IBM CUSTOMER ENGINEERING

REFERENCE MANUAL

PREVENTIVE MAINTENANCE

Alphabetical Interpreter Type 552

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INTERNATIONAL BUSINESS MACHINES CORPORATION
New York, New York
Printed in U.S.A.
Form 22-5749-2

PREVENTIVE MAINTENANCE

Alphabetical Interpreter, Type 552

General

Machine should be given a general cleaning before the actual inspection is begun. Brush out card dust and wipe up any excess grease and oil from the base and the various parts. Check conditions of ribbon at this time. If ribbon replacement is necessary, remove and wipe ink from ribbon shield and associated parts. A better, more efficient inspection can be performed on a clean machine.

CAM AND DRIVE SHAFTS

I. Cleaning

All dirt and old grease should be cleaned from cams and cam followers.

II. Inspection

1. Cam Followers for loose studs.
2. Cams for loose pins.
3. Contact Drum brake and ratchet assembly for freedom of action.

III. Lubrication

IBM 9

(1) Reverse friction lock, particularly at point where steel shoulder of drive pulley operates against the reverse friction lock arm.

IBM 17

(1) Light film on all linen dilecto gears.
(2) All gears and cam surfaces not lubricated by Bijur System.

IBM 21

(1) Zerk fitting in drive pulley.

FEED UNIT

I. Cleaning

See *General Section* under headings listed below.

II. Inspection

1. Hopper and Feed Rolls (see *General Section—Horizontal Feeds*)
   (a) CLEANING
   (b) FEED KNIFE ADJUSTMENTS
   (c) FEED KNIFE GUIDE SLIDES
   (d) EVEN FEEDING OF CARDS
   (e) HOPPER SIDE PLATES
   (f) ROLLER THROAT
   (g) FEED ROLL TENSION
   (h) CONTACT ROLL CARD GRIPPERS for good spring tension.
   (i) FEED KNIFE TIMING
   (j) HOPPER POSTS

2. Brush Assemblies (see *General Section*)
   (a) CLEANING. It is essential to keep the contact roll absolutely free of all particles of dirt or other foreign matter, not only to insure good electrical contact but also to insure clear printing impressions on the card. Removing the card guide between the contact roll and the hopper will simplify the cleaning.
   (b) BRUSH SEPARATORS. Revolve the rolls and watch for brush movement. Any dirt between the separators will result in brush movement.

(c) BRUSHES
(d) BRUSH ALIGNMENT TO SCRIBED LINE. Use gauge #450388 and line nearest bend in gauge.
(e) BRUSHES EVENLY SPACED BETWEEN SEPARATORS. Special care should be taken that all dirt is cleaned from between the segments of the feed roll separator. The grooved dilecto roll is adjusted horizontally by means of the brush roll locating collar so that the brushes are in the center of the grooves. Use the brush bending tool on individual brushes. Revolve the roll to make sure brushes are free all the way around.
(f) BRUSH TRACKING. Change by shimming the brush assembly holding brackets located on the side castings.
(g) BRUSH TIMING. The brushes are timed to the holes in the card so they will make at least $1\frac{1}{2}^\circ$ before every selecting impulse, and break not earlier than $1\frac{1}{2}^\circ$ after each selecting impulse breaks. The make and break timing of the brushes should be checked for each selecting and zoning impulse. The correct timing is obtained by loosening the holder clamping screws and moving the holder left or right in the assembly. Make sure that the clamping screws are tightened after the correct timing is obtained. The brushes should never have a duration of longer than 2° before and after the make and break of the selection circuit breakers, or a total of 7° duration at selection time. See information on "CB's" under *Base* for this machine.

3. Stacker
(a) STACKER ROLLS for freedom of operation and wear.
(b) JAM CONTACT for adjustment and timing.

4. Card Levers (see *General Section*)

III. Lubrication

IBM 6

(1) Roller throat.
(2) Card lever pivot points.

IBM 9

(1) Feed knife guide slides.
(2) Feed knife guide pin.
(3) Brush separator roll bearings.
(4) Card stacker shaft assembly pivots.
(5) Bell crank assembly pivot.

IBM 17

(1) Card levers—very light film between operating lever and phenolic pad on contact strap.
(2) Both ends of bell crank assembly.

PRINT UNIT

I. Cleaning

Type bars should be cleaned of all dirt and old ink. The face on the type tails should be cleaned with a stiff brush taking care to clean out all accumulated material from the center of the letters. An alternate cleaning method would be to use plastic type cleaner, part 450528.

II. Inspection

1. Type Unit. Before removing type unit from machine, operate the machine manually under power without cards and observe the operation of the type bars. They may best be viewed from the left end of the machine under the magnet unit. Check the releasing time and the restoring of the bars. Any bars in which the friction slide spring tension is insufficient will have a tendency to fall down during the restoring part of the cycle. Note the number of any bars not operating correctly and correct when unit is removed.

With unit removed:

(a) TYPE BARS for bent or broken type tails, broken type tail springs and freedom of operation of type bars in their guides.
(b) PRINTING PRESSURE BAR ASSEMBLY for wear.

2. Magnet Unit. Check with unit removed from machine.

(a) DRIVE ROD BAIL for freedom of movement.
(b) ARMATURES for wear at point where drive rod lever contacts it.
(c) TERMINAL WIRES for loose or broken connections.
(d) RIBBON FEED ASSEMBLY for wear and freedom of operation.

III. Lubrication

IBM 6

(1) Print magnet armature pivot point.
(2) Type bar stop pawls.

IBM 9

(1) Ribbon feeding mechanism.

IBM 17

(1) Magnet armatures at point where drive rod levers rest.
(2) Internal cuts in zoning pawl restoring lever cams.
(3) Top of magnet unit restoring levers where they fit into slot in sides of magnet unit.
(4) Zone carrier lever arms at end that fit into type unit.
(5) Type bar friction springs.

IBM 21

(1) Cam rollers for magnet restoring cam.
(2) Cam roller on zoning carrier lever.
(3) Drive shaft end bearing behind linen dilecto gear.

BASE

1. CB Cams and Contacts (see *General Section*)

When the brushes are worn to the extent that the duration of contact through the hole in the card is increased, difficulty may be experienced both with the brushes making too early and too late. Wear of the CB cams, contacts and cam followers resulting in longer impulses, aggravates this condition. A worn brush, making contact early through a hole in the card before CB 5 and 6 have broken the circuit for the previous impulse, may result in tripping the magnets early causing printing under. With a worn brush making contact too long, or if CB 4, 5 and 6 are making early, it is possible for a zero hole to make contact for a one impulse and the type bar will be stopped by the zero-one position which is normally blank. To overcome these conditions, the timing below should be adhered to: CB 5 makes at 108° for a one impulse, CB 6 breaks three degrees later at 111°. As further check, CB 5 should make at 153° and CB 6 should break at 156° for a 7 impulse. CB 4 should not make earlier than 107°.

Occasionally a brush will drop into the zero hole in the card, while the zone make cam CB 2, due to its long duration, is closed for an X and if the brush overlaps the CB by as little as 1° the discharge of the 2MFD condenser may operate the print magnet. Such an impulse will start the type bar moving much sooner than it should, and it may be deposited on the X bail.

To overcome this condition the zone cams CB 2 and 3 are now cut for a shorter duration. These cams, Part #160759, are available for installation and should be ordered on MES Group 11 to eliminate difficulties of this nature.

The theoretical timing of CB 2 and CB 3 with this shorter duration is shown on wiring diagram #161561-K reading as follows:

	Make	Break
CB 2	30°	36°
	60°	66°
	354°	360°
CB 3	28°	34°
	58°	64°
	352°	358°

2. Relays (see *General Section*)
3. Motors and Generators (see *General Section*)
4. Bijur System (see *General Section*)
5. Control Panel (see *General Section*)

TESTS

MOST CUSTOMERS have a 513 control panel wired for 80-80 reproducing. This may be inserted in the 552 and used for the first three tests below, if a test deck blank in columns 21 through 40 is used. Check the printing after running a test deck through once to be sure all positions have printed correctly; then run the same deck through several times and check to see that the printing has been the same every time.

1. Check a test deck punched with numeric information in all positions.
2. Check alphabetical interpretations with the same control panel using cards punched with the alphabetical characters in sequence in all columns of the card.
3. Punch a card with zeros in all columns. Check printing results. For further checking, punch an individual card in all columns for each digit and letter. Check results.
4. Check X elimination device operation.
5. Check zero elimination device (optional feature).
6. Check quality of all printing for clearness and legibility.
7. Check to see that cards are not embossed.
8. Stand by and check the customer's work as it comes off machine to insure against trouble being left which the above tests did not show. Also, it is possible to place trouble on machines when covers are installed.