

Technical Manual

Scanner BUIC 3XX



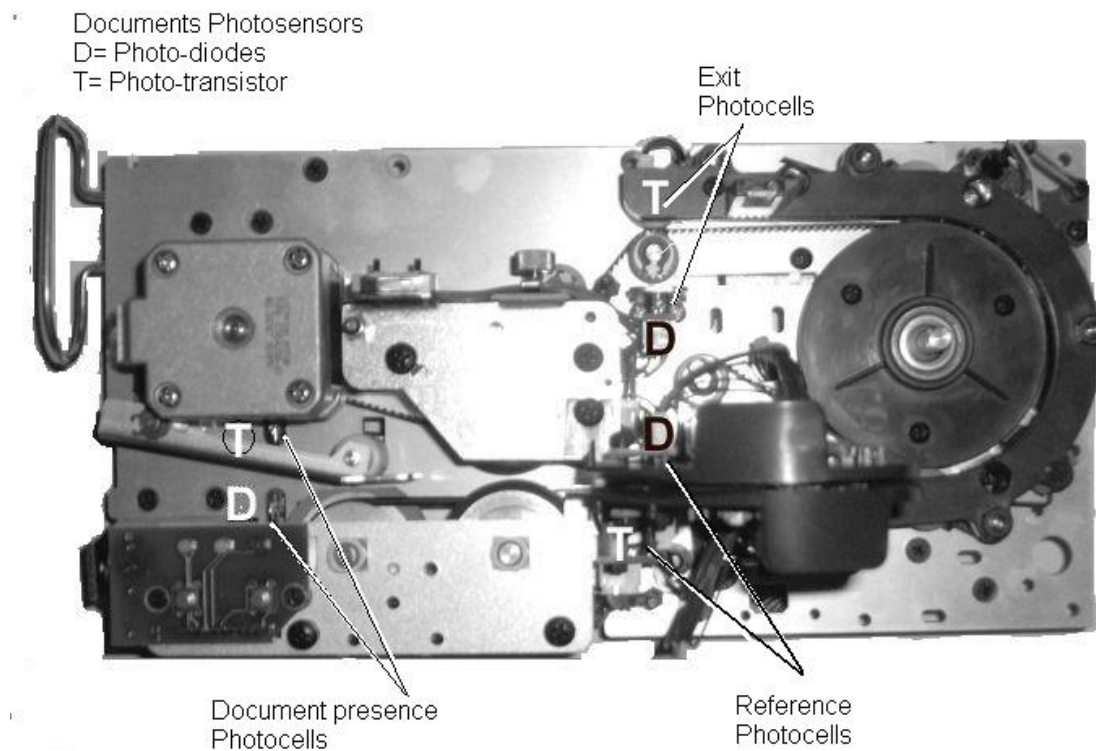
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1.0 FUNCTIONING

1.1 PHOTOCELLS PRESENCE OF DOCUMENTS

The presence of documents in the feeder entrance is detected by two photocells placed 1 mm from the base; in this way, when a document is not completely laid on the base, the two photocells cannot detect it. This operation is to avoid document skewing, for a correct recognition of the characters.



1.2 ACQUISITION START CONTROL

When the unit receives by Host the command to start the image acquisition, the following operations will be performed:

Checking that there are any pending errors.

Checking that the upper central cover is closed (micro safety switch); if it is open, the message **Cover open** will be displayed.

Activation of the step motor at the acquisition speed

- B38X: Activation of the electromagnet feeder and rotation of the feeling roller
- B37X: Activation of the feeding paper electromagnet
- B38X: The first document placed on the feeder entrance will go through the fanning rollers that feed one document at a time. If more than one document is fed at the same time, you must adjust the distance between the fanning rollers. (Refer to the Section "Adjustment").
- B37X: the feeder lever presses against the document, which enters in the scanner

1.3 PHOTOCCELL THICKNESS CONTROL

The leading edge of the document passes in front of the document thickness sensor; if two documents enter at the same time, or in case of a thick document, the motor will stop and the error **Double Feed Detected** will be displayed. For the adjustment, please refer to the manual: Buic Scanner USB Test program, section 3 Parameters **and Peripherals, Double Feed Detection**

1.4 SYNCHRONIZATION PHOTOCCELL

If the document doesn't get in front of the photocell within 1.5 seconds from the acquisition start control, the Error "**Paper jam (CIS)**" will be displayed.

When the document leading edge arrives in front of the reference photocell, the document will be processed according to the selected parameters.

1.5 EXIT PHOTOCCELL

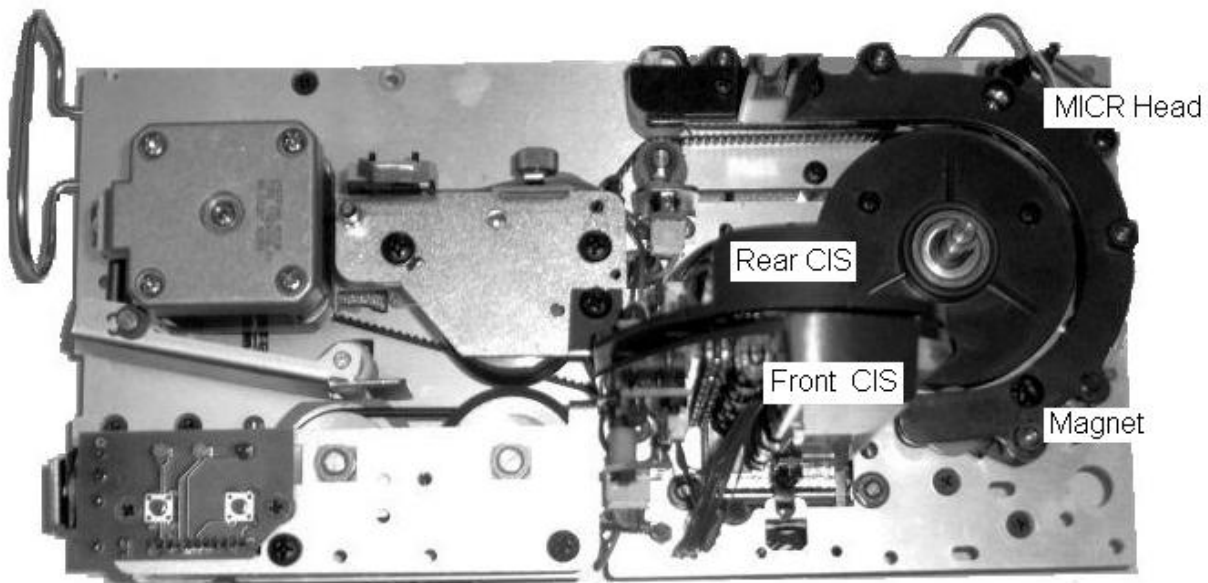
The motor must stop only after that the document will be passed in front of the exit photocell and come out of the unit, other ways the will be displayed the Error Path not completed "**Paper jam (output bin)**".

1.6 ACQUISITION OF THE DOCUMENT

The document reaches in front of the rear CIS and after that, in front of the CIS; then it starts the acquisition of the document according to the parameters selected in the configuration file (100 or 200 DPI, grey levels or colours).

The images are transferred from the scanner to the Host in a raw- file format that is according to the acquisition type and the resolution. After that the PC converts these images in the format previously selected in the configuration file.

The document will pass in front of the magnetic read head, if the reader is functioning, then it starts the acquisition of the magnetic characters (CMC7 o E13B) in the code-line, according to the parameters selected in the configuration file.



1.7 MAGNETIC READING DEVICE – FUNCTIONS

The device allows you to recognize the characters printed with magnetic ink. It is possible to read CMC7 and E13B characters.

The recognition is made by the numeric processing of the signal produced by the magnetic head.

The read head registers the variations of magnetic flow, caused by the passage of the characters in front of its magnetic gap. The document to read will pass next to the read head at the speed of 1 meter per second. The magnetic ink is polarized during the passage by a permanent magnet placed immediately before the read head. The magnetic ink is polarized during the passage by a permanent magnet placed immediately before the read head. The signal produced is amplified, filtered and converted in a numeric format in order to be processed.

The document passes in front of the magnetic head from right to left; therefore, the first character read is the first one to the right of the document (looking at it frontally).

The beginning and the end of the characters acquisition are synchronised with the passage of the document by the Reference Photocell.

When the document comes out from the magnetic head, the processing and the recognition of the characters will start

The characters of the code-line are sent to the PC through the USB interface with the character C at the beginning of the string. Rejected characters are marked with this symbol: "@".

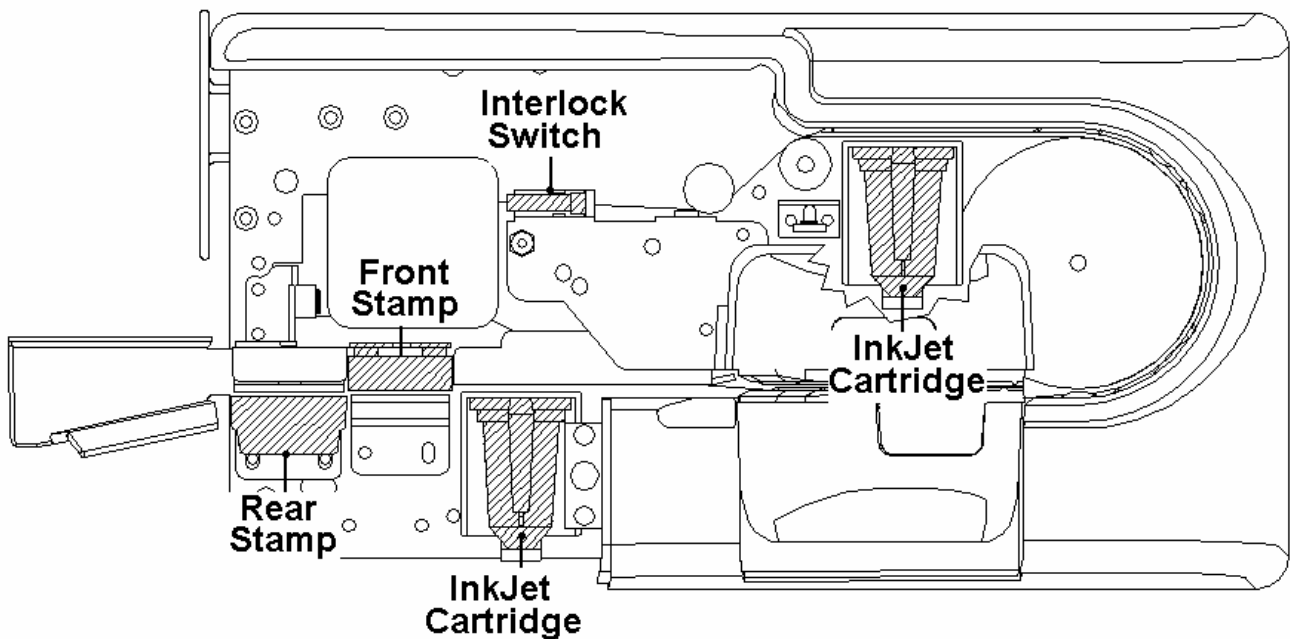
2.0 OPTIONALS

2.1 INKJET

When the inkjet is enabled, on the front or back of the document the scanner will print a string. The operator can insert the text and regulate the beginning of the print. See manual USB Buic Scanner USB Test program

2.2 Endorser (only for model B37X)

When the endorser is enabled, the solenoid is actuated and the cylinder rotates and prints at the front side of the document.



3.0 ADJUSTMENTS (MECCANIC SECTION)

3.1 DOCUMENTS FANNING ROLLERS

NOTA: please, set this adjustment using the documents that will be used by the Customer.

Description:

The automatic feeder must feed the scanner with only one document at a time. Check the adjustment inserting manually a document on the feeding guide, between the shoulder and the pressure block, pushing it into the scanner; the document must slide between the separation rollers with a slight friction. Repeat the same operation with two documents at the same time; they should not pass between the rollers.

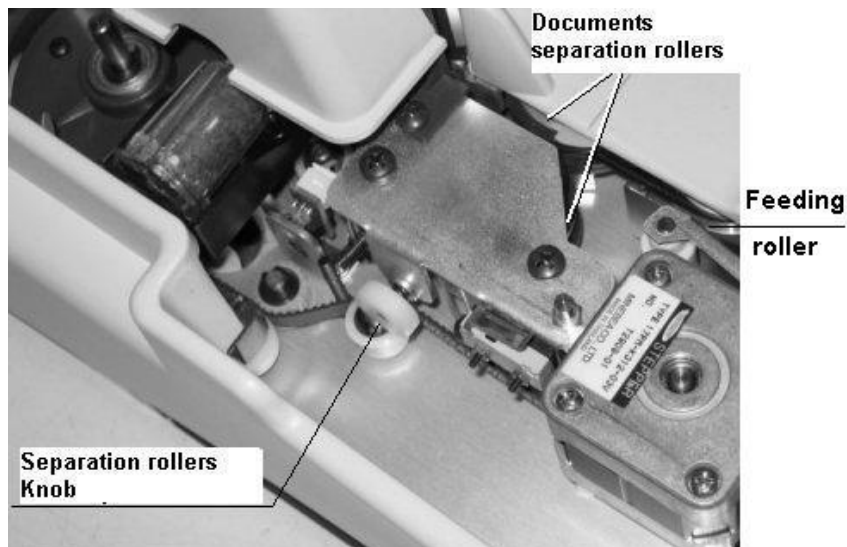
How to adjust

Lift up the central cover. Screw or unscrew the knob to adjust the separation rollers, as described here below:

- One document does not enter: loosen the adjusting screw to increase the distance between the separation rollers

- Two documents enter at the same time: tighten the adjusting screw to decrease the gap between the separation rollers.

Re-insert the central cover; check the good functioning of the scanner using the original documents.



3.2 INTRODUCTION ROLL DOCUMENTS

NOTE:

- The introduction roller must be positioned with the flat side towards the outside, so that it will not interfere when you put through the documents
- The adjustment is usually set in the factory, if for some reasons, it should move, adjust as follows:

Adjustment:

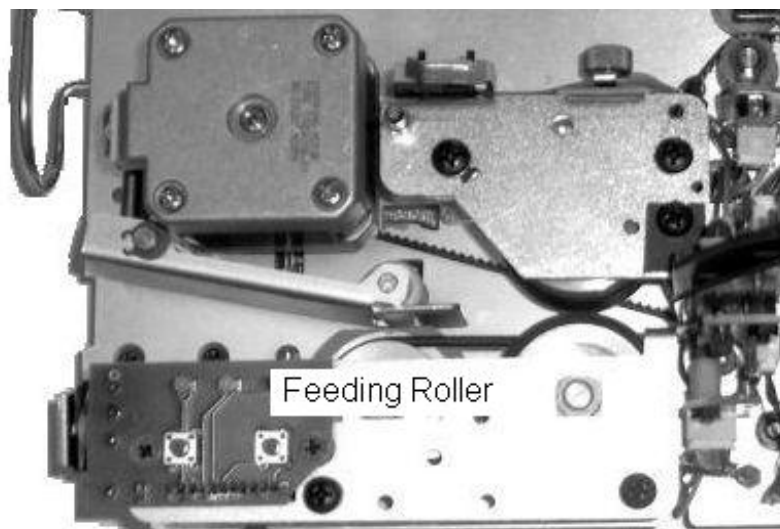
Remove the front and rear panel.

Rotate the introduction roll anti-clock-wise until you can see the hole for the grain in the cave for the O-Ring.

Unscrew the socket-head screw grain and friction it.

Rotate the introduction roll clockwise until the flat part is positioned in front of the puck. Rotate it then, anti-clockwise and screw the socket-head screw

Check, and if necessary repeat the operation.



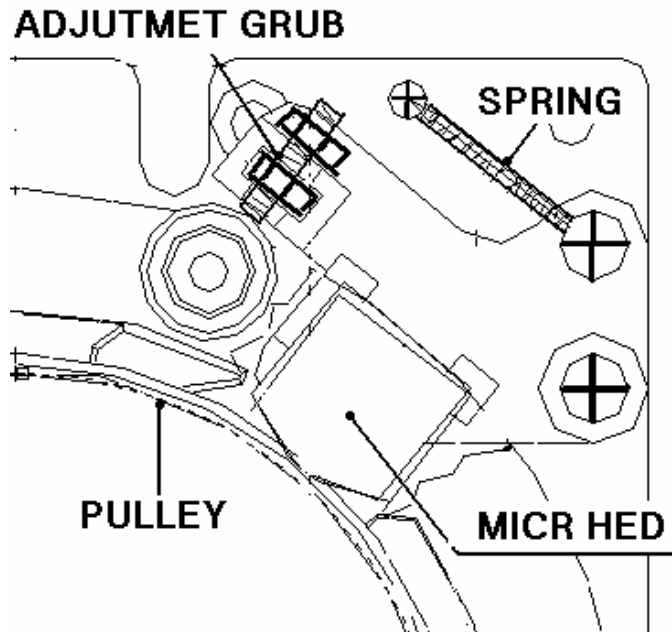
3.3 MAGNETIC CHARACTERS READER

Description

In order to get the highest percentage of magnetic characters recognition the document, during the advancement, must touch the permanent magnet and the reading head.

- The magnet must be positioned at about 0,05mm from the pulley
- The read head must be adjust as close as possible to the pulley without touching it and press against the document.

Please, make sure that the magnetic heads are always clean.



To Adjust

Remove the central cover.

Clean the read head MICR.

Connect the scanner to the PC and check the recognition quality feeding the documents previously rejected. If you still have a remarkable percentage of rejected characters follows the below instructions:

Check that the MICR read head is as close as possible to the pulley, without touching it. Other ways, modify the position of the screw, when found the right one, block it by the two stop nuts M3.

Note: to obtain a good percentage of recognition of the magnetic characters, the MICR head must press against the document.

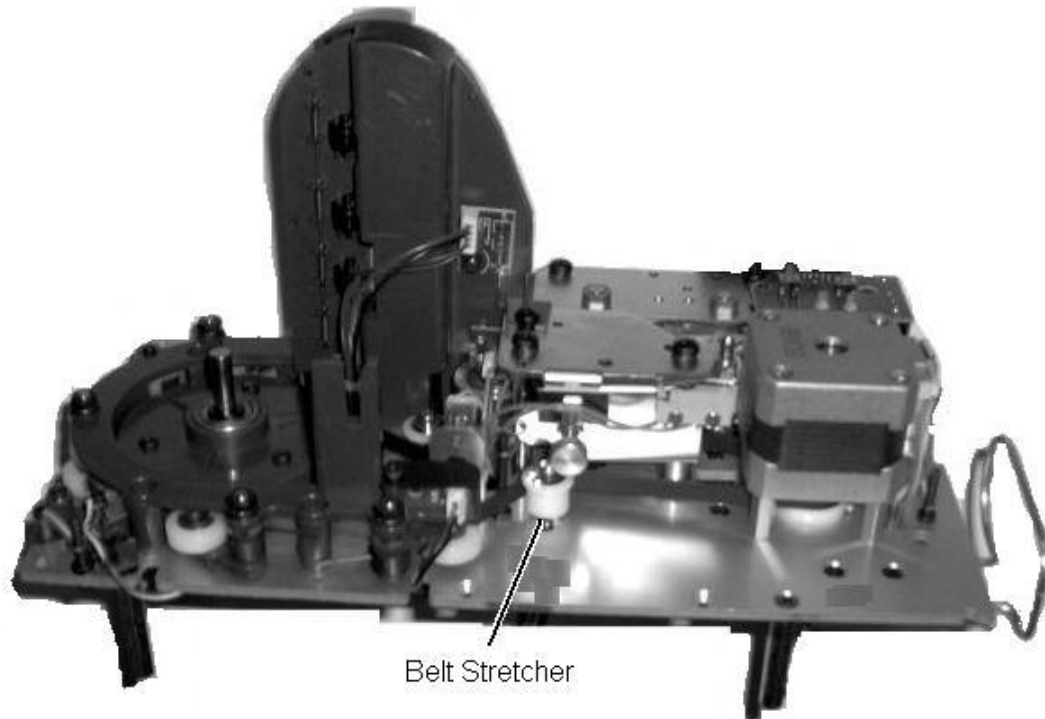
Check again the level of the magnetic signal by using the Test program and if necessary adjust, by the R49 potentiometer; move it anti-clock ways to increase; clock-ways to decrease. See Buic Scanner USB manual, Test program.

Check again the recognition quality and re-adjust as required.

3.4 TENSION OF MOTOR TOOTHED BELT

Description

The tension of this belt mustn't be too tight, because it could brake and stop the step motor when utilised at the maximum speed. At the same time, the belt mustn't be too loose; otherwise the document is not transported smoothly and could cause a poor quality of the acquired image and a rejection of magnetic characters.



NOTE: The tension of this belt is adjusted at the factory, if not required; do not change the position of the belt stretcher.

If you need to change the belt with a new one, which could be too tight or too loose, it must be regulated.

To adjust:

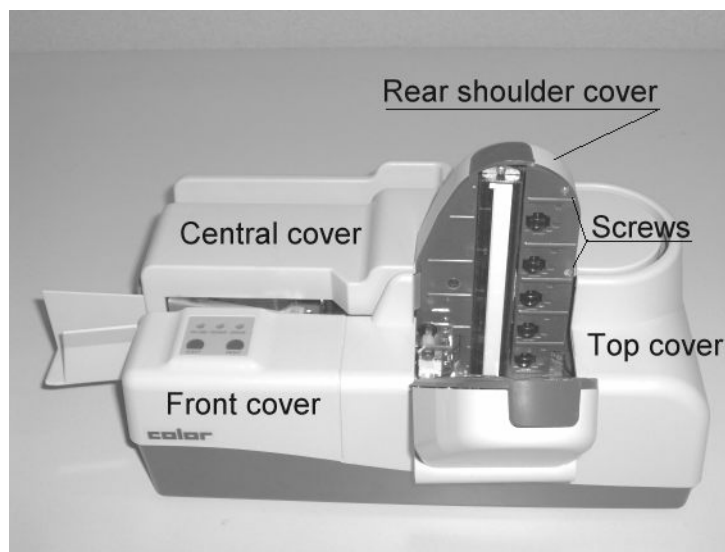
Remove the rear and front covers.

Loosen the belt stretcher and move it slowly to Increase/decrease the tension of the belt until you find the best one. Block then the nut.

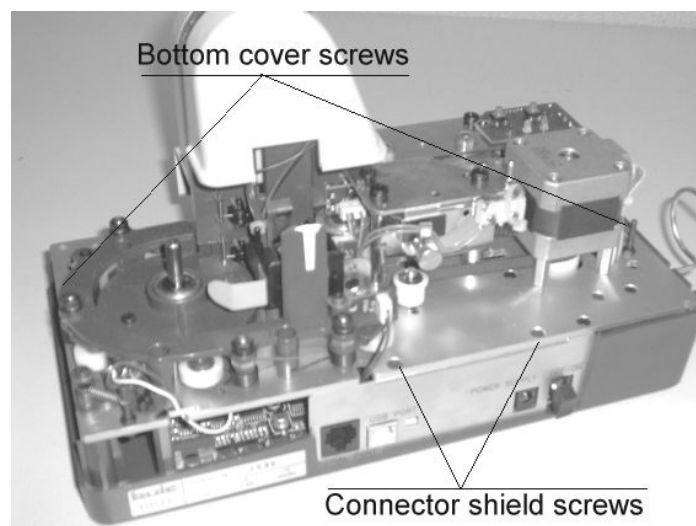
4.0 REMOVING OPERATIONS (MECCANIC SECTION)

4.1 COVERS REMOVING

- Central cover: just lift the cover (no screws)
Note: under the central cover there is an interlock switch that disables the unit when you remove the cover.
- Front cover: is tight up with one screw located at the bottom
- Top cover: three screws are located at the bottom on the three corners and one under the front cover
- Rear and front shoulder covers: two self tapping screws on the front



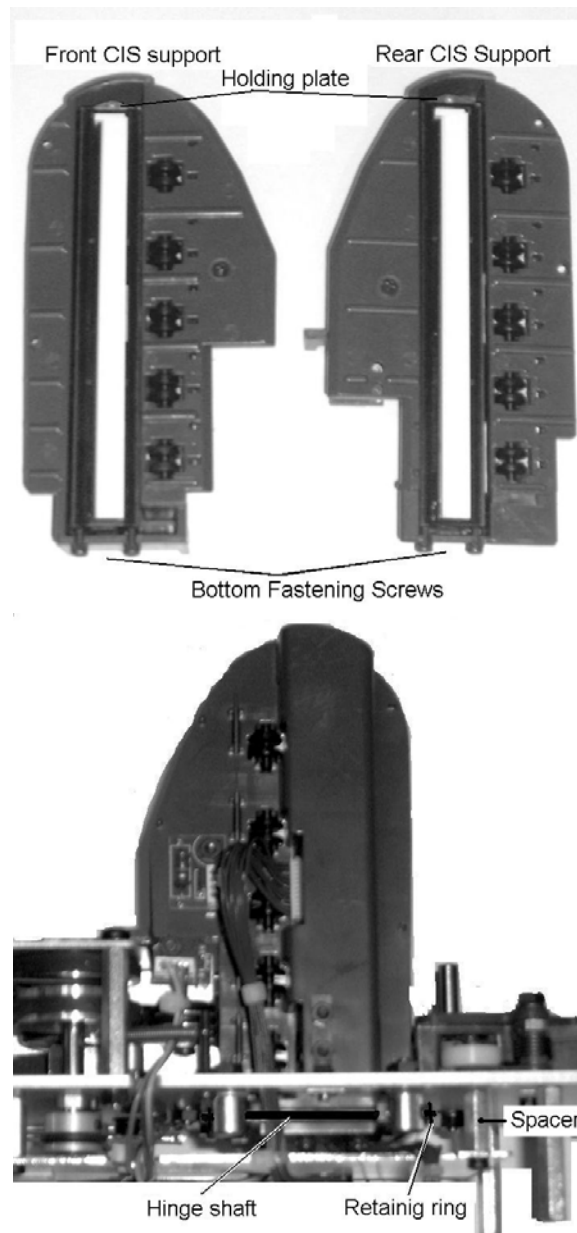
- Bottom covers: two self tapping screws on right and left side
- Connector shield: Two self tapping screws



4.2 REMOVING THE CIS GROUPS

NOTE:

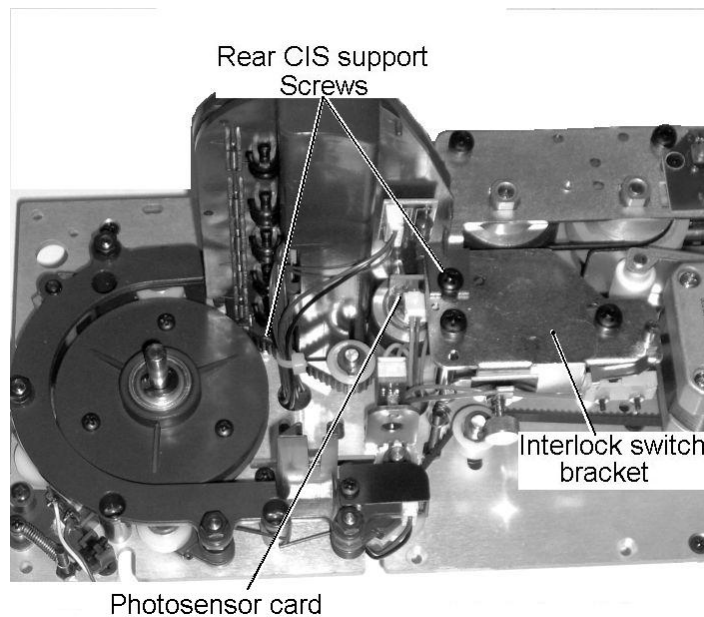
When you replace the CIS you need to calibrate the images.



Front CIS support

1. Remove the front and rear covers
2. Disconnect the CIS connectors and the Interface card
Attention: do not pull the wires but lift up, with the help of a little screwdriver, directly the connector.
3. Unscrew the two upper screws and the two lower, which fix the intermediate plate spacer and remove it.
4. Remove the left retaining ring of the hinge shaft
5. With the help of a pliers take completely out, from left to right, the hinge
6. Lift up the front CIS shoulder
7. Unscrew the fixing upper screw of the small capturing plate of the CIS

8. Unscrew the two lower screws and remove the CIS
 9. Unscrew the two screws with a washer and screw them on the CIS, without tight them up
 10. Position the new CIS with the holes in the upper small capturing plate of the CIS
 11. Press it gently downwards and tight up the screws
- Attention:** Please, handle with care the CIS, because you could break the glass on top
- When you install the new CIS, checks that the connector is in the correct position
12. Position the support in its location, put the hinge in its position and push the hinge pin in the holes
 13. Insert the retaining ring on the pin
 14. Re- install the spacer
 15. Join together the connectors
 16. Start the scanner and verify that it works properly, then calibrate the images



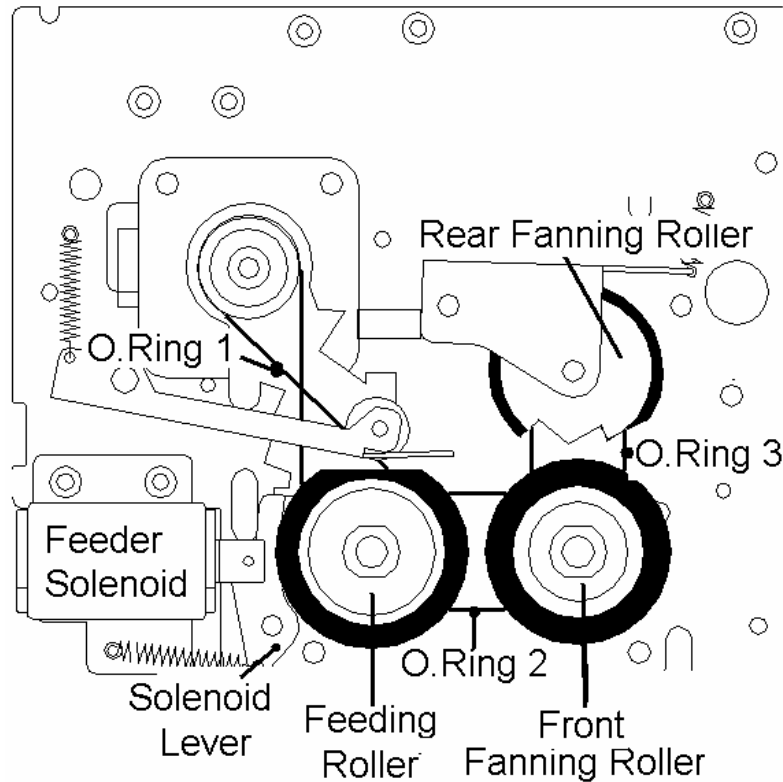
Rear CIS Support

1. Remove the rear and front covers
 2. Disconnect the CIS connectors, interface card and sensors boards
- Attention:** do not pull the wires but lift up, with the help of a little screwdriver, on the connector.
3. Unscrew the right and left screw of the CIS fixing group
 4. Unscrew the fixing screws of the micro-safety bracket and move it towards the back
 5. Lift the back CIS shoulder
 6. Remove the CIS and replace it as indicated to the point: 7– 11 front CIS
 7. Reposition the CIS support in its place
 8. Fix the micro-safety bracket
 9. Screw the fixing screws of the rear CIS
 10. Join the connectors and
 11. Start the scanner and verify it works properly, calibrate then the image
- Attention:** make sure that, between the front CIS shoulder and the rear one, there is enough room to pass a document. If the two shoulders are too closed or too far away from each other, unscrew the fixing screws of the shoulder to the micro-safety bracket and move the shoulder forward or backward until you find the write position.

4.3 FANNING ROLLER GROUP AND O-RINGS

NOTE:

The fanning rollers are outsize compare to the equipment, we suggest then they shouldn't be ever replaced. They must be always clean and in the right regulation (see chapter: REGULATION). The caves and the O-rings of transportation and fanning rollers, to avoid that they slide; they must be cleaned with a detergent for rubber.



4.4 DOCUMENT FEEDING PROBLEMS

Problem

Two documents enter the unit at the same time or enter a chain of documents

Solution

Clean thoroughly the Fanning Rollers

Adjust the Fanning Rollers

Enable the Double Feed Detection

Check for the proper operation of the feeding roller. It must turn just one turn when you feed the document. If it does more than one turn you must remove it and clean thoroughly the Feeder Solenoid, clean the solenoid nucleus very well. Pay attention not to lose the small washer placed on the pin at the end of the nucleolus; check also that the solenoid lever turns freely on the shaft.

Feeding Roller - The flat side of the Feeding Roller must face the checks. It should not move when the solenoid is not actuated.

5.0 ELECTRIC SECTION

5.1 POWER SUPPLY

Note: Use only the power supply provided with the scanner.

When you connect the power supply to the net, the green light comes on; if it should come off when you connect it the secondary to the scanner , that means that there is a short-circuit. So, unplug immediately the power supply and check the connections to the scanner.

5.2 PHOTOSENSORS TRACKING TRANSITION OF PAPER

The correct functioning of the photo sensors can be obtained with the test program, if although these are not working properly, check as follows:

The scanner should not be positioned under a direct font of light (natural or artificial)

Clean carefully the sensors (photodiode and phototransistor)

Check the parallel tension to the phototransistor (blue)

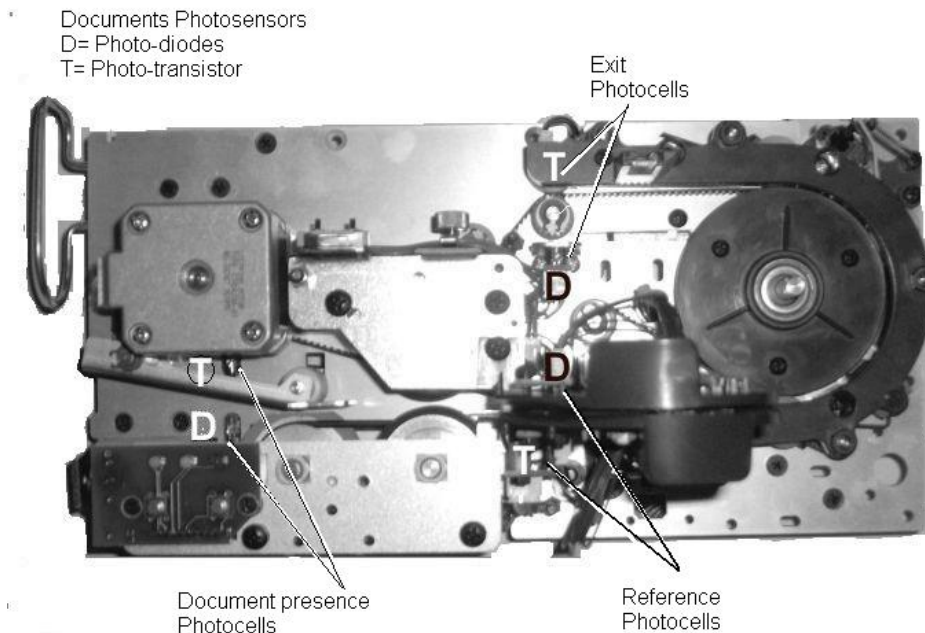


Photo-transistor (Blue)	With a blank paper insert between emitter and receiver	Without paper
1) paper presence	2,6/3,0 VDC	0,1/0,4 VDC
2)Synchronization	2,6/3,0 VDC	0,1/0,4 VDC
3) Exit	2,6/3,0 VDC	0,1/0,4 VDC

Photo-transistor (Blue)	With a black paper insert between emitter and receiver	Without paper
4) Thickness control	5,0 VDC	0,0/0,3 VDC

5.3 POTENTIOMETER

There are, on the card, two potentiometers to regulate the MICR signal. Please, see instructions test program MICR SETUP

5.4 INKJET

The inkjet is an optional and it can be installed on the scanner from a specialized technician. For more information, please refer to the paragraph "Instruction inkjet installation"

The Inkjet cartridge is activated every time to clean the nozzles, every time you turn on the scanner and every time you leave the scanner in stand-by through one document to another.

To verify the good functioning, turn off the scanner, insert a blank paper in front of the inkjet cartridge and turn on the scanner. On the blank paper you should have a black line and in evidence the 12 points correspondences to the nozzles.

6.0 MAINTENANCE

6.1 INSPECTION SCHEDULE

(Valid for average of 1.500 documents per day)

ACTIONS TO BE TAKEN	FREQUENCY	NUMBER OF DOCUMENTS
Cleaning the CIS	Once at week or more, if necessary	7.500
Cleaning of feeding rollers and fanning rollers (user)	Once at month	30.000
Removal of the dust and paper debris	Every 6 months	180.000
Cleaning of the paper feeding rollers	Every 6 months	180.000
Cleaning of the magnetic read heads	Every 6 months	180.000

6.2 CLEANING THE SCANNER

Remove all the covers; use a vacuum cleaner to eliminate the dust present in the area of the paper transport. Remove the paper, debris or other small objects that could be on the electronic board shields.

Clean the rollers and the paper transport belts using a cleaner for rubber.

6.3 CLEANING OF THE MAGNETIC READ HEADS FOR THE READING OF THE MAGNETIC CHARACTERS

Clean carefully the read heads surface with a soft cloth dampened with isopropyl alcohol.

Check the recognition quality of magnetic characters and, if necessary, reposition again the read heads.

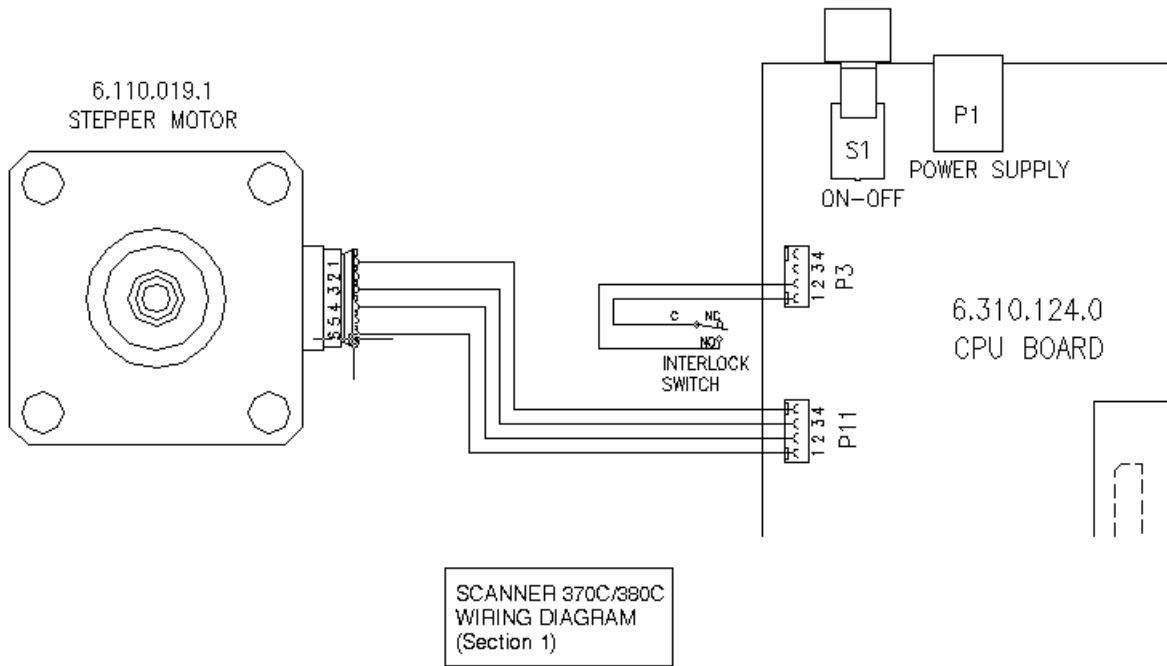
6.4 CLEANING OF THE SUPPORT CONTACTS

Turn off the scanner, remove the cartridge and clean with a neutral detergent for electrical contact.

7.0 ELECTRICAL DIAGRAMS

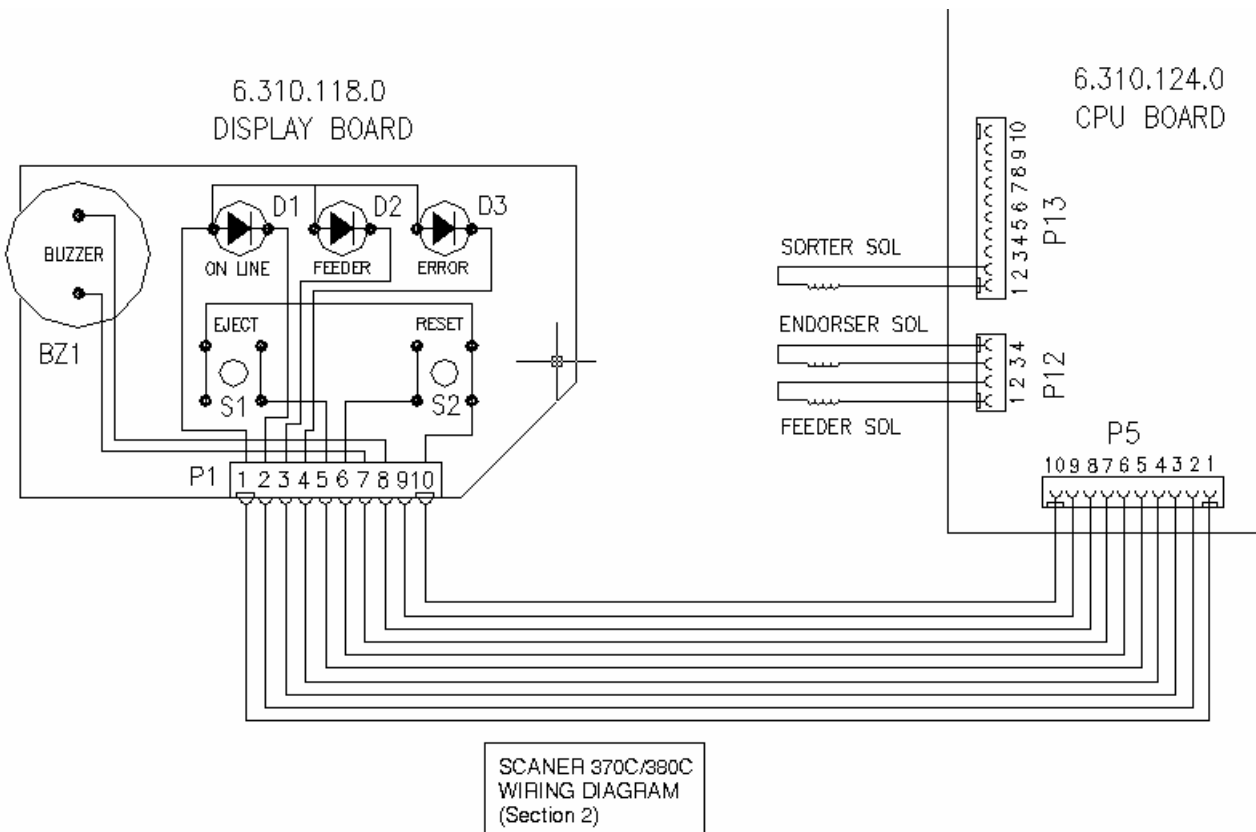
7.1 SECTION 1

Motor and Interlock switch

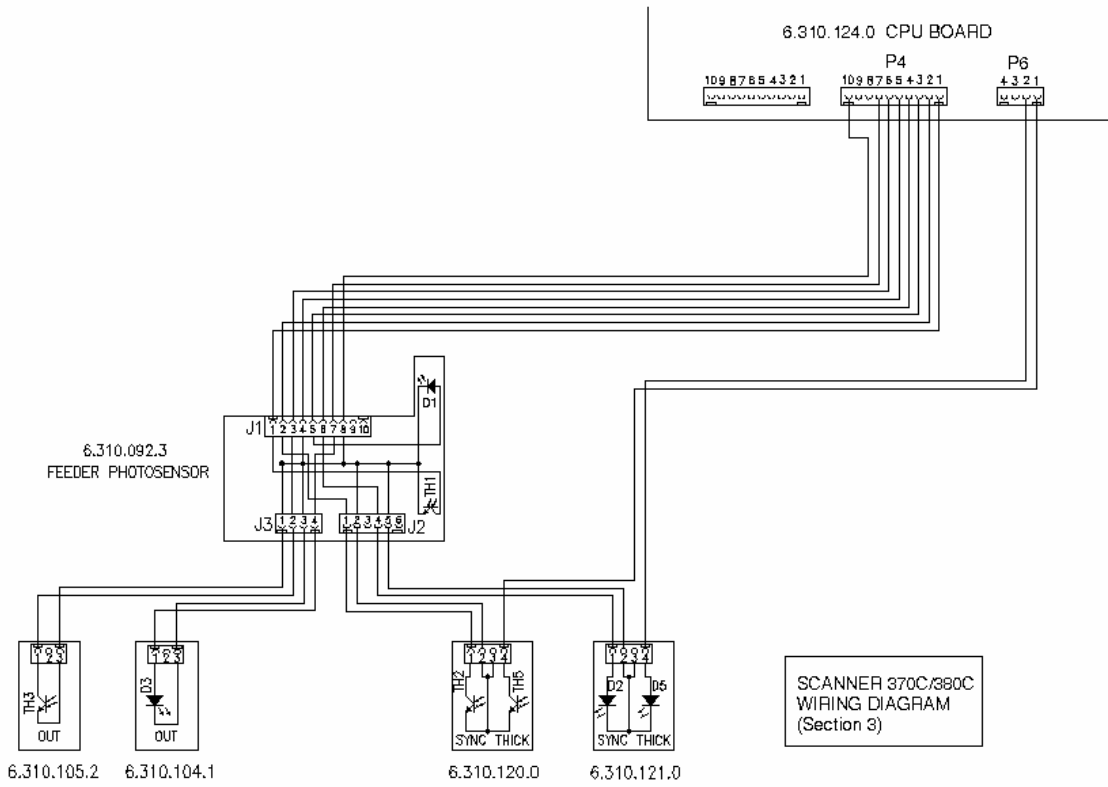


7.2 SECTION 2

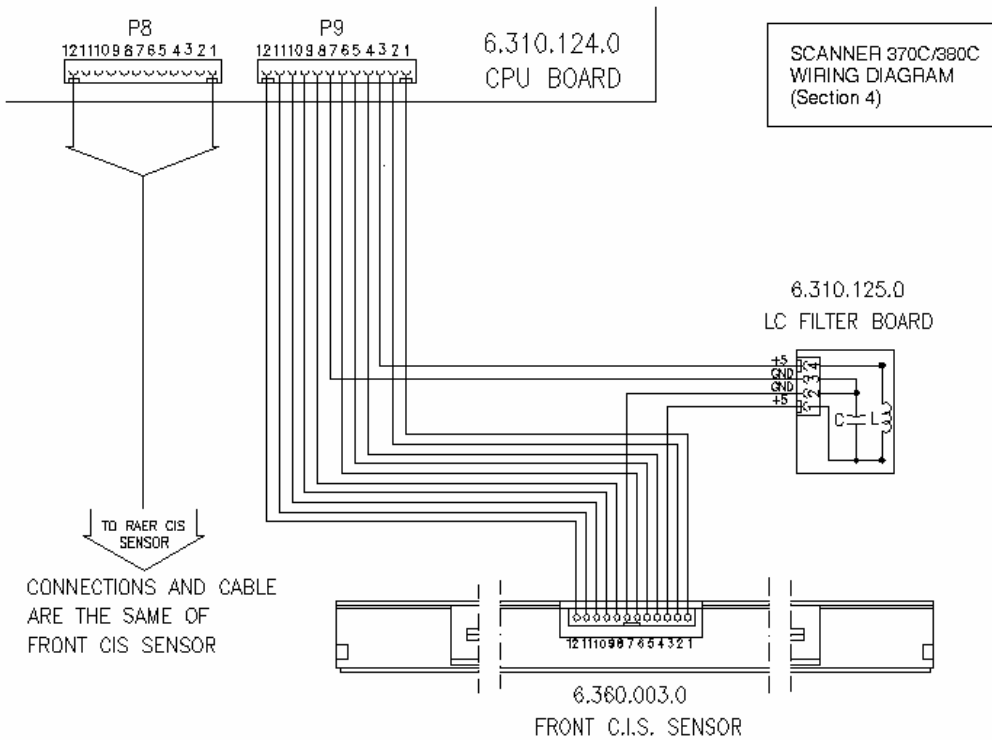
Display Board



7.3 SECTION 3 Photo sensors



Section 4 CIS



7.4 SECTION 5
MICR

