

ELECTRONIC SECRETARY MODEL TT2
TELEPHONE ANSWERING SET
DESCRIPTION, INSTALLATION AND MAINTENANCE

1. GENERAL

1.01 The Model TT2 Answering Set furnishes automatic answering service only on Central Office and PBX Lines.

1.02 The medium for recording the answering statement is an endless tape. Three lengths of tape are available, one, two, and three minutes.

1.03 The customer should tailor his message to use all of the tape possible, since the answering cycle is controlled by the physical length of the tape.

1.04 The set is housed in a gray hammer-tone steel cabinet 7-3/8 inches high, by 8-1/8 inches wide and 12 inches deep. See Figs. 1 & 2.

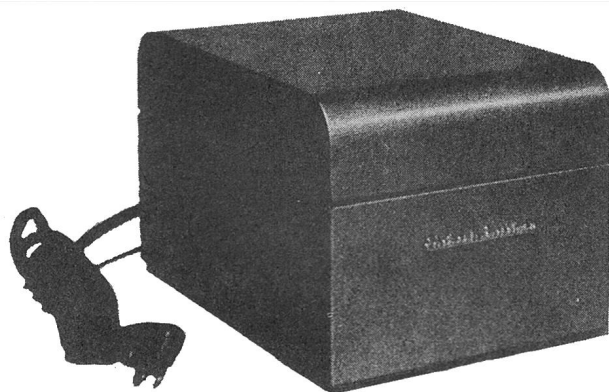


FIG. 1

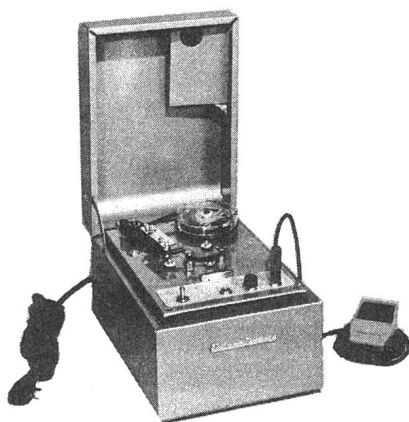


FIG. 2

2. DESCRIPTION

2.01 The Model TT2 can be used at common battery stations of the following classes of manual and dial services:

- Individual Lines
- Two-party Selective
- PBX Stations

2.02 It cannot be used behind Key Telephone Systems.

2.03 It is equivalent to one high impedance ringing bridge.

2.04 A telephone is not directly associated with it.

2.05 Announcements are recorded and monitored by using the self contained cord and plug-ended speaker microphone.

2.06 This set operates on commercial A.C. Power, 105 to 125 Volts.

NOTE: Do not connect it to D.C. Power. Serious damage to the set will result.

2.07 Controls consist of a 3-position non locking key (S1) for Record and Monitor, Record Jack, Combined ON-OFF Switch, and Out Message Level Control, and Monitor Jack, A Start Indicator (Neon Lamp) is located above the Record Jack.

2.08 It cannot be used with Group Announcement Circuits.

3. LOCATION OF ANSWERING SET

3.01 The Model TT2 must be handled carefully at all times to avoid damage.

3.02 In general, locate the set as directed by the customer. Consideration must be given to the following conditions:

- An A.C. Power Outlet must be provided near the set.

- The customer must provide a surface to place the set on, such as a table, desk, or shelf. It should be reasonably level.
- Avoid locations near windows or any place where the set may be exposed to the weather.

4. INSTALLATION

LINE CONNECTIONS

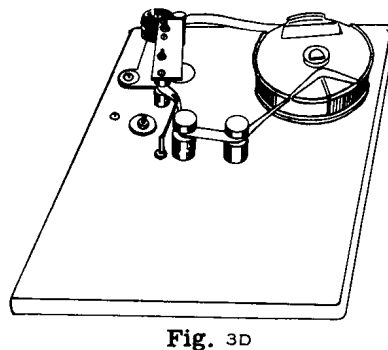
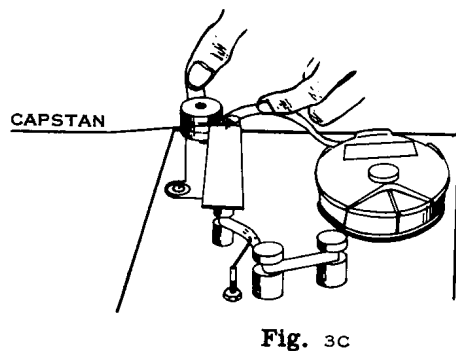
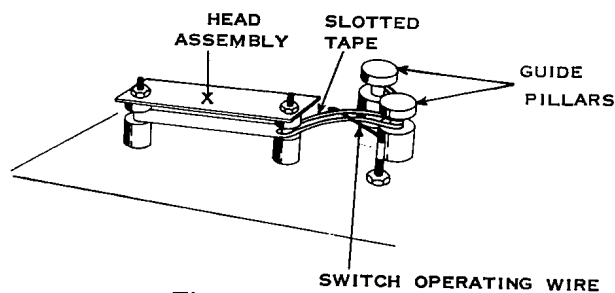
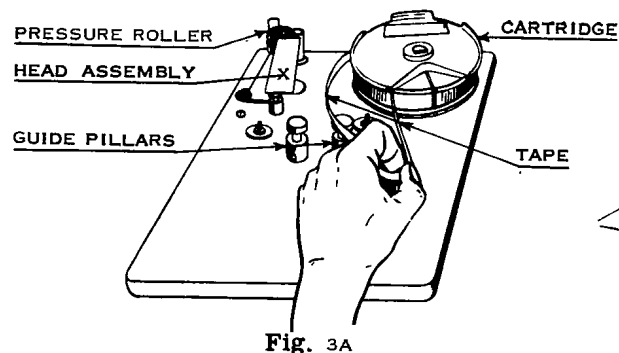
INDIVIDUAL, PBX, OR BRIDGED SERVICE	2-PARTY SELECTIVE SERVICE*		TBI CONNECT- ING BLOCK
	RING PARTY	TIP PARTY	
Ring (R)	Ring (R)	Tip (GN)	L1
—	GRD (Y)	GRD (Y)	G
Tip (GN)	Tip (GN)	Ring (R)	L2

*Remove Strap Between L2 and G for Two-Party Service.

4.02 Placing Tape Cartridge:

- Raise lid of answering set. Note that the speaker, microphone is stored in the lid.
- Place cartridge as follows:
 1. Place it on horseshoe shaped spindle located in right rear of set. See Fig. 2.
- Pull slotted section of tape from cartridge, being careful not to twist the tape. See Fig. 3a.
- Place slotted section of tape around guide pillars, allowing switch operating wire to enter the slot. Fig. 3b.
- Pull back Pressure Rollar on Head Assembly. Fig. 3c. Thread tape past head assembly guide pillars, thru head assembly, and between the pressure roller and the capstan.
- Gently release the pressure roller making sure that the tape is properly positioned in the guides. Figs. 3c and 3d.

FIG. 3



4.03 Operation:

- Turn Power Switch to 'ON'.
- Plug Speaker-Microphone into Record Jack.
- Push Switch S1 to 'Record' and Hold until Start Lamp Lights.
- Hold Microphone about 2 inches from your mouth and talk into it. If you like, use any available written matter.
- There is no Recording Gain Control. By trial the optimum distance from the mouth for the Microphone can be determined.
- Once started, the tape will run until the slotted part returns and lets the switch wire enter the slot.
- When tape stops, move Speaker-Microphone Plug from Record Jack to the Monitor Jack.
- Holding the Speaker-Microphone near an ear, push switch (S1) to Monitor (playback) position. Hold until start lamp lights. The recorded message can now be heard.
- To adjust the level of the recording delivered to the telephone line, call the test board. Ask them to call the telephone number connected to the Answering Set to check the level.
- The level can be adjusted by the knob on the 'ON-OFF' switch.

5. CUSTOMER INSTRUCTION

5.01 Show the customer the controls and demonstrate their use.

5.02 General Rules for Making Good Recordings:

- Hold Microphone about 2 inches from the mouth.
- Talk in a normal tone of voice.
- Enunciate clearly.

- Try to select a time when background noise is at a minimum.

6. MAINTENANCE - CIRCUIT DESCRIPTION (FIG. 4)

6.01 Record (K2, K3 and K4 are operated)

(a) Power is applied to the machine from the power plug through the interlock switch (S-4) through the 3 amp fuse (F-1) and to pin 6 of the 10 pin socket (J-4).

(b) The common side is connected to pin 3. From pin 6 of the 10 pin plug (P-1) power flows through the power switch (S-2) to the power transformer (T-1) and also the panel control switch S-1. When the panel control switch S-1 is moved to the right hand position "RECORD" relays K-2 and K-3 will operate.

(c) Power then flows through contact K-3A to the tape transport motor (B1). The motor drives the capstan which in turn advances the tape until the slotted section of the tape passes the tape switch arm. This closes the tape switch (S3) operating relay K-4. Contacts K-4C then form a locking circuit and apply power directly to the tape recorder motor (B1) and to relays K-2 and K-3 through contact K-3A. The panel control switch may now be released. Contact K-4A connects the selenium rectifier to the filter circuit and supplies power to the amplifier.

(d) The amplifier is now ready to record a message. This is done by inserting the microphone into the "RECORD MIC" Jack J-2. The signal is amplified in the two sections of the 5751 (V-1A, V-1B) and goes to relay contact K-3B.

(c) As K-3 is operated during the record cycle the signal is then transferred through equalizing network (R-2 and C-4) to the record head (PU-2) where it is recorded on the tape. As relay K-2 is also operated during the record cycle the grid of V-2 is connected to the dividing network of the oscillator coil (T-3)

through contact K-2A while the plate of V-2 is connected to the oscillator coil through K-2B.

(f) V-2 supplies a high frequency alternating current (50KC) to be used for erasure and recording bias. When the tape again reaches the slotted section, the tape switch drops out, opening the circuit to relay K-4. K-4 then releases, opening K-4C. K-2 and K-3 then release and restore the machine to stand by condition.

6.02 Monitor (K1 and K4 are operated):

(a) In monitor operation the panel control switch S-1 is moved to the left hand position "MONITOR REJECT" operating relay K-1. Power then flows through switch S-1 and K-1B to the tape transport motor (B-1). The motor drives the capstan advancing the tape, closing the tape switch (S3) and operating relay K-4 which latches in as described previously. The panel control switch may now be released. The machine is now ready to play back the message previously recorded on the tape. This is done by inserting the microphone into the "MONITOR MIC" jack J-1. The signal now comes from the record head (PU2) V1A and V1B to where it is amplified and coupled to the monitor jack through capacitor C-7. As relays K-2 and K-3 are not operated the signal is also amplified by V2. However, it is prevented from reaching the telephone line by contact K-1A, the action of which will be covered in the section describing automatic operation.

(b) As voltages are being developed by the output tube (V2) a 620 ohm resistor (R17) is connected from one side of the output transformer (T2) through pin 5 of J4 and P1 through the now closed K-1A contact through K-3C through pin 7 of P1 and J4 to the other side of the output transformer. This resistor provides a load for the output tube preventing the output transformer from burning out.

6.03 Automatic Answer (K4 and K5 are operated):

(a) Ringing voltage on L-1 and L-2 of the connecting block (TB1) will be

fed from L-1 through pin 8 of J4 and P1 through K-4B normally closed contact through pin 1 of P1 and J4 through the 100 ohm resistor (R18) through the ringing bridge (CR2) through the two microfarad blocking capacitor (C19) to terminal G and L-2. The ringing voltage is then rectified and operates the DC relay K-5. Contact K-5 allows AC to flow from the power switch S-2 through pin 4 of P1 and J4 through the now closed K-5 contact through pin 2 of J4 and P1 to the tape transport motor. This action advances the tape, closing the tape switch S3 and operating relay K-4. K-4B contact now transfers the telephone line L-1 from the ringing circuit through K-1A through K-3C through pin 7 of P-1 and J-4 to the secondary of the output transformer (T-2), coupling the secondary of the output transformer to the telephone line. The outgoing message is then picked up by the record head (PU2) amplified by Electron Tube V1 through K-3B (back contact) through the out-message level control R-3, back contacts K-2A, to the 6005 output tube V2. The primary of the output transformer (T-2) is connected to the positive voltage source and the plate of the 6005 (V2) through pins 9 and 10 of P-1 and J-4 and the normally closed contact K-2B.

6.03 Automatic Answer (K4 and K5 are operated):

(b) The recorded message is then delivered to the telephone line from the secondary of the output transformer. You will note that the secondary of the output transformer is connected to L-1 of the telephone block through relay contacts K-1A and K-3C. This is done to prevent the machine from being bridged across the telephone line whenever relay K-1 or K-3 is operated during the record or monitor cycle.

6.04 Servicing Procedure:

(a) Access to the amplifier for minor servicing such as tube or belt replacement may be obtained by removing the bottom plate from the machine. If it is necessary to do any major servicing the entire motor board and amplifier may be removed from the cabinet by taking out the three screws on the top of the motor

board, lifting out the complete assembly, and disconnecting the 10 pin plug.

(b) For any trouble not listed, replace the set.

(c) Tape Transport Service:

1. Be certain that the rubber belt is on between the motor pulley and the flywheel.

2. See that the tape recorder head is clean and adjusted properly. Excessive accumulation of dust can cause distortion as well as decreased output. Adjustment of the head is made in the following manner.

- To vary the tension of the tape against the head loosen the #6

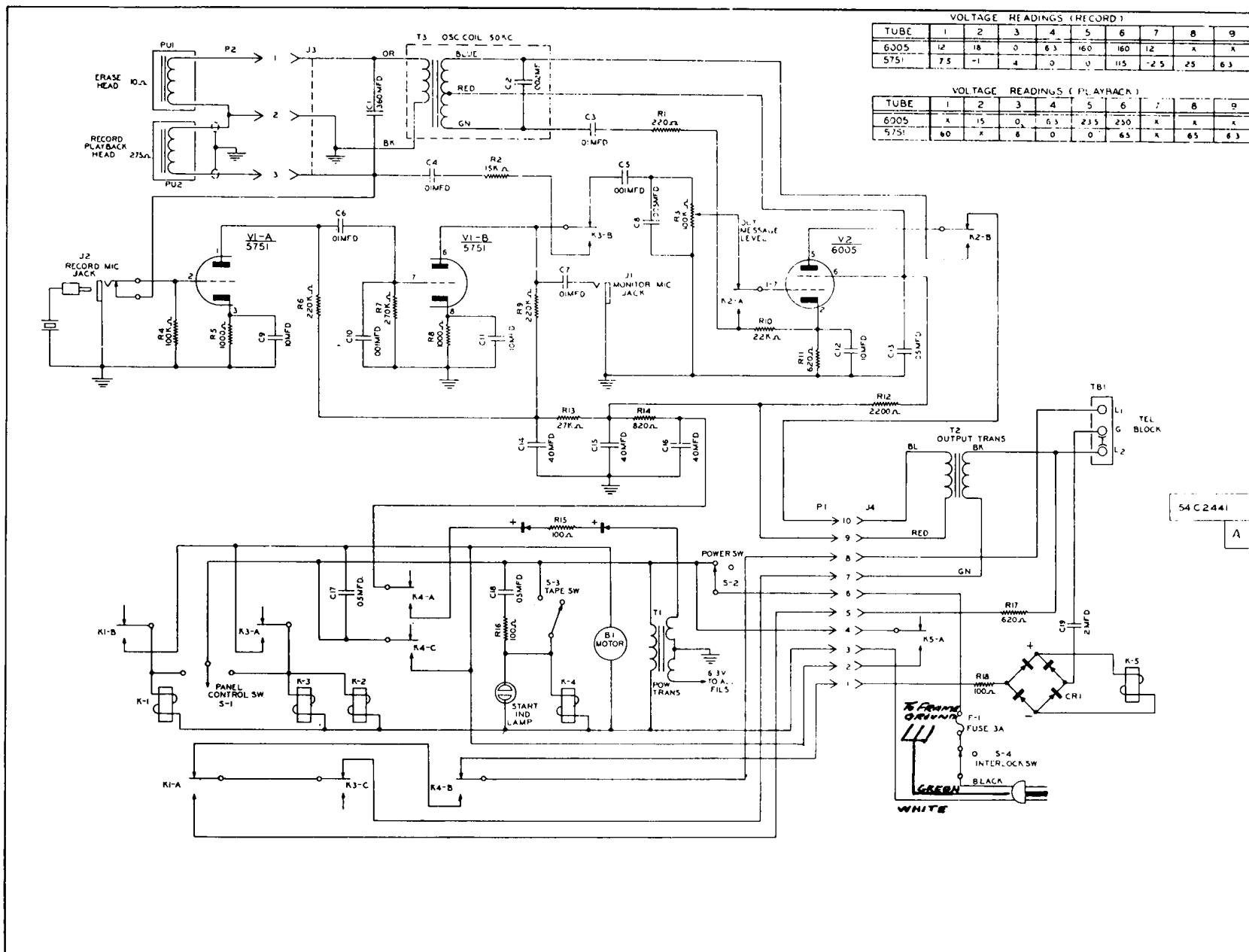
screw located at the left-hand edge of the head bracket and swing the bracket until the proper tension is obtained. Proper tension is obtained when the bracket is about 1/32" ahead of the point at which the tape contacts the head.

- To adjust head alignment loosen the nut holding the record head. Adjust the alignment screws located in a triangular position about the head for maximum output, and then tighten the nut holding the record head.

3. See that the tape is taking the proper path around the guideposts.

6.05 Amplifier Service:

<u>SYMPTOM</u>	<u>REMEDY</u>
No audio signal	1. Check continuity with a signal source from input to output.
	2. Inspect thoroughly for poor connections on switch or relay contacts.
	3. Check voltages using voltage chart, FIG. 4.
Weak recordings	1. Check tubes. Replace if faulty.
	2. Clean tape head if necessary with alcohol solution.
	3. Check head alignment (See Par. 2 under Tape Transport Mechanism.)
Machine does not erase old messages . .	1. Replace 6005 oscillator tube.
	2. Check head alignment.
Set does not start when telephone rings	1. Make sure that wall plug is in the socket.
	2. Check relay K5 contacts.
	3. Make sure 10 pin plug is in socket.

SCHEMATIC
FIG. 4