



Switchboards for Telephone Answering Services

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Switchboards used by private firms in supplying telephone answering and secretarial service to their clients have special features to meet the needs of these services. The features include privacy for calls answered by the client, and prevention of calls being originated by the answering bureau. Until recently, a variety of switchboard arrangements were provided by the Operating Companies for telephone answering-services. Now, two new switchboards have been developed specifically for this purpose.

Since the installation of the first Secretarial Answering Bureau in 1920, telephone answering-service firms have mushroomed to where today about 1,500 bureaus serve nearly a quarter million clients. Answering-service lines are still increasing by about 30,000 a year. To meet this vast growth, the Laboratories recently developed two new switchboards to help the Operating Telephone Companies meet their customers' needs.

Telephone answering service is a service offered by private firms whereby many businesses and professional men with offices that are manned only part of the time may contract with an answering bureau to have their incoming calls answered during such periods and in such manner as they may desire. Attendants at these bureaus take messages, make appointments, and in other ways perform duties similar to their clients' representatives or secretaries. In order that the answering bureau may answer incoming calls, it is necessary for a client of the bureau to arrange with the Telephone Company to extend his line from the central office to the bureau,

where the line appears at a jack plus a supervisory lamp on a switchboard. The Telephone Company receives rental from the answering bureau for the switchboard and receives additional rental from the customer for the telephone plant involved in extending his line to the bureau. Privacy on outgoing calls by the client is assured by the design of the new, special-purpose switchboards.

Studies indicated that the requirements for this service could best be met by the development of two new switchboards for answering-bureau use — one for those areas where combined PBX and answering-service operation is permissible and another for areas where interested commissions and regulatory bodies do not permit this combination. The two new switchboards developed by the Laboratories for this use are the 557A and 557B.

Each of these boards is a manual, single-position, self-contained switchboard with large designation strips upon which the client's name, address, telephone number and contracted class of service may be typed, a large writing shelf covered with a plas-

tic bulletin holder and exterior wood panels that are readily removable for refinishing and maintenance. The 557A offers combined secretarial and PBX service using conventional self-contained double-cord units now in use in the 555 PBX,* while the 557B is for answering-service only and employs single-ended answering cords of a new design.

Concentrator-identifier (CI) equipment has been developed for use where the answering-service bureau is located some distance from the central office. This is a means of concentrating up to 100 clients' lines in a central office, routing incoming calls on these lines over four pairs of cable wires and identifying the lines at the answering bureau on a switchboard. Both the 557A and 557B boards were developed so that they included the use of the new concentrator-identifier features.

While both boards are 2½ feet wide and 2½ feet deep, with a writing shelf 30 inches above the floor, the 557A is somewhat taller — approximately 5 feet high. The upper portion of the jack panel of the 557A is arranged for 5 answering-service line units across its width. Each unit contains jacks, lamps, relays, gas tubes, and designation strips for 20 answering-service lines. Space is available for a maximum of 100 lines. Jacks may be provided in the lower portion of the panel for central office trunks, tie trunks, conference circuits, and administrative stations, together with their associated lamps and designation strips in groups of 10. Designation cards for the answering-service lines are mounted in individual holders above the lamp caps

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Fig. 1 — Miss Isabella Waegelein operates a 557A switchboard in an answering bureau in Chicago.

for the various lines, while a common strip-type designation card suffices for trunks and other lines.

Fifteen cord units can be mounted across the lower part of the board, each one comprising two cords, two lamps, two keys and associated relays. Conventional cord weights are used. A pilot lamp installed in the lower part of each half of the board provides an indication when at least one answering-service line is calling in that half of the board. An-

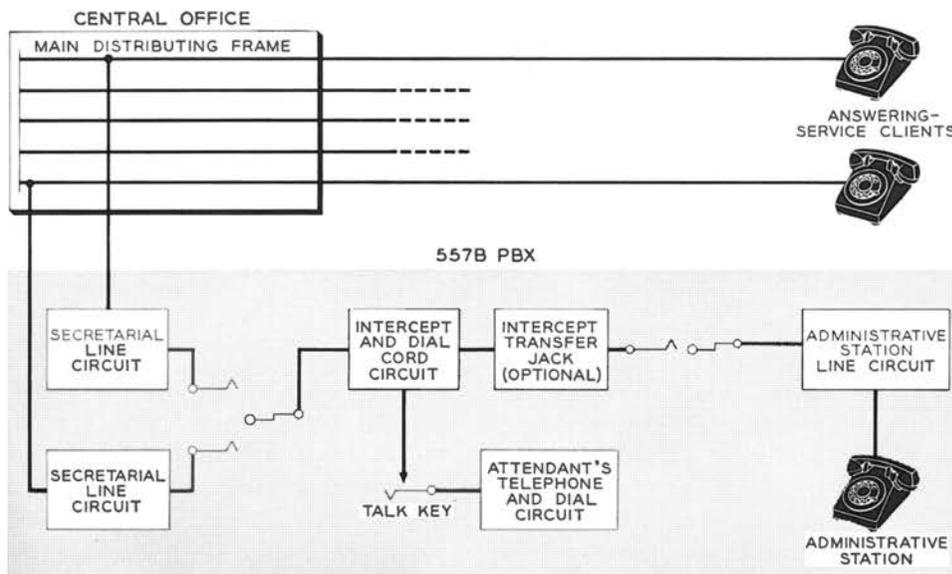


Fig. 2 — Answering-service facilities of the 557B.

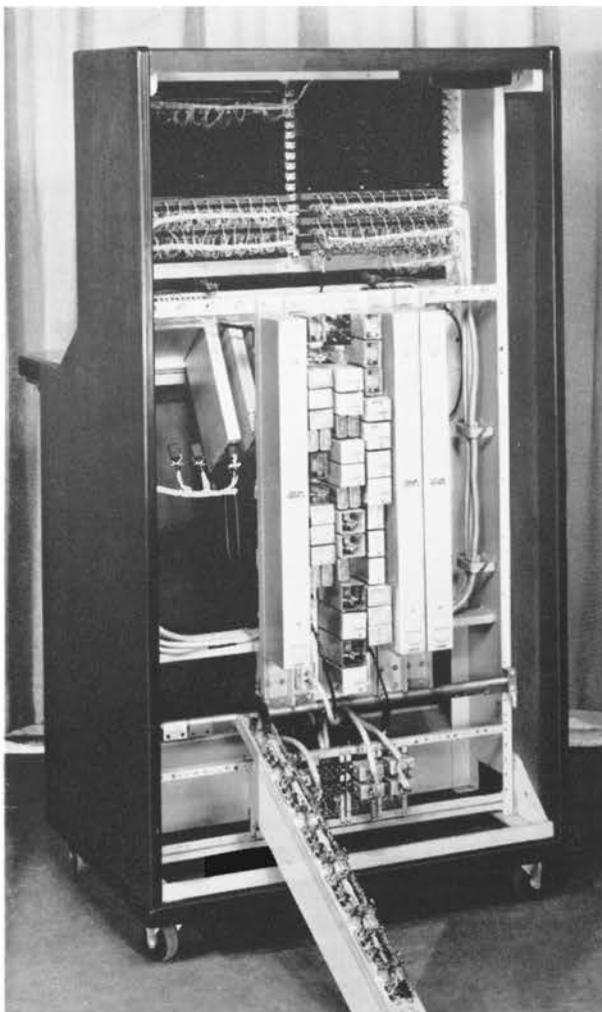


Fig. 3—Rear of 557B switchboard showing one cord unit lowered for maintenance.

swering-service lines are answered by inserting the left cord of a pair in the jack. When, for some reason, it is desired to connect a call with the manager or some other person in the bureau, the call can be extended through the right cord of the pair to an administrative station. Regular PBX service is available for administrative stations; they may be connected with central-office trunks and tie trunks, or together directly or through a conference circuit. However, neither the attendant nor an administrative station user can originate a call on an answering-service line. A 557A switchboard equipped with jacks and lamps for 20 answering-service lines is shown in Figure 1.

Regulatory requirements in some states forbid extending an intercepted call to another telephone, so boards with double-ended cords and provisions for regular PBX service may not be used.

The 557B switchboard, shown in the headpiece, was developed for use where combined secretarial and regular PBX service is not permitted. It incorporates new apparatus and mounting techniques that permit a height of only $4\frac{1}{4}$ feet, similar to that of the 551-type boards now used for answering service by most Operating Companies. Either a standard 10-pulse dial or an operator's 20-pulse dial may be mounted at the right of the cords. Jacks mount in 10-jack strips on either side of the center.

On answering-service lines, the designation strip covers the lamp sockets and allows the lamps to shine through holes in the strip, eliminating the need for lamp caps. Ten individual plastic windows to cover the designation cards may be installed on each strip. These windows and cards may be readily removed by the attendant to change designation information. All other lines in the board use standard 10-jack designation strips and cards.

A maximum of 100 answering-service lines may be installed, but only 5 central-office trunks are provided. Up to 8 intercept-and-dial cord units may be supplied. Figure 2 shows how the lines are answered. A single cord and key is used to answer each incoming call but, because the cord units are connected in series, it is not possible to patch two intercepted calls together. A maximum of 3 administrative stations may be connected to each 557B position, relay equipment for three station cords being furnished with the switchboard.

Should an administrative station originate a call, the lamp in its station cord unit lights and the attendant answers by operating the talking key associated with the lamp. She then inserts the associated station cord in a trunk jack and the station dials the number. Upon completion of the call, the attendant receives a disconnect signal and removes the cord from the trunk jack. Where a conference circuit is provided, two administrative stations may be connected together by the attendant.

For incoming trunk calls, Figure 4, the attendant answers by inserting an intercept-and-dial cord in the trunk jack and gives the information requested. If the call should be for an administrative station, she rings the station and replaces the intercept-and-dial cord with the appropriate station cord.

If the board is equipped with intercept-and-transfer jacks, an optional feature, an incoming call on an answering-service line may be transferred to an administrative station. The attendant answers with an intercept-and-dial cord as usual and, upon ascertaining that an administrative station is desired, rings the station and plugs the station cord into the

transfer jack associated with the intercept cord used. The equipment has been so designed that, upon completion of the call, it is impossible for the administrative station or the attendant to originate a call on the intercepted answering-service line.

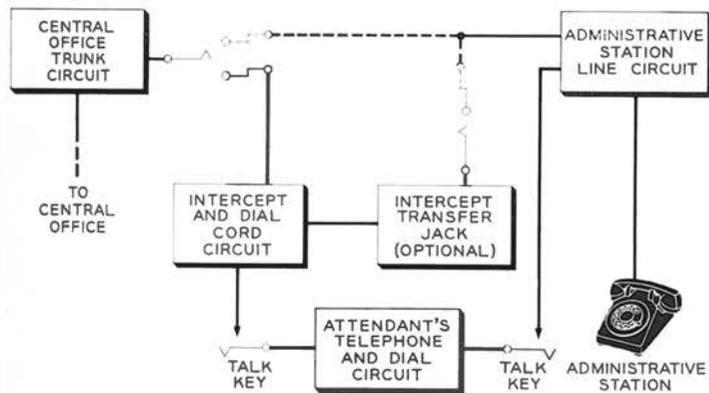


Fig. 4 — Arrangements of 557B switchboard for trunk calls.

Lamps for answering-service lines may be so arranged that the attendant must answer the line to extinguish the lamp. A pilot lamp installed in each half of the board below the jack field provides an indication when at least one line or trunk lamp is lighted in that half of the board.

Both Concentrator-Identifier lines and regular answering-service lines can be used on the same board. A simplified line circuit unit is available for terminating each 10 lines served by a concentrator-

identifier. In certain instances where CI lines are used, the number of line lamps displayed may exceed the number of available CI trunks; a "no cut-through" tone may be provided to indicate this condition to the attendant.

Cord units in the 557B utilize a new three-conductor cord $\frac{1}{8}$ -inch in diameter, and cord reels instead of cord weights. These self-contained units mount in the switchboard with two screws, and are equipped with a jack and plug for connecting them together and to the attendant's telephone circuit equipment. The combined intercept-and-dial cord unit has a 2-position normal and talk-dial key while the station cord unit has a 3-position talk-ring key with a normal off position. The cord units do not include any relays but utilize two relays in the attendant's telephone equipment. Relay equipment for all but answering-service lines is mounted on a common unit in the rear of the board. The common unit and all answering-service line units are on vertical mounting plates, hinged at the base so that they can be lowered for easy maintenance, Figure 3. All units and the line cables may be readily installed or removed through the use of jacks and plugs. Additional equipment, required for various optional features, mounts in the space below the writing shelf in back of the front panel.

The introduction of these two boards permits the Operating Companies to offer standardized switchboards to answering-service companies, with features designed especially for such service.

THE AUTHOR

G. D. STEWART received his I.E.E. degree from the Pratt Institute, and joined the New York Telephone Company in 1921. Since then he has been actively engaged in designing such circuits as commercial service observing equipment, special wiring plans, key pulsing equipment for long distance calls at pay station switchboards, and is the designer of a tool for making Braille designation strips used to enable blind attendants to operate some PBX's. In 1953 Mr. Stewart was loaned to the Laboratories to design the 557B PBX. Following this he collaborated on equipment layout for the 756A crossbar PBX. On March 1, 1956, he returned to the New York Telephone Company and currently heads a group handling PBX equipment and special circuits.

