

Honeywell

Honeywell Information Systems Italia

SPPL

MAINTENANCE PROCEDURES

71011352 - 300

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VIII

MAINTENANCE PROCEDURES

This section of the "SPPL 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 Maintenance Tasks" is included in this manual to allow the F.E. engineer to observe those indications useful to carry out all corrective operations.

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 NOTE on next page).

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8.0 LOCAL TEST

NOTE

All SPPL models can be exercised in OFF LINE. The following flow supplies a correct guide of the operations to be implemented in order to obtain the needed exercise.

	PRINT GRAPHIC SET	ONLY CARRIAGE MOVEMENT	PRINT "H" or "I"	HALT TEST
ROSY 24	ST/BY - LOCAL-TEST P LOCAL-TEST - P	ST/BY-LOCAL-TEST C LOCAL-TEST - C		STOP
ROSY 26	ST/BY-LOCAL-TEST- P LOCAL-TEST - P	ST/BY-LOCAL-TEST C LOCAL-TEST - C		BREAK
ROSY 28	LOCAL-START-		LOCAL-START & BREAK	STOP
ROSY 72	LIKE ROSY 26	LIKE ROSY 26		LIKE ROSY 26
ROSY 74	LIKE ROSY 26	LIKE ROSY 26		LIKE ROSY 26
POLY 21	LOCAL-TEST-START	LOCAL-TEST-DISABLE		STOP
POLY 23 (FW 2K)	START-TEST-START	START-TEST-DISABLE		STOP
LINA 21	TEST-LOCAL	TEST-LINE FEED		FORM FEED
LINA 22	TEST-LOCAL		TEST-LINE FEED	FORM FEED
LINA 4X	LOCAL-TEST		LOCAL-TEST+TEST	LINE FEED
SARA 2X	LOCAL-TEST-START	LOCAL-TEST-LOCAL		STOP
ROSY 21	LOCAL-TEST-START	LOCAL-TEST-LOCAL		LINE FEED
ROSY 82	LOCAL-TEST-START	LOCAL-TEST-LOCAL		LINE FEED
LINA 29 LINA 27	TEST-READY		TEST-LINE-FEED	FORM FEED

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

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8.1 OPERATOR MAINTENANCE 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:

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

Inked ribbon (cartridge) replacement, paper loading, and drum adjustment according to the number of copies are considered normal operations to run the unit.

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8.2 F.E. MAINTENANCE TASKS

This chapter describes all corrective maintenance operations, such as possible adjustments and/or replacements on the SPPL product.

The adjustment routine described at para 8.2.1.3. can be executed without the oscilloscope using KIT P/N 78114628-046.

This KIT contains, for all series 20 SPPL models, a specific eeprom which makes casier to adjust the mistor to carriage motor timing.

Besides the KIT content is compatible both on the Mina and Mara mechanics regardless of both PWA and firmware level.

CAUTION

All dangerous voltage (≥ 42 Vpp), high temperature points and areas containing parts in movement are conveniently protected and indicated by protection labels.

When operating without protection covers, be very careful and, after executing all operations, restore the protection covers, which have been previously removed, as at the start.

In order to obtain a higher safety interrupt the AC line acting either on the electric panel breaker or disconnecting the machine from the network outlet.

On the SPPL's the protection on the network voltage input is implemented by interrupting only the phase. For this purpose, a polarized plug which must coincide with a same type outlet available at the customer site, is mounted on the power cable.

It is strictly mandatory to comply with the polarities on the network power outlet.

An external label is stuck near the main breaker to warn the technical personnel.

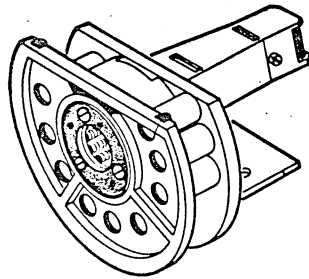
The unit is not foreseen to be installed on IT type networks (neutral isolated)

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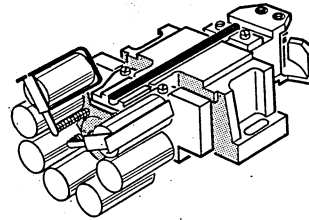
Print Quality Check Procedure

The series 20 SPPL units (SARA-ROSY-POLY-LINA) feature the following heads :

- 1) GTWF 207J 78123629-001
- 2) GTWF 207E 78120017-001 (only for ROSY 72)



78123629



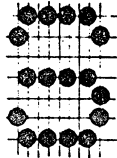
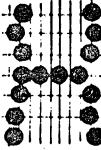
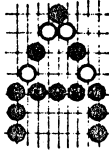
78120017

The check procedure, which must be executed whenever a print quality is complained, is as follows :

- Check that the adjustment routine **8.2.1.5** is the required one, otherwise execute the appropriate adjustment.
- Mount the paper (1 copy)

Mount a ribbon cartridge which does not show an excessive wear.

- Execute some print lines of the graphic set in "Local". (See page 8.2)
- Remove the printed sheet from the unit and check that there are no print faults as shown in the following table:

	TYPE OF INVOLVED CHARACTER	FAULT DESCRIPTION	EXAMPLE	POSSIBLE CAUSE
1	All	Absence of a point along the entire print line		A needle is broken. A coil is interrupted.
2	With prevalence of vertical lines (H, I, / ...).	The vertical lines are not clearly defined (the points are not arrayed on a single line).		The ruby is unglued or is ungluing.
3	All	Some points forming the characters are faded and do not allow the character identification.		The needles are worn.

- Replace the print head if the print quality is not good.

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8.2.1 ADJUSTMENT

8.2.1.1 Mistor Gap Adjustment Procedure

1 - Needed Material

- . Personal tool kit

2 - Purpose

To obtain a correct gap between the mistor and the timing disk pieces.

3 - Preliminary Operations

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

4 - Adjustment Rule

The distance between the gear tooth and the mistor must range from 0,10 to 0,15 mm (.004 to .006 inch.) in the point of maximum eccentricity of the gear (red point).

5 - Procedure (MINA)

- . Loosen the Allen screw fitted on the mistor fixing collar.
- . Interpose the 0,10 mm (.004 inch.) blade and tighten the screw previously loosened pressing the mistor against the blade. Refer to fig. 8.2

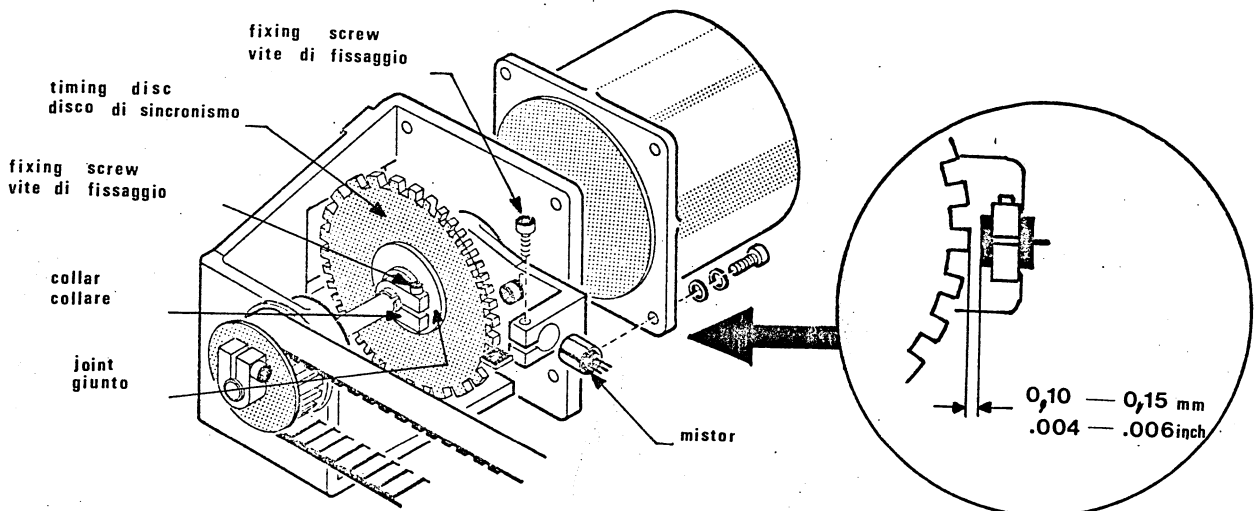


Fig. 8-2 MINA Mechanism Motor/Mistor Support Assembly

6 - Execution Procedures (MARA)

- Loosen the allen screw located on the mistor fixing collar.
- Insert a 0,10 mm (.004 in.) blade and lock the previously loosened screw, keeping the mistor pressed against the blade (See fig. 8.3)

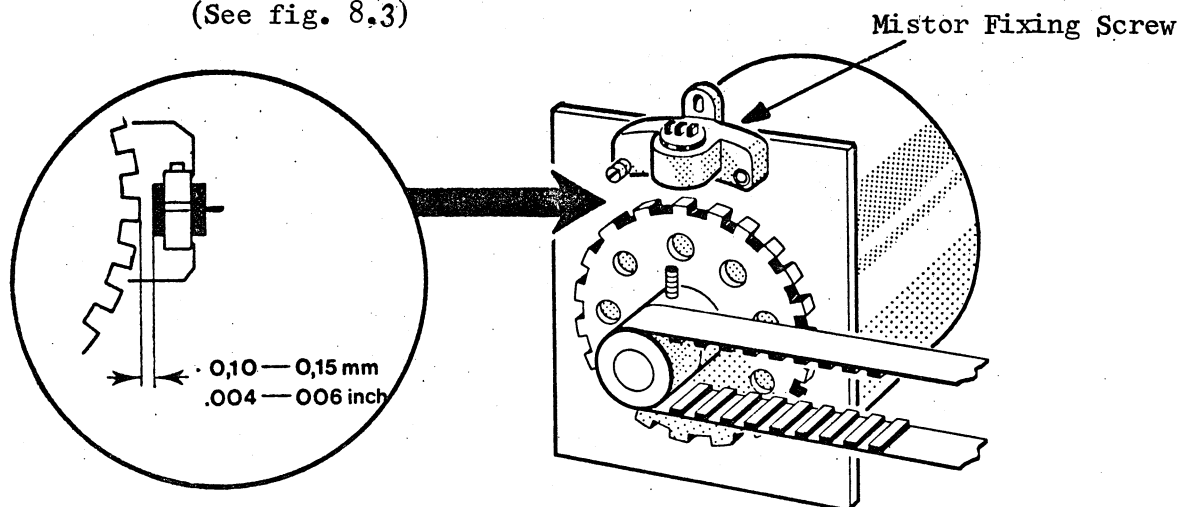


Fig. 8.3 Mistor Support Assembly for the "MARA" Mechanics

7 - Check Procedure

Rotate the toothed wheel and check every 90° that the distance remains steady. Should the gap be less than 0,10 mm (.004 in) in a given point repeat the adjustment procedure for this point of maximum eccentricity.

8 - Final Operations

Execute the mistor amplifier adjustment (routine 8.2.1.2)

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8.2.1.2 Mistor Amplifier Adjustment

- 1 - Needed Material
 - . Oscilloscope or Voltmeter (20,000 Ω - VDC)
 - . Personal tool kit
- 2 - Adjustment Purpose
 - . To obtain a correct carriage feeding
- 3 - Preliminary Operations
 - . Power off the unit
 - . Remove the top cover (routine 8.2.2.1) to gain access to the PWA.s pack
- 4 - Adjustment Rules
 - . The pulse of the mistor (MISTO * 0) with carriage in motion must have an amplitude of 20 V. $\pm \frac{0}{5}$ V and be balanced with respect to the zero (fig. 8.5.a: $b_1 = b_2$)
- 5 - Execution Procedure Using an Oscilloscope
 - . Ground connect the DISCA signal by mounting a jumper between TP01 and TP86 on the PWA DRIVE (Fig. 8.4)
 - . Place the oscilloscope probe on TP03 (MISTO signal) of the PWA DRIVE (fig. 8.4)
 - . Power on the unit
 - . Check that the amplitude and the balance are correct by manually moving the carriage (fig. 8.5 a)
 - . Act on the potentiometer RA8 of the PWA DRIVE (fig. 8.4) to adjust the amplitude
 - . Act on the potentiometer RA7 of the PWA DRIVE (fig. 8.4) to adjust the balance

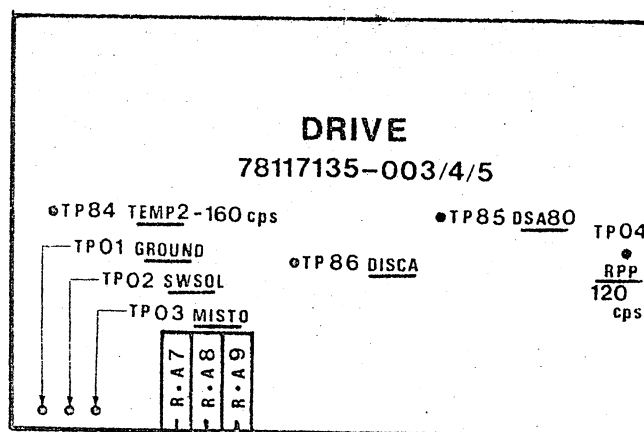


Fig. 8-4

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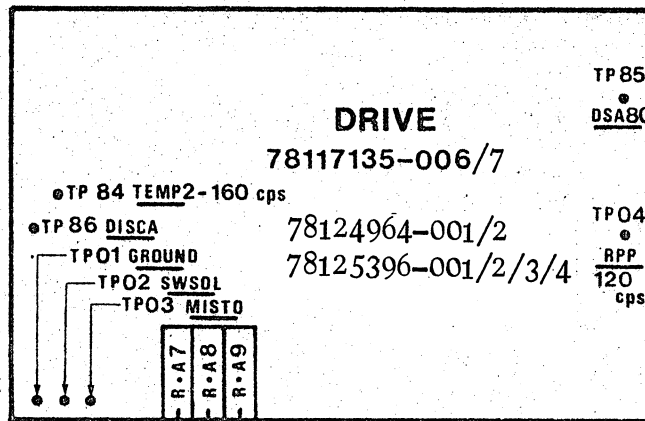
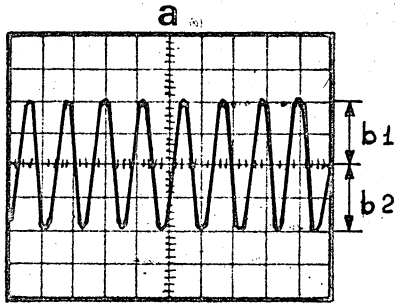


Fig. 8-4

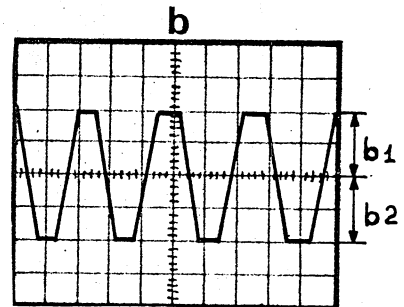
5.1 - Execution Procedure Using A Voltmeter (20,000 Ω V -DC)

- Ground connect the DISCA signal by mounting a jumper between TP 01 and TP 86 on the PWA DRIVE (fig. 8.4)
- Place the voltmeter negative probe on TP 01 and the positive probe on TP 03 (MISTO signal) of the PWA DRIVE (fig. 8.4)
- Move the carriage to the right and to the left side very slowly, observe the maximum positive voltage on the TP 03 and adjust it to 7 volts by acting on RA 8 of the PWA DRIVE (fig. 8.4)
- Invert the voltmeter probes, move the carriage very slowly and check that the maximum negative voltage is precisely equal to the positive voltage previously adjusted to 7 volts
- Should they be different, alternatively observe the maximum positive and negative voltage and act on RA 7 of the PWA DRIVE (fig. 8.4) until the same voltage levels are reached
- Move the carriage slowly and observe either the maximum positive or negative voltage.
- Act on RA 8 to adjust the voltage between 9 and 10 volts.
- Observe the adjusted voltage every 90° of the timing disk
- Should the difference between the maximum voltages observed be ≥ 3 volts, replace the timing toothed disk (fig. 8.2-8.3)

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CORRECT WAVE FORM



SATURATED WAVE FORM

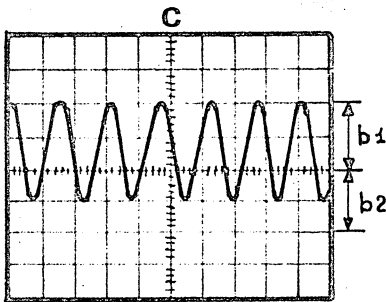
MISTO

Scale:

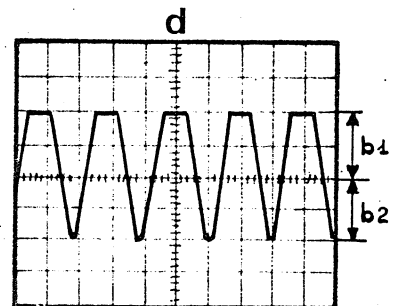
5 V

2 mS

INTERNAL SYNCHRON +



UNBALANCED WAVE FORM

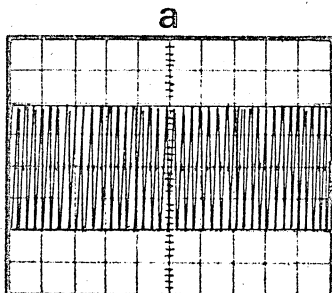


SATURATED-UNBALANCED WAVE-FORM

FIG. 8-5

6 - Check-out Procedure Using an Oscilloscope

- Disconnect the jumper between TP 01 and TP 86
- Perform the local test without print and check the amplitude and the linearity of the MISTO signal (fig. 8.6)
- Should the difference between the maximum and the minimum amplitude of the MISTO signal be ≥ 6 volts, replace the timing toothed disk (fig. 8.6 b)



MISTO

Scale:

5 V

50 mS

INTERNAL SYNCHRON +

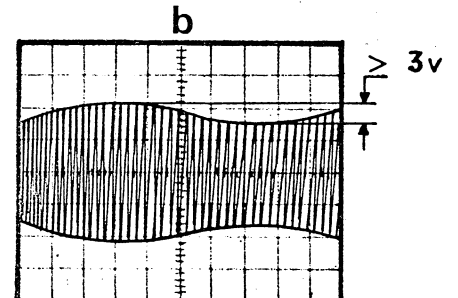


FIG. 8-6

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- 6.1 - Check-Out Procedure Using A Voltmeter (20.000 Ω VDC)
 - . Disconnect the jumper between TP 01 and TP 86
 - . Perform the local test and check that the graphic set print is correct

- 7 - Final Operations
 - . Remount all covers previously removed

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8.2.1.3 Mistor Pulse Timing with the Carriage Step Motor

1 - Needed Material

- . Oscilloscope
- . Personal tool kit

WARNING

This adjustment can be executed without an oscilloscope, using kit P/N 78114628-046 containing the EPROM's and the instructions to execute the adjustment.

2 - Purpose

- . Timing of the carriage mistor signal with the step motor position

3 - Preliminary Operations

- . Remove the upper cover (routine 8.2.2.1)
- . Remove the operator's panel, leaving the cable connected

4 - Adjustment Rule

- . When the step motor has performed a step, the mistor signal must reach its maximum negative level

5 - Procedure

- . Set the MINA carriage in such a way as to align the toothed wheel windows with the fixing screws of the mistor support (see fig. 8.7)

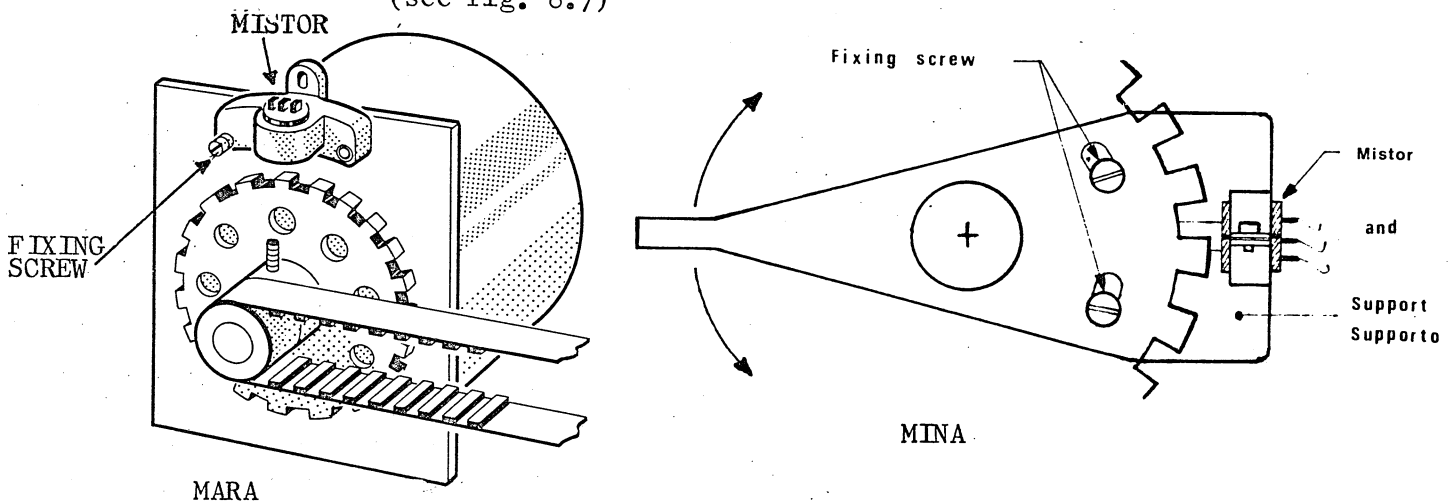


Fig. 8.7 Mistor Support Group

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- Extract the PWA pack without disconnecting the cables
- Ground connect the DSA 80 signal by mounting a jumper between TP01 and TP85 on the PWA DRIVE (fig. 8.8)
- Set the oscilloscope probe on TPO3 (MISTO signal) of the PWA DRIVE (fig. 8.8)
- Loosen the fixing screws of the mistor support as to rotate the mistor through friction (figure 8.7)
- Power on the unit
- Set the support in such a way as to obtain the maximum negative level of the MISTO (Scale: 5V-2MS)

NOTE

For the ROSY 28 model, this can be indifferently obtained both with the maximum positive level and the maximum negative level.

- Tighten the support fixing screws.
- Check the correct adjustment by trying to move the carriage in the two directions and checking that the signal on the oscilloscope tends to move only upward (scale: 1V-2MS)

NOTE

For the ROSY 28 model, the signal on the oscilloscope can move upward or downward if previously the maximum negative level (high) or the maximum positive level (low) has been respectively chosen.

- Set the unit to POWER OFF and remove the jumper between TP01 and TP85.

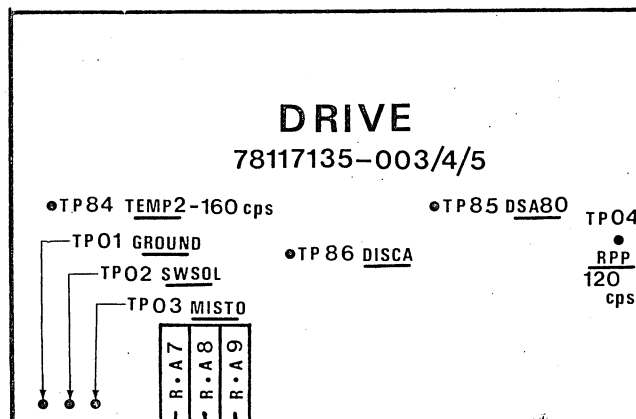


Fig. 8-8

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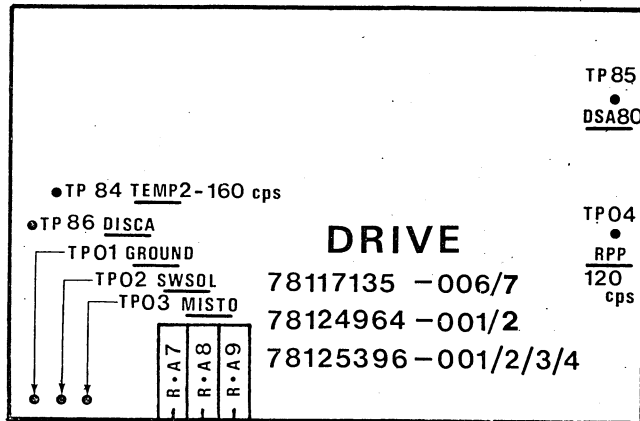
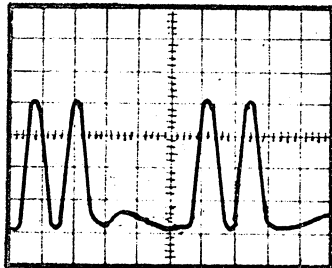


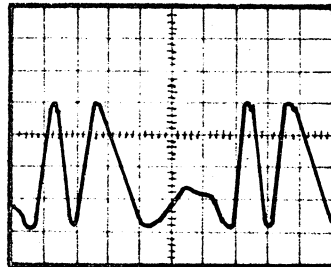
Fig. 8-8

6 - Check-out

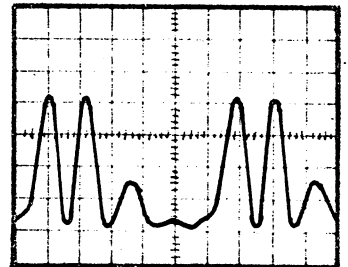
- . Keep TP 03 (MISTO) visualized
- . Manually move the head to the right side
- . Power on the unit
- . Observe the wave-form during the start-up stage and compare it with fig. 8.9



MISTO signal
CORRECT WAVEFORM



MISTO signal
INCORRECT WAVEFORM
Move the support
counterclockwise



MISTO signal
INCORRECT WAVEFORM
Move the support
clockwise

Fig. 8-9 SCALE: 5 V - 10 mS - SYNC. INTERNAL - CHANEL 1

7 - Final Operations

- . Remount the operator's panel and all covers previously removed

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8.2.1.4 Mistor Pulse with Beginning - of - Line Sensor Timing

1 - Needed Material

- . Double track oscilloscope or 20,000 Ω V - DC voltmeter
- . Personal tool kit

2 - Purpose

- . Timing of the mistor pulse with the beginning - of - line sensor to ensure a correct carriage movement reversal upon start-up

3 - Preliminary Operations

- . Power off the unit
- . Remove the upper cover (routine 8.2.2.1)

4 - Adjustment Rule

- . The switching of the beginning - of - line sensor must take place in the middle of a carriage step (fig. 8.12)

5 - Execution Procedure Using an Oscilloscope (MINA Mechanics)

- . Move the carriage toward the right side until the Allen screw fixing the step motor joint to the pulley shaft can be accessed (fig. 8.11)
- . Extract the logic pack without disconnecting any cable
- . Ground connect the DSA 80 signal mounting a jumper between TP 01 and TP 85 on the PWA DRIVE (fig. 8.8)
- . Loosen the joint screw
- . Place the channel 1 probe of the oscilloscope on the TP 02 (SWSOL) and the channel 2 probe on the TP 03 (MISTO) of the PWA DRIVE
- . Power on the unit
- . Monitor channel 1 on the oscilloscope (SWSOL signal)
- . Interpose a 1,25 mm (.05 inch) shim between the actuator of the beginning - of - line switch and the left-hand carriage stop (fig. 8.10), and move the carriage until the SWSOL signal (on TP 02) switching is detected
- . Tighten in this position the motor joint screw

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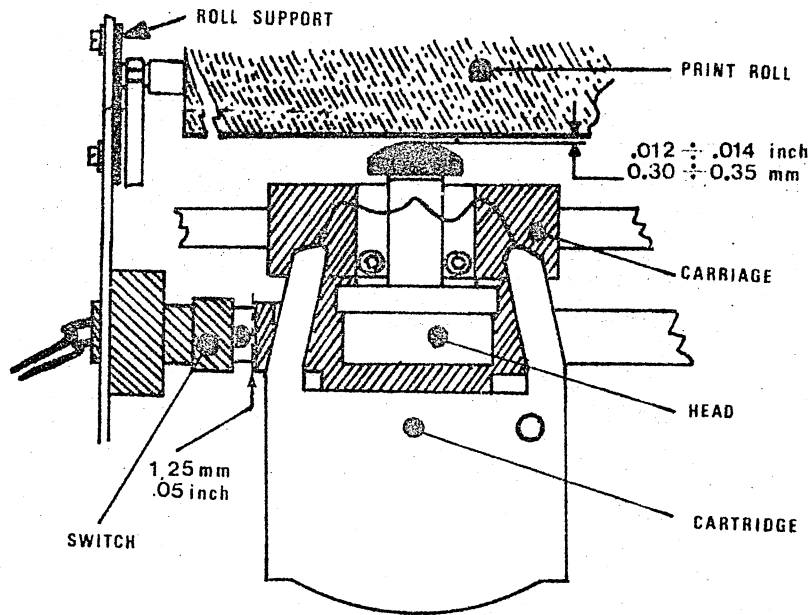


Fig. 8-10

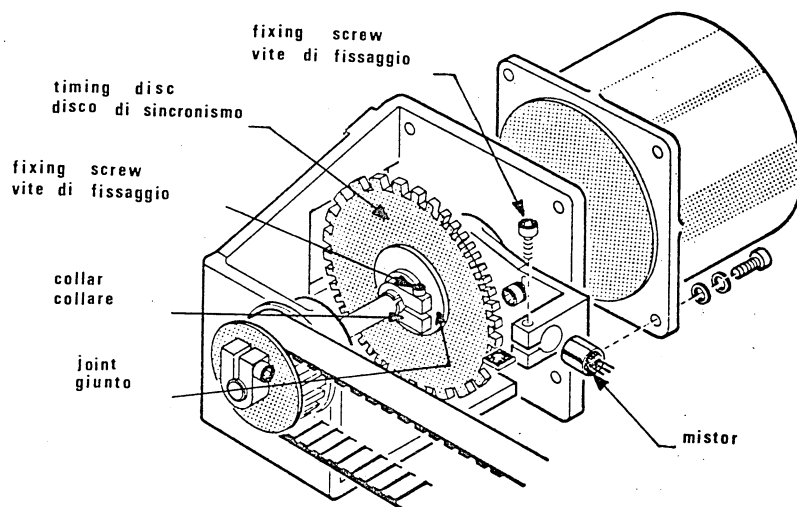


Fig. 8-11

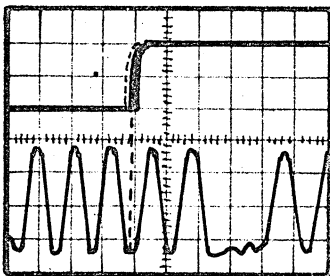
5.1 - Execution Procedure Using a 20,000 Ω V - DC Voltmeter (MINA Mechanics)

- Move the carriage toward the right side until the allen screw of the collar fixing the step motor joint to the pulley shaft can be accessed (see fig. 8.11)
- Take off the logic pack without disconnecting any cable
- Ground connect the DSA 80 signal mounting a jumper between TP 01 and TP 85 on the PWA DRIVE (fig. 8.8)
- Loosen the joint screw
- Place the voltmeter positive probe on TP 02 and the negative probe on TP 01

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- . Power on the unit
 - . Interpose a 1,25 mm (.05 inch) shim between the beginning - of - line switch actuator and the carriage stop (fig. 8.10), move the carriage toward the left side until the SWOL (TP 02 = \emptyset volt) signal is switched, and then toward the right side until the beginning - of - line switch is tripped again (TP 02 = \sim 4 volt)
 - . Tighten in this position the joint collar screw
- 6 - Check-out Using an Oscilloscope (MINA Mechanics)
- . Power off the unit
 - . Remove the jumper between TP 01 and TP 85
 - . Ground connect the DISCA signal mounting a jumper between TP 01 and TP 86
 - . Power on the unit
 - . Synchronize the oscilloscope on negative channel 1 (SWSOL signal) by manually moving to and forth the carriage till to close and open the beginning - of - line switch repetitively
 - . Check that the rising edge of SWSOL falls half way between two waves of the MISTO signal (fig. 8.12)
 - . Remove the jumper between TP 01 and TP 86
 - . Repetitively push LOCAL (DISABLE) and ON LINE (START) and check, after each initialization, the adjustment obtained in line

SCALE:
CHANNEL 1-2V
CHANNEL 2-5V
TIME: 2 mS
NEGATIVE SYN.
CHANNEL 1



SWSOL
CHANNEL 1

MISTO
CHANNEL 2

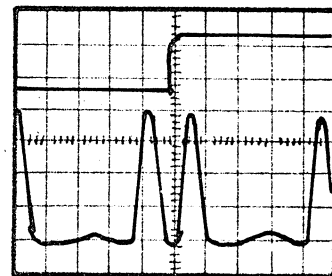


Fig. 8-12

6.1 - Check-out Procedure without Oscilloscope (MINA Mechanics)

- . Power off the unit
- . Remove the jumper between TP 01 and TP 85
- . Power on the unit
- . Alternatively depress LOCAL (DISABLE) and ON LINE (START) to repetitively initialize the carriage
- . Check that the initialization stops the carriage always on the same position

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7 - MARA Mechanics Execution Procedure

- Extract the logic pack without disconnecting any cables.
- Obtain a distance of $26 \text{ mm} \pm 0.5$ (0.864 inch) between the internal left-hand wall of the unit and the left-hand side of the carriage.
- Ground connect the DSA80 signal by mounting a jumper between TPO1 and TP85 on the PWA DRIVE (fig. 8.8)

NOTE: For all SPPL models, DSA 80 to ground means that the MISTO signal is in the maximum negative position. For the ROSY 28 model, DSA 80 to ground can mean that the MISTO signal is indifferently either in the maximum negative or positive position.

- Interpose a 1.25 mm (0.05 inch) shim between the actuator and the carriage.
- Acting as to make the carriage skim the switch actuator, set the unit to POWER ON.
- By acting on the adjusting screw (fig.8.13), move the support of the beginning-of-line switch till the swol signal changes to the opposite state.

NOTE: Observe the switching of the swol signal, through either an oscilloscope or a voltmeter, on TPO2 of the PWA DRIVE (fig. 8.8)

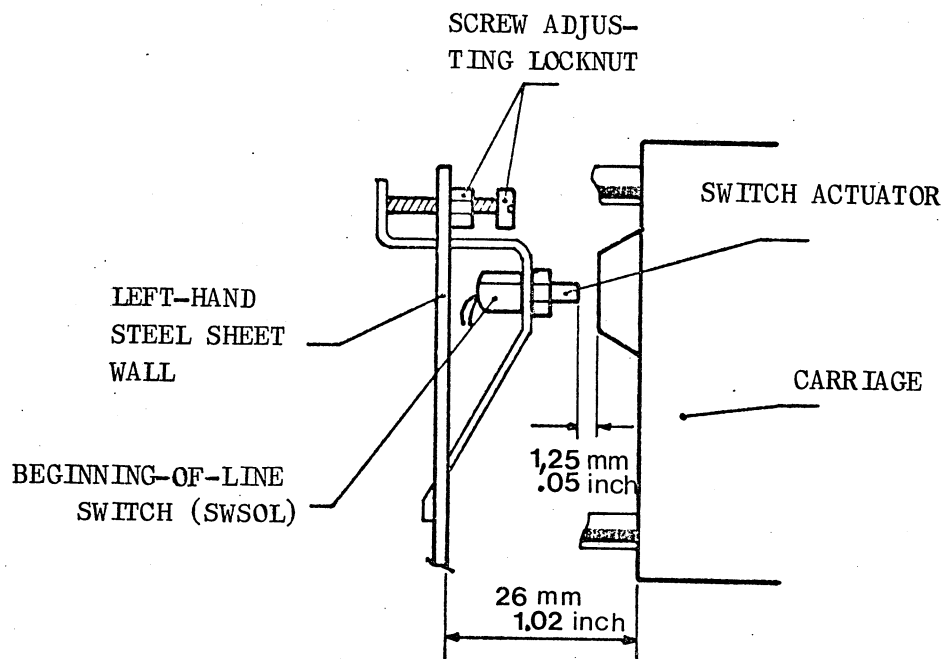


Fig. 8-13

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8 - Check Procedure Using an Oscilloscope (MARA Mechanics)

- . Set the unit to POWER OFF
- . Remove the jumper between TP85 and TPO1
- . Set the unit to POWER ON
- . Display on channel 1, of the oscilloscope, the SWSOL signal (TPO2) and on channel 2 the MISTO signal (TPO3) as shown in fig. 8.12
- . Manually execute some initializations checking that the rising edge of the SWSOL signal falls half way between 2 waves of the MISTO signal. (Fig. 8.12)

NOTE: For all SPPL models the concurrence shown in fig. 8.12 provides the adjustment result.

On ROSY 28 models, in order to determine the adjustment result, the concurrence shown in fig. 8.12 can occur both on the negative and positive maximum value

8-1 - MARA Mechanics Check-out procedure without using an Oscilloscope

- . Set the unit to POWER OFF
- . Take off the jumper between TPO1 and TP85
- . Set the unit to POWER ON
- . Execute repeated initializations checking that the carriage stops always on the same first column.

9 - Final Operations

- . Mount again the PWA pack
- . Mount again the covers which have been previously removed.

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8.2.1.5 Roller to Fixed or Passbook Head Distance and Parallelism Adjustement (MINA Mechanics)

1 - Needed Material

- . Personal tool kit

2 - Purpose

- . To obtain the character impression uniformity along the whole print line

3 - Preliminary Operations

- . Power off the printer
- . Take off the inked ribbon cartridge and the paper
- . Take off the upper cover (routine 8.2.2.1)

4 - Adjustment Rule

- . The head to roller distance must be the one indicated on table 8.1

A	MODELLO TESTINA - HEAD MODEL
0.40 ÷ 0.45 mm .016 ÷ .018 inch	78123629-001 CORPO IN PLASTICA / PLASTIC FRAME
0.65 ÷ 0.70 mm .025 ÷ .027 inch	78120017-001 TESTINA MOBILE / PASS BOOK

Tab. 8.1

A = Distance measured in the max eccentricity point which is defined by the presence of a red spot on the roller and on the steel sheet under the roller both oriented toward the print head.

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5 - Adjustment Procedure

5.1 Execution Procedure (MINA)

- . Set the copy adjusting lever to 1 copy position
- . Set the head in front of the red spot on the steel sheet under the roller
- . Set the red point located on the left-hand of the print roller in front of the head and on the same horizontal axis.
- . Loosen the two allen screws which lock the head to the carriage
- . Interpose a feeler gauge between the needles and the roller as shown on table 8.1 (fig. 8.14)
- . Tighten the two allen screws Keeping the head pressed against the roller.
- . Check along the entire carriage run that the distance between the head and the roller is comprised within the tolerance (see tab 8-1).
- . Rotate the roller and execute a check on different points of the roller.
- . Should the alignment be out-of-tolerance, loosen the two allen screws on the plate which locks the left-hand side of the roller to the steel sheet wall (fig. 8.14).
- . Using an appropriate feeler gauge, adjust the parallelism between the head and the roller.
- . Tighten the two plate screws.
- . Check again the distance and, if necessary, repeat the head adjustment.

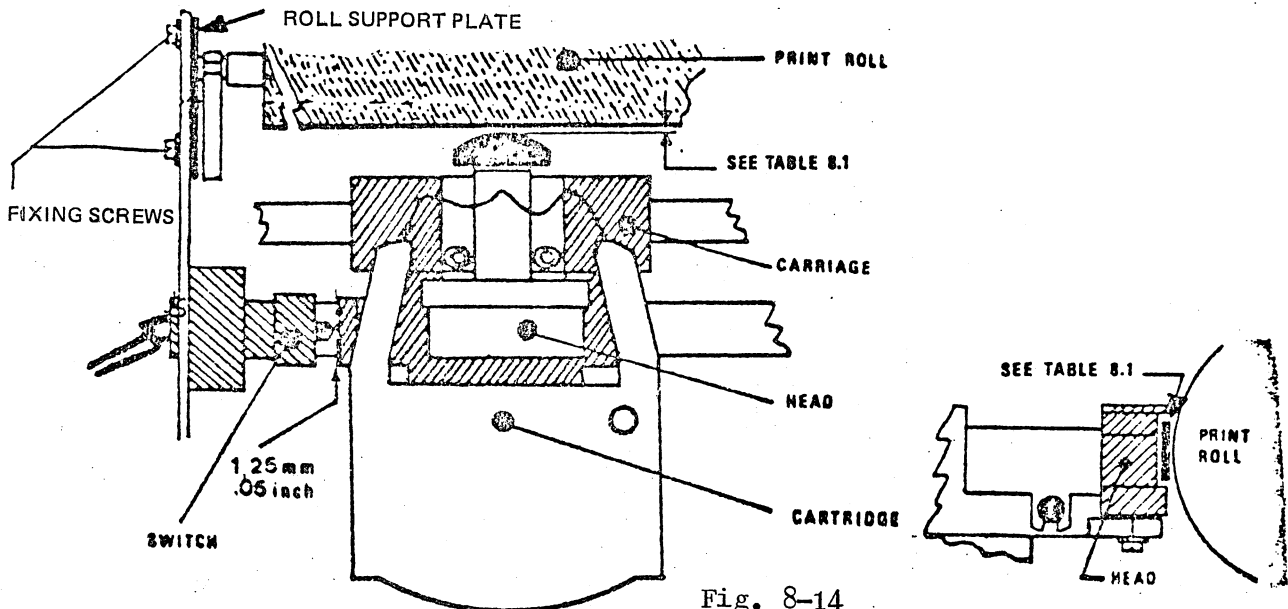


Fig. 8-14

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5.2 MARA Adjustment Procedure

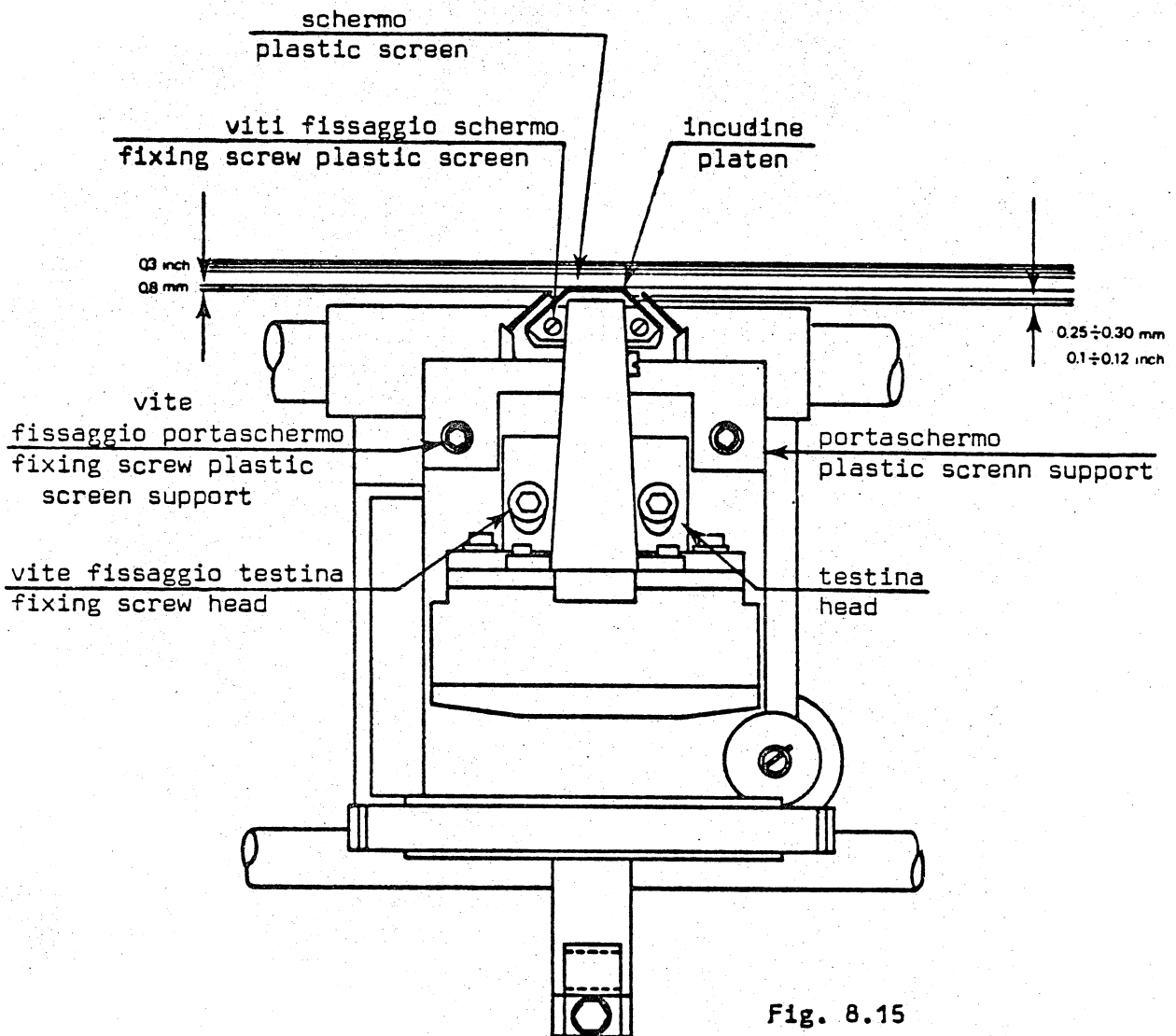


Fig. 8.15

- Set the copy adjusting lever to 1 copy position (lever all the way up).
- Set the head in front of the minimum distance point (paint spot behind the platen wing).
- Loosen the fixing screws of the screen, screen support and head (fig. 8.15).
- Interpose a feeler gauge between the platen and the ends of the two screen support wings and after obtaining a $1.1 \text{ mm} \pm \pm 0.1$ ($.031 \text{ inch}$) clearance tighten the screws.
- Interpose a 0.3 mm ($.012 \text{ inch}$) feeler gauge between head and screen and slightly pressing the platen, tighten the head fixing screws.

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- . . Check that the 0,3 mm feeler gauge encounters some movement resistance and that the 0,25 mm (0.01 inch) feeler gauge is free to move
- . Fit again the 0,25 mm feeler gauge between head and screen and lock the screen by means of the appropriate screws.
- . Extract the 0,25 mm feeler gauge and check that the screen remains leaned against the print platen.
- . Set the copy lever to 5 and check that the screen does not touch the platen; otherwise replace the screen.

6 - Check-Out Procedure

- . Mount again cartridge and covers
- . Print the graphic set and check the impression uniformity along the whole print line.

7 - Final Operations

- . Mount again all covers which have been previously removed.

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8.2.1.6 Head (P/N 78123629) Ruby Adjustment

1 - Needed Materials

- . Personal tool kit

2 - Adjustment Purpose

- . To enhance the print quality on heads with worn needles

3 - Preliminary Operations

- . Set the unit to Power-off
- . Open the upper cover

4 - Adjustment Rule

- . Move backward the ruby until the needle jutting is comprised in the ϕ to 0,2 mm (ϕ to .008 inch) tolerance.

5 - Execution Procedure

- . Take off the head from the carriage support
- . Lay the head on a work table and after loosening screw A (fig. 8.16) move backward the ruby till when the shortest needle is aligned with the ruby.
- . Lock in place the ruby
- . Check that no needle juts out more than 0,2 mm (.008 inch)

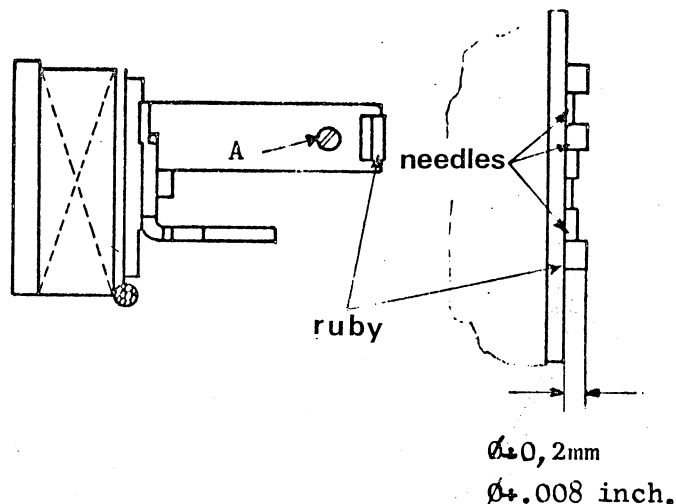


Fig. 8-16

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6 - Check-out Procedure

- . Mount again the print head on the carriage support
- . Execute the adjustment (8.2.1.5)
- . Check that the unit operates correctly by printing the graphic set

7 - Final Operations

- . Close the upper cover.

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8.2.1.7 Carriage Speed Adjustment in Synchronous Motion

NOTE : Adjustment applicable only to 120 c.p.s. units.

When this adjustment is performed after having replaced the PWA DRIVE, it is possible that the potentiometer RA 9 is completely misadjusted. In this case the carriage starts in a forward discontinuous motion and stops at the end - of - run. If this condition occurs, perform the following operations: rotate RA 9 clockwise for some spins, power off the unit and then power it on again. Repeat these operations till to obtain, in LOCAL, a continuous motion of the carriage which enables the adjustment execution.

1 - Needed Material

- . Oscilloscope
- . Personal tool kit

2 - Purpose

- . To obtain a carriage motion at the speed of 120 chrs/sec.

3 - Preliminary Operations

- . Remove the top covers (routine 8.2.2.1)

4 - Adjustment Rule

- . The total time among three pulses must be equal to 4.2 ms.

NOTE

Check that all switches of the PWA DRIVE are set to on.

5 - Execution

- . Execute the local test without print
- . Place the oscilloscope probe on the TP 04 (RPP * 1 signal) of the PWA DRIVE (fig. 8.18) and check the time between the 1st and the 3rd pulse during the carriage motion to the right side (fig. 8.17)
- . Act on RA 9 on the PWA DRIVE (fig. 8.18) to obtain the required condition.

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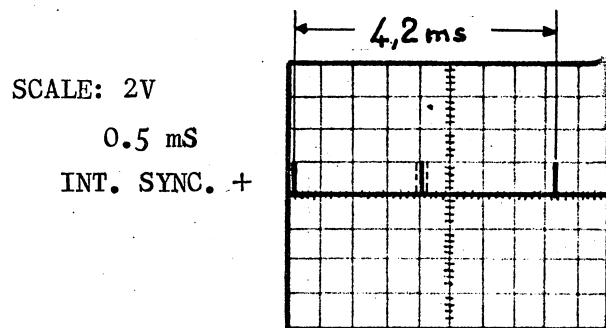


Fig. 8-17

- 6 - Check-out
 - . None
- 7 - Final operations
 - . Remount all covers previously removed

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8.2.1.8 One-shot Adjustment for the Carriage Motion Speed Control

NOTE: Adjustment applicable only to 160 c.p.s. units

- 1 - Needed Material
 - . Oscilloscope
 - . Personal tool kit
- 2 - Adjustment Purpose
 - . To obtain a correct operation of the speed control
- 3 - Preliminary Operations
 - . Remove the top cover (routine 8.2.2.1)
- 4 - Adjustment Rules
 - . The signal present on TP 84 of the PWA DRIVE must be of 300 μ sec \pm 25/ μ sec
- 5 - Execution
 - . Make the carriage perform some continuous motions without print

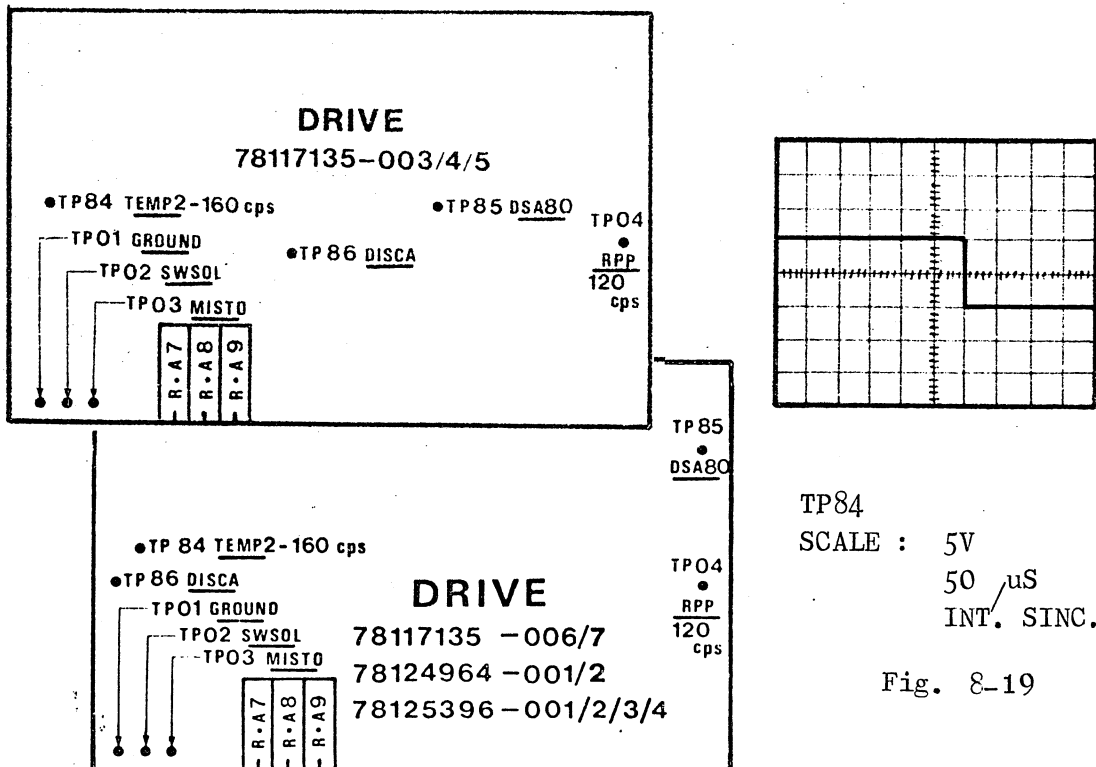


Fig. 8-18

Fig. 8-19

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- . Place the oscilloscope probe on TP 84 of the PWA DRIVE (fig. 8.18)
- . Act on RA 9 till to obtain the required condition (fig. 8.19)

6 - Check-out

- . None

7 - Final Operations

- . Remount all covers previously removed

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8.2.1.9 Form Reference Edge Solenoid Adjustment (for units with the Automatic front feed option)

1 - Needed Material

- Personal tool kit

2 - Adjustment Purpose

- To obtain that the tile sets correctly during the form insertion

3 - Preliminary Operations

- None

4 - Adjustment Rules

- When the solenoid core reaches the end-of-run, the tile driven by it must be at 0,5 mm (.02 inch) from the front plastic reference edge (refer to fig. 8.20) fitted on the shoulder.

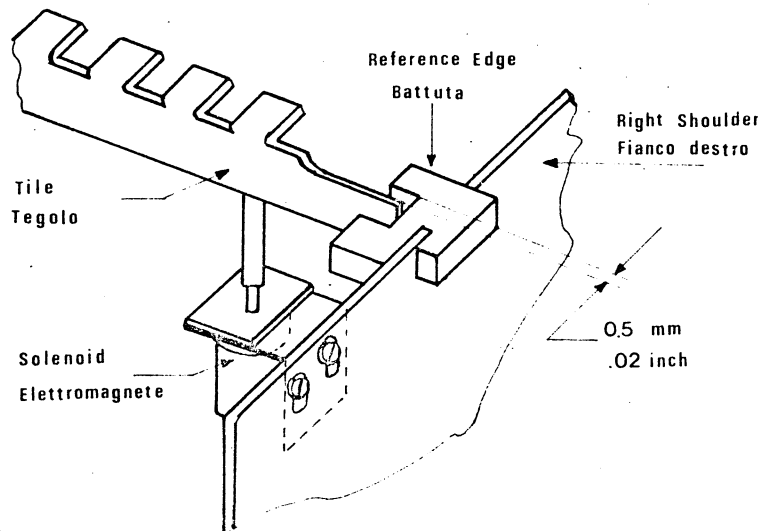


Fig. 8-20

5 - Execution

- Fit two screws in the slots of the solenoid bracket and adjust the screws in the upper position of the slots
- Set the solenoid core on the end-of-run (lower) position

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- . Move the solenoid assembly upwards till to obtain a tile to tile reference edge gap of 0,5 mm (.02 inch) (Refer to fig. 8.20)
- . Tighten the solenoid screws.

6 - Check-out

- . With the solenoid energized, check that the tile ensures a correct form setting

7 - Final operations

- . None

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8.2.1.10 AFF or Pass-book Optic Sensor Adjustment

1 - Needed Material

- . Personal tool kit
- . Multimeter

2 - Purpose

- . To guarantee the correct operation of the roller opening solenoid of the AFF option

3 - Preliminary Operations

- . Remove the top cover (routine 8.2.2.1)

4 - Adjustment Rules

- . Between TP 01 and TP 02 of the PWA AFF a voltage of $3 V \pm 0.1V$ must be present

5 - Execution

- . Place the voltmeter positive probe on TP 01 and the negative probe on TP 02 (fig. 8.21)
- . Act on R 34 till to obtain the required condition

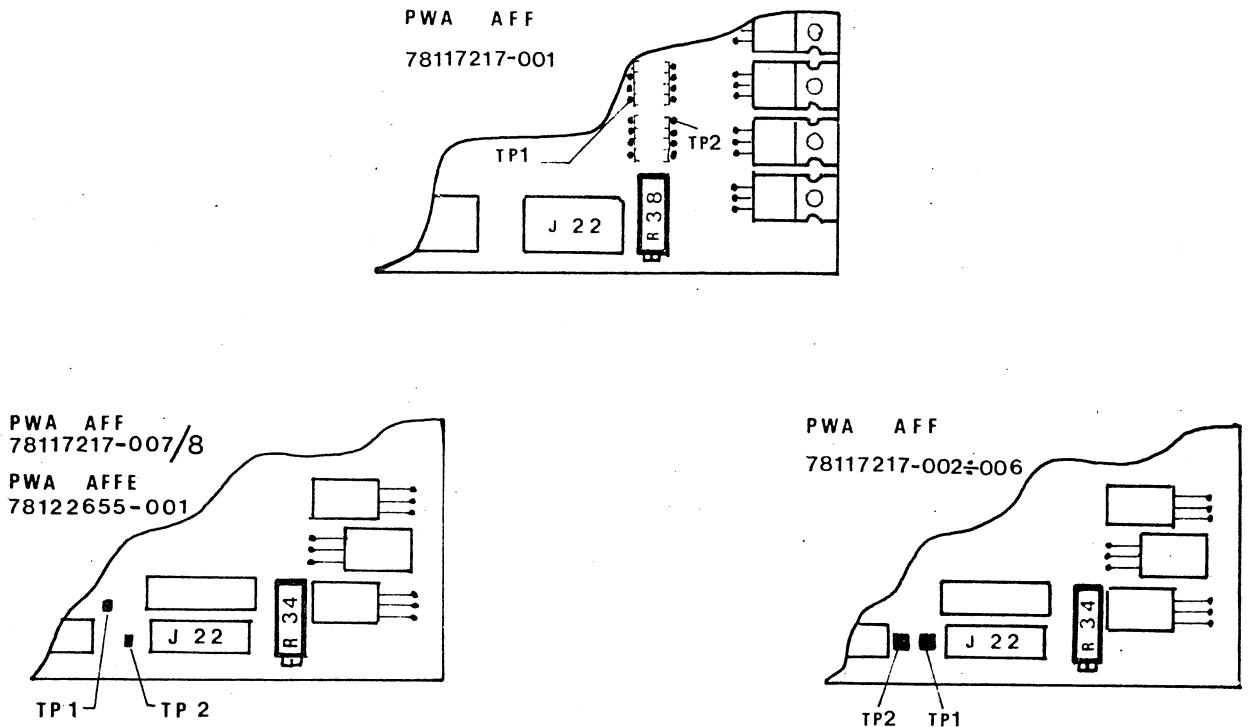


Fig. 8-21

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6 - Check-out

- . Power on the unit
- . Insert a paper sheet in the AFF guides
- . Check that when the sensor is obscured by the sheet of paper, the tile and the roller opening solenoids sequentially start to operate.

7 - Final Operations

- . Remount the cover previously removed

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8.2.1.11 AFF Assembly Adjustment (option)

1 - Needed Material

- Two adjustment gauges P/N 78126721-01 and P/N 78117657-003 (each unit with the AFF option must be supplied with these gauges)
- Personal tool kit

2 - Adjustment Purpose

- Set the AFF assembly and pertinent guides to a correct distance from the print roller

3 - Preliminary Operations

- None

4 - Adjustment Rules

- The distance between the carriage front bar and the roller movable row of the AFF option must be established by the two adjusting gauges P/N 78126721-001 for the 16 mm ϕ carriage bar and P/N 78117657-003 for the 12 mm ϕ carriage bar. The distance between the guides and the print roller must be of 0,5 mm (.02 inch).

5 - Execution Procedure

- Fit the two adjusting gauges between the carriage front bar and the roller movable row bar of the AFF (see fig. 8-22)

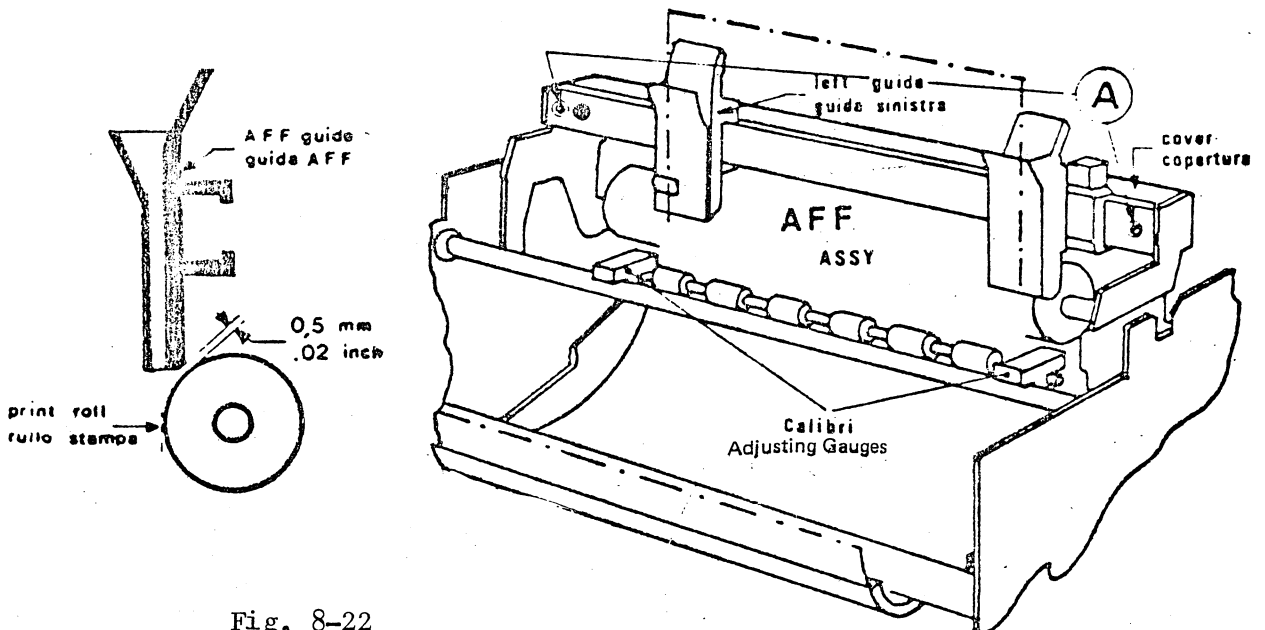


Fig. 8-22

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- . Fix the AFF to the base so that the two feeler gauges cannot move longitudinally.
 - . Act on screws A (Fig. 822.) to obtain a 0,5 mm (.02 inch) distance between the two single-sheet guides and the print roll.
- 6 - Check-out
- . Switch on the unit
 - . Insert a paper sheet in the AFF guides and check that the sheet is correctly fed between the rollers.
- 7 - Final Operations
- None.

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8.2.1.12. Printed Characters Vertical Alignment Adjustment

NOTE: Applicable only on two-direction units

- 1 - Needed Material
 - . Personal tool kit
- 2 - Purpose
 - . To obtain a correct vertical alignment of the printed characters with a two-direction carriage motion
- 3 - Preliminary Operations
 - . Power off the unit
 - . Remove the top covers (routine 8.2.2.1)
 - . Remove the operator's panel without disconnecting the cable
- 4 - Adjustment Rule
 - . The alignment gap between the characters printed from left to right and the characters printed from right to left must be equal to \emptyset (zero) mm with a max tolerance of ± 0.4 ($\pm .015$ inch)
- 5 - Execution
 - . Take off the PWA pack without disconnecting the cables
 - . Set to OFF the 4 character aligning switches (fig. 8.23, 8.24)

NOTE

For the ROSY 28 model, the three switches must be set to "ON"

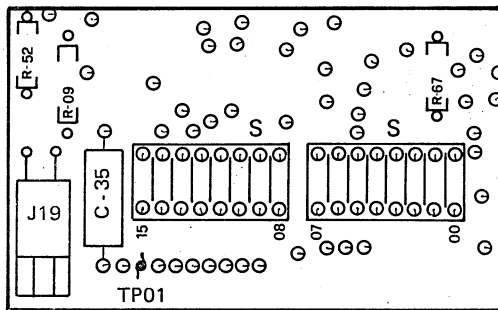
- . Set the unit to Power on
- . Execute the local test to print the H character
- . Check the alignment of the first and last 2 columns (fig. 8.24 a/b)
- . Act on the mistor support through very little shifts upwards or downwards (fig. 8.7) and readjust the mistor timing (procedure 8.2.1.3) till to reach the best vertical alignment on the first and last two columns (fig. 8.24 a : a = b).
- . Set to ON the proper character aligning switchers till to observe the best average alignment of the two-direction print on all columns (fig. 8.24 c).
- . For ROSY 28 set the switches to OFF

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NOTE

This customization can be obtained only through attempts by trying the binary combinations as shown in the tables specific to each model.

ROSY 28



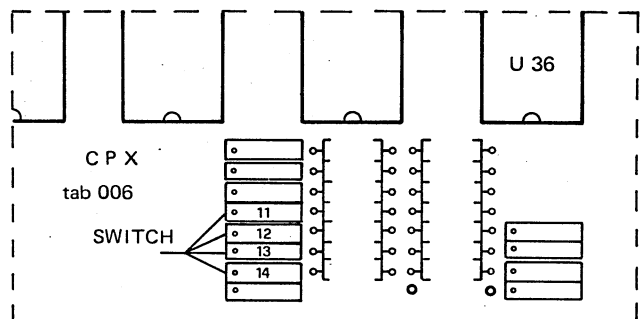
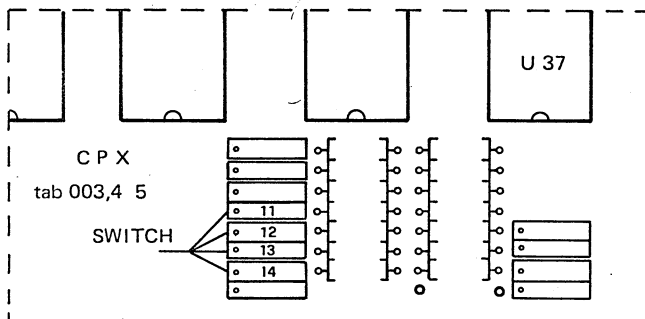
- CPU280 78114414-001-4
- CPU28B 78128366-001
- CPU28B 78124415-001-2

S-09	S-10	S-11	VALUE OF ADJUSTMENT
ON	ON	ON	0
OFF	ON	ON	1
ON	OFF	ON	2
OFF	OFF	ON	3
ON	ON	OFF	4
OFF	ON	OFF	5
ON	OFF	OFF	6
OFF	OFF	OFF	7

S-11	ON	"0"	2 ⁰ CHARACTERS ALIGNEMENT
	OFF	"1"	
S-12	ON	"0"	2 ¹ CHARACTERS ALIGNEMENT
	OFF	"1"	
S-13	ON	"0"	2 ² CHARACTERS ALIGNEMENT
	OFF	"1"	
S-14	ON	"0"	2 ³ CHARACTERS ALIGNEMENT
	OFF	"1"	

LINA 4X

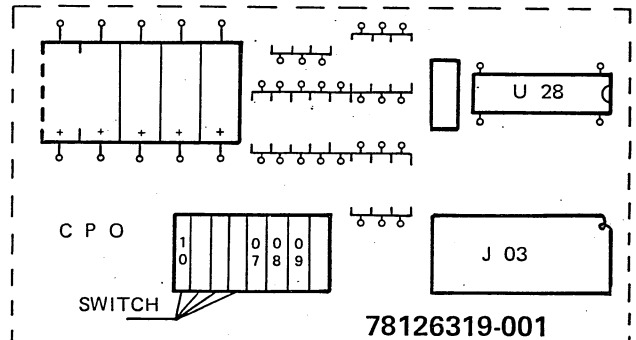
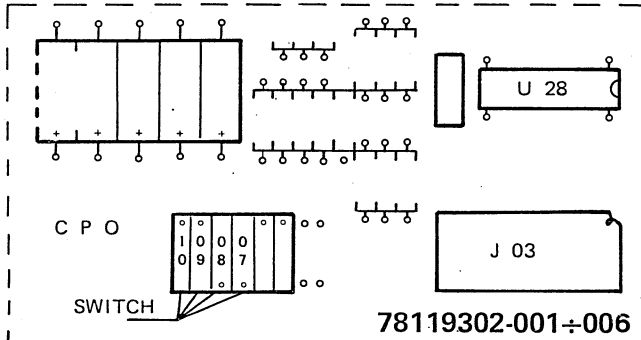
Fig. 8-23



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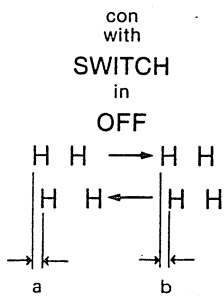
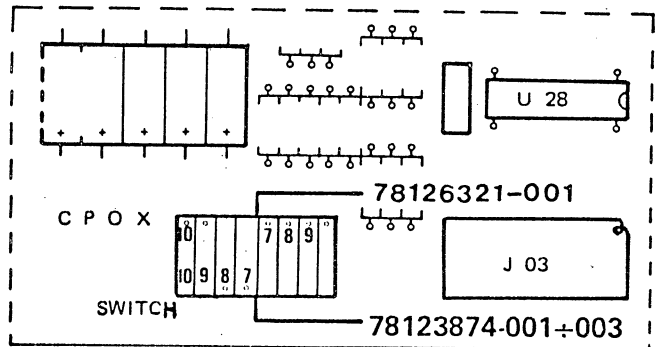
LINA 22

S-01 07	ON	"0"	2° CHARACTERS ALIGNMENT AND ADJUSTMENT
	OFF	"1"	
S-01 08	ON	"0"	2 ¹ CHARACTERS ALIGNMENT AND ADJUSTMENT
	OFF	"1"	
S-01 09	ON	"0"	2 ² CHARACTERS ALIGNMENT AND ADJUSTMENT
	OFF	"1"	
S-01 10	ON	"0"	2 ³ CHARACTERS ALIGNMENT AND ADJUSTMENT
	OFF	"1"	



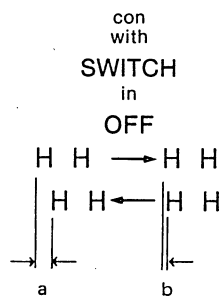
LINA 27-29

S-01 07	ON	"0"	2° CHARACTERS ALINEAMENT AND ADJUSTEMENT
	OFF	"1"	
S-01 08	ON	"0"	2 ¹ CHARACTERS ALINEAMENT AND ADJUSTEMENT
	OFF	"1"	
S-01 09	ON	"0"	2 ² CHARACTERS ALINEAMENT AND ADJUSTEMENT
	OFF	"1"	
S-01 10	ON	"0"	2 ³ CHARACTERS ALINEAMENT AND ADJUSTEMENT
	OFF	"1"	



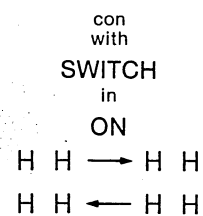
A

INCORRECT ALIGNMENT
Customize in "ON"
the character alignment
switches



B

INCORRECT ALIGNMENT
Readjust the mistor
to carriage motor
timing



C

CORRECT ALIGNMENT

Fig. 8-24

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6 - Check-out

- . None

7 - Final Operations

- . Remount the operator's panel
- . Remount all covers previously removed.

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8.2.1.13 Carriage Sliding Blocks Adjustment

1 - Needed Material

- . Personal tool kit

2 - Purpose

- . To ensure a correct carriage sliding on the rear bar

3 - Preliminary Operations

- . Power off the unit
- . Remove the top covers (routine 8.2.2.1)

4 - Adjustment Rule

- . The gap between the sliding blocks and the bar must be $0,05 \text{ mm} \pm 0,025$ ($.002 \text{ inch} \pm .001$)

5 - Execution

- . Loosen the set screw on the eccentric shaft (fig. 8.25)
- . Interpose a feeler gauge of $0,05 \text{ mm}$ ($.002 \text{ inch}$) between the top sliding block and the bar.
- . Act on the eccentric shaft till the required condition is obtained (fig. 8.25)
- . Tighten the eccentric shaft set screw.

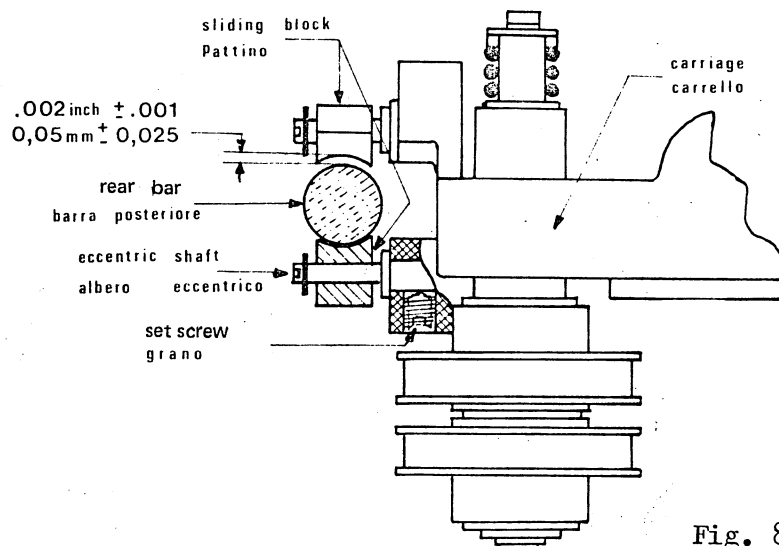


Fig. 8-25

6 - Check-out

- . Check that the carriage slides correctly along the bar

7 - Final Operations

- . Remount all covers previously removed.

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8.2.1.14 Pass-book Roller Opening Solenoid Adjustment

1 - Needed Material

- . Personal tool kit.

2 - Purpose

- . To obtain a correct roller opening

3 - Preliminary Operations

- . Power off the unit
- . Remove the top covers (routine 8.2.2.1)

4 - Adjustment Rule

- . In the idle condition, the gap between the lever and the solenoid plastic head must be of $0,1 \text{ mm} \pm 0,05$ ($.004 \text{ inch} \pm .002$)

5 - Execution

- . Loosen the two adjustment nuts (fig. 8.26)
- . Act on the plastic head till the required condition is obtained

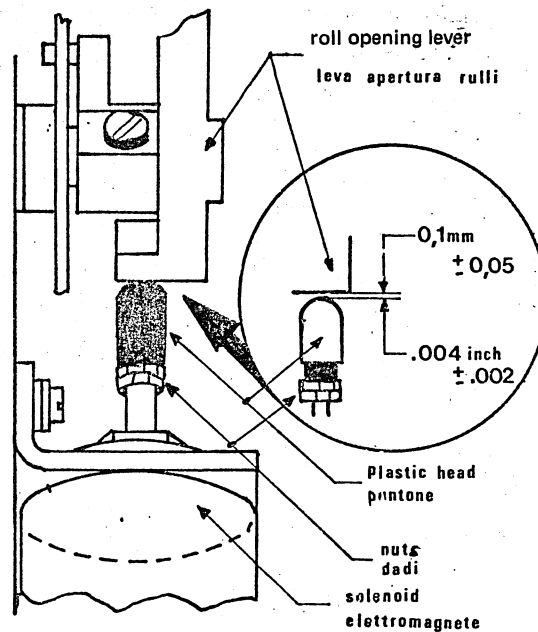


Fig. 8-26

6 - Check-out

- . Power on the unit
- . Insert a book, perform the loading phase and check that rollers open correctly

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7 - Final Operations

- Power off the unit
- Remount all covers previously removed.

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8.2.1.15 Pass-book Tile Solenoid Adjustment

- 1 - Needed Material
 - . Personal tool kit
- 2 - Adjustment Purpose
 - . To obtain a correct tile setting
- 3 - Preliminary Operations
 - . Power off the unit
- 4 - Adjustment Rule
 - . With the solenoid in operating conditions, the tile must be parallel to the book feeding rollers
- 5 - Execution
 - . Loosen the connecting rod lock-nut (fig. 8.27)
 - . Manually simulate the solenoid operation and rotate the shaft till the required condition is obtained (fig. 8.27)
 - . Tighten the connecting rod lock-nut after the adjustment has been performed.

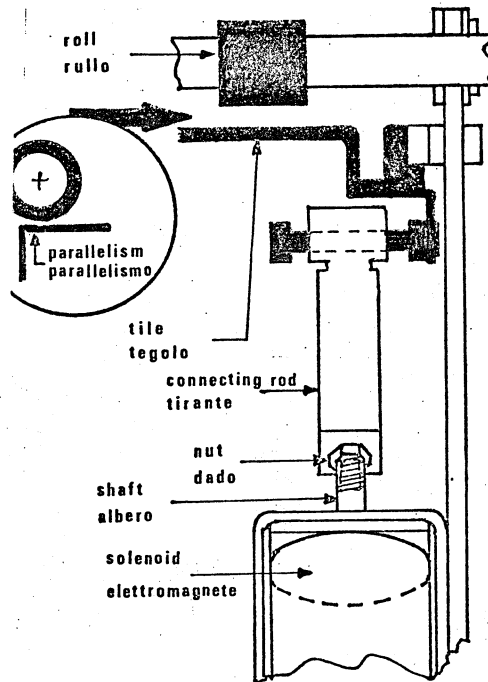


Fig. 8-27

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6 - Check-out

- . Check that with the solenoid energized, the tile guarantees a correct book setting.
- . Power on the unit

7 - Final Operations

- . None.

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8.2.1.16 Pass-Book Assembly Adjustment

1 - Needle Material

- Personal Tools Kit.
- Adjustment gauge P/N 78129361-001 for 16 mm diameter bars.
- Adjusting gauge P/N 78129362-001 for 12 mm diameter bars.

2 - Purpose

- Set the pass-book assembly and the pertinent guide to a correct distance from the print roller.
- Obtain the vertical alignment between the guide and the feed rollers of the Pass-Book

3 - Preliminary Operations

- None

4 - Adjustment Rule

C-D-E-F dimension must have the values shown in Fig. 8.28

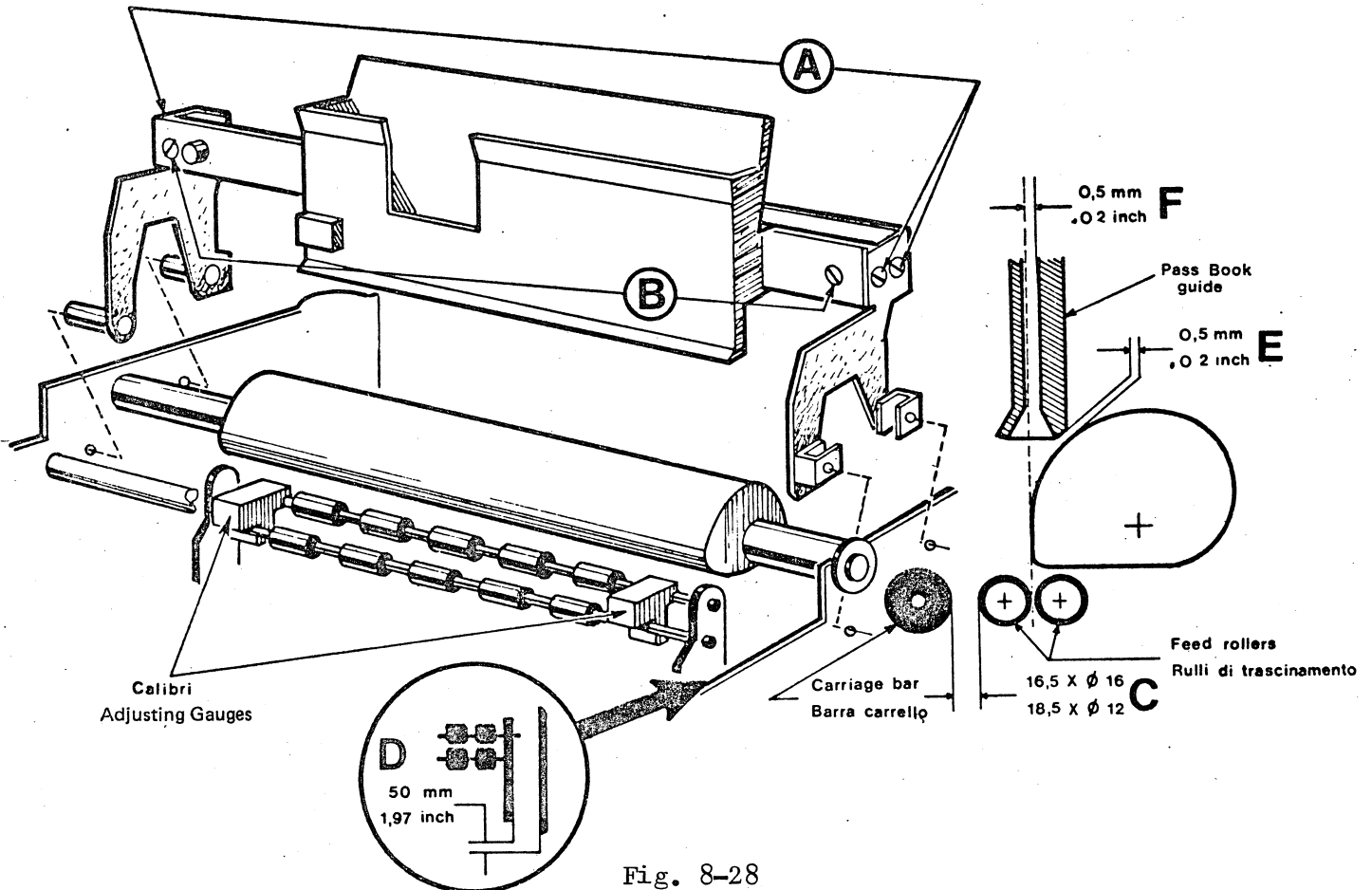


Fig. 8-28

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5 - Execution Procedure

- . Act on the "B" screws to obtain the parallelism between the guide and the print roller (fig. 8.28)
- . Act on the "A" screws to obtain "E" and "F" values referred to the print roller.
- . Mount 2 adjusting gauges (according to the bar diameter) between the carriage sliding front bar and the movable bar of the passbook rollers (fig. 8.28)
- . Lock the pass-book mechanism to the base so that the two adjusting gauges have no play in the longitudinal direction.

6 - Check-out

- . Power ON the unit
- . Insert a pass-book in the guides and check its correct loading
- . Check that once loaded, the pass-book is not deformed

7 - Final Operations

- . None

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8.2.1.17 Pass-book Guide Adjustment

1 - Needed Material

- Personal tool kit

2 - Purpose

- To obtain a correct setting of the character with respect to the book edge

3 - Preliminary Operations

- None

4 - Adjustment Rule

- The gap between the beginning of a complete character (E or H) and the left-hand edge of the pass-book guide must be $5 \text{ mm} \pm 0,5$ ($.2 \text{ inch} \pm .02$)

NOTE: For the 80 column MINA refer to column 1
For the 132 column MINA refer to column 51

5 - Execution

- Loosen the fixing screws of the Pass-book guide
- Print the graphic set through the local test and move the guide horizontally till the required condition is obtained (fig. 8.29)
- Tighten the guide fixing screws

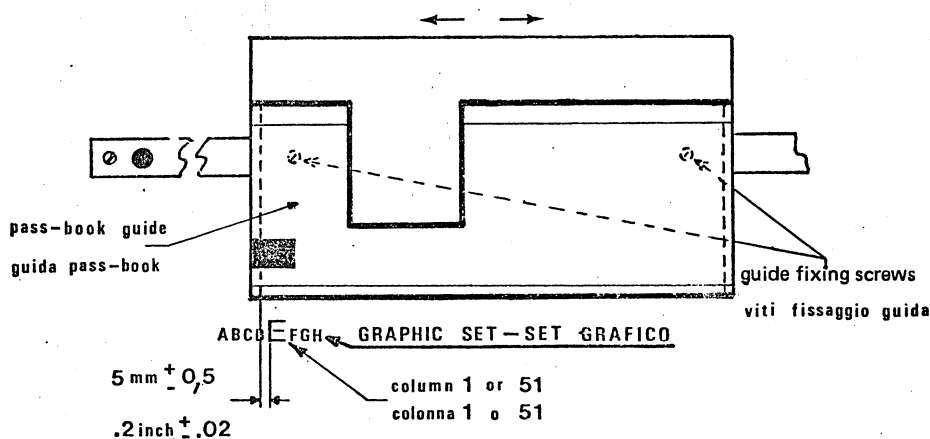


Fig. 8-29

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6 - Check-out
• None

7 - Final Operations
• None

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8.2.1.18 Pass-book Photosensor Adjustment

- 1 - Needed Material
 - . Personal tool kit
- 2 - Purpose
 - . To obtain a correct setting of the first print line of the book upper edge
- 3 - Preliminary Operations
 - . None
- 4 - Adjustment Rule
 - . The gap between the character base and the book upper edge must be of 34 mm (1.34 inch)
- 5 - Execution
 - . Load a book in the pass-book
 - . Print a graphic set line through the local test
 - . Check the adjustment rule
 - . If necessary, move the photosensor support upward or downward (fig. 8.30)

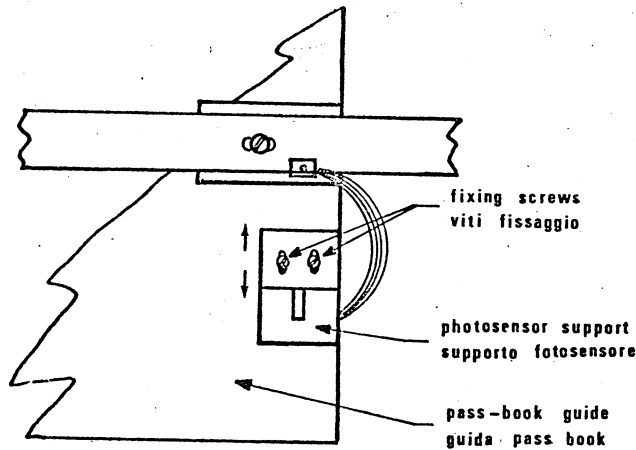


Fig. 8-30

- 6 - Check-out
 - . None
- 7 - Final Operations
 - . None

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8.2.2 Mountings and Removals

8.2.2.1 Covers Removal

Removal Procedure

- 1 - Needed Material
 - . Personal F.E. tool kit.
- 2 - Preliminary Operations
 - . Power off the printer
- 3 - Execution Procedure

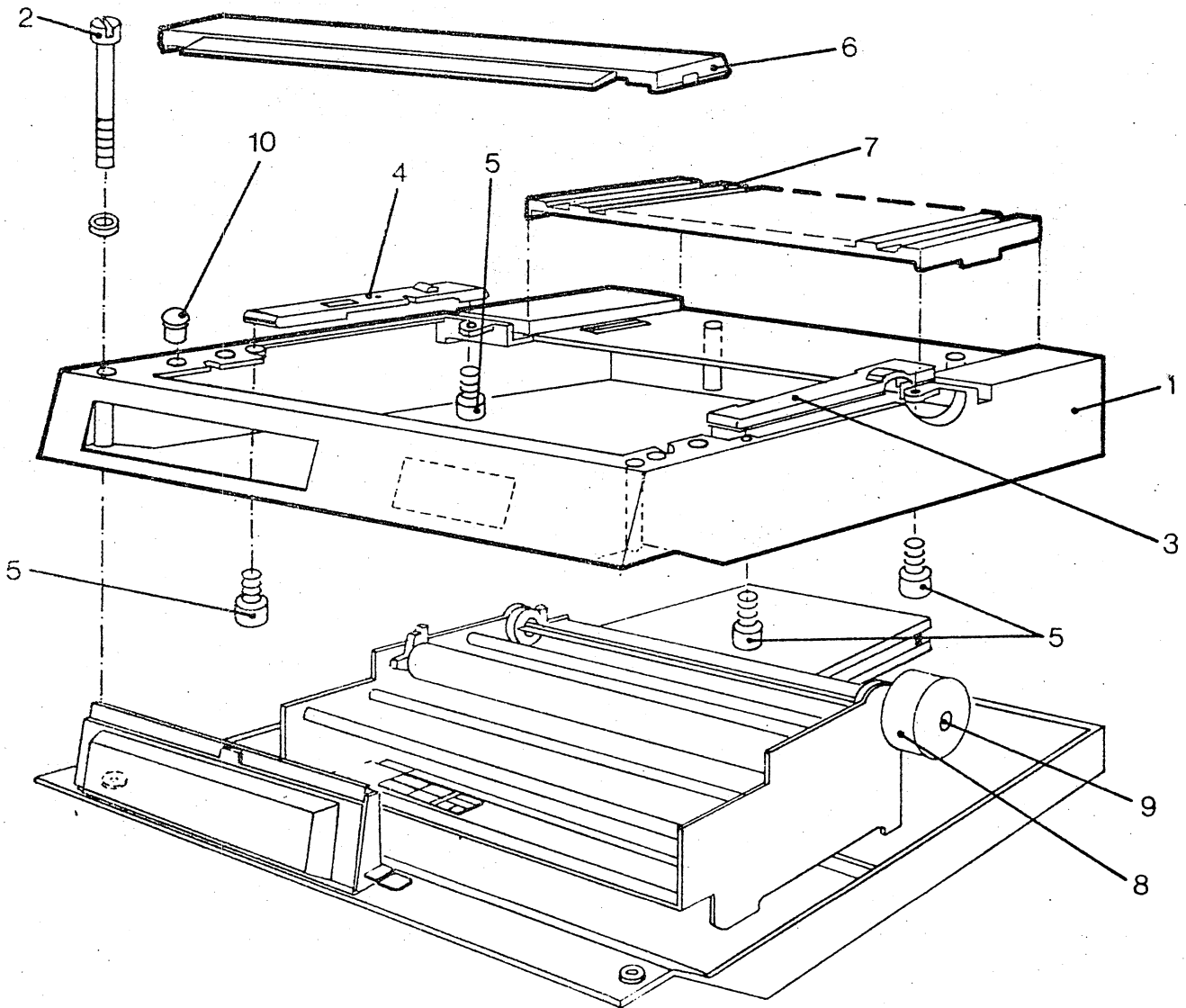


Fig. 8-31

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- . The SPPL covers are made-up by plastic modular elements as shown in fig. 8.31
- . The front cover (item 6) is held only by magnets (item 10). It must be removed to gain access to the print head and to the carriage-clutch-mistor motor assemblies.
- . The paper chute (item 7) is pressure fitted and must be removed during paper load operations.
- . The top cover (item 1) is fixed by 4 screws (item 2) accessible from the upper part of the unit. Before extracting this cover, remove the paper feeding knob (item 8) which is kept in place 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

Mounting Procedure

Perform the removal operations in the reverse order.

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8.2.2.2 Carriage Roller Assembly RemovalMounting Procedure**NOTE**

The carriage comprises 3 roller assemblies, one on the front side and two on the rear side (see fig. 8.32). The front assembly can be directly replaced previous the removal of the top cover, because it is easily accessible from the front side of the unit. The following procedure must be applied for the two rear assemblies.

1 -- Needed Material

- . Personal tool kit

2 -- Preliminary Operations

- . Power OFF the printer
- . Remove the upper cover (item 1 fig. 8.31)

3 -- Execution

- . Remove the inked ribbon cartridge
- . Loosen the belt tensioning nut in the right hand pulley support (Fig. 8.32 c/d)
- . Unhook the two tension springs
- . Extract the shaft on which the springs are fixed by removing one of the two spring rings
- . Remove the pulley
- . Remove the allen screw which locks the internal bar to the right side (see fig. 8.32 d)
- . Remove the right and left spring rings fitted on the bar
- . Make the bar slide leftwards and extract it from the carriage rollers. At this point the carriage assembly can be turned over to gain access to its lower part
- . Remove the roller assembly to be replaced (8.32 a/b)

4 -- Final Operations

- . Scrap the faulty assembly

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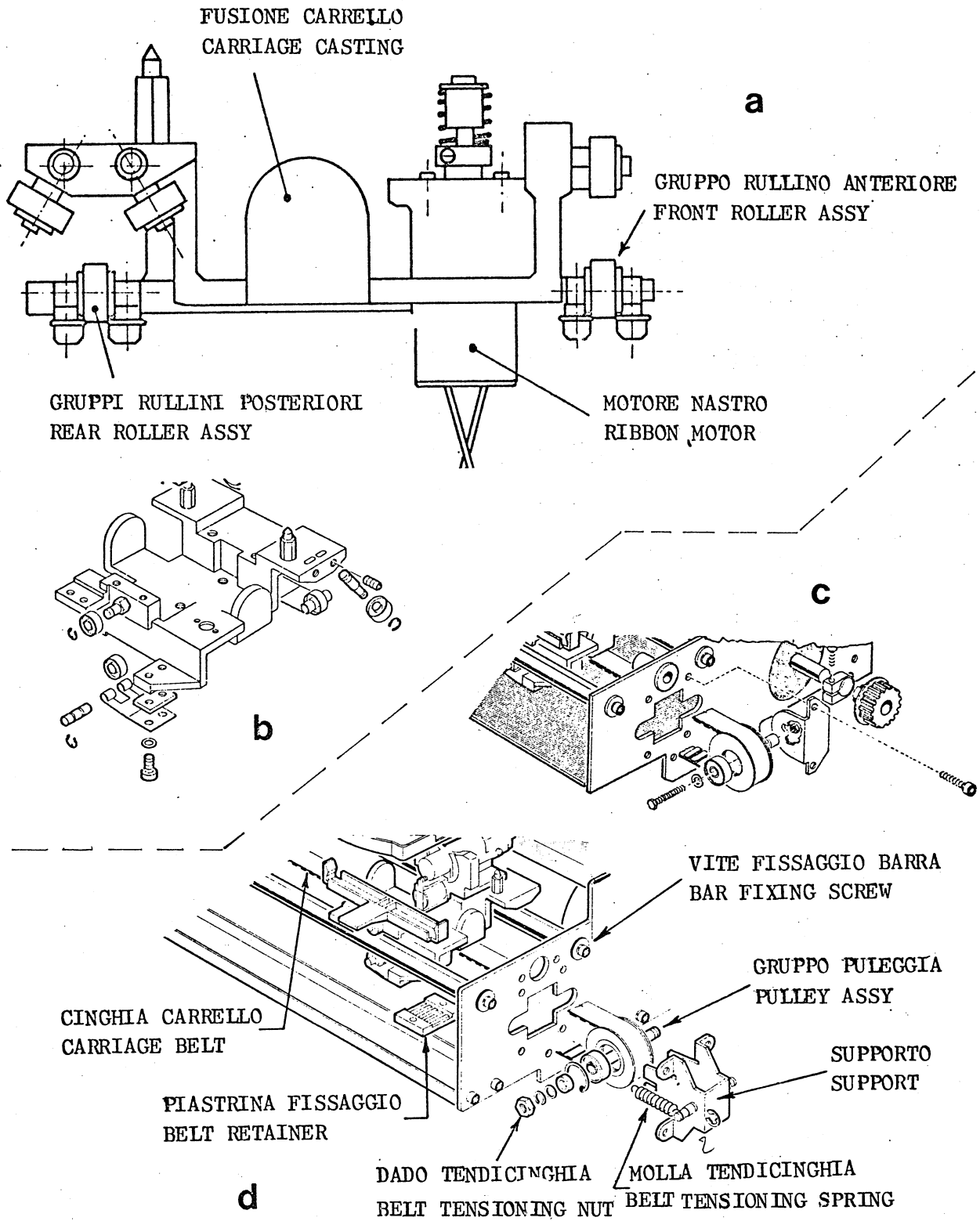


Fig. 8-32

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Mounting Procedure

- 1 - Needed Material
 - . Personal tool kit

- 2 - Preliminary Operations
 - . Power OFF the printer

- 3 - Execution
 - . Mount the new roller assembly
 - . Fit the internal bar by inserting it between the carriage rollers and fixing it by means of the screw and the spring rings previously withheld.
 - . Place the belt on the right hand pulley, then insert this pulley in its support
 - . Fit the shaft and the two belt tensioning springs
 - . Lock the pulley retaining nut without varying the position which the belt tensioning springs have made it assume

- 4 - Final Operations
 - . Remount the covers previously removed (items 1, fig. 8.31)

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8.2.2.3 Carriage Belt Replacement

Removal

1 - Needed Material

- . Personal tool kit

2 - Preliminary Operations

- . Power-off the printer
- . Remove the upper cover (item 1, Fig. 8.31)
- . Remove the inked ribbon cartridge and the paper

3 - Execution

- . Loosen the belt tensioning nut (see fig. 8.33)
- . Unhook the two springs
- . Extract the shaft on which the two springs are fixed by removing one of the spring rings
- . Extract the pulley assembly from its support and then set free the right side of the belt
- . Remove the fixing plate fitted under the print head and remove the belt

4 - Final Operations

- . None

Mounting Procedure

1 - Needed Material

- . Personal F.E. tool kit

2 - Preliminary Operations

- . Power off the printer

3 - Execution

- . Mount the belt fixing plate located under the print head (see fig. 8.33)
- . Place the belt on the right and left pulleys
- . Insert the right-hand pulley assembly in the support slots and fit the shaft. Hook the two belt tensioning springs which automatically establish the correct tension of the belt
- . Fix the belt tensioning nut without modifying the pulley position determined by the spring tension

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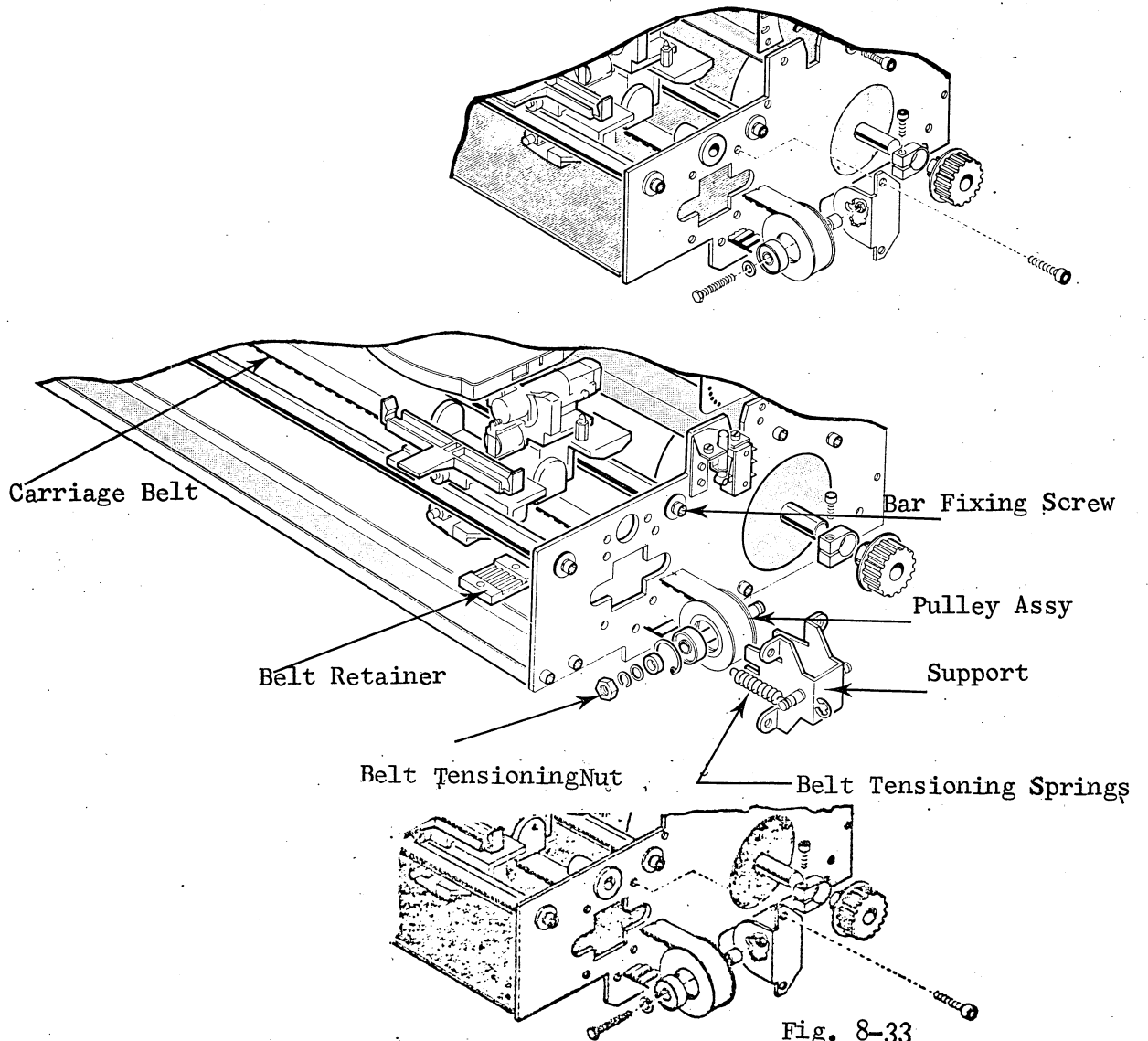


Fig. 8-33

4 - Final Operations

- Mount the operator's panel
- Perform adjustment routine 8.2.1.4
- Remount all covers previously removed

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8.2.2.4 Timing Toothed Disc Replacement

Removal

1 - Needed Material

- . Personal F.E. tool kit

2 - Preliminary Operations

- . Power off the unit
- . Remove the upper cover (item 1 fig. 8.28)
- . Remove the operator's panel

3 - Execution

- . Loosen the belt tensioning nut (fig. 8.33)
- . Remove the belt from the pulley
- . Loosen the fixing screw on the front and back collars of the timing disc (fig. 8.34)
- . Take off the pulley shaft and extract the timing disk. Be careful not to scratch the mistor.

4 - Final Operations

- . With hold the joint collars.

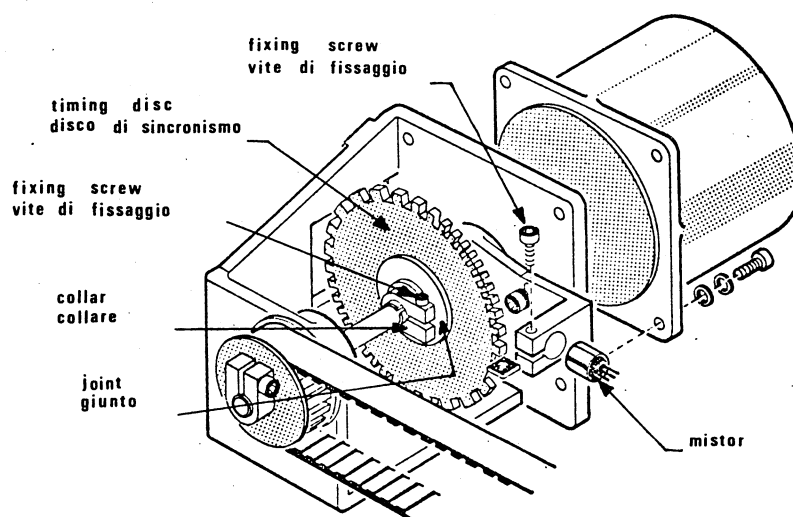


Fig. 8-34

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Mounting Procedure

1 - Needed Material

- . Personal tool kit

2 - Preliminary Operations

- . Fit the previously with held collars on the tinning disc joint

3 - Execution

- . Fit the joint on the step motor shaft paying much attention not to scratch the motor
- . Insert the pulley shaft
- . Tighten but do not lock the collar screws
- . Set the belt on the pulley
- . Lock the belt tensioning nut

4 - Final Operations

- . Mount the operator's panel
- . Perform routines
 - 8.2.1.1.
 - 8.2.1.2
 - 8.2.1.3
 - 8.2.1.4
- . Mount all covers previously removed

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8.2.2.5 AFF or Pass-Book Optic Sensor Replacement

Removal

1 - Needed Material

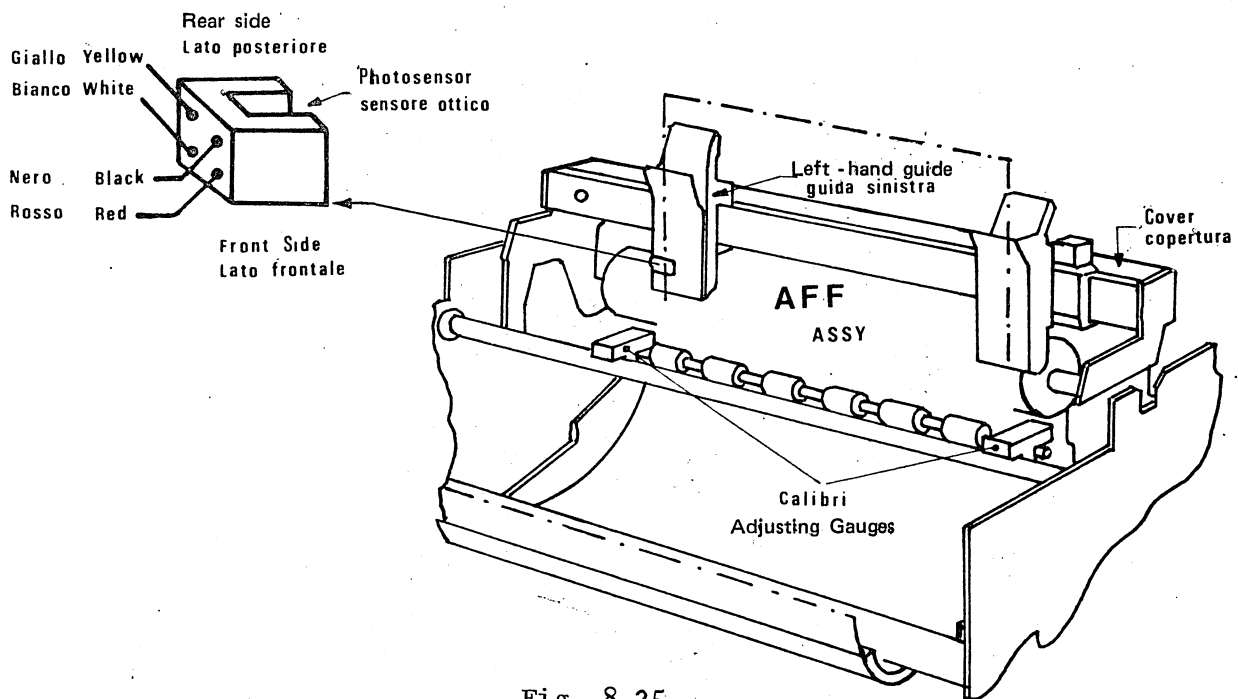
- . None

2 - Preliminary Operations

- . Power off the printer

3 - Execution Procedure

- . Extract the left-hand 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 slide. The cover is pressure fitted on the guide
- . Disconnect the sensor assembly.



Mounting Procedure

Fig. 8-35

- . Perform in the reverse order all operations described in the removal procedure
- . Pay much attention during insertion of the sensor (ref. to fig. 8.35)
- . Perform routine 8.2.1.10

4 - Final Operations

- . Scrap the faulty sensor

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8.2.2.6 AFF Option Item Replacement (Automatic Front Feed)

- 1 - Needed Material
 - . Personal F.E. tools kit
- 2 - Preliminary Operations
 - . Power OFF the printer

- 3 - Execution Procedure

The AFF group item replacement is very easy to execute therefore it is useless to provide a procedure for each single item (motor, solenoids, 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 replacements mentioned above.

AFF Removal

- . Loosen the belt tensioning nut (See fig. 8.33)
- . Unhook the two springs
- . Extract one of the spring rings
- . Extract the pulley group from the support and move the belt and the carriage to the left to clear the AFF front area.
- . Remove the two screws and the two spring rings which lock the bar (the one nearer the AFF) on which the head carriage slides.
- . Carefully remove the bar from the carriage rollers and extract it completely
- . Mark with a point the actual position of the AFF on the base in order to be able to remount it in the same position
- . Remove the three brackets fixing the AFF group to the base steel sheet
- . Seize the AFF upper group, turn it over forward and extract it from the unit.

AFF Mounting

Mount the parts by following the removal operations in the reverse order. The AFF assembly must be transversally placed according to the reference previously marked on the base steel sheet.

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4 - Final Operations

- . In case the form reference edge solenoid has been replaced, perform adjustment routine 8.2.1.9
- . Perform adjustment routine 8.2.1.11 (AFF Assembly Adjustment) to correctly reposition the AFF assembly.

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