COMMON SYSTEMS RECORDED ANNOUNCEMENT FRAME (CSRAF) SD-97725-01, SD-97725-02, AND SD-97725-03 PIECE-PART DATA AND REPLACEMENT PROCEDURES

1. GENERAL

1.01 This section describes approved procedures for replacing replaceable parts of the common systems recorded announcement frame (CSRAF) and information for ordering these parts.

1.02 This section is reissued to add information covering the multiple recording service version of the CSRAF and to generally update the section.

1.03 Unless otherwise specified, all piece-part data and replacing procedures pertain to all versions of the CSRAF. When piece-part data or replacing procedures pertain to a particular version, it will be specified by using VML for variable message length, MM for modular message, PM for phased message, MSS for message synthesis service, ▶and MRS for multiple recording service.◀

> ***Note:*** The MSS version of the CSRAF is provided with fully duplicated announcement systems. These duplicated systems are arranged on the same frame and are identical in all respects. Therefore, for the purpose of simplification and explanation, information is provided for a single system but may be used for either.

1.04 Part 2 of this section covers the piece-part numbers and the corresponding names of the parts which can be replaced in the field. No attempt shall be made in the field to replace parts not designated.

1.05 Part 3 of this section covers the approved procedures for the replacement of the parts covered in Part 2.

1.06 ***Removing From Service:*** To make some of the piece-part replacements, it is necessary to remove the CSRAF from service as follows.

> ***Note:*** If the motor of the drum storage unit will be turned off for 8 hours or more, the wiper and the head bars should be backed off so that the heads and wiper are not in contact with the drum. [3.13(a) (1) through (3), (5) and (6)].

FOR VML, MM, PM, ▶AND MRS◀ ONLY

(1) Notify the proper traffic personnel that the recorded announcement frame will be removed from service.

(2) Depress CONTROL OFF keys at control units for all channels on the frame.

> ***Note:*** There are three different CONTROL OFF_ keys on the control unit for the variable message length.

(3) Operate the MOTOR OFF key on the storage module (Fig. 1).

(4) Operate -48V OFF key on the storage module. The CSRAF is now out of service.

> ***Note:*** Step (4) must always be performed whenever Steps (2) and (3) are performed.

Warning: All voltage has not been removed from the unit.

FOR MSS ONLY

(1) Notify the proper personnel that the recorded announcement machine will be removed from service.

(2) Operate AUD ALARM key on the storage module (Fig. 2).

(3) Operate AMPL key on the storage module.

(4) Operate the MOTOR key on the storage module.

(5) Operate -48 key on the storage module. The CSRAF is now out of service.

Note: Step 5 must always be performed whenever Steps 2 through 4 are performed.

Warning: All voltage has not been removed from the unit.

1.07 *Restoring to Service*

Note: If the head bars and wiper were out of contact with the drum, as required for shutdown periods greater than 8 hours, secure the wiper and head bars by tightening the mounting screws. [3.13(b) (4) and (5)].

FOR VML, MM, PM, ▶AND MRS◀ ONLY

(1) Check that all CONTROL OFF keys are operated on all control units.

(2) Check that MOTOR OFF key is depressed on the storage module (Fig. 1).

(3) Check that PWR and OFF NOR lamps on the storage module are lighted on all control panels.

(4) Depress -48V NOR key on the storage module. POWER OFF lamp on storage module extinguishes, and POWER OFF and OFF NOR lamps on all control units light.

(5) Using the KS-14510-L1 volt-ohm-milliammeter (VOM), check the voltages at the jacks on the storage module. The voltages shall be as indicated on the panel.

(6) Depress MOTOR NOR key. Motor starts and drum rotates.

(7) Depress CONTROL NOR keys on all control units.

(8) If the CSRAF is equipped with variable message length channels, perform the memory reset procedure (1.08) for each channel.

FOR MSS ONLY

(1) Check that MOTOR key is depressed on the storage module (Fig. 2). Lamp lighted.

(2) Check that -48 lamp on the storage module is lighted.

(3) Check that AUD ALARM and AMPL lamps are lighted.

(4) Depress -48 key on storage module. -48 lamp on storage module extinguished.

(5) Using the KS-14510-L1 volt-ohm-milliammeter (VOM), check the voltages at the jacks on the storage module. The voltages shall be as indicated on the panel.

(6) Depress MOTOR key on the storage module. MOTOR lamp on storage module extinguished. Motor starts and drum rotates.

(7) Depress the AMPL key on the storage module. AMPL lamp extinguished.

(8) Depress the AUD ALARM key on the storage module. AUD ALARM lamp extinguished.

1.08 *Memory Reset*

FOR VML ▶OR MRS VERSION WITH VML◀ ONLY

(1) Request that no operations be made at the dedicated telephone while resetting the memory.

(2) Connect headset or handset into HEADSET jack (Fig. 1) on the storage module.

(3) Insert one plug of the W1 patch cord into SIGNAL jack on the storage module and the other plug into the TMS jack on the variable message length control unit (Fig. 3).

(4) Depress CHANNEL TEST key on the control unit.

(5) Depress and ***hold*** RECORD MEM key on the control unit.

(6) Monitor the recording.

Note: (FOR MRS ONLY) Audio cannot be monitored until RDY lamp lights.

(7) At the end of the message, release the RECORD MEM key ***immediately.***

(8) Monitor the recording to ensure correct message length.

(9) Depress the CHANNEL NOR key on the control unit.

(10) Remove handset or headset and the patch cord.

1.09 ***Pulling Recorder Unit Out on Its Slides:*** To gain access to the recorder unit, pull it out on its slides as follows.

(1) Unlatch the door (Fig. 1 or 2) with the paddle latch and open the door.

(2) If desired, the door can be removed by lifting it from the hinge blocks. Place the door in a suitable storage place.

(3) Release the latch assembly (Fig. 4) by lifting it upward and pull the recorder unit out of the drum storage unit until it stops and locks.

1.10 ***Pushing the Recorder Unit Into the Drum Storage Unit***

(1) Release the slides (Fig. 5) by pushing the latches on both slides. Push the recorder unit back into the drum storage unit until the latch (Fig. 4) secures the unit.

(2) Remount the door, if removed, and close it ensuring that it is secured with the paddle latch.

1.11 ***Dust Cover:*** To gain access to the drum and associated parts, remove the dust cover (Fig. 5) as follows.

(1) Pull the recorder unit out on its slides (1.09).

(2) Using the appropriate Allen wrench, remove the four dust cover mounting screws.

(3) Remove the dust cover by lifting it vertically off the recorder unit, being careful not to bump anything on the recorder unit.

(4) To remount the dust cover, reverse the procedure.

2. PIECE-PART DATA

2.01 The illustrations in this part show the various piece parts in their proper relation to other parts of the announcement frame. The piece-part numbers are given with the names of the parts as listed by the Western Electric Company Merchandise Department. When these names differ from those in general use in the field, the latter names in some cases are shown in parentheses.

2.02 When ordering replacement parts, give both the piece-part number and the name of the piece part as follows:

238AM jack

If a piece-part is part of the drum storage unit, state the serial number and list number of the drum storage unit, the part number, the name of the part, the manufacturer's name, and specify that the piece part is part of the KS-20951 drum storage unit, serial number ( ), list number ( ), as shown in the following example:

L-504777 wiper, manufacturer's name, for KS-20951 drum storage unit, serial number ( ), list number ( )

If a part identified by other than a piece-part number is required, state the number, the name of the part, and the manufacturer's name if applicable. Also, be sure to specify that the piece part is a part of the CSRAF.

Do not refer to the section number nor to any information shown in parentheses in the illustrations.

2.03 Information enclosed in parentheses is not ordering information. This information may be references to notes, information pertaining to parts not considered replaceable, or part names in

general use in the field if the names differ from those assigned by the manufacturer.

2.04 ***Circuit Packs:*** When ordering circuit packs, order using the ***A*** number stamped on the face of the circuit pack.

2.05 ***Recommended On-Site Spare Parts:*** Parts listed in Table A are replacement parts which are most likely to be needed to maintain a CSRAF. It is recommended that a stock of these parts be kept on site with each unit.

3. REPLACEMENT PROCEDURES

3.01 *List of Tools and Materials*

CODE OR SPEC NO.	DESCRIPTION
TOOLS	
KS-16346 L1	Soldering iron (or equivalent)
KS-8511	Tweezers
417A	1/4-inch and 3/8-inch open double-end flat wrench
723B	Tool (circuit pack extracter)
—	4-inch E screwdriver
—	6-inch E screwdriver
—	3/32-inch Allen socket screw wrench
—	7/64-inch socket screw wrench
—	9/64-inch Allen socket screw wrench
MATERIALS	
KS-2423	Twill cloth
KS-19139, L4	Lubricant
TEST APPARATUS	

Note: The following test apparatus is only necessary for setting the memory of the VML announcement.

G3DR-61	Handset
W1	Patch cord, 3PE slate cord, 4 feet long, equipped with two 310 plugs (3P7E cord)

3.02 No replacement procedures are given for screws or other parts where the procedure is obvious and consists of a simple operation.

3.03 All procedures covered in this section can be performed without removing the drum storage unit from the frame.

3.04 After replacement of any parts, the CSRAF shall meet the requirements specified in Section 201-520-701. Replacement operations may affect the adjustment of related parts; therefore, such parts should be checked against the requirements and should be adjusted if necessary.

3.05 ***Optical Switch Circuit Assembly:*** The optical switch assembly is replaced as a unit. Replace the switch circuit assembly as follows.

(1) Remove the recorded announcement frame from service (1.06).

(2) Pull the storage unit out on its slides (1.09).

(3) Remove the dust cover (1.11).

(4) Using the 4-inch E screwdriver, remove the three optical switch assembly mounting screws. Refer to Fig. 6 when equipped with L504316 optical switch assembly, and refer to Fig. 7 when equipped with L509855 optical switch assembly.

(5) Carefully remove the switch circuit assembly from its mounting position, taking care not to apply pressure to the connecting leads.

For List 1 and List 2 Drum Storage Units

Note: For list 1 drum storage units serial numbered 1 through 7 and list 2 drum storage units serial numbered 1 through 8, the optical switch assembly is removed by lifting directly upward. For all other list 1 and list 2 drum storage units, the optical switch assembly is removed by slightly lifting assembly off of guide pins, sliding assembly in the direction

of the connecting cable (such that the optical switch clears the edge of the code plate located atop the magnetic drum) and then lifting upward.

For List 3 Drum Storage Units

Note: For all list 3 drum storage units, the optical switch assembly is removed by slightly lifting assembly off of guide pins, sliding assembly in the direction of the connecting cable (such that the optical switch clears the edge of the code plate located atop the magnetic drum) and then lifting upward.

(6) Using the 3-inch C screwdriver and the 417A wrench, remove the connector mounting screws and nuts; disconnect the connector; and remove the assembly.

(7) Connect the connector to the new switch circuit assembly and secure it with the two mounting screws and nuts. Position the assembly on the mounting surface using the guide pins (Fig. 6, 7, 8 and 9) for alignment.

Note: Refer to notes in Step 5, performing procedure in reverse order.

(8) Secure the switch circuit assembly with the mounting screws.

(9) Check that the switch circuit assembly meets requirements (Section 201-520-701).

(10) Remount the dust cover (1.11).

(11) Push the recorder unit back into the drum storage unit (1.10).

(12) Restore the recorded announcement frame to service (1.07).

3.06 *Wiper*

(1) Pull the recorder unit out on its slides (1.09).

Caution: Do not place any object or fingers on or near the magnetic drum because the drum is rotating and severe damage may result to drum or fingers.

(2) Remove the dust cover (1.11).

Caution: Care should be taken not to damage the head bar cables while removing the lower wiper housing mounting screw. The lower mounting screw will be covered with the List 10 head bar cable if the unit is equipped with an L504320-10 head bar assembly.

(3) Using the appropriate Allen wrench, remove the two wiper housing mounting screws and remove the wiper housing (Fig. 8 or 9 and 10).

Note: Take care not to get the silicone lubricant on other parts of the unit.

(4) Using the KS-8511 tweezers, remove the old wiper leaving the flat spring in the housing. Remove the new wiper from the new container and place the new wiper into the wiper housing, being sure the point of the bevel is oriented in the direction of the rotation of the drum.

Note: Prior to remounting the wiper housing, check the spring retainers (Fig. 10) for free movement along the mounting screws.

(5) Remount the wiper housing and secure with the mounting screws.

(6) Observe that the wiper is in contact with the drum along its entire length and that it is applying a uniform film of lubricant over the entire surface of the rotating drum.

(7) The wiper shall meet requirements (Section 201-520-701).

(8) Remount the dust cover (1.11).

(9) Push the recorder unit back into the drum storage unit (1.10).

3.07 *Detector Assembly*

(1) Remove the recorded announcement frame from service (1.06).

(2) Pull the recorder unit out on its slides (1.09).

(3) Using the appropriate Allen wrench, remove the four cover mounting screws (Fig. 11) and remove the cover from the bottom of the recorder unit.

Caution: Be extremely careful when removing the detector assembly from the recorder unit. The code wheel is very easily damaged.

(4) Using the appropriate screwdriver and while holding the detector assembly (Fig. 12 and 14) in position, remove the detector assembly mounting screws.

(5) Remove the detector assembly from the code wheel area, being very careful not to bump or scratch the code wheel.

(6) Using the appropriate screwdriver, remove the code wheel amplifier mounting screws and remove the code wheel amplifier.

(7) Tag and disconnect the detector assembly leads from the code wheel amplifier using the soldering iron.

(8) Reconnect the leads of the new detector assembly to the terminals on the code wheel amplifier assembly.

(9) Remount the code wheel amplifier assembly.

(10) Being aware of the caution, remount the detector assembly and secure with the mounting screws. Dress the leads away from the code wheel.

(11) Check the detector assembly requirements in accordance with Section 201-520-701.

(12) Remount the cover on the bottom of the recorder unit and secure with the mounting screws.

(13) Push the recorder unit back into the drum storage unit (1.10).

(14) Restore the recorded announcement frame to service (1.07).

3.08 ***Code Wheel***

(a) ***Removing the Code Wheel***

(1) Remove the recorded announcement frame from service (1.06).

(2) Pull the recorder unit out on its slides (1.09).

(3) Using the appropriate Allen wrench, remove the four cover mounting screws (Fig. 11) and remove the cover from the bottom of the recorder unit.

Caution: Be extremely careful when removing the detector assembly from the recorder unit. The code wheel is very easily damaged.

(4) Using the appropriate screwdriver and while holding the detector assembly (Fig. 12) in position, remove the detector assembly mounting screws.

(5) Remove the detector assembly from the code wheel area, being very careful not to bump or scratch the code wheel. Do ***not*** disconnect the leads.

(6) Using the appropriate screwdriver, remove the code wheel amplifier mounting screws and remove the code wheel amplifier.

Caution: Extreme care shall be practiced while removing and handling the code wheel. A small scratch or chip on the code wheel is not repairable. Hold the code wheel by its edges or by the code wheel support. Finger smudges on the grid section will cause faulty operation.

Note: Some drum storage units are equipped with the L-518116 brush shield. The brush shield is held in place by the code wheel and will come off the shaft when the code wheel is removed.

(7) While holding the code wheel in position and using the appropriate Allen wrench, remove the four code wheel mounting screws. Carefully remove the code wheel and the brush shield on it, if one is present, and store them in a safe place.

(b) ***Mounting the Code Wheel***

(1) Using a clean, dry cloth, carefully remove any finger smudges, residue, and dust from the code wheel.

(2) If a brush shield was present, mount it on the shaft up against the brush ring.

(3) Place the code wheel in position, being very careful not to damage it. Align the mounting screw holes.

(4) Secure it with the mounting screws.

(5) Remount the code wheel amplifier assembly and secure with the mounting screws.

(6) Being aware of the cautions in (a), remount the detector assembly and secure with the mounting screws. Dress the leads away from the code wheel.

(7) Check the detector assembly requirements in accordance with Section 201-520-701.

(8) Remount the cover on the bottom of the recorder unit and secure with the mounting screws.

(9) Push the recorder unit back into the drum storage unit (1.10).

(10) Restore the recorded announcement frame to service (1.07).

3.09 *Brush Ring*

(1) Remove the code wheel [3.08(a)].

(2) Using the appropriate screwdriver and wrench, remove the connector mounting screws and remove the connector, as shown in Fig. 13.

(3) Using the soldering iron, unsolder the brush ring leads (Fig. 13) from the terminals on the code wheel amplifier assembly.

(4) Using the appropriate Allen wrench, loosen the cable clamps securing the leads.

(5) Using the 4-inch E screwdriver, remove the four brush ring mounting screws and remove the brush ring from around the motor armature (Fig. 13).

(6) Using a clean KS-2423 cloth, wipe the armature and brush mounting area to remove all residue worn from the old brushes.

(7) Mount the new brush ring around the motor armature, ensuring that the brushes are contacting the armature properly. Secure with the mounting screws. Dress the leads in place and tighten the cable clamps.

(8) Solder the leads of the new brush ring assembly to the terminals on the code wheel amplifier assembly.

(9) Connect the connector to the code wheel amplifier and secure with the two mounting screws and nuts.

(10) Using a clean, dry cloth, carefully remove any finger smudges, residue, and dust from the code wheel.

(11) Remount the code wheel [3.08(b)].

3.10 *Code Wheel Amplifier*

(1) Remove the recorded announcement frame from service (1.06).

(2) Pull the recorder unit out on its slides (1.09).

(3) Using the appropriate Allen wrench, remove the four cover mounting screws (Fig. 11) and remove the cover from the bottom of the recorder unit.

(4) Using the appropriate screwdriver, dismount the code wheel amplifier assembly (Fig. 12 and 14).

(5) Using the appropriate screwdriver and wrench, remove the connector mounting screws and nuts and disconnect the connector.

(6) Using the soldering iron, unsolder the brush ring leads and the detector assembly leads (Fig. 13) from the terminals on the code wheel amplifier assembly.

(7) Solder the brush ring leads and the detector assembly leads to the new code wheel amplifier assembly.

(8) Reconnect the connector and secure it with the mounting screws and nuts.

(9) Mount the new code wheel amplifier assembly, secure it with the mounting screws (Fig. 12), and dress the leads away from the code wheel.

(10) Check the code wheel amplifier requirements (Section 201-520-701).

(11) Remount the cover on the bottom of the recorder unit and secure with the mounting screws.

(12) Push the recorder unit back into the drum storage unit (1.10).

(13) Restore the recorded announcement frame to service (1.07).

3.11 *Head Bar Assembly*

Note: The dashed number of the L504320 head bar assembly fixes its position on the recorder unit. If a -3 unit is being replaced, it must be replaced by another -3 assembly.

(a) ***Removal***

(1) Pull the recorder unit out on its slides (1.09).

Caution: Do not place any object or fingers on or near the magnetic drum because the drum is rotating and severe damage may result to the drum or fingers.

(2) Remove the dust cover (1.11).

(3) Using the appropriate Allen wrench, remove the cable clamping bar retaining screws (Fig. 15) at the back of the recorder unit and remove the bar.

(4) Using the appropriate Allen wrench, remove the cable clamping bar retaining screws inside the rear of the recorder support and remove the bar.

(5) Open the cover door on the rear of the drum storage unit (Fig. 16).

(6) Remove the connectors from the interconnecting unit of the head bar assembly to be removed (Fig. 15 and 16).

(7) Using the appropriate Allen wrench, remove the mounting screws of the interconnecting unit at the rear of the drum storage unit. Remove the interconnecting unit by withdrawing it at the front of the drum storage unit.

(8) Using the appropriate Allen wrench, turn the head bar assembly mounting screws (Fig. 4) counterclockwise a few turns at a time, alternating from top to bottom. Continue this procedure until the head bar is free of the head bar housing.

Note: The mounting springs will move the head bar assembly away from the head bar housing as the mounting screws are removed.

(9) Remove the head bar assembly and the interconnecting unit from the drum storage unit.

(b) ***Installation***

Note: Prior to placing the headbar in position, check the spring retainers (Fig. 17) for free movement along the mounting screws.

(1) Position the head bar assembly on the recorder unit, being careful not to damage the magnetic heads or the magnetic drum.

(2) Secure the head bar assembly with the mounting screws. Be sure the assembly is properly seated in the head bar housing slot without binding and is seated tightly in the bottom of the slot before tightening the mounting screws. Turn each of the screws a few turns at a time, alternating from top to bottom until both are tight.

(3) Route the flat cable across the base of the recorder unit keeping it in the proper level of the cable track.

(4) Position the printed circuit end of the interconnecting unit at the proper level at the rear of the drum storage unit (Fig. 15) and secure it with the mounting screws.

(5) Dress the flat cables of the interconnecting units at the rear of the drum storage unit and replace and secure the cable clamping bar.

(6) Dress the cables on the recorder unit, and place and secure the cable clamping bar on the back of the recorder unit.

(7) Mount the connectors on the interconnecting unit at the back of the drum storage unit. Close and secure the cable cover door.

(8) Mount the dust cover (1.11).

(9) Push the recorder unit back into the drum storage unit (1.10).

(10) If a defective head bar assembly has been replaced by a new one, the recordings associated with that head bar assembly must be replaced.

(11) If a new head bar assembly has been added to increase the storage capacity, new recordings must be made for the new head bar assembly.

3.12 *Head Assembly*

(1) Remove the head bar assembly [3.11(a)] and place it on a clean work surface (Fig. 17).

(2) Using the appropriate Allen wrench, remove the head bar cover mounting screws (Fig. 18) and remove the head bar cover.

Caution: In all replacement and handling operations, care shall be exercised to ensure that no damage occurs to the pole pieces of the magnetic heads.

(3) Select the L-504303 head assembly to be replaced and apply pressure to the pole piece of the head (Fig. 19 and 20). This will position the connector on the head assembly for easy removal (Fig. 21).

(4) Disconnect the connector from the head assembly.

(5) Remove the head assembly from the front of the head bar assembly.

Note: Do not lose the springs on the head bar assembly that hold the head assembly against the drum.

(6) Using the KS-19139, L4 lubricant, lightly lubricate all sliding surfaces of the new head assembly (Fig. 19) which contact the slot in the head bar assembly.

(7) Mount the new head in the head bar assembly and reconnect the head assembly connector.

(8) Apply pressure to the pole piece of the new head assembly and release the pressure to verify that the head assembly slides freely in its slot without sticking. The spring behind the head assembly should push it forward as the pressure is released. If the head assembly sticks, the condition must be corrected before proceeding.

(9) Remount the head bar cover and secure with the mounting screws.

(10) Reinstall the head bar assembly [3.11(b)].

Note: Prior to placing the headbar in position, check the spring retainers (Fig. 17) for free movement along the mounting screws.

3.13 *Magnetic Drum*

(a) ***Removal***

(1) Remove the recorded announcement frame from service (1.06).

(2) Pull the recorder unit out on its slides (1.09).

(3) Remove the dust cover (1.11).

(4) Remove the optical switch circuit assembly [3.05(4), (5), and (6)].

(5) Using the appropriate Allen wrench, loosen the two wiper housing mounting screws (Fig. 4 and 10) and pull the wiper away from the drum.

(6) Using the appropriate Allen wrench, turn all the head bar assembly mounting screws counterclockwise a few turns at a time alternating from top to bottom on the same head bar assembly. When the gap between the head bar assembly and the housing is 3/32 to 1/8 inch, the heads will be out of contact with the drum.

(7) Using the 6-inch E screwdriver, hold the shaft (Fig. 8 or 9) to prevent rotation and turn the knurled nut counterclockwise (as viewed from top) off the shaft.

(8) Carefully lift the drum off the shaft and out of the head bar housing.

Caution: Avoid scratching the drum surface. Do not allow it to come in contact with any surrounding metallic surfaces.

(b) ***Installation***

(1) Clean and lubricate the magnetic drum per Section 201-520-701.

(2) Mount the new drum on the shaft, carefully ensuring that it is seated properly on the shaft.

(3) Secure the drum with the knurled nut and, while holding the shaft with the 6-inch E screwdriver, securely tighten the nut.

(4) Tighten all head bar assembly mounting screws, being sure the head bar assemblies are seated tightly in the bottom of the slot in the head bar housing without binding.

(5) Tighten the two wiper housing mounting screws.

(6) Remount the optical switch circuit assembly [3.05(7) through (9)].

(7) Restore the recorded announcement frame to service (1.07).

(8) Observe that the wiper is in contact with the drum along its entire length and that it is applying a uniform film of lubricant over the entire surface of the rotating drum.

(9) Remount the dust cover (1.11).

(10) Push the recorder unit back into the drum storage unit (1.10).

3.14 ***Latch Assembly*** (for securing in stored position)

(1) Pull the recorder unit out on its slides (1.09).

(2) Using the 417A wrench, remove the latch assembly (Fig. 4) mounting screws and washers and remove the latch assembly.

(3) Mount the new latch assembly and secure with the mounting screws and washers.

(4) Check the latch requirement (Section 201-520-701).

(5) Push the recorder unit back into the drum storage unit (1.10).

3.15 ***Circuit Packs:*** All the circuit packs mounted in the CSRAF are removed from and mounted into the frame following the same general procedure.

(a) Remove a circuit pack as follows.

(1) Ensure that proper notification is given and the frame or module is in proper condition for removing a circuit pack. Power must be removed from any circuit pack before it is removed or installed.

Caution: When installing the 723B tool on the circuit pack, be sure the lower part of the tool is not resting against the lower rib of the circuit pack. Improper placement will result in damage to the circuit pack.

(2) Using the 723B tool, disengage the circuit pack from its connector. Remove the circuit pack from the frame.

(b) To mount a circuit pack in the frame, place the circuit pack in position ensuring it fits in the grooves to position it vertically and is in line with the connector. Push it all the way in until it fully engages the connector.

3.16 ***Interconnecting Units***

Note: The list number defines a folding pattern which is established by the position on the recorder unit.

(a) ***KS-20594 Interconnecting Unit***

(1) Remove the CSRAF from service (1.06).

(2) Remove the head bar assembly from the drum storage unit [3.11(a)].

(3) Place the head bar assembly on a clean suitable work surface.

Caution: The head assemblies will be free in the head bar assembly after the connector is removed and will fall out if the head bar assembly is positioned with the pole pieces of the heads downward.

(4) Remove the connector from each head assembly following the procedure in 3.12 (2) through (4). Do ***not*** remove the heads from the head bar assembly.

(5) Connect the connector of the new interconnecting unit to the head. To avoid confusion, substitute the new connectors one at a time.

(6) Remount the head bar cover and secure with the mounting screws.

(7) Verify that each head assembly slides freely in its slot in the head bar assembly without sticking, using the procedure in 3.12 (8).

(8) Reinstall the head bar assembly [3.11(b)].

(9) Restore the CSRAF to service (1.07).

(b) ***KS-20955 L1 Interconnecting Unit***

(1) Remove the CSRAF from service (1.06).

(2) Pull the recorder unit out on its slides (1.09).

(3) Open the cover door at the rear of the drum storage unit (Fig. 16).

(4) Using the appropriate screwdriver, remove the two screws securing the connector near the bottom of the drum storage unit and disconnect the connector.

(5) Using the appropriate Allen wrench, remove the cable clamping bars on the base of the recorder unit and inside the rear of the drum storage unit.

(6) Remove the dust cover (1.11).

(7) Using the appropriate Allen wrench, remove the four cover retaining screws (Fig. 11) and remove the cover from the bottom of the recorder unit.

(8) Remove the optical switch circuit assembly [3.05(4), (5), and (6)].

(9) Using the appropriate screwdriver and wrench, disconnect the connector from the code wheel amplifier.

(10) Using the appropriate Allen wrench, loosen the cable clamps in the base of the recorder unit.

(11) Remove the interconnecting unit from the drum storage unit.

(12) Place the new interconnecting unit in proper position in the drum storage unit.

(13) Secure the cable clamp in the base of the recorder unit.

(14) Connect and secure the connector at the code wheel amplifier assembly.

(15) Mount the connector on the optical switch assembly. Secure the connector and install the optical switch assembly with its mounting screws [3.05 (7) through (9)].

(16) Secure the connector at the back of the drum storage unit.

(17) Position the cables and remount the cable clamping bars at the base of the recorder and inside the rear of the drum storage unit.

(18) Remount the cover on the bottom of the recorder unit (Fig. 11) and secure with the mounting screws.

(19) Remount the dust cover (Fig. 5) and secure with mounting screws.

(20) Push the recorder unit back into the drum storage unit (1.10).

(21) Restore the CSRAF to service (1.07).

(c) ***KS-20955-L2 Interconnecting Unit***

(1) Remove the CSRAF from service (1.06).

(2) Using a 4-inch E screwdriver, remove the screws securing the connector [Fig. 16(A)]. Disconnect the connector. Do ***not*** pull on the leads.

(3) Using the 4-inch E screwdriver, remove the screws securing the connector [Fig. 16(B)]. Disconnect the connector. Do ***not*** pull on the leads.

(4) Remove the interconnecting unit from the frame.

(5) Place the new interconnecting unit on the frame and connect both connectors. Secure the connectors with the screws.

(6) Restore the CSRAF to service (1.07).

(d) ***KS-20956 Interconnecting Unit***

(1) Remove the CSRAF from service (1.06).

(2) Remove the cable channel cover (Fig. 16) on side of frame.

(3) Remove the connector from the printed circuit edge connector on the back of the channel module.

(4) Open the cover door at the rear of the drum storage unit and disconnect the appropriate connector from the back of the drum storage unit.

(5) Remove the interconnecting unit from the frame. Mount the new interconnecting unit in position on the frame and dress the excess cable into the cable channel, being careful not be bend or crease the cable. Be sure the connectors are in the proper position (the end connectors are different).

(6) Reconnect the connectors and remount the cable channel cover. Close and secure the cover door on the rear of the drum storage unit.

(7) Restore the CSRAF to service (1.07).

3.17 ***Control Unit***

FOR VML, MM, PM, AND MRS ONLY

(a) ***Removal***

(1) Remove the CSRAF from service (1.06).

(2) Disconnect the appropriate connectors from the rear of the control unit (Fig. 16).

(3) Using a 6-inch E screwdriver, insert the tip of the blade in the slot at the end of the control unit [Fig. 22(A)] and pry the control unit out (toward the front) and remove it from the frame.

Note: All types of control units are removed in a similar manner.

(b) ***Installation***

(1) Position the control unit in the frame and push it all the way into the frame.

(2) Reconnect the appropriate connectors to the control unit at the rear of the frame (Fig. 16).

3.18 Brush Shield (Fig. 23)

(a) Installing the Brush Shield

Note: Drum storage units manufactured prior to (S/N—) for L1, and (S/N—) for L2, and (S/N—) for L3, were not shipped with the L-518116 brush shield installed.

(1) Remove the code wheel [3.08(a)].

(2) Mount the brush shield on the shaft up against the brush ring.

(3) Mount the code wheel [3.08(b)].

TABLE A

LIST OF SPARE PARTS

DESCRIPTION	KS-20951, L1 DRUM STORAGE UNIT		KS-20951, L2 DRUM STORAGE UNIT		KS-20951, L3 DRUM STORAGE UNIT	QUANTITY
	SERIAL NO. 1-7	SERIAL NO. 8-UP	SERIAL NO. 1-8	SERIAL NO. 9-UP	SERIAL NO. 1-UP	
	PART NUMBER	PART NUMBER	PART NUMBER	PART NUMBER	PART NUMBER	
OPTICAL SWITCH CIRCUIT ASSEMBLY	L-504316-1	L-509855-1	L504316-2	L-509855-2	L-509855-2	1
CODE WHEEL AMPLIFIER ASSEMBLY	L-504783	L-504783	L-504783	L-504783	L-504783	1
BRUSH RING ASSEMBLY	B-32627	B-32627	B-32627	B-32627	B-32627	1
WIPER	L-504777	L-504777	L-504777	L-504777	L-504777	2
HEAD ASSEMBLY	L-504303	L-504303	L-504303	L-504303	L-504303	5
CIRCUIT PACKS	AS REQUIRED (NOTE 1)	AS REQUIRED (NOTE 1)	AS REQUIRED (NOTE 1)	AS REQUIRED (NOTE 1)	AS REQUIRED (NOTE 2)	SEE APPROPRIATE NOTE

Note 1: The recommended quantity of spare circuit packs will depend on the configuration of the frame. If there are 10 or fewer circuit packs of the same part number (for example, A1019), the quantity of spares shall be one. If the frame is equipped with more than 10 cards of the same part number, the quantity of spares shall be on a 10 percent basis (for example, equipped with 20, stock 2 spares; equipped with 30, stock 3 spares, etc).

Note 2: The recommended quantity of spare circuit packs is 5 additional quad amps (A1102 packs) per frame. These 5 are in addition to the 4 spare packs per frame located at the storage module. There should also be 2 additional ferrod drivers (A1103 packs) per frame.

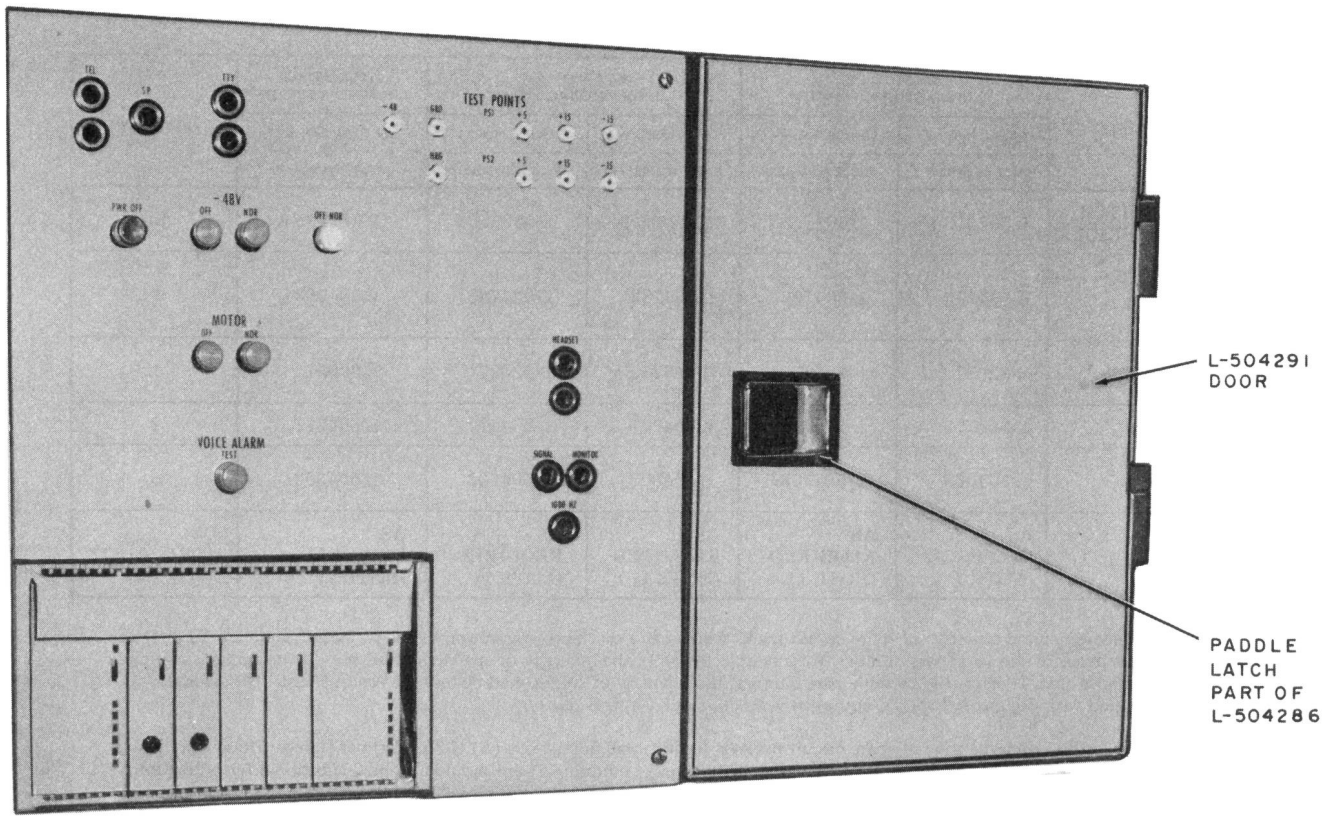


Fig. 1—Storage Module ◗(for VML, MM, PM, and MRS Only)◖

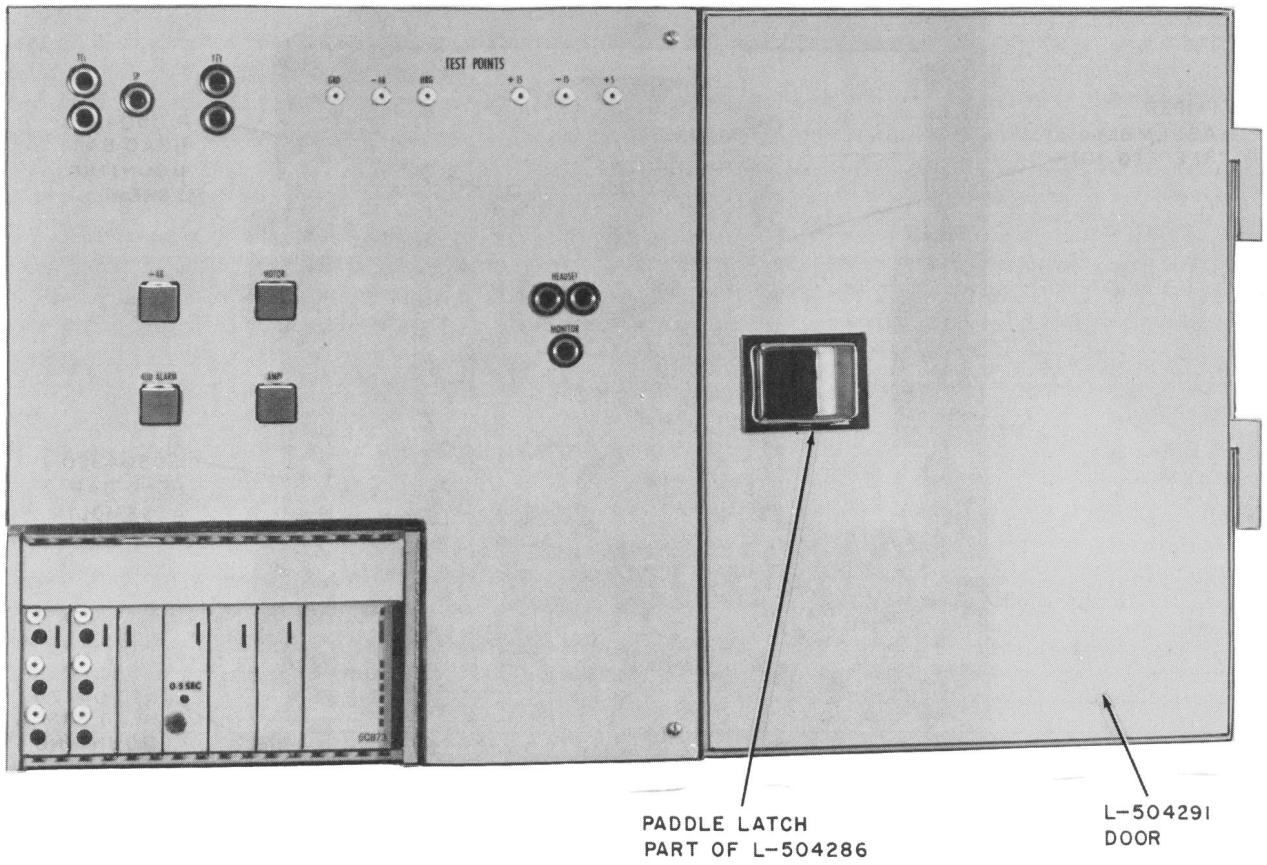


Fig. 2—Storage Module (for MSS Only)

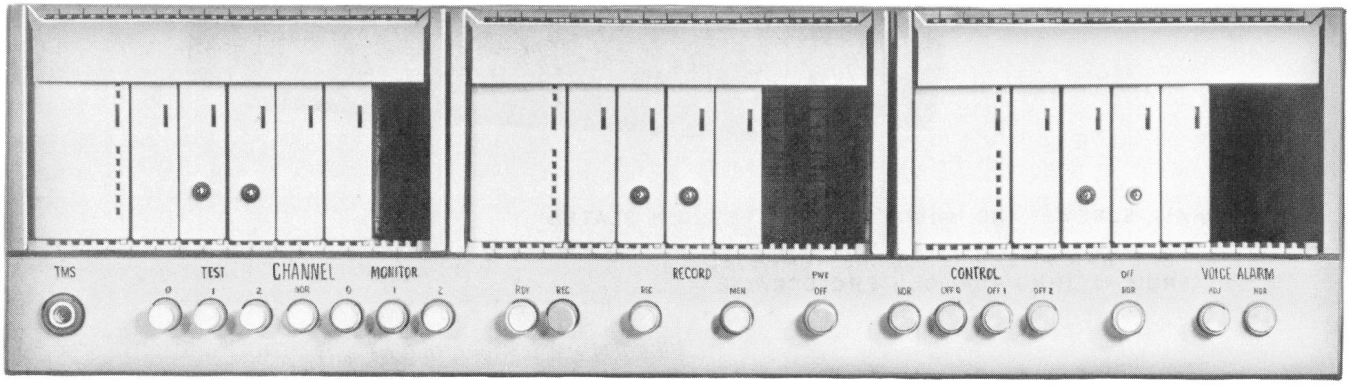
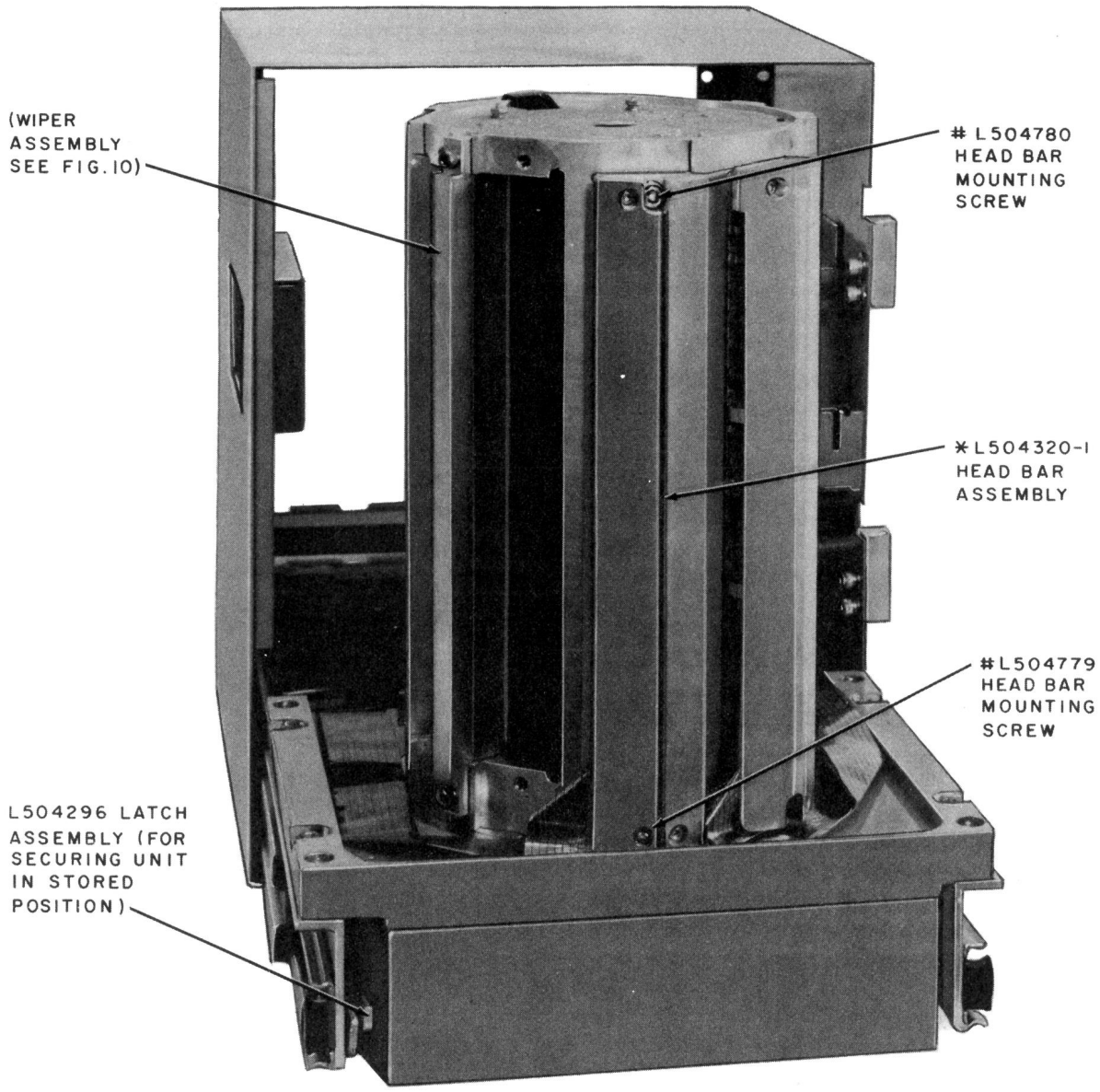


Fig. 3—VML Control Unit and Channel Module



#ALL SCREWS AND WASHERS ARE STEEL ZN PLATED

*HEAD BAR ASSEMBLIES ARE NUMBERED FROM -1 THRU -10 COUNTERCLOCKWISE

Fig. 4—Recorder in Extended Position With Dust Cover Removed

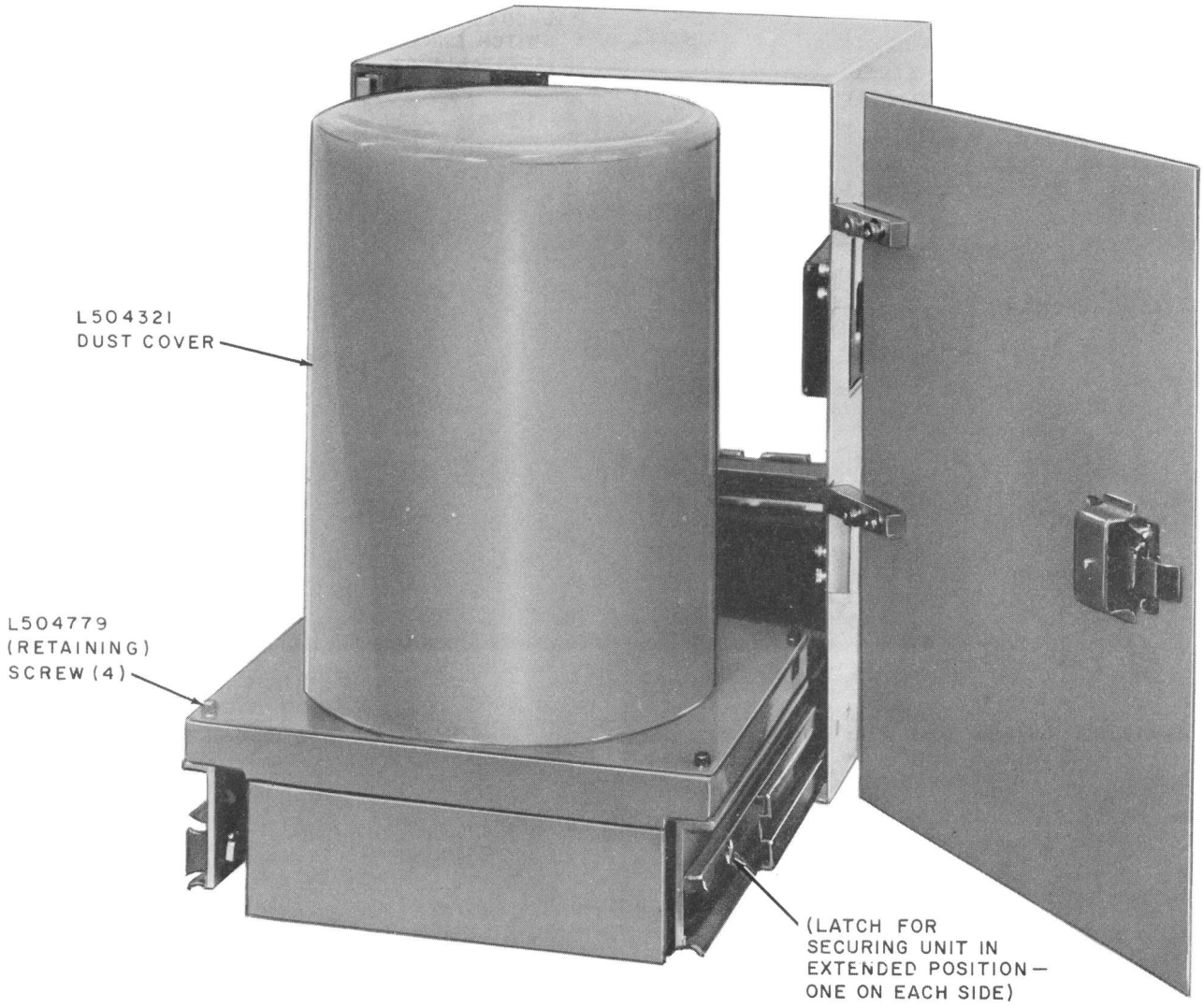


Fig. 5—Recorder Unit Pulled Out On Its Slides

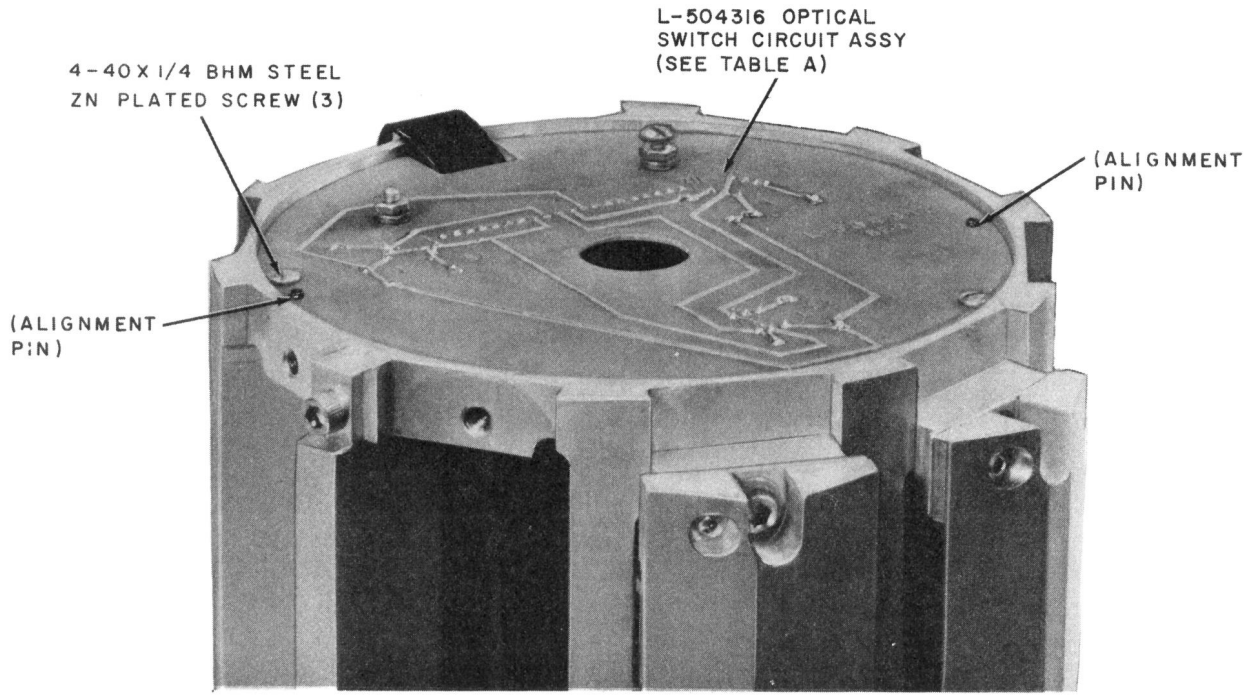


Fig. 6—Top of Recorder Unit With Dust Cover Removed—Equipped With L-504316 Optical Switch Assembly

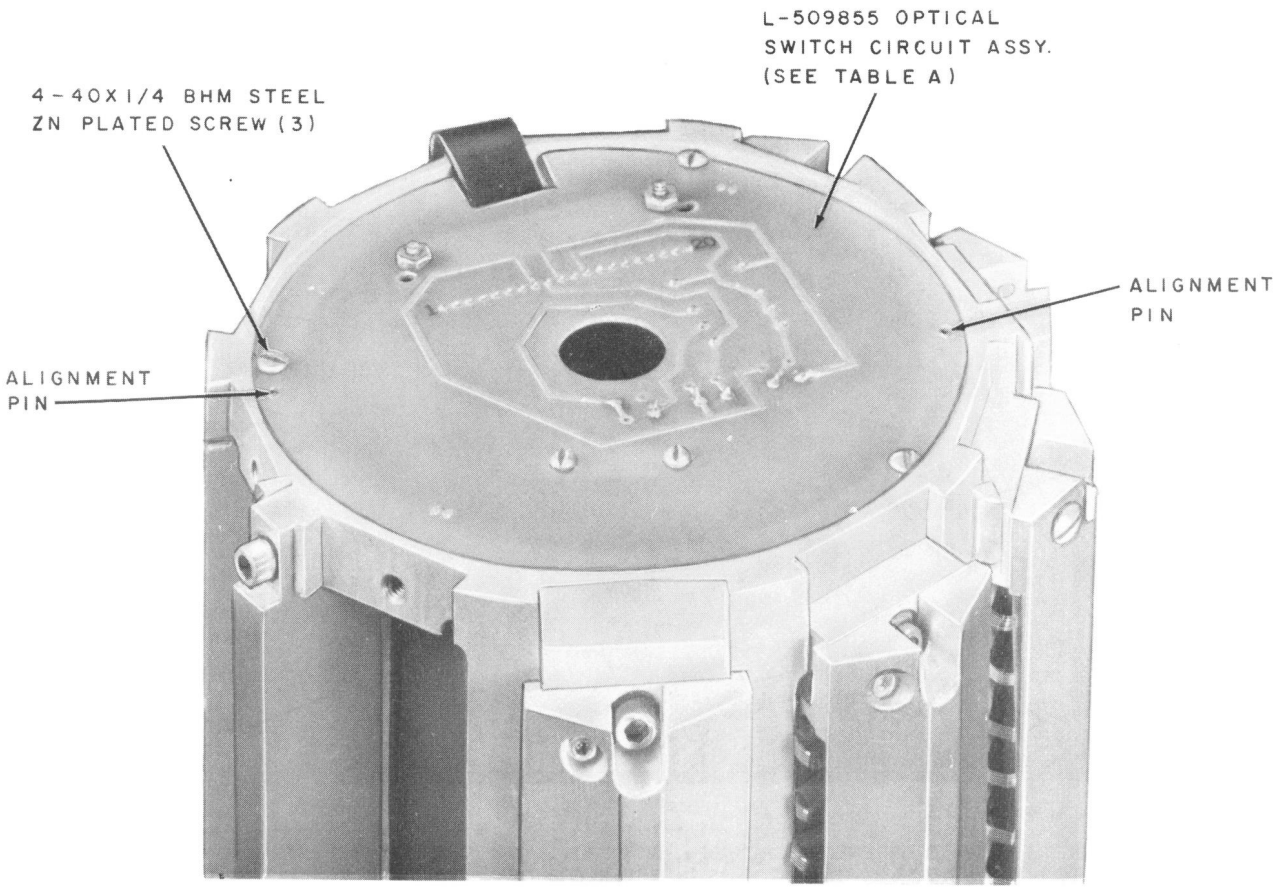
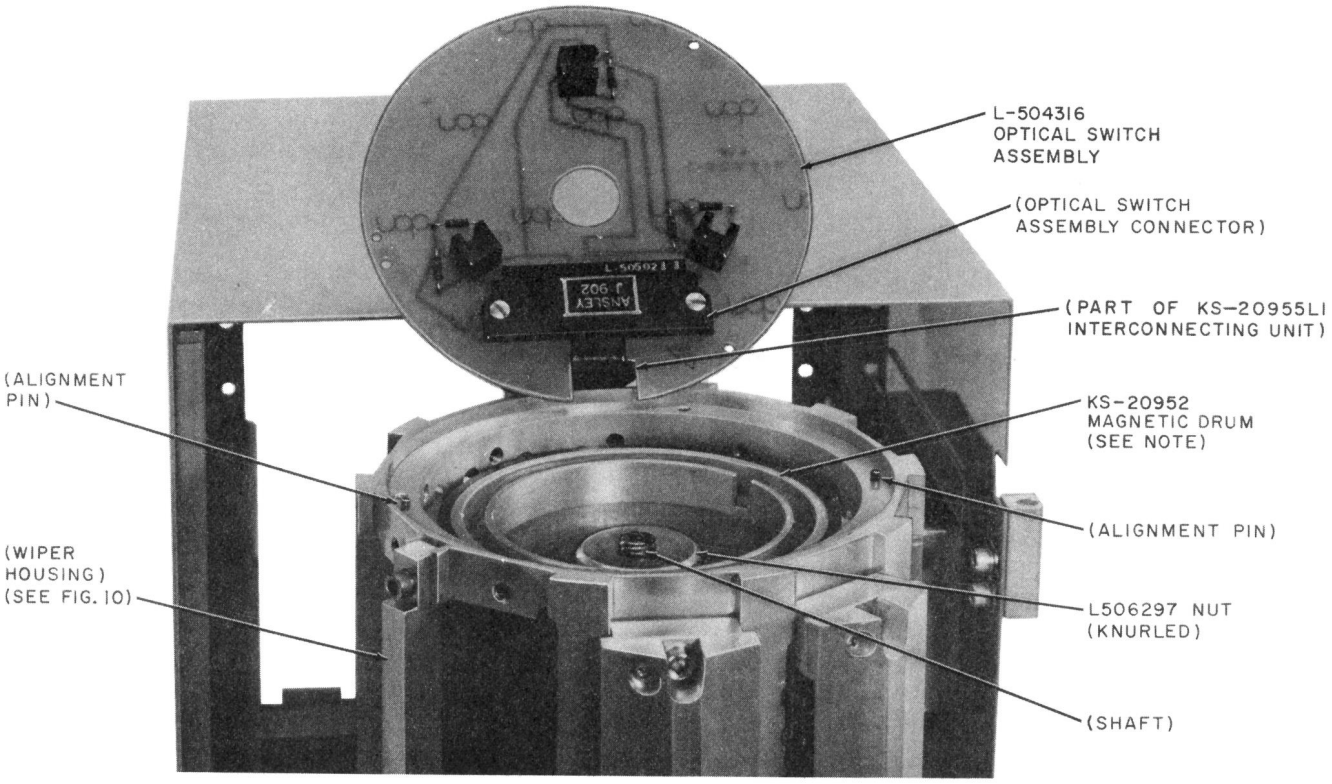
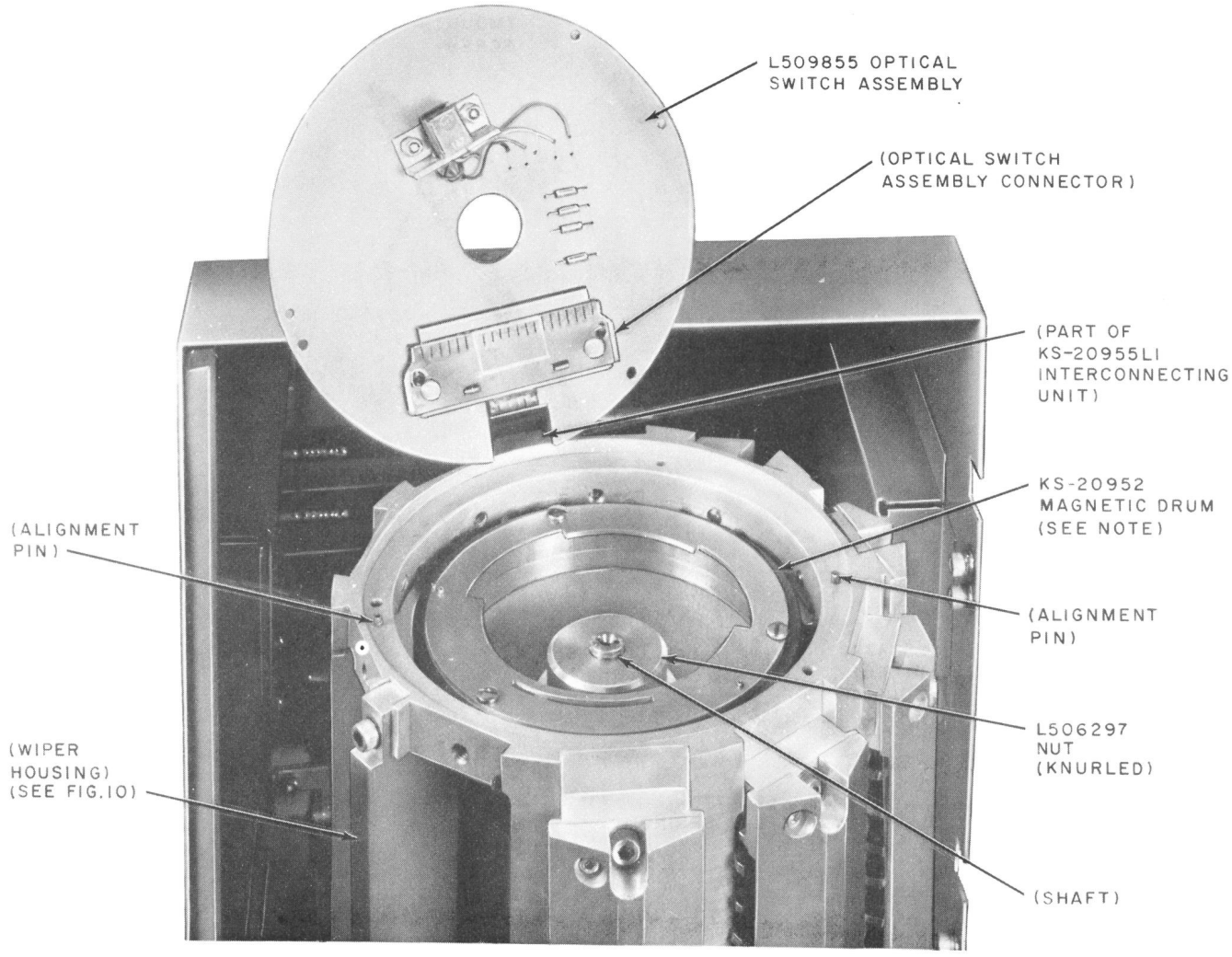


Fig. 7—Top of Recorder Unit With Dust Cover Removed—Equipped With L-509855 Optical Switch Assembly



NOTE:
THE KS-20952 MAGNETIC DRUM IS ORDERED AS EITHER A LIST 1 OR LIST 3. THE LIST 1 IS INTENDED FOR USE WITH DRUM STORAGE UNITS LIST 1 OR LIST 2. THE LIST 3 IS INTENDED FOR USE WITH DRUM STORAGE UNITS LIST 3. FOR ORDERING INFORMATION THE LIST NUMBER OF THE DRUM STORAGE UNIT AND THE SERIAL NUMBER SHOULD BE SPECIFIED.

Fig. 8—Top of Recorder Unit With L-504316 Optical Switch Assembly Removed From Mounted Position



NOTE:
THE KS-20952 MAGNETIC DRUM IS ORDERED AS EITHER A LIST 1 OR LIST 3. THE LIST 1 IS INTENDED FOR USE WITH DRUM STORAGE UNITS LIST 1 OR LIST 2. THE LIST 3 IS INTENDED FOR USE WITH DRUM STORAGE UNITS LIST 3. FOR ORDERING INFORMATION THE LIST NUMBER OF THE DRUM STORAGE UNIT AND THE SERIAL NUMBER SHOULD BE SPECIFIED.

Fig. 9—Top of Recorder Unit With L-509855 Optical Switch Assembly Removed From Mounted Position

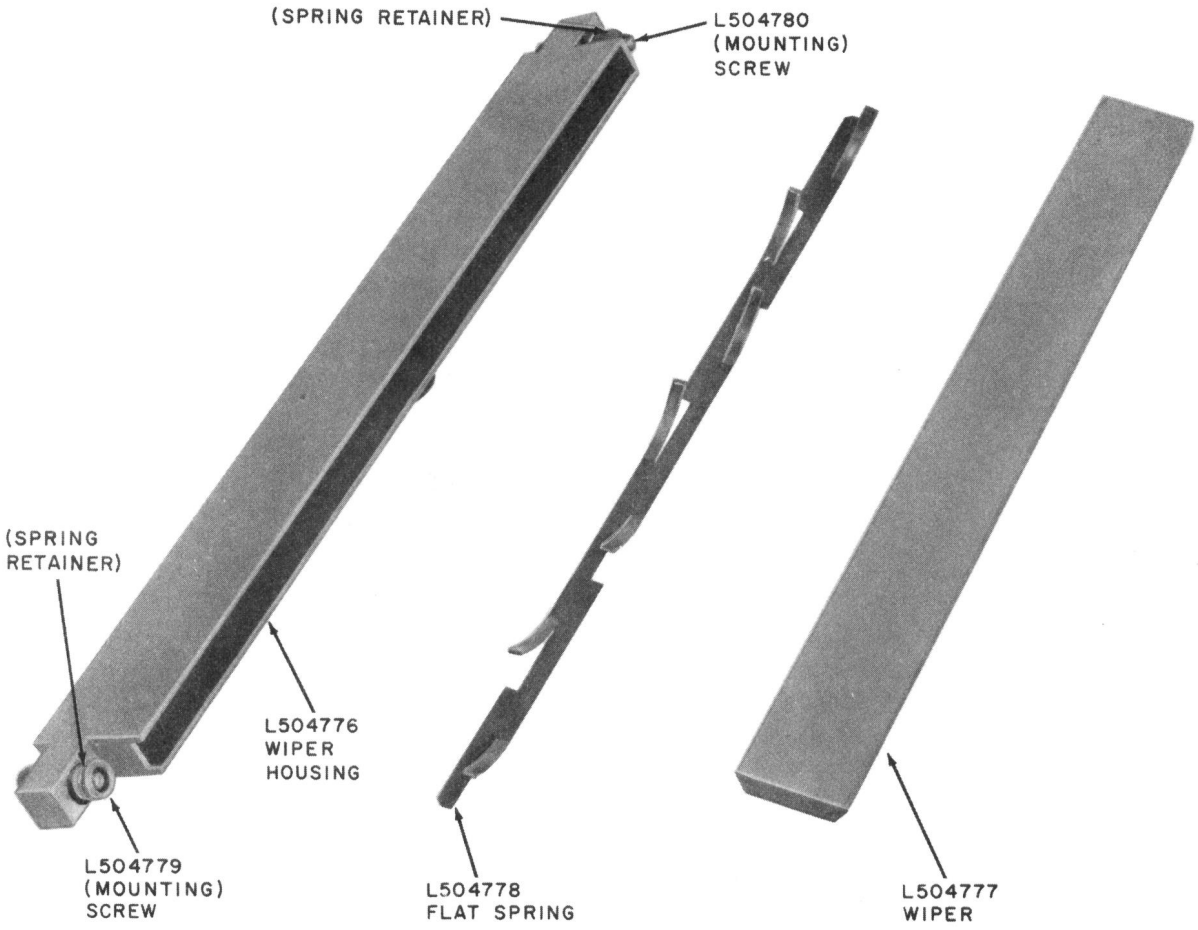


Fig. 10—Wiper Assembly

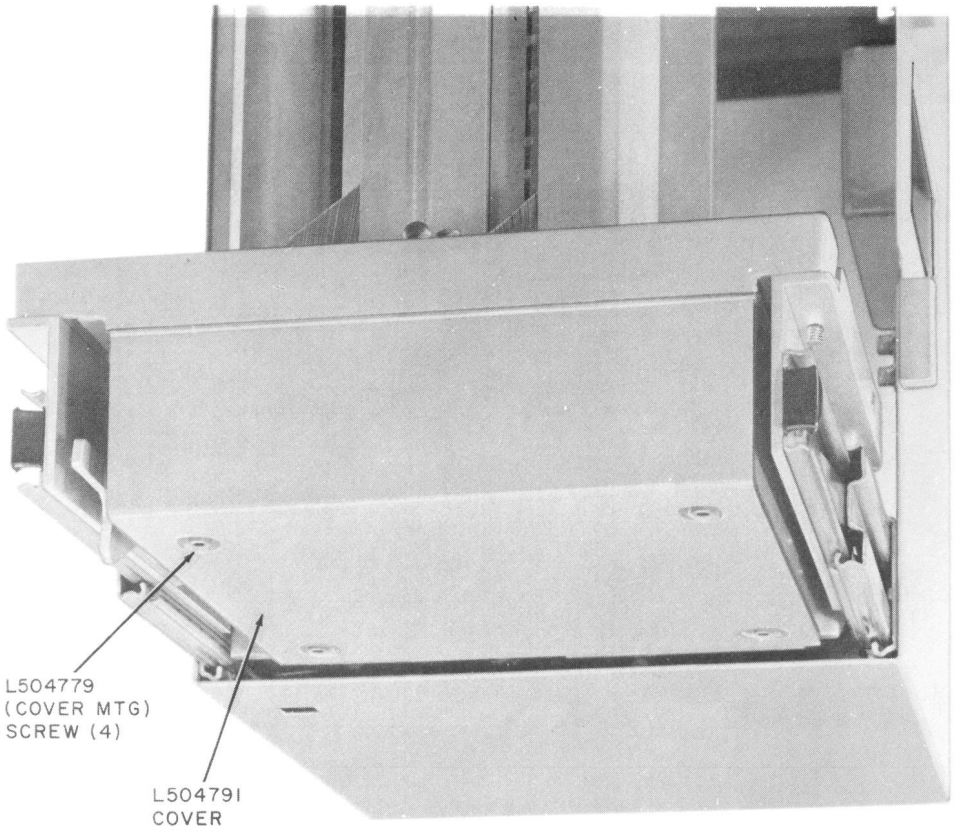


Fig. 11—Bottom of Recorder Unit

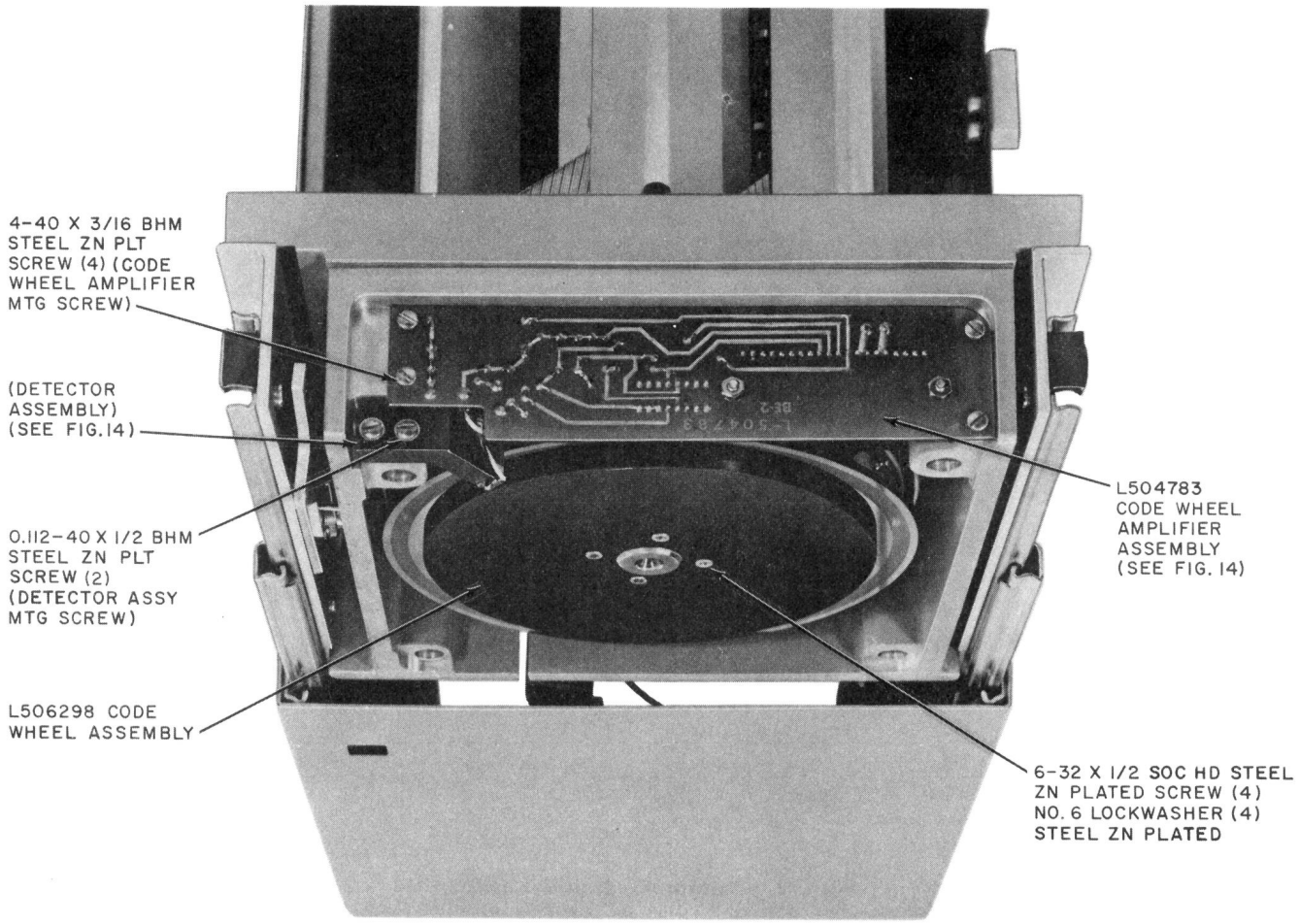


Fig. 12—Bottom of Recorder Unit With Cover Removed

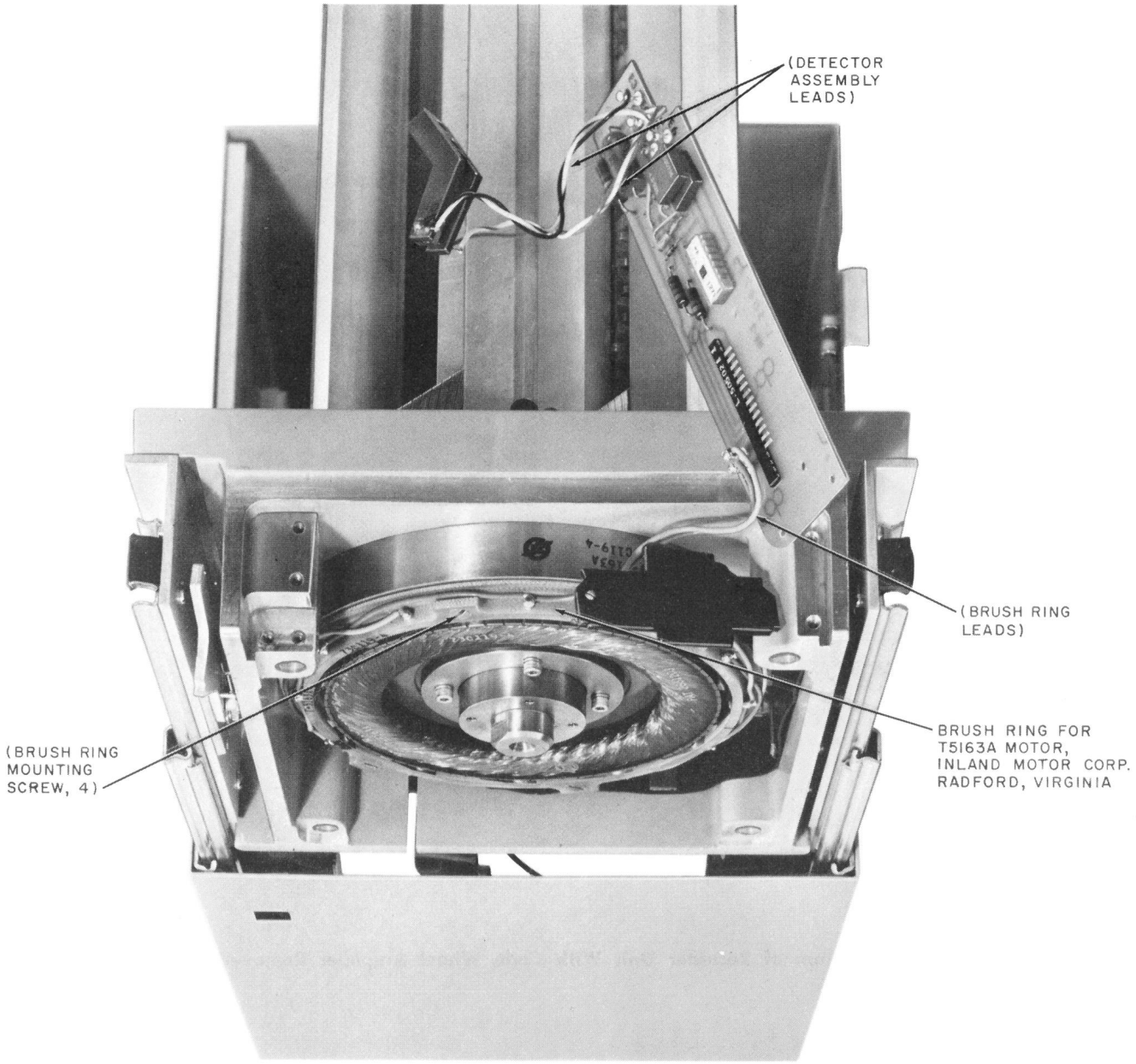


Fig. 13—Bottom of Recorder Unit With Code Wheel Removed

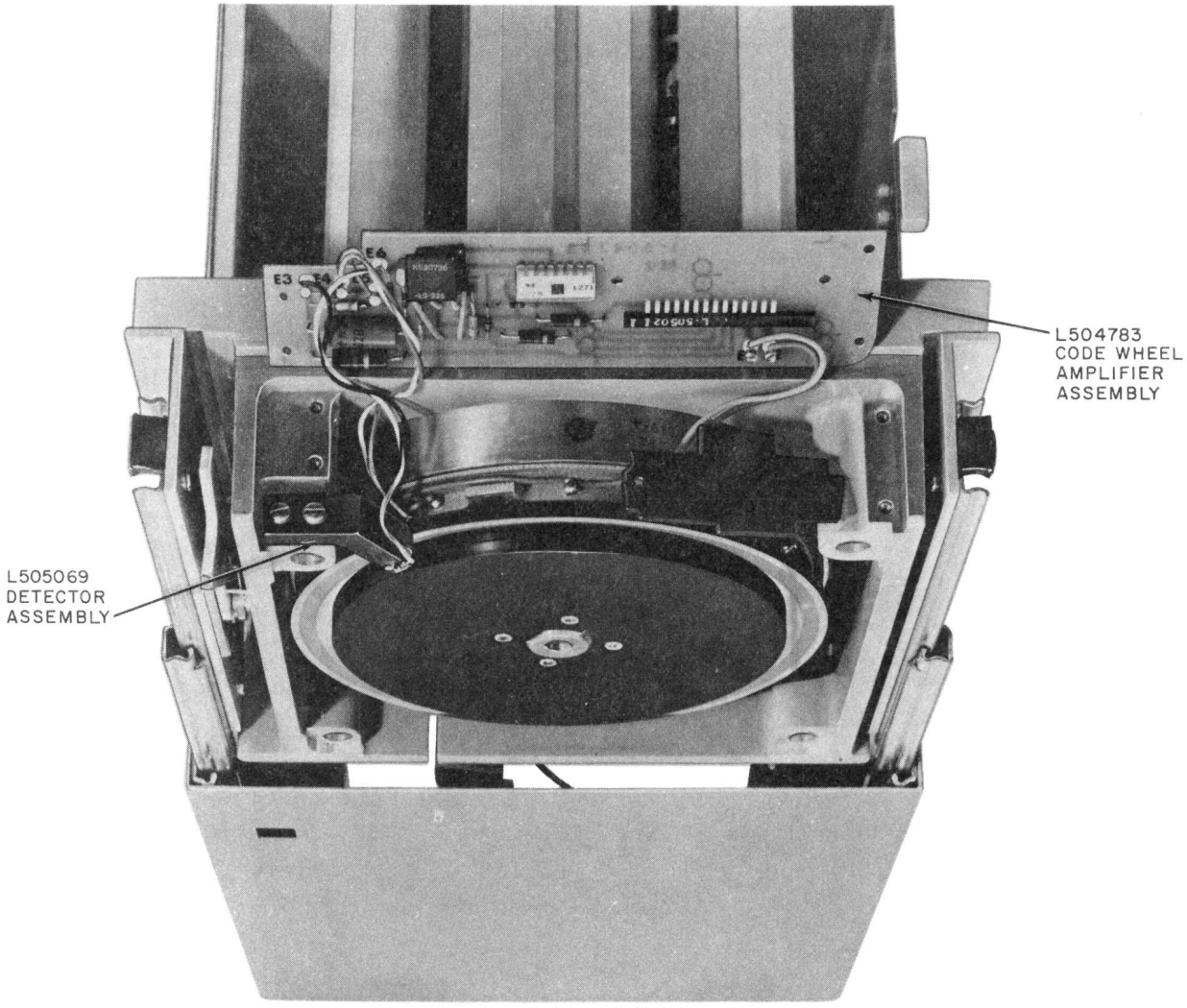


Fig. 14—Bottom of Recorder Unit With Code Wheel Amplifier Removed

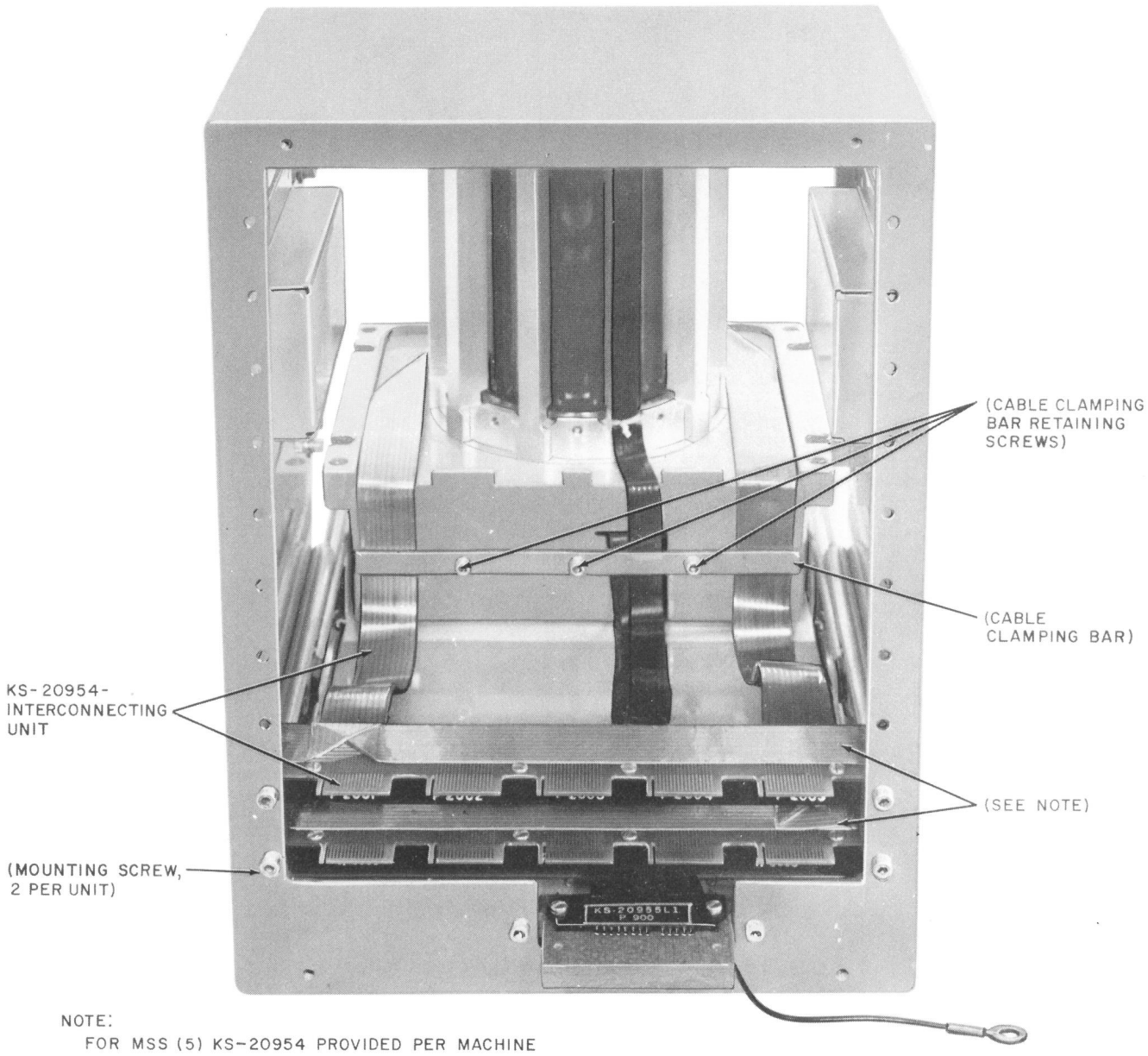


Fig. 15—Rear of Drum Storage Unit With Cover Door Opened

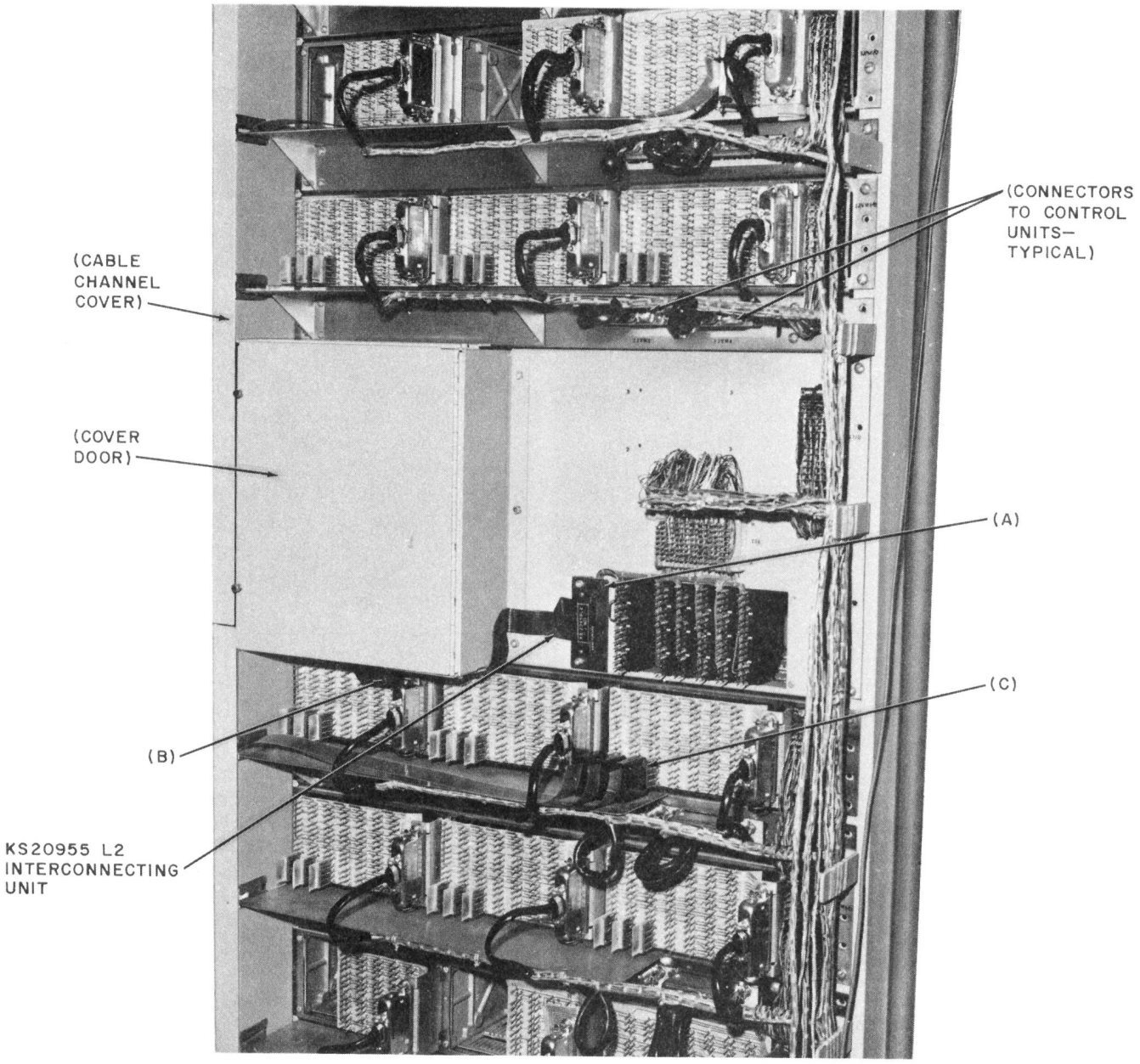


Fig. 16—Back of Announcement Frame (Typical)

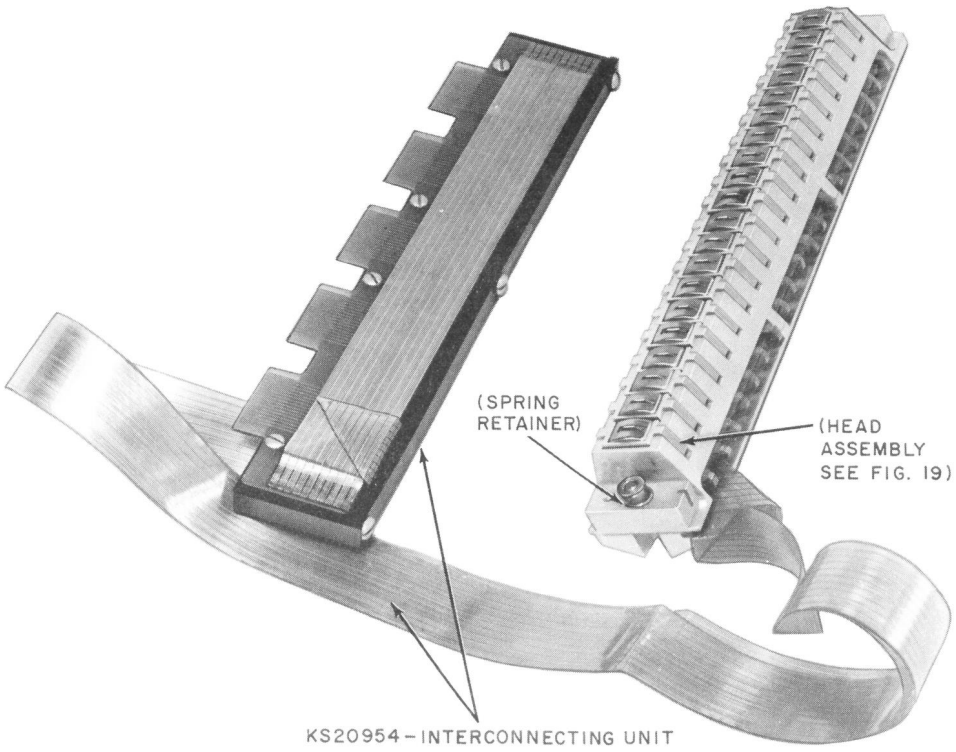


Fig. 17—Head Bar Assembly and Interconnecting Unit Removed From Recorder Unit

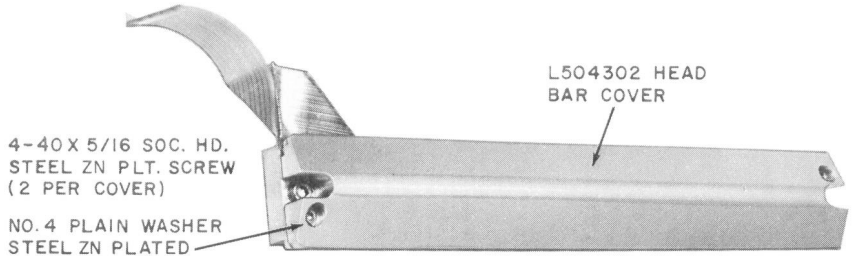


Fig. 18—Head Bar Assembly Removed From Recorder Unit With Head Bar Cover Mounted

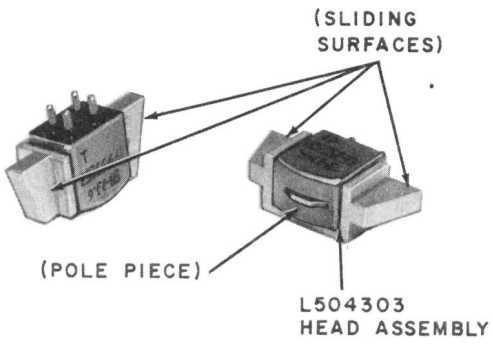


Fig. 19—Magnetic Head Assembly Removed From Head Bar Assembly

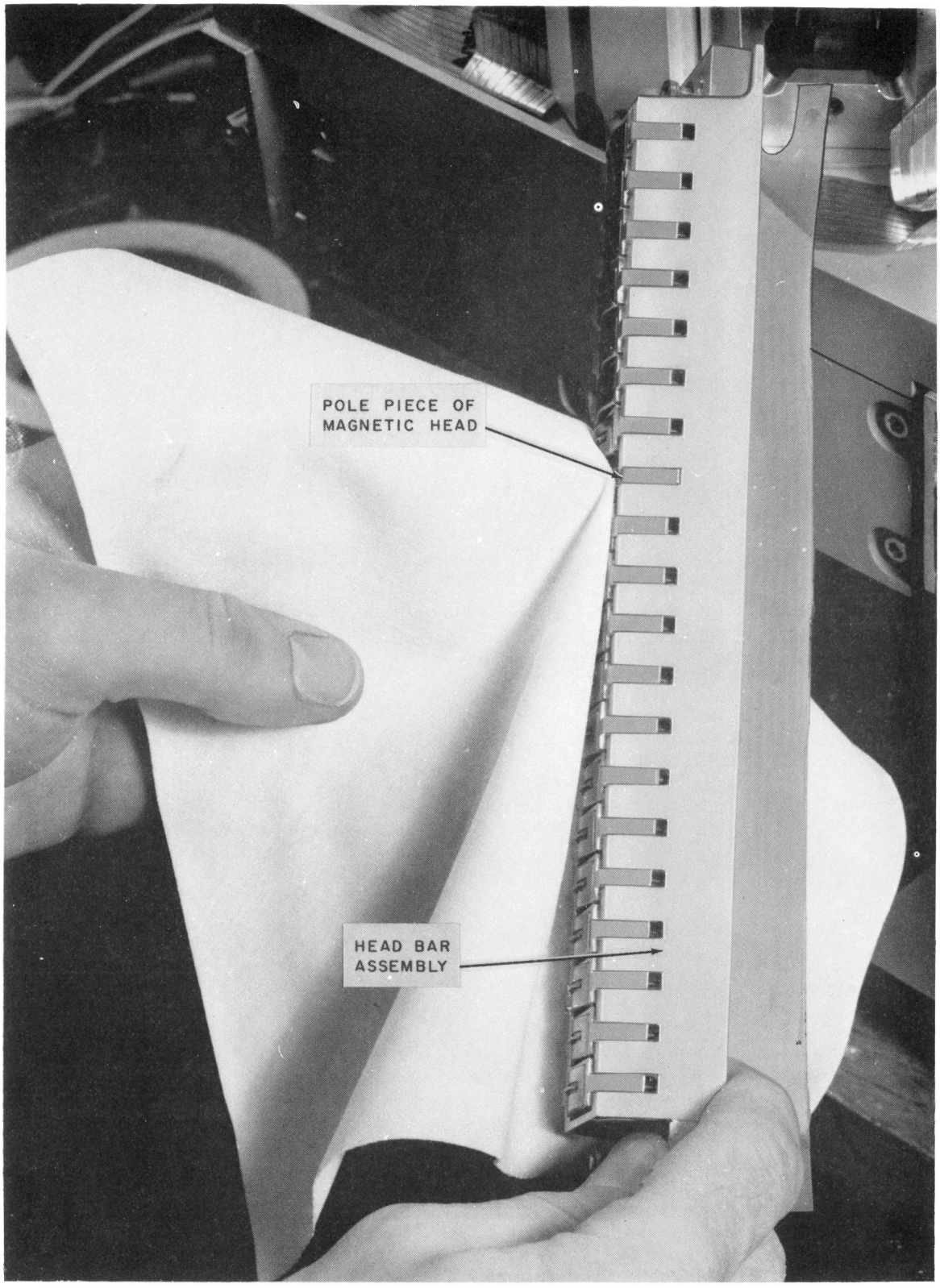


Fig. 20—Magnetic Head Depressed for Removing the Connector

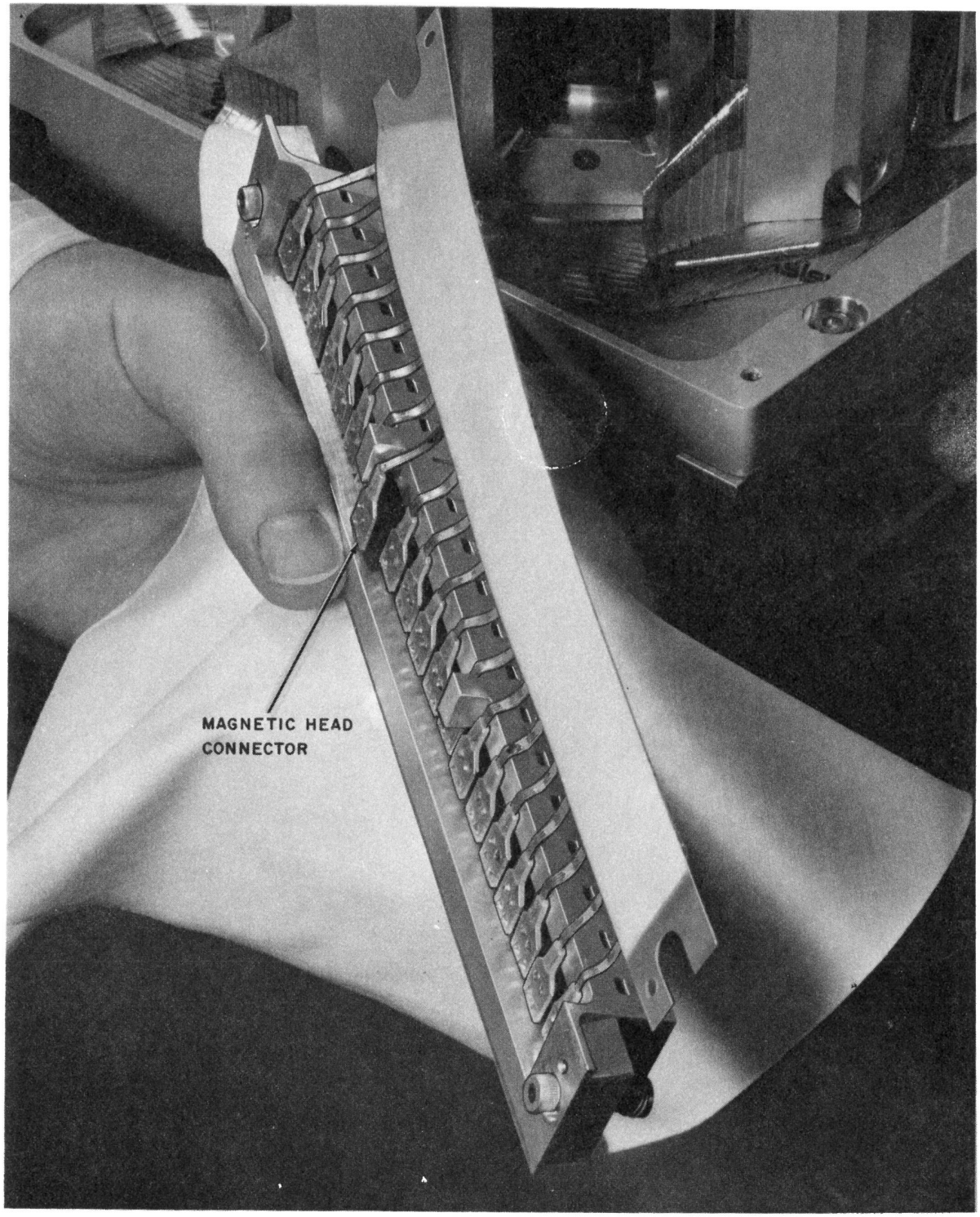


Fig. 21—Magnetic Head Assembly Connector Positioned for Removal

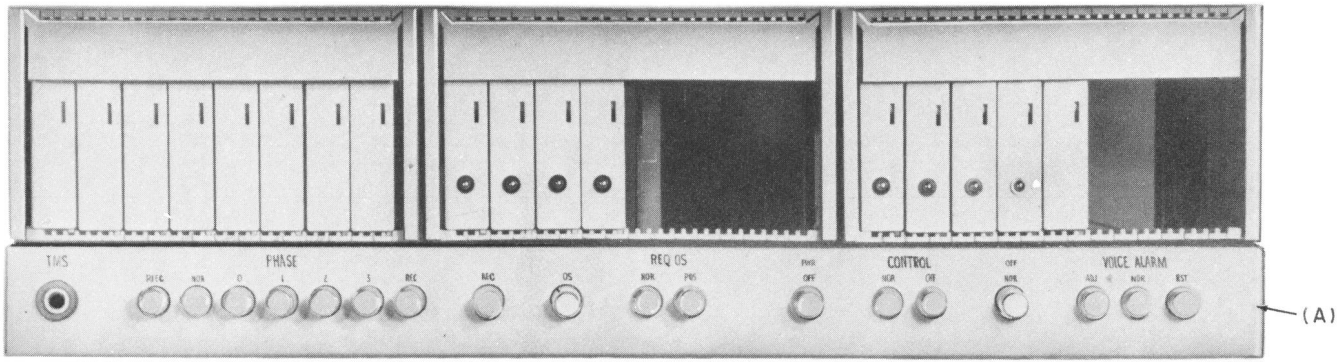


Fig. 22—Control Unit (Typical)—Method of Removal

Fig. 23—L518116 Brush Shield