

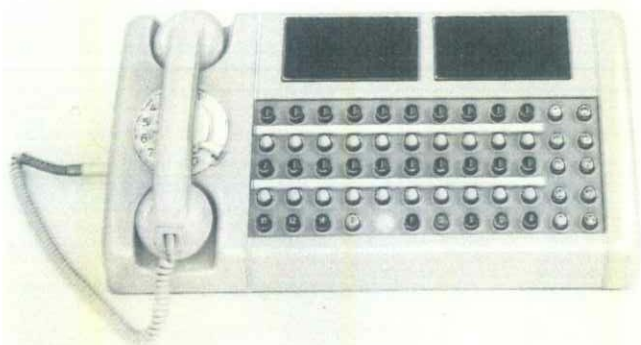


Series 30 PABX Automatic Telephone System



STROMBERG-CARLSON

SERIES 30 PABX Automatic Telephone System



Private Automatic Branch Exchange

In operation, versatility, style and ease of maintenance the Series 30 PABX is an engineering masterpiece. It is a fully automatic telephone system combining all the advantages of modern telephony with several exclusive features to give organizations of all types the very finest communications setup available. Furthermore, it is compatible with all other standard telephone systems.

The Series 30 PABX is ideally suited for use where initial requirements consist of 20 telephones and 2 central office trunks. It can be readily expanded all the way up to 100 station lines and 20 central office trunks as your needs increase. It offers a wide variety of services and features.

STANDARD FEATURES

- Cordless Operation**
- Keysender Operation**
- Busy Lamp Field**
- Call Storage (Camp-On)**
- Restricted Service**
- Night Service**
- Rotary Hunting**
- Busy Override**
- Consultation and Call Transfer**
- Disconnect Recall and Holding**
- Lockout**
- Executive Right-of-Way**
- Station Answering of Trunk Calls**
- Power Failure Cut Through (on first trunk only)**
- Auxiliary (Overflow) Links**
- Attendant's Service Line**
- Plug-in Cabling**

OPTIONAL FEATURES

- Code Call (25 or 125 code capacity)**
- Conference Service**
- Area Paging**
- Toll Restriction**
- Tie Lines**
- Long Line Adapters**
- Second Night Station**
- Operator Monitoring**
- Dictation Adapter**
- Message Waiting Signal**
- 2nd Attendant's Service Line**
- Multiple Trunk Groups**
- Call Distribution**
- Inward Dialing**
- Multiple Stations on One Trunk**
- Extending Trunk to Trunk Calls**

FUNCTIONS OF STANDARD FEATURES:



CORDLESS OPERATION

Attendant controls all operations with push buttons. No plugging in required.



KEYSENDER

Enables operator to signal all station lines by operating in succession keys corresponding to the digits of the desired station.

10	11	12	13	14	15
20	21	22	23	24	25
30	31	32	33	34	35

BUSY LAMP FIELD Visually shows all lines currently in use. Cut-off button provided to extinguish lamps when attendant is not on duty.

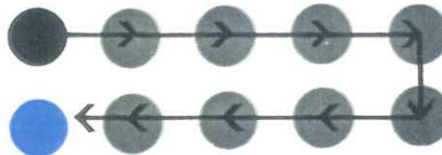


CAMP-ON Allows incoming calls to a busy station to "camp-on" until station is free. Call is completed without further action by attendant. A lamp signal indicates when "stored" call has been answered.

RESTRICTED SERVICE

Lines can be arranged for service classes as follows:

- Class A: Direct access to central office by dialing trunk code.
- Class B: Semi-restricted access to central office by dialing attendant's code and having her make the connection.
- Class C: Restricted to intercommunications; no access to central office trunks.



ROTARY HUNTING Any group of consecutive lines may be arranged for consecutive selection of an idle line. If the first line is busy the connector will automatically step to the next and so on until an idle line in the rotary group is found.

NIGHT SERVICE (N1)

Converts any extension into a night station to receive incoming calls from any or all trunks. Local as well as outgoing calls can be made in the normal manner from all stations including the night station.

(continued on next page)

STANDARD NIGHT (N1) SERVICE

A standard feature on all Series 30 systems. Provides for the automatic connecting of incoming trunk calls to predetermined PABX stations. These "Night Stations" are chosen by the subscriber with the help of his telephone company and are physically assigned by strapping on trunk selector switches. Standard Night Service (N1) permits two basic arrangements with variations:

1. One Night Station per trunk.
2. One Night Station for two or more trunks. For example, in a typical five-trunk situation, the following assignments are possible:
 - a. One station for all five trunks, or a total of one Night Station;
 - b. One station for one trunk and one station for remaining four trunks, or total of two Night Stations;
 - c. One station for one trunk, one station for two other trunks, and one station for remaining two trunks, or a total of three Night Stations;
 - d. One station for each of three trunks and one station for remaining two trunks, or a total of four Night Stations;
 - e. One station per trunk for a total of five Night Stations.

Changes in the station-trunk arrangement can be made by rearranging the strapping on the trunk selector switch. If a particular Night Station is busy when an incoming call comes through, the station user hears a faint ring tone.

He may then clear his Night Station by terminating his conversation or by transferring the existing call to another station. When the user hangs up, the Night Station will ring automatically, and the new call may be answered.

Standard Night Service also allows intercommunication between individual Night Stations by dialing the appropriate station number(s). All non-restricted stations may originate trunk calls by dialing the trunk access number.



BUSY OVERRIDE A part of the "Camp-On" feature. Allows attendant to cut in and inform busy extension user of a waiting call. Party may either accept the call immediately or have it "stored."

CONSULTATION & CALL TRANSFER

If party engaged in an outside call wishes to talk with someone else in the building, he merely pushes his transfer key. This holds the trunk and connects his station to a PABX link allowing him to dial an inside station or a central office trunk. A conversation may then be carried on without the original trunk party hearing. At the end of the consultation call, either the original party or party called for consultation may connect to the trunk by operating his transfer key. In this way calls may be transferred without the help of an attendant.

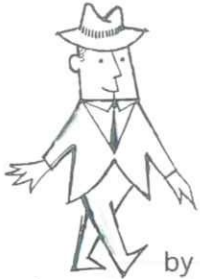
DISCONNECT RECALL & HOLDING

Provides the holding of a central office trunk following completion of a call. (Central office connections are normally released as soon as the inside party disconnects.) The attendant operates her holding key and, upon station disconnection, she is signalled automatically. A valuable feature when a caller wants to speak to several parties, or when time and charges must be requested from the long distance operator.

LOCKOUT



Equipment is arranged so that links release when no dialing takes place within 20 to 30 seconds after seizure. This prevents unnecessary holding of links due to line trouble or other artificial conditions.



EXECUTIVE RIGHT-OF-WAY

Gives designated stations the privilege of cutting in on a conversation, thereby connecting with both original parties. A subdued warning signal is continuously applied when Executive Right-of-Way is being exercised. If person making call wants to speak privately with called party, he requests that both parties hang up. Called party will then be rerung automatically.

STATION ANSWERING

Allows for handling of incoming telephone traffic when switchboard is unattended. May be used in place of Supplementary (N2) Night Service.

Incoming calls are signaled by ringing of chimes or gongs throughout office or plant. Person hearing the signal may intercept the call by picking up the receiver of any non-restricted PABX telephone and dialing the trunk answering code (generally "11"). Once this code is dialed, the incoming call is completed automatically and signaling ceases. Central Office dial tone will be heard if the call has already been answered.

At an additional cost, a separate code may be assigned for answering incoming calls so that party making an outgoing call cannot accidentally answer an incoming call or so that stations restricted from automatic trunk access can answer an incoming call when station answering is in effect. A busy tone is heard if call has already been answered. Attendant auto-

matically puts station answering into effect by turning the "SA" key when she closes her board.

ELIMINATION OF ATTENDANT'S SET

Station Answering can be used to replace an attendant since any group of employees designated to answer calls may also transfer them throughout the PABX system.

POWER FAILURE CUT THROUGH

Provides automatic, instantaneous connection of the first central office trunk to a designated line should total power failure occur. This safeguard can also be provided for other trunks.

AUXILIARY (OVERFLOW) LINKS

Permits full utilization of trunks whether regular links are available or not. If all regular links are in use, station user hears a special dial tone indicating that he has seized an auxiliary link. He can then make a trunk call by dialing the usual code.

RELEASE OF LINKS ON TRUNK CALLS

Links are automatically released when a Central Office Code is dialed. Links are not used for extending incoming trunk calls to PABX stations.

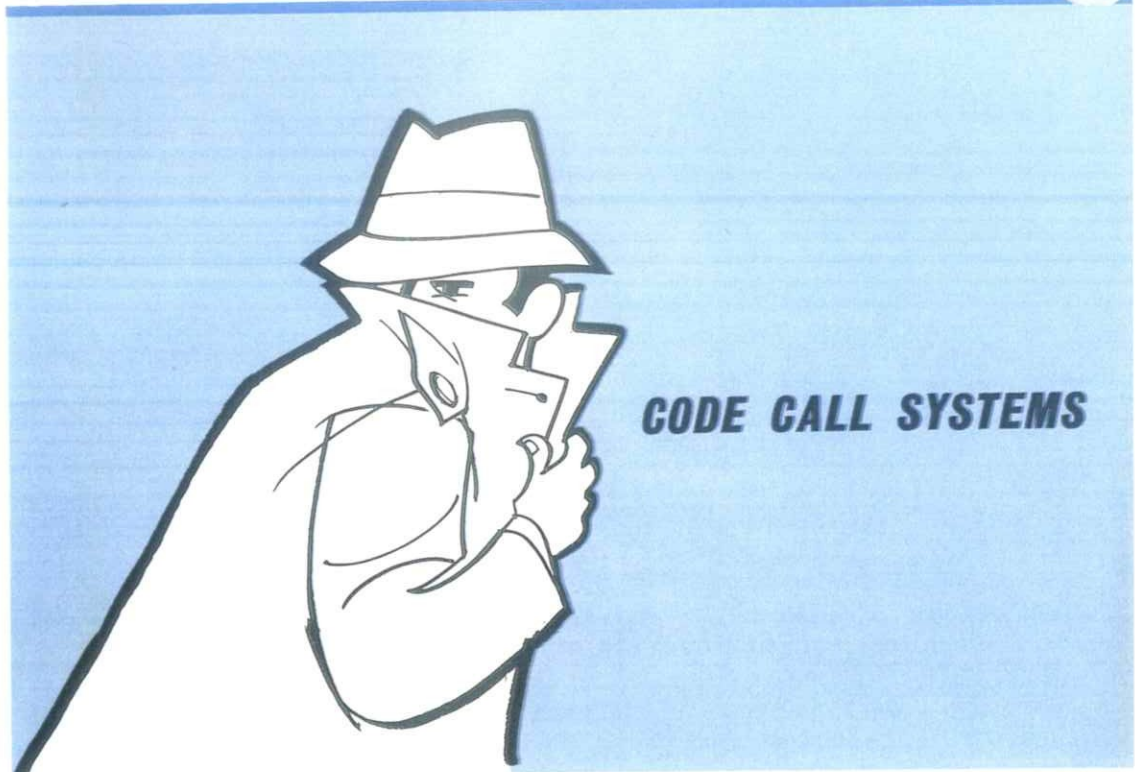
PLUG IN CABLING

Cables which inter-connect the equipment racks will have both ends terminated on the racks in the factory. The other ends of the cables have plugs terminated on them and need only be connected together to complete the inter-rack cabling.

ATTENDANT'S SERVICE LINE

A line on the attendant's position, equipped with a pushbutton and lamp, that can be reached from stations by dialing "22." The attendant can make intercom calls to stations in the system on this line.

FUNCTIONS OF OPTIONAL FEATURES:

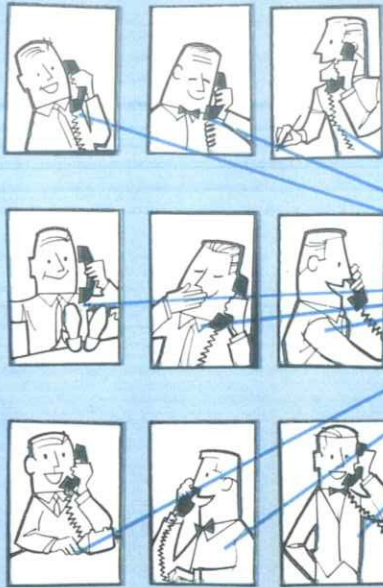


Code Call Systems are available in code groups of 25 and 125.

Signalling may be audible, visual, or both. In areas where audible signals are required, chimes, horns, or single stroke bells are recommended. In areas where silent signals are preferred (conference rooms, executive offices, etc.), wall-mounted lamps are recommended.

Method of operation is extremely simple. Calling party dials the access code followed by the called party's personal code. For example, if the access code is "88" and Mr. Smith's personal code is "231," caller dials "88-231." After party has dialed, the code call circuit transmits the appropriate signals. In the case of "231" the signals will be heard as two sounds in rapid succession, a pause, three sounds in rapid succession, a pause, and then one sound. Following a longer pause, the signal is repeated. Signalling continues in this manner until party answers, or caller abandons call by replacing the handset.

Upon hearing his code, Mr. Smith goes to the nearest telephone, and dials the code call answering access code. For example, if the access code is "89," called party dials "89" and is connected with the calling party. All signalling stops as soon as the answering code is dialed.



Permits the connecting of several PABX stations for conference. Station users wishing to join in dial a special code number. A central office trunk may also be included in the hookup.

To arrange a conference, each participating party dials the conference code from his station. He enters the conference circuit automatically, stays as long as he wants, and hangs up when he is through.

The conference group is connected to a central office trunk by the PABX attendant. When notified by one of the conferees that an outside party is to be included, she dials the desired party over a CO trunk.

Then, she connects the trunk to the conference and clears from the connection. An incoming trunk call may be connected to a conference in the same manner. Station users in the PABX conference may leave the circuit singly or as a group. When the last station user disconnects, the trunk is automatically released.

If the group wishes to continue its conference without the outside party, a conferee leaves the line temporarily and notifies the PABX attendant. She disconnects the trunk from the conference by connecting to the proper trunk and pressing her disconnecting (D) key. The "inside" conference continues as before.

Equipment can also be provided for any PABX party to transfer a trunk party to the conference by momentarily operating the hold and transfer key and then dialing the conference code.



TOLL RESTRICTION ADAPTER

(Codes 0, 10, 112, 110 or 0, 12-19 and 10)
—The Toll Restriction Adapter Circuit makes it possible to prevent a few or all stations from placing toll calls. If a toll number (0, 10, 112 or 110) or (0, 12-19 or 10) is dialed, automatic lock-out occurs and busy tone is returned to the calling station. The Toll Restriction Adapter has no effect on local calls. However, it enables the PABX attendant to place and keep a record of all toll calls. This service is particularly valuable in motels and related non-restricted telephone service areas.

UNIVERSAL TOLL RESTRICTOR

A Universal Toll Restrictor may be provided which will restrict or pass any code which is strapped into the Restrictor. (Maximum of six digits per code.)

The Restrictor is mounted external to the equipment racks on a wall mounted frame. This feature now operates on 24 volts and no longer requires a separate 48-volt power supply.

MULTI-OFFICE CODES

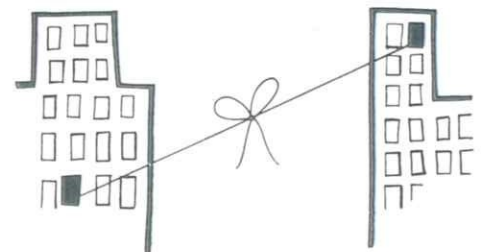
A universal toll restrictor can be provided where multi-office codes must be restricted.

MULTIPLE TRUNK GROUPS

An arrangement can be provided whereby the 20 trunks may be assigned in various combinations into two, three, four, five or six groups, each with its own code.



Similar in operation to Code Call Service. An access code is provided for reaching the equipment. Amplifiers (not furnished) provide instantaneous, one-way voice paging. Since no answering access code is provided, the message must include specific instructions, i.e. "Mr. Smith, please call your office," etc. Only one party has paging access at a time.



TIE LINE SERVICE

Interconnects two PABX systems so that calls may be dialed from either one to the other. Outgoing calls are handled through the Tie Line automatically. The station user dials the Tie Line access number followed by the desired number in the distant PABX. Incoming calls over the Tie Line are received without attendant assistance. Central office trunk calls which must be transferred over the Tie Line are handled by the attendant.

CALL DISTRIBUTION SYSTEM

A Call Distribution System may be interconnected to the Series 30 PABX to uniformly distribute a heavy volume of incoming trunk calls to a number of attended positions. Ideally suited for reservation services, order departments, stock exchanges, large resorts, etc. Calls to other departments are handled by the regular Series 30 PABX. Calls may be transferred between the two systems.

INWARD DIALING

The Standard Series 30 PABX (including existing installations) may now be arranged for inward dialing by providing a trunk circuit similar to existing Series 30 trunks.

An installation of this type will accommodate 100 lines and may be thought of as replacing a 100-line connector group in the associated central office. The central office must be arranged with trunks on a selector level to provide access to the trunk in the PABX. In a 7-digit central office, 7 digits only are required to reach an extension on the PABX. The first 5 digits give access to the PABX trunk. The final two digits "22" are assigned to the PABX attendant. The final 2 digits "11" are not used. The remaining 98 combinations are assigned to station lines in the PABX.

Calls dialed directly to a PABX station can be transferred to other stations by means of a transfer key on the station as in the Series 30. Calls dialed to the attendant ("22") are handled in the normal manner. Outgoing access to trunks, call transfer, and flashing under control of the key on the telephone are provided as in the regular Series 30. Station users dial

"11" to reach a trunk for outgoing calls. Alternate special arrangements may be made to use single digit codes, such as "9" and "0" to access trunks and attendant. Station answering is not considered suitable for use with PABX's equipped solely with the Inward Dialing feature. Inward Dial access to features such as area paging, tie lines, conference circuits, etc. can be restricted.

In order to match battery voltage from the central office, a low drain 48 volt power supply must be provided for Inward Dial Trunks.

LONG LINE CIRCUIT

Extends the usual 400 ohm supervision range of the switchboard to reach distant telephone. Equipment is available for loops up to 1000 or 2000 ohms. The transfer key signal is also repeated by this circuit.



Permits special incoming and outgoing telephone service whenever switchboard is unattended. An indispensable service for night watchmen and personnel in offices, libraries, laboratories, etc., who have to work after hours, or on weekends and holidays.

Two variations of Special Night Service are available: **Supplementary or Night ("N2") Service**; and **Multiple Stations on One Trunk**. While both are similar in nature, each is designated to provide a specific service.

A. NIGHT (N2) SERVICE

(Provided in Lieu of Station Answering)

Identical to N1 Service except that a new group of stations is used which may or may not include those chosen for N1 Service. N1 Service may be used for night shift personnel, and N2 Service for watchmen and gate guards or during weekends, vacations, etc. **Note: N1 and N2 services are not engineered to function simultaneously.**

B. MULTIPLE STATIONS ON ONE TRUNK

Must be used in conjunction with either N1 or N2 Service. This is a "party line" arrangement with no provisions for calling between the selected stations. However, a station may initiate calls singularly as on a party line. One station is assigned as the Primary Night Station. The other stations are automatically switched from their normal daytime numbers to the same number as the Primary Night Station. Thus, an incoming call will ring all assigned stations. When closing her board, the attendant turns either the N1 or N2 button to put this service into effect.

NOTE: Caution must be exercised in selecting the number of stations assigned and the length of line involved. An excess of either or both may cause inferior ringing in all stations. Planned properly, no trouble should be encountered.



MESSAGE WAITING SIGNAL

A popular feature in motels, hospitals, and industrial organizations. If party is out when a call comes in, attendant cuts in and takes the message or number to be called. She then pulls the appropriate button on the Message Waiting Key Panel (Fig. 6). This causes a small lamp on the room or office phone to flash repeatedly. When called party returns, he notes the flashing light and calls the PABX attendant for the message. The Message Waiting Lamp does not interfere with normal telephone service. Prior to calling the PABX attendant, the party may place or answer other calls. However, flashing ceases only when attendant has delivered the message and restored the key to its normal position.

DICTATION ACCESS ADAPTER

When telephone dictation equipment is to be used with this system, an access adapter can be provided for use with the dictating recorder and control trunk which is furnished by the dictation equipment manufacturer.

EXTENDING TRUNK- TO-TRUNK CALLS

Incoming trunk or tie line calls may be extended to another trunk or tie line by the attendant.

2ND ATTENDANT'S SERVICE LINE

The attendant's set is arranged for one attendant's service line. A second attendant's service line may be furnished optionally.

DESCRIPTION OF EQUIPMENT

LINE EQUIPMENT

Each station line requires only two wires plus local ground and is terminated on a two-relay line circuit. When a station user removes the handset from its cradle, thus closing the line circuit, the line-finder connects to his line and extends his call through the link relays to the associated connector. Station line resistance, not including station resistance, may be as high as 400 ohms. First choice links are as follows:

Odd Nos.: 11-35 (61-85) 1(7)

Even Nos.: 12-36 (62-86) 2, 3 (8, 9)

Odd Nos.: 37-59 (87-09)

CT1 (CT3) 4 (10)

Even Nos.: 38-50 (88-00)

CT2 (CT4) 5, 6 (11, 12)

SWITCHING AND RELAY EQUIPMENT

Series 30 switching equipment employs a relay-switch type link with a rotary switch (Fig. 1) serving as a line-finder and a step-by-step (rectangular motion) switch (Fig. 2) as the connector.

Trunk switching equipment consists of relays (Figs. 3 and 4) with associated rotary switches (Fig. 1). The latter serve as line-finders on central office calls.

Both the Type 70 (Fig. 3) and 56A (Fig. 4) relays are of the very finest material and workmanship. Dual contacts and bifurcated springs are employed, assuring uniform pressure and reliability in dusty or polluted atmospheres. Precious metal contacts assure dependable contact resistance and resist corrosive atmospheres.

EQUIPMENT RACK FEATURES

All inter-rack wiring is supplied on a plug and jack basis to facilitate installation. All circuit plates on both the line and trunk racks are supplied on a plug-in basis. Line circuits are furnished with ten line circuits per plug-in plate.

The Series 30 provides for individual metal covers for all Links, Line Circuits, Trunk Circuits, Common Control Equipment, etc. Each cover is easily removed for servicing purposes. An optional arrangement provides for individual dust covers PLUS an attractive 4-door metal cabinet of gray hammertone finish. The cabinet must be ordered at the time of original installation. (Fig. 5)

The cable rack and cable to attendant's set are not included in basic Series 30 equipment.

EQUIPMENT MOUNTING FEATURES

The Series 30 equipment racks (Fig. 12) are 6 ft. 8 in. high. Interconnection of rack is made through plug and jack arrangement.

COMMON EQUIPMENT

The plug-in ringing machine (Fig. 7) operates only when actually needed and furnishes the following features:

- Conventional dial, busy and ring-back tones with 25 cycle ringing at 60 volts. Ringing is applied for one second, silent for four;
- Special dial tone and override warning signal, i.e., ticking pulses at half-second intervals;
- Flashing ring-back and busy signal for the trunk supervisory lamp;
- Test allotter for call storage feature.

A plug-in, electronic Interrupter Circuit furnishes uniform, high-speed stepping pulses for the searching and homing action of all rotary switches. This eliminates the usual variation in switch stepping speed.

Alarm Circuits are provided which activate a lamp in the attendant's set in the event of a trouble condition. A fuse alarm lamp is located in the equipment racks and a provision is also made for optional bell or buzzer trouble signals.

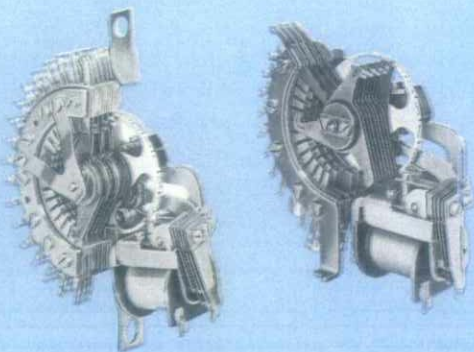


Fig. 1: Rotary Switches

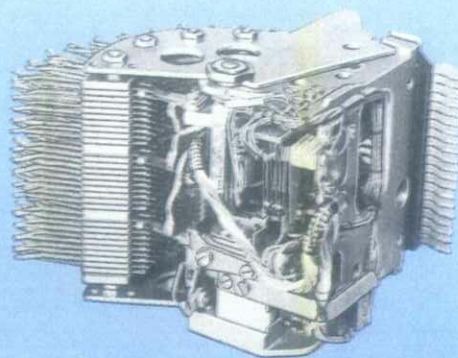


Fig. 2: Rectangular Motion Switch

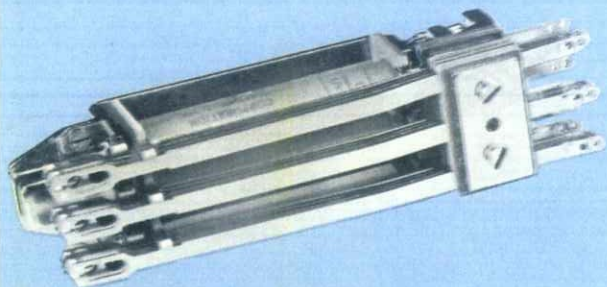


Fig. 3: Type 70 Relay

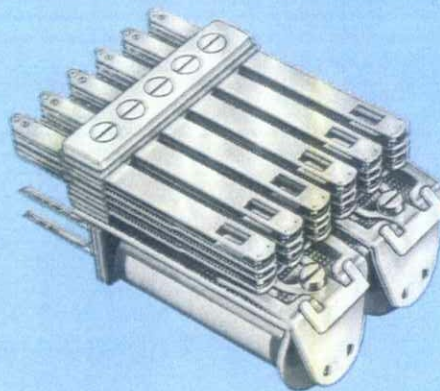


Fig. 4: Type 56A Relay



Fig. 6: Message Waiting Key Cabinet

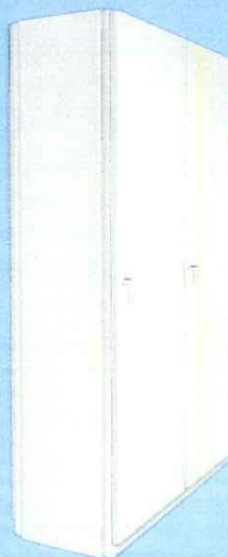


Fig. 5: 4 Door Metal Cabinet

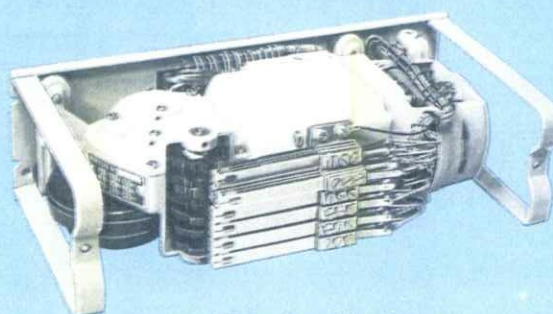


Fig. 7: Ringing Machine

WIRED	RECTIFIER RECOMMENDED (AMP.)	BATTERY RECOMMENDED (AMP.-HOUR) (8-HOUR RATE)	BATTERY ELIMINATOR RECOMMENDED (AMP.)
6 - 50 - 6	3.0	100	6
13 - 50 - 6	6.0	120	12
20 - 50 - 6	12.0	200	24
6 - 100 - 12	6.0	100	12
13 - 100 - 12	12.0	160	24
20 - 100 - 12	12.0	200	24

CAPACITY CHART

The following chart indicates the maximum and minimum capacities for the various Series 30 models. Any quantity of trunks, lines and links, between the minimum and maximum, can be supplied.

One, 122 conductor cable; one, 104 conductor cable and one, 20 AWG Wire for ground connections are required for a 20 trunk attendant's cabinet. This will accommodate maximum initial and future requirements.

WIRED	TRUNKS		LINES		LINKS		AUXILIARY LINKS
	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	
6 - 50 - 6	2	6	20	50	2	6	1
13 - 50 - 6	7	13	20	50	2	6	1
20 - 50 - 6	14	20	20	50	2	6	1
6 - 100 - 12	2	6	60	100	6	12	2
13 - 100 - 12	7	13	60	100	6	12	2
20 - 100 - 12	14	20	60	100	6	12	2

WEIGHTS & DIMENSIONS CHARTS

Chart 1 indicates fully equipped net weight, shipping weight and dimensions for each Series 30 PABX.

Chart 2 indicates the dimensions of the Series 30 Attendant's Sets. Height is measured to the top of the handset.

Chart 1

MAXIMUM TRUNKS AND LINES	NET WEIGHT (LBS)	SHIPPING WEIGHT (LBS)	HEIGHT (INCHES)	WIDTH (INCHES)	DEPTH (INCHES)
6 - 50 - 6	540	850	80	44	14*
13 - 50 - 6	810	1320	80	66	14*
20 - 50 - 6	1090	1790	80	88	14*
6 - 100 - 12	800	1250	80	66	14*
13 - 100 - 12	1070	1710	80	88	14*
20 - 100 - 12	1360	2170	80	110	14*

SERIES 30 IS 14 INCHES DEEP WITHOUT A CABINET AND 20 INCHES DEEP WITH A CABINET

Chart 2

ATTENDANT'S SET MEASUREMENTS			
Attendant's Set	Length (Depth)	Width	Height
20 Trunks, 100 Lines	9 1/8"	18 3/16"	5 7/16"

CABLE AND WIRING REQUIREMENTS

Distance between Attendant's Set and Switch Racks
Via Cable Route in Feet

Conductor Size Required
AWG

	Ground Leads	All Other Leads
Up to 100	20 (or four 26's)	26
Up to 150	18 (or four 24's)	24
Up to 250	16 (or four 22's)	22
Up to 400	14 (or four 20's)	20
Up to 600	12 (or four 18's)	18
Up to 1000	10 (or four 16's)	16

As a standard procedure, it is recommended that the cable between the switch rack and the attendant's set have sufficient conductors for the full 20 trunks, 100 lines. Therefore, the following are suggested:

122 conductors should be specified for the 100 lines and controls (cable 6-2991-122 is 24 gauge).

122 conductors should be specified for the 20 trunks and controls.

1 ground lead (cable 6-2663-14 is a single conductor 14 gauge).

METHOD OF OPERATION

Figures A, B, C and D indicate schematically the methods of operation of the Series 30 systems.

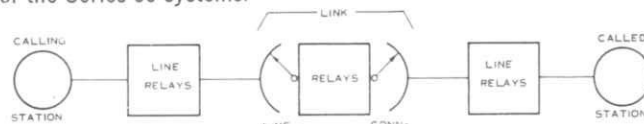


Fig. A: Local to Local Call

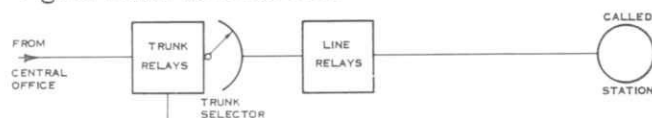


Fig. B: Incoming Call

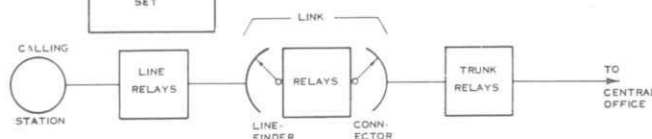


Fig. C: Outgoing Call, Link Selects Idle Trunks

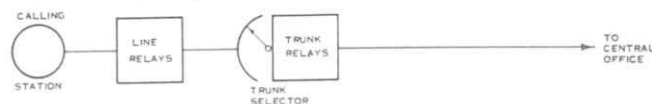
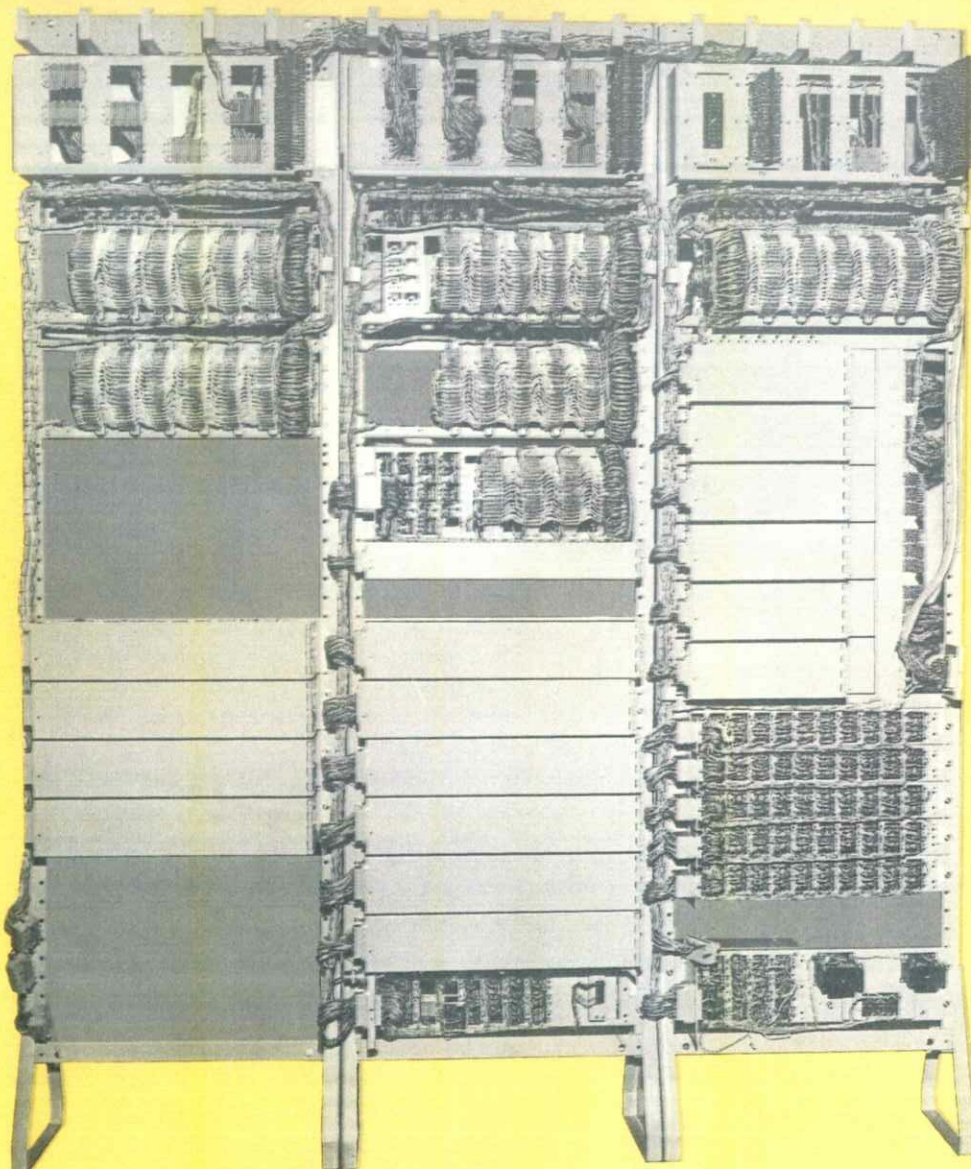


Fig. D: Outgoing Call, Trunk Finds Calling Station

ENGINEERING MANUAL

T-2083 SERIES 30 PABX



Series 30 PABX equipment racks photographed during laboratory test. This is shown to illustrate the new plug-in cabling arrangement between racks.

Series 30 PABX Automatic Telephone System

COMPATIBLE WITH ALL STANDARD EQUIPMENT



**STROMBERG-CARLSON
CORPORATION**

Rochester, N. Y.