

HIGH SPEED DX TYPE TAPE READER

DISASSEMBLY AND REASSEMBLY

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1. GENERAL

1.01 This section provides disassembly and reassembly information for high speed DX readers. This information was formerly covered in Sections 592-804-702 and 592-804-712.

1.02 Disassembly procedure allows the tape reader to be broken down into major subassemblies. The subassemblies should be removed first. In most cases the order of disassembly is not important, except that the reading head should be removed before the stepper block, and the electronic card assemblies should be removed in the sequence listed in the contents.

1.03 If further disassembly of parts is necessary, refer to the appropriate adjustment and parts sections. For the DX1, 3, 4, or 804 reader, refer to Section 582-101-710. Section 582-101-713 provides information for the DX800, 801, or 802 reader.

1.04 The appropriate adjustment section provides the sequence and information about the special tools required for adjustments. The parts section includes drawings of parts and illustrates their arrangement. Similar or interchangeable parts should be remounted in the same places in order to facilitate readjustment of unit.

1.05 Avoid loss of springs in disassembly by holding one spring loop with left hand while gently removing the opposite loop with a spring hook. Do not stretch or distort springs when removing them.

1.06 Loss of retaining rings can be minimized by holding the retainer with one hand to prevent it from rotating while placing the blade of a suitable screwdriver in the slot of the retainer. Rotate the screwdriver in a direction to increase the diameter of retainer for removal.

1.07 All references to left or right, front or rear, up or down are made from a normal operating position in front of reader.

CAUTION: DISCONNECT ALL POWER BEFORE STARTING DISASSEMBLY. DO NOT PICK UP READER BY TOP PLATE OF READING HEAD AS ANY STRESSOR STRAIN AT THIS POINT IS LIKELY TO DISTURB THE CRITICAL READING HEAD SETTINGS.

Note: Take care when reassembling to keep wires and cables free from moving parts.

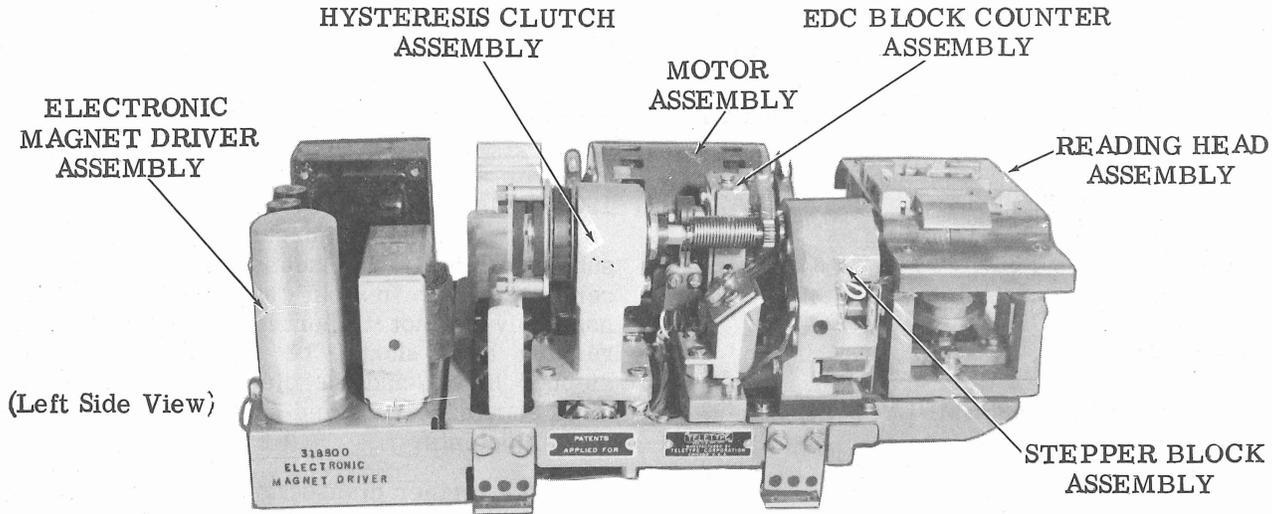


Figure 1 - Major Subassemblies of High Speed Tape Reader (DX4)

2. DISASSEMBLY OF DX1, 3, 4, OR 804 READER (Figure 1)

READING HEAD ASSEMBLY (Figures 1, 2, and 3)

2.01 When removing the reading head assembly from the unit, remove all associated wire terminals from the connector mounted at the rear of the electronic magnet driver. Refer to 2.28, 2.29, and 2.30. Do not disturb adjusting bushings unless it is necessary.

2.02 Remove four top plate mounting screws and remove top plate from reader frame. Remove three reader head frame mounting screws to remove the reading head subassembly from the unit.

2.03 Remove two nuts attaching the tape-out/tangled-tape contact bracket and contact assembly with associated wiring to the top plate.

Note: The tape-out/tangled-tape contact pile-up assembly may be removed from the top plate, but the pile-up mounting screws should not be removed since this is a factory adjusted item. Replace entire assembly if service is required.

2.04 When removing code contact and verify contact assemblies, remove two mounting screws and shoulder screw (on each contact assembly). This allows removal of contact assembly from pedestal support.

Note: This contact pile-up is factory adjusted and not normally disassembled for servicing. Replace entire contact assembly if service is required.

2.05 Refer to appropriate wiring diagram and recheck all related adjustments, especially feed wheel to reading head adjustment, upon reassembly.

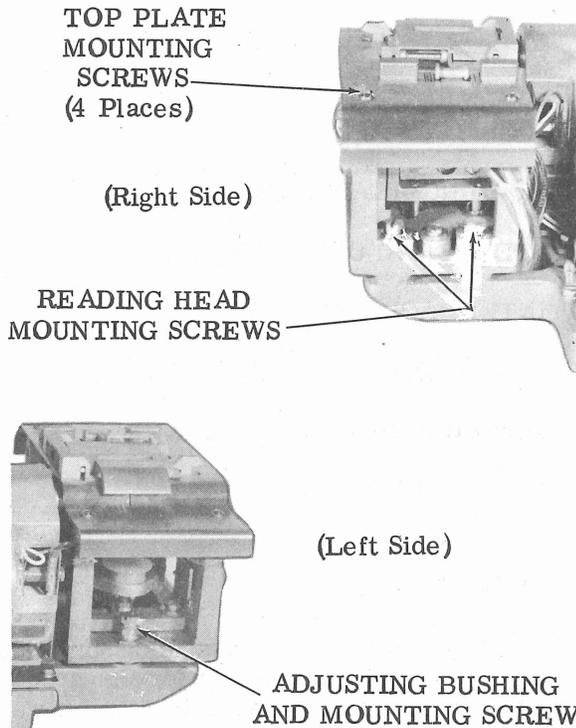


Figure 2 - Reading Head Assembly

STEPPER BLOCK ASSEMBLY (Figure 4)

- 2.06 Remove wires from magnetic coil terminals, and remove two wire clamps on front of block to disengage wires from stepper block. Loosen ground screw on back of block and remove ground strap.
- 2.07 Loosen setscrew at gear end of escapement shaft and disengage escapement spring. Remove four mounting screws, washers, and remove stepper block assembly from reader base.
- 2.08 Holding the rear of the pallet shaft with a hex wrench, remove the nut on the front of the pallet shaft. Remove armature and pallet shaft by pulling pallet shaft out toward rear of block.
- 2.09 Remove clampscrew for the front bearing retainer in the pallet eccentric bushing. Remove the bearing retainer with ball bearing from block. Loosen the pallet shaft eccentric bushing clampscrew and remove the eccentric hub from the block.
- 2.10 Remove feed wheel clamp nuts (left hand thread) and feed wheel from escapement shaft. Holding the rear of the escapement shaft with a hex wrench, remove the clamp nut on the front of escapement shaft. Remove escapement shaft assembly by pulling the shaft out toward the rear.
- 2.11 Loosen the hex setscrew for the escapement shaft front bearing retainer; remove bearing retainer, ball bearing, and internal spacer. When replacing bearing retainer, keep the burr created by the setscrew toward the top.
- 2.12 Remove the left and right magnet assembly mounting screws and magnets from stepper block.

Note: The rear bearing retainers for the escapement and pallet shafts are pressed into the stepper block and pallet eccentric hub. They are not normally removed for servicing.

EDC BLOCK COUNTER ASSEMBLY (Figures 5 and 6)

- 2.13 When the complete block counter is removed from the unit, it is necessary to remove all associated wiring from the connector mounted at the rear of the electronic magnet

CODE AND VERIFY
CONTACT ASSEMBLIES

CONTACT BRACKET
MOUNTING NUTS

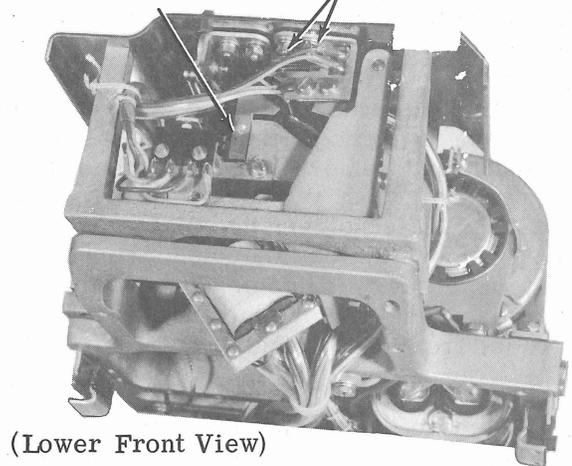


Figure 3 - Reading Head Assembly

driver. Refer to 2.28, 2.29, and 2.30 for wire removal information.

- 2.14 Remove the lubrication reservoir mounting screws and reservoir from the mounting block. (Check wick adjustment when reassembling.) Remove two block counter mounting screws and the block counter assembly from the unit. Remove the block counter cover mounting screw located on top of the assembly and lift the cover out of its guide slots and off the block.
- 2.15 The end-of-block and block counter contact assemblies may be removed by removing the bracket mounting screws.

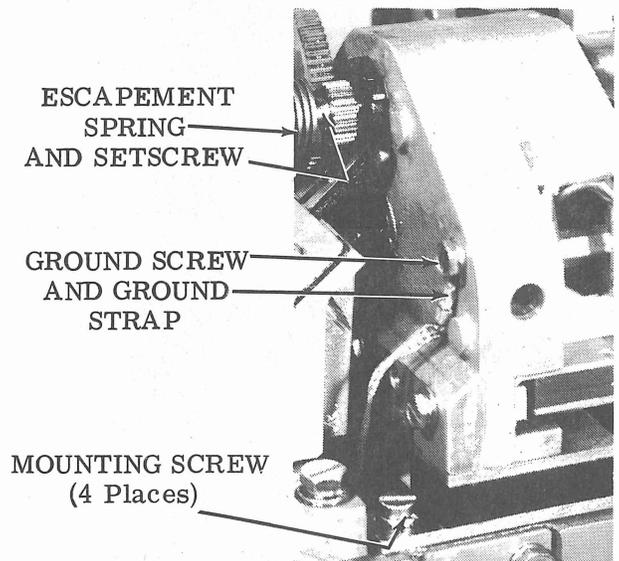


Figure 4 - Stepper Block Assembly

Note: Contact pile-up assemblies are factory adjusted and are not normally disassembled for servicing. Replace entire contact assembly if servicing is required.

2.16 To disassemble the end-of-block cam, hold the rear of the upper shaft with a hex wrench and remove the nut on the rear of the upper shaft; then remove the reverse contact cam. While holding the shaft with a hex wrench, remove the forward contact cam mounting nut and the forward cam. Remove the shaft mounting nut, and remove the shaft by pulling it toward the front of the block.

2.17 Remove the bearing retainer, ball bearing, and bearing internal spacer by removing the screw and retaining clamp on back of block.

2.18 To disassemble the block counter cam, hold the rear of the lower shaft with a hex wrench and remove the nut and block counter cam at the rear of the shaft. Remove the shaft mounting nut, and remove shaft by pulling it toward the front of the block.

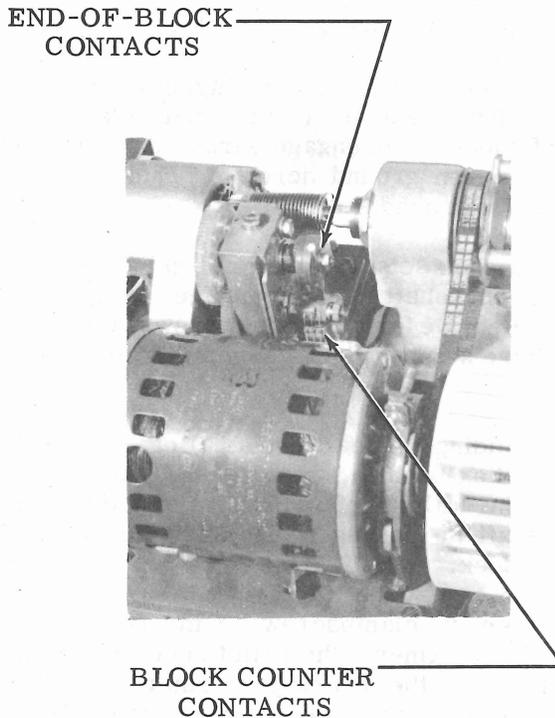


Figure 6 - EDC Block Counter Assembly

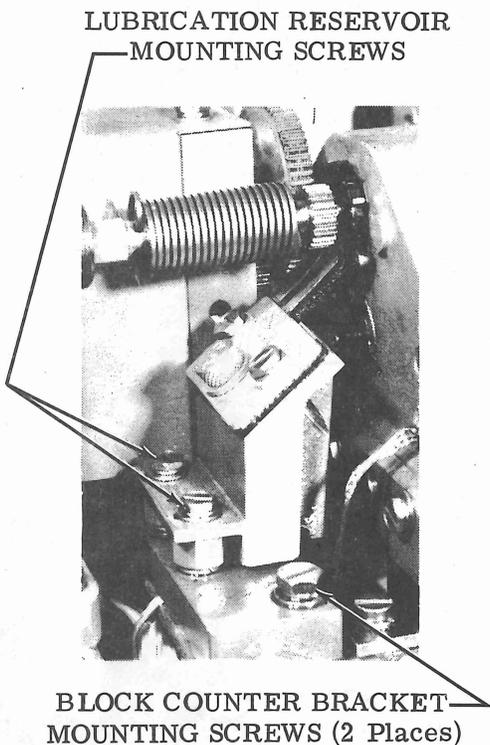


Figure 5 - Lubrication Reservoir and EDC Mounting Block

2.19 Remove the bearing retainer, ball bearing, and internal bushing by removing the screw and retaining clamp on back of block. Loosen bushing setscrew and remove eccentric bushing from block.

HYSTERESIS CLUTCH ASSEMBLY (Figure 7)

2.20 When removing the hysteresis clutch assembly, loosen drive spring setscrew at the end of the clutch shaft and disengage drive spring from shaft. Remove four mounting screws and remove entire clutch housing from unit.

2.21 To further disassemble clutch, remove the three nuts securing the clutch adjusting plate, remove plate and shims from mounting posts. Take note of amount of shims on each post so same amount of shims are replaced when reassembling.

2.22 To remove the follower shaft from the driver hub, remove the adapter nut on the front of the shaft while holding the rear of the follower shaft with a hex wrench.

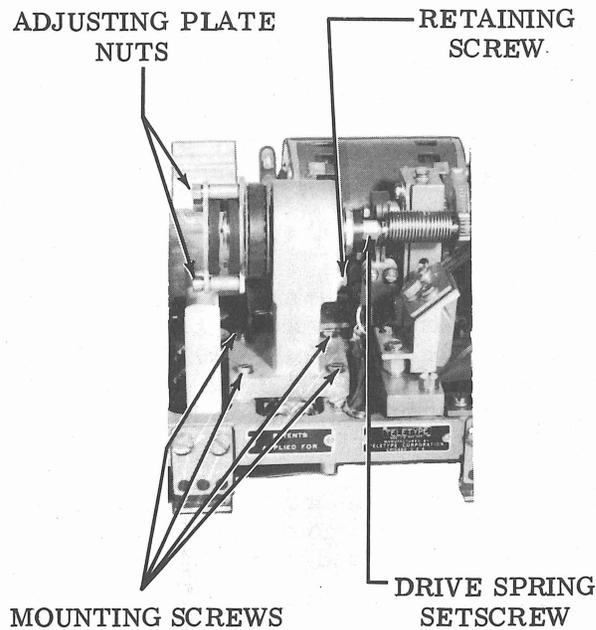


Figure 7 - Hysteresis Clutch Assembly

2.23 Hold the rear of the driver hub while using a wrench to loosen and remove the nut on the front of the hub. Remove the driver hub from the clutch housing.

2.24 Remove the front bearing retaining screw and retainer, pull the front bearing with retainer and internal bearing spacer out of clutch housing. The rear bearing in the clutch housing is pressed in and not normally removed for service.

MOTOR ASSEMBLY (Figure 8)

2.25 Disconnect motor connector under motor assembly. Remove four motor assembly mounting screws and remove drive belt from clutch pulley. Lift motor assembly from base.

2.26 Loosen motor fan setscrew and pull fan from shaft. To remove capacitor, pull back plastic sleeving from terminals and slide wire terminals from capacitor terminals. Twist end of capacitor bracket protruding through right side of motor bracket. This releases clamping action and allows capacitor to be removed from underside of motor mounting bracket.

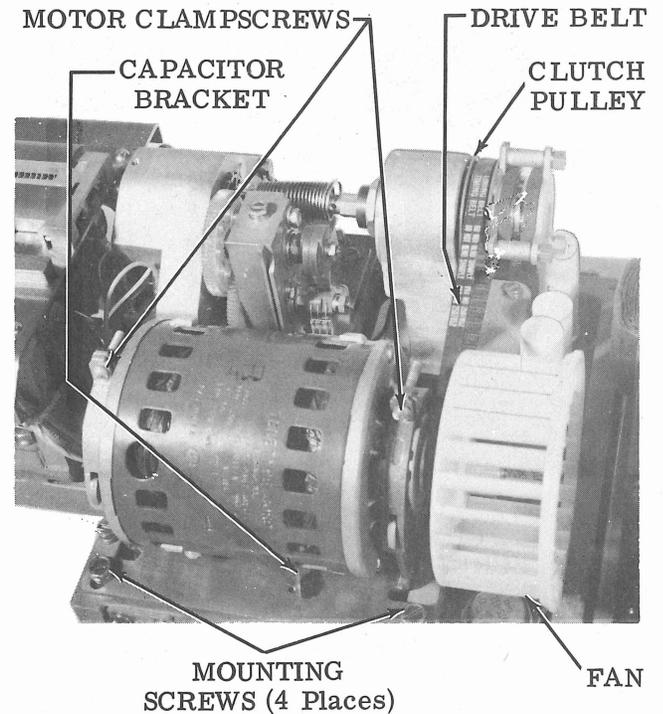


Figure 8 - Motor Assembly

2.27 Remove motor clamps, screws, and nuts (one each end) and lift motor from motor mounting bracket.

Note: Check belt tension adjustment after reassembling.

ELECTRONIC MAGNET DRIVER ASSEMBLY (Figure 9)

2.28 With the unit turned upside down, remove six mounting nuts on the bottom of the unit and remove the insulator plate under the magnet driver.

2.29 Remove the four insulators between insulator plate and circuit card, lift circuit card from its mounting screws and fold over toward front of unit.

2.30 Disconnect all wires from reading head and block counter from connector mounted at rear of driver. The connector terminals can be removed or installed with a long nose pliers or a TP318888 "poke home" connector tool. Remove string ties, cable clamps, and carefully pull wires clear of other component wires.

2.31 Before turning unit right side up, and to prevent damage to circuit card, replace card on its mounting screws and secure it on

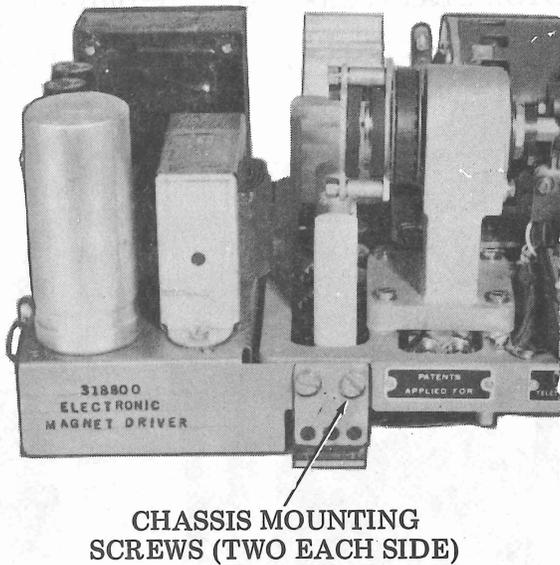


Figure 9 — Electronic Magnet Driver

opposite sides using two mounting nuts finger tight. Remove all wires from the reader terminating at terminal board one (TB1).

2.32 Remove four chassis mounting screws, which also secure rear mounting feet of unit and are located on each side of magnet driver chassis. Take care to support rear end of driver when all screws are removed.

Note: The driver chassis is mounted against the reader frame with the mounting feet on the outside of the driver chassis.

2.33 If the reader base is still upside down, remove the magnet driver chassis from the reader base by pulling the driver chassis out from the bottom of the reader base. (If the reader base is right side up, lift the reader base away from the driver chassis.)

2.34 For further disassembly of magnet driver components, refer to appropriate parts section. Use two mica insulators when replacing chassis mounted power transistors.

Note 1: When reassembling subassemblies, follow reverse procedure for the disassembly described in the preceding paragraphs. Check all wiring, connections, and adjustments that may have been disturbed by disassembly, reassembly, and handling of the unit.

Note 2: If possible, make dynamic strobing checks with an oscilloscope as instructed at the end of adjustment section.

3. DISASSEMBLY OF DX800, 801, OR 802 READER

MOTOR ASSEMBLY

3.01 Remove the four motor bracket mounting screws. Disconnect the motor connector in the motor cable and lift off the entire motor assembly. In doing so, carefully disengage and remove the drive belt from its pulley.

3.02 To remove the motor from its bracket, loosen the motor clamp mounting screws, remove clamps and the motor.

HYSTERESIS CLUTCH ASSEMBLY

3.03 When removing the hysteresis clutch assembly, loosen drive spring setscrew at the end of the clutch shaft and disengage drive spring from shaft. Remove four clutch housing mounting screws and remove entire clutch housing from unit.

3.04 To further disassemble clutch, remove the three nuts securing the clutch adjusting plate, remove plate and shims from mounting posts. Take note of amount of shims on each post so same amount of shims are replaced when reassembling.

3.05 To remove the follower shaft from the driver hub, remove the adapter nut on the front of the shaft while holding the rear of the follower shaft with a hex wrench.

3.06 Hold the rear of the driver hub while using a wrench to loosen and remove the nut on the front of the hub. Remove the driver hub from the clutch housing.

3.07 Remove the front bearing retaining screw and retainer, pull the front bearing with retainer and internal bearing spacer out of clutch housing. The rear bearing in the clutch housing is pressed in and not normally removed for service.

READING HEAD ASSEMBLY

3.08 When removing the reading head from the reader, disconnect the cable connector under the reading head. Remove the three

reader frame mounting screws and remove the reading head from the reader.

3.09 Remove the four hex head screws in the top plate and remove the top plate from the reader frame.

3.10 Remove the two code contact pedestal mounting screws and shoulder screw, remove the contact assembly from the pedestal. Remove the contact assembly mounting screws for further disassembly of the contacts.

Note: This contact pile-up is factory adjusted and not normally disassembled for servicing. Replace entire contact assembly if service is required.

3.11 Removal of top plate components and other hardware on the reader frame is simple and needs no explanation.

3.12 Remove two nuts attaching the tape-out/tangled-tape contact bracket and contact assembly with associated wiring to the top plate.

Note: The tape-out/tangled-tape contact pile-up assembly may be removed from the top plate, but the pile-up mounting screws should not be removed since this is a factory-adjusted item. Replace entire assembly if service is required.

3.13 Refer to appropriate wiring diagram and recheck all related adjustments, especially feed wheel to reading head adjustment, upon reassembly.

STEPPER BLOCK ASSEMBLY

3.14 Disengage stepper block cable connector. Loosen ground screw on back of block and remove ground strap.

3.15 Loosen setscrew at gear end of escapement shaft and disengage escapement spring. Remove four mounting screws, washers, and remove stepper block assembly from reader base.

3.16 Holding the rear of the pallet shaft with a hex wrench, remove the nut on the front of the pallet shaft. Remove armature and pallet shaft by pulling pallet shaft out toward rear of block.

3.17 Remove clamp screw for the front bearing retainer in the pallet eccentric bushing. Remove the bearing retainer with ball bearing from block. Loosen the pallet shaft eccentric bushing clamp screw and remove the eccentric hub from the block.

3.18 Remove feed wheel clamp nuts (left hand thread) and feed wheel from escapement shaft. Holding the rear of the escapement shaft with a hex wrench, remove the clamp nut on the front of escapement shaft. Remove escapement shaft assembly by pulling the shaft out toward the rear.

3.19 Loosen the hex setscrew for the escapement shaft front bearing retainer; remove bearing retainer, ball bearing, and internal spacer. When replacing bearing retainer, keep the burr created by the setscrew toward the top.

3.20 Remove the left and right magnet assembly mounting screws and magnets from stepper block.

Note: The rear bearing retainers for the escapement and pallet shafts are pressed into the stepper block and pallet eccentric hub. They are not normally removed for servicing.

INTERFACE CARD

3.21 Lay the reader on its right side (motor side). Remove three mounting screws on the insulator plate and three insulator washers between the plate and the circuit card.

3.22 Remove three circuit card mounting screws and fold the interface card over toward the left of the reader.

3.23 When removing the interface card from the reader, cut the cable tie under the reader head. Disconnect the ground wire by removing the mounting screw on the power supply chassis. Remove the two connectors by loosening four mounting screws.

STEP CONTROL CARD

3.24 Disconnect the three cable connectors located in front of the magnetic clutch. Loosen and remove the three control card mounting posts; remove card.

POWER SUPPLY

3.25 Loosen and remove four power supply mounting screws (two on each side of reader base). Support power supply at the rear when mounting screws are removed. When replacing power supply make sure the feet (mounted with mounting screws) are on the outside of the chassis.

3.26 Pull the power supply out from the bottom of the reader, if reader is upside down. If reader is right side up, lift reader off of power supply (take care not to strike chassis-mounted power resistors on reader base).

3.27 For further disassembly of the power supply, remove two mounting screws, and four capacitor mounting screws. Pull circuit

card forward and fold it to the right. Make sure the connector and ground wire have been removed as outlined in the Interface Card instructions. If transistors are removed be sure to replace two mica insulators under each transistor.

4. REASSEMBLY

4.01 Reassembly of each major subassembly should follow a reverse procedure for the disassembly described in preceding paragraphs.

4.02 Check all wiring, connections, and adjustments that might have been disturbed by disassembly, reassembly, and handling of the reader.