

CAPITAL VENDING, INC.

13581 Virginia Manor Road
Laurel, Maryland 20707-6515
301-419-3189

6-24-96

Technical Bulletin

CHANGING MOTORS IN A USA BILL ACCEPTOR FITTED WITH A PLASTIC MOTOR DRIVE CHASSIS

This bulletin describes changing the transport and stacker motors in USA bill acceptors having a molded plastic motor drive chassis. The plastic chassis has been used in acceptors having serial number 119xxxxx (November, 1989) and later.

Throughout these procedures, reassembly is performed by reversing of the order of disassembly. Make notes or sketches as needed during disassembly.

Symptoms of Motor Problems

The following are symptoms of possible motor problems. You can quickly confirm motor problems by transferring the entire motor drive chassis to another acceptor chassis. If the problems follow the drive chassis, the problem lies with the motors.

- Complete failure to pull in the note (transport motor), or repeated jamming at the cash box opening (stacker motor).
- Slow pull-in or return of an inserted note (transport motor).
- Abrupt note travel (transport motor).
- Abnormal sounds, grinding, stripping, etc. during note transport or stacking (transport or stacker motor).

NOTE

Separate transport and stacker motors are available as spares. However, you may find it quicker and more practical to replace the complete motor and harness assembly which consists of a pre-wired transport motor, stacker motor, harness, and connector.

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Before Removing the Motor Drive Chassis...

Before you remove the motor drive chassis, you must remove the note escutcheon, front cover, and microprocessor board.

1. Remove the plastic cover from the front of the acceptor (Figure 1).
2. Remove the 2 screws "E" from each side of the acceptor which hold the escutcheon to the acceptor (see Figure 2). One screw fastens a ground wire to the left side of the chassis. Replace this wire in the same location during reassembly.
3. The microprocessor board is held in place by a white plastic clip near each corner of the board. Pop the microprocessor board away from acceptor chassis to free the board, but do not remove the board completely. Use care to prevent the plastic clips from being broken or separated from the microprocessor board.
4. Note the locations of all ribbon cables and connectors on the microprocessor board. Disconnect the cables from the microprocessor board, and remove the board.

NOTE

When reattaching cables, start by attaching the cables at the bottom edge of the microprocessor board, and work toward the top of the board. Then, reposition the PC board and snap the board in place.

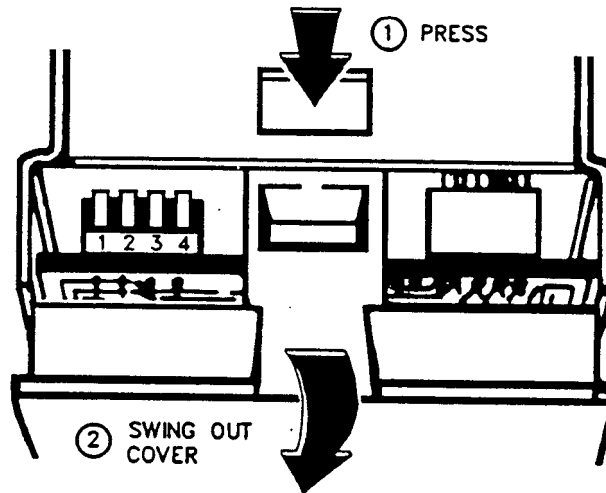


Figure 1. Removal of Front Plastic Cover, Showing Microprocessor Board

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Removal of the Motor Drive Chassis

1. Remove screw B1 from each side of the acceptor as shown in Figure 2. (If screw B2 is present, the motor drive chassis is metal.)
2. Spread the cables coming from the various boards away from the front of the acceptor to facilitate removal of the motor drive chassis.
3. Swing the top of the motor drive chassis outward from the acceptor, then pull the chassis up and out of the acceptor.

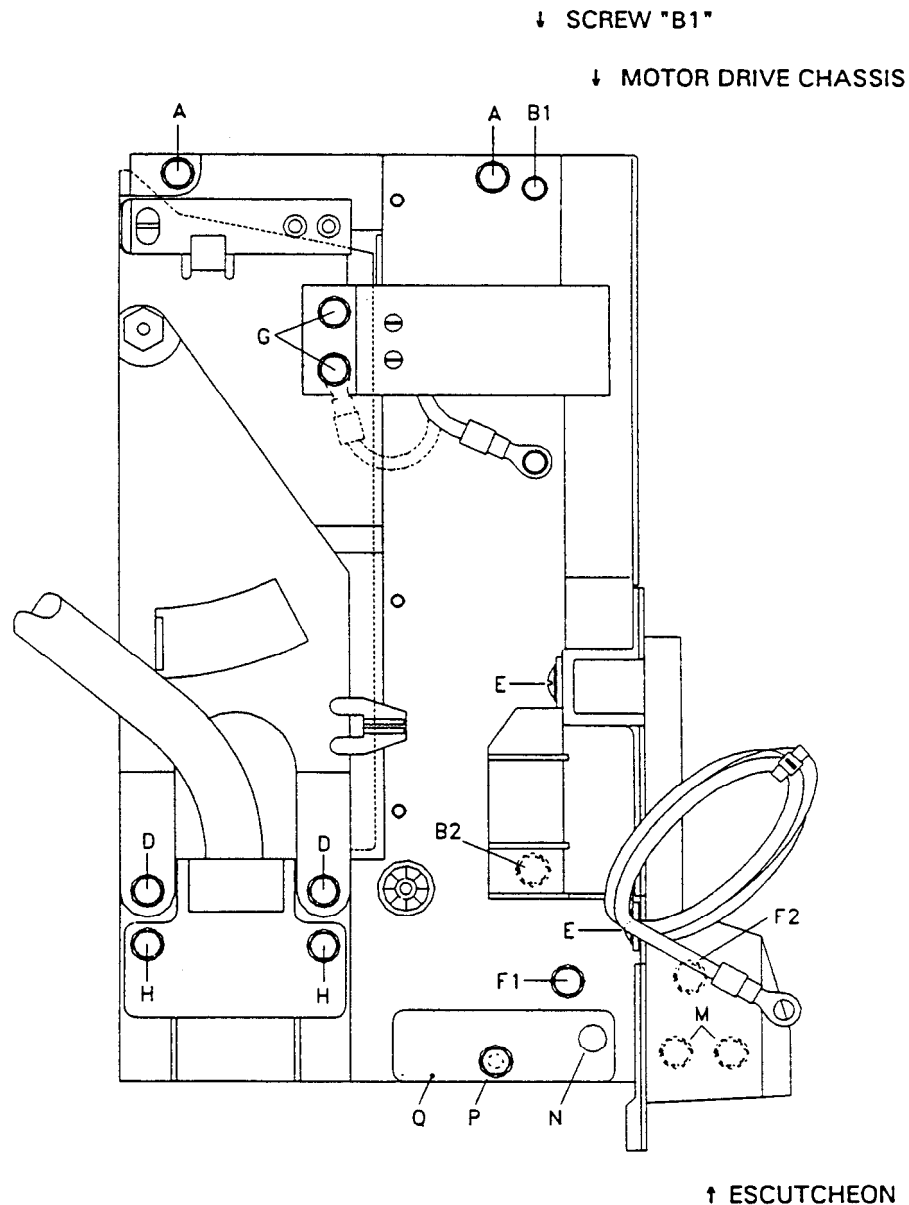
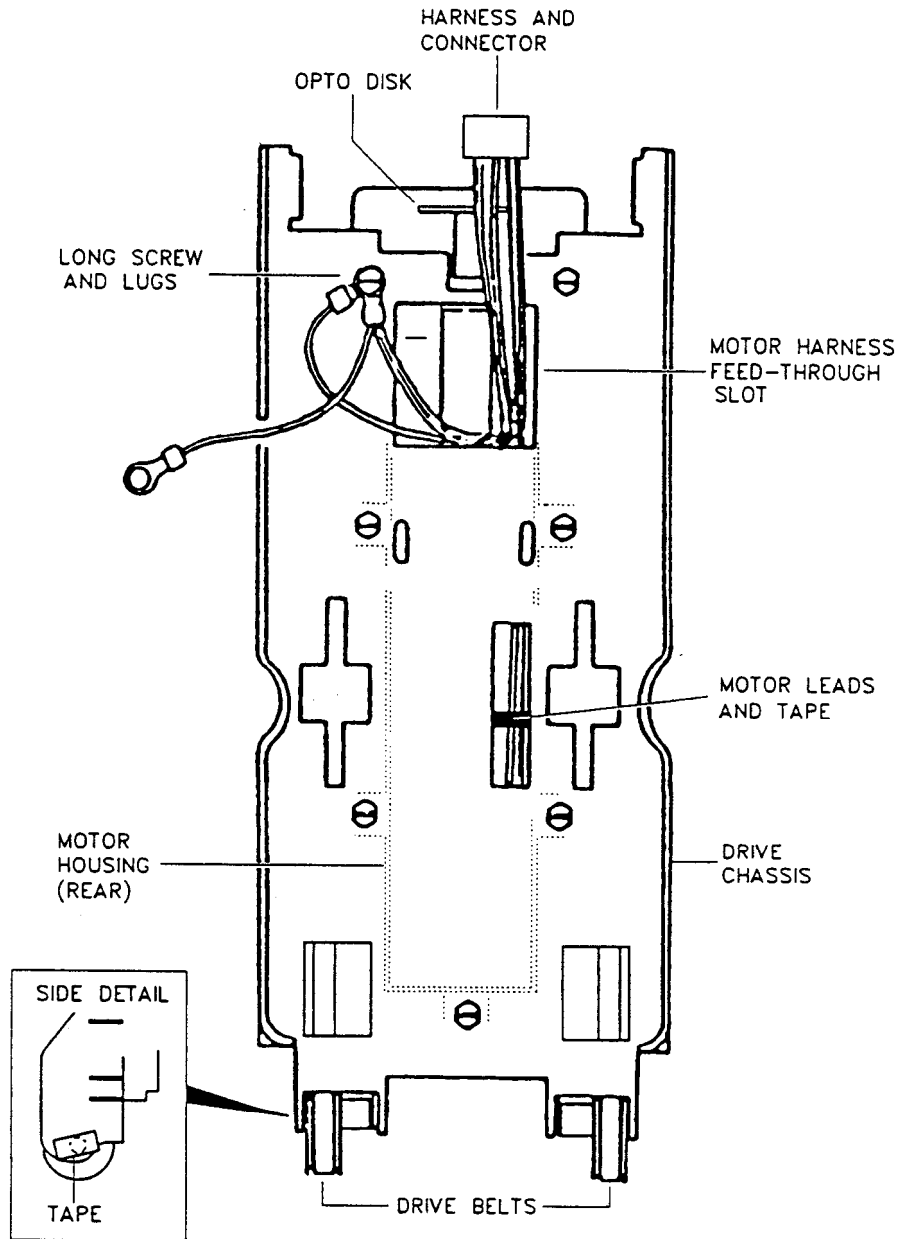


Figure 2. USA Assembly Screws

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NOTE: A SMALL PIECE OF TAPE IS USED TO SECURE EACH LOWER PULLEY SHAFT. IF THIS TAPE IS REMOVE FOR RENEWING BELTS OR LOWER PULLEYS, THE TAPE MUST BE REPLACED.

Figure 3. Plastic Motor Drive Chassis, Screws, and Details

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Replacing the Transport Motor in a Plastic Motor Drive Chassis

The complete motor drive chassis consists of a front drive chassis plate and a separate motor housing. The motor housing mounts to the drive chassis with 7 screws.

1. Set the motor housing on a flat surface with the motors facing upward. Note the location of the wire lugs under the screw head in the upper left corner of the motor chassis (Figure 3). The screw and lugs must be reinstalled in the same location. Also note the slot where the motor harness and connector feed through the drive chassis plate. The harness must be reinstalled through the same slot.
2. Red, green, and black motor harness leads are visible through the plastic cover plate, and are taped to the stacker motor gear box (Figure 3). When you reassemble the motor drive chassis, route and tape these leads exactly as they appear.
3. Remove the screws shown in Figure 3, then separate the motor housing from the drive chassis plate. Pull the motor harness through the feed-through slot.
4. Inspect for any tie-wraps holding motor wiring in place. Record the locations of these tie-wraps, then remove the tie-wraps.

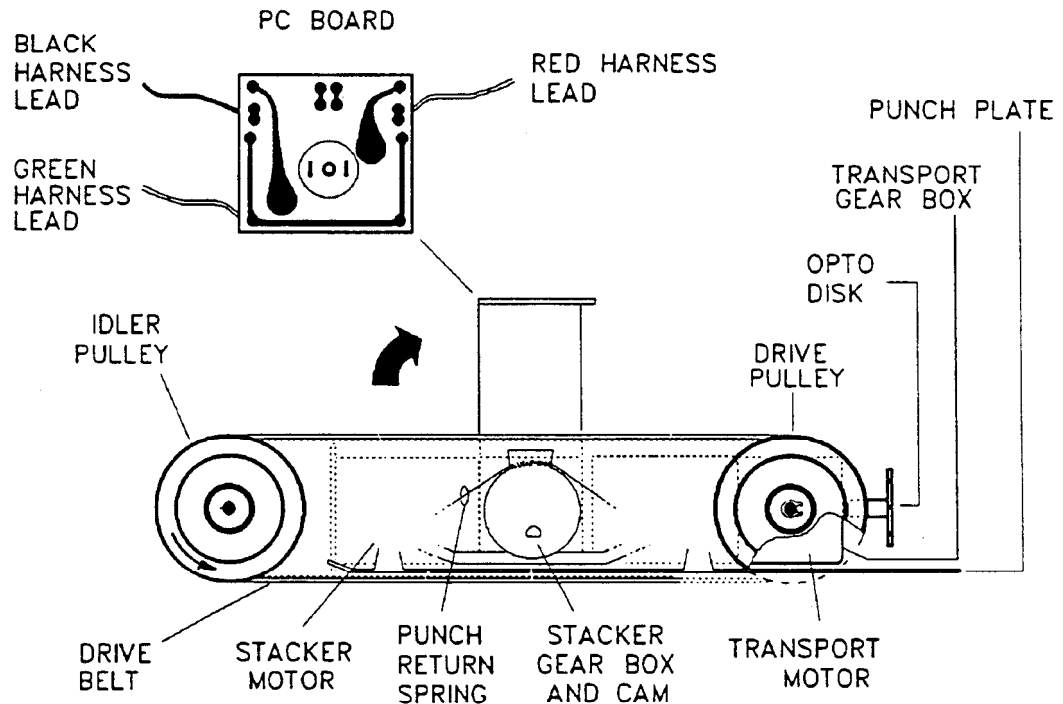


Figure 4. Motor Chassis and PC Board

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5. Lift the transport motor out of the motor housing and take the drive belts off the drive pulleys. If you are changing only the transport motor, you do not need to remove the stacker motor, hardware, springs, etc.
6. Tilt the bottom end of the stacker motor upward to expose the PC board and solder connections (Figure 4).
7. Note the locations of the red, green, and black harness leads soldered to the PC board (Figure 4). Also note there is another, short green wire from the stacker motor to the PC board. Do not remove this wire.
8. Unsolder the red, green, and black motor harness leads from the PC board.
9. Remove the retaining clips and drive pulleys from the transport motor shafts (Figure 4) and install them on the new transport motor. Pull the optical interrupt disk off the old motor and press it onto the shaft of the new transport motor.

NOTE

The optical interrupt shaft is flatted on one side and the disk is keyed to the shaft. Be sure to install the disk properly.

10. Twist and tin the ends of the red, green, and black leads on the new motor harness, then solder the leads to the stacker motor PC board. Inspect for cold joints, solder bridges, etc.
11. Reposition the drive belts on the drive pulleys and drop the transport motor into the motor housing. Route the red, green, and black leads to their original positions across the stacker motor gearbox and tape them down as shown in Figure 3.
12. Replace tie-wraps as needed. Feed the motor connector and harness through the slot in the drive chassis (see Figure 3). Before you reinstall any screws, confirm that there are three green wires on the outside of the motor chassis. Also confirm that the red, green, and black leads are visible in the slot, as shown in Figure 3. Finally, confirm that no wires will be pinched when the screws are reinstalled.
13. Insert the long screw through the large and small ring lugs and reinstall the screw in the original position shown in Figure 3. CAUTION: This is a 2 ½-turn screw! Lightly tighten the screw, taking care not to strip the threads.
14. Insert the remaining short screws. CAUTION: These are 1 ½-turn screws! Lightly tighten the screws, taking care not to strip the threads.
15. Lightly pull on the motor harness and confirm that it "floats" in the feed-through slot. If not, remove the screws. Check for pinched wires, correct as needed, and reinsert the screws.

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16. Reinstall the motor drive chassis in the acceptor and reinstall the "B1" screws shown in Figure 2. CAUTION: These are 2½-turn screws! Lightly tighten the screws, taking care not to strip the threads.
17. Conclude by reassembling the micro board, escutcheon, and front cover.

Replacing the Stacker Motor in a Plastic Motor Drive Chassis

Replacement of the stacker motor is nearly identical to the procedure for the transport motor.

1. Remove the complete motor drive chassis as described earlier, then perform all steps for changing the transport motor, up to and including step 8.
2. Gently lift the punch return springs up and to the outside of the stacker motor cams. See Figure 4 for the location of the punch return springs and cams.
3. Lift the stacker motor out of the motor housing.
4. Remove the retaining clips and cams from the stacker motor shafts, and reinstall the cams and retaining clips on the new stacker motor.
5. Dress the tips of the red, green, and black leads and resolder them to the PC board on the new stacker motor.
6. Reassemble the motor drive chassis and acceptor as described in steps 11-17 for the transport motor replacement.

Replacing Both Motors in a Plastic Motor Drive Chassis

When you replace both motors at once, the replacement motor assembly includes both motors and an attached wiring harness. The procedure is similar to replacing individual motors, except that no soldering is required. You will need to transfer the drive pulleys, cams, and optical interrupt disk to the new motors.

IMPROVED DRIVE MOTOR	33.10 EA
GRAY BELT	2.99 EA
BLACK BELT	1.50 EA
TENSION LEVER UPDATE KIT	5.00 EA

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Technical Bulletin

REPLACEMENT OF TENSION LEVERS IN USA³ AND DBA ACCEPTORS

This bulletin describes changing the black plastic tension levers on the USA³ and DBA acceptors. This bulletin does not apply to the USA and USA-15 acceptors, which use metal tension arms. Refer to the figures as needed. Note: Remove only those screws in Figure 1 which you are instructed to remove. Do not loosen any other screws.

1. Remove the plastic cover from the upper front of the acceptor.
2. Remove the four screws (E) which hold the escutcheon to the acceptor, and lift off the escutcheon. Note the ground wire which attaches under the lower screw on the left side of the escutcheon. This wire must be reattached in the same position when you assemble the acceptor.
3. The microprocessor board is now exposed. Gently pry outward on each corner of the microprocessor board until the board pops out. Unplug the 5 cable connectors from the microprocessor board (motor, ribbon, cash box, sensor, and mag head) and remove the board.
4. Remove the 3/16" hex head screw (Figure 1, screw "B1") from each side of the acceptor. Remove the chassis ground wire located on or beneath the cash box switch plate (this wire is shown under lower screw "G" in Figure 1.) Remove the motor drive chassis.
5. Inspect the tension arm assembly on each side of the acceptor to familiarize yourself with the parts called out in Figure 2.

Perform steps 6-18 on one side of the acceptor, then repeat for the other side.

6. Pull the push-pin fastener straight out of the acceptor side piece (Figure 2).
7. Locate the spring which maintains tension on the tension lever. The rear (hooked) end of this spring loops over a pin on the free end of the tension lever assembly. Note that the spring rests between two shoulders on the tension lever pin. Lift this spring off the tension lever and then outward to release tension from the lever.
8. Open the cash box (250-bill model), or remove the cash box (all other cash boxes). Position the acceptor with the tension arms facing upward. Open the acceptor to expose the lower bill path.

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9. Push the rear of the tension lever downward until it bottoms in the "keyhole" slot in the side plate. Using a small, flat-blade screwdriver, gently pry the rear of the lever away from the side plate until it is free of the keyhole.
10. Pivot the rear of the tension lever upward until the lever is in a vertical position. Using a small, flat-blade screwdriver, gently pry the front end of the tension lever free of the side plate. Remove the tension lever and idler belt. Discard the tension lever.

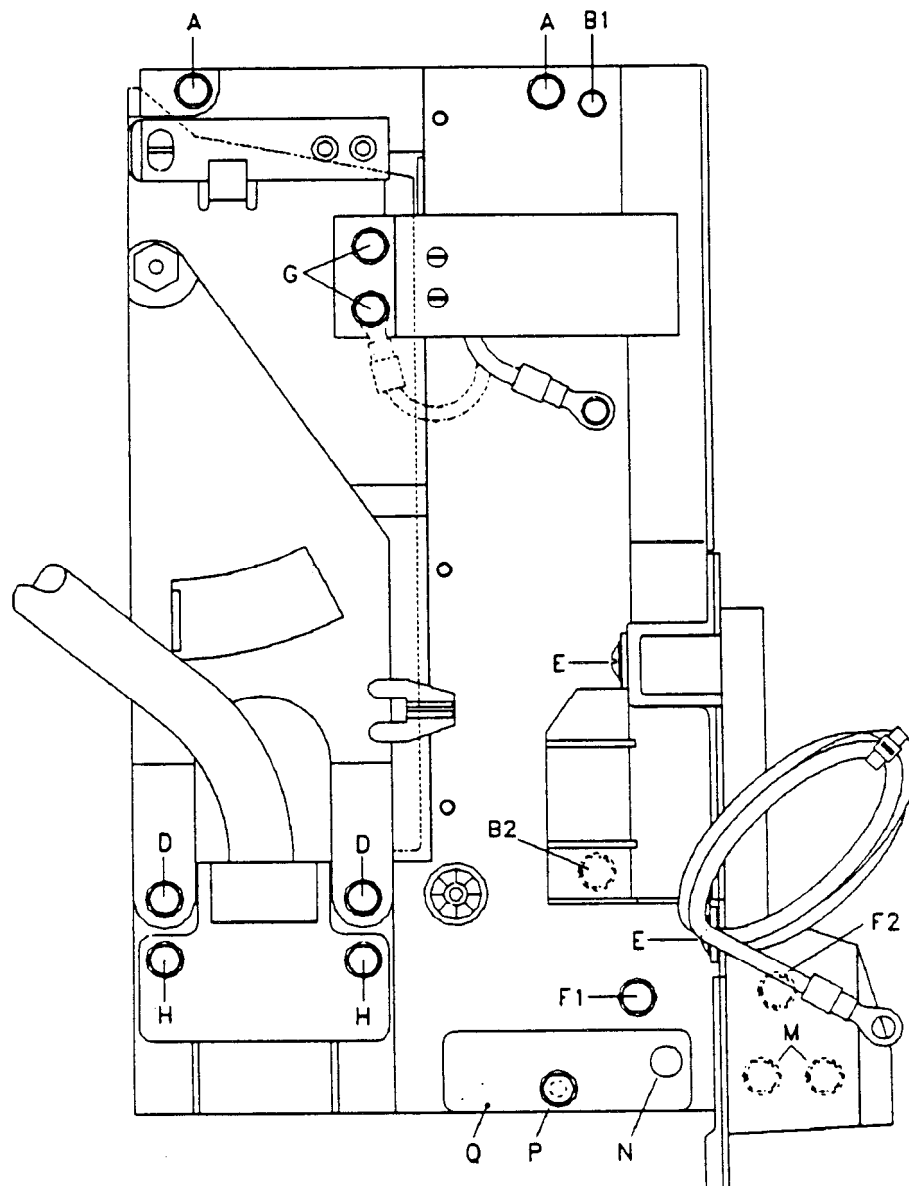


Figure 1. Mounting Screws - Left Side Plate

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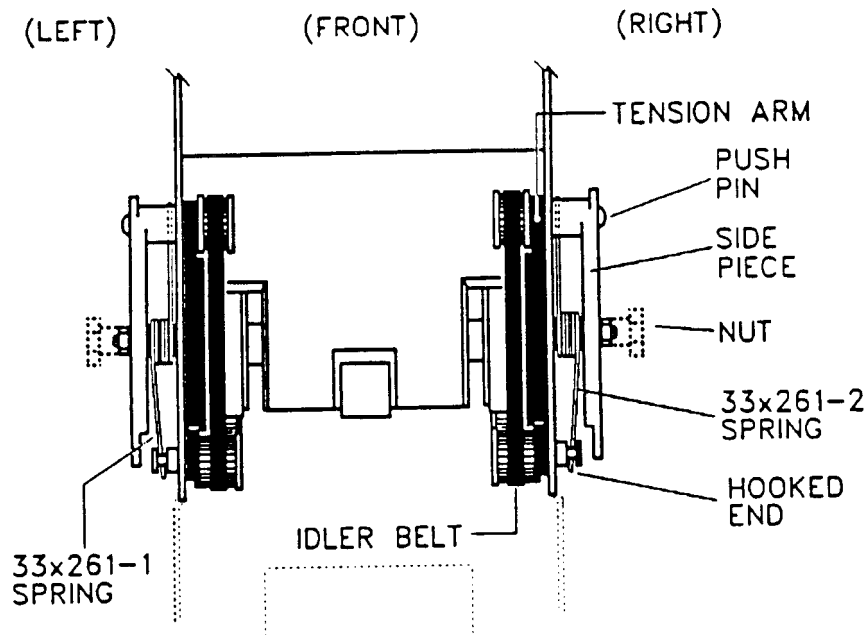


Figure 2. Tension Levers

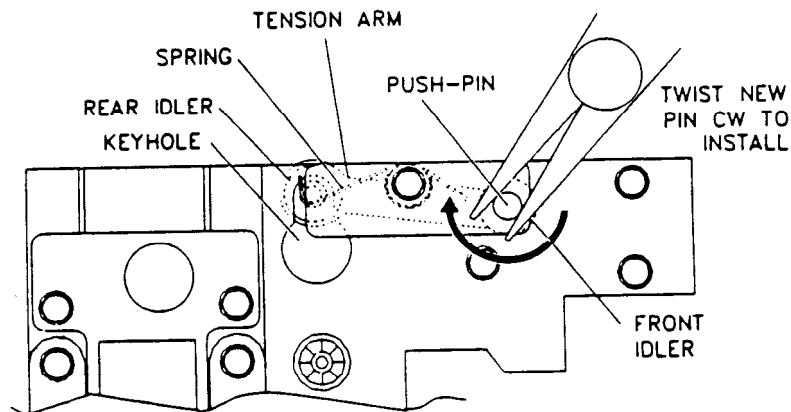


Figure 3. Side Piece Details

11. Remove the nut from the side piece (style may vary), and lift off the rectangular side piece. The tension spring will come off with the corresponding side piece. Discard the spring.
12. Reassemble the side piece using a new spring, as shown in Figures 2 and 3. Make sure the spring is positioned as shown. Reinstall and tighten the nut.

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13. Loop a clean idler belt around the front idler wheel (pivot post end) of the new tension lever. Position the new tension lever in a vertical position, with the pivot post inserted in the pivot hole in the side plate.
14. Apply thumb pressure to the face of the front idler wheel until the pivot post snaps into the side plate.
15. Pivot the free end of the tension lever fully downward so that the pin on the free end can be inserted into the keyhole. Exert inward pressure as needed on the end of the tension lever to guide the pin to the keyhole.
16. Move the hooked end of the spring back and over the pin on the free end of the tension lever. The spring should rest between the shoulders on the pin. When both springs have been replaced, the acceptor should resemble Figure 2. The hooked end of each spring should be toward the outside.
17. The new push-pin for the pivot post is metal. Insert the push-pin into the hole in the tension arm pivot post (location "N" in Figure 1).
18. Grasp the head of the push-pin with a small pair of pliers. Seat the pin by rotating it clockwise with the pliers, 1/4 to 1/2 turn as shown in Figure 3. The pin will cut new threads and tighten into the pivot post. Do not overtighten the pin.

Perform steps 19-24 after both tension levers have been replaced.

19. Reinstall both idler belts over their respective idler wheels.
20. Replace the motor chassis and screw (Figure 1, screw "B1" on each side).
21. Replace the microprocessor board and reattach all cables, Make sure all connectors are firmly seated.
22. Replace the escutcheon, any previously removed ground wires, and all associated screws.
23. Replace the front plastic cover over the microprocessor board.
24. Test the unit for proper operation.

IMPROVED DRIVE MOTOR	33.10 EA
GRAY BELT	2.99 EA
BLACK BELT	1.50 EA
TENSION LEVER UPDATE KIT	5.00 EA

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Money Controls

Obsolete Notification (47x299)

Rev. Date December 18, 2002

This is the official notification that Money Controls is discontinuing the Ardac USA, MDB, ABA and DBA series (Currency Validator). This notification provides affected items, important dates and end-of-life purchase information.

Items Affected:

Acceptor Part Number:

88x50XX (USA, DBA1, DBA2)
88x5100-88x5129 (DBA3-DBA5)
88x5130-88x5159 & 88x519X (DBA 7 /DBA 66)
88x52XX – 88x53XX (DBA 70 & DBA76)
88x55XX (MDB, ABA)

Spare Parts:

ALL

Available Replacements:

Acceptor (Replacement):

MC2600 for most models (Call for availability)

Important Dates:

Note Acceptor Obsolete Date (Last Buy):

Money Controls will accept non-cancellable purchase orders on Last Buy items:

88x50XX (USA, DBA1, DBA2)	Immediately (No Last Time Buy)
88x5100-88x5129 (DBA3-DBA5)	Immediately (No Last Time Buy)
(Limited 88x5105 DBA stock Available)	June 30, 2003
88x5130-88x5159 & 88x519X (DBA 7 /DBA 66)	June 30, 2003
88x52XX – 88x53XX (DBA 70 & DBA76)	Immediately (No Last Time Buy)
88x55XX (MDB, ABA)	Immediately (No Last Time Buy)

Service Obsolete Date: (Contact MC for Authorized Service Location)

NOTE: As of January 1, 2003 all new DBA 5&7 sold will only have a 1-year warranty

88x50XX (USA, DBA1, DBA2)	Immediately (No Last Time Buy)
88x5100-88x5129 (DBA3)	Immediately (No Last Time Buy)
88x5100-88x5129 (DBA 5)	June 30, 2004
88x5130-88x5159 & 88x519X (DBA 7 /DBA 66)	June 30, 2004
88x52XX – 88x53XX (DBA 70 & DBA76)	June 30, 2004
88x55XX (MDB, ABA)	Immediately (No Last Time Buy)

Money Controls, Inc.

34099 Melinz Parkway • Eastlake, Ohio 44095 USA • Telephone (440) 946-3000 • Fax (440) 946-9829

Email: sales.usa@moneycontrols.com

Money Controls

Spare Parts Obsolete Date (Last Buy)(due to availability):

88x5100-88x5129 (DBA3-DBA5)	Immediately
88x5130-88x5159 & 88x519X (DBA 7 /DBA 66)	June 30, 2004
88x52XX – 88x53XX (DBA 70 & DBA76)	June 30, 2004
88x55XX (MDB, ABA)	Immediately (Contact Money Controls for -
88x50XX (USA, DBA1, DBA2)	Immediately Authorized Parts Distributor)

Please contact Money Controls for available price discounts.

SIRIUS TECHNOLOGY

440) 205-9200

Software Support: (Note Sets Only)

88x50XX (USA, DBA1, DBA2)	Immediately
88x5100-88x5129 (DBA3-DBA5)	Immediately
88x5130-88x5159 & 88x519X (DBA 7 /DBA 66)	June 30, 2004 for the following countries:
USA 57x939	
Brazil 57x719 & 57x1050	
Australia 57x782	
88x52XX – 88x53XX (DBA 70 & DBA76)	Immediately
88x55XX (MDB, ABA)	Immediately

Software Core Support:

88x50XX (USA, DBA1, DBA2)	Immediately
88x5100-88x5129 (DBA3-DBA5)	Immediately
88x5130-88x5159 & 88x519X (DBA 7 /DBA 66)	Immediately
88x52XX – 88x53XX (DBA 70 & DBA76)	Immediately
88x55XX (MDB, ABA)	Immediately

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