CENTRAL OFFICE
AUDIBLE AND VISUAL
MAINTENANCE ALARM EQUIPMENT
EQUIPMENT DESIGN REQUIREMENTS
COMMON 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 and installation of central office audible and visual alarm equipment for the larger installations of panel, step-by-step, crossbar, toll crossbar, toll, and telegraph systems and associated power plants without self-contained alarm equipment. It is also for use with any combination of these systems and may be used in conjunction with power plants having self-contained alarm equipment. Equipment included in this specification may be ordered by specifying the code and list numbers covered in Part 4.

1.02 This specification is reissued:

(a) To rate J93009E Mfr Disc.

(b) To add J93009F.

(c) To revise the specification to bring it into agreement with the latest manufacturing information.

Description

General

1.03 The alarm equipment covered in this specification provides simultaneous visual and audible signals supplementary to the alarms provided on the individual frames. These signals permit the maintenance force to detect and identify the operation of alarms from any point in the office, and to determine the location and general nature of the alarm.

1.04 The audible alarms consist of a set of signals centrally located on each floor which can identify, by means of distinctive tone, the following alarms:

(a) ***Power failure alarms*** are those caused by a failure of important power supply equipment (a blown discharge fuse, etc).

(b) ***Major alarms*** indicate an inoperative condition affecting large groups of equipment or equipment used with circuits of special importance.

(c) ***Minor alarms*** indicate inoperative conditions affecting only a small group of equipment and some less important troubles not directly affecting service.

(d) ***Alarm circuit alarms*** indicate trouble in the alarm equipment.

(e) ***Permanent signal alarms*** indicate troubles preventing the completion of a subscriber call.

(f) ***Service alarms*** are telephone calls or other indications requiring the attention of a specialized maintenance force such as the group in charge of the testboard.

(g) ***Alarm extensions*** to the operating room are those originating in the switchboard or alarms relayed from other floors to actuate the operating room signal.

(h) ***Distinctive major audible alarms*** indicate, by use of a coded signal bell, the floor or equipment unit from which the alarm is originating.

1.05 Visual signals indicate the general nature of the trouble by using different colored lamps for each type of alarm. In addition, these lamps (by their location) direct the maintenance force to the floor, main aisle, and aisle in which the equipment in trouble is located. For equipment not arranged in aisles, or for an isolated section of an office, a centralized group of lamp signals is used to indicate the class of alarm and, in some cases, the particular piece of equipment affected. Pilot lamps known as exit pilots are provided on each floor to indicate trouble on other floors. These lamps light at all times when trouble occurs but no action is taken on floors other than the one on which the trouble originates unless a supplemental pilot lamp known as an "other floor" lamp is lighted. The operation of this lamp is an indication that a trouble has occurred on a floor where the attendant has operated an alarm switching key and then left the floor. The operation of this key, in addition to conditioning the "other floor" lamp of the succeeding floor, connects the audible signal operating leads together so that an alarm on the unattended floor will operate the signals on both floors. The various audible and visual signals are discussed in the following paragraphs.

Audible Signals

1.06 Audible signals are of eight types:

(a) Vibrating Bell (6 inches) - Power Failure Alarm

(b) Tone Bar Signal (~245 Hertz) - Major Alarm

(c) Subscriber Set (~2500 Hertz) - Minor Alarm

(d) Subscriber Set (~2600 Hertz) - Alarm-on-Alarm

(e) Buzzer - Permanent Signal

(f) Subscriber Set (~1600 Hertz) - Service Alarm

(g) Tone Bar (~980 Hertz) - Operating Room Alarm

(h) Single Stroke Bell (4 inches) - Coded Signal for Major Alarms.

1.07 These signals, with the exception of the operating room tone bar and the code signal bell, are mounted on a backboard as shown in Fig. 1. The assembly is supported by a wall or column, the resonating effect of the backboard tending to increase the output of the signals. The operating room signal, which when operated gives a single stroke at approximately 2-minute intervals, and the coded signal bell for major alarms are mounted independently on a wall or column.

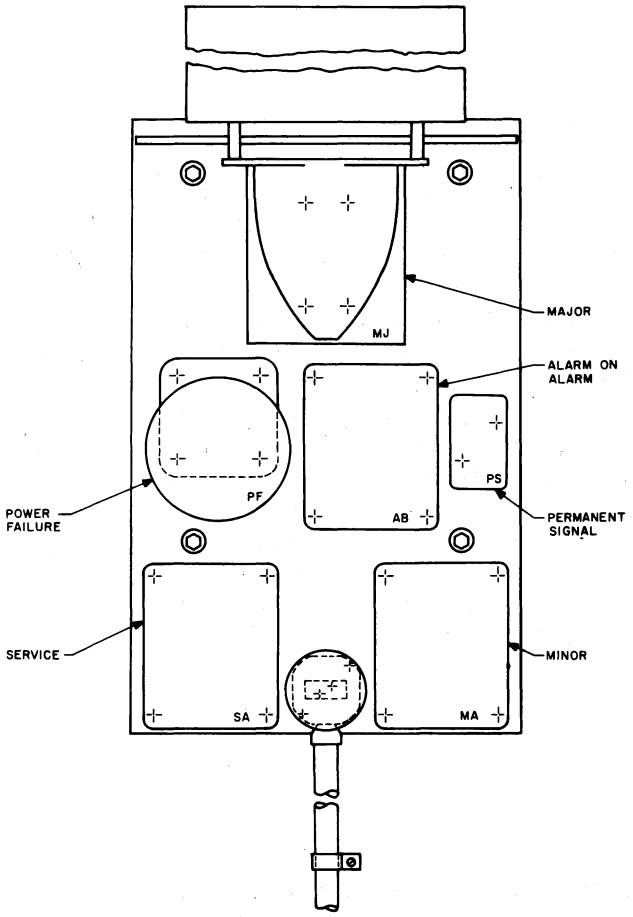


Fig. 1—Audible Alarm Signal Mounting

1.08 Normally, the audible signals are operated only when a case of trouble develops upon the floor where the signals are located. However, in order to care for periods when a floor may be unattended, a progressive grouping system may be provided by means of which troubles originating upon an unattended floor may be made to operate the corresponding audible signals on an attended floor in addition to operating the signals on the floor where the alarm originates. This may be made clear by reference to the fundamental alarm

circuit shown in Fig. 2 where the operation of the alarm switching key causes a trouble to operate the audible signal and light the other floor pilot lamp on the succeeding floor. Separate keys are provided for service signals.

Visual Signals

1.09 The visual signals used with this alarm system fall into six general classifications as follows:

(a) Bay or panel lamps individual to the equipment requiring alarm indications. (These lamps do not form a part of the equipment covered by this specification and are mentioned solely for the purpose of completing the chain of directional visual signals.)

(b) Aisle pilots.

(c) Main aisle pilots.

(d) Exit pilots.

(e) Other floor pilots.

(f) Cabinet lamps.

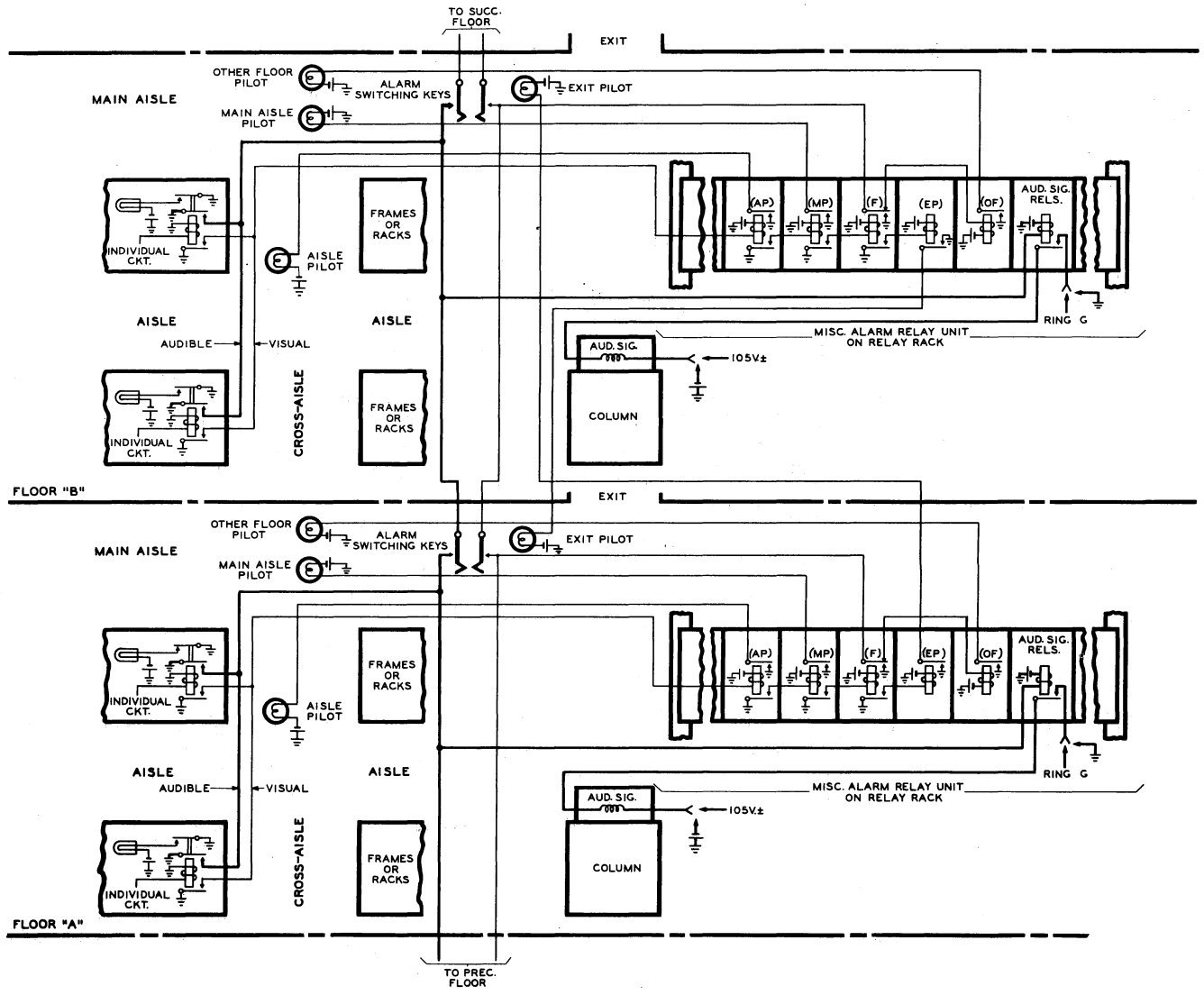


Fig. 2—Fundamental Visual and Audible Alarm Arrangement

1.10 The standard method of arranging bays in rows creates what are known as aisles. For maintenance alarm purposes, an aisle may be considered to be (a) the space enclosed by two rows of bays that face each other or (b) the space along the front of a single row of bays. Typical aisle arrangements are illustrated in Fig. 3 through 6 where the aisles are indicated by the letter A. Aisle pilots (Fig. 7) operating in conjunction with the bay or panel lamps indicate the particular aisle where the trouble has occurred. These lamps are medium screw-base lamps located at the end of the aisle and extending into the cross-aisle so that they are visible from either end of the cross-aisle. Colors are used to indicate different kinds of trouble: red indicates fuse or no-voltage alarms; green, miscellaneous troubles; amber, service calls; and white, permanent signal indications. As shown in Fig. 2, the aisle pilot lamps are lighted at the same time that the audible signals are operated.

1.11 Main aisle pilot lamps are provided in the main aisle when there are several cross-aisles or where irregularly shaped rooms or isolated groups of equipment prevent all the aisle pilots from being seen from one main aisle. These main aisle pilots are, in effect, a multiple of the associated aisle pilots; they are mounted vertically in the same manner and are located at one or both ends of the cross-aisle, as required, and the lamps extend into the main aisle so as to be visible from either end of that aisle.

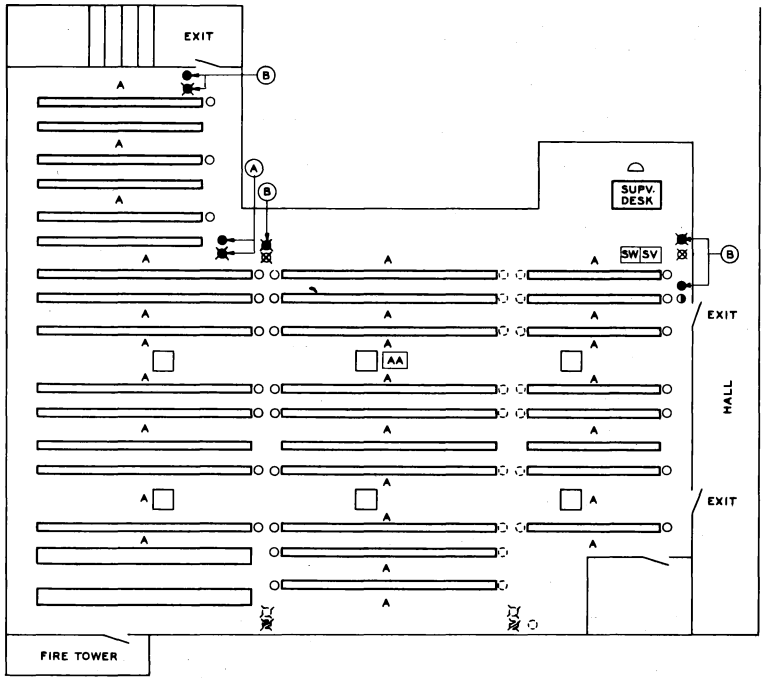


Fig. 3—Typical Audible and Visual Alarm Equipment in Office With Inner Court and All Aisles in Same Direction—Terminal or Switchroom

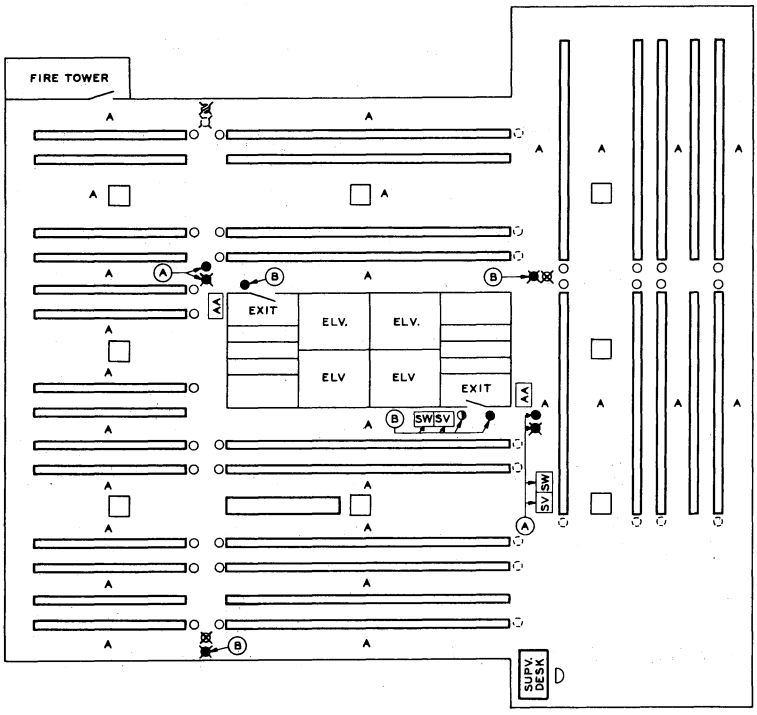


Fig. 4—Typical Audible and Visual Alarm Equipment in Office With Central Elevator Shaft and Aisles in Two Directions—Terminal or Switchroom

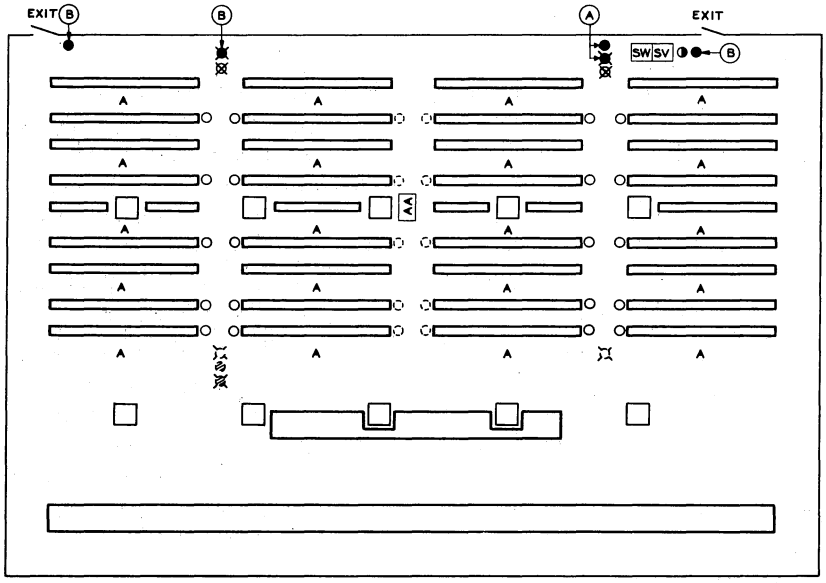


Fig. 5—Typical Audible and Visual Alarm Equipment in Office With Several Cross-Aisles—Terminal or Switchroom

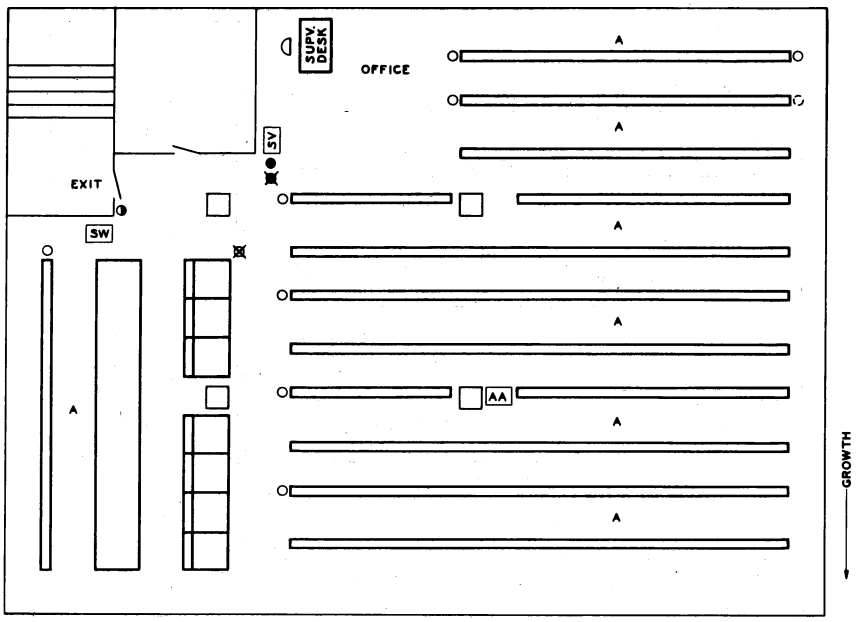


Fig. 6—Typical Audible and Visual Alarm Equipment in Office With Main Cross-Aisle—Terminal or Switchroom

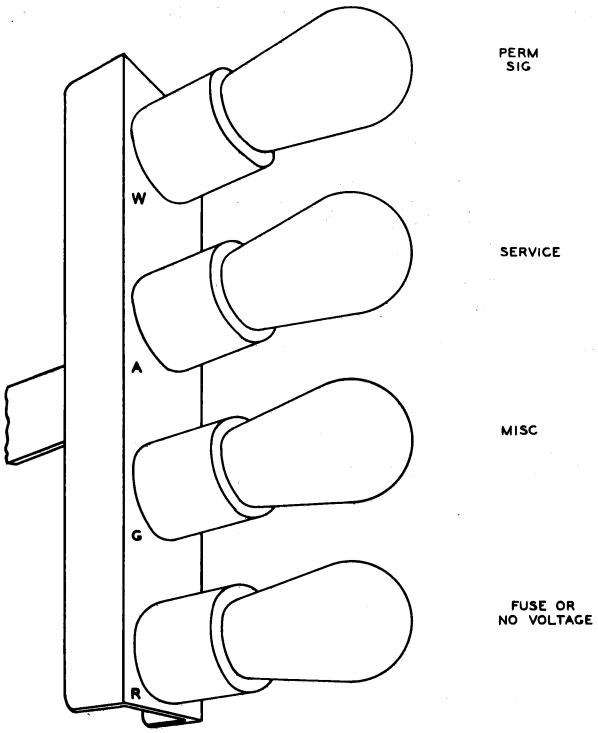


Fig. 7—Typical Aisle Pilot Equipment

1.12 Typical locations for these lamps, as well as other alarm equipment, are shown in Fig. 3 through 6. The conventions shown below are used for all figures.

NOTES:
1. DOTTED LINES INDICATE OPTIONAL EQUIPMENT.
2. EQUIPMENT Ⓑ MAY BE SUBSTITUTED FOR EQUIPMENT Ⓐ IF DESIRED.
3. A DENOTES AISLE.
   ○ DENOTES AISLE PILOTS.
   ⊠ DENOTES MAIN AISLE PILOTS.
   ● DENOTES EXIT PILOTS.
   ▣ DENOTES OTHER FLOOR PILOTS.
   ◑ DENOTES ALARM CONTROL KEY AND LAMP.
   [AA] DENOTES AUDIBLE ALARM SIGNALS.
   [OA] DENOTES OPERATING ROOM AUDIBLE ALARM SIGNAL AND CUT-OFF KEY.
   [SW] DENOTES EQUIPMENT ALARM SWITCHING KEY.
   [SV] DENOTES SERVICE ALARM SWITCHING KEY.
   [LC] DENOTES LAMP CABINET.

The location of equipment covered by Note 3 should be shown on all job floor plan drawings. It will be noted that, in general, main aisle pilots are

provided in every other cross-aisle. Where several cross-aisles are provided as in Fig. 5, it is sometimes advantageous to provide a multiple of the aisle pilots as shown by the dotted lines in order that a maintenance man may check the alarm indications from the intermediate cross-aisles and therefore care for some troubles without going to the cross-aisle having main aisle pilots and then retracing his steps.

1.13 Referring again to Fig. 2, a trouble condition on any floor provides the means to light the exit pilot lamps. These lamps appear on other floors and thus extend the alarm indications of a particular floor to all floors of a building included in the same operating unit. The lamps are of the same type as aisle pilots, mount vertically, but are only one color, yellow. They may be located near the exits as shown by (B) in Fig. 3 through 6 or may be located in the main aisle as shown by (A). The main aisle location has an advantage in that trouble on a floor that has for the time gone unattended will be drawn to the attention of an attendant upon another floor even if the audible signal switching key is not operated. Where the exits are not visible from the main aisle or other maintenance center, it is possible that under the conditions just mentioned a considerable time could elapse before the attendant became aware of the trouble on the unattended floor. To secure uniformity of arrangement, a socket and wiring are provided on each floor for equipment on that floor, but the lamp is omitted. This makes the lamp sequence the same for all floors.

1.14 As the exit pilots light each time a trouble occurs, additional signals known as other floor pilots are provided. These lamps, when lighted on any floor, indicate to the attendant that a trouble has occurred on another floor that is unattended. The particular floor is identified by means of the exit pilot lighted. The other floor pilots are yellow lamps of the same type as the exit pilots. They are mounted vertically and may be located with main aisle pilots or separately. They always should be visible, however, from the main aisle. They are under the control of the alarm switching key and will light only if this key is operated as shown in Fig. 2. Typical locations for these pilots are shown in Fig. 3 through 6.

Operating Room

1.15 The arrangement of alarm equipment in operating rooms is shown in Fig. 8. The equipment consists of exit pilots for other floors, a tone bar signal with cutoff key, and an exit pilot for the operating room itself. The exit pilots are of the type previously described with the exception of the lamp for the operating room. This lamp is red when located on the operating room floor instead of yellow as on other floors or the other exit pilots. It therefore takes the place of a main aisle pilot in the operating room and indicates a switchboard circuit trouble condition. The exit lamps in the operating room always light on trouble condition; however, the audible signal sounds for the power room power failure alarm, the alarm battery supply fuse alarms, and, in the case of the 301C power plant, the minor alarms. The major, minor, and power failure alarms of the terminal or switch floor from which the switchboard alarms are supervised also bring in the operating room audible signal. The power failure, major, and minor alarms of other floors in the same operating area are brought in only when grouped, by means of the alarm switching keys, to the floor associated with the switchboard. Where the equipment covered in this paragraph is not provided, the auxiliary circuits mentioned in 1.17 may be used to bring up indicating lamps in the face of the switchboard.

Power Room

1.16 Power room alarm equipment is shown in Fig. 9. In the case of 301C power plants, the alarm equipment is located in the main control board. For other types of plants, the aisle pilots are replaced by switchboard-type lamps mounted in a lamp cabinet located near the power equipment. Auxiliary power alarm circuits required for the operation of these lamps are covered in detail in supplementary information pertaining to the particular system involved. A typical cabinet with associated designation card and holder is shown in Fig. 10. In addition to the signal lamps, the cabinet contains pushbutton type keys for releasing visual and audible alarm signals and displaying guard lamps. The failure of any power equipment lights a signal lamp; the designation card is used to associate the lamp number with the specific equipment. For certain individual equipments subject to troubles of a type that cannot be rectified immediately, a nonlocking key located in the cabinet or on the power board may be operated. Operation of this key extinguishes the alarm lamps, silences the audible alarms, and lights a guard lamp, which is also located in the cabinet. The guard lamp remains lighted until the trouble is cleared, at which time

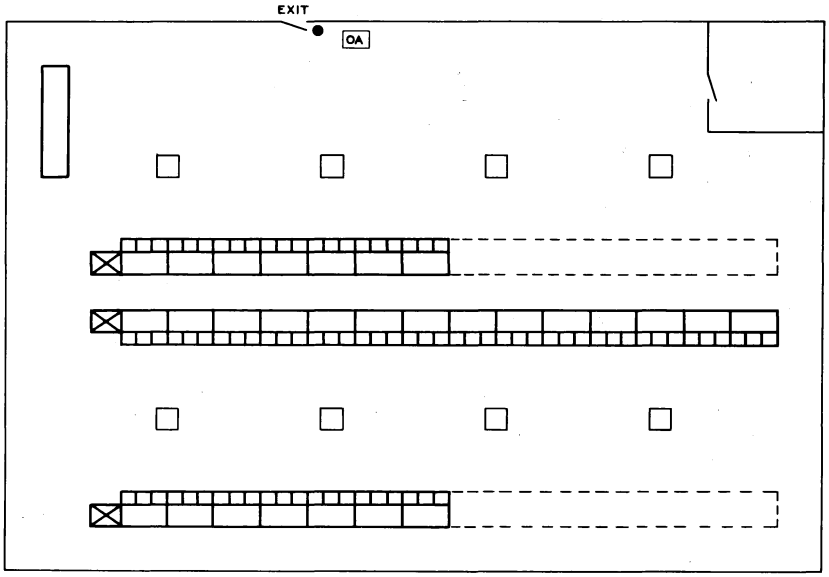


Fig. 8—Typical Audible and Visual Alarm Equipment—Operating Room

the circuit automatically restores to normal. Power room equipment, located in terminal or switchrooms and supplying power for specific equipment in that room, operates aisle or main aisle pilots and the common set of audible signals in the same manner as any other equipment on the floor.

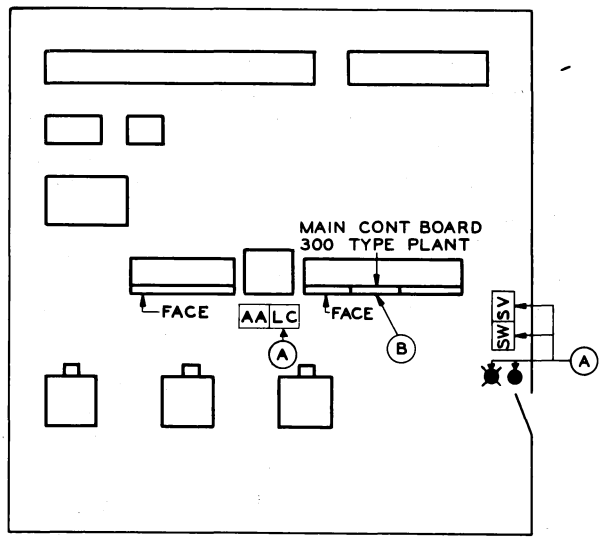


Fig. 9—Typical Audible and Visual Alarm Equipment—Power Room

Alarm Control

1.17 For unattended or part-time attended offices, an alarm control key and associated guard lamp are provided to silence the audible indications and extinguish some of the visual indications at times when no attendent is present. The operation of the control key energizes the alarm system; the lighting of the guard lamp indicates this condition. Trouble alarms originating during this period may be transferred to another office or to a switchboard in the same office by means of auxiliary circuits.

Method of Wiring and Assembly

1.18 The equipment covered in this specification is in the form of shop wired units and miscellaneous equipment. The alarm relay unit is shown in Fig. 11. The unit is available in two sizes: one is for relay racks with 19-inch mounting plates, and the other is for relay racks with 23-inch mounting plates. A terminal strip, local cable, and common cover are provided. The switchboard cables may be fanned out to the terminal strip. The local cable wiring is universal, the relays being furnished and connected on a job basis. Simplification is accomplished in that, as far as possible, the job connections are confined to strap wires placed on the switchboard cable side of the terminal strip. Ground is supplied to the relays through strap and surface wiring since no leads are provided in

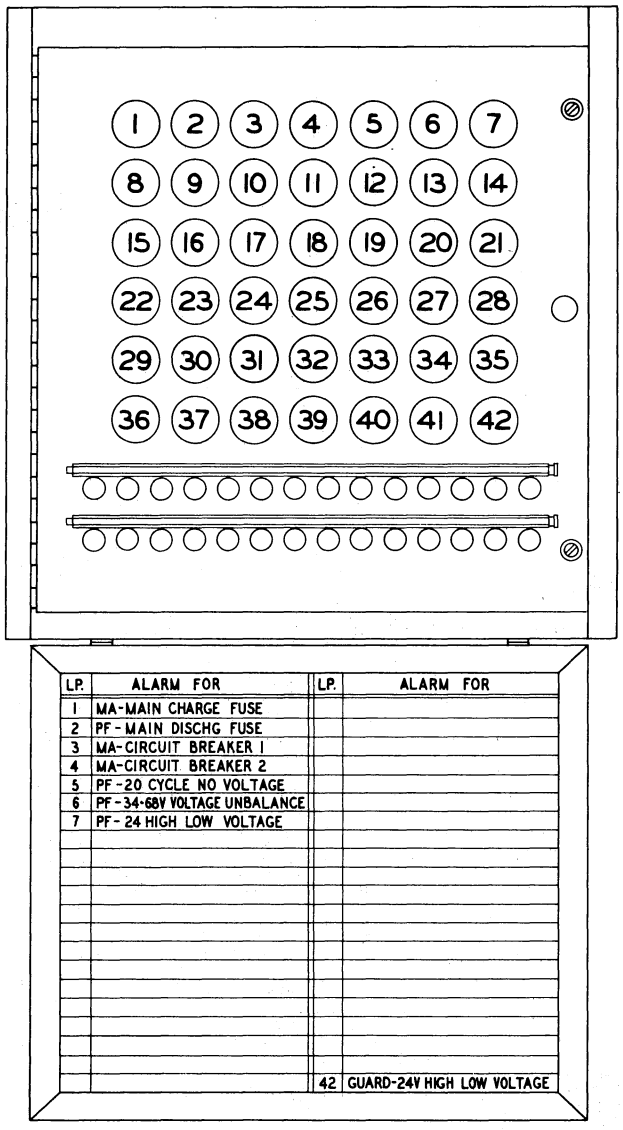


Fig. 10—Power Room Lamp Cabinet

the local cable for this purpose. The association of the alarm relays with the various circuits is given on a chart fastened to the inside of the common can cover. The chart shown in Fig. 11 is only partially filled out and is intended to show only the method to be used and not any particular installation.

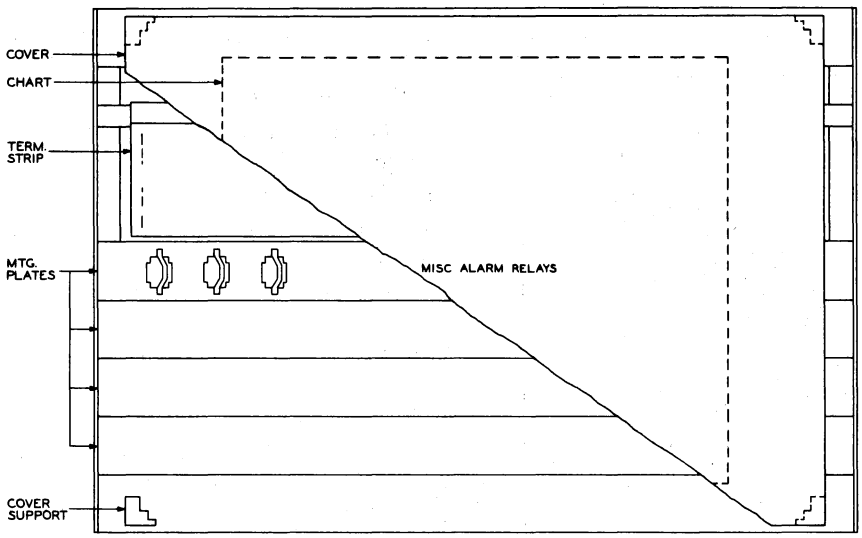
1.19 A switching key unit is shown in Fig. 12. This unit is for use when central control and supervision of the alarm switching system is required with the switching keys for all floors located at one central point. The unit is available in 23-inch length and is shown on J93009B-( ). A 19-inch or 23-inch mounting plate unit equipped with a set of terminal strips on the rear is provided so that the keys may be cross-connected in any desired sequence, and the sequence may be readily changed by the telephone company when required. The terminal strip unit should be mounted near the alarm or the key unit. The major audible alarm unit is on 23-inch mounting plates and is wired to terminal strips for cabling.

Capacity and Location of Equipment

1.20 The 19-inch miscellaneous alarm relay unit has a capacity of 40 relays or similar equipment, which is usually sufficient to care for the common alarm equipment serving one or two floors of a building. The 23-inch unit has a capacity of 48 relays or other similar equipment. In the case of the 40-circuit unit, the universal local cable provides 12 leads from terminal strip to mounting plate position for each of circuits 1 through 14, and 9 leads per circuit for circuits 15 through 40. The 48-circuit unit provides 12 leads per circuit for circuits 1 through 16 and 9 leads each for circuits 17 through 48. The units are provided with mounting plates 1-3/4 inches wide which are drilled and equipped on order.

1.21 Any relay shown on the alarm circuit that will mount on these plates may be located in any position provided the number of leads required for that relay (excluding ground connections) does not exceed the number of leads in the local cable, relay association being effected by the chart inside of the front cover. The major audible alarm unit is mounted on 2- by 23-inch mounting plates and has a capacity of four coded signals. To facilitate cabling, the relay unit is preferably mounted in the same bay and directly above the associated alarm and signal battery fuses. It may, however, be located on a relay rack bay at a distance from the fuse panels.

1.22 Audible and visual signals are provided as previously discussed and in general accordance with the arrangements shown in Fig. 4, 5, 6, 8, and 9. Lamp cabinets are available with a capacity of 5, 40, 42, and 70 lamps. One cabinet is provided for each floor with power equipment except in the case of installations using automatic power plants having the alarm equipment incorporated in the power plant. Audible alarms, if located in an operating room, are equipped with a cutoff key in order to avoid the disturbing effects of a continuous



FRONT VIEW

MISCELLANEOUS ALARM RELAYS

L NO	ALARM	DRAWINGS	FIG	REL DES	NOTE	LOCATION
1	UNIVERSAL WIRING	SD-96188-01	101		2	POS 1-14
		T-96188-31	1			
	UNIVERSAL WIRING	SD-96188-01	102		2	POS 15-48
		T-96188-31	2			
5	MAJOR AUDIBLE	SD-96188-01	1	DA	3	POS 1
		T-96188-32	1			FL 1
	MINOR AUDIBLE	SD-96188-01	5	AA	3	POS 2
		T-96188-32	5			FL 1
	SERVICE AUDIBLE	SD-96188-01	17	SA	3	POS 3
10		T-96188-32	17			FL 1
	ALARM BATTERY	SD-96188-01	9	AB	3	POS 4
		T-96188-32	9			FL 1
	FLOOR SIGNAL	SD-96188-01	20	F	3	POS 5
		T-96188-32	20			FL 1
15	FLOOR SIGNAL	SD-96188-01	20	OF	3	POS 6
		T-96188-32	20			FL 1
	EXIT SIGNAL	SD-96188-01	21	EP	3	POS 7
		T-96188-32	21			FL 1
	AISLE PILOT	SD-96188-01	26	AP	3,4	POS 8 9 10 11 12 13 14 15
20		T-96188-32	26			CKT 1 2 3 4 5 6 7 8
	MAIN AISLE PILOT	SD-96188-01	28	MP	3,5	POS 15 16 17
		T-96188-32	28			CKT. 1 2 3
						POS
25						POS
						POS
						POS
30						POS
						POS
35						POS
						POS
						POS
40						POS
						POS
45						POS
						POS
						POS
50						POS
						POS
55						POS
						POS
60						POS

L NO	ALARM	DRAWINGS	FIG	REL DES	NOTE	LOCATION
65						POS
						POS
						POS
70						POS
						POS
75						POS
						POS
80						POS
						POS
						POS
85						POS

NOTES FOR INSTALLER

1 FUSES FOR MISC. ALM. RELAYS ARE LOCATED ON

FUSE BOARD BAYS	ROWS
212.5 (24V. ABS)	3
212.6 (24V. SIG.)	1

2 WIRING ONLY

3 EQUIPMENT ONLY WIRING PER T-96188-31

4 ASSIGN AISLE PILOT CIRCUITS AS FOLLOWS

CKT. NO.	ASSIGNED TO	CKT. NO.	ASSIGNED TO
1	207 LINE MINOR	5	209 LINE SERVICE
2	208 LINE MINOR	6	210 LINE MINOR
3	208 LINE SERVICE	7	210 LINE SERVICE
4	209 LINE MINOR	8	210 LINE MAJOR

5 ASSIGN MAIN AISLE PILOT CIRCUITS AS FOLLOWS

CKT. NO.	ASSIGNED TO
1	207-210 LINE MAJOR
2	207-210 LINE MINOR
3	207-210 LINE SERVICE

-SHEETS SHEET 1 WIRING LIST AND TABLE OF EQUIPMENT FOR MISCELLANEOUS ALARM RELAYS T- ISS.

CHART

Fig. 11—Miscellaneous Alarm Relay Unit

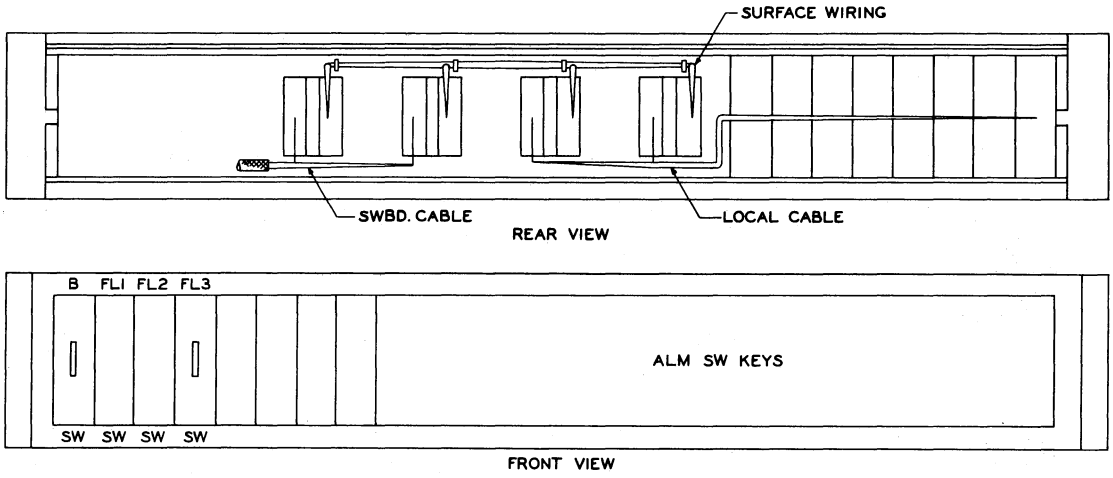


Fig. 12—Alarm Switching Keys and Pilot Lamp Unit

alarm. Ordinarily, one set of audible alarm signals, centrally located, is sufficient for any one floor. However, if one set of these alarms cannot be heard through the entire floor, a second set may be provided.

1.23 Lamp cabinets, aisle, main aisle, other floor and exit pilot lamps, audible signals and switching, cutoff, and control keys are located as specified on job floor plan drawings. In general, the main aisle, other floor and exit pilots and lamp cabinet should be located so as to be plainly visible to the attendants who will have most frequent occasion to supervise the alarm system. The audible signals assembled as shown in Fig. 1 may be located at any convenient point and are placed so as to be clearly distinguishable from any point on the floor. The switching and service keys may be mounted on a wall, column, desk, or relay rack; with centralized control, they may be located on a key unit.

1.24 The alarm key unit is arranged for eight keys and pilot lamps. The service key unit is also arranged for eight keys. These keys and the alarm cutoff keys should be located so as to be conveniently accessible for operating when entering on or leaving the floor. When specified, the keys mounted on the key unit may be provided with guards to avoid accidental operation.

1.25 Where a building is served by a single maintenance force, and includes two or more systems, a distinction between the major alarm signals of each system may be desirable, since the identical tone bar is used to indicate major alarms in all systems. This distinction is obtained by sounding a code of one, two, three, four, or five (maximum) strokes on a bell following the single tone bar signal. This code signal arrangement, covered in SD-95798-01, may also be used to indicate the different floors serving the same type of system. When several alarms are involved, the code signals will be sounded in rotation and all codes will be repeated until the alarms are released. The equipment is mounted on 2-inch mounting plates arranged on a 23-inch relay rack unit serving one system or floor. These units will be located on existing alarm frames or relay racks for the associated system or equipment floor. This circuit is arranged to connect to existing audible and visual alarms, aisle pilot, and floor alarm circuits. The assignment of these code signals to a particular system or floor may be arbitrary and will be determined by the telephone company. A timing feature will bring in a distinctive major alarm, in case of trouble, in the code signaling equipment. Those signals not assigned will not be sounded in the cycling of the circuit.

SUBDIVISIONS OF EQUIPMENT AND DETAILED INDEX

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

EQUIPMENT CODE	RATING OF UNIT	TITLE	EQUIPMENT DRAWING	CIRCUIT DRAWING
J93009A	AT&TCo Std	Miscellaneous Alarm Relay Unit for Relay Rack Bays With 19-Inch Mounting Plates	J93009A-( )	SD-96188-01
J93009B	AT&TCo Std	Miscellaneous Alarm Relay Unit for Relay Rack Bays With 23-Inch Mounting Plates	J93009B-( )	SD-96188-01
J93009F	AT&TCo Std	Major Audible Alarm Unit Arranged for Coded Signaling	J93009F-( )	SD-95798-01

Circuit Schematic Index

CIRCUIT DRAWING	J93009 EQUIP CODE
SD-95798-01	F
SD-96188-01	A, B

2. SUPPLEMENTARY INFORMATION

800-600-000—List of General Equipment Requirement Sections
801-000-000—Equipment Design and General Equipment Requirements and Engineering Information—Common Systems
J97014—801-006-154—Channel Relay Rack
J97025—801-006-155—Angle Relay Rack

3. DRAWINGS

For additional drawings forming a part of this specification, see listings under Subdivisions of Equipment and Detailed Index.

Framework

ED-25269-( )—DPTS and Aisle Pilot Lamp Supports
ED-90470-( )—Jack, Key, and Lamp Signal Cabinet
ED-90517-( )—Lamp Signal Cabinet
ED-90702-30—Designation Cards and Card Holders for Lamp Signal Cabinets
ED-90706-01—Method of Mounting Number Plate, DPTS, and Aisle Pilot Lamp Supports
ED-90707-( )—Number Plate, DPTS, and Aisle Pilot Lamp Support
ED-96188-30—Audible and Visual Alarm Signal Mountings

Wiring and Cabling

ED-60067-01—Typical Unit Local Cable
ED-90976-01—Switchboard Cabling Plan for Relay Rack Units

4. EQUIPMENT

J93009A—AT&TCo Std—Miscellaneous Alarm Relay Unit for Relay Rack Bays With 19-Inch Mounting Plates

Equipment—J93009A-( )

List 1—Framework, assembly, and wiring for a miscellaneous alarm relay unit. (See Note B.)

	WIRE	EQUIP	NOTES
Universal Alarm Ckt SD-96188-01:			
Fig. 101	1-14	As Reqd	A
Fig. 102	15-40	As Reqd	A

Notes

A. Mounting plates, relays, etc, shall be provided as required. Partially equipped mounting plates shall be fully drilled. Individual relay covers are not required. The wiring of the unit is universal. Audible and visual alarm equipment, as required to meet job conditions, shall be furnished in accordance with the following circuits, locating the relays on this unit except when, as in the case of 301C power plants, they are provided as an integral part of the power equipment.

CIRCUIT	FIG. ON SD-96188-01	SEE NOTE
Nondistinctive Major Audible Alarms	3,4,78,79,80,84	5.01
Distinctive Major Audible Alarms	3,4,64,65,66,67, 68,70,71,84	5.02
Minor Audible Alarms	5,6,7,50	5.03
Alarm Battery Supply Audible Alarm	10,76	5.04
Operating Room Audible Alarm	11,12,13,14,39, 40,41,46,49,76	5.05
Power Failure Audible Alarms	15,16,31, 33,51	5.06
Service Audible Alarms	7,17	5.07
Alarm Switching	18,68,69,75,77,81,82	5.08
Visual Signal Floor Alarm Relays	20,21,22, 23	5.09
Exit Pilot Lamps	24	5.10
"Other Floor" Pilot Lamps	25	5.11
Aisle Pilot Relays	26	5.12
Aisle Pilot Lamps	27,87	5.13
Main Aisle Pilot	28,29	5.14
Auxiliary Minor Audible Power Alarm Relay	50	5.15
Multiaisle Service Alarm Relay	34	5.16
Interrupter Relay	35	5.17
Permanent Signal Alarms	8,36	5.18
803C Power Plant Auxiliary Alarm Relays	72	5.19
Alarm Control	42,43,44,48,52	5.20
Alarm Cabinet Lamp	45	5.21
Audichron Converter Announcement Alarm	73	5.23
Noise Sensitive or Loop Closure Connecting Alarm	83	5.24
ESS and TSPS Alarm Connections	85,86	5.25

B. Key units are to be provided only when centralized control is specified. The wiring is universal and equipment shall be provided in accordance with SD-96188-01, Fig. 18, 75, 77, 81, or 82 to suit job requirements. The surface wiring used for cross-connections shall be provided as specified at time of installation. Key spaces shall be provided for all unequipped keys. Key guards shall be provided when specified.

J93009B—AT&TCo Std—Miscellaneous Alarm Relay Unit for Relay Rack Bays With 23-Inch Mounting Plates

Equipment—J93009B-( )

List 1—Framework, assembly, and wiring for a miscellaneous alarm relay unit. (See Note B.)

	WIRE	EQUIP	NOTES
Universal Alarm Ckt, SD-96188-01:			
Fig. 101	1-16	As Reqd	A
Fig. 102	17-48	As Reqd	A

Notes

A. Mounting plates, relays, etc, shall be provided as required. Partially equipped mounting plates shall be fully drilled. Individual relay covers are not required. The wiring of the unit is universal. Audible and visual alarm equipment, as required to meet job conditions, shall be furnished in accordance with the following

circuits, locating the relays on this unit except when, as in the case of 301C power plants, they are provided as an integral part of the power equipment.

CIRCUIT	FIG. ON SD-96188-01	SEE NOTE
Nondistinctive Major Audible Alarms	3,4,78,79,80,84	5.01
Distinctive Major Audible Alarms	3,4,64,65,66,67, 68,70,71,84	5.02
Minor Audible Alarms	5,6,7,50	5.03
Alarm Battery Supply Audible Alarm	10,76	5.04
Operating Room Audible Alarm	11,12,13,14,39 40,41,46,49,76	5.05
Power Failure Audible Alarms	15,16,31, 33,51	5.06
Service Audible Alarms	7,17	5.07
Alarm Switching	18,68,69,75,77,81,82	5.08
Visual Signal Floor Alarm Relays	20,21,22, 23	5.09
Exit Pilot Lamps	24	5.10
"Other Floor" Pilot Lamps	25	5.11
Aisle Pilot Relays	26	5.12
Aisle Pilot Lamps	27,87	5.13
Main Aisle Pilot	28,29	5.14
Auxiliary Minor Audible Power Alarm Relay	50	5.15
Multiaisle Service Alarm Relay	34	5.16
Interrupter Relay	35	5.17
Permanent Signal Alarms	8,36	5.18
803C Power Plant Auxiliary Alarm Relays	72	5.19
Alarm Control	42,43,44,48,52	5.20
Alarm Cabinet	45	5.21

CIRCUIT	FIG. ON SD-96188-01	SEE NOTE
Lamp		
Audichron Converter Announcement Alarm	73	5.23
Noise Sensitive or Loop Closure	83	5.24
Connecting Alarm		
ESS and TSPS Alarm Connections	85,86	5.25

B. Key units are to be provided only when centralized control is specified. The wiring is universal and equipment shall be provided in accordance with SD-96188-01, Fig. 18, 75, 77, 81, or 82 to suit job requirements. The surface wiring used for cross-connections shall be provided as specified at time of installation. Key spaces shall be provided for all unequipped keys. Key guards shall be provided when specified.

J93009F—AT&TCo Std—Major Audible Alarm Unit Arranged for Coded Signaling

Equipment—J93009F-( )

List 1—Framework, assembly, wiring, and common equipment for one major audible alarm unit arranged for 5-coded signaling and equipped for 2-coded signaling.

	WIRE	EQUIP	NOTES
Major Audible Alarm Ckt SD-95798-01:			
Fig. 1 With Z,Y,X,W,T,S,R Wiring	1	1	A,B
Fig. 2,3,4,5,6	1	0	

List 2—Equipment per SD-95798-01, Fig. 2, required in addition to list 1 for a third code. (See Note C.)

List 3—Equipment per SD-95798-01, Fig. 3, required in addition to lists 1 and 2 for a fourth code. (See Note D.)

List 4—Equipment per SD-95798-01, Fig. 4, required in addition to list 1 when the interrupter transfer feature is connected to the interrupter frame or the miscellaneous frame in panel, No. 1 crossbar, crossbar tandem, and No. 4M toll systems.

List 5—Equipment per SD-95798-01, Fig. 5, required in addition to list 1 when interrupter feature is not connected to panel, No. 1 crossbar, crossbar tandem, or No. 4M toll system. (See Notes F, G, H, and I.)

List 6—Equipment per SD-95798-01, Fig. 6, required in addition to lists 1, 2, and 3 for a fifth code. (See Note E.)

Notes

A. This unit, when wired to connecting circuits, is arranged for a maximum of five major audible coded alarm signals sounded in rotation until the alarms are released. The codes may be assigned on a code per floor basis or per switching system or a zone alarm area, as specified.

B. Connect Z wiring when a 2-code signal unit is required.

C. Connect Y wiring when a 3-code signal unit is required.

D. Connect X wiring when a 4-code signal unit is required.

E. Connect R wiring when a 5-code signal unit is required.

F. Connect V wiring in addition to list 5 for use with step-by-step systems.

G. Connect T wiring in addition to list 5 for use with No. 1 ESS or TSPS No. 1 systems.

H. Connect W wiring in addition to list 5 for use with No. 5 crossbar systems.

I. Connect S wiring in addition to list 5 for use with No. 1 ESS or TSPS No. 1 systems.

5. GENERAL NOTES

5.01 One Fig. 78 shall be provided for each terminal or switchroom and for the power room when a power plant without self-contained alarm equipment is used in a toll office that does

not require distinctive major audible alarms. Fig. 79 and 84 shall be substituted for Fig. 78 in a step-by-step or combined step-by-step and toll office. One Fig. 80 and XH wiring shall be provided for the floor from which a power plant with self-contained alarm equipment is supervised. Relay D in Fig. 80 is for the purpose of operating the NV relay shown in Fig. 33 in order to extend major power alarms to the PF bells and OF lamps on other floors as described under 5.06. T wiring is to be provided when 60 ipm is obtained from a relay interrupter circuit actuated over the ST lead. When 60 ipm is obtained from a ringing machine or ringing machine interrupter circuit, use S wiring and lead IR. One Fig. 4 shall ordinarily be provided for each Fig. 78 or 79. However, where difficulty is anticipated in hearing the signal, additional signals may be provided by specifying Fig. 3 in addition to the extra Fig. 4. YQ apparatus is for 24-volt operation; YR apparatus is for 48-volt operation. The signal mounting is covered by ED-96188-30, Group 44.

5.02 One Fig. 64, 70, and 71 shall be provided for each terminal or switchroom and for the power room when a power plant without self-contained alarm equipment is used in a toll office that requires distinctive major audible alarms. Fig. 66 shall be substituted for Fig. 64 if a power plant with self-contained alarm equipment is provided. Fig. 65 and 67 shall be substituted for Fig. 64 and 66, respectively, and Fig. 84 added in a step-by-step or combined step-by-step and toll office.

5.03 One Fig. 5 shall be provided for each terminal or switchroom and for the power floor when a power plant without self-contained alarm equipment is used. However, only one Fig. 5 is required on a combination floor with a power plant operating the same signals as the terminal or switch equipment. L wiring shall be provided only for the terminal or switch floor from which a switchboard is maintained. Fig. 6 and R wiring are required for the terminal or switch floor from which a 301C power plant is supervised. One Fig. 7, MA subset, shall ordinarily be provided for each floor. A multiple may be provided when required. The subset uses the same mounting as the signal covered in 5.01. One Fig. 50 shall be provided for each power plant other than those with self-contained alarm equipment.

5.04 Provide one Fig. 76 per building for each alarm battery supply. One Fig. 10 shall ordinarily be provided for each terminal or switch floor or power room with power plant not having self-contained alarm equipment. The Fig. 10 for floors served by the same alarm battery supply shall be multipled together. Additional Fig. 10 may be included in the multiple on any floor if one set does not provide adequate coverage. R wiring shall be provided on the terminal or switch floor from which the alarms for a 301C power plant are supervised. The AB subsets are to be located on the common signal mounting mentioned in 5.01.

5.05 When specified, an audible alarm signal per Fig. 13 shall be provided for the operating room. This signal shall be provided with a cutoff key per Fig. 14. A timing circuit per Fig. 11, 12, or 41, and 47 shall be provided. Fig. 11 is for panel, crossbar, and toll switching system No. 4. Fig. 12 is for step-by-step or combination step-by-step and toll systems. Fig. 41 and 47 are for use when the toll operating room is located in a building without a dial system office. YO apparatus is provided for 24-volt operation; YP for 48-volt operation. The key and signal mounting is covered by ED-96188-30, Groups 22 through 31. The MB relay shown in Fig. 47 shall be mounted on a miscellaneous basis. Provide Fig. 39, 40, and 46 for additional alarms as required.

5.06 Provide one Fig. 15 for each terminal or switchroom and one Fig. 51 for each power room other than those having plants with self-contained alarm equipment. One Fig. 51 and one Fig. 15 shall be provided for each combination power and terminal or switch floor with power plants without self-contained alarm equipment. Provide W wiring for unattended or partially unattended offices with control equipment to cut off audible and visual signals; otherwise, provide Z wiring. ZP wiring and Fig. 31 shall be provided when a ringing power plant other than the 803C plant is located with terminal or switchroom equipment. ZO wiring shall be provided when the ringing machine is located in the power room. Fig. 16 shall be provided as specified, although in general only one bell is required for each terminal or switchroom and for the power floor when a power plant without self-contained alarm equipment is used. However, only one bell is required on a combination floor with a power plant operating the same signals as the terminal or switch equipment. YS apparatus is provided for 24-volt operation; YT for 48-volt operation. A maximum of three Fig. 16 per floor

may be provided. One Fig. 33 shall be provided for the terminal or switch floor from which a 301C power plant is supervised and for each power floor except a power floor with a 301C power plant. This relay is for the purpose of operating the PF bells and OF lamps on other floors of the building and in the same maintenance area whenever a major power trouble occurs. One Fig. 33 provides operating leads for four floors. Additional Fig. 33 shall be provided as required. The 6-inch bell shown in Fig. 16 is located on the signal mounting mentioned in 5.01.

5.07 When service alarm equipment is specified, one Fig. 17 shall be provided for each terminal or switchroom, combination terminal or switch and power room, and power floor having a power plant without self-contained alarm equipment. One Fig. 7, SA subset, shall ordinarily be provided for each floor. A multiple may be provided when required. R wiring shall be provided on the terminal or switch floor from which a 301C power plant is supervised. The subset shall be located on the signal mounting covered in 5.01.

5.08 Provide one Fig. 18 and 77 for each terminal or switch floor, combination terminal or switch and power floor, or power floor with plant without self-contained alarm equipment when service alarms and provision for grouping floors together during the light load period are specified. When alarm grouping without service alarms is required, provide Fig. 77 only. Unless otherwise specified, the grouping shall be progressive from the lower toward the higher numbered floors. Fig. 18, with Q apparatus, shall be specified when the keys are to be mounted on a desk; Fig. 18, with U apparatus, is to be specified when the keys are mounted in a lamp cabinet or on the power board; Fig. 18, with V apparatus, is to be specified when centralized control is specified and the keys are located on J93009B relay rack units. XJ, XK, and XA apparatus shall be substituted for Q, U, and V apparatus when Fig. 77 is provided. Provide Fig. 82 and 45 or 69 instead of Fig. 18, or Fig. 81 and 75 instead of Fig. 19, when the keys must be wall mounted. One Fig. 68 and YD wiring per Fig. 75 or 77 shall be provided when distinctive major audible alarms are required. Alarm switching pilot lamps per Fig. 45 or 69 shall be provided as required.

5.09 One Fig. 20 shall be provided for each terminal or switch floor and for a power floor when the power plant does not have self-contained alarm equipment. Only one Fig. 20 is required on a combination floor where the power equipment is located with the terminal or switch equipment and operates the same signals. One Fig. 21 shall be provided per terminal or switch floor for each four other floors in the same operating area. One Fig. 23 shall be provided per power room for each four other floors in the same operating area. In the case of power plants with self-contained alarm equipment, Fig. 23 is associated with the terminal or switch floor from which the power plant is supervised. Provide W wiring for unattended or partially unattended offices with alarm control equipment; otherwise, provide Z wiring. One Fig. 22 shall be provided for each operating room. This provides one contact for lighting the OF lamps on other floors, one contact for lighting the operating room red exit lamp, and four contacts for lighting operating room exit lamps located on other floors. Where indications are required on more floors, another Fig. 22 may be provided which will care for exit lamps on five additional floors.

5.10 Exit pilot lamps per Fig. 24 shall be provided as specified. YQ apparatus is for 24-volt operation; YR apparatus is for 48-volt operation. A set may be located by each exit or in each main aisle. These lamps are required on each terminal or switch floor, operating room floor, and power floor with power plant not having self-contained equipment. Where a 301C power plant is used, equivalent lamps are provided in the main control board. Lamp mountings are shown in ED-96188-30, Groups 1 through 33. A socket and wiring shall be provided on each floor for each floor of the building in the same operating area. In the operating room, a red lamp shall be provided in the socket corresponding to the operating room floor. On other floors, no lamp shall be provided for the socket corresponding to the floor upon which the lamps are mounted unless specifically requested.

5.11 "Other floor" pilot lamps per Fig. 25 shall be provided for each terminal or switchroom or power room having a plant other than the 301C plant. YQ apparatus is for 24-volt operation; YR apparatus is for 48-volt operation. One or more lamps may be provided per floor. They may be located in each main aisle or at the end of one or more cross-aisles. They can be mounted by themselves using a lamp mounting per ED-96188-30, Group 7, 12, or 17, or with the main aisle pilot lamps covered in 5.14.

5.12 For terminal and switch floors, provide one aisle pilot relay per Fig. 26 for each class of alarm (fuse or no-voltage, miscellaneous, service, and permanent signal) originating in the aisle. Provide W wiring for unattended or partially unattended offices when alarm control equipment is specified; otherwise, provide Z wiring. Where no main aisle pilot lamps are required, Fig. 26 may connect to Fig. 20. With main aisle pilots, Fig. 26 connects to Fig. 28 (see 5.14). In the case of panel and crossbar equipment, the majority of the relays controlling the aisle pilot lamps are shown on various individual circuits. Power boards lined up with aisle equipment shall be considered as part of the associated aisle.

5.13 One aisle pilot lamp per Fig. 27 shall be provided per terminal or switchroom aisle for each class of alarm originating in that aisle. Red lamps shall be provided for fuse or no-voltage alarms, green for miscellaneous alarms, amber for service calls, and white for permanent signal indications. YQ apparatus is for 24-volt operation; YR apparatus is for 48-volt operation. Normally, one set of aisle pilot lamps is provided for each aisle. However, when specified, or when subscribers calling in signals or 2-way trunks for use with testboard answering appear in the aisle, a second appearance of the aisle pilot lamps shall be provided at the opposite end of the aisle. Aisle pilot lamps are located in brackets mounted at the end of the aisle and supported by the frame or end guards. The mountings are covered on ED-96188-30, Groups 1 through 6. Fig. 87 shall be substituted for Fig. 27 when ESS-type frames are provided.

5.14 When required, provide one Fig. 28 for terminal or switch floors for each class of alarm appearing in a cross-aisle when the aisle pilot lamps in this cross-aisle are not visible from the principal maintenance point (usually the main aisle). Main aisle pilots per Fig. 29 shall be provided in the main aisle at one or both ends of the cross-aisle as specified. YQ apparatus is for 24-volt operation; YR apparatus is for 48-volt operation. The color assignment of the main aisle pilot lamps shall be the same as the associated aisle pilot lamps. Main aisle lamps shall also be provided for groups of equipment that are in a semidetached location or that ordinarily do not function with aisle equipment, such as power plants located on terminal or switch floors. Main aisle pilot lamp mountings are shown on ED-96188-30, Groups 7 through 11. OF lamps covered in 5.11 may also be located on these mountings together with the necessary main aisle pilot lamps.

5.15 Provide one Fig. 50 for each power plant without self-contained alarm equipment. This figure is required when the power plant is located with the terminal or switch equipment as well as when it is on the power floor.

5.16 Where calls may be answered in more than one aisle, as in the case of an order wire circuit, a multiaisle pilot relay per Fig. 34 shall be provided for each four aisles in which the call may be answered. These relays operate the aisle pilot relays for service alarms (A lead).

5.17 For toll and step-by-step offices, one Fig. 35 shall be provided to serve all floors in the same operating area. One relay will serve a maximum of nine floors including the power floor. W wiring shall be provided in unattended or partially unattended offices with alarm control equipment; otherwise, provide Z wiring.

5.18 For step-by-step offices, provide one Fig. 36 and one Fig. 8 per floor. The buzzer is located on the signal mounting covered in 5.01.

5.19 When the 803C ringing power plant is located with terminal or switchroom equipment, provide one Fig. 72 for the floor containing the ringing power plant. Battery and ground for operating the alarm relays on this power plant shall be furnished as covered in SD-96188-01, Note 205.

5.20 For unattended or partially unattended offices where means are required to cut off visual and audible signals, provide one Fig. 42 and one Fig. 44 per office and a sufficient number of Fig. 43 per floor to serve the number of alarm figures requiring connection on that floor. Provide one Fig. 48 per floor to silence the ringers. Control lamp and key mountings are covered in ED-96188-30, Groups 32 and 33. Provide one Fig. 52 in addition to Fig. 42 when more than three BG leads are required.

5.21 Provide individual alarm lamps per Fig. 45 for power alarms for plants not having self-contained alarm equipment. YQ apparatus is for 24-volt operation; YR apparatus is for 48-volt operation. W wiring shall be provided in unattended or partially unattended offices with alarm control

equipment; otherwise, provide Z wiring. These lamps are located in a lamp signal cabinet associated with the power plant. One lamp signal cabinet per J99208 shall be provided as required for each power room when a power plant containing alarm equipment is not provided. The cabinet shall be located as specified at some point clearly visible from a position in front of the power board. When located upon a wall or column, the cabinet shall be mounted with the bottom edge approximately 6 feet 6 inches from the floor. The wiring to the cabinet shall preferably be run from cable rack to cabinet in conduit using a size large enough to care for the maximum capacity of the cabinet. The lamps in the annunciator cabinet shall be numbered left to right and top to bottom starting in the upper left-hand corner. Guard lamps shall start with the last or highest numbered lamp and continue to the lowest numbered lamp. A card holder and designation card per ED-90702-30, Group 1 or 2 shall be provided for each 42-lamp capacity cabinet and for one or two 5-lamp capacity cabinets. The card holder shall be mounted directly below the cabinet. Other types of cabinets are provided with designation strips. The designation strips or cards shall be filled out to suit job conditions. Printed characters (3/8 inch) shall be used for the cards where possible.

Bell Telephone Laboratories, Incorporated

Dept 5224

5.22 When ground is required at a unit terminal strip punching, it may be obtained by connecting a spare lead to the ground terminal provided with the relay.

5.23 Provide one Fig. 73 when an alarm for a No. 4A Audichron converter announcement system is required.

5.24 One Fig. 83 shall be provided when paired alarm leads are required.

5.25 Where alarm grouping to or from electronic switching or traffic service position systems is required, one Fig. 85 shall be provided. Provide one Fig. 86 for alarm connections where electronic switching or traffic service position systems power alarms are not supervised in their own area.

List of A&M Only and Mfr Disc. Equipment

EQUIPMENT	RATING	DETAILS LAST SHOWN IN ISSUE	REPLACING EQUIPMENT
J93009C	Mfr Disc.	1	—
J93009D	Mfr Disc.	1	—
J93009E	Mfr Disc.	1	J93009F

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.