per the system wiring diagram.

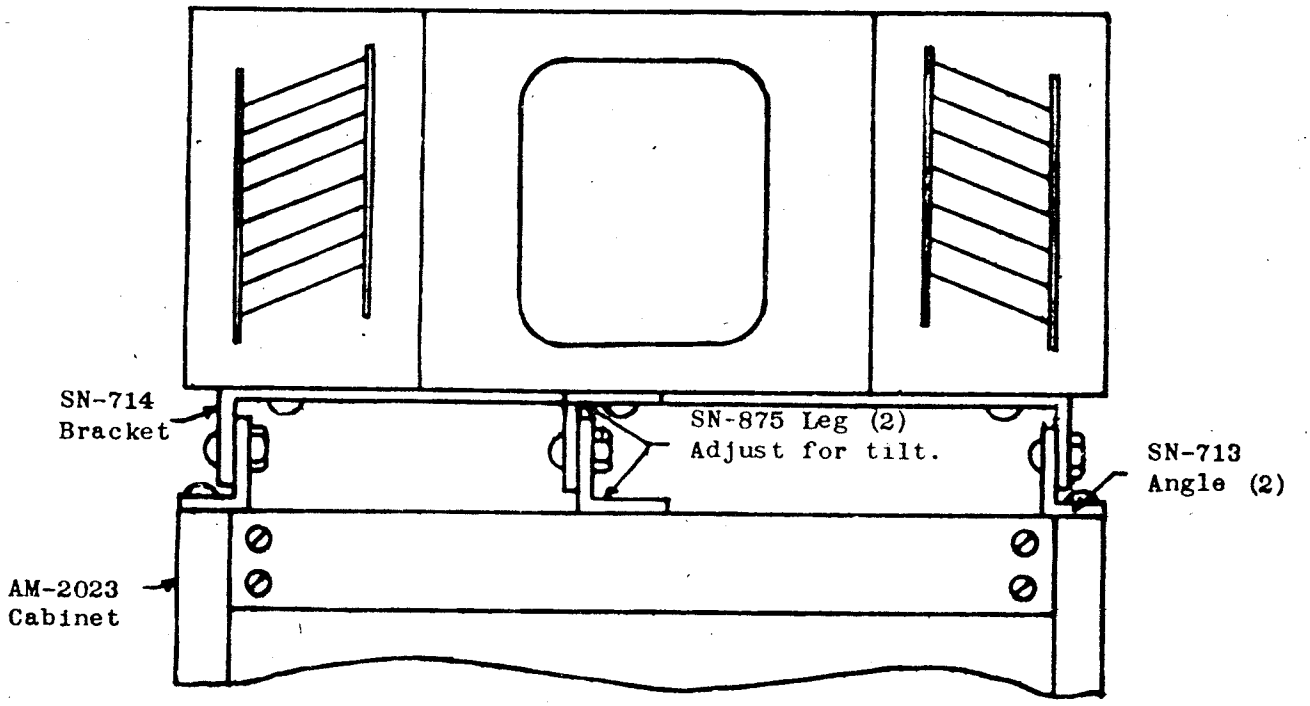
B. Installation of Cover of LU-1024. In replacing the cover after the monitor unit has been mounted on it, all eight mounting screws should be threaded into the holes before any are tightened. The four mounting screws on the front of the cover should then be tightened first to make sure that the cover seats properly.

3. MAINTENANCE.

The cover and partition mounting screws should be checked periodically and any loose screws tightened. For quality reproduction it is essential that all screws be tight. If the threads in the partitions become stripped, replace the screws with the larger Parker Kalon screws shipped loose with the horn.



LU-1024 Monitor Loudspeaker Mounted on Ceiling.



LU-1024 Monitor Loudspeaker Mounted on AM-2023 Cabinet

International Projector Corporation
New York
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3-21-41

SIMPLEX SOUND SYSTEMS

EQUIPMENT INSTRUCTION - LU-1026 NETWORK

1. DESCRIPTION.

The LU-1026 is a two-way, series type dividing network on a chassis 8½" high x 17" wide x 10" deep, weighing 37 lbs. Two terminal strips on extension cable forms are provided for external connections. The crossover frequency is 400 cycles, the input impedance 12 ohms, high frequency output impedance 12 ohms, low frequency output impedance 6 ohms. Two switches (for loud speaker testing, frequency response measurements and emergency operation), a monitor volume control rheostat and a jack for headset monitoring or frequency response measurements are mounted on the front panel. A socket, into which an AM-1003 Monitor Amplifier may be plugged, and a monitor amplifier "ON"-"OFF" switch are on the chassis. Heater and plate supply for the monitor amplifier are obtained from the AM-1001 Amplifier. Adjustable L-Pad resistors are provided in the H.F. speaker circuit for use in tuning up.

2. INSTALLATION.

The LU-1026 should be installed in the AM-2023 Cabinet in the location shown on the system conduit layout and per the Equipment Instruction "AM-2023 Cabinet", which is packed with the cabinet. Connections should be made to the terminal strips per the system wiring diagram.

NOTE:- It is essential that the heater and plate supply leads for the monitor amplifier be connected when the network is installed so that the monitor amplifier may be mounted without delay.

A. H.F. Speaker L-Pad Resistors, providing adjustable attenuation in the H.F. speaker circuit, may be adjusted as required per the associated drawing WD-124 to obtain optimum balance between H.F. and L.F. speakers.

B. Frequency Response Measurements. Plug the volume indicator into the jack on the front panel, and set the "H.F." and "L.F." switches in the "OFF" position. The AM-1001 Amplifiers are then terminated in 6 ohms (R_4 and R_5 in parallel). If a 12 ohm termination is required disconnect the RD-BL wire from R_5. Check the amplifier output transformer connections to determine the matching impedance required. Refer to Equipment Instruction "AM-1001 Amplifier" for further details regarding the output transformer connections.

3. OPERATION.

A. Normal. Set the "H.F." and "L.F." switches in "ON" position. Set the "Monitor Ampl." switch in "ON" position when the AM-1003 Monitor Amplifier *is* used. If the monitor amplifier *is not* used, set this switch in "OFF" position.

B. Emergency. In case of failure of one of the high frequency stage speakers, set the "H.F." switch in "OFF" position and the "L.F." switch in "ON" position. The network is then disconnected, and the L.F. speakers operate across the full output of the AM-1001 Amplifiers.

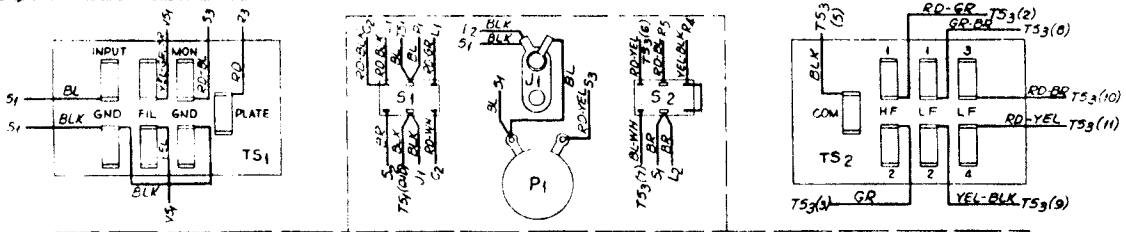
C. Stage Speaker Testing. The stage speakers should be tested each day as follows, and if the reproduction indicates a defective unit it should be replaced at once:-

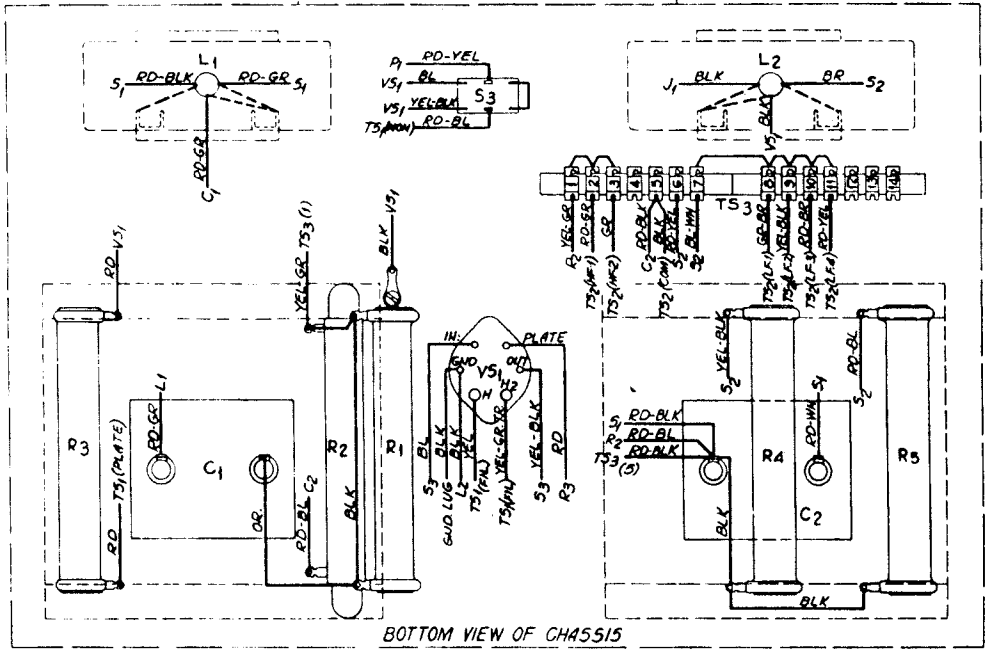
(1) H.F. Speakers. Set the "H.F." switch in "ON" position and the "L.F." switch in "OFF" position. This permits testing of the H.F. speakers as a group. To test each speaker separately, lift each of the external connections to the H.F. terminals of the network.

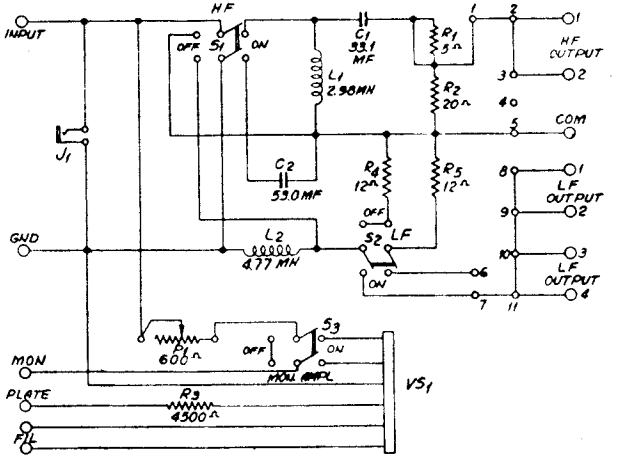
(2) L.F. Speakers. Set the "L.F." switch in "ON" position and the "H.F." switch in "OFF" position. This permits testing of two L.F. speakers as a group, or four L.F. speakers, connected in series-parallel, as a group. Two of the four L.F. speakers may be tested as a group by lifting each of the external connections to the L.F. terminals of the network.

4. **ASSOCIATED DRAWING.** WD-124 Schematic and Wiring Diagram.

WD 124







DESIG	PART No	APPARATUS
C1	SU-923	CAPACITOR - 33.1 MF.
C2	" -943	CAPACITOR - 59.0 MF.
R1	" 982	RESISTOR - 5 Ω
R2	" 984	RESISTOR - 20 Ω 17 WATT
R3	" 746	RESISTOR - 4500 Ω - 60 WATT
R4,R5	" 963	RESISTOR - 12 Ω
L1	" 975	REACTOR - 2.98 MH
L2	" 976	REACTOR - 4.77 MH
S1,S2,S3	" 988	D.P.D.T SWITCH
J1	" 610	OPEN CCT JACK
VS1	" 564	SOCKET
TS1	LU-2024	TERM. STRIP - INPUT
TS2	LU-2025	TERM. STRIP - OUTPUT
TS3	SU-971	TERM. STRIP - (2 REQUIRED)
P1	" 719	RHEOSTAT - 600 Ω

NOTE:-
R1 AND R2 FORM AN L-PAD ATTENUATOR IN THE H.F. SPEAKER CIRCUIT WHICH MAY BE ADJUSTED TO GIVE THE FOLLOWING ATTENUATION:-

APPROXIMATE ATTENUATION DB		R1, R2 CONNECTION
2	—	AS SHIPPED (BLACK STRAP CONNECTED ACROSS R1)
5	—	REMOVE BLACK STRAP ACROSS R1

LU-1026 NETWORK SCHEMATIC WIRING DIAGRAM
INTERNATIONAL PROJECTOR CORPORATION
WD-124

SIMPLEX SOUND SYSTEMS

EQUIPMENT INSTRUCTION - LU-1040 WINGS

1. DESCRIPTION.

The LU-1040 is a set of four wing details, an LU-2019 Stand (shipped knocked down), an LU-2020 Horn Cradle, and the necessary wood details and hardware for assembly to two LU-1015 Low Frequency Horns and for mounting a high frequency multicellular horn.

2. INSTALLATION.

The method of assembly of the LU-1040 Wings is covered on the associated drawing WD-133. The recommended sequence of assembly is as follows:-

A. Assemble the LU-2019 Stand, and place on the stage floor where the horns are to be located as the complete assembly cannot be moved readily.

B. Place the LU-1015 Horns on the stand, one above the other, and bolt the wing details together and to the horns.

NOTE:- In some instances it may be desirable to bolt the SN-946 and SN-947 Wing Details to the bottom of the LU-1015 Horn.

C. Bolt the SN-948 Braces to the wings and horns.

D. Mount the high frequency Horn on the cradle, and locate the assembly centrally on top of the LU-1015 Horns, with the front edge of the bell in line with the front edge of the LU-1015 Horns.

NOTE:- Select two holes in the top of the LU-2020 Horn Cradle the same distance apart as the ears on the horn to be mounted, and mount the eye bolts in these holes.

E. Tilt the high frequency horn as required for proper distribution, cut the SN-966 Support to the length required to support the horn, and toe nail securely to the cradle.

F. Install the high frequency speaker Units on the high frequency Horn, and the LU-1010 low frequency speaker Units in the LU-1015 Horns, and connect per the system wiring diagram.

NOTE:- The high and low frequency speaker Units must be securely mounted. The covers on the back of the LU-1015 Horns must be replaced, and all wing nuts tightened securely.

G. After the horns have been properly phased in accordance with the Equipment Instruction "System Tuning Up", which is included in the Instruction Book, the cradle should be nailed securely to the LU-1015 Horn.

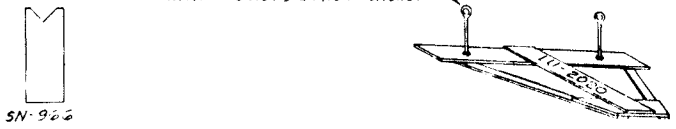
NOTE:- Be sure all the bolts in the wings and on the cradle are tightened securely.

International Projector Corporation
New York
Printed in U. S. A.

1-31-41

WD-133

ISSUE: 3 10-14-41
1/4-20 X 6 BOLT
WAS 1/4-20 X 5.
ISSUE: 2 1-13-41



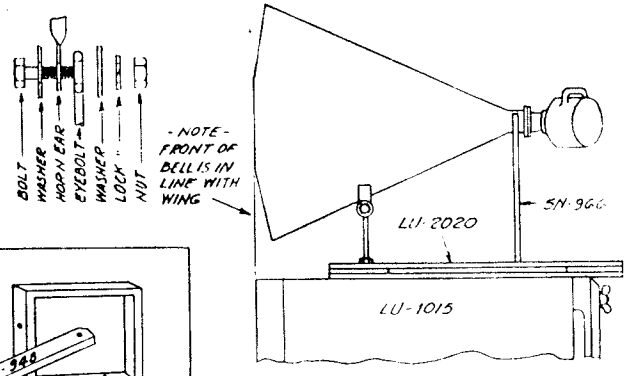
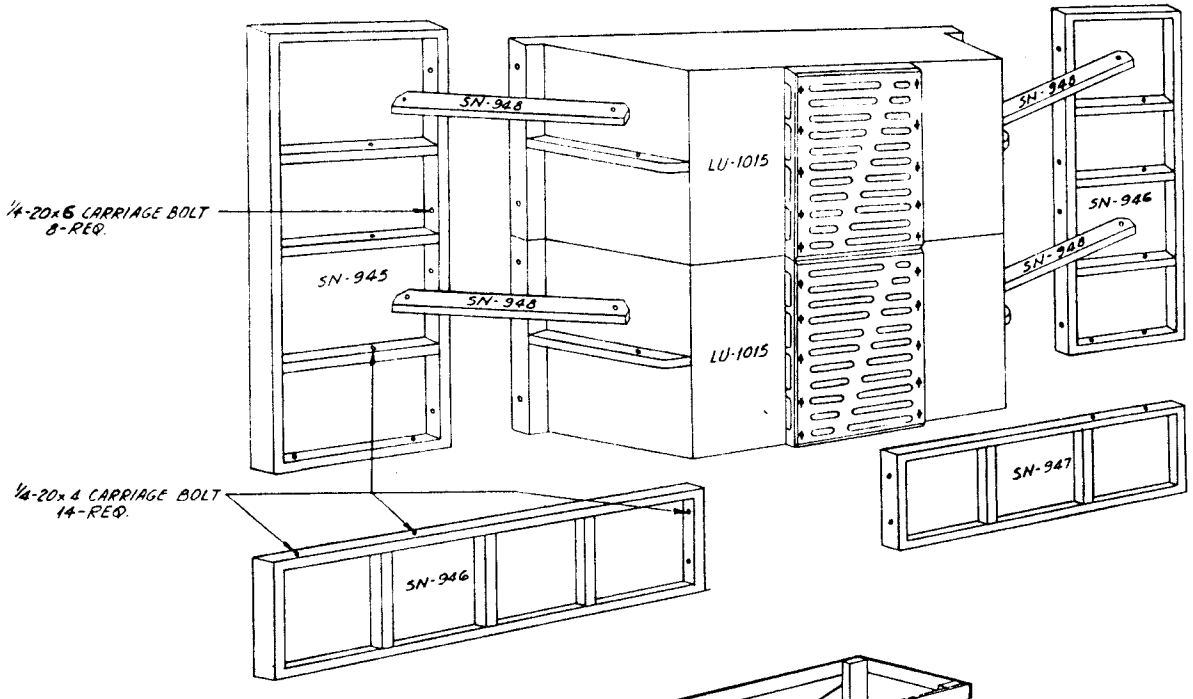
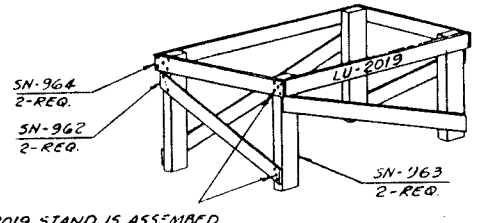


FIG. 1
(SEE NOTE-1)





LU-2019 STAND IS ASSEMBLED AS SHOWN WITH #14 x 1 3/4 LONG WOOD SCREWS.

NOTE -

1. H.F. HORN IS MOUNTED ON TOP OF LU-2020 CRADLE (SEE FIG. 1) BY SECURING HORN EARS TO EYE BOLTS WITH TWO 5/16 x 1 1/4 LONG BOLTS.
2. AFTER THE FINAL PHASING RELATION IS ESTABLISHED, LU-2020 CRADLE SHALL BE FIRMLY SECURED TO LU-1015 WITH NAILS.
3. THE THROAT OF H.F. HORN IS SUPPORTED BY SN-966 WHICH IS TO BE CUT TO HEIGHT REQUIRED BY THE FINAL VERTICAL ANGLE OF THE HORN THEN FIRMLY TOE NAILED TO CRADLE.

LU-1040 WINGS	
DETAIL	REQ.
SN-945	1
" -946	2
" -947	1
" -948	4
" -966	1
" -962	2
" -963	2
" -964	2
LU-2020	1

ASSOCIATED ITEMS
LU-1040 WINGS
ASSEMBLE TO LU-1015 HORNS
ASSEMBLY
INTERNATIONAL PROJECTOR CORPORATION
90 GOLD STREET NEW YORK
DR. JLS APP'D
WD-133

SIMPLEX SOUND SYSTEMS

EQUIPMENT INSTRUCTION - PU-1000 POWER UNIT

1. DESCRIPTION.

The PU-1000 is an all AC operated chassis type power unit, 9" high x 17" wide x 10" deep, weighing 65 lbs. Two terminal strips on extension cable forms are provided for external connections. It consists of two units. One unit is an all AC operated, full wave rectifier, using two SN-941 Tungar Bulbs and one SN-723 Ballast Lamp which are furnished separately. This unit supplies 4 amperes 9 volts DC (ripple voltage 1% maximum) to the "ON" exciter lamp in the sound mechanism. The other unit is an AC step down transformer which supplies 2 volts AC to preheat the "OFF" exciter lamp and 9 volts AC for emergency exciter lamp supply if the rectifier becomes inoperative. The ballast lamp is employed to maintain constant output voltage with ±10% variations in line voltage. The exciter lamp supply is controlled by the "REC" - "AC" switch on the unit.

2. POWER SUPPLY.

105 - 125 volts AC., 50 - 60 cycles, power consumption 250 watts. One SN-594 (1 amp) and one SN-605 (3.2 amps) Fusetron are supplied. Fusetrons are recommended as they give increased protection.

3. INSTALLATION.

The PU-1000 should be installed in the AM-2023 or AM-2033 Cabinet in the location shown on the system conduit layout drawing and in accordance with Equipment Instruction "AM-2023 Cabinet" or "AM-2033 Cabinet", which is packed in the respective cabinet. External connections to the terminal strips should be made in accordance with the system wiring diagram.

CAUTION:- The three wires (exciter lamp supply) from the power unit must be twisted tightly. Do not operate the power unit without the exciter lamps installed, as the shunt resistor in the power unit may become damaged and make replacement necessary.

A. Power Transformer Connection. Transformers T_1 and T_2 have "125 V", "115 V" and "105 V" taps. Connections should be made to these taps as follows (See WD-123):-

Average Line Voltage	Connect to T_1 and T_2 Taps
120 - 130	125 V (Connection as shipped)
110 - 120	115 V
100 - 110	105 V

Average line voltage is the average of line voltage readings taken during operating hours.

If the average line voltage is above or below the above limits, and the power company will not cooperate to bring voltage within the recommended 105 - 125 volt limits, a voltage regulator (furnished by the customer) is required.

B. Adjustment of DC Exciter Lamp Current. It is important that the adjustments to obtain 4 ampere DC exciter lamp current be made carefully in accordance with the following procedure. The ballast lamp has a definite operating range and adjustments must be made so that, with average line voltage, the lamp is operating in the middle of this range. Otherwise constant current output cannot be maintained with line voltage changes within the ± 10% limits. If the exciter lamp current is low, response and output are affected. If the current is high, the life of the lamp is shortened. The power units are shipped with the adjustable resistors in the minimum current position so that the exciter lamp will not be damaged when the power unit is turned on initially.

To make the adjustments, invert the power unit and proceed as follows:-

(1) Be sure that the transformer primaries are connected for the average line voltage during operating hours, that the exciter lamps are installed and connections made.

(2) Be sure that the "shunt" and "series" rheostats on the chassis are in the extreme counter-clockwise position.

(3) In the rear left corner remove the metal strap at "A" and connect a DC Ammeter (0 - 10 scale) to the terminals.

(4) Connect a DC Voltmeter (0 - 15 scale) to the two terminals in the rear left corner designated "V".

(5) Set the "AC" switch in "ON" position, the "Output" Switch in "REC" position and allow the ballast lamp to heat up and stabilize.

(6) Adjust the "series" rheostat until the current is 4 amperes.

(7) Adjust the "shunt" rheostat so that the voltage across the ballast lamp is 10 volts.

(8) Readjust the "series" and "shunt" rheostats successively as required to obtain the above readings as the adjustment of one affects the other. A minimum of ten seconds should be allowed between adjustments to permit stabilization of the ballast lamp.

NOTE:- If the voltage across the ballast lamp, with rheostats in extreme counter-clockwise position, is more than 10 volts, transfer the "low" leads from tap "3" to tap "2" or "1" as required before making adjustments 6, 7 or 8. On the other hand, if the rheostats are near the extreme clockwise position before a balance is obtained, transfer the "low" leads from tap "3" to tap "4". The current must be adjusted to 4 amperes. The voltage across the ballast lamp may be min. 9.5, max. 10.5 volts if closer adjustment is not possible.

C. Adjustment of AC Exciter Lamp Current. To adjust the AC exciter lamp supply set the "Output" switch in "AC" position, connect an AC Voltmeter (0 - 15 scale) across "COM" and "DC" terminals in the rear left corner and adjust "AC" rheostat until the meter reads 9 volts. Also check the "preheat" voltage (2 volts AC) by connecting the voltmeter across terminals "AC" and "COM".

4. **OPERATION.**

A. **Normal.** Set "AC" switch in "ON" position and set "Output" switch in "REC" position.

NOTE:- The tungar bulbs should normally begin to glow as soon as the "AC" switch is set in "ON" position. If one of the tubes is burned out or "hard", the other will not start. If the tube is not burned out but the difficulty is due to a "hard" tube, the "AC" switch should be operated several times, which will in most instances start the "hard" tube. It should, however, be replaced as soon as possible.

B. **Emergency.** Set "AC" switch in "ON" position and "Output" switch in "AC" position. The "Output" switch in this position disconnects the rectifier transformer, and the tungar bulbs are dark.

5. **MAINTENANCE.**

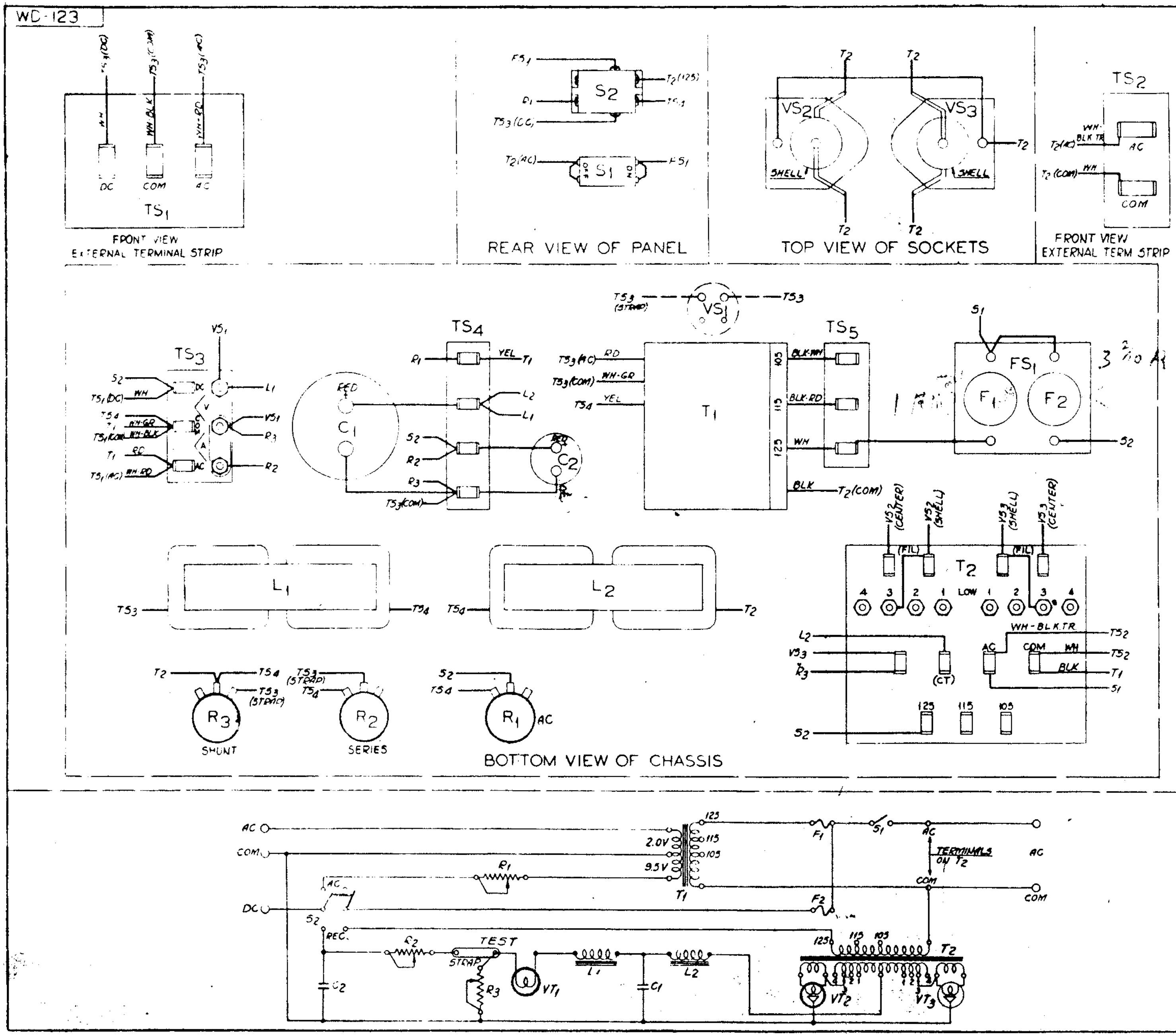
A. **Tungar Bulbs.** Check periodically to make sure that the bulbs are tight in their sockets and the springs make good contact. Loose bulbs will cause heating of the springs and crystallization, followed by spring breakage. A burned out bulb should be replaced at once as the other bulb will not carry the load. Flickering of the pilot lamo in the AM-101 Volume Control Amplifier is an indication of a defective bulb.

B. **Ballast Lamp.** The prongs should make good contact, and the prongs and socket contacts should be clean and bright. Check periodically. Careful bending of the socket contacts and burnishing of prongs and contacts with crocus cloth may be resorted to if necessary.

C. **Capacitors.** Check all clamping rings and nuts periodically and tighten if necessary.

D. **Exciter Lamp Current Adjustment.** The exciter lamp current should be checked periodically by the method described under 3 B above. If an ammeter is not available, however, a DC Voltmeter may be connected across the exciter lamp terminals "1" and "2" in the "ON" sound mechanism. The meter should read 8.5 volts minimum, 9.0 volts maximum. If the voltage is lower, readjust by the method described under 3 B above. If readjustment is impoesible, replace ballast lamp and tungar bulbs successively and repeat adjustments.

6. **ASSOCIATED DRAWING.** WD-123, Schematic and Wiring Diagram.



DESIG	PART No	APPARATUS
C1	SU-809	2,000 MF - 24 V CAPACITOR
C2	" 781	[illegible] MF - 50 V CAPACITOR
R1 & R2	" 818	15 OHMS RHEOSTAT
R3	" 819	105 OHMS RHEOSTAT
L1, L2	" 817	REACTOR, 0.1 HENRY
S1	" 987	D.P.S.T. SWITCH (SEE NOTE)
S2	" 1051	D.P.D.T. SWITCH (SEE NOTE)
T1	" 815	POWER TRANSFORMER
T2	" 816	POWER TRANSFORMER
TS1	PU-2002	TERMINAL STRIP ASSEMBLY
TS2	PU-2013	" " "
TS3	PU-2006	" " "
T[illegible]4	PU-2007	" " "
TS5	PU-2008	" " "
VS1	SU-827	SOCKET
VS2, VS3	" 826	SOCKET
FS1	" 901	RECEPTACLE, FUSE
F1	" 594	FUSETRON, 125 VOLT - 1 AMP
F2	" 605	FUSETRON, 125 VOLT - 3.2 AMP
• VT1	" 723	BALLAST LAMP
• VT2, VT3	" 941	TUNGAR BULB

• INDICATES NON-COMPONENT ITEM WHICH MUST BE ORDERED SEPARATELY.

ISSUE 4 8-3-38
S1 AND S2 WERE SU 366 AND SU-365 & WERE WIRED THUS. [illegible]
NOTE ADDED
EGM [illegible]
ISSUE 2 8-4-33
AT T2 & TS2 WH-BLK.TR. WAS BR OR WH-RD.
[illegible]
ISSUE 3 4-4-44

NOTE:
IN POWER UNITS WITH SERIAL #558 TO 561 INCL., AND FROM SERIAL #576 UP, SN-987 SWITCH REPLACES SN-566 AND SN-1051 SWITCH REPLACES SN-565.

PU-1000
POWER UNIT
WIRING DIAGRAM-SCHEMATIC
INTERNATIONAL PROJECTOR CORPORATION
[illegible] NEW YORK
WD-123

SIMPLEX SOUND SYSTEMS

ADJUSTMENT OF PU-1000 POWER UNIT
(Supplement to Equipment Instruction - PU-1000 Power Unit)

The PU-1000 Power Unit, as shown on drawing WD-123, provides direct current for exciter lamp operation and an emergency alternating current supply. Separate transformers, T_2 and T_1, are employed for the rectifier circuit and AC supply, thus providing two essentially independent units, either of which may be placed in operation instantly by means of a transfer switch located on the front panel of the power supply.

The direct current is obtained from a full wave rectifier circuit, employing two tungar bulbs. Automatic current regulation of the DC supply over wide variations in power line voltage is obtained by means of a ballast lamp. Series and shunt rheostats are provided for adjustment of exciter lamp current and ballast lamp voltage to the proper values.

The ballast lamp used in the PU-1000 Power Unit is designed for 4 amperes and, by virtue of its variable resistance characteristics, to maintain this current within the range of 7 to 13 volts drop across the lamp. In order that the ballast lamp may compensate for both increase and decrease in line voltage, the normal drop should be adjusted near the middle of the lamp's operating range, approximately 10 volts. However, reasonable care must be exercised in the selection of the "normal" ballast lamp voltage drop in order that extreme increases in line voltage will not cause the lamp to operate at or above its maximum voltage limit. Such a condition will definitely shorten the lamp's life, and in some instances may destroy its regulating properties by open-circuiting parts of its multi-filament structure. In this connection, it is important that line voltage variations be carefully observed over a typical operating day, and the power unit adjustments made so that overload conditions will not be encountered.

The transformers, T_1 and T_2, are provided with taps at 105, 115 and 125 volts, Connection should be made to the tap above the maximum line voltage encountered during the operating period - that is, if the line voltage is found to generally remain above 115 volts, connection should be made to the 125 volt tap. This is not a definite requirement, but in most cases will result in longer life for the ballast lamp and should materially reduce heating of the transformers due to saturation.

Transformer T_2, which supplies the rectifier circuit, is provided with four secondary taps, each succeeding tap from 1 to 4 representing approximately 3 volts increase in secondary voltage. In order that the ballast lamp and rheostats will absorb a minimum of power, it is desirable to employ the lowest secondary tap which will give satisfactory results.

In making adjustments of the power unit, a DC ammeter and a DC voltmeter should be available. After connecting to the primary tap corresponding to the line voltage, and to tap 1 or 2 of the secondary winding, the DC meters should be placed in the circuit at the proper points. The ammeter should replace the metal strap at "A" which is located in the rear left corner as seen when the unit is inverted. The voltmeter should be connected to the two terminals marked "V", also located in the rear left corner. In these positions the ammeter reads the exciter lamp current, while the voltmeter reads the potential drop across the ballast lamp.

With the AC switch in "ON" position, and the output switch in "REC" position, the series rheostat R_2 and the shunt rheostat R_3 should be adjusted so that the ammeter reads 4 amperes and the voltmeter reads 9 to 10 volts. In adjusting these rheostats it must be remembered that, since the resistance of the ballast lamp filament is dependent on its termperature, ample time must be allowed between rheostat adjustments for the lamp to stabilize. When the final adjustments have been made, both rheostats, R_2 and R_3, should be near their extreme clockwise position. In this position the voltage drop across R_2 is a minimum and, consequently, the regulation of the exciter lamp current can be accomplished more perfectly due to the fact that the lamp represents practically the entire load. If R_3 is set at its extreme clockwise position the current through this rheostat is a minimum and, therefore, the ballast lamp is required to handle a minimum load. Proper selection of the secondary voltage tap will facilitate arriving at these desirable rheostat settings.

It is not to be assumed that the operation of the rectifier unit is extremely critical, but the advantages in exercising reasonable care in making adjustments are many. Operating at proper voltage and current will result in long, trouble-free operation of all replaceable components, as well as uniform exciter lamp performance.

The line voltage should likewise be connected to the proper primary tap of transformer T_1, which is the AC supply for the exciter lamp. With the output switch of the power unit in "AC" position, and an AC voltmeter across the exciter lamp terminals, rheostat R_1 should be adjusted so that the meter reads 9 volts. No further adjustment is required in the AC supply.

THE EXCITER LAMP BRACKET SHOULD NOT BE REMOVED FROM THE SOUNDHEAD WHILE THE LAMP IS BEING OPERATED ON DC, SINCE REMOVING THE LOAD FROM THE POWER UNIT WILL CAUSE A VOLTAGE SURGE, WITH THE POSSIBLE RESULT OF BURNING OUT THE PILOT LAMP OR FUSE IN THE VOLUME CONTROL AMPLIFIER. However, the exciter lamp operating on standby current may be removed without damage since the transformer which supplies both the standby and operating AC current is independent of the transformer used in connection with the DC supply.

Inspections should be made periodically to make sure that the tungar bulbs are tight in their sockets. Also these bulbs should be observed for arcing which sometimes occurs near the end of their operating life and, if excessive, may result in permanent damage to other parts of the unit.

The adjustment of the rectifier circuit should be re-checked occasionally since the characteristics of the tungar bulbs, ballast lamp and exciter lamp change with age. The more carefully the adjustment is made originally, the more infrequent these check-ups need be made. At no time should these adjustments be made without the aid of a voltmeter and an ammeter.

SIMPLEX SOUND SYSTEMS

EQUIPMENT INSTRUCTION - PU-1003 POWER UNIT

1. DESCRIPTION.

The PU-1003 is an all AC operated, chassis type power unit 8½" high x 17" wide x 10" deep, weighing 42 lbs. Two terminal strips on extension cable forms are provided for external connections. It consists of a full wave rectifier, using two or four 5Z3 vacuum tubes, which are furnished separately. This unit supplies a maximum of 0.75 ampere at 220 volts DC (maximum ripple voltage 1%) to energize the fields of two to six stage speakers.

2. POWER SUPPLY.

105 - 125 volts AC, 50 - 60 cycles, power consumption 300 watts. One SN-605 (3.2 amps) Fusetron is supplied. Fusetrons are recommended as they give increased protection.

3. INSTALLATION.

The PU-1003 should be installed in the AM-2023 Cabinet in the location shown on the system conduit layout drawing, and in accordance with Equipment Instruction "AM-2023 Cabinet", which is packed in the cabinet. External connections to the terminal strips should be made in accordance with the system wiring diagram.

Caution: Be sure that the following adjustments are so made as to obtain an output of 220 volts, DC.

A. Power Transformer Primary Connections. Transformer T_1 has "125 V", "115 V" and "105 V" taps. Connections should be made to these taps as follows (See WD-140):

Average Line Voltage	Connect to T_1 Tap
120 - 130	125 V (Connection as shipped)
110 - 120	115 V
100 - 110	105 V

Average line voltage is the average of line voltage readings taken at regular intervals during operating hours.

If the average line voltage is above or below the above limits, and the power company will not cooperate to bring the voltage within the recommended 105 - 125 volt limits, a voltage regulator (furnished by the customer) is required.

B. Power Transformer Secondary Connections. Secondary taps "2" and "4" are provided to maintain constant output voltage with the loud speaker field loads given below. Two or four 5Z3 vacuum tubes should be installed per the following tabulation:

NUMBER STAGE SPEAKERS	CONNECT TO SECONDARY TAP	NUMBER 5Z3 INSTALLED
2	2	2
4	4	2
6	4	4

4. OPERATION.

Set "AC" Switch in "ON" position. Vacuum Tubes should begin to warm up immediately.

5. MAINTENANCE.

A. **Vacuum Tubes.** Check output voltage periodically. If below 220 volts replace one vacuum tube at a time until defective tube is located. If above 227 volts check connections to transformer T_1 (see Section 3) and determine whether average line voltage has changed since initial installation.

(1) Tube prongs should make good contact. Careful bending of the socket contacts may be resorted to if necessary.

(2) Tube prongs and socket contacts should be clean and bright. Burnish with crocus cloth if necessary.

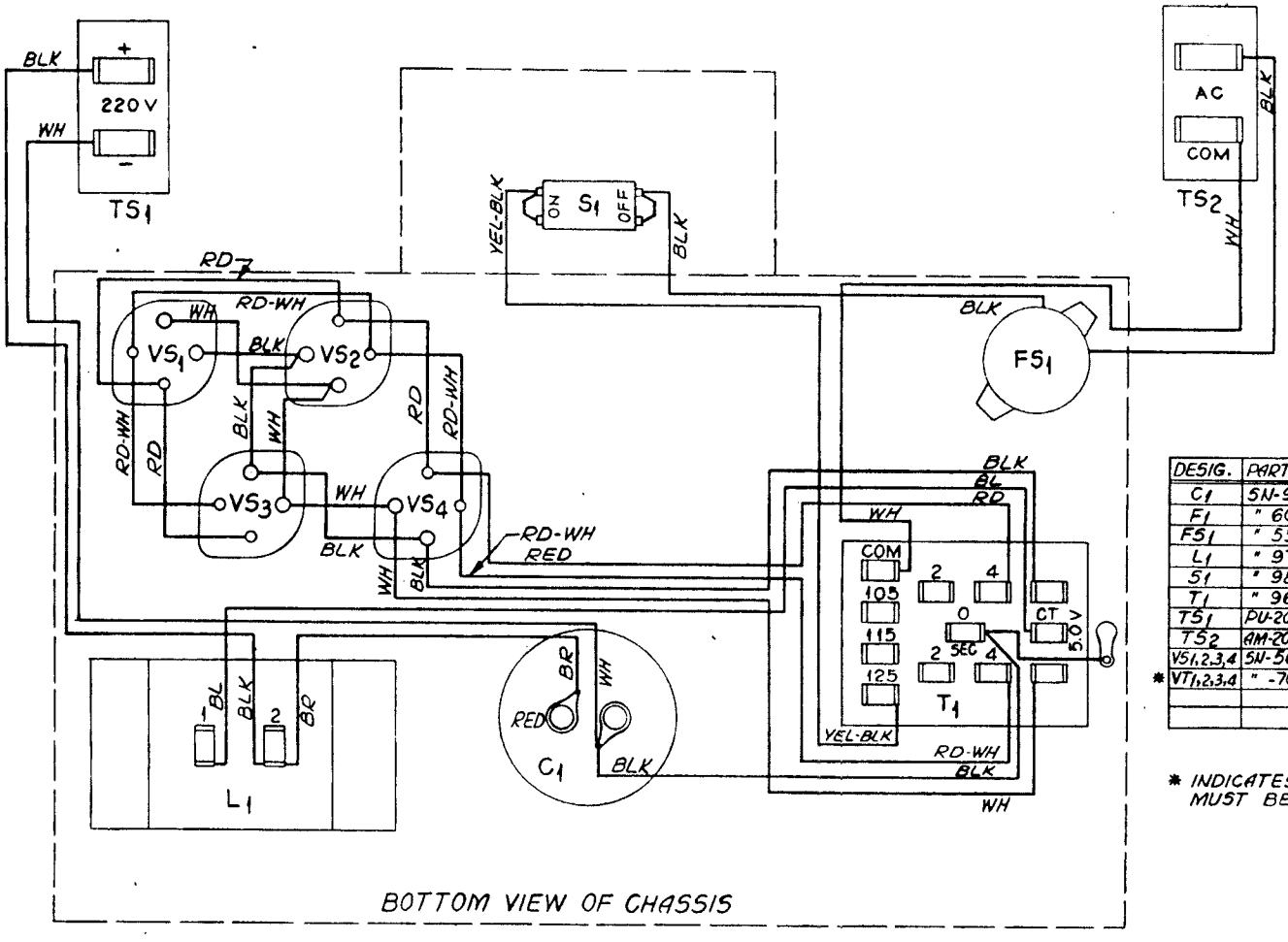
B. **Capacitor.** Check clamping ring and nut periodically and tighten if necessary.

6. ASSOCIATED DRAWING.

WD-140 Schematic and Wiring Diagram.

WD-140

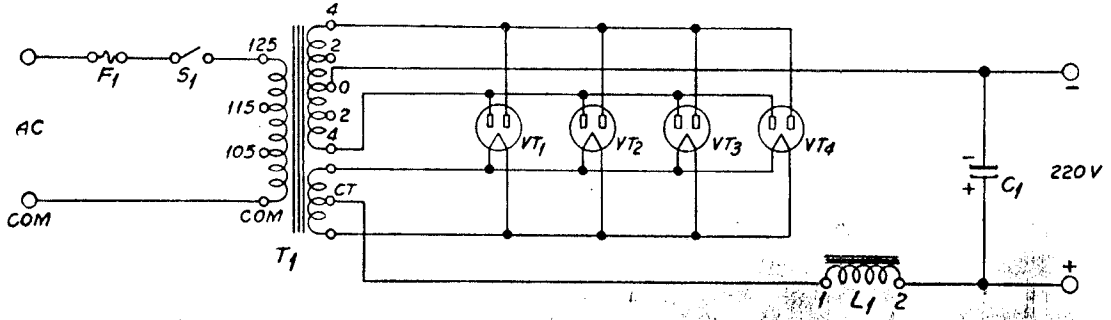
ISSUE: 1 10-31-38



BOTTOM VIEW OF CHASSIS

DESIG.	PART No	APPARATUS
C1	SW-967	CAPACITOR-75 MF -400 V.
F1	" 605	FUSE - 3.2 AMP. FUSETRON
FS1	" 554	FUSE RECEPTACLE
L1	" 970	REACTOR
S1	" 987	SWITCH - D.P.S.T.
T1	" 969	TRANSFORMER
TS1	PU-2009	TERMINAL STRIP ASSEM.
TS2	AM-2015	TERMINAL STRIP ASSEM.
VS1,2,3,4	SW-562	SOCKET
* VT1,2,3,4	" -708	5Z3 VACUUM TUBE

* INDICATES NON-COMPONENT ITEM WHICH MUST BE ORDERED SEPARATELY.



PU-1003
POWER UNIT
WIRING DIAGRAM & SCHEMATIC
INTERNATIONAL PROJECTOR CORPORATION
90 GOLD STREET NEW YORK
DR E.G.M. CHK C.E.A. APP'D
WD-140

SIMPLEX SOUND SYSTEMS

EQUIPMENT INSTRUCTION - SH-2100 COAXIAL CABLE ASSEMBLY

1. DESCRIPTION.

The SH-2100 is a 6' length of SN-928 Coaxial Cable with a capacity of 8 mmf per foot enclosed in flexible metal tubing for mechanical protection. Flexible conduit connectors are provided at each end for installation purposes.

The SN-928 consists of low capacity ceramic beads strung on a stranded conductor and covered by a closely woven tinned copper shield, which is in turn covered by oil proof tape and an impregnated woven cotton braid. Each end of the shield is terminated in lugs for shield connections.

2. INSTALLATION.

A. Install the SH-2100 per Figures 1 and 2 on Page 2.

Caution: Unpack, handle and install the coaxial cable carefully, as sharp bends or kinks may damage it and make replacement necessary. DO NOT SHORTEN THE CABLE.

B. Strap the cable on the front wall 8" to the left of and 2" below the AM-101 using a "BX" strap per the system conduit layout. Adjust the loop so that the cable does not bind when the cover is closed and is not under tension when the cover is open. Strap the cable again on the center line of projection.

C. Strap the cable to the bracket mounted below the sound mechanism per Equipment Instruction "SH-1000 Sound Mechanism".

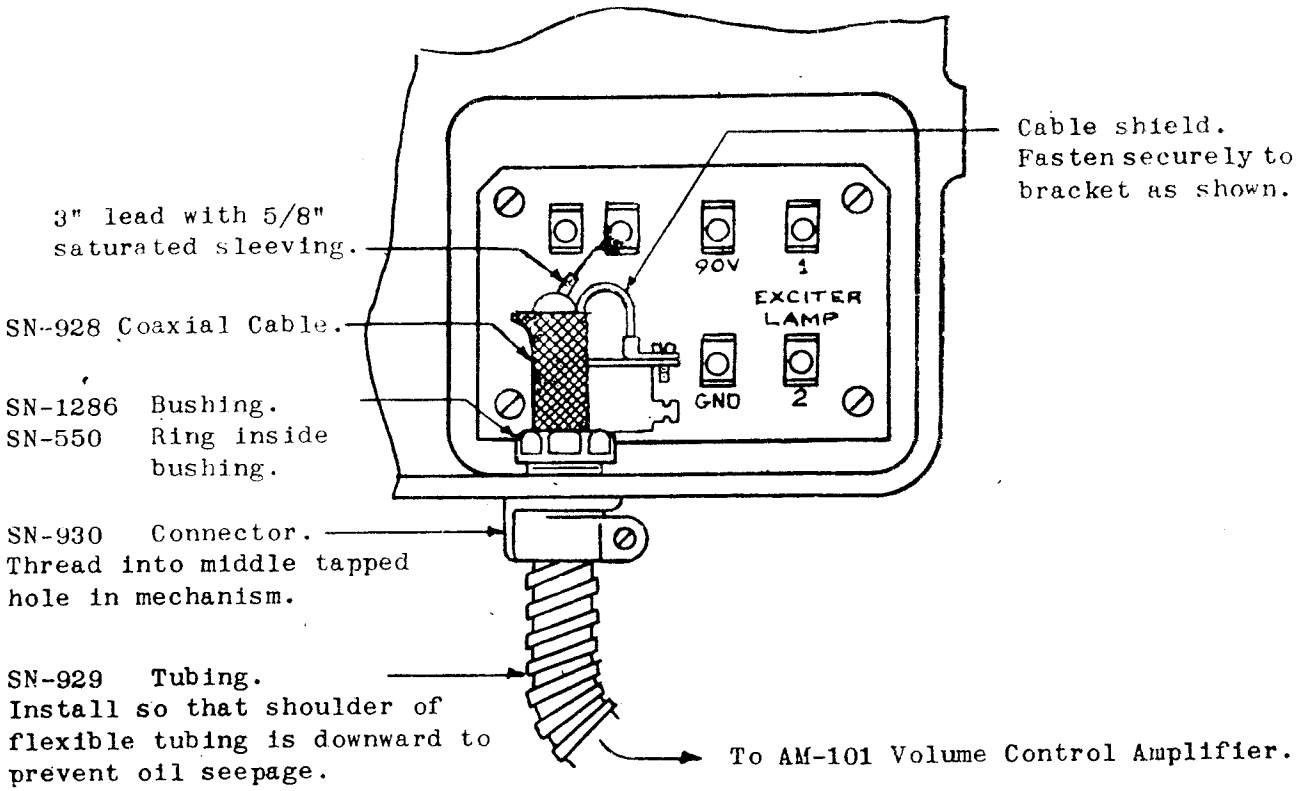


FIGURE 1. INSTALLATION OF SH-2100 IN SH-1000 SOUND MECHANISM

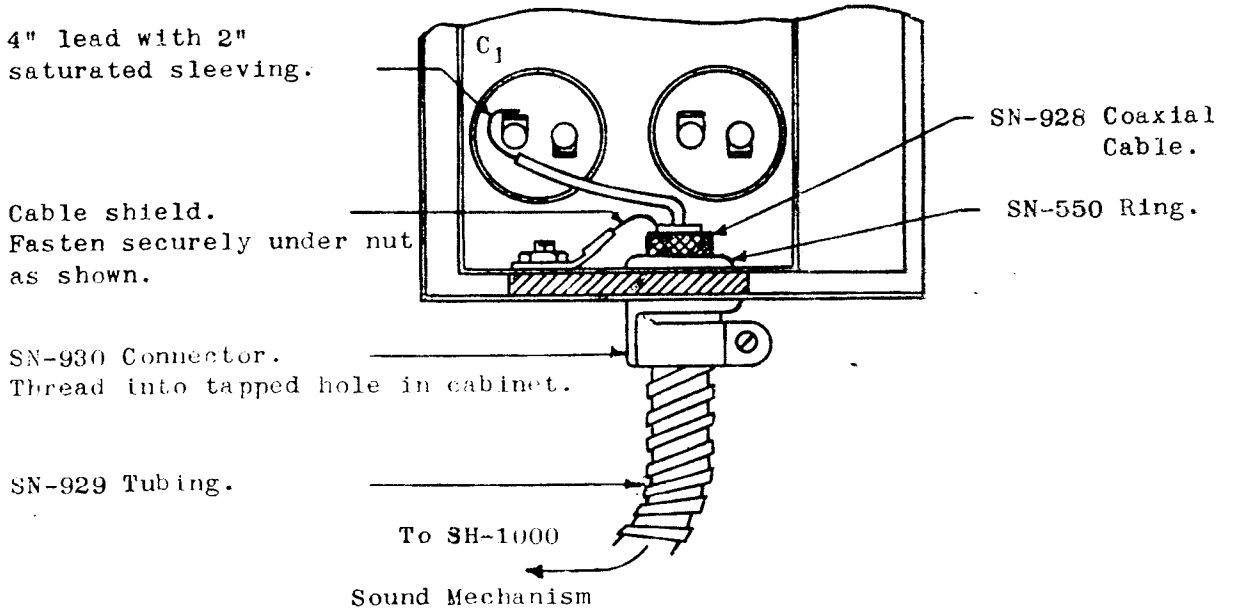
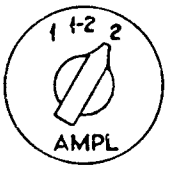
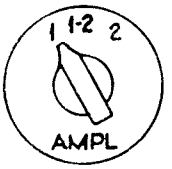
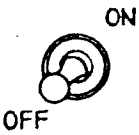


FIGURE 2. INSTALLATION OF SH-2100 IN AM-101 VOLUME CONTROL AMPLIFIER

Simplex ★★★★ SOUND System

TYPE "C-60" SYSTEM EMERGENCY FEATURES AND HOW TO USE THEM

INOPERATIVE APPARATUS	EMERGENCY PROCEDURE
1. ONE EXCITER LAMP. (LAMP BURNED OUT.)	REPLACE EXCITER LAMP (PREFOCUSED BASE LAMP MAY BE USED TEMPORARILY WITHOUT ADJUSTMENT. CHECK ADJUSTMENT AS SOON AS POSSIBLE.)
2. PU-1000 POWER UNIT. (TUNGAR BULBS NOT LIGHTED, "ON" MECHANISM EXCITER LAMP AND PILOT LAMP NOT LIGHTED.)	 SET "OUTPUT" SWITCH ON PU-1000 IN "AC" POSITION (EXCITER LAMP SUPPLY AC.)
3. AM-1001 AMPLIFIER #1 OR #3. (NO SOUND OR QUALITY POOR- NO PLATE METER READINGS.)	 SET AM-2013 SWITCH IN POSITION "2". (AMPLIFIERS #2 AND #4 CONNECTED, #1 AND #3 DISCONNECTED.)
4. AM-1001 AMPLIFIER #2 OR #4. (NO SOUND OR QUALITY POOR - NO PLATE METER READINGS.)	 SET AM-2013 SWITCH IN POSITION "1". (AMPLIFIERS #1 AND #3 CONNECTED, #2 AND #4 DISCONNECTED.)
5. HIGH FREQUENCY STAGE SPEAKER(S). (NO HIGH FREQUENCIES REPRODUCED.)	 SET "HF" SWITCH ON NETWORK IN "OFF" POSITION (ALL FREQUENCIES REPRODUCED BY LOW FREQUENCY STAGE SPEAKERS)
6. LOW FREQUENCY STAGE SPEAKER(S). (NO LOW FREQUENCIES REPRODUCED.)	 SET "LF" SWITCH ON NETWORK IN "OFF" POSITION (PREVENTS OVERLOADING H.F. SPEAKERS AND MAINTAINS CONSTANT IMPEDANCE.)
7. AM-1003 AMPLIFIER. (MONITOR NOT OPERATING.)	 SET "MON. AMPL." SWITCH ON NETWORK CHASSIS IN "OFF" POSITION. (LU-1018 MONITOR UNIT OPERATES ACROSS NETWORK INPUT.)
8. AM-1000 AMPLIFIER-EITHER OF THE TWO IN EACH AM-101 VOLUME CONTROL AMPLIFIER. (NO SOUND.)	 SET INOPERATIVE AMPLIFIER SWITCH IN "OFF" POSITION, AND STANDBY AMPLIFIER IN "ON" POSITION.

IF THE SYSTEM BECOMES INOPERATIVE, FOLLOW THE ABOVE EMERGENCY PROCEDURE TO RESTORE SOUND TEMPORARILY. CALL YOUR SERVICE INSPECTOR IMMEDIATELY. HAVE INOPERATIVE APPARATUS RECONDITIONED AND THE SYSTEM RESTORED TO NORMAL AS QUICKLY AS POSSIBLE.

ISSUED BY
SOUND ENGINEERING DIVISION
INTERNATIONAL PROJECTOR CORPORATION
NEW YORK