

## VOICE CONNECTING ARRANGEMENTS RDL AND RDM

### 1. GENERAL

**1.01** This section provides identification, installation, operation, maintenance, and connection information for the KS-19522 recorder coupler when used in Voice Connecting Arrangements (VCA) RDL and RDM.

**1.02** This section is reissued to:

- Change title
- Add information on the KS-19522, List 21 and List 22 replacing the List 1 and List 2 which are rated MD.

**1.03** The customer must be informed by the manufacturer or supplier of the equipment of the proper use and operation of his equipment with VCA RDL and RDM.

**1.04** If the customer wants a copy of the Technical Reference (AT&T Publication 42204) which covers these interface specifications, the customer should contact the local Telephone Company Business Office or the Marketing Representative.

**1.05** With either arrangement, an associated telephone set may make a normal outgoing call when the coupler is not in use and may be used to monitor the line when the coupler is in use.

**1.06** The KS-19522, List 12 test set is used to test the recorder coupler independent of the customer-provided equipment (CPE).

**1.07** This issue of the section is based on the following drawing:

SD-99356-01, Issue 13B—KS-19522 Recorder Coupler

If this section is to be used with equipment or apparatus reflecting later issue(s) of the drawing(s), reference should be made to the SDs and CDs to determine the extent of the changes and the manner in which the section may be affected.

### 2. IDENTIFICATION

#### PURPOSE

- VCA RDL provides for one-way voice transmission in each direction (but not simultaneously) between customer-provided (CP) announcement/recorder equipment and a telephone line on incoming calls. Transmitters of any telephone sets associated with the line are disabled during incoming calls to prevent recording of 2-way conversations. This arrangement is provided by KS-19522, List 1 or List 21 or List 2 or List 22 recorder coupler. The KS-19522, List 2 or List 22 consists of a KS-19522, List 11 voice control added to a KS-19522, List 1 or List 21 recorder coupler.
- VCA RDM provides for 2-way voice transmission between the CPE and telephone line, permitting distant party control of the CPE during incoming calls. Recording of 2-way conversations is prevented as before. This arrangement is provided by a modified KS-19522, List 21 or List 22 recorder coupler stamped "2W".
- The KS-19522, List 21 and List 22 recorder couplers are identical to the List 1 and List 2 recorder couplers with one exception. The List 21 and List 22 are provided with three extra screw terminals (S, C, and L) for installing options for disconnect time delay. The KS-19522, List 1 and List 2 will be rated MD with the availability of the List 21 and List 22.

#### APPLICATION

For use with central office (CO) or PBX lines.

#### ORDERING GUIDE

- Coupler, Recorder, KS-19522,L21
- Coupler, Recorder, KS-19522,L22

- Coupler, Recorder, KS-19522, L21 (2W) modified for 2-way transmission per BSRs 455.204
- Coupler, Recorder, KS-19522, L22 (2W) modified for 2-way transmission per BSRs 455.204
- Control, Voice, KS-19522, L11 (provides automatic disconnect—see 2.03)
- Set, Test, KS-19522, L12 (required for testing recorder couplers)
- Relay, Plug-in (if required for maintenance, see Table A).

TABLE A  
ORDERING INFORMATION

RELAY	ORDERING INFORMATION
ENA	T163X-23 or T163X-23A, 2C, 700 ohms, 24VDC, Allied Control Company
LS, TR	T163X-21 or T163X-126, 6C, 430 ohms, 24VDC, Allied Control Company



Fig. 1—KS-19522 Recorder Coupler

#### DESIGN FEATURES

**2.01** The KS-19522, List 1 and List 21 or List 2 and List 22 recorder coupler (Fig. 1):

- Detects ringing and supplies a signal to the CPE
- Upon command by CPE, couples prerecorded announcements to telephone line from CP unit
- Upon command by CPE, couples incoming messages from telephone line to recording equipment
- Transmits a single short beep tone to telephone line at the time of mode transfer (start and end of recording period)
- Transmits low level tone to telephone line as required by customer unit (not recommended when List 11 voice control is used)

- Disconnects from telephone line on signal from customer unit (opening of ready leads), battery reversal, or momentary open from the CO.

- KS-19522, List 21 and List 22 also provide three installer selectable disconnect time delay intervals to prevent false disconnects.

**2.02** The KS-19522, List 11 voice control provides automatic disconnect from the telephone line in the absence of speech for 12 seconds. CO receiver off-hook tone generator will prevent operation of the voice control.

**2.03** The KS-19522, List 11 voice control is required when the local CO or PBX does not provide a suitable disconnect signal (momentary interruption in line current) when the calling party goes on-hook or when CPE does not provide disconnect. The List 11 voice control is factory-installed in the List 2 and List 22 recorder coupler. It may be ordered separately for field installation in the List 1 or List 21 recorder couplers.



**2.04** The KS-19522, List 1 and List 21 recorder couplers are constructed on a printed wiring board mounted in a metal apparatus box measuring 6-7/8 inches wide, 7-3/8 inches high, and 3-3/8 inches deep. The complete assembly weighs approximately five pounds and is designed for wall mounting.

**2.05** Screw terminals for termination of the telephone line and telephone set mounting cord, or inside wiring cable, are located on the right side of the printed wiring board (Fig. 2 for List 1 and Fig. 3 for List 21). Entrance is provided at the bottom of the recorder coupler.

**Note:** Terminal locations on late production circuit boards of KS-19522, List 1 differ from early production boards.

**2.06** The recorder coupler is equipped with a 6-foot, 3-conductor power cord with a 3-wire,

parallel blade grounding cap for connection to a 3-wire, grounded 115-volt ac convenience outlet.

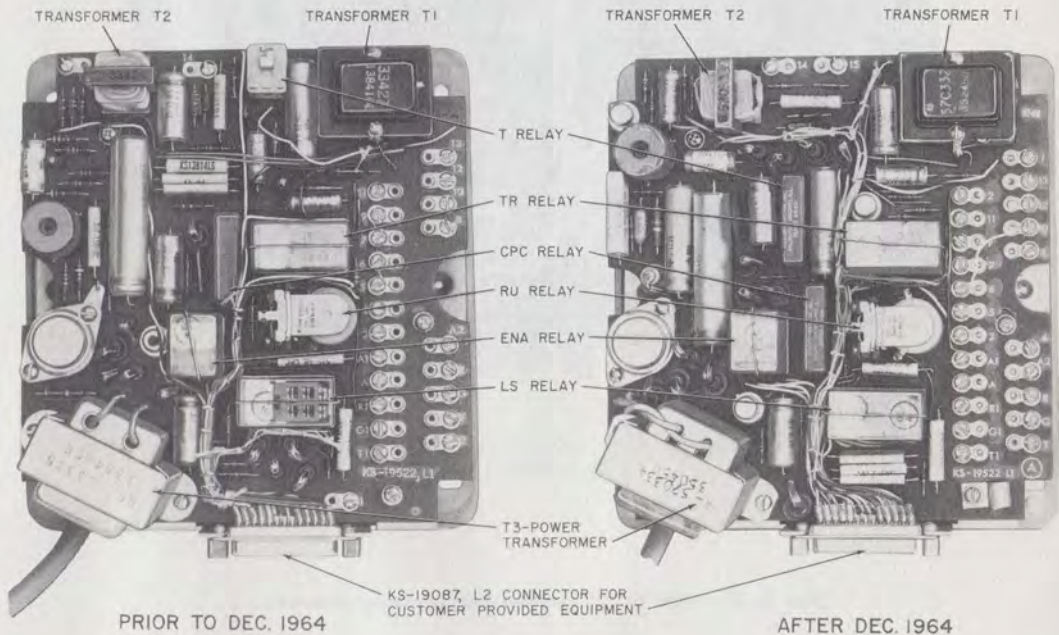
**2.07** The power cord and customer equipment connector are located at the bottom of the recorder coupler (Fig. 2 and 3).

**2.08** The power supply input is 105 to 125 volts, 50 to 60 Hz. The power supply output is 22 volts dc.



*If only dc power is available, the KS-15662 dc-ac inverter must be used.*

**2.09** The KS-19522, List 2 recorder coupler consists of the List 1 recorder coupler with the List 11 voice control factory-installed (Fig. 4). The KS-19522, List 22 recorder coupler consists of the List 21 recorder coupler with the List 11 voice control factory-installed (Fig. 4). The List 11



**Fig. 2—KS-19522, List 1 (MD) Recorder Coupler, Cover Removed**

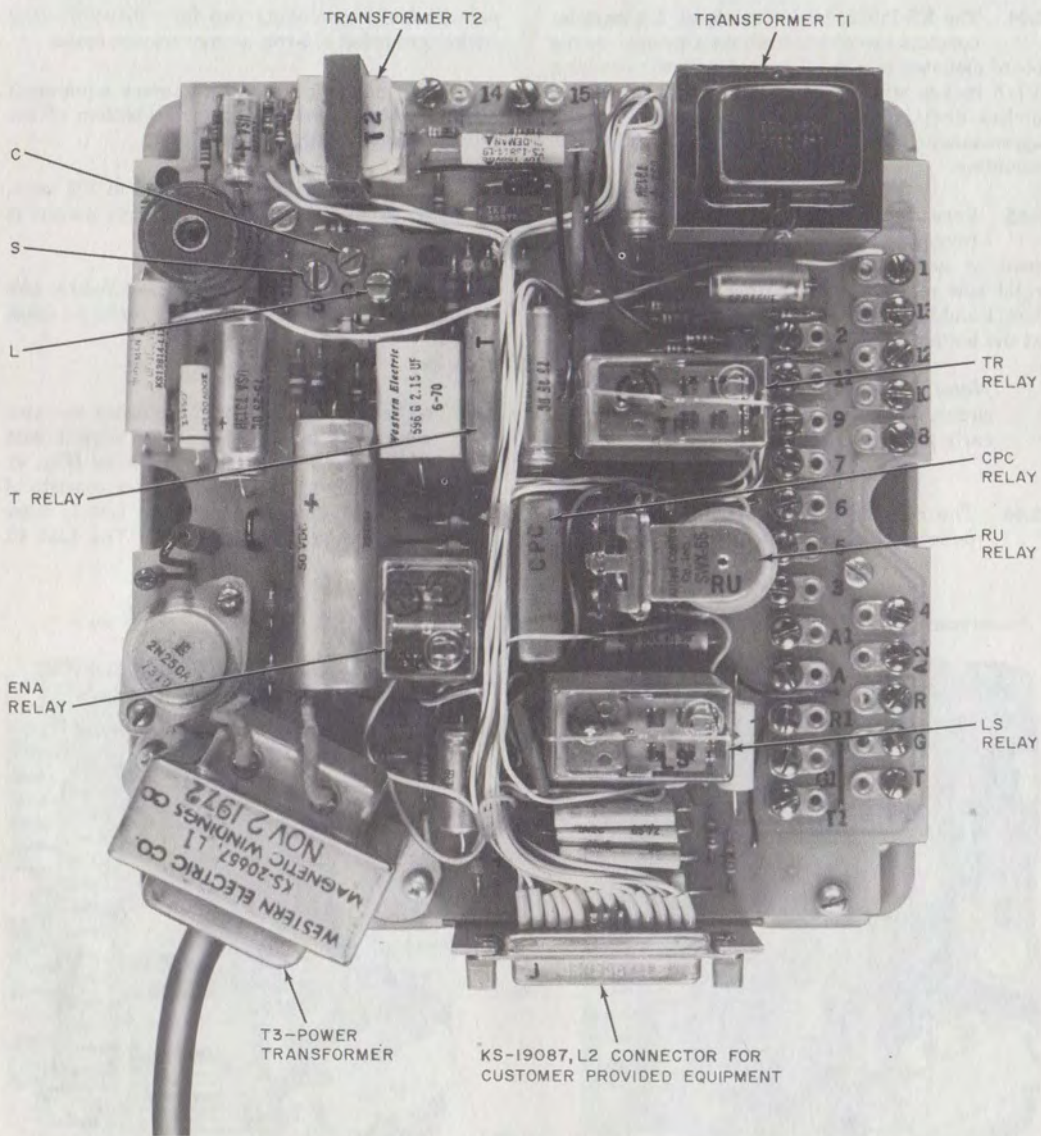


Fig. 3—KS-19522, List 21 Recorder Coupler, Cover Removed



(Fig. 5) may be ordered separately for field installation in List 1 or List 21 recorder couplers.♦

**2.10** The KS-19522, List 11 voice control is constructed on a printed wiring board and is equipped with spade-tipped leads for connecting to screw terminals on the recorder coupler (Fig. 5).

**2.11** The KS-19522, List 12 test set (Fig. 6) provides a means for testing the operation of the recorder coupler following installation. It also permits testing the recorder coupler independently of the CPE, as an aid in trouble clearance. The test circuit is housed in a small plastic case and consists of a 12-position rotary switch and associated circuitry arranged to test each function of the recorder coupler by providing contact closures in sequence. A schematic of the test set is shown in Fig. 7.

### 3. INSTALLATION

**3.01** The location and method of installing the recorder coupler shall be consistent with standard practices. The KS-19522 recorder couplers are designed for vertical wall mounting only. If a backboard is required, the 165A backboard is recommended.



**Connect KS-19522 recorder couplers to commercial power after all other installation work has been completed. The power cord shall not be passed through holes in walls or fastened to walls.**

**3.02** The installation of the KS-19522, List 21 recorder coupler is identical to the installation of List 1.

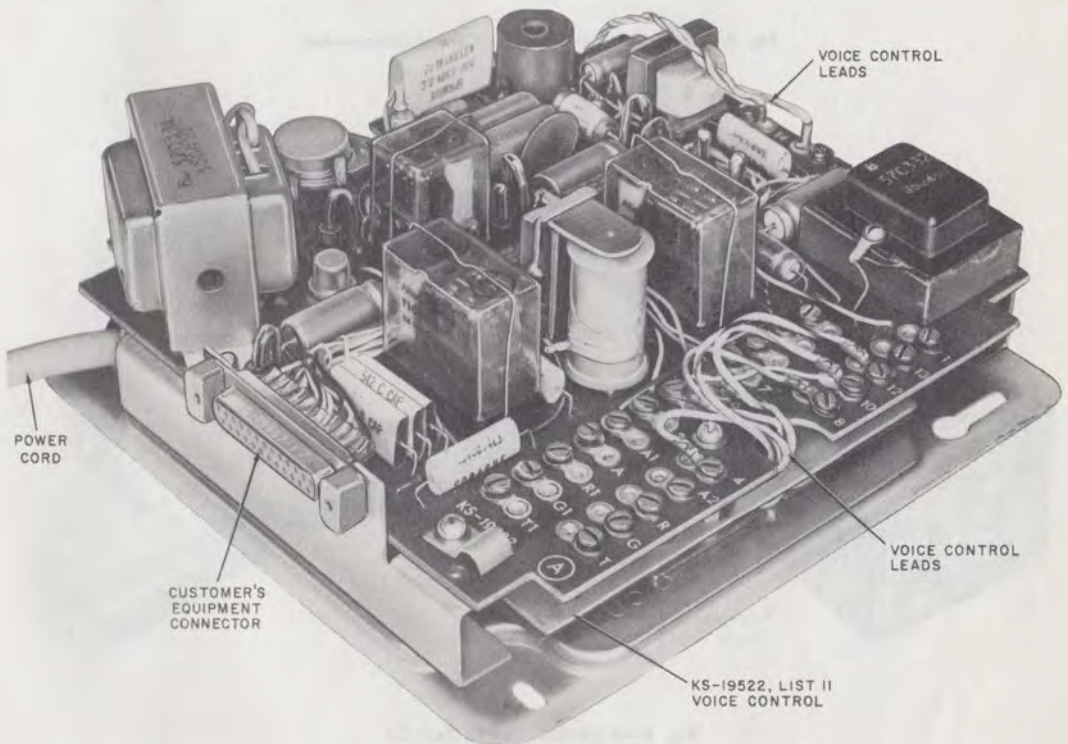


Fig. 4—KS-19522, List 2 or List 22 Recorder Coupler, Cover Removed

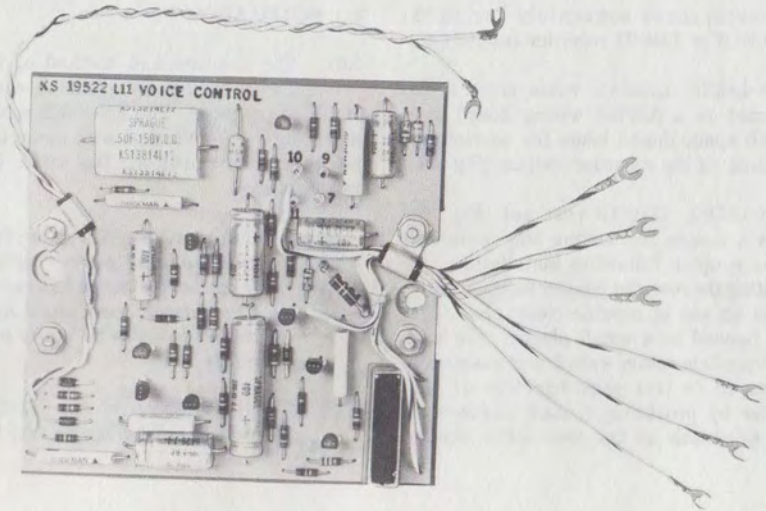


Fig. 5—KS-19522, List 11 Voice Control, Unmounted

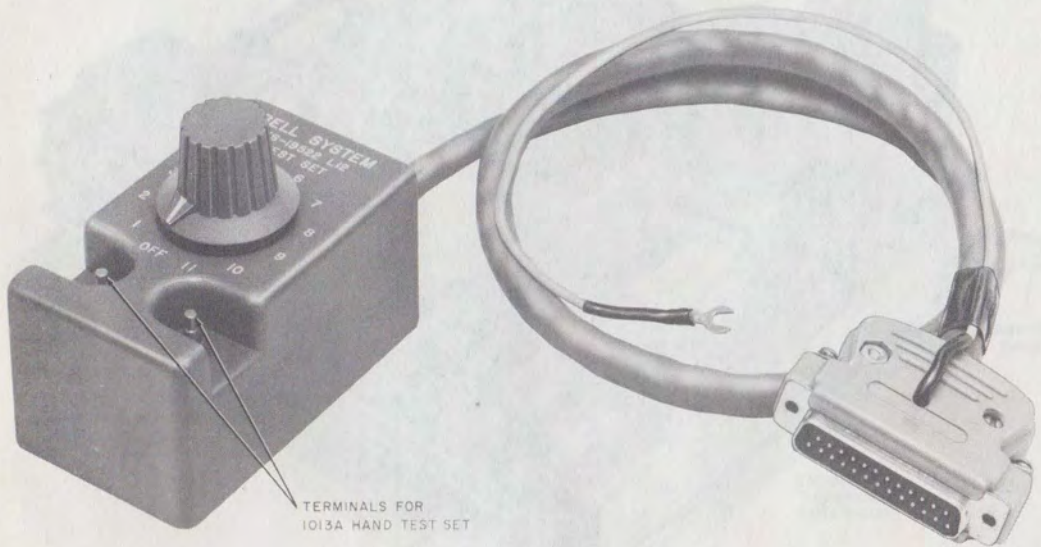
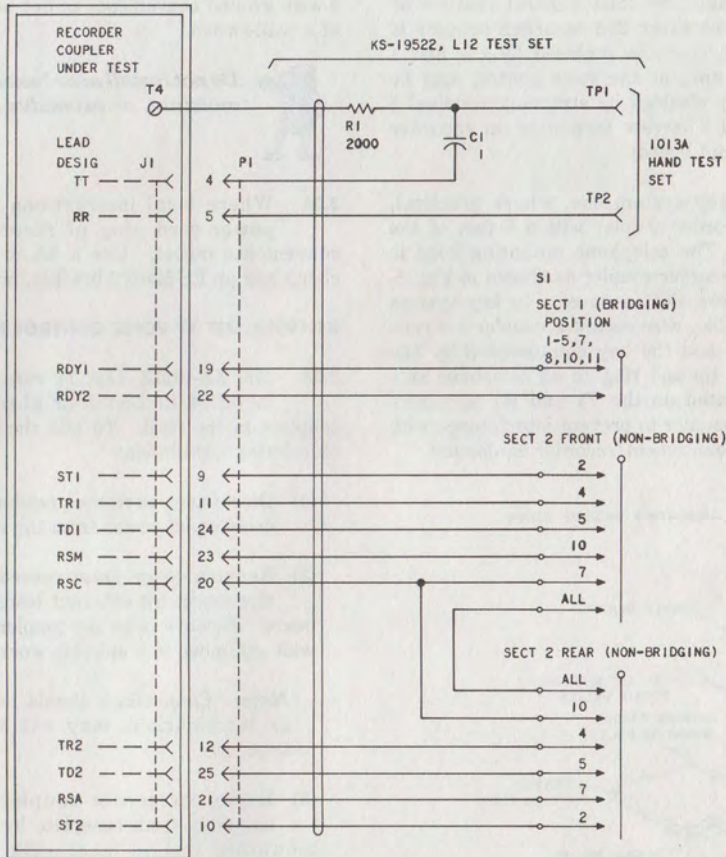


Fig. 6—KS-19522, List 12 Test Set



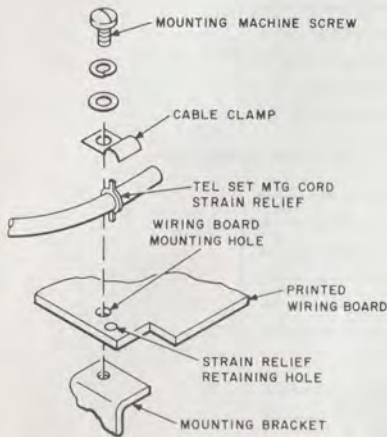


POSITION	SIGNAL PROVIDED	LEADS CLOSED
1	READY	RDY1 TO RDY2
2	START	RDY1 TO RDY2, ST1 TO ST2
3	READY	RDY1 TO RDY2
4	TRANSFER	RDY1 TO RDY2, TR1 TO TR2
5	TONE APPLIED	RDY1 TO RDY2, TDI TO TD2
6	TONE REMOVED	NONE
7	REMOTE START ANNOUNCE	RDY1 TO RDY2, RSC TO RSA
8	READY	RDY1 TO RDY2
9	READY REMOVED	NONE
10	REMOTE START MESSAGE	RDY1 TO RDY2, RSC TO RSM
11	READY	RDY1 TO RDY2
12	OFF	NONE

Fig. 7—Schematic—KS-19522, List 12 Test Set

**Note:** When the voice control feature of the List 2 or ♦List 22♦ recorder coupler is not desired it can be replaced by the List 1 or List 21 unit, or the voice control may be permanently disabled by strapping terminal 5 to terminal 6 (screw terminals on recorder coupler circuit board).

**3.03** For non-key system use, where practical, locate recorder coupler within 5 feet of the associated set. The telephone mounting cord is secured to the recorder coupler as shown in Fig. 8. Dress leads before closing cover. In key system use, where possible, wire recorder coupler between CO or PBX line and the key equipment (Fig. 11). In all cases the tip and ring to all telephone sets must be terminated on the T1 and R1 terminals of the recorder coupler to prevent interference with operation of announcement/recorder equipment.



**Fig. 8—Securing Telephone Set Mounting Cord in Recorder Coupler**

**3.04** A 25-pin connector (Fig. 1) is located on the base of the unit to connect the transmission path and control leads to the CPE. The mating ITT Cannon Electric or Cinch Plug No. DB-19604-432 with Hood No. DB-51226-1, or equivalent, is customer-provided and prewired to his equipment.

**3.05** The recorder coupler shall be readily accessible for maintenance and within 6 feet of a

3-wire ground convenience outlet not under control of a wall-switch.



**Do not install near hazardous locations, moisture, or excessive heat.**

**3.06** Where local instructions permit, fasten power cord plug of recorder coupler to convenience outlet. Use a 5A or 6A Tinnerman clamp and an ES-528772 bracket, or equivalent.

#### **KS-19522, LIST 11 VOICE CONTROL INSTALLATION**

**3.07** The KS-19522, List 11 voice control can be installed in List 1 or ♦List 21♦ recorder couplers in the field. To add the voice control to an existing installation:

- (1) Disconnect customer equipment cable and commercial power from the recorder coupler.
- (2) Remove cover from recorder coupler and disconnect all external leads from terminal board. Remove recorder coupler assembly from wall and move to a suitable work area.

**Note:** Connections should be suitably noted as terminations may not be in standard sequence.

- (3) Remove recorder coupler wiring board assembly from baseplate by removing eight mounting screws (accessible from back of baseplate). Remove standoff (located on back of board between terminal 3 and edge of board). Retain screws and washers for reassembly.
- (4) Mount voice control on baseplate using screws, lockwashers, and standoff supplied as loose parts with unit (Fig. 9).
- (5) Reassemble recorder coupler wiring board assembly to baseplate using screws and washers retained in step (3).
- (6) Connect voice control leads in accordance with Table B. Dress leads to avoid interference with circuit components and cover.
- (7) Affix adhesive circuit label, supplied as loose part with voice control, inside cover on upper side panel. Change nameplate designation from





Fig. 9—KS-19522, List 11 Voice Control, Mounted on Baseplate

TABLE B  
CONNECTIONS FOR KS-19522, LIST 11  
VOICE CONTROL

VOICE CONTROL LEAD	CONNECT TO TERMINAL
W-Y	4
W-G	5*
W-BL	6*†
W-S	8
W-O	10†
W-BK	12
W-R	14
W-BR	15

\* Remove existing strap between terminals 5 and 6.

† Add strap between terminals 6 and 10.

KS-19522, List 1 to KS-19522, List 2 or KS-19522, List 21 to KS-19522, List 22 in accordance with locally established procedure.

(8) Reinstall voice recorder and connect leads disconnected in step (2).

#### KS-19522, LIST 21 AND LIST 22 RECORDER COUPLER

**3.08** The installation of the KS-19522, List 21 and List 22 is identical to that of List 1 and List 2 except that List 21 and List 22 are provided with three extra screw terminals designated S, C, and L located on the upper left quadrant of the recorder coupler circuit board (Fig. 3).

**3.09** The three screw terminals, S, C, and L, are provided to overcome false disconnects caused by the momentary loss of battery during reswitching or transferring of calls in certain types of associated equipments.

**3.10** The recorder coupler provides an 8-millisecond (MS) time delay as a standard feature. If the recorder coupler is connected to a No. 5 crossbar centrex, 800-type PBX, or manual switchboard, refer to 3.11. If the recorder coupler is connected to a No. 1 Electronic Switching System (ESS), refer to 3.12.

**3.11** A strap shall be placed between terminals S, C, and L (E option) when the recorder coupler is connected to a line served by a No. 5 crossbar centrex, 800-type PBX or a manual switchboard. This option will provide a delay of approximately 100 MS to prevent false disconnects caused by the momentary loss of battery during reswitching or transferring of calls.

**3.12** When a recorder coupler is connected to a CO line served by a No. 1 ESS, a strap shall be placed between screw terminals C and L (D option). Option D will provide a disconnect time delay of approximately 450 MS, to prevent premature disconnects caused by the momentary loss of battery during reswitching or transferring of calls.

#### TESTS AT TIME OF INSTALLATION

**3.13** Perform the operational tests of Part 5.

#### 4. OPERATION (Fig. 10)

**4.01** Refer to CD- and SD-99356-01 for detailed circuit description and operation.

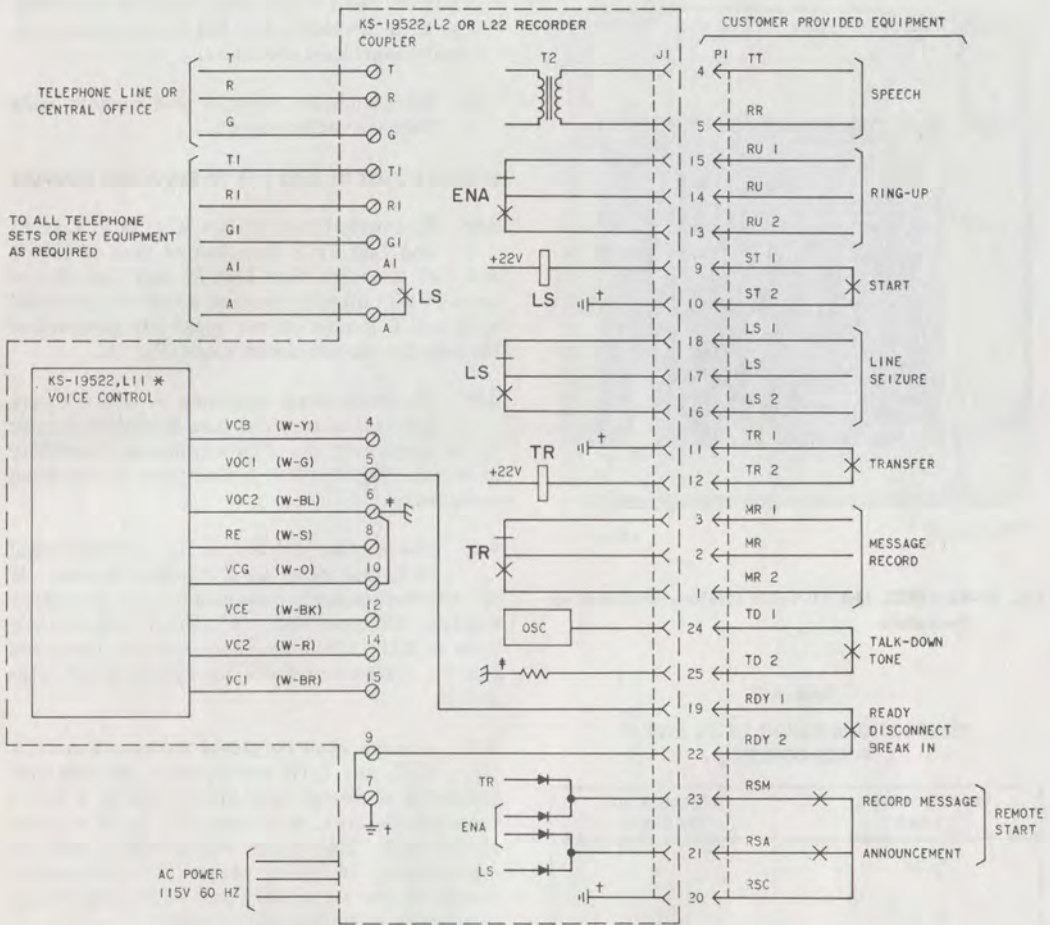


Fig. 10—Simplified Schematic-Voice Connecting Arrangements RDL-RDM

**4.02** The recorder coupler signals the progress of the automatic cycle to the CPE by dry contact closures. The CPE provides signals by means of dry contact closures to control the automatic cycle of the recorder.

**4.03** The telephone set associated with the recorder coupler may be operated in the conventional

manner when the recorder coupler is not answering a call. During the automatic cycle, the telephone set may be used to monitor the call in progress; however, the transmitter is disabled by removal of talk battery preventing its use for a 2-way telephone conversation. The G6-type amplifier handset, required by a handicapped person for conventional calling, requires line current to operate



and will become inoperative when used to monitor a call during the automatic cycle of a KS-19522 recorder coupler (during which it is capacitively coupled to the line).

**4.04** The recorder coupler under control of the customer equipment will automatically function as follows:

- (1) Ready signal (closure between RDY1 and RDY2) is present from customer unit.
- (2) Ringing current on telephone line provides ring-up signal (lead RU opened from lead RU1 and closed to RU2) to CP unit.
- (3) Customer unit provides start signal (closure between leads ST1 and ST2) when ready to start automatic cycle.
- (4) Coupler seizes line and trips ringing; line seizure signal (lead LS opened from LS1 and closed to LS2) is provided to customer unit.
- (5) Announcement on speech leads (TT and RR) is transmitted from customer unit to telephone line.
- (6) At end of announcement, transfer signal (closure between leads TR1 and TR2) from customer unit causes the following:
  - (a) Direction of transmission through the recorder coupler is reversed so that speech on the telephone line appears on speech leads (TT and RR).
  - (b) A 1/2-second beep tone is transmitted from coupler to telephone line.
  - (c) Message record signal (lead MR opened from MR1 and closed to MR2) is provided to CP unit.
- (7) Ready signal (lead RDY1 opened from lead RDY2) is removed by the customer unit at the end of message record cycle. This indicates a request to the coupler for disconnect and causes:
  - (a) A 1/2-second beep tone transmitted to the telephone line from the coupler and then disconnect.

(b) Removal of line seizure signal (lead LS opened from lead LS2 and closed to LS1), removal of message record signal (lead MR opened from lead MR2 and closed to lead MR1).

(c) Ready signal (closure between leads RDY1 and RDY2) reestablished by customer unit.

**4.05** The automatic cycle can be interrupted by a BREAK-IN signal (momentary open between leads RDY1 and RDY2) from the customer unit. This will allow normal transmit and receive operation of the associated telephone set.

**4.06** When an automatically answered call has been interrupted by a BREAK-IN signal, the automatic cycle can be reinstated by use of the REMOTE START switch (closure of lead RSC to lead RSA and RSM) located on the customer unit.

**4.07** Low level tone is under control of the customer unit and may be transmitted by closure of the TD1 and TD2 leads as many times as required, for any desired interval during the cycle. This may be used, for example, as talk-down tone associated with a recording control circuit located in the customer unit. This feature is not recommended when the List 11 voice control is provided as the tone signal may mask the calling party's voice, and the voice control would time out causing disconnect.

## 5. MAINTENANCE

**5.01** When trouble is reported, verify that:

- CO pair and telephone set are good.
- Power plug of recorder is secure in outlet.
- Plug-in relays are secure in sockets.
- Leads from telephone line and telephone set are secure on screw-type terminals.
- Connections for type of service are correct.
- Customer connector plug is secure in recorder coupler.

- Proper option straps have been placed between screw terminals S, C, and L.

**5.02** Test for proper operation of the recorder coupler using the KS-19522, List 12 test set (Fig. 6). The test set permits testing of the recorder coupler independent of the customer unit.

**NOTES FOR TEST:**

- (1) When the KS-19522, List 11 voice control unit is provided (List 2 or List 22 recorder coupler), the voice control feature may be disabled by strapping terminal 5 to terminal 6 as an aid in trouble clearance.
- (2) When the TR relay is operated, the installer will not be able to talk to the local test desk operator since talking battery is removed

from the associated telephone set and the recorder coupler is conditioned for one-way transmission from the telephone line to the 1013A or equivalent hand test set [except KS-19522 (2W) Voice Connecting Arrangement RDM].

- (3) If the associated telephone set uses a G6-type amplifier handset, it will be necessary to use a second 1013A (or equivalent) hand test set connected to screw terminals T1 and R1 for monitoring.

**5.03 Apparatus Required:**

- KS-19522, List 12 test set (Fig. 6)
- 1013A (or equivalent) hand test set.



**5.04 Preparation:**

STEP	ACTION	VERIFICATION
1	Disconnect connector to customer equipment.	
2	Remove cover of recorder coupler.	
3	Plug the recorder coupler power cord into 115-volt 60-Hz power outlet.	
4	Set rotary switch on the test set to the OFF position.	
5	Connect test set plug to the receptacle on the recorder coupler.	
6	Connect the spade-tipped lead from the test set plug to terminal 4 on the recorder coupler.	
7	Connect a 1013A (or equivalent) hand test set to terminals provided on the test set.	

**5.05 Operational Tests:**

STEP	ACTION	VERIFICATION
8	<p>Rotate test set switch to position 1. Have a call placed to the recorder coupler from the local test desk. (If the recorder coupler is connected to a CO centrex station line, place test call via attendant to verify that coupler does not disconnect when attendant releases from connection.) [Associated telephone set on-hook.]</p>	<p>Relay RU buzzes in presence of ringing current. Relay ENA operates.</p>



STEP	ACTION	VERIFICATION
9	Rotate test set switch to position 2.	Relay LS operates and trips ringing. Relay RU stops buzzing. After 1-1/2 seconds, relay ENA releases. Battery removed from local telephone set.
	<b><i>Two-way conversation specified in Steps 10, 11, and 12 apply to VCA RDM only. VCA RDL will accept conversation for recording purposes only in these steps.</i></b>	
10	Rotate test set switch to position 3. Talk into transmitter of the 1013A (or equivalent) hand test set and listen to receiver of local telephone handset. (Leave local telephone handset off-hook through remaining steps to maintain line connection.)	Speech is transmitted to calling party (may be heard in telephone handset receiver).
11	Ask tester to speak for approximately 30 seconds after hearing the beep tone, then cut off test desk transmitter but hold talking battery on the line.	Speech from the local test desk operator may be monitored on the local telephone handset receiver.
12	Rotate test set switch to position 4. Listen to receiver of 1013A (or equivalent) hand test set.	Relay TR operated. Beep tone is transmitted to telephone line. Beep tone and speech from calling party should be heard in 1013A (or equivalent) hand test set and telephone handset receivers.
	<b><i>Steps 13 and 14 apply to the List 11 voice control. If List 11 is not provided, proceed to Step 15.</i></b>	
13	The List 11 voice control will cause automatic disconnect approximately 12 seconds after the calling party stops talking. Listen to receiver of telephone handset.	Relay TR releases. Short beep tone from recorder coupler should be heard in telephone handset receiver. Relay LS releases. Battery connected to telephone set.
14	After voice control disconnect— Connect strap between terminals 5 and 6 to prevent time-out in following steps. Proceed to Step 16.	
15	Rotate test set switch to position 5. Listen to receiver of telephone handset.	Low level 1400-Hz tone from recorder coupler should be heard in telephone handset receiver.
16	Rotate test set switch to position 6. Listen to receiver of telephone handset.	Relay TR releases. Short beep tone from recorder coupler should be heard in telephone handset receiver. Relay LS releases. Battery connected to telephone set.

STEP	ACTION	VERIFICATION
17	Rotate test set switch to position 7.	Relays LS and ENA operate. Battery removed from telephone set.
18	Rotate test set switch to position 8.	After approximately 1-1/2 seconds relay ENA releases.
19	Rotate test set switch to position 9.	Relay LS releases. Battery connected to telephone set.
20	Rotate test set switch to position 10. Listen to receiver of telephone handset.	Relays ENA, LS, and TR operate. Short beep tone from recorder coupler should be heard in telephone handset receiver. Battery removed from telephone set.
21	Rotate test set switch to position 11.	After approximately 1-1/2 seconds relay ENA releases.



*When List 11 voice control is provided, proceed to Step 23.*

22	Talk into 1013A hand test set; ask local test desk operator to release the line from test. Observe relays in coupler.	Relays TR and LS should release within one minute after test desk disconnects. (If relays TR and LS do not release within 1 minute, see 5.06.)
23	Rotate test set switch to OFF. Remove strap between terminals 5 and 6 if voice control is provided.	

**5.06** If trouble is identified as failure to disconnect from CO, check disconnect delay options 3.11 through 3.13. A List 11 voice control may be required to correct trouble. When trouble develops that cannot be cleared by plug-in relay substitution, replace the recorder coupler.

**5.07** If the tests are satisfactory, remove all test connections to restore circuit to normal and follow local reporting procedures for CPE trouble.



*Do not attempt any test or repair to the CPE.*

**5.08** When in the repairman's judgment the trouble is located in the CPE, the Repair Service Bureau should be notified so that proper maintenance of service charge billing can be initiated as outlined in Section 600-101-312 entitled Maintenance of Service Charge on Services With Customer-Provided Equipment (CPE).



*When the recorder coupler is served by a CO line of a No. 1 ESS and the customer continues to complain of false disconnects after option D of KS-19522, List 21 or List 22 has been provided, line applique circuit SD-1A297 should be installed at the CO.*

## 6. CONNECTIONS

**6.01** Connections to the customer's equipment are made through the 25-pin KS-19087, List 2 connector. The customer must furnish a suitable connecting cable equipped with a Cinch or ITT Cannon Electric DB-19604-432 plug with a DB-51226-1 hood (or equivalent).

**6.02** Fig. 11 shows the connections for the recorder coupler for various telephone set applications. Fig. 10 shows connections for customer's equipment.



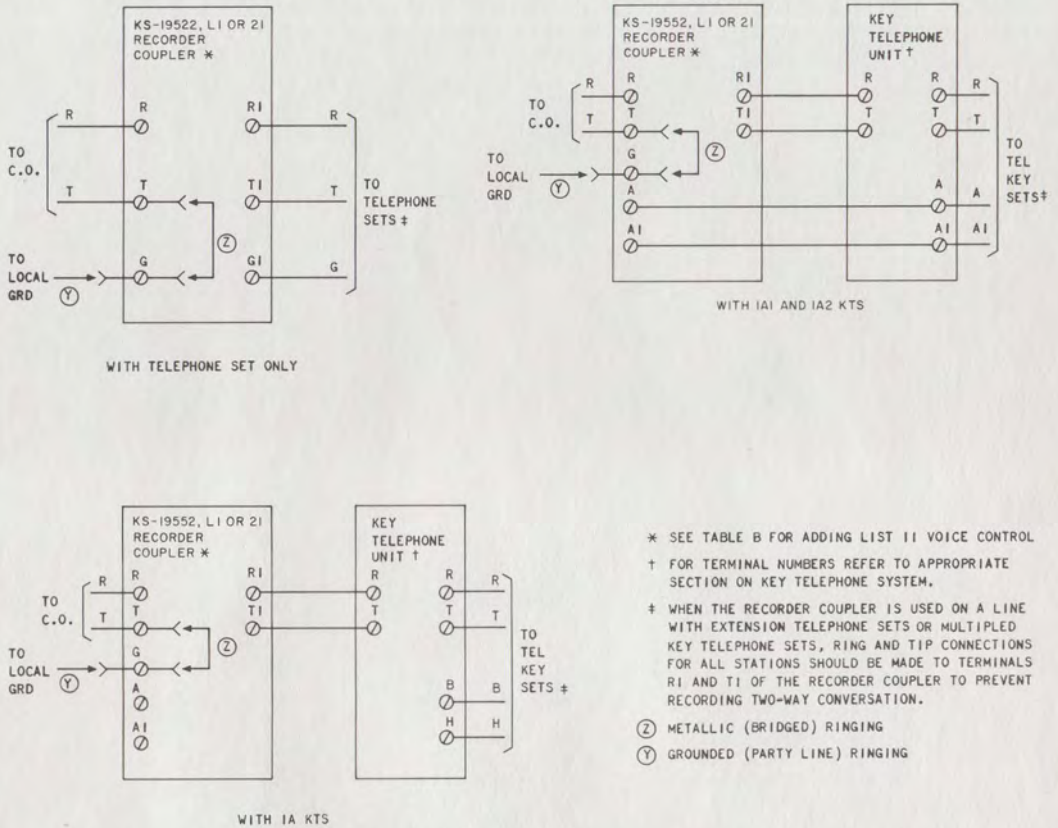


Fig. 11—KS-19522 Recorder Coupler Connections



When the recorder coupler is used on a line with extension telephone sets or multiplied key telephone sets, ring and tip connections for all stations should be made to terminals R1 and T1 of the recorder coupler to prevent

recording of 2-way conversations. When the recorder coupler is used on a busy out line where sleeve control is required, this contact may be provided using A and A1 leads when not connected to a key system line.