Honeywell

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LOW COST SERIAL PRINTER

MAINTENANCE PROCEDURES

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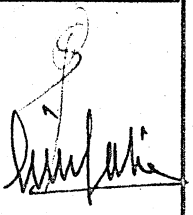
Rev. 0 6/76		1st Edition 71011352-001	
Rev. 0 9/77		2nd Edition 71011352-100	

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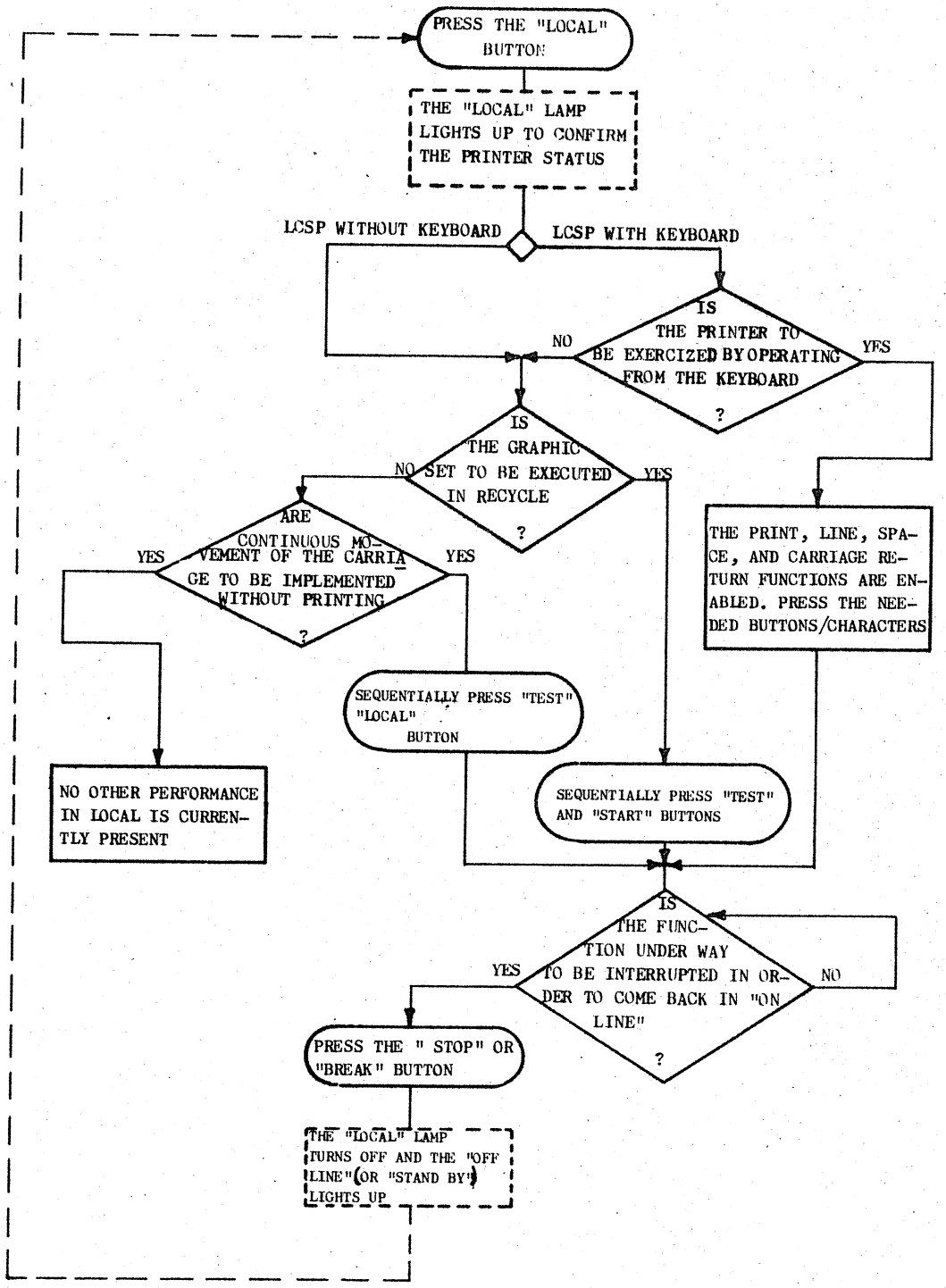
VIII
MAINTENANCE PROCEDURES

This section of the "LCSP Product Manual" describes all the preventive and corrective maintenance operations that are to be carried out by the operator and the Adjustment, Removal and Replacement Operations to be performed by the Field Engineer.
Chapter 8.1 "Operator Tasks" is included in this manual for possible checks or indications the Field Engineer must follow for corrective purposes.
The adjustment procedures must be carried out in "OFF LINE" with the aid of the "Print" and "Carriage Movement" functions which can be started in LOCAL (See the NOTE on next page).

NOTE

All LCSP models can work in OFF LINE. The following flow supplies a correct guide of the operations to be imple - mented in order to obtain the needed solicitation.



Refer to Section VII - Fault Diagnosis for the isolating diagnostic start-up instructions (when the pertinent option is present).

8.1 OPERATOR TASKS

Preventive Maintenance

No preventive maintenance has been planned for this product at Operator's level.

Corrective Maintenance

The corrective maintenance operations at Operator's level are:

- Clear of paper or inked ribbon jams
- Collection of the symptoms with the aid of the diagnostic tests, in case of fault whenever requested by a procedure at system or terminal level.

Replacement of the inked ribbon, paper loading and adjustment of the drum according to the number of copies are considered normal functioning operations.

8.2 F.E. MAINTENANCE TASKS

Preventive Maintenance

The LCSP print head is subject to a progressive wear which cannot be recovered in field through adjustment operations. It is therefore foreseen a replacement program of the head before its print quality lowers under the tolerance limits. The average work of a print head is 60 x 10^6 characters approx between two refurbishing.
The following table shows some replacement times, typical of some applications:

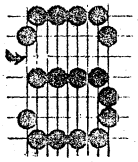
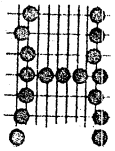
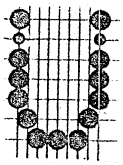
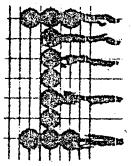
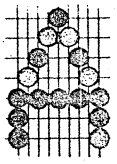
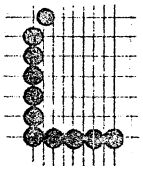
APPLICATION	AVERAGE CHRTS NUMBER/YEAR	REPLACEMENT PLAN
CONSOLE (62/64/66)	18 x 10^6	3 YEARS
TERMINAL (HARD COPY..)	30 x 10^6	2 YEARS
HIGH USAGE TERMINALS (61/OUTPUT PRINTER...)	60 x 10^6	1 YEAR

Procedure

This check-out procedure must be implemented either to correct print quality falling off or to preventively establish the replacement data of the print head (see the above table).
Firstly perform the following preliminary operations :

- check the correctness of the Adj Routines 8.2.1.4 and 8.2.1.5. Should their requirements not be met, adjust the unit by applying the pertinent routines.
- mount the one form stationery.
- mount a new inked ribbon.

Then print-out in LOCAL (See the NOTE on page 8.2) some rows of the graphic set, extract the printed form from the unit and verify that no one of the print errors, listed in the following table, are present on it.

	INVOLVED CHARACTERS	DETECTABLE ERROR	PESSIMISTIC EXAMPLES	PROBABLE CAUSE
1	All	One point is lacking along the whole printed row. Normally lacking of 10 points per row is considered acceptable, but however no more than 2 points per character.		Breakage of a needle. Interruption of a coil
2	Chiefly on the vertical lines (H , I , / .....).	The vertical lines are not well defined (the points are not set on one line).		The ruby is unglued or is about to unglue.
3	All	Some points appear smaller than the others. Furthermore the inked ribbon reveals an anomalous wear.		A needle is splitted on the point and presents on the paper a sharp corner.
4	All	The characters are correctly printed but some inked strias are present along the printed row.		One or more needles are seized and/or the return springs are weakened, consequently the needles protrude longer than the amount due.
5	All	Some points which make-up the characters are faded and in great contrast with the characters printed correctly.		Wear of the needles.
6	Chiefly on the vertical lines (H,I,/...)	One of the points making up the vertical line appears misaligned on the right side.		The needle is seized (hard spots in the guide, not due to dirt).

Should the errors, listed in steps 1 to 4 appear, it is advisable to replace the print head at once (Routine 8.2.2.2).
Should the other errors be present, it is necessary to evaluate their frequency and the impact on the customer's jobs (possibility or not to work with an incorrect printing) and then establish the head replacement date.
It is however advisable to replace the print heads during some trouble shooting intervention at the customer's site.

Materials

The replaced print head must be sent to the repair center for refurbishing according to the local agreements established by Marketing and Field Engineering Support.

Corrective Maintenance

The corrective maintenance section is divided in two main chapters:

8.2.1 Adjustments
8.2.2 Removals and Replacements.

8.2.1 ADJUSTMENTS

8.2.1.1 Mistor Gap Adjustment Procedure

1 - Needed Material

- Feeler Gauge
- Allen Wrench, 3 mm

2 - Purpose

To obtain an exact gap between the mistor and the gear teeth.

3 - Preliminary Operations

- Power-off the printer
- Remove the front cover (see 8.2.2.1)
- Move the carriage on the right up to the end of run

4 - Adjustment Rule

The distance between the gear teeth and the mistor must be of 0.10 to 0.15 mm (0.004 to 0.006 inch.) in the great eccentricity point of the gear itself.

5 - Procedure

- Loosen the Allen screw fitted on the mistor fixing collar.
- Interpose the 0.10 mm (0.004 inch.) blade and tighten the screw previously loosened by pressing the mistor against the blade. Refer to fig. 8.1

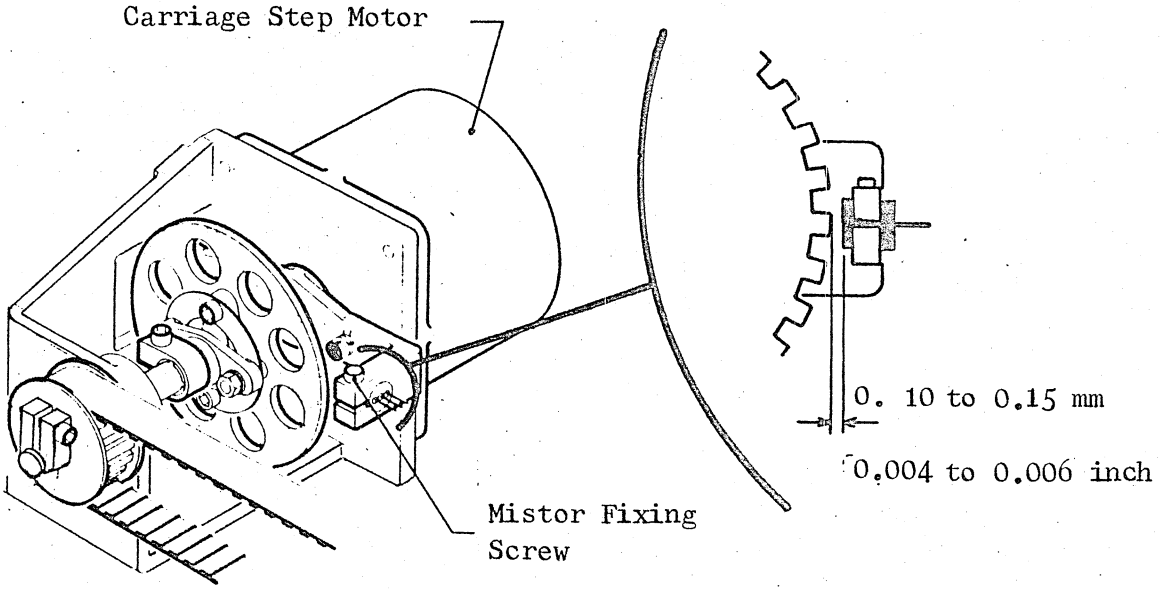


Fig. 8.1

6 - Check-out

Rotate the gear and check, every 90 degrees, that the distance remains constant. Should this requirement not be met, repeat the Adjustment Procedure in the great eccentricity point of the gear.

NOTE

On the most recent units the max eccentricity point is already identified by a red spot.

7 - Final Operations

Perform the mistor adjustment routine 8.2.1.7.

8.2.1.2 Mistor Pulse to Carriage Step Motor Adjustment Procedure

1 - Needed Material

- Oscilloscope
- Screwdriver - 5 mm
- Allen Wrench - 3 mm

2 - Purpose

Set the carriage mistor signal in phase with the step motor position.

3 - Preliminary Operations

Remove the top cover (Routine 8.2.2.1) and the Operator panel without disconnecting the cable.

4 - Adjustment Rules

Once the step motor has completely executed a step, the mistor waveform must reach the max negative level.

5 - Procedure

- Position the carriage so that the gear holes allow access to the mistor support screws. (Refer to fig. 8.2).

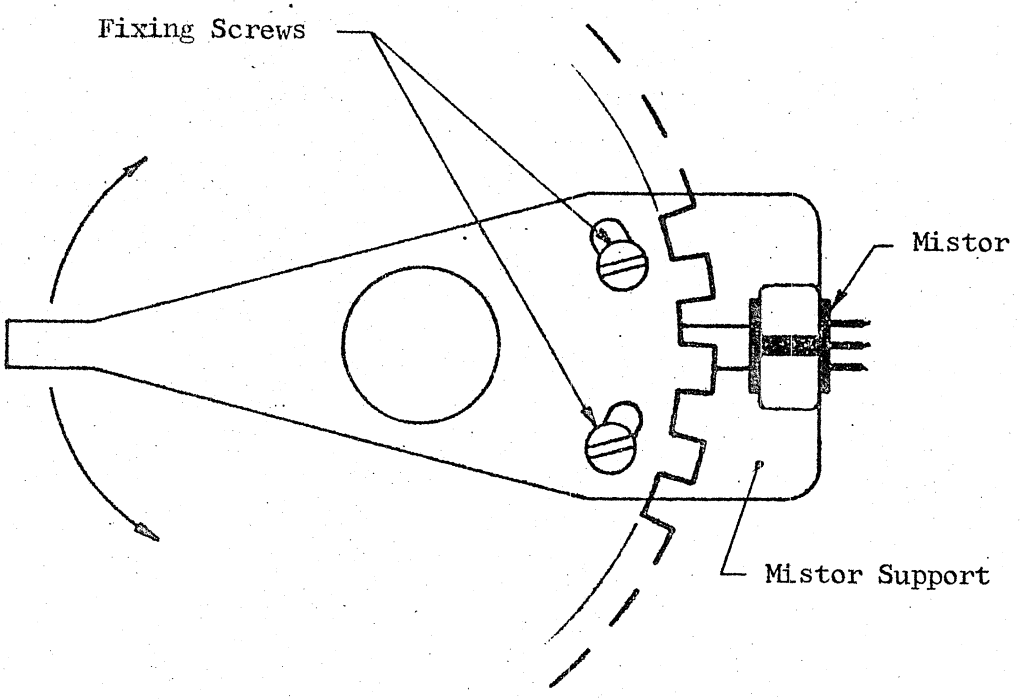


Fig. 8.2

. Take-off the logic module without disconnecting the cables.
. Ground signal DSA80*0 through a jumper connected between TP75 and TP85 (see fig. 8.3 - on the top) for the DRIVE PWAs bearing tab number 001 and 002 or between TP01 and TP85 (see fig. 8.3 - on the bottom) for the DRIVE PWA's bearing P/N 78117135-003.
. Power-on the unit and verify that the print head remains fixed in the previously stated position.
. Set the scope probe (NOT ATTENUATE) on test point TP88 (or TP03) (MISTO*0) of the DRIVE board (see fig. 8.3)
. Slightly loosen the two support fixing screws so that the support can rotate with friction.
. Move the support to obtain the max negative level of signal MISTO (scale 5V - 2 ms).
. Sligthly tighten the two support screws (without locking them completely because quite surely this adjustment will be repeated).
. Set the scope scale on 1V - 2 ms.
. Slightly move the carriage in both directions and verify that the MISTO signal only goes UPWARDS. Otherwise, it is necessary to adjust the MISTO position by slightly tapping on its support arm with the screwdriver handle.
. Power off the unit and disconnect the jumper.

6 - Check-out procedure

. Power-on the unit.
. Press the right end-of-run button, then move the head on the right almost up to the end of run. Press LOCAL (or DISABLE) and START buttons and perform an initializing operation during which the head sets in first column.
Compare the waveform monitored during carriage return with the ones illustrated in fig. 8.4
Should it not be correct, adjust the Mistor by tapping again on its support arm.
. Tighten the two fixing screws.

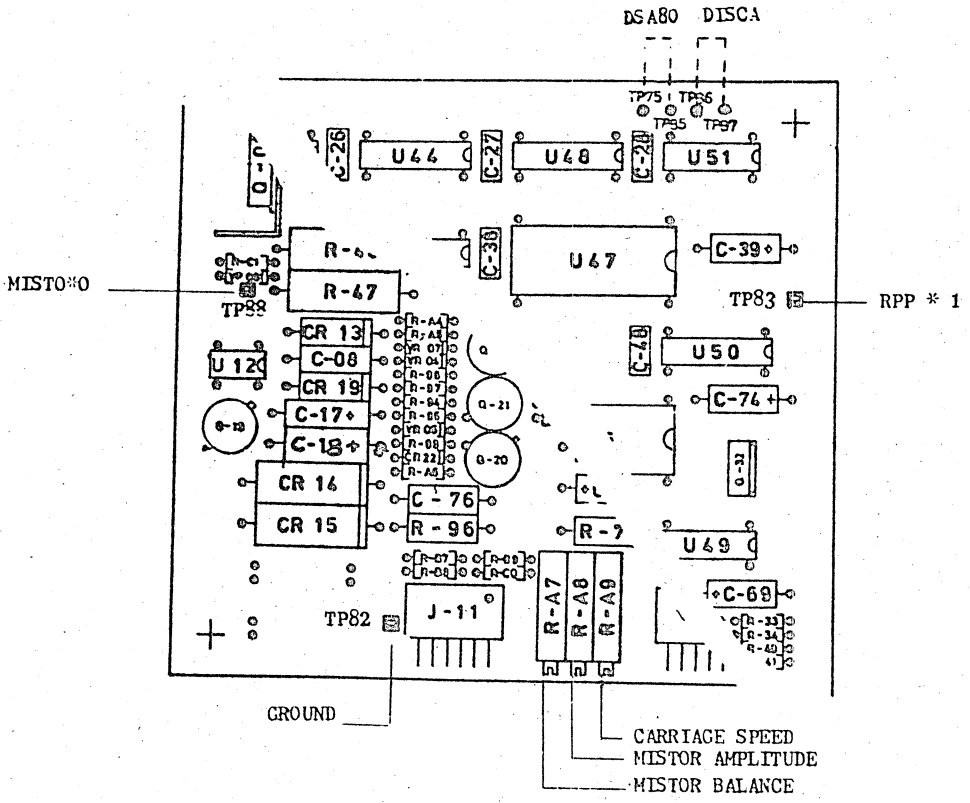


Fig. 8.3 - PWA DRIVE P/N. 78117135-001/002

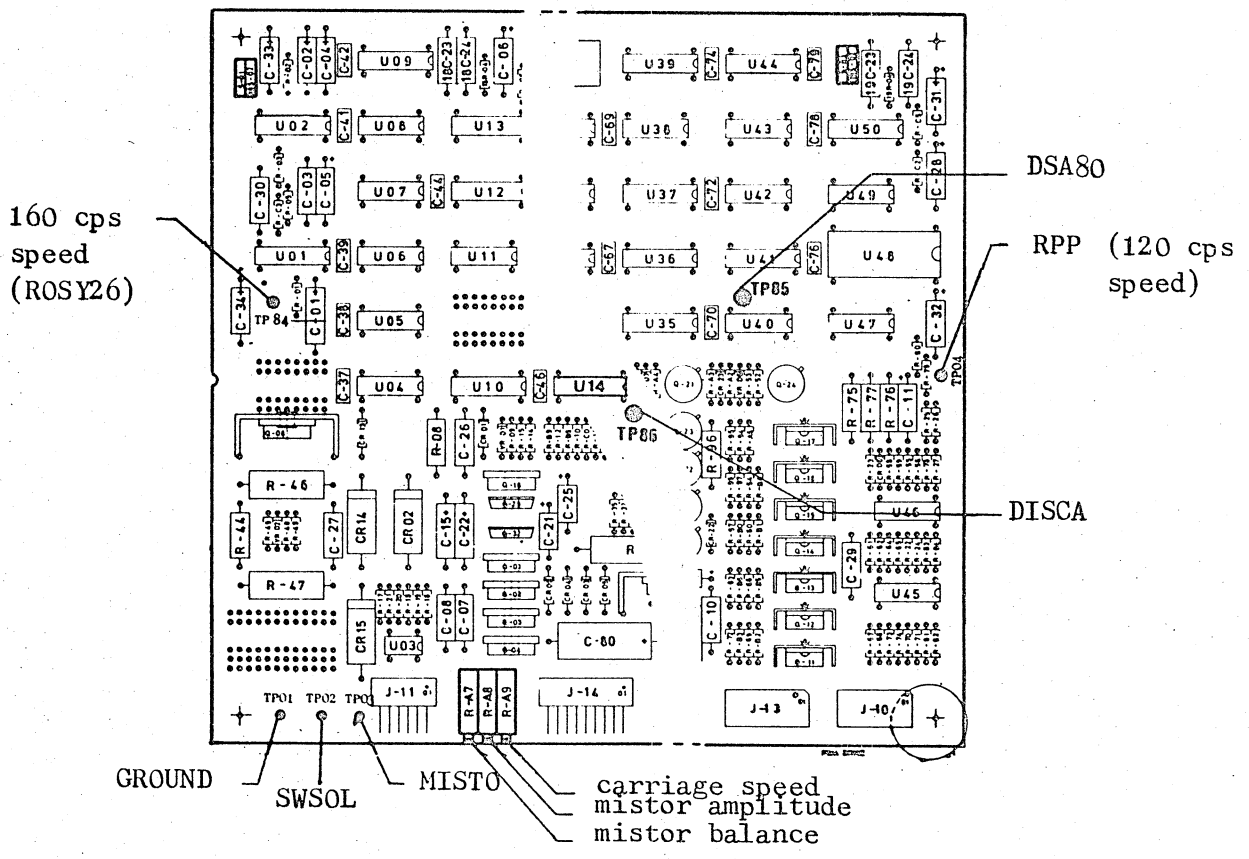


Fig. 8.3 - PWA DRIVE P/N.78117135-003

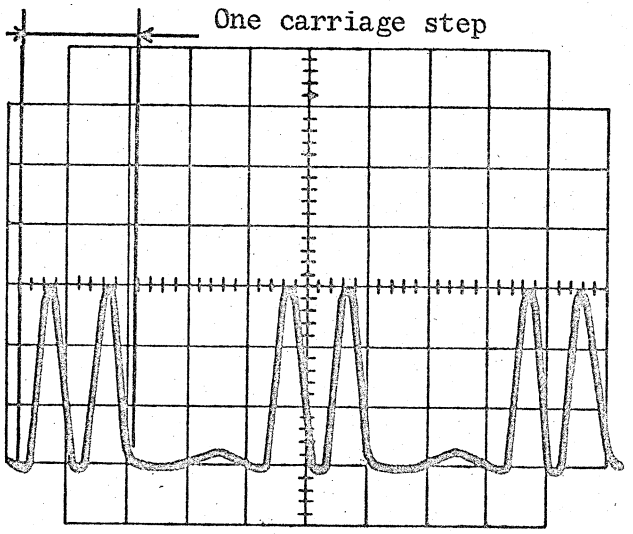
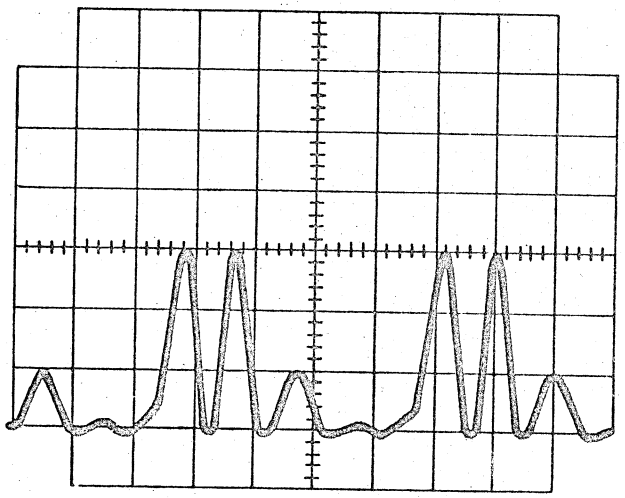


Fig 8.4

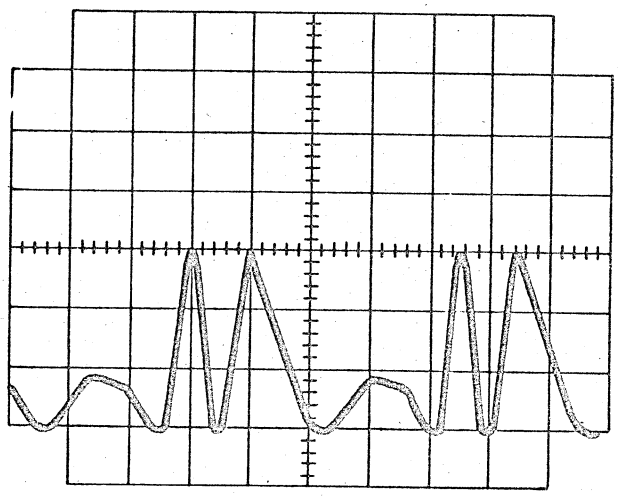
"MISTO*O" SIGNAL

Correct Waveform
Scale : 5 V - 10 ms (+INT sync.)
The waveform between two successive steps is as slow as possible.



"MISTO*O" SIGNAL

Wrong waveform
Rotate the support clockwise.



"MISTO*O" SIGNAL

Wrong waveform
Rorate the support counter - clock wise.

7 - Final Operations

. Perform the carriage speed adjustment routine (8.2.1.8)

8.2.1.3 Mistor Pulse to the Row Start Pulse Adjustment Routine

1 - Needed Material

- Oscilloscope
- Allen Wrench 3 mm
- Feeler Gauge

2 - Purpose

Sync the mistor pulse with the row start pulse to guarantee a correct inversion of the carriage movement during the initialization phase.

3 - Preliminary Operations

- Power-off the printer
- Remove the top cover (routine 8.2.2.1).

4 - Adjustment Rules

The row start pulse switching must take place in the middle of a carriage step without exceeding the tollerances shown in fig. 8.5

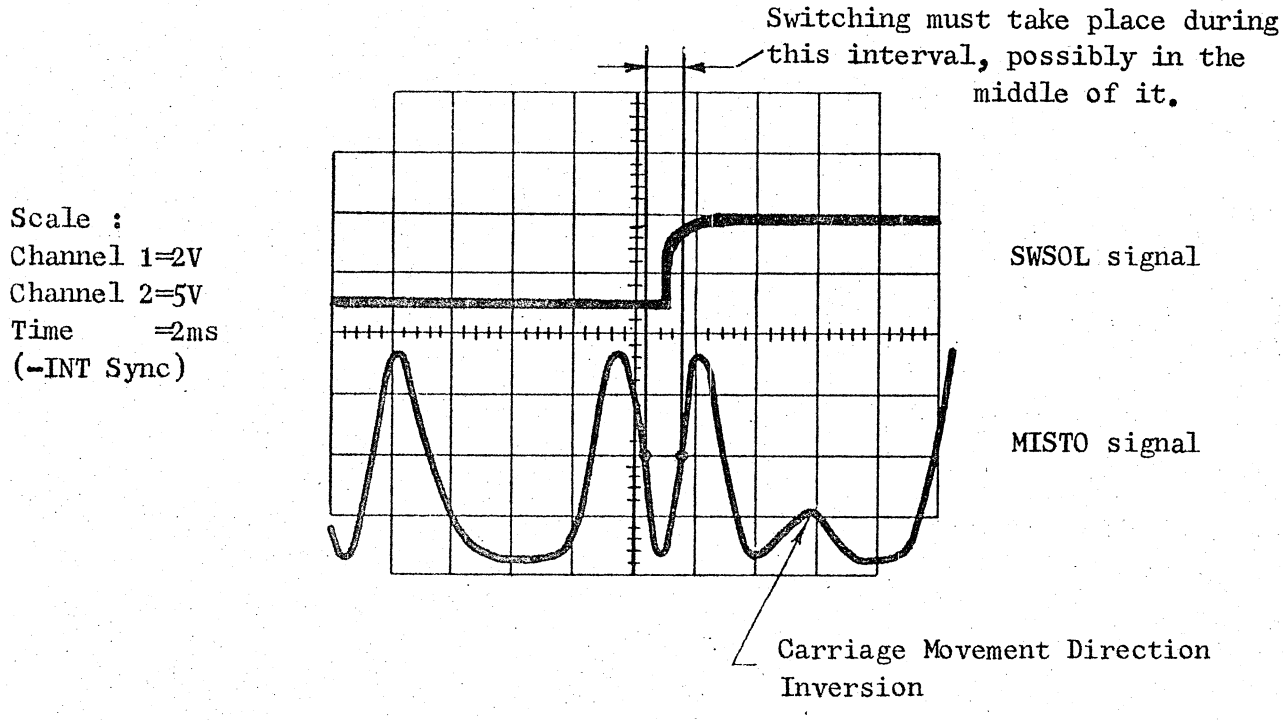


Fig. 8.5

5 - Procedure

. Move the carriage toward the right side to gain access to the Allen screw fixing the step motor coupling to the pulley shaft (see fig. 8.6).
. Extract the logic board module without disconnecting any cable.
. Ground signal DSA80*0 by connecting a jumper between TP75 and TP85 (see fig. 8.3 - on the top) as for the PWA DRIVE bearing tab number 001 and 003 or between TP01 and TP85 (see fig. 8.3 - on the bottom) as for the PWA DRIVE P/N 78117135-003.

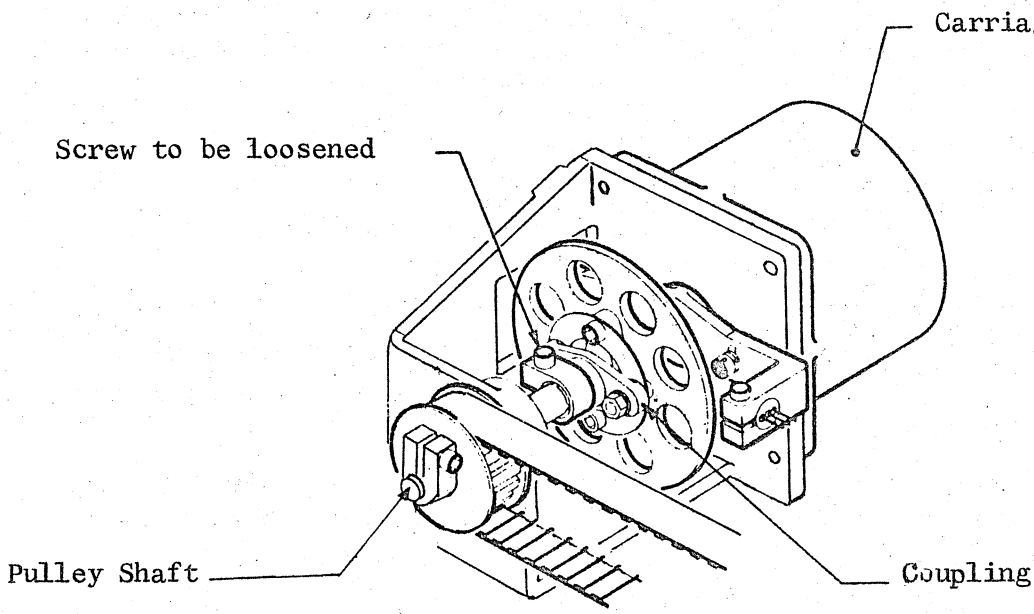


Fig. 8.6

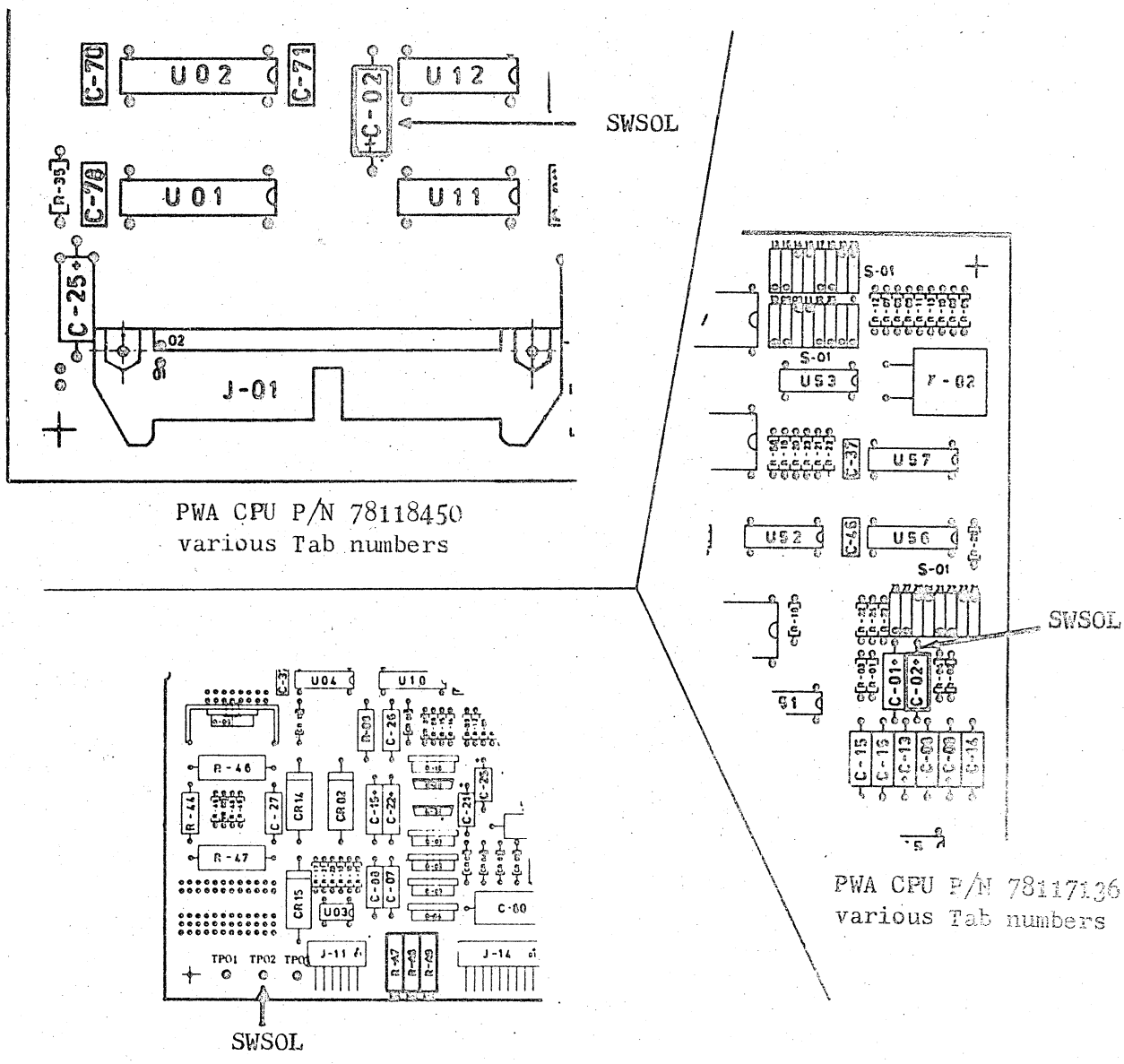
. Loosen the coupling screw without removing the Allen wrench.
. Set the scope probe on pin "+" of capacitor C02 inserted on the CPU board (SWSOL - see fig. 8.7). On the more recent units mounting the PWA DRIVE, tab number 003 or upper, the SWSOL signal is available on test point (see fig. 8.7)
. Power on the unit.
. Insert a 1.25 mm (.05 inch) blade between the sensor and the reference edge of the carriage. Slightly move the carriage to the left up to monitor the signal switch operation on the scope.
Tighten the screw previously loosened in this exact position.

6 - Check-out

- Set the other scope probe on TP88 or TP03 (MISTO) of the DRIVE board (see fig. 8.3) Int. negative sync on SWSOL.
- Remove signal DSA80*0 from ground.
- Perform some carriage initialization operations by pressing first LOCAL and then continuosly START pushbutton.
- Ensure that the timing of the two signals adheres to the Adjustment Rules. Otherwise, repeat the Adjustment Procedure.

7 - Final Operations

- Replace the covers previously removed (Routine 8.2.2.1).



PWA DRIVE P/N 78117135 tab. Nr. 003

Fig. 8.7 - Signal SWSOL Position According to the Revision Level of the LCSP Boards.

8.2.1.4 Roller/Head Parallelism Adjustment Routine

1 - Needed Material

. Allen Wrench - 2.5 mm
. Allen Wrench - 3 mm
. Feeler Gauge

2 - Purpose

The intensity of the character, in a print line, must be uniform.

3 - Preliminary Operations

. Power-off the printer
. Remove the inked ribbon cartridge and the paper
. Remove the top cover (Routine 8.2.2.1).

4 - Adjustment Rules

The head to roller distance must be 0.30 to 0.35 mm (0.012 to 0.014 inch) along the whole carriage run.
The max distance in the greatest tolerance point must not exceed 0.40 mm (0.016 inch).

5 - Procedure

. Set the copies adjustment lever to "1 copy" position.
. Move the carriage on the right up to the end of run.
. Loosen the two Allen screwsfixing the head to the carriage (see fig. 8.8).
. Insert a 0.30 mm (0.12 inch) blade between head and roller. Tighten the two screws by pressing the head against the roller (see fig. 8.8).
. Move the carriage on the left, up to the end of run.
. Loosen the two Allen screws of the plate fixing the roller left side to the side frame.
. Insert a 0.30 mm (0.012 inch.) blade between head and roller. Tighten the two screws of the plate by pressing the roller against the head.
. Verify along the whole carriage run that a 0.40 mm (0.16 inch.) blade cannot be inserted between head and roller. Perform the same check on different parts of the roller by rotating it.

NOTE

On the most recent units the greatest tolerance point is already identified by a red point drawn on the roller left side.

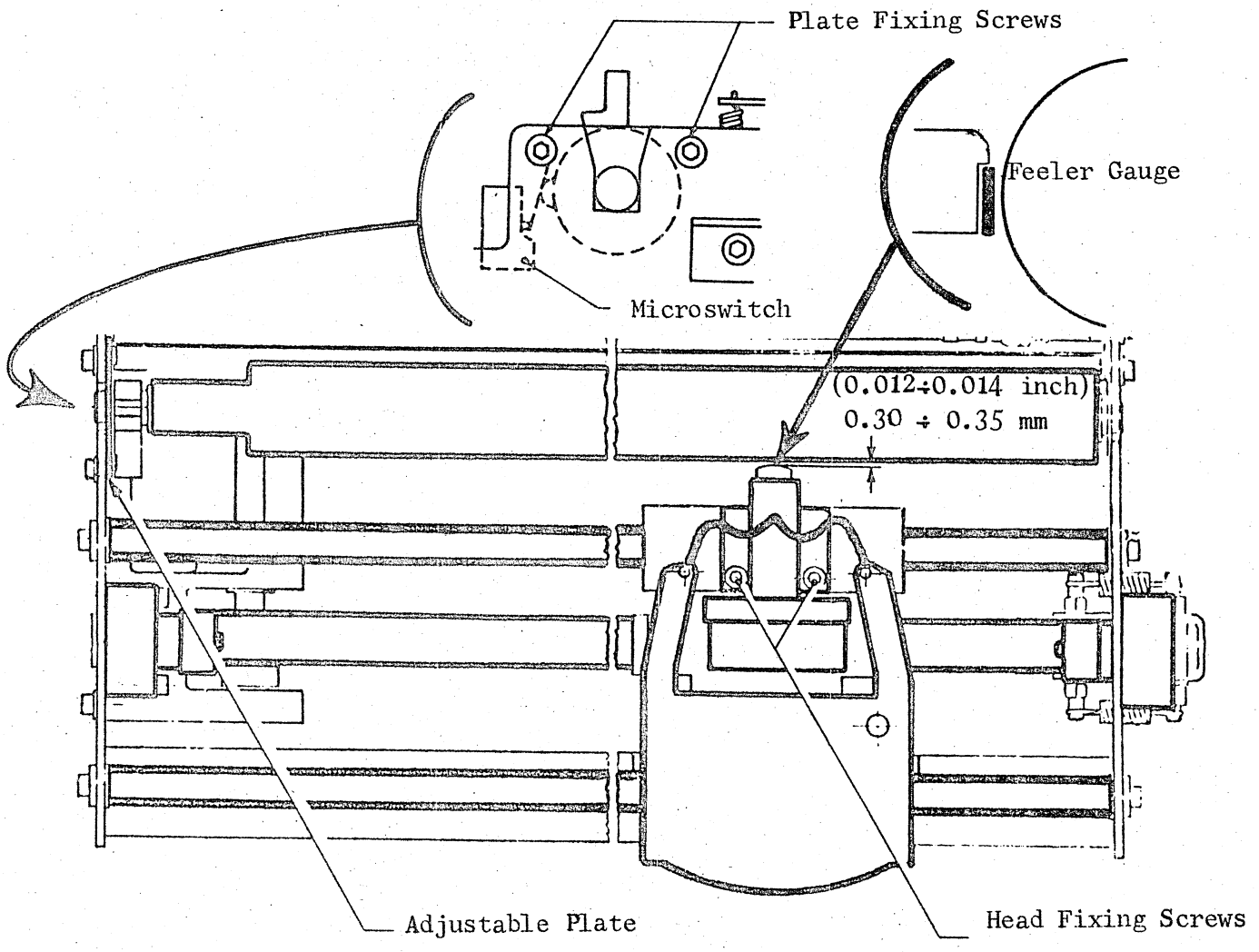


Fig. 8.8

6 - Check-out

- Replace the cartridge and the paper.
- Print the graphic set (See NOTE on page 8.2) and check that the print line intensity is uniform along the whole print line.

7 - Final Operations

Replace the covers previously removed (Routine 8.2.2.1).

8.2.1.5 Roller/Head Distance Adjustment

NOTE

This routine must be performed whenever the head group is replaced.

1 - Needed Material

- Feeler Gauge
- Allen Wrench - 3 mm

2 - Purpose

Obtain a correct distance between head group and roller.

3 - Preliminary Operations

- POWER-OFF the printer
- Set the copies adjustment lever to "one copy" position
- Extract the inked ribbon cartridge and the paper.

4 - Adjustment Rule

The distance between head and roller must result 0.30 to 0.35 mm (0.012 to 0.014 inch.).

5 - Procedure

- Loosen the two Allen screws fixing the head to the carriage (Refer to fig. 8.8).
- Insert a 0.30 mm (0.012 inch.) blade between head and roller. Tighten the two screws by pressing the head against the roller. Trace in fig. 8.8 the exact point in which the measure must be checked.

6 - Check-out

- Verify that the distance between roller and head results within the tollerance limits along the whole carriage run.
- Should a point be found in which the above distance results lower than 0.30 mm (0.012 inch.), it is necessary to repeat the adjustment procedure to meet the requirements at step 4.

7 - Final Operations

- Replace cartridge and paper
- Print the graphic set (see Note on Page 8.2) and verify that the intensity of the characters is uniform in a print line. Otherwise, perform routine 8.2.1.4.

8.2.1.6 Print Energy Adjustment

1 - Needed Material

. Screwdriver - 5 mm

2 - Purpose

Adjust the print energy to the number of copies of the module.

3 - Preliminary Operations

. POWER-OFF the printer
. Remove the top cover (routine 8.2.2.1).

4 - Adjustment Rule

The msw must trip when the copies adjustment lever is set in the "3 copies" position.

5 - Procedure

. Loosen the two msw fixing screws (Refer to fig. 8.8).
. Set the lever on the "3 copies" position.
. Push the msw against the lever so that it trips.
. Tighten the screws.

6 - Check-out

. Verify that msw trips (a "clic" noise signals this operation) during the passage from position 2 to pos. 3.

7 - Final Operations

Replace the cover previously removed (Routine 8.2.2.1).

8.2.1.7 Mistor Amplifier Adjustment

1 - Needed Material

- Oscilloscope
- Screwdriver - 2.5 mm

2 - Purpose

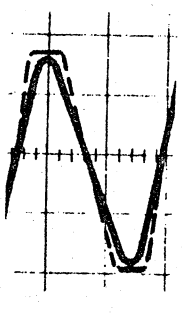
Obtain a correct drive of the carriage

3 - Preliminary Operations

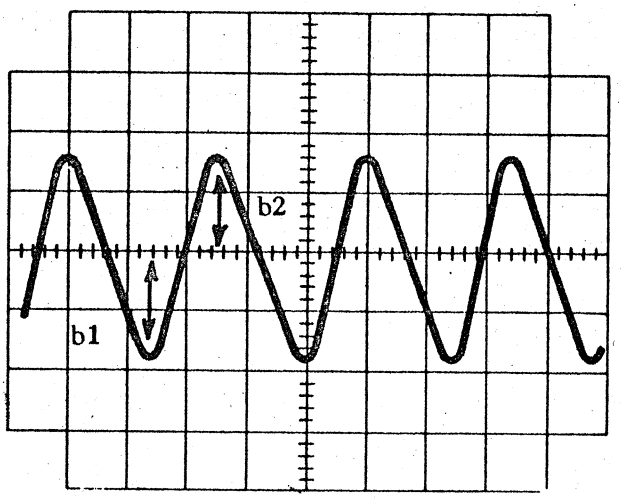
Remove the top cover (routine 8.2.2.1) to gain access to the boards module.

4 - Adjustment Rule

- When the carriage is moving, the mistor pulse (MISTO * 0) must have an amplitude included between 16 and 18V and must be balanced with respect to zero (b1 = b2).



Saturation Example



MISTO*0 Signal
Scale: 5V-2 ms
(+Int. Sync.)

Fig. 8.9

5 - Procedure

- Set the scope probe on TP88 or TP03 (MISTO*0) of the DRIVE PWA (See fig. 8.10)
- Move the ground line to the central row of the screen.
- Power-on the subsystem, then act on one of the two carriage end-of-travel switches. This causes a "FAULT", which allows the carriage to move freely.

NOTE

Should the mistor signal be completely misadjusted, the carriage does not initialize when pressing POWER-ON. As a consequence, the end-of-row switch does not function.
It is therefore necessary to ground signal DISCA by connecting a jumper between TP85 and TP86 on the DRIVE PWA, P/N 78117135-001/002 (see fig. 8.3 - on the top) or between TP01 and TP86 (see fig. 8.3 - on the bottom) on the PWA DRIVE P/N 78117135-003. This operation will cause a "FAULT" status to arise.

- Move the carriage manually and verify the waveform amplitude and balance correctness.
- Act on the RA8 pot (PWA DRIVE - see fig. 8.10) to adjust the amplitude.
- Amplify the signal up to notice a slight saturation on the waveform peaks; i.e.an enlargement of the peaks themselves.
  This saturation is not to be implemented, if it is necessary to exceed the max amplitude of 18V in order to reach it.
- Act on the RA7 pot (PWA DRIVE) to adjust the balance.

6 - Check-out

None.

7 - Final Operations

- Remove the jumper, if previously connected.
- Replace the cover previously removed (routine 8.2.2.1).

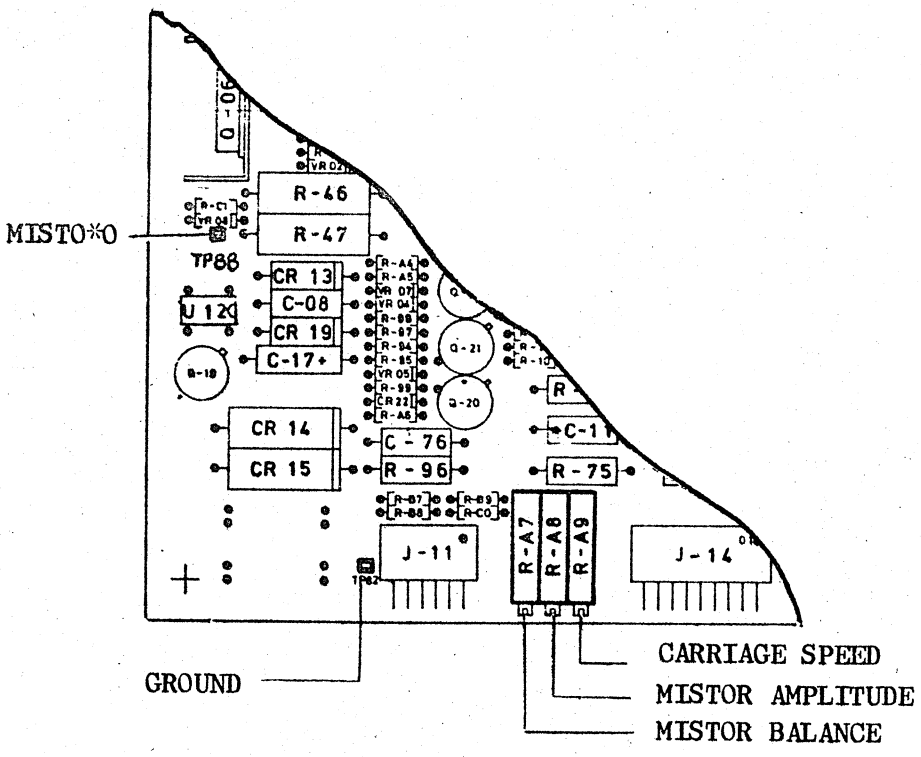


Fig. 8.10 - PWA DRIVE P/N 78117135-001/002

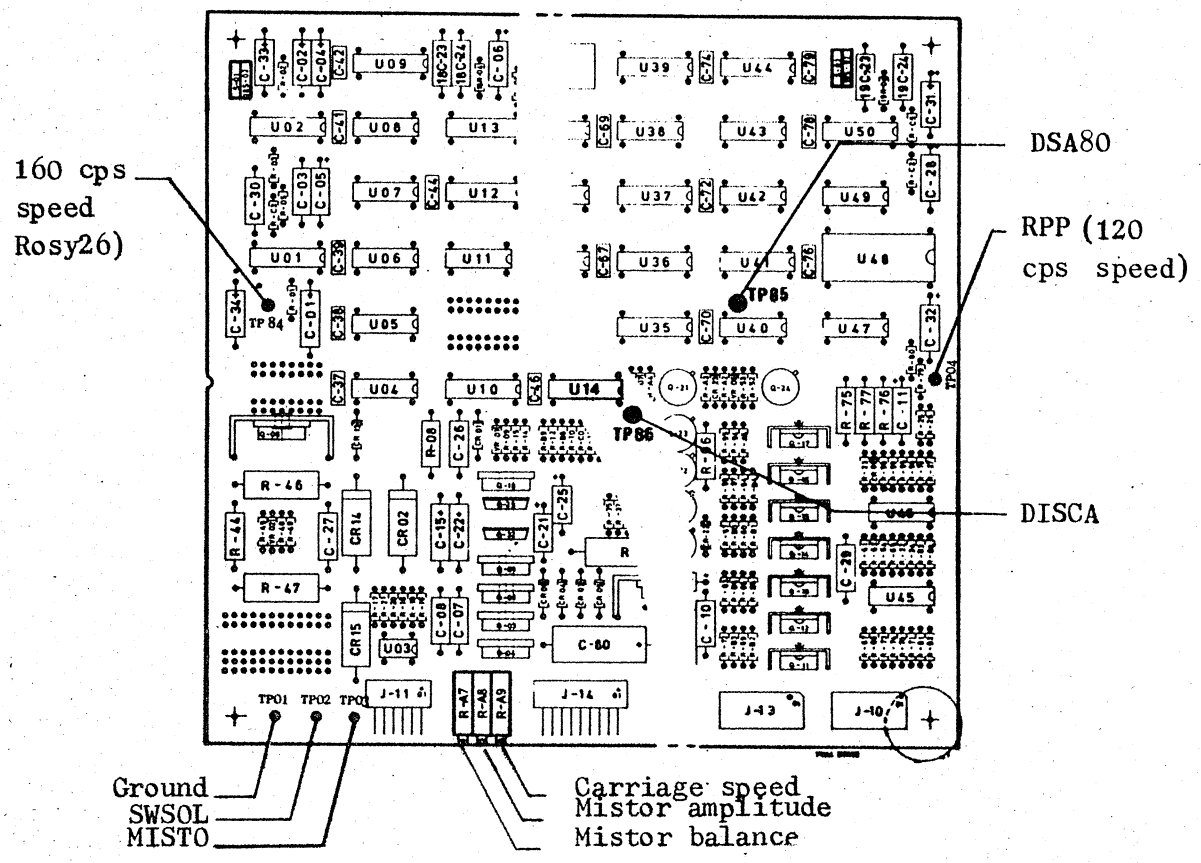


Fig. 8.10 - PWA DRIVE P/N 78117135-002

8.2.1.8 Synchronous Carriage Speed Adjustment (120 cps)

1 - Needed Material

- Oscilloscope
- Multimeter
- Screwdriver 2.5 mm

2 - Purpose

Obtain that the carriage moves in synchronous mode at a speed of 120 cps.
This adjustment is not applicable to the ROSY 26 (TN1200 like) model, because in this case the carriage speed is 160 cps (see Routine 8.2.1.9).

3 - Preliminary Operations

- Remove the top cover (routine 8.2.2.1).

4 - Adjustment Rule

The distance between RPP*1 pulses must be adjusted according to the value of the network voltage. Refer to the following table:

AC NETWORK NOMINAL VALUE (Vac)				
240 V	220 V	208 V	117 V	DISTANCE BETWEEN TWO PULSES OF THE RPP*1 SIGNAL
204 - 234V	187 - 214V	175 - 204V	105 - 114V	2.2 ms
235 - 245V	215 - 225V	205 - 212V	115 - 119V	2.1 ms
246 - 264V	226 - 242V	213 - 229V	120 - 129V	2.0 ms

TABLE 8.1

NOTE

Should this adjustment be performed upon PWA DRIVE replacement, it is possible that the RA9 pot is completely misadjusted. In this case, the carriage moves in forward mode up to the end of run. It is therefore necessary to perform the following operations: rotate pot R09 clockwise for some turns then power-off and on the unit.
Repeat these operations up to obtain a continuous movement of the carriage in LOCAL.

5 - Procedure

- Measure the value of the AC voltage present on the printer input.
- Draw out from table 8.1 the pertinent value that must be found between two pulses of the RPP*1 signal.
- Move the carriage in continous mode and without printing (See Notes on page 8.2 and 8-19)
- Set the scope probe on TP83 or TP04 (RPP*1 signal) of the DRIVE PWA (see fig. 8.3) and check the distance between two pulses.
- If necessary, act on pot RA9 of the DRIVE board. Ref. to fig. 8.3

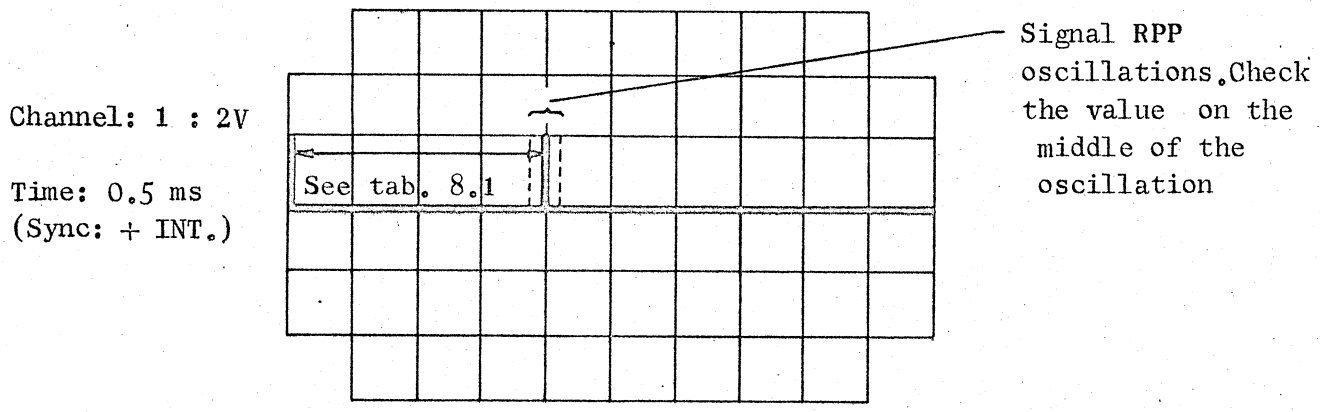


Fig. 8.11

6 - Check-out

None.

7 - Final Operations

Replace the covers previously removed (Routine 8.2.2.1).

8.2.1.9 Synchronous Carriage Speed Adjustment (160 cps)

1 - Needed Material

- Oscilloscope
- Multimeter
- Screwdriver - 2,5 mm

2 - Purpose

- To obtain that the carriage moves in synchronous mode at a spee of 160 cps. This adjustment is only valid for the LCSP ROSY 26 model (TN 1200 like).

3 - Preliminary Operations

- Remove the top cover (Routine 8.2.2.1)

4 - Adjustment Rules

The signal present on TP84 of the PWA DRIVE must be of 300 msec. (See fig. 8.10 - on the bottom).

5 - Procedure

- Move the carriage in continuous mode and without printing (see Notes on pages 8-2 and 8-23).
- Set the scope probe on TP84 of PWA DRIVE (See Fig. 8-10).
- If necessary, act on pot RA9 up to reach the requirement. (see Fig. 8-10).

6 - Check - Out

None

Scale:
Channel 1 : 5V
Time 0,1 ms
(Synch. + INT)

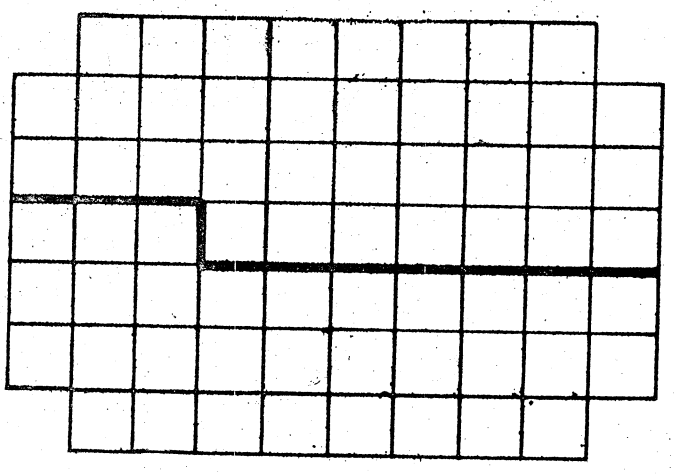


Fig. 8-12

7 - Final Operations

- Replace the covers previously removed (Routine 8.2.2.1).

8.2.1.10 Adjustment of the Form Reference Edge Solenoid (for the units with Automatic Front Feed Option)

1 - Needed Material

. Personal F.E. Tools Kit

2 - Purpose

To obtain that the reference tile is correctly positioned during the form insertion.

3 - Preliminary Operations

None.

4 - Adjustment Rules

When the solenoid core goes to end of run, the reference edge tile driven by it must be 0.5 mm (0.02 inch.)apart from the plastic front reference edge (see fig. 8.13) fitted on the right shoulder.

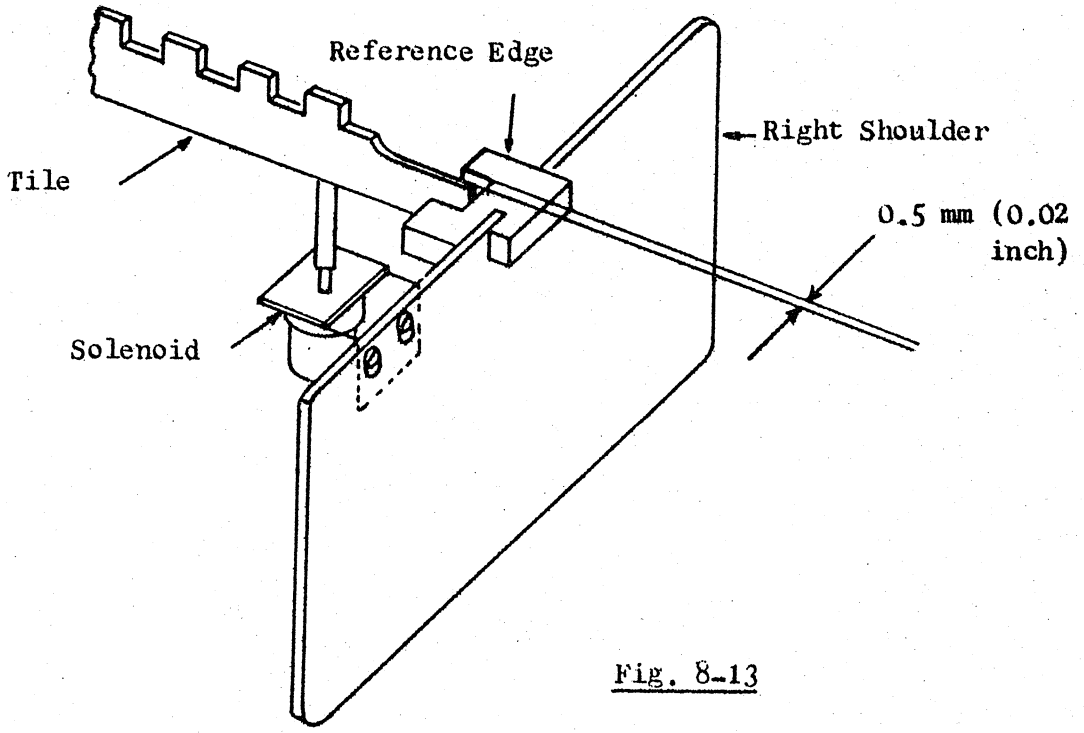


Fig. 8-13

5 - Procedure

. Set the solenoid with the pertinent screws at the top end of the slots.
. Move the solenoid core downwards up to the end of run.
. More the solenoid group upwards to obtain a measure of 0.5 mm (0.02 inch.) between tile and reference edge (see fig. 8.13).
. Tighten the solenoid screws.

6 - Check-out

Energize the solenoid and check that the tile ensures a correct positioning of the form.

7 - Final Operations

None.

8.2.1.11 Adjustment of the Form-in-place Optic Sensor (For the units with Automatic Front Feed Option)

1 - Needed Material

. Personal F.E. Tools Kit
. Multimeter

2 - Purpose

To guarantee the correct functioning of the Optic sensor upon its replacement.

3 - Preliminary Operations

. Remove the top cover (Routine 8.2.2.1).

4 - Adjustment Rules

A voltage of 2.9 to 3.1 VDC must be present between test points TP01 and TP02 of the AFF board.

5 - Procedure

. Set the multimeter positive probe on TP1 and the negative one on TP2 (see Fig. 8.14).

NOTE

The old AFF boards do not have a protruding test point, therefore it is necessary to connect the multimeter probes respectively on:

R28 (TP1): positive (see fig. 8.15) - R25 (TP2): negative (see fig. 8.15)

. Rotate the potentiometer up to obtain the requirements.

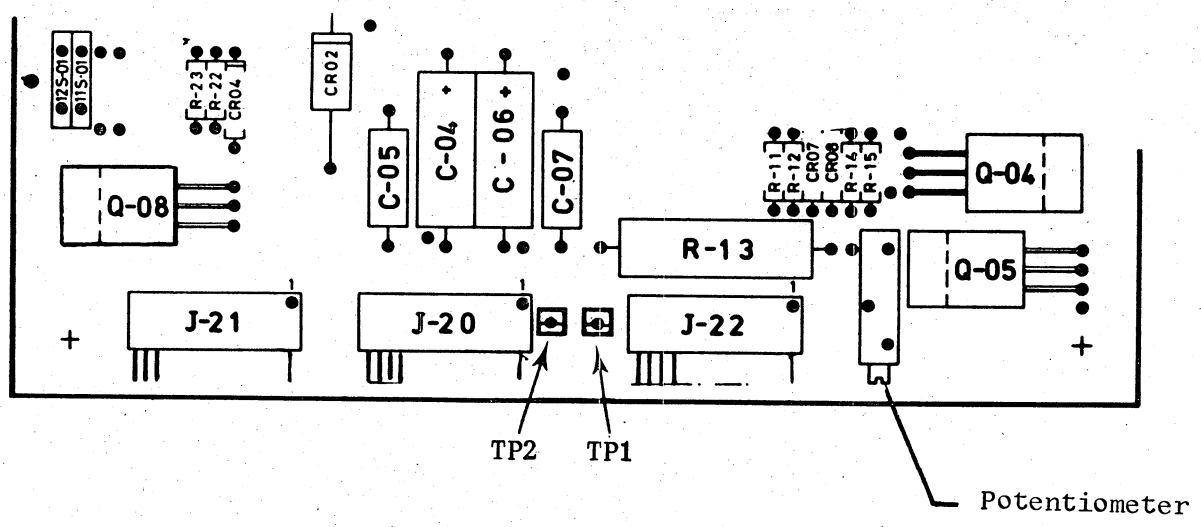


Fig. 8.14 - AFF board test points

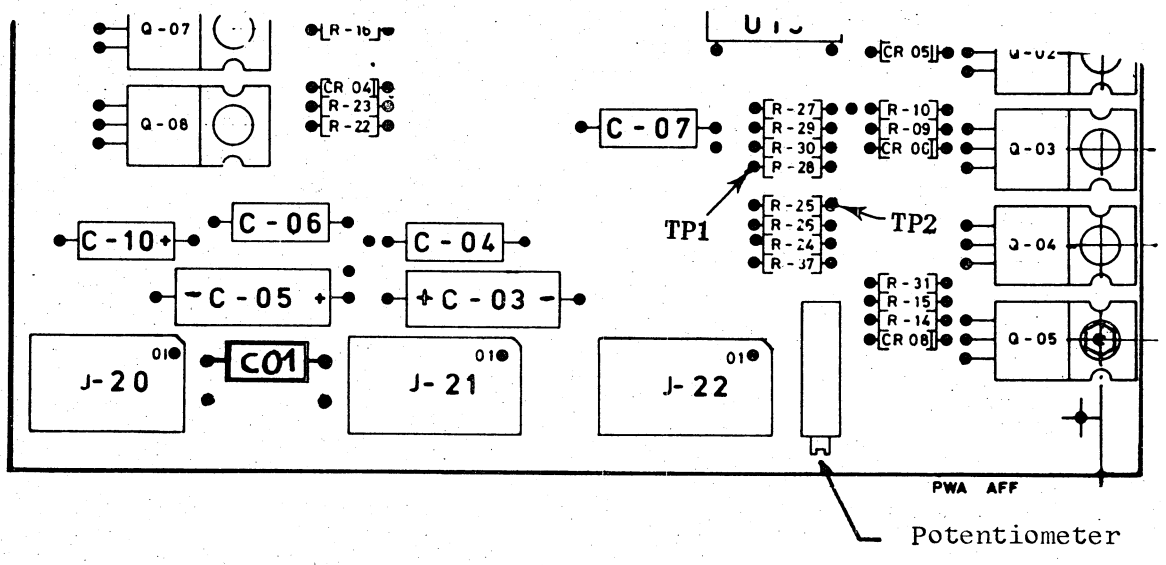


Fig. 8.15 - AFF board (old model) test points

6 - Check-out Procedure

. Power-on the unit
. Insert a minimum substance sheet of paper in the AFF guides. Verify that, when the sensor is obscured by the paper, the form lower reference edge and the roller opening solenoids sequentially start to operate.

7 - Final Operations

Replace the cover previously removed (Routine 8.2.2.1).

8.2.1.12 AFF Assembly Adjustment (Option)

1 - Needed Material

- Nr. 2 Feeler Gauges P/N 4068095B (each unit with AFF option must be supplied with these tools);
- Personal F.E. tools kit.

2 - Purpose

Position the AFF assembly to a correct distance from the print roller.

3 - Preliminary Operations

None.

4 - Adjustment Rules

The distance between the carriage front bar and the AFF option rollers movable row must be stated by the two feeler gauges P/N 4068095B.

5 - Procedure

- Mount the two feeler gauges between the carriage front bar and the AFF rollers movable row (see fig. 8.16).
- Fix the AFF to the base so that the two feeler gauges cannot move longitudinally.

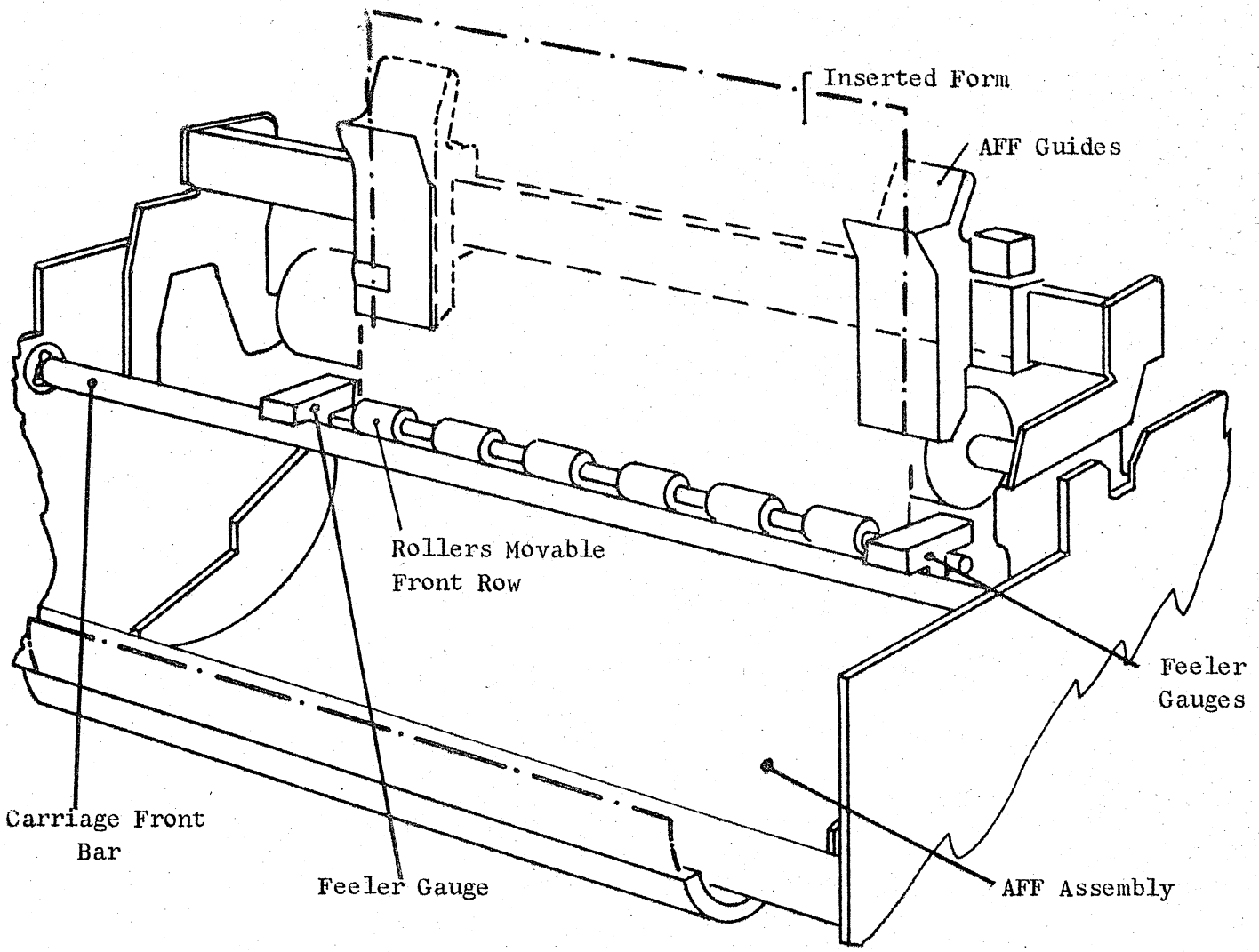


Fig. 8.16

6 - Check-out

. Power-on the unit
. Insert a sheet of paper in the AFF guides. Verify that insertion takes place correctly.

7 - Final Operations

None.

8.2.2 Removals and Replacements

8.2.2.1 Covers Removal

Removal

1- Needed Materials

. Common blade screwdriver 5 mm
. Screwdriver for cross slot screws

2- Preliminary Operations

Power off the printer

3- Procedure

The LCSP covers are made-up by modular elements in plastic material, as shown in fig. 8.17.

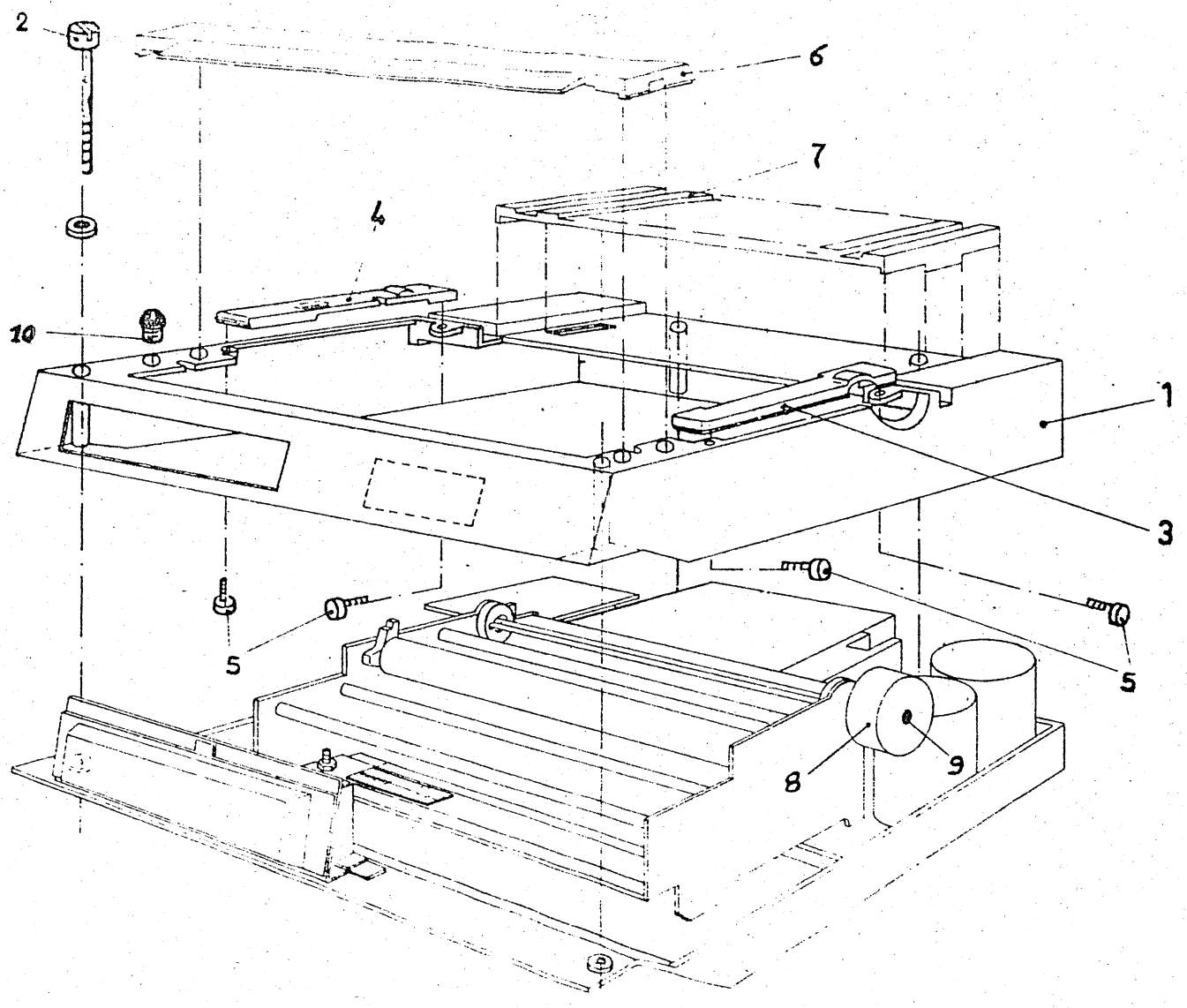


FIG. 8.17

-The front cover (item 6) is fixed only by magnets (item 10). It must be removed to gain access to the print head and to the carriage-clutch-mistor assemblies.

-The paper slide plate (item 7) is set in a slot and must be removed during paper load operations.

-The top cover (item 1) is fixed by 4 screws (item 2) accessible by the upper part of the unit. Before extracting this cover, it is necessary to remove the paper drive handwheel (item 8) which is tightened by a coaxial screw (item 9).
Two side panels are fitted on the top cover (items 3 and 4). Normally these panels are not to be removed. However they are fixed by two self-threading screws (item 5) accessible from the lower side of the cover itself.

4-Final Operations

None.

Replacements

Replace the parts by following the removal operations in the reverse order.

8.2.2.2 Print Head Replacement

Removal

1- Needed Material
- Allen wrench - 2.5 and 3 mm
- Common blade screwdriver - 2 mm

2- Preliminary Operations
Power off the printer

3- Procedure
- Remove the front cover (item 6 - fig. 8.17).
- Remove the inked ribbon cartridge and its plastic support.
- Disconnect the head connector set on the carriage.
- Use a thin screwdriver to extract from the connector the pins which supply the tape drive motor (See fig. 8.18).
- Remove the two allen screws fixing the head to the carriage and then extract the head group.

4- Final Operations

Send the faulty head group to the repair center for refurbishing according to the local agreements established by Marketing and Field Engineering Support.

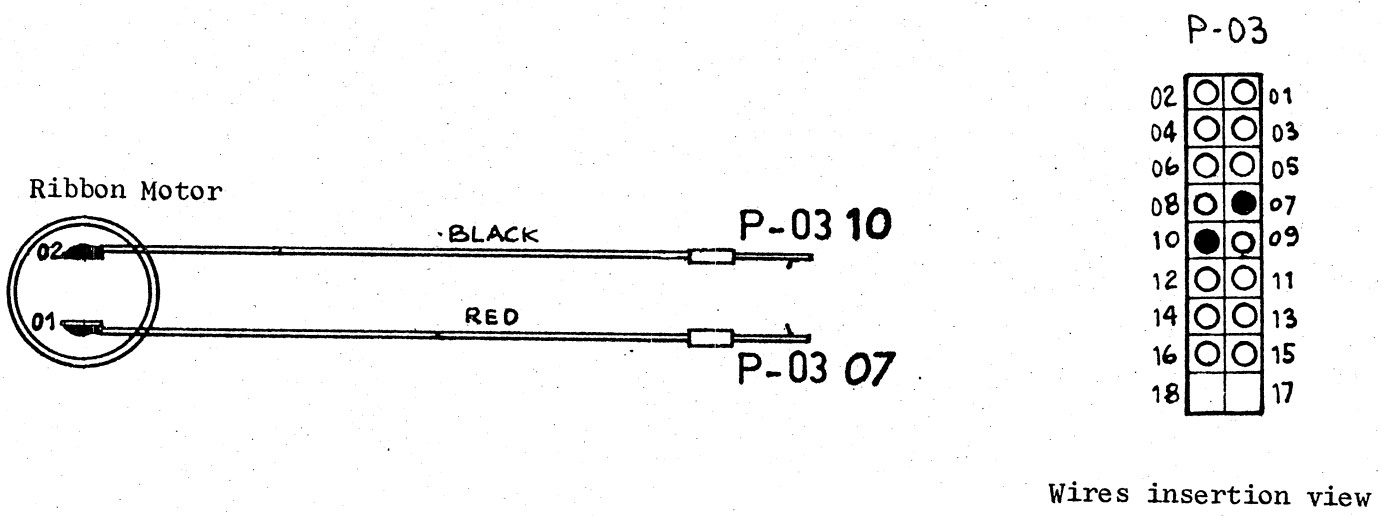


Fig. 8.18

Replacement

1- Needed Material
- Allen wrench - 2.5 and 3 mm
- Common blade screwdriver - 2 mm

2- Preliminary Operations

Power off the printer

3- Procedure
- Insert the two ribbon drive motor supply pins in the new head connector (pos. 7 and 10). Refer to fig. 8.18.
- Connect the head connector.
- Insert the head group in its pertinent housing on the carriage.
- Mount the two allen screws without completely locking them.
- Replace the cartridge support.

4- Final Operations
- Perform the Adjustment Routine 8.2.1.5.
- Replace the cover previously removed.

8.2.2.3 Ribbon Drive Motor

Removal

1- Needed Material
- Common blade screwdriver - 2 mm
- Common blade screwdriver - 5 mm
- Allen wrench - 1 mm
- Allen wrench - 1.5 mm

2- Preliminary Operations
Power off the printer

3- Procedure
- Remove the front cover (item 6 - fig. 8.17).
- Extract the inked ribbon cartridge and its plastic support.
- Disconnect the head connector fitted on the carriage.
- Extract from the connector the two pins pertinent to the ribbon motor wiring (See fig. 8.18).
- Loosen the allen screw (by using a 1 mm/1.5 mm wrench) fixing the cartridge drive dragging (See fig. 8.19).
- Loosen the two screws fixing the motor to the carriage casting. Withhold the screws which will be used to tighten the new motor
- Extract the motor downwards by holding the dragging which is inserted in its shaft.

4- Final Operations
Scrap the faulty motor.

Replacement

1- Needed Material
- Common blade screwdriver - 2 mm
- Common blade screwdriver - 5 mm
- Allen wrench - 1 mm
- Allen wrench - 1.5 mm

2- Preliminary Operations
Power off the printer

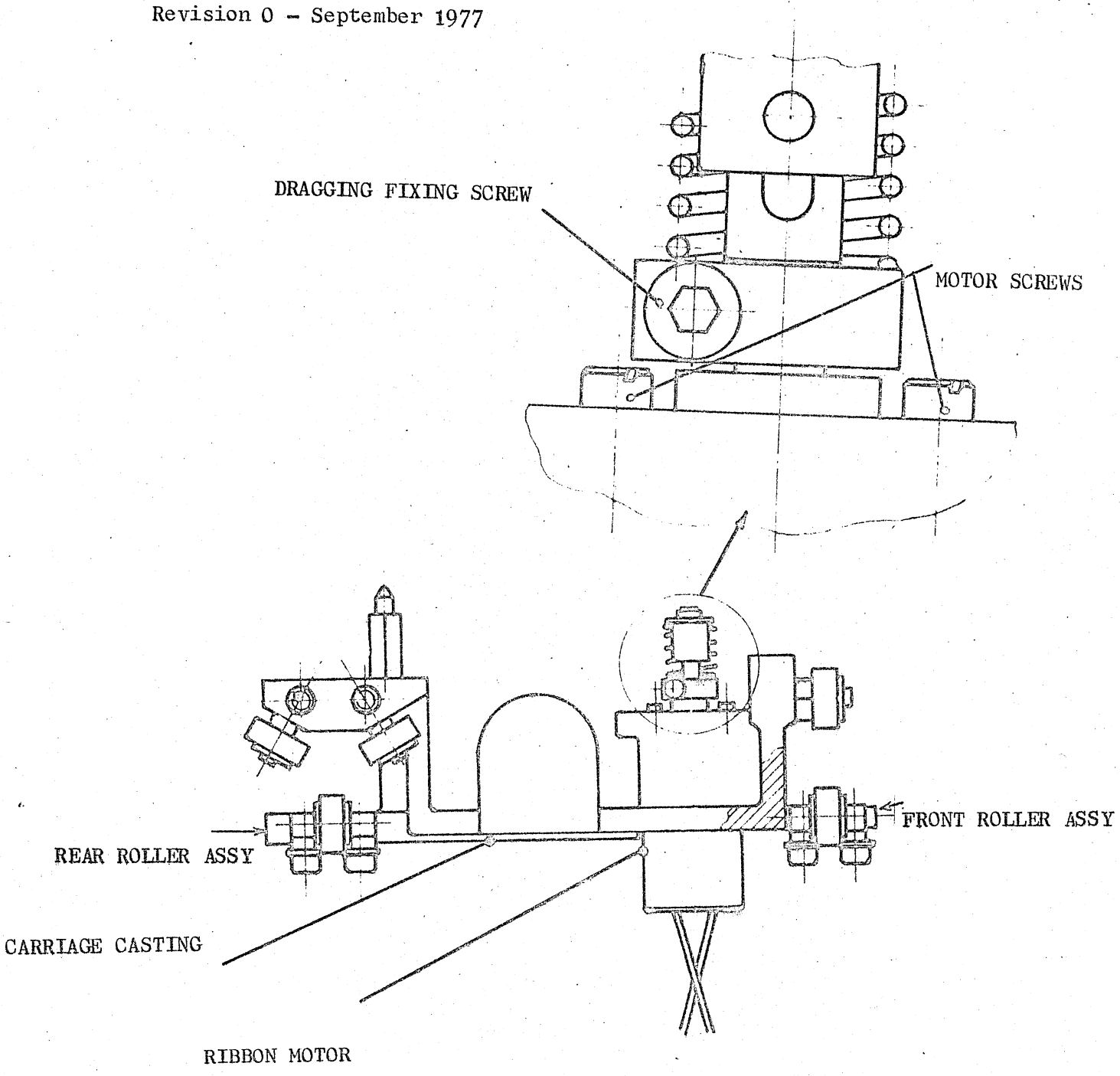


FIG. 8.19

3- Procedure

. Insert the motor in its housing on the carriage casting and fix it with the two screws previously withheld. Some new models of this motor may need screws with different pitch. In this case the new motor will be supplied with the new screws.

. Insert the two motor supply pins in the head connector (pos. 7 and 10). See fig. 8.18.

. Insert the dragging group on the motor shaft by pushing it flash downwards.
. Fix the dragging by acting on the pin screw.
. Replace the head connector, the cartridge support and the cartridge itself.

4- Final Operations

. Power-on the printer
. Print-out the graphic set in Local (See the Note on page 8.2)
. Verify that the inked ribbon is correctly driven during printing.
. Replace the front cover.

8.2.2.4 Carriage Roller Assemblies

Removal

NOTE
The carriage mounts 3 roller assemblies, one on the front side and two on the rear side. See fig. 8.19.
The front group may be directly replaced upon removal of the top cover because it is easily accessible from the front side of the unit.
While the following procedure must be applied for the two rear assemblies.

1- Needed Material
- Flat Wrench - 10 mm
- Tool for retaining ring
- Allen wrench - 3 mm
- Allen wrench - 2.5 mm

2- Preliminary Operations
- Power-off the printer
- Remove the top cover (item 1 - fig. 8.17).

3- Procedure
- Remove the inked ribbon cartridge
- Loosen the tensioner nut of the right pulley support.See fig 8.20.

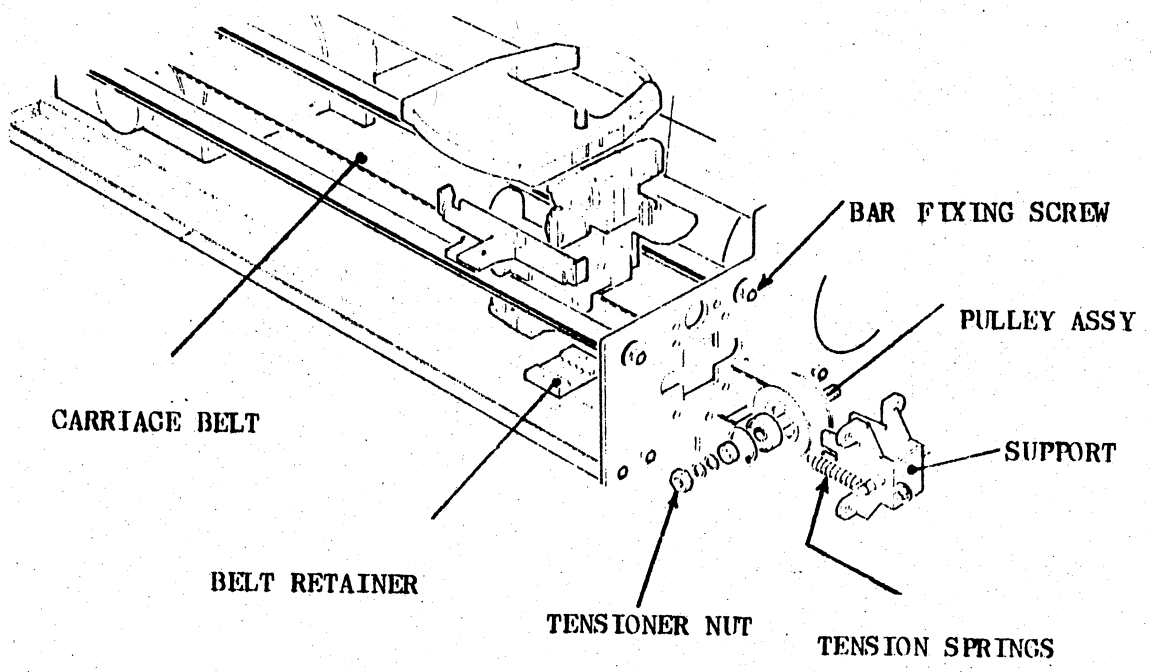


Fig. 8.20

. Loosen the two tension springs
. Extract the shaft on which the springs are fixed by removing one of the two retaining rings
. Remove the pulley
. Remove the allen screw fixing the internal bar to the right side. See fig. 8.20
. Remove the right and left retaining rings fitted on the bar
. Move the bar leftwards up to extract it from the carriage rollers. At this point the carriage assembly can be turned off to gain access to its lower part.
. Remove the roller assembly to be replaced.

4- Final Operations
Scrap the faulty group.

Replacement

1- Needed Material
. Flat wrench - 10 mm
. Tool for retaining ring
. Allen wrench - 3 mm
. Allen wrench - 2.5 mm

2- Preliminary Operations
Power-off the printer.

3- Procedure
. Mount the new roller assembly
. Replace the internal bar by inserting it between the carriage rollers and fixing it with the screw and the retaining rings previously recovered
. Place the belt on the right pulley, then insert this pulley in its support
. Fit the shaft and the two torsion springs
. Fit the pulley retaining nut without varying its position.

4- Final Operations
Replace the covers previously removed (Item 1 - fig. 8.17).

8.2.2.5 Carriage Belt

Removal

1 - Needed Material

- Flat wrench - 10 mm
- Allen wrench - 3 mm
- Tool for retaining rings
- Allen wrench - 2.5 mm

2 - Preliminary Operations

- Power-off the printer
- Remove the top cover (item 1 - fig. 8.17)
- Remove the inked ribbon cartridge and the paper
- Remove the operator panel

3 - Procedure

- Loosen the tensioner nut (See fig. 8.21)
- Loosen the two springs
- Extract the shaft on which the springs are fixed by removing one retaining ring
- Extract the pulley group from its support and set free the right side of the belt
- Remove the fixing plate fitted under the print head.
  The most recent units have the left pulley free, therefore the belt can be extracted without difficulty (see fig. 8.22).
  In the case of the old type units, it is necessary to go on with the following steps in order to obtain the belt extraction.
- Remove the retaining ring fitted on the left pulley shaft and set before the casting intermediate support. See fig. 8.22
- Loosen the pulley and dragging retaining hub screws.
- Extract the shaft. At this point the left pulley is free and the belt can be removed.

4 - Final Operations

None.

Replacement

1 - Needed Material

- Flat wrench - 10 mm
- Allen wrench - 3 mm
- Tool for retaining rings
- Allen wrench - 2.5 mm

SEE FIG. 8.22

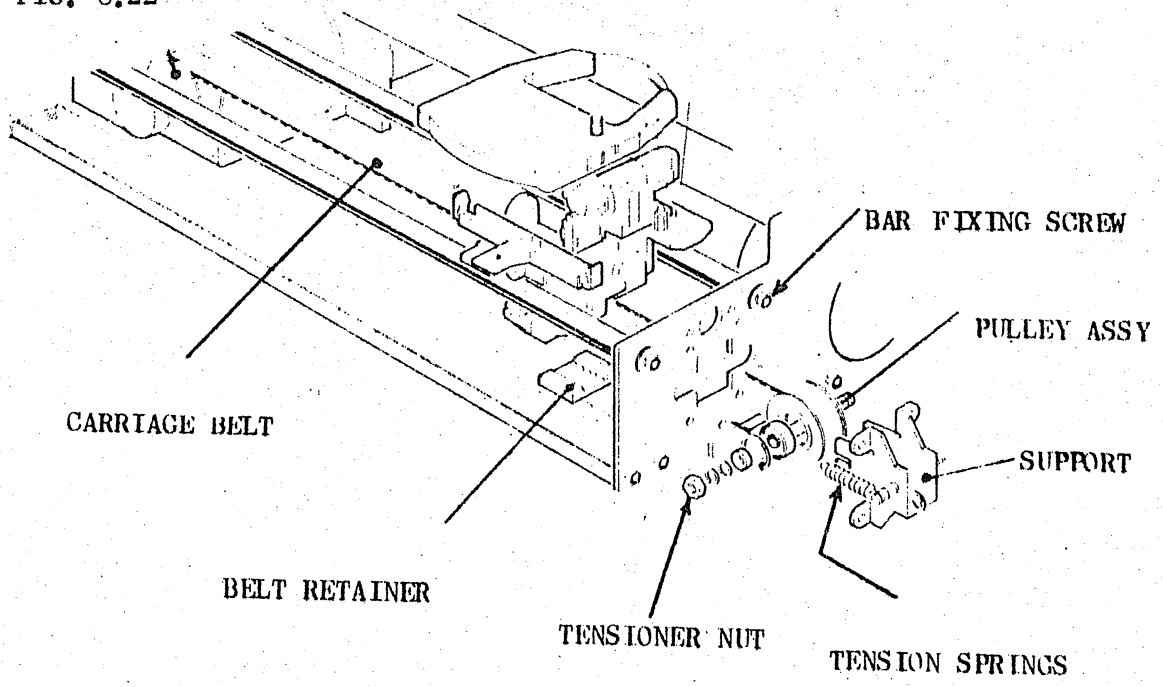


FIG. 8.21

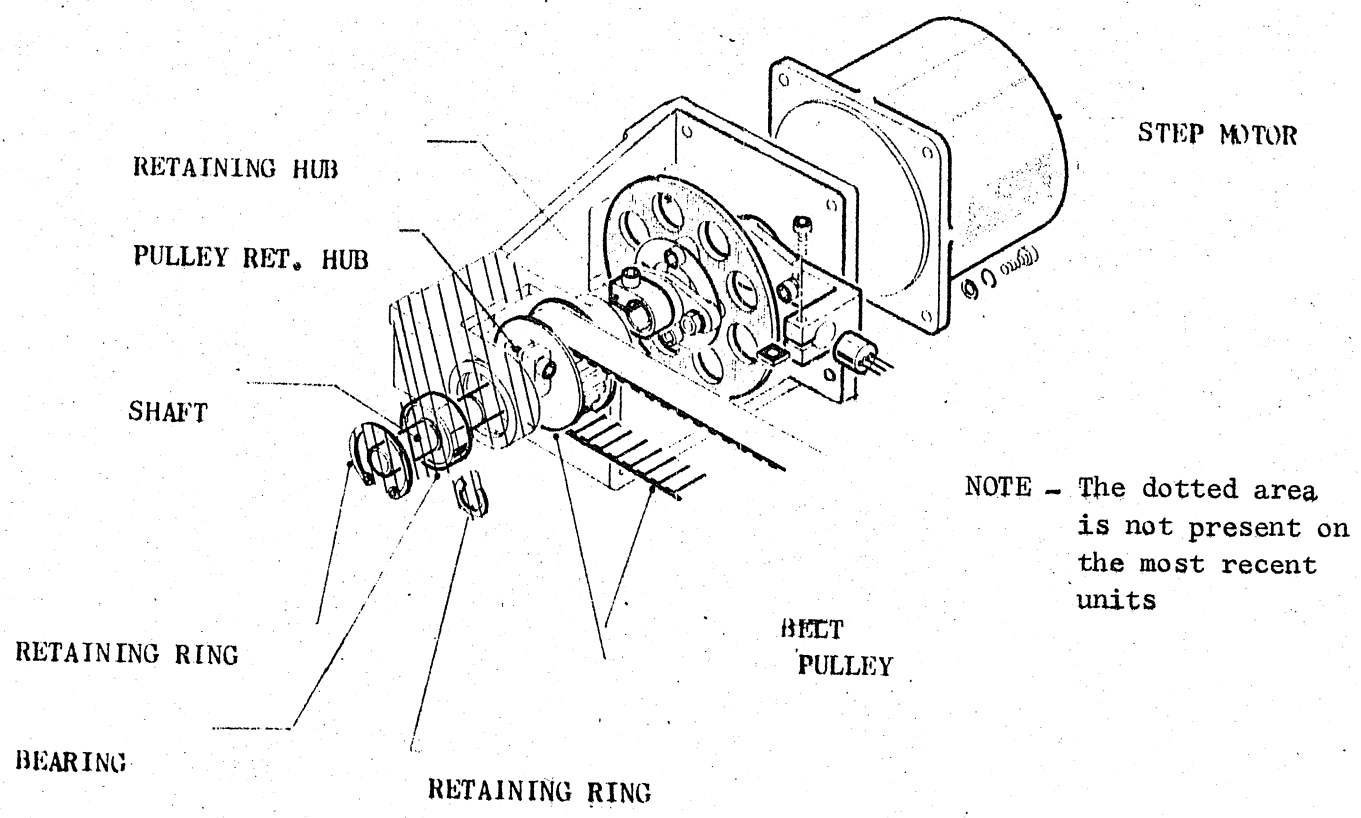


FIG. 8.22

2 - Preliminary Operations

. Power-off the printer
. Remove the top cover (Item 1 - fig. 8.17)
. Remove the inked ribbon cartridge and the paper

3 - Procedure

For units having the left pulley fixed:

. place the belt on the left pulley and insert the shaft. See fig. 8.22
. Insert the retaining ring in its housing on the shaft, then push the shaft inwards up to the ring is bottomed up.
. Lock the pulley retaining hub screw by holding the pulley flush against the casting front support.
. Tighten the dragging retaining hub screw but not completely.
. Mount the fixing plate of the belt located under the print head. See fig. 8.21.
. Place the belt upon the right pulley.
. Insert the pulley assembly in the support slots and fit the shaft.
Hook the two torsion springs which automatically establish the correct torsion of the belt.
. Fix the tensioner nut without modifying the pulley position.

For units having the left pulley free:

. Mount the belt fixing plate under the print head (see fig. 8.21).
. Place the belt on the left and right pulley.
. Insert the right pulley assembly in the support slots and mount the shaft. Hook the two torsion springs which automatically establish the correct tension of the belt.
. Fix the tensioner nut without modifying the pulley position.

4 - Final Operations

. Mount the operator panel
. Perform the adjustment routine 8.2.1.3
. Replace the covers previously removed.

8.2.2.6 Carriage Motor Dragging

Removal

1 - Needed Material
- . Allen wrench - 3 mm
- . Tool for retaining rings
- . Common blade screwdriver - 5 mm

2 - Preliminary Operations
- . Power-off the printer
- . Remove the top cover (Item 1 - Fig. 8.17)
- . Remove the operator panel

3 - Procedure

The first step is only applicable with the left pulley fixed (See fig. 8.23).
- . Loosen the pulley ret. hub fixing screws (See fig. 8.23)
- . Loosen the dragging front ret. hub. fixing screw.
- . Remove the retaining ring fitted on the pulley shaft.

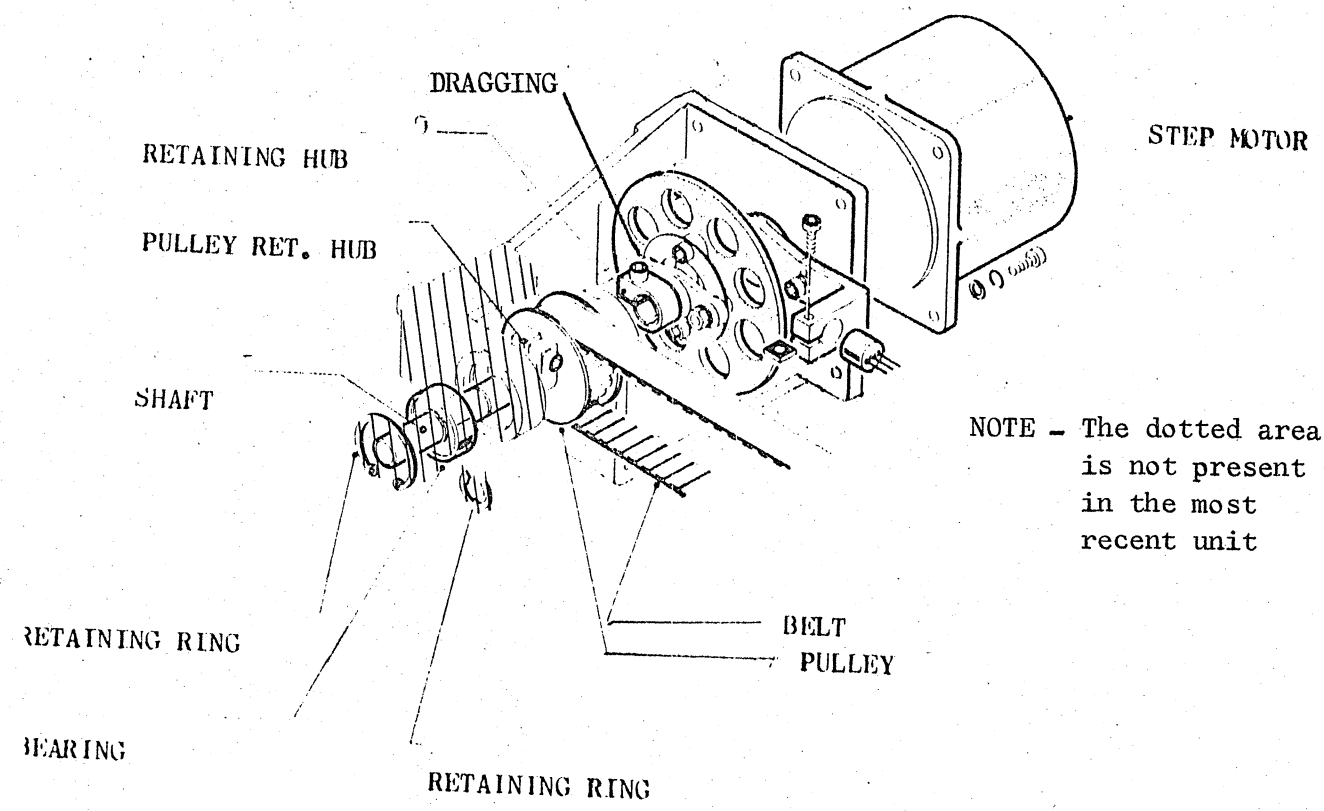


FIG. 8.23

. Remove the retaining ring placed on the pulley shaft before the casting intermediate support.
. Extract the pulley shaft.
. Loosen the screw of the hub fixing the dragging/signal disc assembly to the carriage motor shaft.
. Extract the dragging/signals disc assembly.

NOTE

Some units have mounted on the shaft a flywheel held in place by two set screws. This flywheel must be moved forward to gain access to the dragging/signals disc fixing screw.

4 - Final Operations

Scrap the faulty dragging

Replacement

1 - Needed Material

. Allen wrench - 3 mm
. Tool for retaining rings
. Common blade screwdriver - 5 mm

2 - Preliminary Operations

. Power off the printer

3 - Procedure

. Fix the dragging/signals disc assembly on the motor shaft paying attention that the signals disc is centered with respect to the mistor.
. Place the belt on the pulley then insert the shaft.
. Insert the retaining ring in its housing on the shaft then push the shaft until the ring is flush against the intermediate support of the casting.
. Lock the screw on the pulley ret-hub (should the pulley be fixed, hold it flush against the front support of the casting).
. Tighten the screw located on the front hub of the dragging/signal disc assembly without completely fixing it.

4 - Final Operations

. Mount the operator panel
. Sequentially perform the following adjustment routines:

8.2.1.1
8.2.1.7
8.2.1.2
8.2.1.3
8.2.1.8

. Replace the covers previously removed.

8.2.2.7 Replacement of the Front Guide Optic Sensor
(For the units with the Automatic Front Feed Option)

Removal

1 - Needed Material

None.

2 - Preliminary Operations

Power-off the printer

3 - Procedure

. Extract the left paper guide sensor group. The sensor is held in place by the pressure of a plastic blade.
. Remove the rear cover fitted along the guide on which the two paper guides run. The cover is pressed on the guide.
. Disconnect the sensor group.

4 - Final Operations

Scrap the faulty sensor.

Replacement

. Replace the parts by following the removal operations in the reverse order.
. Perform the Adjustment Routine 8.2.1.11.

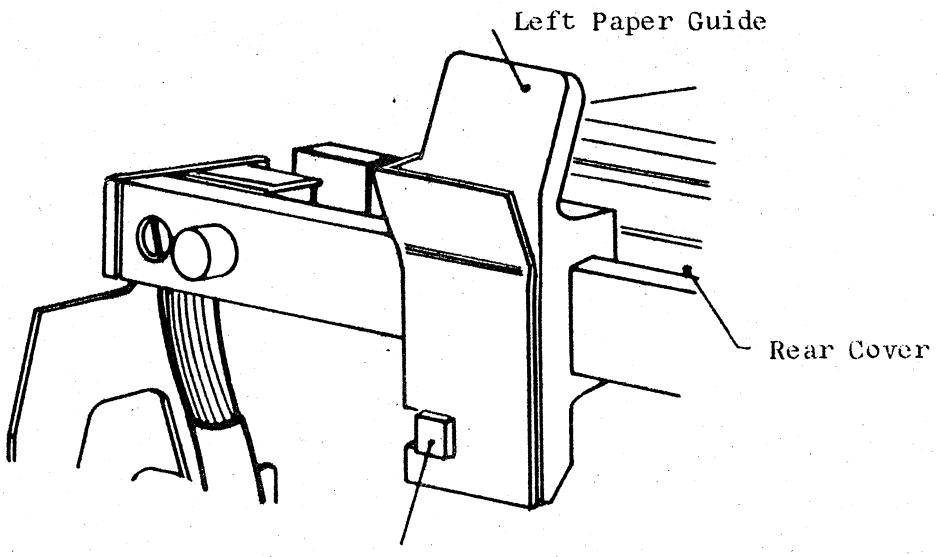


Fig. 8-24

8.2.2.8 AFF Option Components Replacement

1 - Needed Material

Personal F.E. Tools kit

2 - Preliminary Operations

Power-off the printer

3 - Procedure

The AFF group components replacement is very easy therefore it is unuseful to give a procedure for each single component (motor, solenoid etc.).
It is however important to know the removal and adjustment procedure of the whole AFF assembly which must be extracted from the unit in order to perform the above replacements.

AFF Removal

- Loosen the tensioner nut (See fig. 8.21)
- Loosen the two springs
- Extract one of the retaining rings
- Extract the pulley group from the support and move belt and carriage to the left to set free the AFF front zone
- Remove the two screws and springs rings fixing the bar on which the carriage-head runs.
- Carefully remove the bar from the carriage rollers up to extract it completely.
- Mark with a point the actual position of the AFF on the base in order to be able to replace it in the same position.
- Remove the three brackets fixing the AFF group to the base.
- Seize the AFF upper group, turn it over foward and extract it from the unit.

AFF Replacement

- Replace parts by following the removal operations in the reverse order. The AFF assembly must be placed transversally according to the references previously marked on the base.

4 - Final Operations

- Should the form reference edge solenoid be replaced, it is necessary to perform the adjustment routine 8.2.1.10
- Perform the adjustment routine 8.2.1.12 (AFF Assembly Adjustment) to correctly reposition the AFF assembly.

8.2.2.9 Replacement of the keyboard module (for the KSR units)

1 - Needed Material

. Personal F.E. Tools kit
. Unsoldering Iron

2 - Preliminary Operations

Power-off the printer

3 - Procedure

. Remove the top cover and extract the keyboard printed circuit.
. Extract the cap of the key to be replaced and the adjacent ones to obtain a better accessibility. For the bistable keys (i.e. CAP LOCK), the cap must be extracted only when the key is in its idle position.
. Use a screwdriver or feeler gauge blade to separate the two lock blades from the key housing. Interpose a piece of card between blade and housing. This will ease key extraction after the unsolder operation.
. Unsolder the key by carefully free the involved paddles Do not apply the unsolder for more than 5 seconds in order to avoid damages to the printed circuit.
. Extract the faulty key.
. Verify that the two blades are not bent. Should this be the case, it is necessary to straighten them before replacing the new key.
. Place the key housing in its position and solder it
. Mount the caps on the keys
. Replace the keyboard and the keyboard cable
. Set the printer in LOCAL (See the flow on page 8-2) and verify the exact correspondence between the printed character and the pressed key.

4 - Final Operations

None.

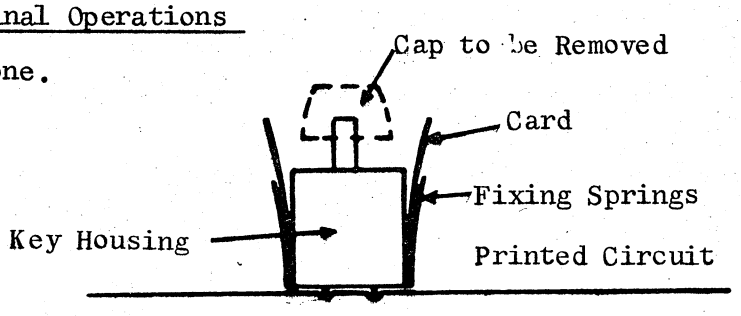


Fig. 8-25