

PROGRAM TRANSMISSION PANELS AND UNITS

EQUIPMENT DESIGN REQUIREMENTS

TOLL SYSTEMS

1. GENERAL

Scope

1.01 This specification, together with the supplementary information listed herein, covers the equipment design requirements for the framework, equipment, and circuits to be used in the manufacture of program transmission panels and units.

1.02 This specification is reissued to incorporate previous appendix changes.

Description

Method of Wiring and Assembly

1.03 Each of the panels or units is equipped, wired, and tested before leaving the shop. In general, all leads are brought out to terminals for connection to auxiliary circuits, except for the 110-volt ac service leads, which, when required, are connected to a plug to be inserted in an appliance outlet on the relay rack bay.

Size and Weight of Equipment

1.04 The size and weight of panels and units are as follows:

PANEL OR UNIT	WIDTH (INCHES)	HEIGHT (INCHES)	WEIGHT (LBS)
J68617B	19	15-23/32	70
J68617N*	19	10-15/32	55
J68617U	12-7/8	3-5/8	9
J68617W	19	10-15/32	60
J68617AA	19	8-23/32	65
J68617AB	19	6-31/32	30
J68617AC	19	3-15/32	16
J68617AD	19	10-15/32	47
J68617AE	19	13-31/32	60
J68617AF	19	12-7/32 (L2)	45

PANEL OR UNIT	WIDTH (INCHES)	HEIGHT (INCHES)	WEIGHT (LBS)
J68617AG	19	5-7/32	28
J68617AJ	19	13-31/32	40
J68617AK	19	3-15/32	16
J68617AM	19	3-15/32	
J68617AN	19	5-7/32	
J68617AQ	19	3-15/32	
J68617AW	19	3-15/32	12

*Fiber-faced wooden panel.

Functions

1.05 The J68617B regulating network panel for B22 cable circuits consists of the assembly of a network of resistors, capacitors, and coils associated with control relays to compensate for variations in transmission due to changes in temperature. This panel is located above the line amplifier (J68617N) and in order to compensate



Fig. 1 — J68617B — Regulating Network Panel — Front View

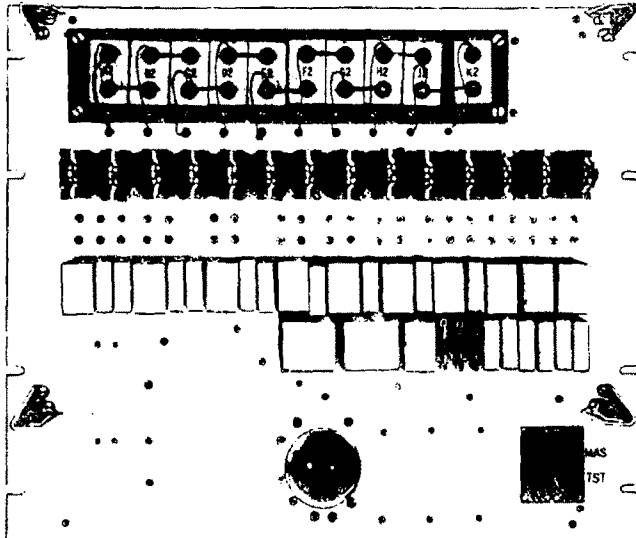


Fig. 2 — J68617B — Regulating Network Panel — Front View With Cover Removed



Fig. 3 — J68617B — Regulating Network Panel — Rear View With Cover Removed

for the loss introduced by its network an amplifying tube is included, the combination forming an added stage which is inserted after the two amplifying tubes of the 12C program amplifier by straps on the face of the panels. This arrangement functions satisfactorily with the J68617N amplifier. The network relays are under control of the master pilot wire gain control equipment.

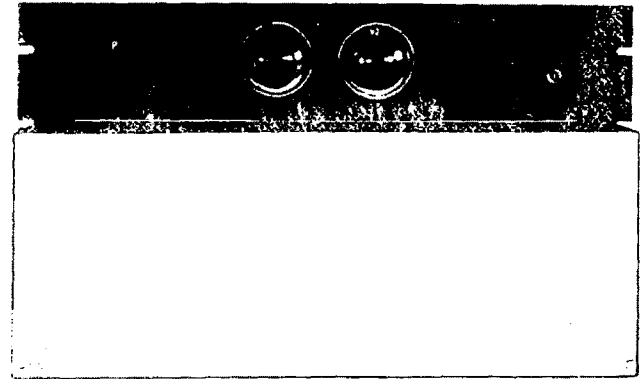


Fig. 4 — J68617N — 12C Program Amplifier Panel — Front View

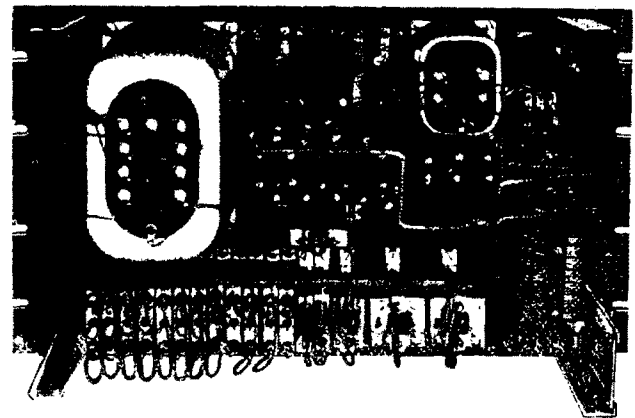


Fig. 5 — J68617N — 12C Program Amplifier Panel — Rear View With Cover Removed

1.06 The J68617N panel (12C program amplifier) was developed primarily for use as a line amplifier on 16-gauge B22 cable program transmission circuits. These amplifiers are one-way 2-stage arranged for regulated filament battery (J68617N). The maximum gain is about 37 db and the gain frequency characteristics are substantially flat from 35 to 8000 cycles with very little delay distortion. Input and output impedance is 600 ohms. These panels are wired for reversal of input and output and may be so equipped when required. Amplifiers manufactured prior to Issue 7 of this specification are not wired universally but field modification may be made to employ the same wiring to amplifiers supplied per J68617N on order. Amplifiers manufactured prior to Issue 10 of this specification do not include the high-frequency suppressor

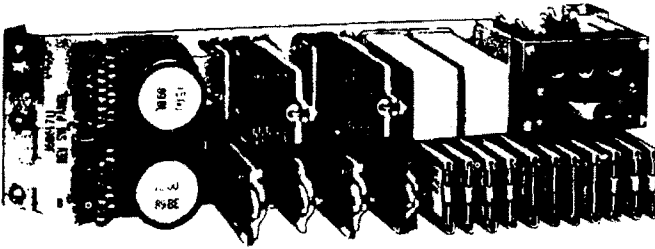


Fig. 6 — J68617U — Amplifier Reversing Panel — Front View

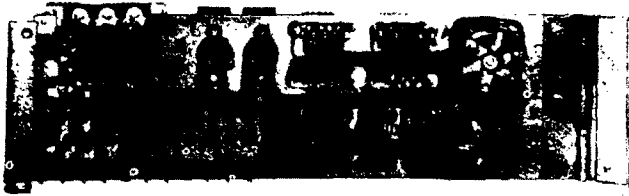


Fig. 7 — J68617U — Amplifier Reversing Panel — Rear View

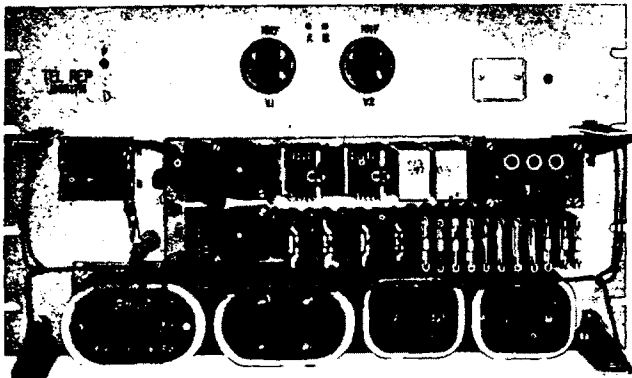


Fig. 8 — 12C Amplifier With J68617U Reversing Panel — Front View

for click reduction but it may be added as a field modification when required.

1.07 The J68617U amplifier reversing panel is an applique unit to be used in modifying the 12C program amplifier (J68617N) for reversal of program transmission circuits. It consists of reversing equipment, replacement pads for variation in length of section, and repeating of the potential on the simplex. The panel mounts on the face of the amplifier and is equipped with

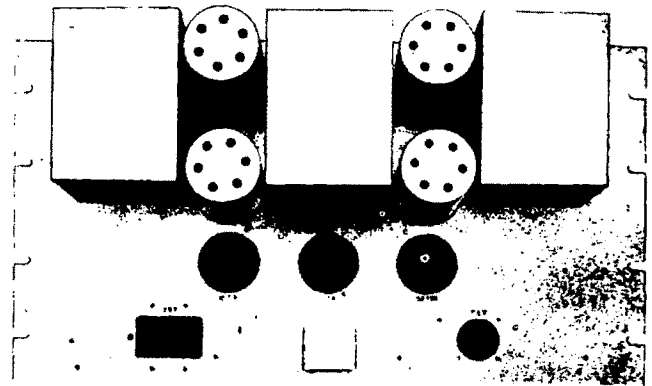


Fig. 9 — J68617W — 14C Program Amplifier — Front View

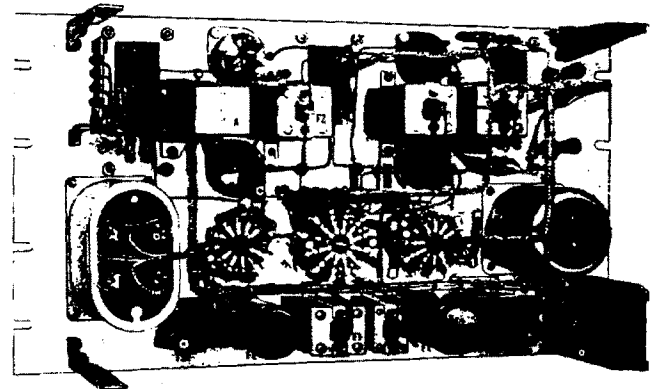


Fig. 10 — J68617W — 14C Program Amplifier — Rear View With Cover Removed

terminals for connection internally to the amplifier and externally to signal and interconnecting circuits.

1.08 The J68617W, 14C program amplifier, is a 2-stage push-pull negative feedback amplifier with calibrated gain control designed to amplify a band of frequencies between 30 and 8000 cycles. This amplifier is for use as a line or bridging amplifier on open wire circuits and at nonregulating repeater points on B22 or H44 cable circuits. As a bridging amplifier, with associated multiple outlet network, it will supply a total of four open-wire outlets or sixteen B22 or H44 cable outlets, or any combination of the two in the ratio of four cable outlets to one open-wire outlet. These outlets will provide normal levels at bridge outlets eliminating the necessity

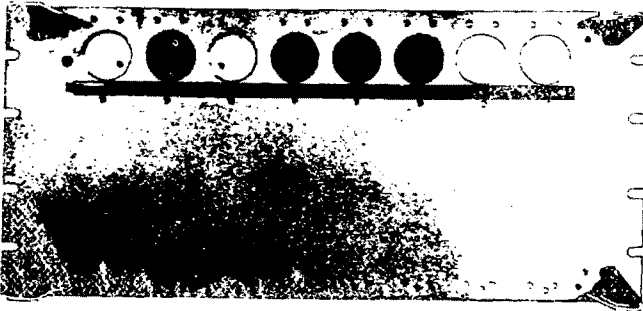


Fig. 11 — J68617AA — Cable Equalizer Unit — Front View With Cover Removed

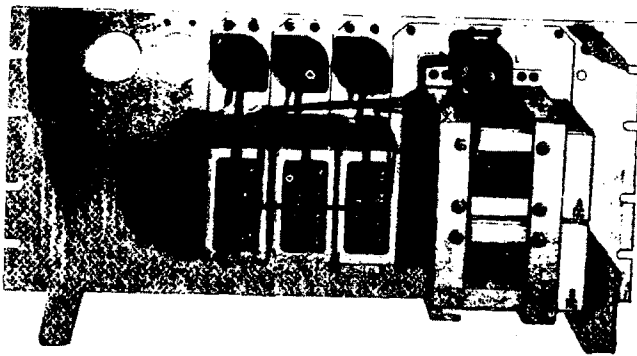


Fig. 12 — J68617AA — Cable Equalizer Unit — Rear View With Cover Removed

for tandem amplifiers. The amplifier input impedance is 600 ohms and the output impedance may be either 40 ohms for bridging or 600 ohms for thru circuits. A full range gain control covers a range of 40 db in 1/4-db steps; by a change in strapping the range may be extended to 42 db. A monitoring tap is provided which is designed to give a level 20 db below the low-level output (B22).

1.09 The J68617AA equalizer unit provides a basic framework for associating 17-type equalizers, 19-type equalizers, and 2A pad or repeating coil and pad assembly to form an adjustable equalizer for B22 or H44 cable sections, or single sideband program type K carrier line sections. The attenuation equalization is adjustable, consisting of a group of single-section 17-type equalizers, each with associated plug-in pad. The single sections are provided and equipped in the desired combination and adjustable losses provided as required to give the desired characteristics. For B22 and H44 cable sections, the

group consists of a maximum of six 17-type equalizers, providing correction for attenuation distortion due to the cable conductors themselves. For single sideband program type K carrier, the group consists of a maximum of eight 17-type equalizers providing correction for attenuation distortion due to the type K carrier line section. The 19-type equalizer corrects for the delay distortion, due to the lumped loading of the conductors, in a 25-mile length of the preceding B22 cable section. For a 50-mile B22 cable section, two of the 19-type equalizers may be connected in tandem. For H44 cable circuits and single sideband program type K carrier line sections, the 19-type equalizers are omitted, delay equalization being taken care of by other delay equalizers mounted in other locations. The cable equalizers are unbalanced and noise pickup due to this unbalance is avoided by separating the equalizers from the cable circuit by means of shielded repeating coils. Two equipment arrangements of these coils are available, one for mounting on the rear of the panel in place of three 17-type equalizers, and one for mounting on the front of the panel in place of a 19-type equalizer. When the preceding section of cable is so short that the gain of the amplifier cannot be reduced sufficiently to meet the losses, a 2A pad mounted with the 17-type equalizers, or a 1A pad mounted with the repeating coils, may be adjusted to build out the section loss.

1.10 Control and reversing units are required to reverse program transmission circuits automatically. The control circuit is obtained from the transmission pairs themselves by means of direct current simplex on the program pair. The circuit is arranged to always transmit away from the control point. Any control point, once having obtained control of the networks, retains control until it is relinquished; that is, a station having control locks out all other control points and has complete control of the line except that at any point the operation of the directional key associated with each reversing circuit will disable the control circuit and place that point on a manual control basis. Except for intervals during which the network direction is changed, control current is applied steadily to the circuit to guard against false operation by possible interferences which may exist on the circuit. Upon release of control, the transmission paths remain unchanged until reversed by control from some

other point. The control circuit is relayed at each repeater. At bridging points using G-type bridges, the control current is transmitted around the bridge over a common lead. Associated with each reversible circuit and operating from the control circuit are reversing relays. These relays operate in the transmission circuits to perform the necessary reversing and are arranged to provide adequate protection against false operation. The reversing of the various lines to a 14C amplifier, when the amplifier is connected to a G-type bridge, involves two reversing operations per line. One reversing operation is that of the line itself; the other is the amplifier. Each line connected to the reversible bridge is provided with a primary reversing circuit and a primary control circuit. The purpose of the primary reversing circuit is to change the direction of transmission of the line by conditioning it with line equipment individual to the line. The purpose of the primary control circuit is to control the primary reversing relays. The primary control circuit functions over the line simplex. When sections of open-wire lines are encountered having leakage resistance or ground potentials outside the working limits of the line simplex, an auxiliary circuit is required for converting the line simplex to a metallic circuit and the metallic circuit to the line simplex.

1.11 Associated with each multiple outlet of the G-type bridge is a secondary reversing circuit which functions to disconnect its associated line from the output of the bridging multiple and connect it to the input of the amplifier. When it is required to control common equipment in the input of an amplifier feeding a bridge automatically, the primary and secondary re-

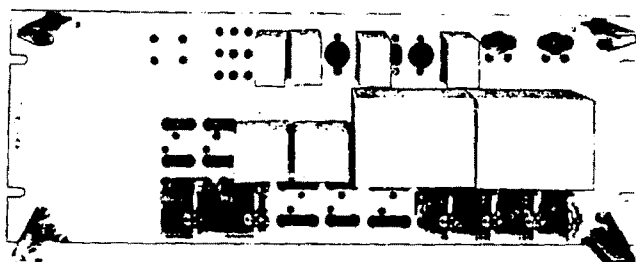


Fig. 13 — J68617AB — Control and Reversing Panel — Single-circuit Unit — Front View With Cover Removed

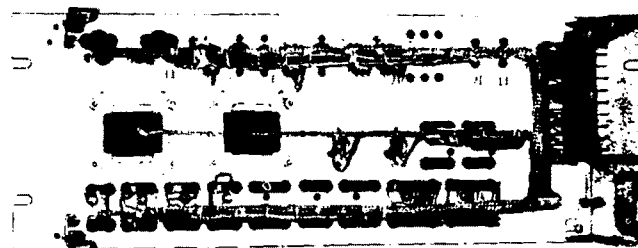


Fig. 14 — J68617AB — Control and Reversing Panel — Single-circuit Unit — Rear View With Cover Removed

versing circuits are supplemented by a tertiary reversing circuit.

1.12 The J68617AB control, reversing, and battery supply unit provides a completely wired unit on a one-line circuit basis equipped as specified for any line control condition. This unit carries the battery supply and common equipment for all reversing as applied to one 14C amplifier using a G-type bridge and will be required with each amplifier reversing group.

1.13 The J68617AC secondary control and reversing unit provides a unit wired for four secondary reversing circuits to be equipped as required.



Fig. 15 — J68617AC — Secondary Control and Reversing Panel — 4-circuit Unit — Front View With Cover Removed

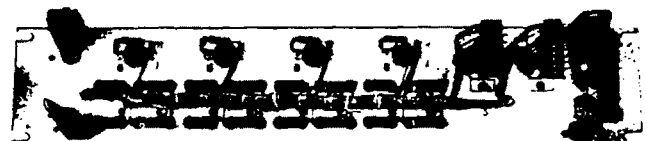


Fig. 16 — J68617AC — Secondary Control and Reversing Panel — 4-circuit Unit — Rear View With Cover Removed

1.14 The J68617AD primary control and reversing unit provides a unit universally wired for four primary reversing and control circuits to be equipped as required for all circuit conditions except an all OW outlet G bridge or an open wire to an open wire thru circuit.

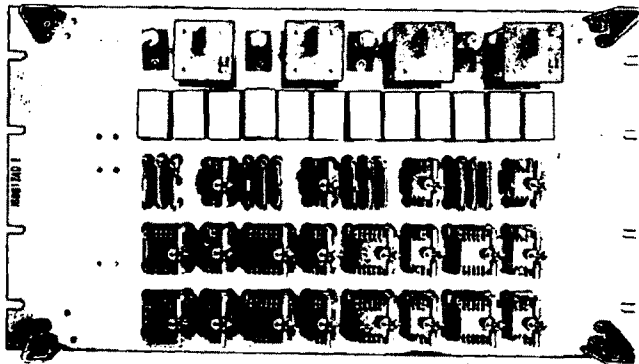


Fig. 17 — J68617AD — Primary Control and Reversing Panel — 4-circuit Unit — Front View With Cover Removed

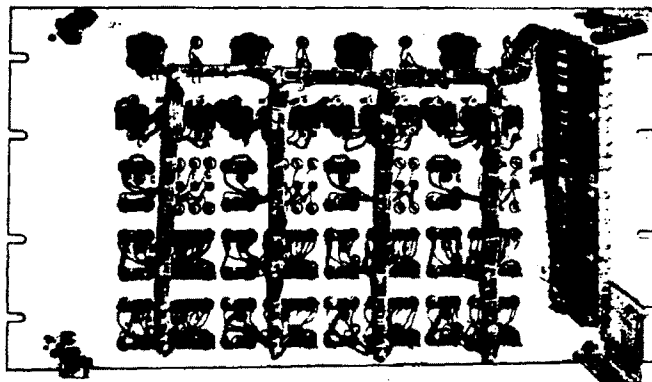


Fig. 18 — J68617AD — Primary Control and Reversing Panel — 4-circuit Unit — Rear View With Cover Removed

1.15 The J68617AE primary control and reversing unit provides a unit universally wired for four primary reversing and control circuits to be equipped as required for an all OW outlet G bridge or open wire to open wire thru circuits.

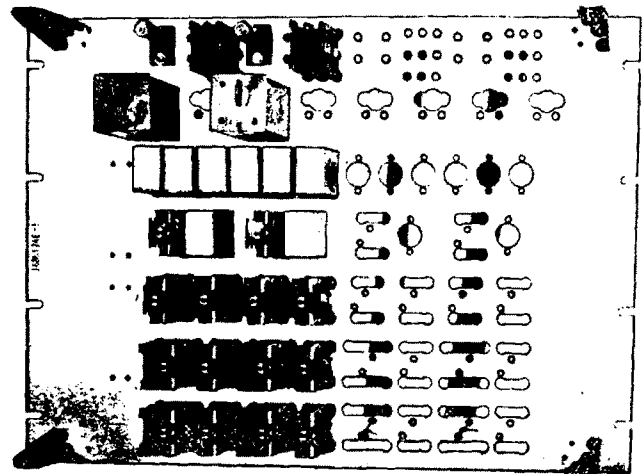


Fig. 19 — J68617AE — Primary Control and Reversing Panel — 4-circuit Unit, Two Circuits Equipped — Front View With Cover Removed

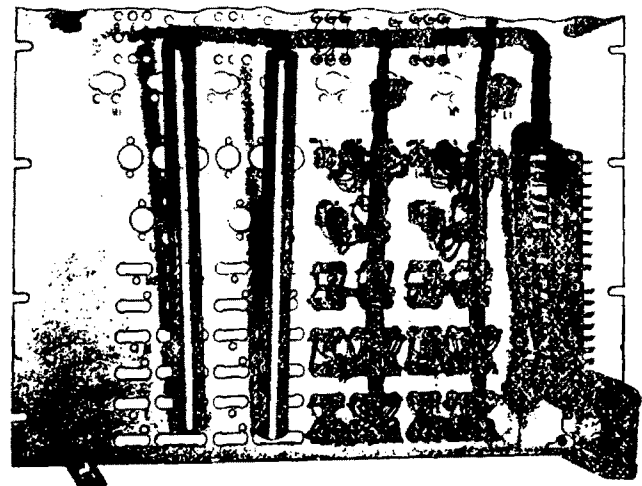


Fig. 20 — J68617AE — Primary Control and Reversing Panel — 4-circuit Unit, Two Circuits Equipped — Rear View With Cover Removed

1.16 The J68617AF, Lists 6 and 7 jack field and distributing terminal strip units, each provide the framework, local cable, and cross-connection facilities for 260 individually mounted jacks. These units are arranged for mounting on channel and I-beam bays, respectively, and are so arranged that jack layouts, to meet specific job conditions, may be set up with a minimum of effort while providing a maximum of flexibility. Lists 2 and 4 cover the distributing terminal strips alone for channel and I-beam bays, where a jack field is not required. Lists 2, 4, 6, and 7 provide a continuous horizontal jumper duct extending through a line-up of bays. List 5 provides two wire guide details for use with lists 2 and 6 used at a junction point where a bay line-up turns.

1.17 The J68617AG telephone and trunk unit provides the common maintenance communication circuits required in a program office;

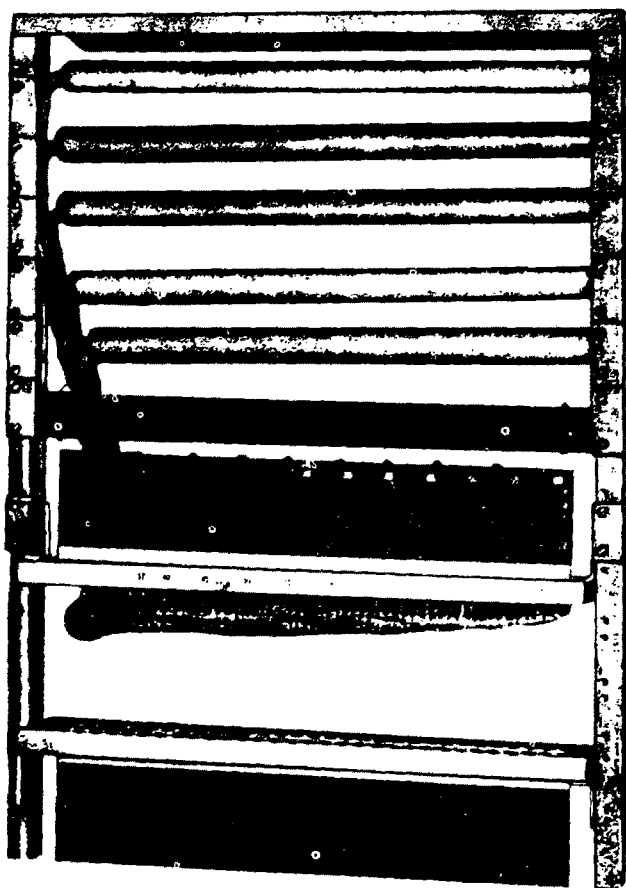


Fig. 21 — J68617AF — Jack Field Unit — Front View With Cover and Cover Supports Removed

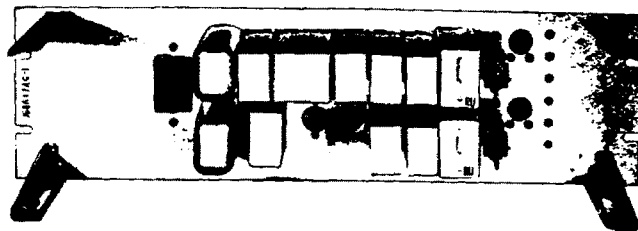


Fig. 22 — J68617AG — Telephone and Trunk Unit — Front View With Cover Removed

namely, the attendant's telephone set, telephone order wire protection equipment, and two talking trunks. The two trunks are wired universally and may be equipped as trunks to the broadcast studio or trunks to the testboard as required.

1.18 The J68617AJ cue and cut multiple relay unit is a 5-circuit unit mounting that part of the program switching circuit which controls the time interval for switching of circuits, and also functions to disconnect the line from working multiples and provide the proper line and amplifier terminations.

1.19 The J68617AK G-type bridge unit provides a unit equipped and wired for one bridge and arranged to be equipped and wired for a second bridge as required. The G-type bridge is a resistance network used in conjunction with the 14C program amplifier to distribute the output as covered in 1.11. The amplifier has sufficient power to supply each outlet with sufficient energy so that tandem amplifiers are not required to compensate for losses in the network. Taps are provided on the transformer to step down the nominal impedance so as to effect a close impedance match with the amplifier output. The transformer is not required for bridges serving only open-wire lines. For ready identification, each grouping of outlets has been given a designation; such as G-4-0, G-3-4, etc. In these designations, the letter refers to the type of bridge; the first numeral indicates the number of open-wire lines (+14 vu); and the second numeral or numerals the number of B22 or H44 cable lines (+8 vu). Unused bridge outlets require 600-ohm termination. However, by strapping on the panel, a termination may be provided for any group of four low-level outlets or a half group of two low-level outlets without the necessity of supplying external resistors. When a

bridge feeds only one type of facility an additional outlet designated X may be used to facilitate reversing without increasing the maximum number of multiple outgoing lines beyond four or sixteen.

1.20 The J68617AM control and reversing unit provides equipment at the broadcast studio for reversing program circuits and for conditioning a reversible program loop for transmission in the proper direction. It also switches the equalization in or out of the loop circuit, as required, for transmitting or receiving. The loop repeating coil and equalizer are covered by separate lists and the unit is arranged to mount this equipment or to connect to it when it is mounted externally. The control key and lamp equipment may be mounted either on or external to the unit, and in either case multiple appearances of both the key and lamps for remote control of circuit reversal, or of the lamps only where only an indication of the condition of the reversible loop is desired, may be provided at a number of locations in the studio.

1.21 On installations where power for the control and reversing unit is supplied by a rectifier, an additional rectifier must be provided for the multiple lamp load.

1.22 The J68617AN power supply unit provides necessary 24- and 130-volt battery at a broadcast studio for operating the J68617AM control and reversing unit. The unit is for use in studios not having the necessary battery supply and requires 105- to 125-volt, 50- to 60-cycle ac commercial power for its operation. This unit will supply the necessary battery for one control and reversing unit.

1.23 The J68617AQ studio remote control switching panel provides equipment at the broadcast studio for switching a studio loop to either of two or any one of four program lines at a remote telephone office. It also provides order-wire facilities between the studio and telephone office and a means of monitoring on the program line to which the loop is not connected, when arranged for switching the loop between either of two program lines. The power supply for the operation of this panel may be either ac or dc supplied from the telephone office or dc supplied at the studio.

1.24 The J68617AW reversing panel provides equipment for reversing the direction of transmission of schedule A and B program circuits over N1 carrier. The reversible circuit is controlled by a signal over the simplex circuit. The signal is applied at the broadcasting studio or control room. Signal lamps indicate whether the circuit is in the transmitting or receiving condition.

Subdivisions of Equipment

- J68617B — AT&TCo Std — Regulating Network Panel for 12C Program Amplifiers on B22 Loaded Cable Circuits
- J68617N — A&M Only — 12C Program Amplifier Panel Arranged for Regulated Battery
- J68617U — AT&TCo Std — Amplifier Reversing Panel
- J68617W — AT&TCo Std — 14C Program Amplifier
- J68617AA — AT&TCo Std — B22 or H44 Cable Equalizer Unit
- J68617AB — AT&TCo Std — Control and Reversing Battery Supply and Single-circuit Unit
- J68617AC — AT&TCo Std — Secondary Control and Reversing 4-circuit Unit
- J68617AD — AT&TCo Std — Primary Control and Reversing 4-circuit Unit
- J68617AE — AT&TCo Std — Primary Control and Reversing 4-circuit Unit
- J68617AF — AT&TCo Std — Jack Field and Distributing Terminal Strip Unit
- J68617AG — AT&TCo Std — Telephone and Trunk Unit
- J68617AJ — AT&TCo Std — Cue and Cut Multiple Relay Unit for Program Switching
- J68617AK — AT&TCo Std — G-type Bridge Unit
- J68617AM — AT&TCo Std — Control and Reversing Unit for Use at Broadcast Studios
- J68617AN — AT&TCo Std — Power Supply Unit for Use at Broadcast Studios
- J68617AQ — AT&TCo Std — Studio Remote Control Switching Panel
- J68617AW — AT&TCo Std — Reversing Panel for N1 Carrier Schedule A and B Program Transmission

2. SUPPLEMENTARY INFORMATION

800-600-000 — List of General Equipment Requirement Sections

804-000-000 — Equipment Design and General Equipment Requirements and Engineering Information — Toll Systems

X-67027 — Manufacturing Testing Requirements for 12C Program Amplifiers and Associated Equipment

X-67095 — Manufacturing Testing Requirements for Program Distributing Bay and Program Switching Units

X-67106 — Manufacturing Testing Requirements for Portable Amplifier for Program Transmission

X-67153 — Manufacturing Testing Requirements for 14C Program Amplifier

X-67654 — Manufacturing Testing Requirements for J68617AW Program Reversing Circuit

KS-5244 — Rheostat

KS-5328 — Shipping Trunk for Portable Relay Rack

KS-5471 — Motor — Alternator Set

KS-7160 — Capacitor

Power Data Book

3. DRAWINGS

WECO J drawings listed should be ordered by referring to the prefix and base number and requesting the current dash (—) number.

Key Sheets

SD-62475-01 — Program Transmission

SD-90250-01 — Master Key Sheet

Circuits

SD-55064-01 — Local Loop Circuit, Control and Reversing Circuit

SD-55065-01 — Power Supply Circuit

SD-55142-01 — Studio Remote Control Switching Circuit

SD-55143-01 — Telephone Office Remote Control Switching Circuit

SD-55471-01 — Transmission and Reversing Circuit Between VF and Double Sideband K Carrier Program Transmission

SD-62327-02 — 12C Program Amplifier Arranged for Regulated Battery

SD-62406-02 — Regulating Network

SD-63866-80 — Program Amplifier Circuit Label Portable AC Operated

SD-64357-01 — 14C Program Amplifier

SD-64413-01 — Telephone Order Wire

SD-64457-01 — Amplifier Reversing Circuit

SD-64529-01 — Trunk Circuits

SD-64610-01 — Attendant's Telephone Set

SD-64751-01 — Control and Reversing Circuit

SD-64755-01 — 14C Amplifier Application Schematic (G Bridge and Equalizer)

SD-64782-01 — Line Switching Relay and Preselection Circuit

SD-80548-01 — Power Service Circuit Emergency 105- to 125-volt AC Supply for Portable AC Amplifier

SD-95182-01 — Reversing Circuit, Application Schematic, N1 Carrier, Schedule A and B Program Transmission

Framework

ED-60254-01 } — Location of Terminal Strips and
ED-60254-02 } Cover Supports for Panels

ED-61166-01 — Common Covers for 19-inch Panels

ED-90064-01 — Wood Panels

ED-90410-01 — Relay Rack Key Mounting

ED-90523-01 — Portable Relay Rack Assembly

ED-90782-01 — Relay Rack Unit

ED-91104-01 — Portable Apparatus Cabinet

ED-91709-01 — Front Covers and Cover Supports for Panels

ED-99024-01 — Studio Remote Control Switching Panel Details

Equipment

J68617B-() — Regulating Network Panel

J68617N-() — 12C Program Amplifier

J68617U-() — Reversing Switching Panel

J68617W-() — 14C Program Amplifier

J68617AA-() — B22 Cable Equalizer Unit

J68617AB-() — Control and Reversing and Battery Supply Panel

J68617AC-() — Secondary Control and Reversing 4-circuit Unit

J68617AD-() — Primary Control and Reversing 4-circuit Unit

J68617AE-() — Primary Control and Reversing Unit

J68617AF-() — Jack Field Unit

J68617AG-() — Telephone and Trunk Unit

J68617AJ-() — Cue and Cut Multiple Relay Unit

J68617AK-() — G-type Bridge Unit

J68617AM-() — Control and Reversing Unit

J68617AN-() — Power Supply Unit
 J68617AQ-() — Studio Remote Control Switching Panel
 J68617AW-() — Reversing Panel, N1 Carrier, Schedule A and B Program Transmission

Wiring

ED-60067-01 — Local Cables on Units
 ED-60355-01 — Local Cables on Panels

4. EQUIPMENT

J68617B — AT&TCo Std — Regulating Network Panel for Use with 12C Program Amplifier on B22 Loaded Cable Circuits

Equipment — J68617B-()

List 1 — Assembly, wiring, and equipment for one regulating network panel per SD-62406-02.

J68617N — A&M Only — 12C Program Amplifier Panel Arranged for Regulated Filament Battery (See Note A)

Equipment — J68617N-()

List 1 — Assembly, wiring, and equipment for one program amplifier panel per SD-62327-02, "SA," "W," "Z," "Y," "N," "H," and "K" wiring, "H" wiring connected.

List 2 — Equipment per J68617U, List 1 required in addition to list 1 to equip the amplifier for reversal.

Note

A. The "SA" wiring shall be looped to the position of the J68617U panel such that no modification of the amplifier cable form will be necessary when equipping for reversal. "W," "Z," and "Y" wiring shall be cut as required to suit job conditions.

J68617U — AT&TCo Std — Amplifier Reversing Panel

Equipment — J68617U-(), Fig. 1

List 1 — Assembly, wiring, and equipment for one amplifier reversing panel per SD-64457-01.

J68617W — AT&TCo Std — 14C Program Amplifier (See Notes A, B, and C)

Equipment — J68617W-()

List 1 — Assembly, wiring, and common equipment for one 14C program amplifier per SD-64357-01, Fig. 1, "X," "Y," and "M" wiring, "X" wiring connected, "M" wiring not connected.

List 2 — Equipment required in addition to list 1 for regulated battery offices.

List 3 — Equipment required in addition to list 1 for nonregulated battery offices.

Notes

A. "X" wiring shall be removed and "Y" wiring connected during installation when so specified.

B. "M" wiring shall be provided during installation as required.

C. Electron tubes are not included as a part of this panel and should be ordered separately as follows:

For lists 1 and 2:

2 — 310A and 2 — 311B electron tubes

For lists 1 and 3:

2 — 328A and 2 — 329A electron tubes

J68617AA — AT&TCo Std — B22 or H44 Cable Equalizer Unit (See Note A)

List 1 — Assembly, wiring, and equipment for one equalizer assembly per J68617AA-(), Fig. 1, and SD-64755-01, Fig. 24. (See note A.)

List 2 — Assembly, wiring, and equipment for one equalizer coil and pad assembly.

Equipment — J68617AA-(), Fig. 2

WIRE EQUIP NOTES

Equalizer Ckt. SD-64755-01,
 Fig. 24, "L" Appar.

1 1

Repeating Coil SD-64755-01,
 Fig. 11

2 2

List 3 — Assembly, wiring, and equipment for one equalizer coil and pad assembly for use with single sideband program type K carrier line section equalizer.

Equipment — J68617AA-(), Fig. 3

	WIRE	EQUIP	NOTES
Equalizer Ckt. SD-64755-01, Fig. 24, "L" Appar.	1	1	
Rep. Coil SD-64755-01, Fig. 11	2	2	

Note

A. "A," "X," and "M" apparatus and "A," "B," "X," "Y," "K," or "G" wiring per SD-64755-01, Fig. 24 shall be furnished as specified in order.

J68617AB — AT&TCo Std — Control and Reversing Battery Supply and Single-circuit Unit

Equipment — J68617AB-()

List 1 — Framework, assembly, wiring, and common equipment for one control and reversing and battery supply unit wired universally per SD-64751-01, Figs. 1, 2, 3, 4, 5, 6, 7, 13, 15, 17, 20, 21, 24, 25, 27, and 28, "A," "B," "E," "F," "G," "J," "K," "S," "T," "X," and "Y" wiring and equipped per SD-64751-01, Fig. 13.

List 2 — Primary reversing and control equipment per SD-64751-01, Figs. 1 and 2 required in addition to list 1 for G bridge outlet to loaded cable or nonloaded cable when there is a loaded cable branch, arranged for studio control, or for loaded cable to loaded cable or nonloaded cable.

List 3 — Primary reversing and control equipment per SD-64751-01, Figs. 1 and 3 required in addition to list 1 for G bridge outlet to nonloaded cable when there is a loaded cable branch not arranged for studio control or a terminal circuit loaded cable to nonloaded cable not arranged for studio control.

List 4 — Primary reversing and control equipment per SD-64751-01, Figs. 1 and 4 required in addition to list 1 for G bridge to open wire when some branches are

loaded cable or nonloaded cable or for open wire to loaded cable or to nonloaded cable.

List 5 — Primary reversing and control equipment per SD-64751-01, Figs. 1 and 5 required in addition to list 1 for open wire to nonloaded cable terminal circuit, not arranged for studio control.

List 6 — Primary reversing and control equipment per SD-64751-01, Figs. 1 and 6 required in addition to list 1 for G bridge outlet to open wire, when all branches are open wire or open wire and nonloaded cable.

List 7 — Primary reversing and control equipment per SD-64751-01, Figs. 1 and 7 required in addition to list 1 for open wire to open wire thru circuit.

List 8 — Secondary reversing equipment per SD-64751-01, Fig. 17 required in addition to list 1 for G bridge.

List 9 — Cue relay equipment per SD-64751-01, Fig. 15 required in addition to list 1 for G bridge outlet.

List 10 — Spark suppressor equipment per SD-64751-01, Fig. 25 required in addition to list 1 for G bridge outlet.

List 11 — Secondary control equipment per SD-64751-01, Fig. 21 required in addition to list 1 for G bridge outlet.

List 12 — Tertiary reversing equipment per SD-64751-01, Fig. 20 required in addition to list 1 for G bridge outlet.

List 13 — Primary control resistance equipment per SD-64751-01, Fig. 2, "E" apparatus only, required in addition to list 1 for G bridge outlet, loaded cable to loaded cable, open wire or nonloaded cable.

List 14 — Guard relay equipment per SD-64751-01, Fig. 24 required in addition to list 1 for G bridge outlet.

List 15 — Studio control equipment per SD-64751-01, Fig. 1 in addition to list 1.

List 16 — Primary reversing and control equipment per SD-64751-01, Figs. 1 and 27 required in addition to list 1 for G bridge outlet to nonloaded cable where there is no loaded cable branch, not arranged for studio control.

List 17 — Primary reversing and control equipment per SD-64751-01, Figs. 1 and 28, required in addition to list 1 for G bridge outlet to nonloaded cable where

there is no loaded cable branch, arranged for studio control.

J68617AC — AT&TCo Std — Secondary Control and Reversing 4-circuit Unit

Equipment — J68617AC-()

- List 1** — Assembly, wiring, and common equipment for one secondary control and reversing unit wired for four circuits per SD-64751-01, Figs. 17 and 21, "X" and "Y" wiring.
- List 2** — Secondary reversing equipment per SD-64751-01, Fig. 17 required in addition to list 1 for G bridge outlet.
- List 3** — Secondary control equipment per SD-64751-01, Fig. 21 required in addition to list 1 for G bridge outlet.

J68617AD — AT&TCo Std — Primary Control and Reversing 4-circuit Unit

Equipment — J68617AD-()

- List 1** — Assembly, wiring, and common equipment for one primary control and reversing unit wired universally for four circuits per SD-64751-01, Figs. 1, 24, and 2, 3, 4, 5, 27, or 28, "A," "B," "E," "F," "G," "J," and "K" wiring.
- List 2** — Primary reversing and control equipment per SD-64751-01, Figs. 1 and 2 required in addition to list 1 for G bridge outlet to loaded cable or nonloaded cable when there is a loaded cable branch, arranged for studio control, or for loaded cable to loaded cable or nonloaded cable.
- List 3** — Primary reversing and control equipment per SD-64751-01, Figs. 1 and 3 required in addition to list 1 for G bridge outlet to nonloaded cable when there is a loaded branch, not arranged for studio control, or terminal circuit loaded cable to nonloaded cable, not arranged for studio control.
- List 4** — Primary reversing and control equipment per SD-64751-01, Figs. 1 and 4 required in addition to list 1 for G bridge to open wire when some branches are loaded cable, or for open wire to loaded cable or to nonloaded cable.

List 5 — Primary reversing and control equipment per SD-64751-01, Figs. 1 and 5 required in addition to list 1 for open wire to nonloaded cable terminal circuit, not arranged for studio control.

List 6 — Guard relay equipment per SD-64751-01, Fig. 24 required in addition to list 1 for G bridge outlet.

List 7 — Primary control resistance equipment per SD-64751-01, Fig. 2, "E" apparatus only, required in addition to list 1 for G bridge outlet, loaded cable to loaded cable, open wire or nonloaded cable.

List 8 — Primary reversing and control equipment per SD-64751-01, Figs. 1 and 27 required in addition to list 1 for G bridge outlet to nonloaded cable where there is no loaded cable branch not arranged for studio control.

List 9 — Primary reversing and control equipment per SD-64751-01, Figs. 1 and 28 required in addition to list 1 for G bridge outlet to nonloaded cable where there is no loaded cable branch arranged for studio control.

J68617AE — AT&TCo Std — Primary Control and Reversing 4-circuit Unit

Equipment — J68617AE-()

- List 1** — Assembly, wiring, and common equipment for one control and reversing unit wired universally for four circuits per SD-64751-01, Figs. 1, 24, and 6 or 7.
- List 2** — Primary reversing control and guard relay equipment per SD-64751-01, Figs. 1, 6, and 24 required in addition to list 1 for G bridge outlet all to open wire.
- List 3** — Primary reversing and control equipment per SD-64751-01, Figs. 1 and 7 required in addition to list 1 for open wire to open wire thru circuits.

J68617AF — AT&TCo Std — Jack Field Unit

Equipment — J68617AF-()

- List 2** — Framework and common equipment for one distributing terminal strip unit for use on channel-type relay racks 20-7/16 inches wide.

- List 4** — Framework and common equipment for one distributing terminal strip unit for use on I-beam type relay rack 19-1/2 inches wide.
- List 5** — Framework required in addition to list 1 or 2 for wire protection at each junction of distributing units where the relay rack line turns.
- List 6** — Framework, assembly, wiring, and common equipment for one jack and distributing terminal strip unit, wired for 41 circuits per SD-64755-01, Fig. 51 or SD-64814-01, Fig. 51 (ckts. 1 to 39, 64 and 65) and 24 circuits per SD-64755-01, Fig. 52 or SD-64814-01, Fig. 52 (ckts. 40 to 63) for use on channel type relay rack 20-7/16 inches wide. (See note A.)
- List 7** — Framework, assembly, wiring, and common equipment for one jack and distributing terminal strip unit, wired for 41 circuits per SD-64755-01, Fig. 51 or SD-64814-01, Fig. 51 (ckts. 1 to 39, 64 & 65) and 24 circuits per SD-64755-01, Fig. 52 or SD-64814-01, Fig. 52 (ckts. 40 to 63) for use on I-beam type relay rack 19-1/2 inches wide. (See note A.)

Note

- A. This unit provides a universal wiring or mounting for all jack circuits used in program transmission. Equipment of this unit shall be in accordance with job information.

J68617AG — AT&TCo Std — Telephone and Trunk Unit

Equipment — J68617AG-()

- List 2** — A&M Only — Framework, assembly, wiring, and common telephone set equipment for one telephone set and trunk unit for use with OW equipment using repeater monitoring windings wired universally for two SD-64413-01, Figs. 12 and 13, two SD-64529-01, Figs. 1 or 2, 3, A or B, and one SD-64610-01, Figs. 1 or 2, and 20 and "Y" wiring and equipped per SD-64610-01, Figs. 2 and 20, "B" apparatus.
- List 3** — Equipment required in addition to lists 1, 2 or 10 for one broadcast studio trunk

per SD-64529-01, Figs. 1 and A, "B" apparatus.

- List 4** — Equipment required in addition to lists 1, 2 or 10 for one trunk to testboard per SD-64529-01, Fig. 2, "B" apparatus.
- List 5** — Equipment per SD-64529-01, Fig. B required in addition to list 3 for multiplying one broadcast studio trunk to the testboard.
- List 6** — Equipment per SD-64529-01, Fig. 3 required in addition to list 4 or 5 for connection to testboard 16, or 17B or test and control board No. 8.
- List 7** — Equipment required in addition to lists 1, 2 or 10 for two telephone order wire jack protection circuits per SD-64413-01, Fig. 12, "B" apparatus.
- List 8** — Equipment required in addition to list 2 for two telephone order wire key protection circuits per SD-64413-01, Fig. 13 "B" apparatus.
- List 9** — Equipment per SD-64529-01, Fig. 7, required in addition to list 4 for connecting to telegraph testboard No. 9. (See note A.)
- List 10** — Framework, assembly, wiring, and common telephone set equipment for one telephone set and trunk unit for use with ringing key pulsing wired universally for two SD-64413-01, Figs. 12 and 13, two SD-64529-01, Figs. 1 or 2, 3, A or B, and one SD-64610-01, Figs. 24 or 2 and 20 and "Y" wiring and equipped per SD-64610-01, Figs. 20 and 24, "Y" apparatus.

Note

- A. Due to common terminal strip punchings, list 9 cannot be equipped when list 7 is equipped on the same unit.

J68617AJ — AT&TCo Std — Cue and Cut Multiple Relay Unit

Equipment — J68617AJ-()

- List 1** — Framework for one 5-circuit unit.
- List 2** — Assembly, wiring, and equipment required in addition to list 1 for one cue and cut multiple relay circuit per SD-64782-01, Fig. 3.
- List 3** — Equipment per SD-64782-01, Fig. 31, required in addition to list 1 for alarm

relay for one line equipped for remote control switching.

J68617AK — AT&T Co Std — G-type Bridge Unit

Equipment — J68617AK-()

List 1 — Assembly, and common equipment for a two G bridge unit wired and equipped per SD-64755-01, Fig. 27 for one G-4-0 bridge with X outlet, for circuit 1.

List 2 — Wiring and equipment per SD-64755-01, Fig. 27 required in addition to list 1 or 3 for one G-4-0 bridge with X outlet, for circuit 2.

List 3 — Assembly, and common equipment for a two G bridge unit wired and equipped per SD-64755-01, Figs. 26 and 28, "H," "X," "L1," "L2," "Z," and "AZ" wiring, for one G-0-16, G-1-12, G-2-8, or G-3-4 bridge with X outlet, for circuit 1. (See note A.)

List 4 — Wiring and equipment per SD-64755-01, Figs. 26 and 28, "H," "X," "L1," "L2," "Z," and "AZ" wiring, required in addition to list 1 or 3 for one G-0-16, G-1-12, G-2-8, or G-3-4 bridge with X outlet, for circuit 2. (See note A.)

List 5 — Equipment for two terminations per SD-64755-01, Fig. 30 required in addition to list 1 or 2 at B22 cable intermediate reversing nonbridging point.

Note

A. "X," "H," "L1," and "L2" wiring shall be connected and "Z" and "AZ" wiring provided as specified at the time of installation.

J68617AM — AT&T Co Std — Control and Reversing Unit

Equipment — J68617AM-()

List 1 — Framework, assembly, wiring, and common equipment for one control and reversing unit per SD-55064-01, Fig. 2, "X" wiring, for use at broadcast studios.

List 2 — Framework, wiring, and control equipment per SD-55064-01, Fig. 4 required in addition to list 1 when control is at the unit.

List 3 — Repeating coil wiring and equipment per SD-55064-01, Fig. 1 required in addition to list 1 when loop repeating coil is located on the unit.

List 4 — Equalizer wiring and equipment per SD-55064-01, Fig. 3 required in addition to list 1 when equalizer is located on the unit.

List 5 — Framework required in addition to list 1 when list 2 is not furnished.

List 6 — Control equipment per SD-55064-01, Fig. 4 required for control and reversing when control is located away from the unit. (See note A.)

List 7 — Grouping equipment per SD-55064-01, Fig. B required for grouping two control and reversing units per list 1. (See note A.)

List 8 — Multiple lamp relay equipment per SD-55064-01, Fig. 6 required in addition to lists 1 and 2 or 6 to provide for multiple appearances of control supervisory lamps. (See notes B and D.)

List 9 — Lamp equipment per SD-55064-01, Fig. 7 required in addition to lists 1, 2 or 6 and 8 for each multiple appearance of control supervisory lamps. (See notes A, C, and D.)

List 10 — Key equipment per SD-55064-01, Fig. 8 required in addition to lists 1 and 2 or 6 for each multiple appearance of reversing control key. (See note A.)

Notes

A. The location and arrangement in the studio of the apparatus in lists 6, 7, 9, and 10 shall, in each case, be engineered on a job basis in accordance with the customer's requirements.

B. The apparatus specified in list 8 shall be furnished to the field mounted on a 600A mounting plate with the H, J, K, and L resistors in positions 1, 3, 5, and 7, respectively, and the T, R, C, and B relays in positions 2, 4, 6, and 8, respectively. The location of the equipped mounting plate on the customer's premises shall be determined as covered in note A above.

C. Each list 9 shall comprise the following apparatus:

- 5 — K1 lamps
- 5 — 47B lamp sockets
- 3 — 2AY lamp caps (white)
- 1 — 2H lamp cap (red)
- 1 — 2L lamp cap (green)

D. Where power for the control and reversing unit per list 1 is supplied by a rectifier, an additional rectifier must be provided for the multiple lamp load. The capacity of the added rectifier shall be such that it is capable of supplying 0.12 ampere at 24 volts for each list 9 used.

J68617AN — AT&TCo Std — Power Supply Unit

Equipment — J68617AN-()

List 1 — Framework, assembly, wiring, and equipment for one power supply unit per SD-55065-01, Fig. 1 for use with control and reversing circuit at broadcast studios.

J68617AQ — AT&TCo Std — Studio Remote Control Switching Panel

Equipment — J68617AQ-()

List 1 — Framework, assembly, wiring, and common equipment for one remote control switching panel wired universally per SD-55142-01, Figs. 1, 3, 4, 5, 6, 7, 8, 9, 10, and 12 and equipped per SD-55142-01, Fig. 7.

List 2 — AC trunk circuit, talk key, and alarm relay equipment per SD-55142-01, Figs. 1, 3, and 5 required in addition to list 1 when ac power supplied from the telephone office and talking trunk are provided.

List 3 — DC trunk circuit, talk key, and alarm relay equipment per SD-55142-01, Figs. 1, 4, and 5 required in addition to list 1 when dc power supply and talking trunk are provided.

List 4 — Connecting circuit equipment per SD-55142-01, Fig. 8 required in addition to list 1 when the panel is arranged for 2-switch operation on ac power supply.

List 5 — Connecting circuit equipment per SD-55142-01, Fig. 9 required in addition

to list 1 when the panel is arranged for 4-switch operation on ac power supply.

J68617AW — AT&TCo Std — Reversing Panel for N1 Carrier, Schedule A and B Program Transmission

Equipment — J68617AW-()

List 1 — Assembly, wiring, and equipment for one reversing panel unit per SD-95182-01, Fig. 1.

Note

A. Equipment for SD-95182-01, Figs. 4, 5, 6, and 7 shall be provided as required on a job basis.

5. GENERAL NOTES

List of A&M Only and Mfr Disc. Equipment

EQUIPMENT	RATING	DETAILS LAST SHOWN IN ISSUE	REPLACING EQUIPMENT
J68617A	Mfr Disc.	5	J68617N
J68617C	Mfr Disc.	7	—
J68617D	Mfr Disc.	9	—
J68617E	Mfr Disc.	7	J68617AG
J68617F	Mfr Disc.	6	—
J68617G	Mfr Disc.	6	—
J68617H	Mfr Disc.	6	—
J68617J	Mfr Disc.	6	—
J68617K	Mfr Disc.	7	J68617W
J68617L	Mfr Disc.	8	J68634
J68617M	Mfr Disc.	8	J68634
J68617N	A&M Only	11	J68617W
J68617P	Mfr Disc.	10	J68617W
J68617Q	Mfr Disc.	10	124B Amp.
J68617R	Mfr Disc.	6	—
J68617S	Mfr Disc.	10	—
J68617T	Mfr Disc.	8	J68617AP
J68617Y	Mfr Disc.	8	J68617AK
J68617AF,L1	Mfr Disc.	10	J68617AF.L6
L3	Mfr Disc.	10	L7
J68617AG,L1	Mfr Disc.	9	J68617AG.L10
L2	A&M Only	10	—
J68617AH	Mfr Disc.	10	—
J68617AL	Mfr Disc.	11	—
J68617AP	Mfr Disc.	11	—
J68617AR	Mfr Disc.	11	—
J68617AS	Mfr Disc.	11	—
J68617AT	Mfr Disc.	11	—

EQUIPMENT	RATING	DETAILS LAST SHOWN IN ISSUE	REPLACING EQUIPMENT
J68617AU	Mfr Disc.	11	—
J68617AV	Mfr Disc.	10	—

The above equipment has been replaced as indicated. Where A&M Only items appear, the issue numbers shown are those of the issue in which the rating was first applied.

Bell Telephone Laboratories, Incorporated

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