

INSTALLATION TESTS

LEICH* L55 PBX

1. GENERAL

1.01 This section supplies information relative to installation tests for the Leich L55 PBX.

1.02 The PBX should be installed in accordance with GSP 503-400-200. Other descriptive and maintenance information, as well as functional schematics and interconnection diagrams, are contained in other sections of the 503-400 series of General System Practices.

1.03 Two persons are required to carry out these tests; one to remain at the PBX and act as the attendant, and a second to place test calls from each PBX station in turn. This gives a positive test and avoids the possibility of later service calls to correct station wiring troubles. Once each station has been tested in this manner, the remaining operations can be handled by one man.

2. STATION TESTS

2.01 Have the handset lifted at a PBX station and check that the line lamp lights to signal the call. Insert the plug of the right hand cord of the first cord pair into the jack associated with the lighted line lamp. The lamp should then be extinguished.

2.02 Operate the Talk key, check transmission, and listen for possible inductive or other interference. Determine that the number disc on the instrument at the station bears the same number as appears on the line jack. Correct the number disc, if necessary.

2.03 Have the handset restored at the station, then press the right ring key to check the station ringer. Have the ring verified, then disconnect.

2.04 Repeat the preceding tests for each station. If some lines are not yet assigned, temporarily connect a test instrument to each in turn and make the same test as for assigned lines.

3. CORD TESTS

3.01 Connect two telephone instruments temporarily at the PBX location, each wired to a different station line in series with a resistance equal to the maximum conductor loop allowable for the operating potential available.

3.02 Insert the plug of the right hand cord of the first cord pair into the jack of one of the station lines mentioned in the preceding paragraph, and press the right ring key. The ringer in one of the test instruments should sound. Disconnect the plug from the jack.

3.03 Lift the handset of one test instrument, operate the Talk key of the first cord pair and insert the plug of the right cord into the line jack beneath the lighted lamp. Check transmission between the handset of the test instrument and the attendant's headset or handset.

3.04 Insert the plug of the left cord into the jack of the other test station line and press the left ring key. The ringer in the second instrument should sound. Restore the Talk key. The left supervisory lamp should be lit.

3.05 Lift the handset of the second instrument. The left supervisory lamp should be extinguished. Operate the Talk key and check transmission between this instrument and the attendant's headset. Restore the Talk key and check transmission between the handsets of the two test instruments.

3.06 Flash the cradle plunger of each test instrument and check that the respective supervisory lamp lights on each flash.

3.07 Repeat the procedure of paragraphs 3.02 through 3.06 for each cord pair.

4. TRUNK TESTS

Outward Calls

4.01 Lift the handset of one of the test instruments, operate the Talk key of the first cord pair, and insert the plug of the right cord into the jack beneath the lighted line lamp.

* (M) Automatic Electric Company.

4.02 Insert the plug of the left cord into the jack of a central office trunk. In an automatic exchange, listen for dial tone and use the PBX dial to call one of the other trunks. In a manual exchange, await the operator's answer and explain that since you will be testing, she may disregard supervisory signals. Ask for the number of one of the other trunks. Restore the Talk key. When the lamp associated with the second trunk lights, operate the Talk key of another cord pair and insert the plug of the left cord into the trunk jack. The trunk lamp should be extinguished. Insert the plug of the right cord into the jack of the line to which the second test instrument is connected. Its supervisory lamp should light. Press the right ring key, check that the ringer sounds, and lift the handset. The supervisory lamp should be extinguished.

4.03 Leave the Talk key operated and check transmission between the two test instruments.

4.04 Operate the Split key and check that conversation between the attendant's headset or handset and the second instrument is inaudible from the first instrument, but that the central office connection is held. Restore the Split key.

4.05 Operate the Monitor key, if any, and check that conversation between the two test instruments is audible in the attendant's headset or handset, while sounds at the attendant's transmitter are inaudible in the handset of either test instrument. Restore the Monitor key.

4.06 Restore the Talk key and check transmission between the two test instruments.

4.07 Make one of the following supervision tests, depending upon the wiring option with which the PBX is equipped:

(a) Blocked Supervision - Flash the cradle plunger of the first test instrument and check that the right supervisory lamp of the first cord pair flashes. Restore the handset and check that the supervisory lamp remains lit until the right cord has been disconnected and that the central office loop remains closed (see paragraph 4.10) until the left cord has been disconnected.

(b) Through Supervision or Automatic Discrimination - Flash the cradle plunger of the first test instrument. Not only should the right supervisory lamp of the first cord pair flash, but the loop

to the central office should be opened (see paragraph 4.10). Restore the handset and check that the supervisory lamp remains lit and that the central office loop is opened. Disconnect both cords.

Inward Calls

4.08 Repeat the procedure of paragraphs 4.01 and 4.02.

4.09 Make one of the following supervision tests, depending upon the wiring option with which the PBX is equipped:

(a) Blocked Supervision or Automatic Discrimination - Flash the cradle plunger of the second test instrument and check that the right supervisory lamp of the second cord pair flashes. Restore the handset and check that the supervisory lamp remains lit until the right cord has been disconnected, and that the central office loop remains closed (see paragraph 4.10) until the left cord has been disconnected.

(b) Through Supervision - Flash the cradle plunger of the second test instrument. Not only should the right supervisory lamp of the second cord pair flash, but the loop to the central office should be opened (see paragraph 4.10). Restore the handset and check that the supervisory lamp remains lit and that the central office loop is opened. Disconnect both cords.

Supervision Test

4.10 To check closure of the central office loop, a milliammeter may be connected in one of the trunk conductors and short-circuited while the call is placed or received. If the short-circuit is removed while supervision tests are made, the meter will indicate whether the loop is opened or closed. In an automatic exchange, this test will not be necessary on the trunk used for the outgoing path of the call, since receipt of on-hook supervision by the central office can be verified by lifting the handset once more and checking for dial tone. Similarly, in an automatic exchange arranged for first party release, the same check can be made on the trunk used for the incoming path of the call.

- 4.11 Repeat the procedure of paragraphs 4.01 through 4.09 for each cord pair.

Recall

4.12 This test requires the assistance of a B operator in a manual exchange, or an automatic exchange toll or DSA operator whose position is equipped to recall an on-hook line. Ask the operator to place a call to one of the trunks. When the trunk lamp lights, operate the Talk key of the first cord pair and insert the plug of the left cord into the trunk jack. Insert the plug of the right cord into the jack of one of the test lines, press the right ring key, allow the ringer to sound, and lift the handset of the called instrument. Restore the Talk key.

4.13 Using the handset of the test instrument, ask the operator to wait a few seconds and then to ring forward on the trunk to recall the station. Restore the handset to permit her to do so. The trunk lamp should light and the ringer of the called instrument should sound. Dismiss the operator, disconnect the cords and restore the handset.

- 4.14 Repeat the procedure of paragraphs 4.12 and 4.13 for each cord pair.

Trunk Rotation

4.15 The trunk hunting or rotation feature of an automatic exchange may be tested by placing a call over the last trunk in the group to the directory number listed for the PBX. The call should be received on the first trunk in the group. Disconnect from this call. Make the first trunk busy by inserting the plug of the left cord of an idle pair into its jack. Then place a call over the last trunk to the same listed number. This time the call should be received on the second trunk. Disconnect from this call. Make the second trunk busy in a similar manner and place the test call again. Repeat until all trunks have been made busy except the last, then remove the plug from the jack of that trunk. Operate the Talk key of a cord circuit connected to one of the lower-numbered trunks and place the test call once more. The call should be received on the last trunk. Restore the Talk key and disconnect all cords.

5. CONFERENCE CIRCUIT TESTS

5.01 Connect one more test instrument to a station line. Insert the plug of the right cord of an idle pair into the jack of each of the three lines to which the test instruments are connected.

The right supervisory lamp should light on each of the three cord pairs. Insert the plug of the left cord of each of these pairs into one of the conference jacks A, B or C. Press the right ring key of each cord circuit, check that the instrument ringer sounds, and lift the handset. The right supervisory lamp should be extinguished in each case.

- 5.02 Connect two more test instruments to lines.

Using either cord of an idle pair, connect each of these lines to conference jacks D and E. Check that the proper supervisory lamp lights, and is extinguished when the handset is lifted. Restore the handset of the instrument connected via jack E and disconnect that cord pair. Place a call to and from the central office as explained in paragraphs 4.01 and 4.02, but connect the right cord of the answering pair to conference jack E rather than to a station line. Restore the handset of one of the test instruments, and check that the proper supervisory lamp lights on the cord circuit used to connect it to the conference. Repeat for all conference stations and check that no disconnect supervision reaches the central office until the cord is removed from the trunk jack or from conference jack E.

- 5.03 Repeat the procedure of paragraphs 5.01 and 5.02, connecting a city trunk to jack D as well as jack E. Make the same tests using tie trunks, if available, after the tie trunks have been tested as explained in Parts 6 through 8.

6. RINGDOWN TIE TRUNK TESTS

Station To Tie Trunk

6.01 Place a call from a station and extend it to the tie trunk using the left cord of the pair. Operate the ring key associated with the tie trunk jack. When the distant attendant answers, check transmission from the station. Ask the attendant to ring back, then restore the handset to allow her to do so. The trunk lamp should light. Answer again and arrange for the distant attendant to initiate a new call. Disconnect the cords and await this call. When the tie trunk lamp lights, answer with a left cord and extend the call to a station. Check transmission from the station and ask the distant attendant to re-ring after a few seconds. Restore the handset to permit her to do so, and check that the supervisory lamp lights. When the re-ring is applied, the tie trunk lamp should light. Answer, and ask the distant attendant to disconnect for a ring back. After a few seconds press the ring key associated with the tie trunk jack. If the attendant at the distant switchboard answers, dismiss her and disconnect the cords.

City Trunk to Tie Trunk

6.02 Repeat the procedure of paragraphs 5.01 and 5.02, but connect the right cord of the answering pair to the tie trunk jack. Ring over the tie trunk, check transmission with the answering attendant, and check ringback and re-ring. Ask the attendant to originate a call to this PBX. Answer the incoming call, check transmission, and extend it to a city trunk using the left cord (this may require switching cords). Call back into the PBX by way of the central office and extend the incoming call to a test instrument. Check transmission, ringback and re-ring.

6.03 If the PBX is also equipped with other types of tie trunks, a call from or to this trunk should be placed to and from each of them, checking transmission, ringback and re-ring. If the Talk key is pushed in to its Night and Through position, pad control relays S and S1 will not operate and the pad loss, if any, will be eliminated. Even if no pad loss is provided, the loss of the cord circuit will be avoided.

6.04 If this circuit is used to provide service to a local battery party line, make certain that the ringup relay does not lock up when one station on the line calls another, but follows the ring and lights the trunk lamp in synchronism so that the attendant may observe the ring and watch for her code.

7. AUTOMATIC-SIGNALING TIE TRUNK TESTS

Outward Call

7.01 Originate a call from a test station and complete it to the tie trunk. The tie trunk lamp should light until the attendant answers at the distant end. Check transmission and restore the station handset. The supervisory lamp should light. When the attendant at the distant end disconnects, the trunk lamp should light again until the cords are disconnected.

7.02 Place a call back into the PBX by way of the central office, answer the incoming call with the left cord, and extend it to the tie trunk. Check transmission and supervision with the distant attendant. The only supervisory signals provided will be those of the trunk lamp itself.

Inward Call

7.03 Have the attendant at the distant switchboard place a call over the tie trunk. The line lamp should light when she plugs in. Answer with a left cord and check that the lamp is extinguished. Check transmission and complete the call to a test station. When the station handset is lifted, the cord supervisory lamp should be extinguished. Check transmission from the station, then disconnect and check that the cord supervisory lamp lights. Ask the distant attendant to disconnect, and check that the trunk lamp lights, as will that at the other switchboard if it is of a similar type. When the cord is disconnected from the tie trunk jack, the lamp should again be extinguished.

7.04 Arrange for the distant attendant to place a call over the tie trunk. Answer with the left cord, then switch cords so the left cord is free to seize a city trunk. Call back into the PBX by way of the central office, answer the call on another cord pair and complete it to a test station. Check transmission. When the distant attendant disconnects, the tie trunk lamp should light until the cords are taken down.

8. DIAL TIE TRUNK TESTS

Outward Call

8.01 Place a call from a test station, answer it with a right cord and complete it to the tie trunk with the left cord. Restore the Talk key of this cord pair and operate the Talk key of an idle pair. Insert the plug of the left cord of this second pair into the dial jack of the tie trunk, listen for dial tone, and dial the number of the desired station at the distant PABX. Remove the plug from the dial jack and restore the Talk key of that pair. The trunk lamp should remain lit until the called station answers, and should then be extinguished. Check transmission from the calling station, then restore the handset. The cord supervisory lamp should light. Wait for the distant party to disconnect and check that the trunk lamp lights again. If, however, the distant party is asked to remain on the line a few moments and the cords are taken down before he disconnects, the trunk lamp remains dark.

Inward Call

8.02 Have some party at the distant PABX place a call over the tie trunk. When the trunk is seized at the far end, the trunk lamp should light.

Answer with a left cord, check transmission, and extend the call to a test station. Check transmission from that point, then restore the handset. The cord supervisory lamp should light. If the distant party disconnects before the cords are taken down, the trunk lamp should light again, but if the plug is removed from the tie trunk jack before the distant end disconnects, the lamp should remain dark.

8.03 Request that a second call be placed in the

same manner. Answer with a left cord, then switch cords so that the left cord is free to extend the call over a city trunk to the central office and back to the PBX by way of another trunk. Answer this incoming call and extend it to a test station. Check transmission and note that the only supervision provided on the first cord pair will be that of the trunk lamp, which should light when the distant end disconnects. Dismiss the calling party and take down the connections.