

pakon®

F-235 Series

Disassembly Service Manual



8/5/05

F-235 Series Disassembly Service Manual

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1.0. General Information

1.1. - Regulatory Information



Warning: This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Taiwan:

警告使用者:

這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策。

Site Conditions

Temperature	59-85 degrees Fahrenheit
Humidity	30-75% (non-condensing)
Vibration	Not to Exceed 0.05G RMS 5-200Hz
Ventilation	A 4" clearance above and behind the scanners ventilation duct is necessary
Lighting	<1000 LUX ambient light
Noise	< 70db(A)

Shipping and Storage Conditions

Temperature: -13 to 140 degrees Fahrenheit

Humidity: 30%-90% (non-condensing)

Fuse Ratings

Only Pakon service technicians are qualified to replace fuses in the F-235 Scanner.

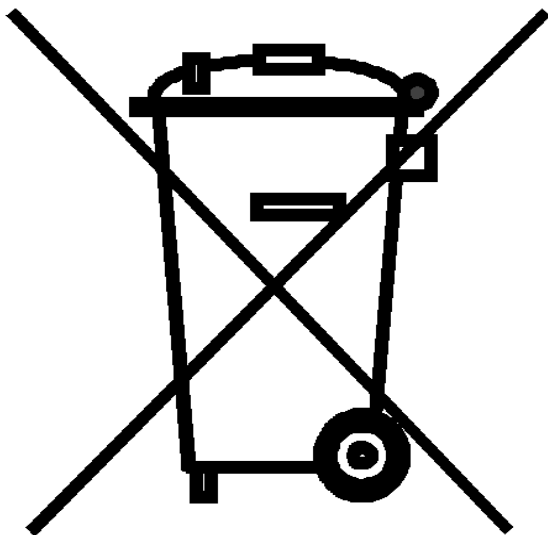
Die Sicherungen im Scanner F-235 dürfen nur von Pakon-Servicetechnikern ausgetauscht werden.

Seuls les techniciens du service d'entretien de Pakon sont qualifiés pour remplacer les fusibles du scanner F-235.

Factory Fuse Rating

3 Amps, 250V

1.2. - EU WEEE Directive



In the European Union, this symbol indicates that when the last user wishes to discard this product, it must be sent to appropriate facilities for recovery and recycling.

Contact your local Kodak representative or refer to www.kodak.com/go/recycle for additional information on the collection and recovery programs available for this product.

1.3. - Tool List for Unit Disassembly

Tool Description	Tool Size	Screw Location	Screw Qty
Diagonal Cutter	Small	Cable Ties	15
Flat Blade	6 inch	MOF Circuit Card	0
Phillips	3 inch / No. 2	Blower Motor Assembly	8
		Bottom Cover	2
		Cover Brackets (Brass)	12
		Fan Motor Brackets	4
		MOF Circuit Board	2
		MOF Per Board	4
		Side Cover Brackets (Brass)	6
Hex Wrench	2.5 mm	Power Supply	3
		Unit Cover	3
		Unit Feet	4
Hex Wrench	4.5 mm	MOF Magnetic Heads	4
Hex Wrench	7/64 inch	CCD Board	1
		CCD Bracket (Optic Tower)	2
		CCD Power Module (Bracket to Case)	1
		Drive Motor	2
		Drive Motor Adjustment	1
		Entrance Ramp	2
		Entrance Ramp Base	4
		Fan Motor Bracket	4
		Grounding Screw	1
		IR Filter Cover	1
		Lens Bracket (Optic Tower)	2
		Lamp Board (behind Fan Motor)	4
		Lamp Bracket	4
		Light Cover	3
		MOF Assembly	4
		Motor Control Board (Located in Base of Unit)	5
		Optic Lens	1
		Optical Tower Assembly	4
		Sensor Board for CCD and Lens Assembly	3
		Transport Base	4
		USB Board (Located in Base Unit)	4
Hex Wrench	3/32 inch	Back Cover (Brass)	6
		CCD Board (Top of Optic Tower)	3
		CCD Chip Holder Bracket	3
		CCD Power Module (Bracket to Board)	1
		CCD Motor (Optic Tower)	2
		Filter Wheel Assembly	2
		Filter Wheel Disk	1
		Filter Wheel Motor	2
		Filter Wheel Sensor	2
		IR Bracket Assembly	4
		IR Filter Cover	1
		Lens Motor (Optic Tower)	2
		Transport Assembly (Main Connect Screws)	6
		Transport Motors (Mounted on Assembly)	6
Hex Wrench	5/64 inch	Light Cone Assembly	4
		Light Cone and Illuminator Block	2
		MOF Motor Gear	1
		MOF Motor	2
		USB Jack (Back of Base)	1
Hex Wrench	.050 inch	Transport Assembly Couplers	5

2.0. - Module and Board Removal Procedures

2.1. - Removing Covers

Removing the F-235 covers is made easy by a locking system, that eliminates the need for all but three screws.

1. Turn off power on scanner.
2. Disconnect all cables from scanner.
3. Remove film catch basket from side of scanner.
4. Gently pull on the side of the scanner. There are three locks that will snap out of place.

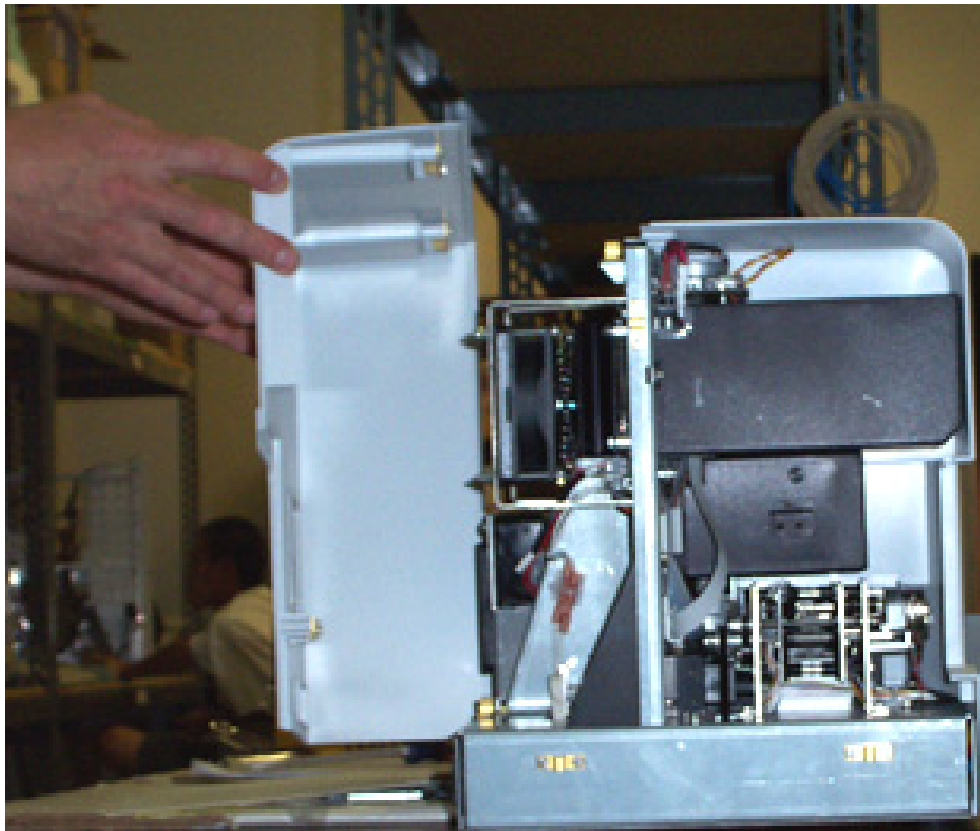
Attention: Do not touch anything inside the scanner while the power is on. The cover is only off to allow dust and debris to be blown out of the scanner.

WARNUNG: Berühren Sie keine Bauteile innerhalb des Scanners, während das Gerät eingeschaltet ist. Die Abdeckung wird nur deshalb abgenommen, damit Staub und Verschmutzungen aus dem Inneren des Scanners heraus geblasen werden können.

ATTENTION: ne touchez aucun élément interne du scanner lorsque ce dernier est sous tension. Le couvercle est ouvert pour permettre d'éliminer poussière et débris du scanner.



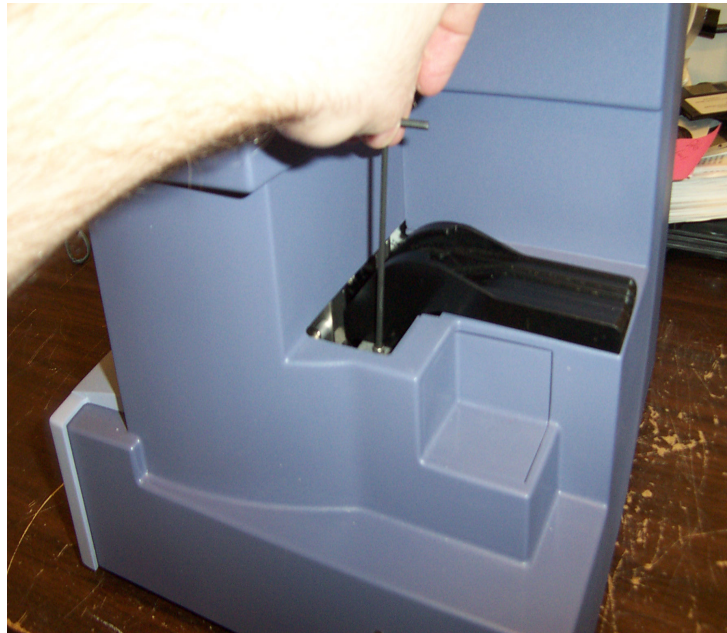
5. Gently pull off the back of the scanner. There are three locks that will snap out of place.



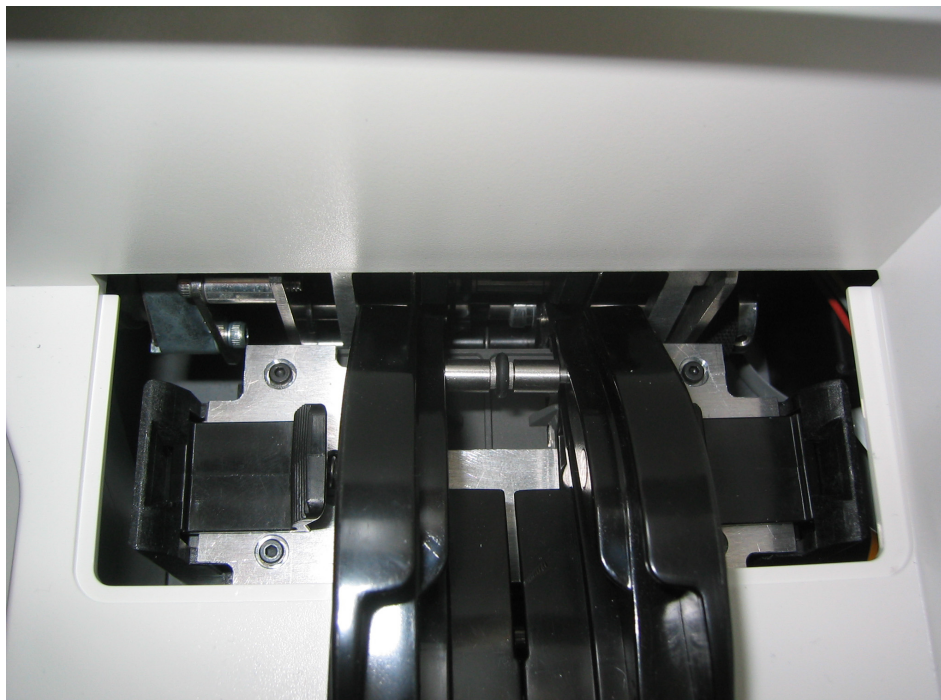
6. Remove the small film path cover in the front on top of the black film entry.



7. Unscrew the two (Hex 7/64") screws holding the film entry point in place and remove the film entry point (Above procedure for F235 unit only).



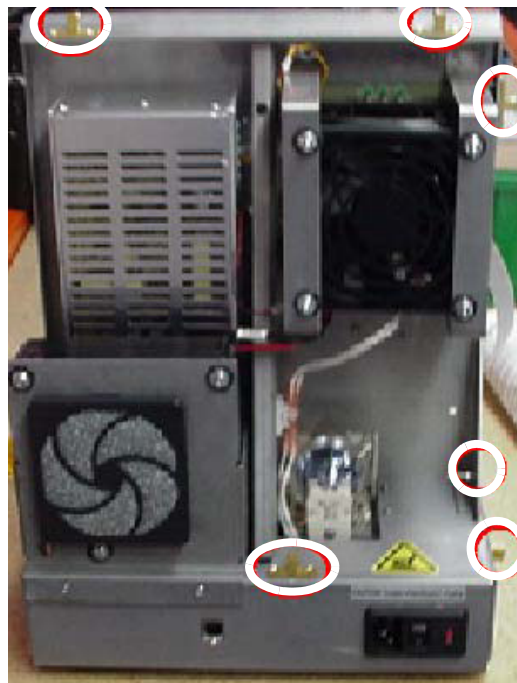
8. Depress the two tabs inward on both side of the film entry point and lift up and outward for removal. (Above procedure for F235C unit only).



9. Unscrew the three (Hex 2.5 mm) screws from the back of the scanner.

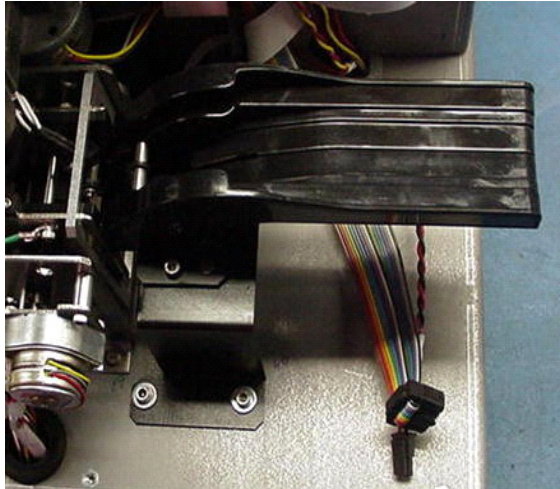


10. Take off the front cover.
11. Unscrew the six (Hex 3/32 “) screws from back cover releasing brass connectors.
12. Unscrew the six (Phillips 3” No. 2 bit) screws from side cover releasing brass connectors.
13. Unscrew the twelve (Phillips 3” No. 2 bit) screws from scanner frame releasing brass connectors.



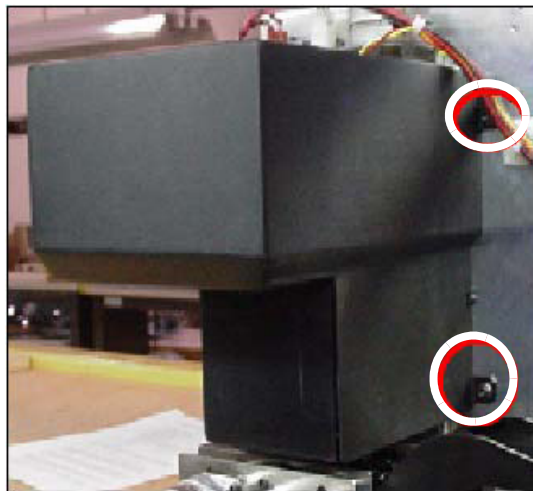
2.2. - Film Entrance Ramp Stand

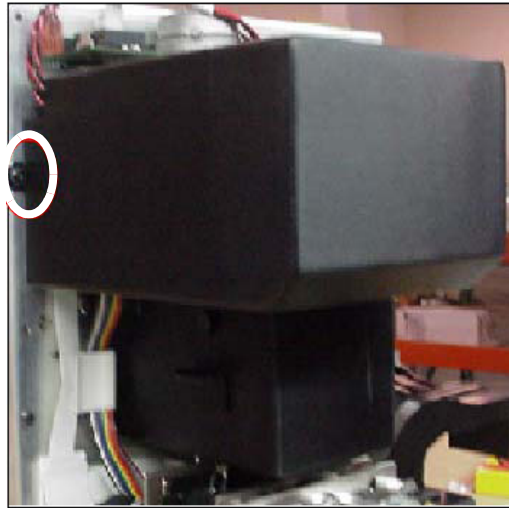
1. Turn the scanner off.
2. Unplug the USB and power cables from the back of the F-235 scanner.
3. Remove all three covers (see 2.1 page 4).
4. Unscrew the four (Hex 7/64") screws and washers which secure ramp base to unit chassis.
5. Remove Film Entrance Ramp from the scanner unit.



2.3 - Light Shield

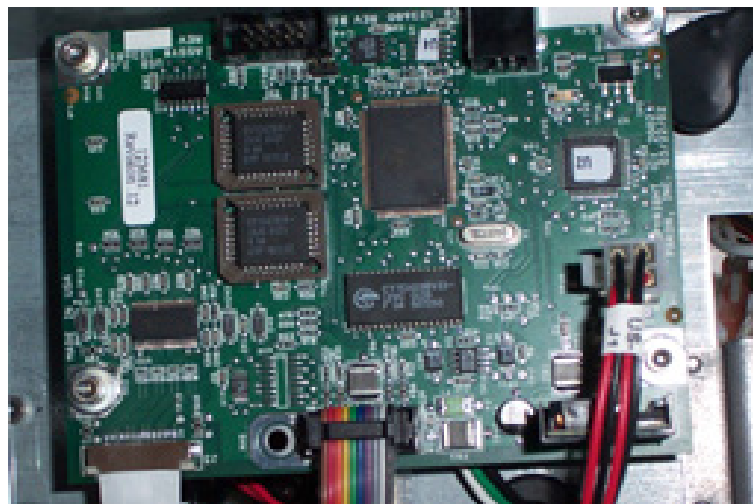
1. Turn the scanner off.
2. Unplug the USB and power cables from the back of the F-235 scanner.
3. Remove all three covers (see 2.1 page 4).
4. Unscrew the three (Hex 7/64 screws and washers holding light shield to optical tower assembly.
5. Slide light shield assembly over optical tower as shown.





2.4. - USB Board

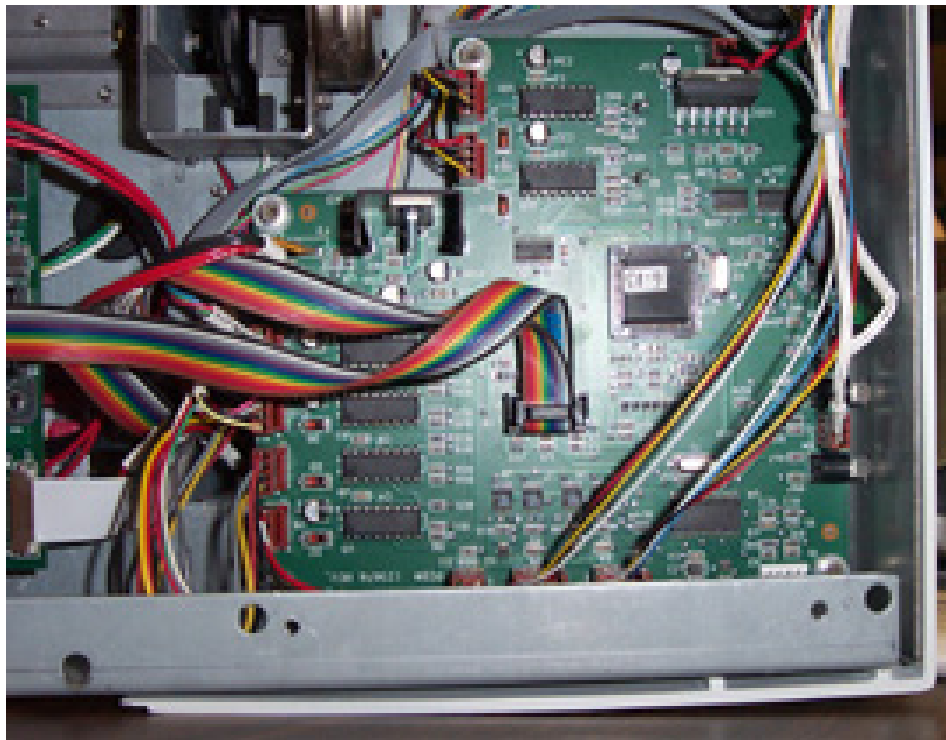
1. Turn the scanner off.
2. Unplug the USB and power cables from the back of the F-235 scanner.
3. Remove all three covers (see 2.1 page 4).
4. Turn scanner onto the left exposed side.
5. Unscrew the four (Hex 2.5 mm) screws holding the bottom plate in place.
6. Unscrew the two (Phillips 3" No. 2 Bit) screws holding the bottom plate in place.
7. Remove the bottom plate from the scanner unit.
8. Disconnect the wires attached to the USB board.



9. Unscrew the four (Hex 7/64") screw holding the USB board from the scanner frame.
10. Unscrew the one (Hex 5/64") screw holding the USB jack to scanner frame.
11. Remove USB Board from the Scanner unit.

2.5. - Motor Control Board

1. Turn the scanner off.
2. Unplug the USB and power cables from the back of the F-235 scanner.
3. Remove all three covers (see 2.1 page 4).
4. Turn scanner onto the left exposed side.
5. Unscrew the four (Hex 2.5 mm) screws holding the bottom plate in place.
6. Unscrew the two (Phillips 3" No. 2 Bit) screws holding the bottom plate in place.
7. Remove the bottom plate from the scanner unit.
8. Disconnect the fifteen wires attached to the Motor Control board.



9. Cut the three cable ties holding the wires for the Motor Control board.
10. Unscrew the five (Hex 7/64") screws holding the motor control board in place.
11. Remove the Motor Control Board from the scanner unit.

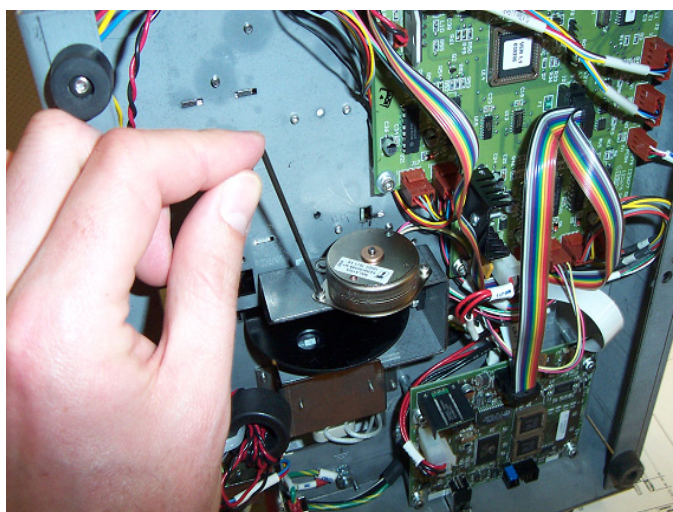
2.6. - Filter Wheel Assembly

1. Turn the scanner off.
2. Unplug the USB and power cables from the back of the F-235 scanner.
3. Remove all three covers (see 2.1 page 4).
4. Turn scanner onto the left exposed side.
5. Unscrew the four (Hex 2.5 mm) screws holding the bottom plate in place.
6. Unscrew the two (Phillips 3" No. 2 Bit) screws holding the bottom plate in place.
7. Remove the bottom plate from the scanner unit.

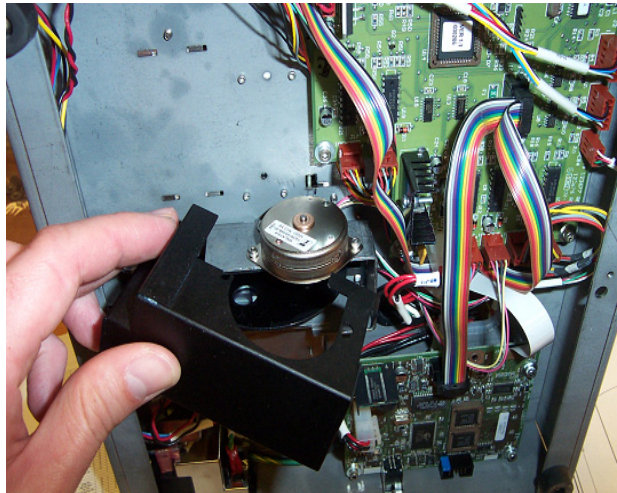
8. Located black filter wheel cover



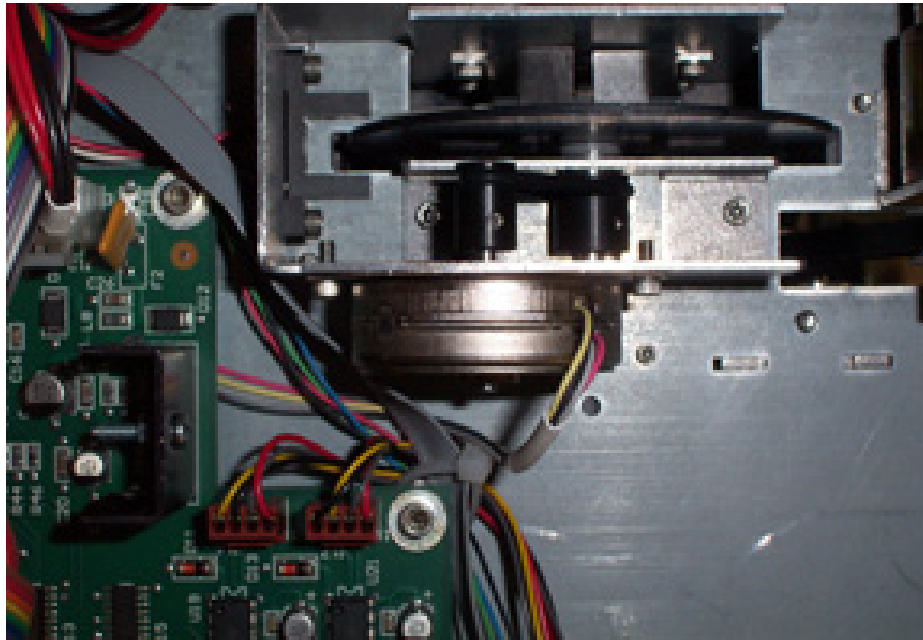
9. Loosen the two (Hex 3/32") screws on the Filter Wheel motor.



10. Remove black Filter Wheel cover from the Scanner unit.



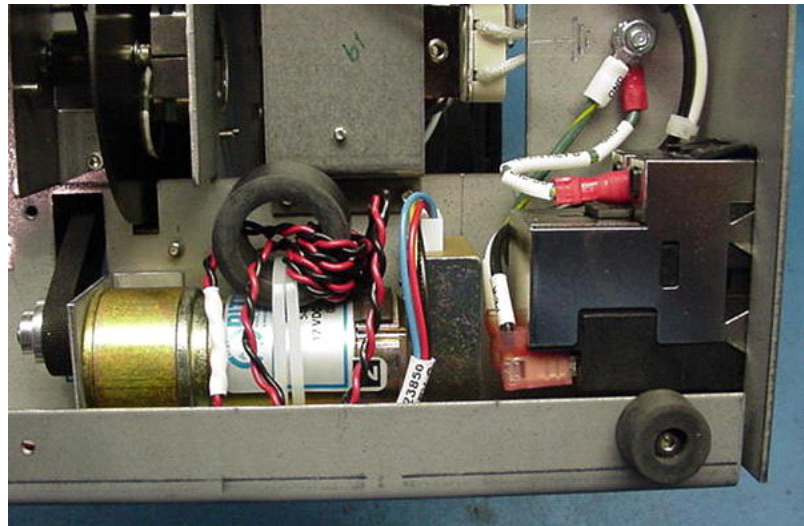
11. Cut the three wires attached to the Filter Wheel Assembly.
12. Unscrew the two (Hex 3/32") screws holding the filter wheel assembly in place.



13. Remove the Filter Wheel Assembly from the scanner unit.
14. Unscrew the two (Hex 3/32") screws holding the filter wheel motor to the Filter Wheel Assembly.
15. Unscrew the two (Hex 3/32") screws holding the filter wheel sensor to the Filter Wheel Assembly.
16. Unscrew the one (Hex 3/32") screws holding the filter wheel disk to the Filter Wheel Assembly.

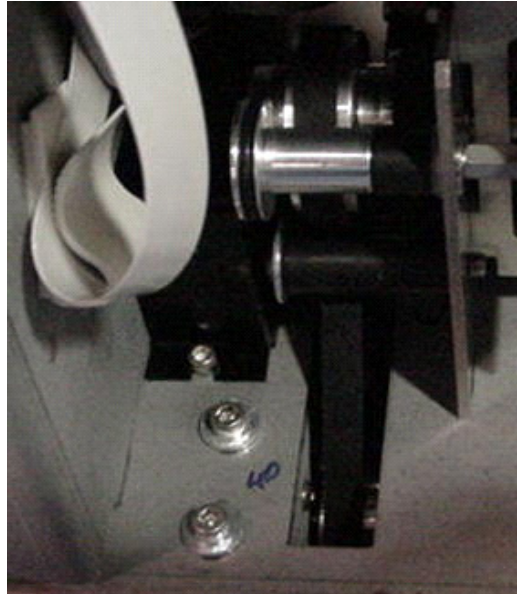
2.7. - Transport Drive Motor

1. Turn the scanner off.
2. Unplug the USB and power cables from the back of the F-235 scanner.
3. Remove all three covers (see 2.1 page 4).
4. Turn scanner onto the left exposed side.
5. Unscrew the four (Hex 2.5 mm) screws holding the bottom plate in place.
6. Unscrew the two (Phillips 3" No. 2 Bit) screws holding the bottom plate in place.
7. Remove the bottom plate from the scanner unit.
8. Cut the two wires attached to the Transport Drive motor.
9. Cut the one cable tie attached to the side wall of the scanner unit.
10. Cut the one cable tie attached to the ferrite bead mounded on the Transport Drive motor.
11. Remove the ferrite bead from the scanner unit.



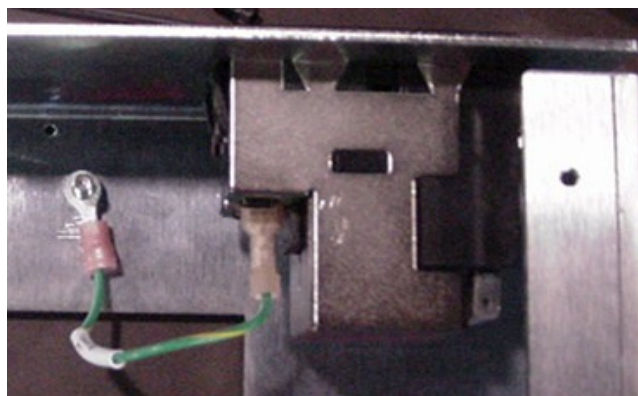
12. Place scanner in the upright position with the left side of the scanner facing technician.

13. Unscrew the three (Hex 7/64") screws holding the Transport Drive motor in place.
14. Turn scanner onto the left exposed side.
15. Remove the drive belt attached to the Transport Drive motor from the scanner unit.
16. Remove the Drive Motor from the scanner unit.



2.8. - Power Supply Module

1. Turn the scanner off.
2. Unplug the USB and power cables from the back of the F-235 scanner.
3. Remove all three covers (see 2.1 page 4).
4. Turn scanner onto the left exposed side.
5. Unscrew the four (Hex 2.5 mm) screws holding the bottom plate in place.
6. Unscrew the two (Phillips 3" No. 2 Bit) screws holding the bottom plate in place.
7. Remove the bottom plate from the scanner unit.
8. Cut the four wires attached to the Power Supply Module.



9. Press the four tab holding the Power Supply Module to the Scanner frame.
10. Slide the Power Supply Module out the back of the scanner unit.

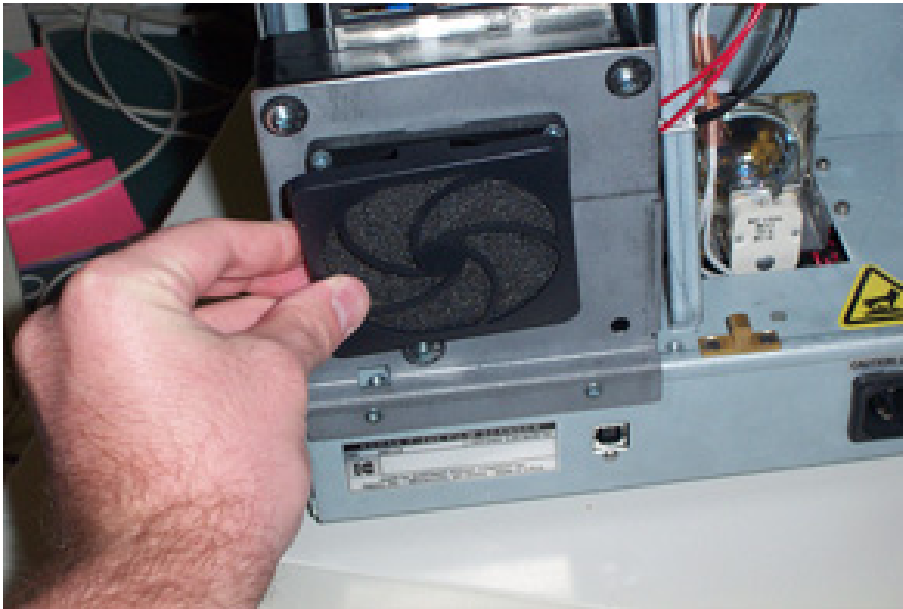


2.9. - Blower Assembly

1. Turn the scanner off.
2. Unplug the USB and power cables from the back of the F-235 scanner.
3. Remove all three covers (see 2.1 page).
4. Locate the Fan filter. It is located on the back of the scanner, just under the plastic fan cover.



5. Pull straight back on the plastic fan cover until it comes free from the scanner housing.



6. Remove the filter from inside the cover.

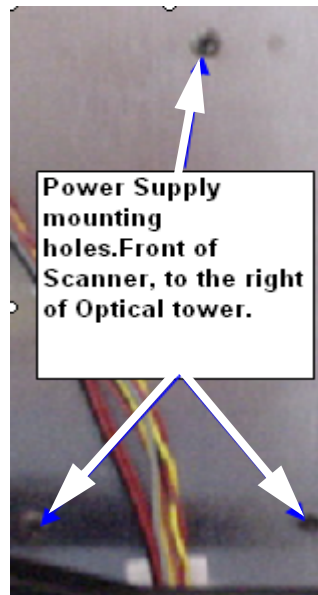


7. Unscrew the eight (Phillips 3" No. 2 Bit) screws holding the blower assembly to scanner frame.
Note: Blower Motor is held to the Scanner chassis by double sided tape.
8. Separate Blower Motor from assembly brackets.
9. Proceed to next Section (Power Supply) to remove power cable or cut.

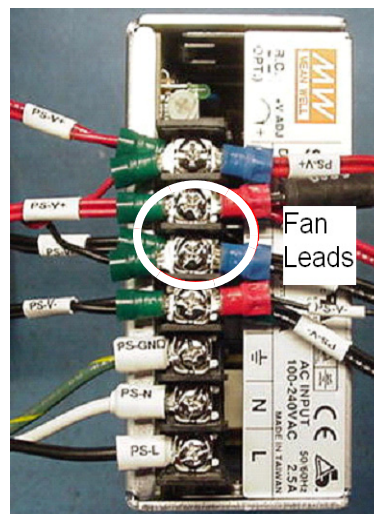
2.10. - Power Supply

1. Turn the scanner off.
2. Unplug the USB and power cables from the back of the F-235 scanner.

3. Remove all three covers (see 2.1 page 4).
4. Place scanner in the up-right position with the front of scanner unit is facing technician.
5. Unscrew the three (Hex 2.5mm) screws from the front of the vertical plate.



6. Turn scanner onto the left exposed side.
7. Unscrew the four (Hex 2.5 mm) screws holding the bottom plate in place.
8. Unscrew the two (Phillips 3" No. 2 Bit) screws holding the bottom plate in place.
9. Slide Power Supply back exposing Power Supply Terminal Board.
10. Remove all wires from Power Supply terminal board.



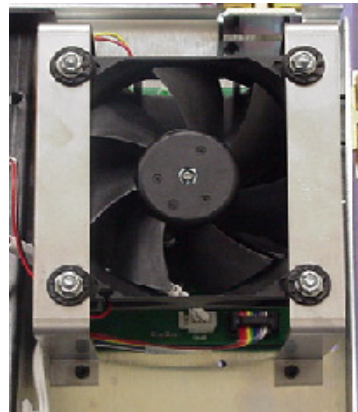
11. Remove Blower Motor from the scanner unit.
12. Remove Power Supply Module from the scanner unit.

2.11. - Fan Motor

1. Turn the scanner off.
2. Unplug the USB and power cables from the back of the F-235 scanner.
3. Remove all three covers (see 2.1 page 4).
4. Turn Scanner so back of scanner unit is facing technician.



5. Unscrew the four (Hex 7/64") screws from scanner unit frame



6. Pull Fan Assembly and support brackets away from scanner unit.
7. Remove two cables from Lamp Assembly board.
8. Unscrew the four (Phillips 3" No. 2 bit) screws from the Fan brackets.
9. Remove Fan assembly from Fan Support brackets.

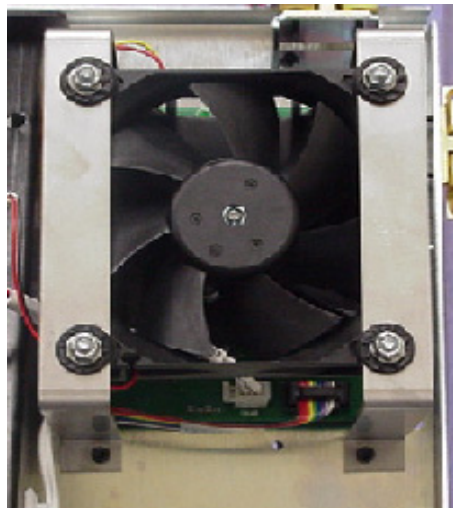
2.12. - Lamp Board Assembly

1. Turn the scanner off.
2. Unplug the USB and power cables from the back of the F-235 scanner.
3. Remove all three covers (see 2.1 page 5).

4. Turn Scanner so back of scanner unit is facing technician.

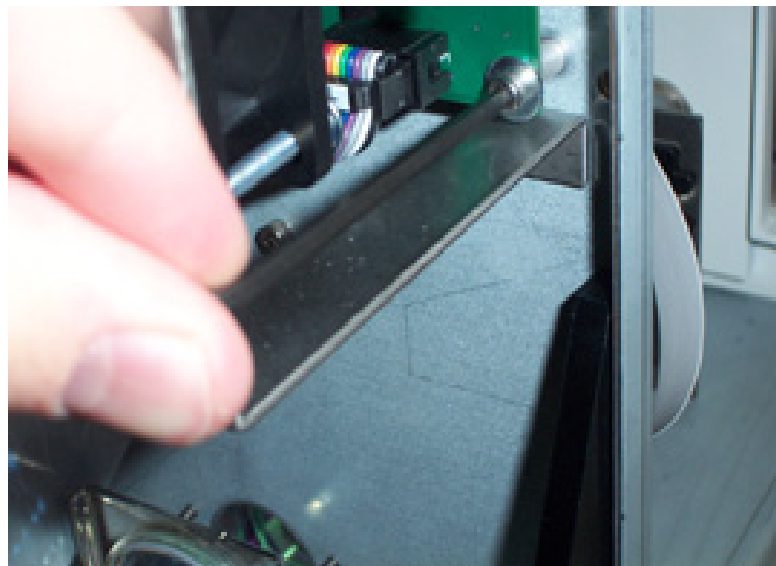
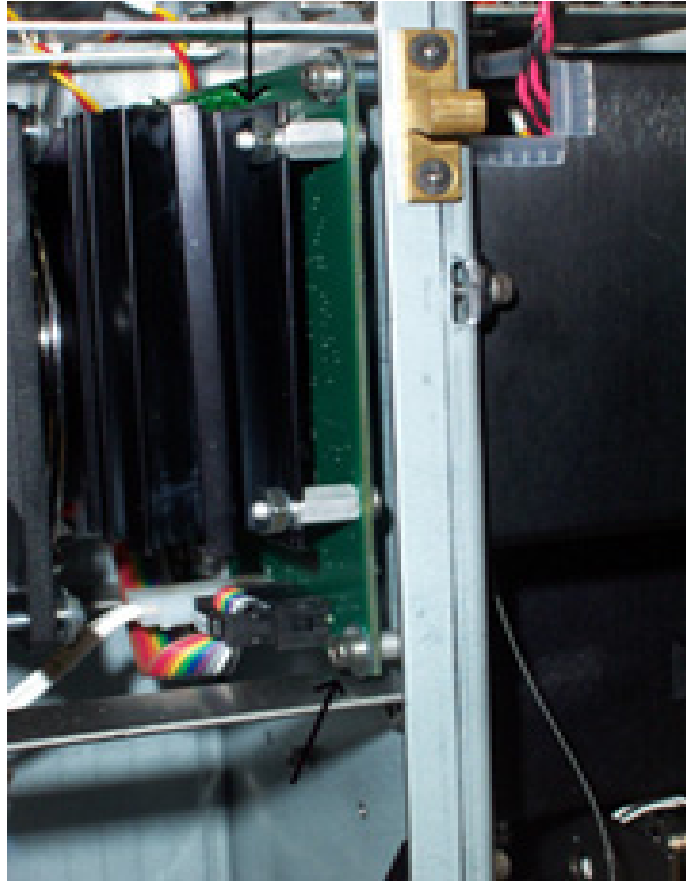


5. Unscrew the four (Hex 7/64") screws from scanner unit frame.



6. Pull Fan Assembly and support brackets away from Scanner Unit.
7. Remove two cables from Lamp Assembly board.
8. Unscrew the four (Phillips 3" No. 2 bit) screws from the Fan brackets.
9. Remove fan assembly from Fan support brackets

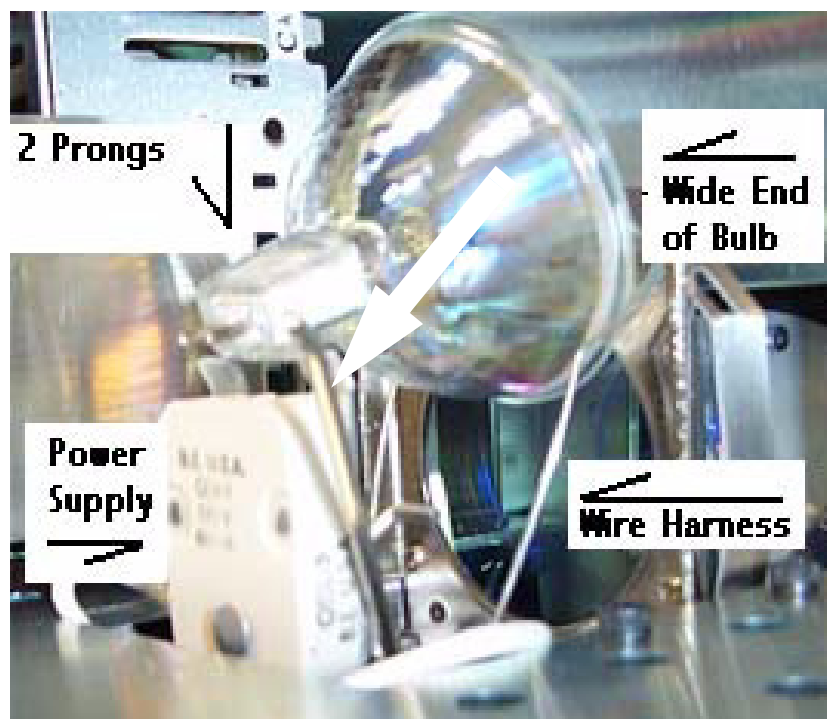
10. Remove the four (Hex 7/64") screws holding the lamp board to scanner base. There is one screw in each corner of the board.



11. Remove two cables attached to the lamp board.
12. Remove Lamp Board from the scanner unit.

2.13. - Lamp Holder

1. Turn the scanner off.
2. Unplug the USB and power cables from the back of the F-235 scanner.
3. Remove all three covers (see 2.1 page 4).
4. Turn Scanner so back of scanner unit is facing technician.
5. Allow lamp to cool down before attempting to replace the lamp holder.
6. Remove the light bulb from the Lamp Holder by pulling the lamp lever towards the power supply connection and gently lifting the lamp bulb upward

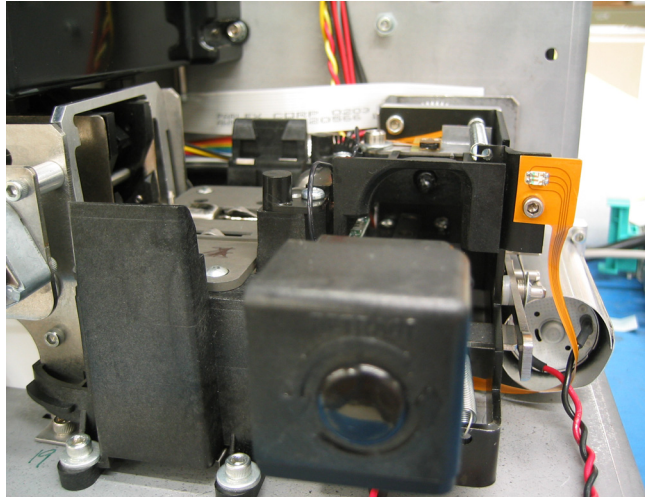


7. Ensure lamp holder power cable from the Lamp Board if NOT remove cable.
8. Unscrew the four (Hex 7/64") screws that mount the Lamp Holder to the scanner frame.
9. Remove the Lamp Holder from the scanner unit.

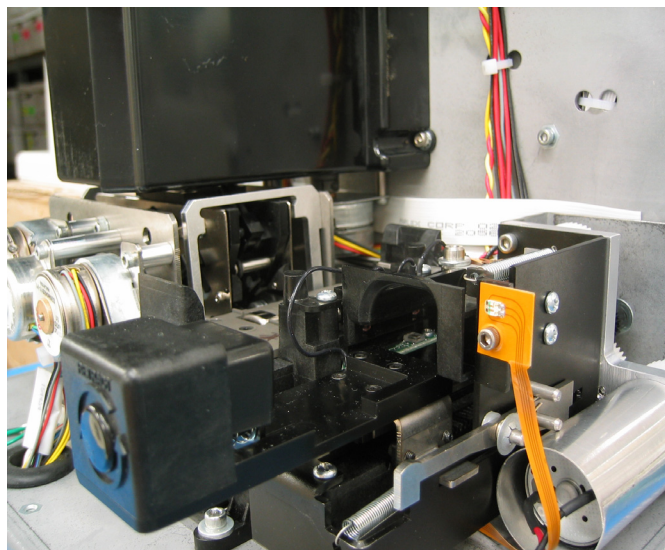
2.14. - MOF unit (F235C Unit Only)

1. Turn the scanner off.
2. Unplug the USB and power cables from the back of the F-235 scanner.
3. Remove all three covers (see 2.1 page 4).

4. Turn Scanner so front of scanner unit is facing technician.
5. Unscrew the four (Hex 7/64") screws that mount the MOF assembly to the scanner frame.
6. Unplug the two MOF cable from main wiring harness.
7. Remove the MOF assembly from the scanner unit.

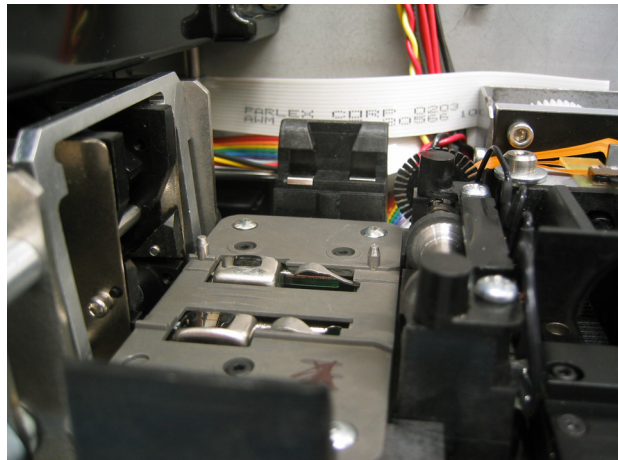


8. Unscrew the one (Hex 5/64") screws which holds the White gear to the MOF Motor.
9. Remove the White gear from the MOF assembly.
10. Unscrew the two (Hex 5/64") screws which holds the MOF Motor to the MOF assembly.



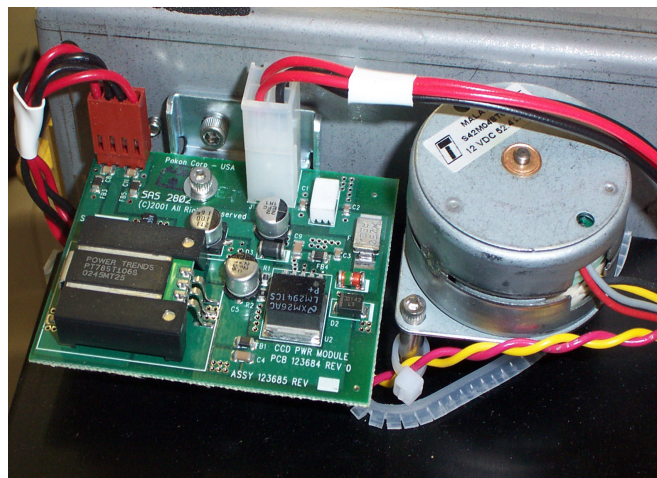
11. Remove the MOF Motor from the MOF assembly.

12. Unscrew the four (Hex 2.5mm) screws which holds the MOF Magnetic Heads to the MOF assembly.
13. Remove the MOF Magnetic heads from the MOF assembly.
14. Unscrew the four phillips screws which holds the MOF Perf board to the MOF assembly.
15. Remove the MOF Perf board from the MOF assembly.
16. Turn MOF assembly so the bottom of the MOF assembly is facing technician.
17. Unscrew the two phillips screws which holds the MOF circuit board to the MOF assembly.
18. Remove the MOF circuit board from the MOF assembly.



2.15. - CCD Power Module

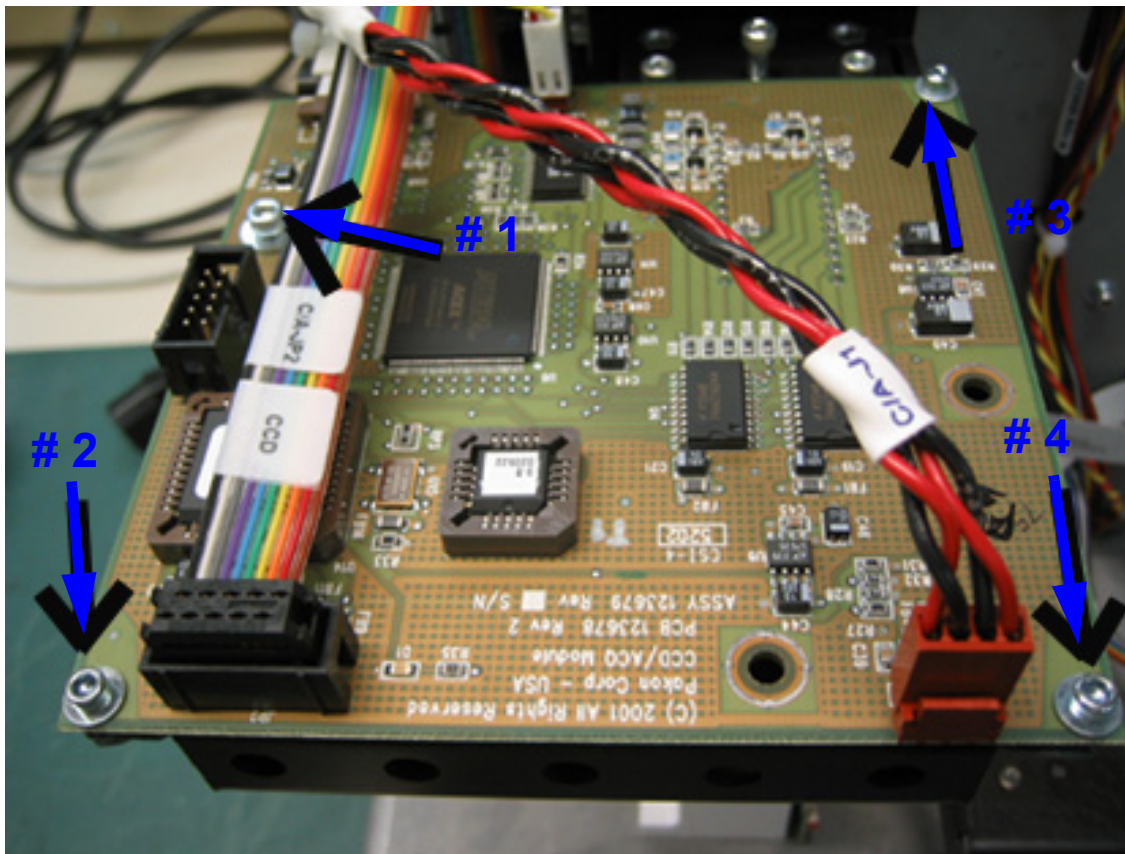
1. Turn the scanner off.
2. Unplug the USB and power cables from the back of the F-235 scanner.
3. Remove all three covers (see 2.1 page 4).
4. Turn Scanner so front of scanner unit is facing technician.
5. Disconnect the power and sync cables from the CCD power module board.
6. Unscrew the one (Hex 3/32") screw from the CCD power module board and the CCD Power Module bracket.



7. Remove the CCD Power Module from scanner.
8. Unscrew the one (Hex 3/32") screw from the CCD Power Module bracket and the scanner chassis.
9. Remove the CCD Power Module bracket from the scanner unit.

2.16. - CCD Board

1. Turn the scanner off.
2. Unplug the USB and power cables from the back of the F-235 scanner.
3. Remove all three covers (see 2.1 page 4).
4. Remove Light Shield (see 2.3. page 8).
5. Cut cable tie located on the back left corner of the CCD Board.
6. Disconnect the four cables from the CCD board.
7. Unscrew one (Hex 7/64") screw mounting the CCD board to the CCD support.
8. Unscrew three (Hex 3/32") screws mounting the CCD board to the CCD support.



9. The board is still connected to the CCD chip, which is mounted to the CCD support.
10. Carefully pry the CCD board from the support mount.
11. Remove the CCD Board from the scanner unit.
12. Unscrew the three (Hex 3/32") screws mounting the CCD Module to the CCD Bracket (Screws are located under the CCD bracket).
13. Remove the CCD module from the scanner unit.

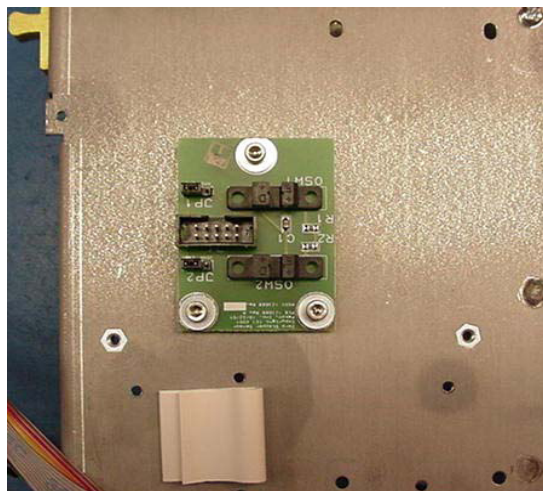
14. Unscrew the two (Hex 7/64") screws mounting the CCD bracket to the Optical tower Assembly (Screws are located under the CCD bracket).

2.17. - Sensor Board for CCD and Lens

1. Turn the scanner off.
2. Unplug the USB and power cables from the back of the F-235 scanner.
3. Remove all three covers (see 2.1 page 4).
4. Remove Light Shield (see 2.3. page 8).
5. If the CCD and Lens assemblies are in the home position turn optical tower spindle to move the assemblies out of the home position other proceed to next step.
6. Disconnect the Sensor cable from the Sensor Board.



7. Unscrew three (Hex 7/64") screws from the Sensor Board and the scanner chassis.

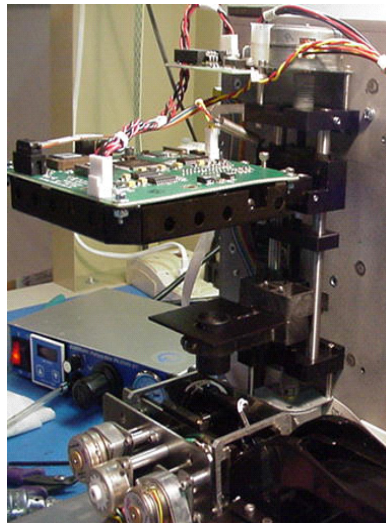


8. Remove the Sensor Board from the Scanner unit.

2.18. - Optical Tower Assembly

1. Turn the scanner off.

2. Unplug the USB and power cables from the back of the F-235 scanner.
3. Remove all three covers (see 2.1. page 4).
4. Remove Light Shield (see 2.3. page 8).
5. Ensure the Fan Motor (2.11 pg 18), Lamp Board Assembly (2.12 pg 18), CCD Power Module (2.15 pg 23) and CCD Board (2.16 pg 24) have been removed before proceeding to the next step.
6. Cut the three cable straps located on the CCD motor leg, Scanner unit chassis and supporting wiring.
7. Unscrew the four (Hex 7/32") screws to remove the Optic Tower assembly from back of the frame.

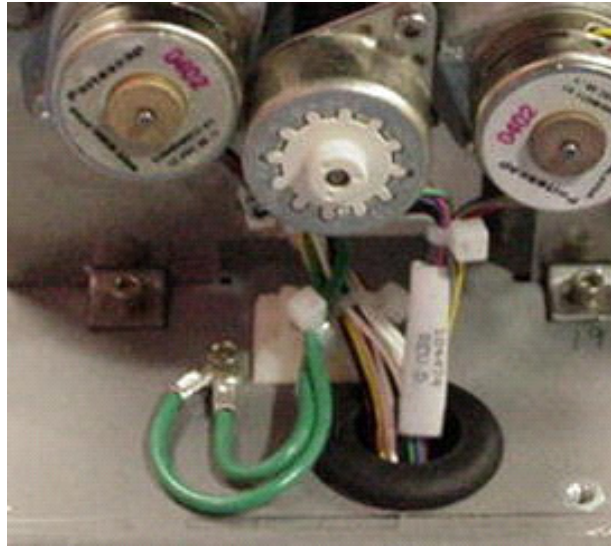


8. Remove the Optical Tower assembly from the scanner unit.
9. Unscrew two (Hex 3/32") screws mounting CCD motor to the top of the Optical Tower assembly.
10. Remove the CCD motor from the scanner unit.
11. Unscrew two (Hex 3/32") screws mounting Lens motor to the bottom of the Optical Tower assembly.
12. Remove the Lens motor from the scanner unit.
13. Unscrew one (Hex 7/64) screw mounting the Lens to the Lens bracket located on the Optical Tower.
14. Remove the Lens from the Lens bracket.
15. Unscrew two (Hex 7/64) screws mounting the Lens bracket to the Optical Tower.
16. Remove the Lens bracket from the Optical Tower.

2.19. - Film Path (Transport) Assembly

1. Turn the scanner off.
2. Unplug the USB and power cables from the back of the F-235 scanner.
3. Remove all three covers (see 2.1 page 4).
4. Turn scanner onto the exposed side.
5. Unscrew the six screws holding the bottom plate in place.
6. Remove the bottom plate from scanner.
7. Disconnect all film path assembly cables from the motor control board. (J2, J3, J6, J7, J12, J16, and J17) if they have not already been removed.
8. Turn the scanner into its proper orientation (front facing technician).

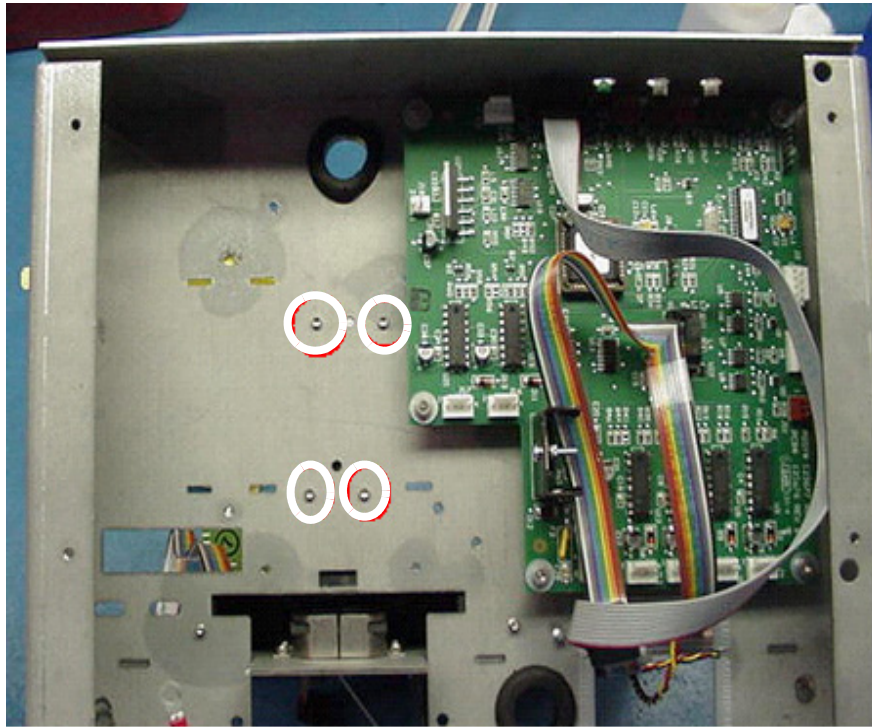
9. Ensure the Entrance Film Ramp (2.2 pg 8) and Light Shield (2.3 pg 8) have been removed from the scanner unit. before proceeding to the next step.
10. . Remove one (Hex 7/64") screw and washer mounting the ground straps to the scanner chassis.
11. Cut the three cable straps located on the wiring harness let to the Film Path (transport) assembly.
12. Unscrew the four (Hex 7/64") screws holding the Film Path assembly on the scanner frame.
13. Remove the Film Path (Transport) assembly from the scanner unit.
14. Unscrew the Six (Hex 3/32") screws holding the Transport motors to the Film Path assembly.
15. Remove the Transport motors from the Film Path (Transport) assembly.



2.20. - LED Board

1. Turn the scanner off.
2. Unplug the USB and power cables from the back of the F-235 scanner.
3. Remove all three covers (see 2.1 page 4).
4. Turn scanner onto the left exposed side.
5. Unscrew the four (Hex 2.5 mm) screws holding the bottom plate in place.
6. Unscrew the two (Phillips 3" No. 2 Bit) screws holding the bottom plate in place.
7. Remove the bottom plate from the scanner unit.
8. Ensure the Entrance Film Ramp (2.2 pg 8), Light Shield (2.3 pg 8), Film Path Assembly (2.19 pg 26) have been removed from the scanner unit before proceeding to the next step.
9. The LED board should now be exposed.

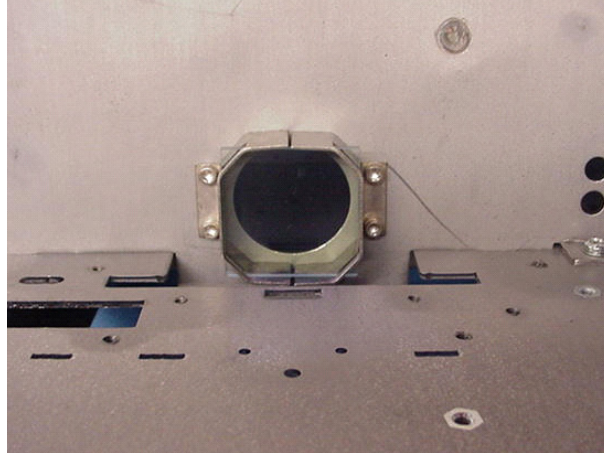
10. Unscrew the four (Hex 5/64") screws holding the Light Cavity to the scanner chassis.



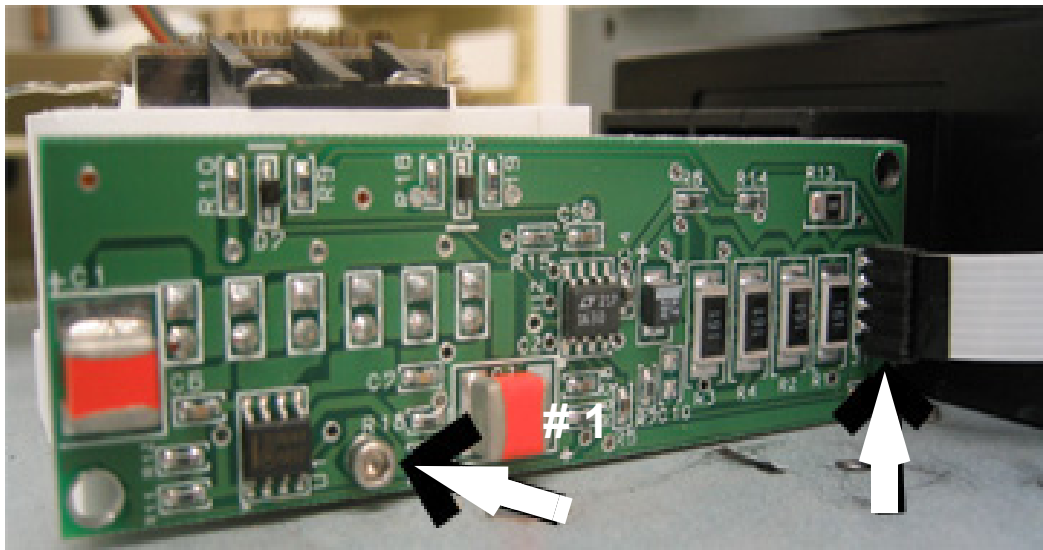
11. Turn Scanner up-right with the scanner front facing the technician.
12. Unscrew the one (Hex 7/64") screw (left side) holding the Light Shield (cover) to the scanner chassis.
13. Unscrew the one (Hex 3/32") screw (right side) holding the Light Shield (cover) to the scanner chassis.
14. Remove Light Shield (cover) from the scanner unit.



15. Unscrew the four (Hex 3/32") screws holding the IR bracket to the front of the scanner chassis.
16. Remove the IR Bracket assembly and IR glass lens from the scanner unit.



17. Unplug the thin ribbon cable from the right side of the LED board.



18. Unscrew the one screw mounting the LED board to the illumination assembly.
19. Remove the LED board from the scanner unit.
20. Unscrew two (Hex 5/64") screws connecting the Light Cone and illuminator block.
21. Remove Light Cone and Illuminator Block.