Basic Maintenance Guide

T1000

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Periodic Maintenance Procedures

This guide contains a list of maintenance tasks and procedures for completing each task.

Maintenance Procedures

The T1000 printer requires periodic maintenance according to the following time frames: Every 2 Hours of Operation, Every 4 Hours of Operation Daily Maintenance, Weekly Maintenance, Monthly Maintenance, Quarterly Maintenance, and Semi Annual Maintenance items.

Caution! You must read and understand the following documents prior to operating or servicing this printer:

- **Printer Safety Guide:** https://inkjet.support.efi.com/doc.php?doc=683
- **Basic Operator's Guide**: https://inkjet.support.efi.com/doc.php?doc=1669

Maintenance Log

The T1000 Maintenance Log provides you with a list of preventive maintenance tasks, as well as the means for tracking the completion of each task. The log has sections for hourly, daily, weekly, monthly, quarterly, semi-annual, and annual maintenance procedures.

Note: Use the Maintenance Log to record your completed maintenance tasks.

Before Starting

Follow these guidelines for the most efficient maintenance routine.

- Verify that you have all the materials required to complete each maintenance procedure.
- Perform all maintenance tasks on a routine schedule either before or after printing.
- When filling out the Maintenance Log, record the current date and time (if applicable), and write your initials in the space provided.
- The guidelines for maintenance are based on a production schedule of eight hours of printing, five days per week. Adjust your maintenance intervals if your operating shifts are longer than eight hours, five days per week.
- Please keep your T1000 Maintenance Log current. During service visits, a Field Service Engineer often reviews your maintenance records.

Every 2 Hours of Operation

Perform the following task every two hours of printer operation.

1. Vacuum print head surfaces and print head plate using the included vacuum and head attachment

A. Follow the instructions in the Basic Operator's Guide for proper print head vacuuming procedures.

Every 4 Hours of Operation

Perform the following task every four hours of printer operation.

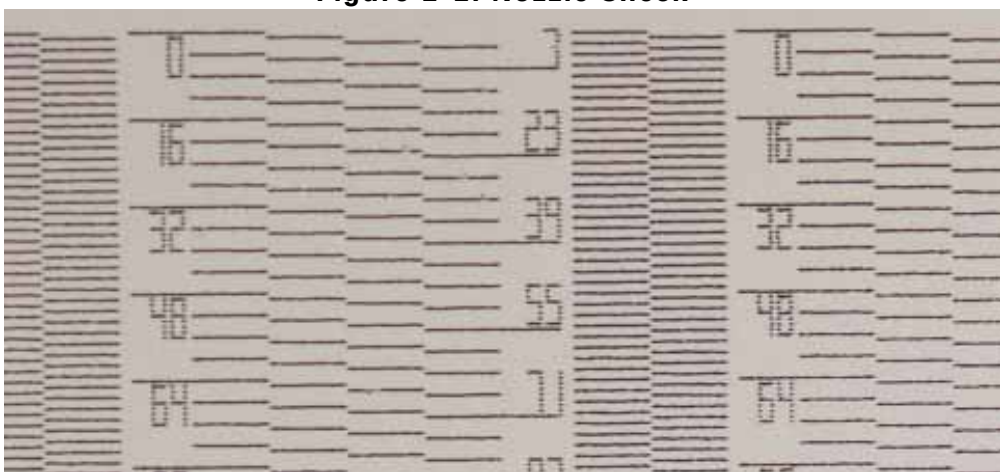
1. Print a Nozzle Check; purge and vacuum print heads after test, if necessary

A. Print a Nozzle Check test as outlined in the Basic Operator's Guide.

B. Review test results using a 30x or stronger eye loupe.

C. If nozzles are missing, purge and vacuum print heads as required to reclaim missing nozzles.

Figure 1-1: Nozzle Check



Daily Maintenance

Perform the following tasks every eight hours of production.

1. Check ink bottle levels

A. Lift each ink bottle to determine the remaining ink.

B. Replace empty ink bottles as outlined in the Basic Operator's Guide.

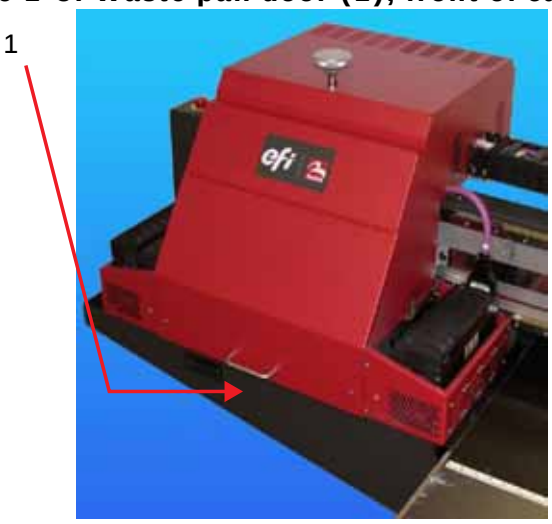
Note: Check ink bottle levels more often during times of increased printing production.

Figure 1-2: Ink bottles, printer rear

2. Check waste tray level

A. Park the carriage in **Home** position.

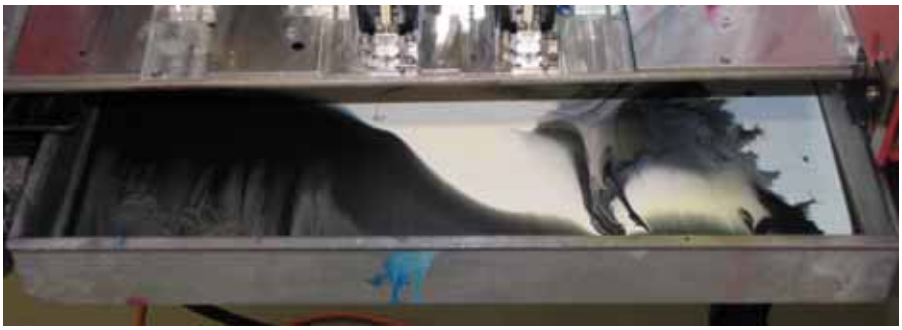
Figure 1-3: Waste pan door (1), front of carriage



B. Place a waste container on the floor beneath the carriage to capture the waste ink.

C. Open the waste pan door.

Figure 1-4: Waste Pan



D. Slowly remove the waste pan and pour contents into the waste container.
E. Replace the waste pan and close the waste pan door.
F. Dispose of waste inks in accordance with local site requirements.

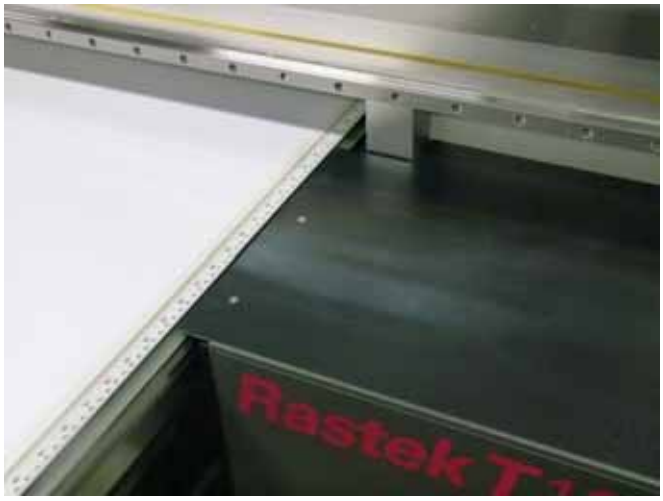
3. Verify Carriage Head Height

A. Check the carriage head height as outlined in the Basic Operator's Guide.

4. Wipe dust and debris from the carriage end plate

A. Wipe off the carriage end plate using a clean knitted polyester wipe saturated with isopropyl alcohol.

Figure 1-5: Carriage End Plate



5. Print a 1'x1' section of White

A. Open (or create) a white image measuring approximately 1' x 1' (30cm x 30cm).
B. Load a dark color media on printer and print the 1'x1' block of white.
C. Analyze image with a 30x or stronger eye loupe.
D. If nozzles are missing, purge and vacuum heads as outlined in the Basic Operator's Guide.

Weekly Maintenance

Perform the following tasks every week of printer operation.

1. Clean static bars and pins, if equipped

A. Unplug the Static Bar power cord.
B. Brush static bars on each side of printer carriage, Figure 1-6, with a stiff nylon bristle brush to remove debris.
C. Plug in Static Bar power cord.

Figure 1-6: Side view of carriage and static bar

1	Static bar
2	Static bar pins

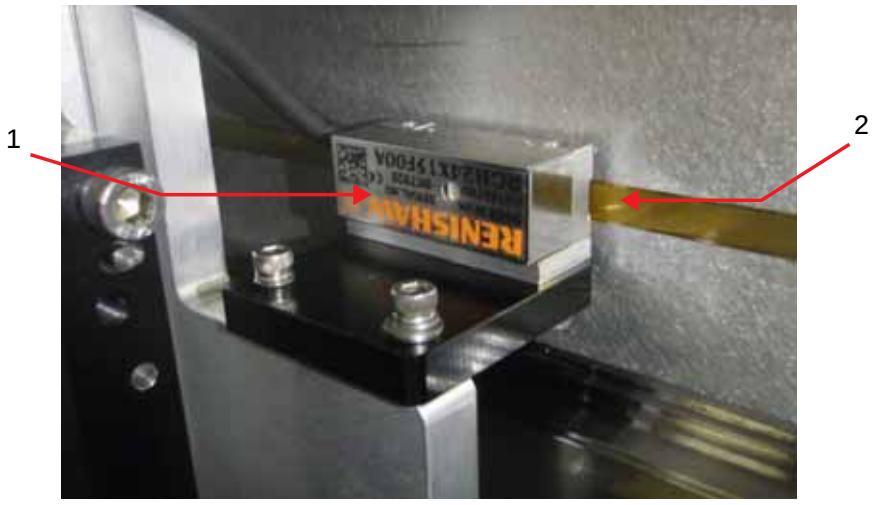
2. Clean linear encoder strip

A. Park the carriage in **Home** position.

B. Wipe down the entire length of the linear encoder strip with a clean knitted polyester wipe dampened with Isopropyl Alcohol to remove ink and debris.

C. Move carriage to opposite printer end and repeat step B.

Figure 1-7: Top right side of carriage



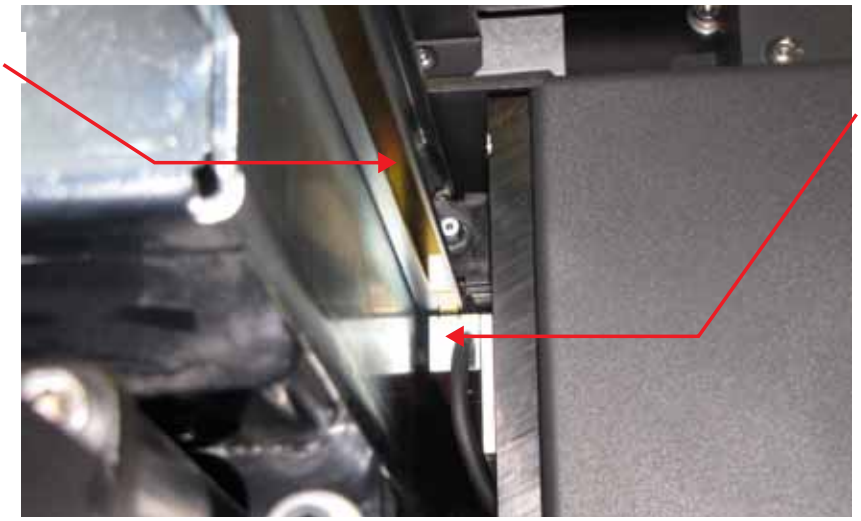
1	Encoder read head
2	Encoder strip

3. Clean gantry encoder strip

A. Park the gantry in **Home** position.

B. Wipe down the entire length of the gantry encoder strip with a clean knitted polyester wipe dampened with Isopropyl Alcohol to remove ink and debris.

Figure 1-8: Top right side of carriage



1	Gantry encoder strip
2	Gantry encoder

4. Clean UV lamp housing air filters

Note: Ensure carriage fans are off before cleaning filters.

A. Remove plastic filter assembly.

Figure 1-9: Left UV light fan filter (1)

B. Remove dust and debris from filter using a toothbrush or similar brush.

Note: Never use a metal or stiff bristle brush, as this can damage the filter.

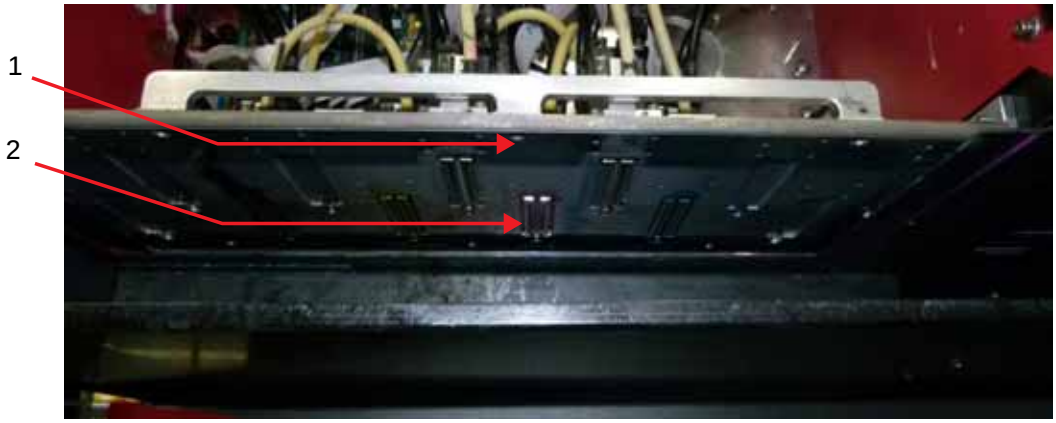
C. Vacuum filter assembly clean.
D. Replace filter assembly.
E. Repeat for opposite UV filter.

5. Wipe down Jet Plate

A. Park the carriage in **Home** position.
B. Open waste pan door and remove waste pan.
C. Wipe jet plate with a clean knitted polyester wipe saturated with Flush Solution.

Caution! Do not wipe the faces of the print heads during this procedure.

Figure 1-10: Jet plate, bottom of carriage



1	Jet Plate
2	Print head

6. Inspect Carriage Rails

A. Inspect entire length of top and bottom carriage rails and wipe off large debris with a clean, dry knitted polyester wipe.

B. Alternate carriage position from Home end to opposite end daily when inspecting the carriage rails.

Monthly Maintenance

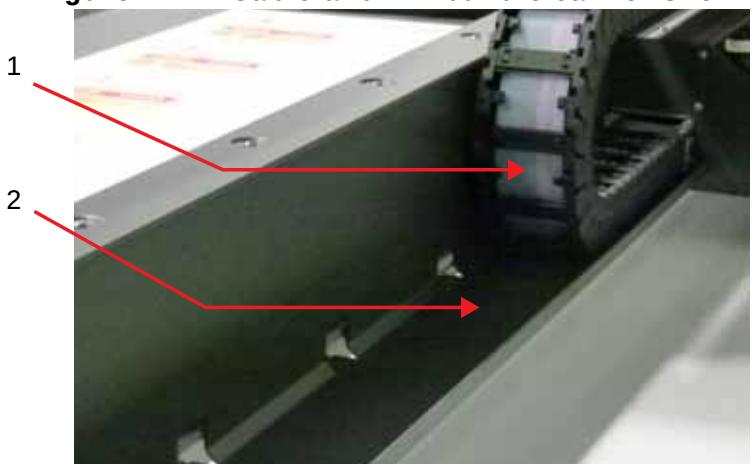
Perform the following tasks every month of printer operation.

1. Vacuum the umbilical assembly and shelf

A. Park the carriage in **Home** position.

B. Vacuum umbilical assembly and carrier shelf, Figure 1-11.

Figure 1-11: Cable and ink bundle carrier shelf



1	Cable and ink bundle carrier
2	Cable and ink bundle carrier shelf

2. Clean Carriage Drive Belt

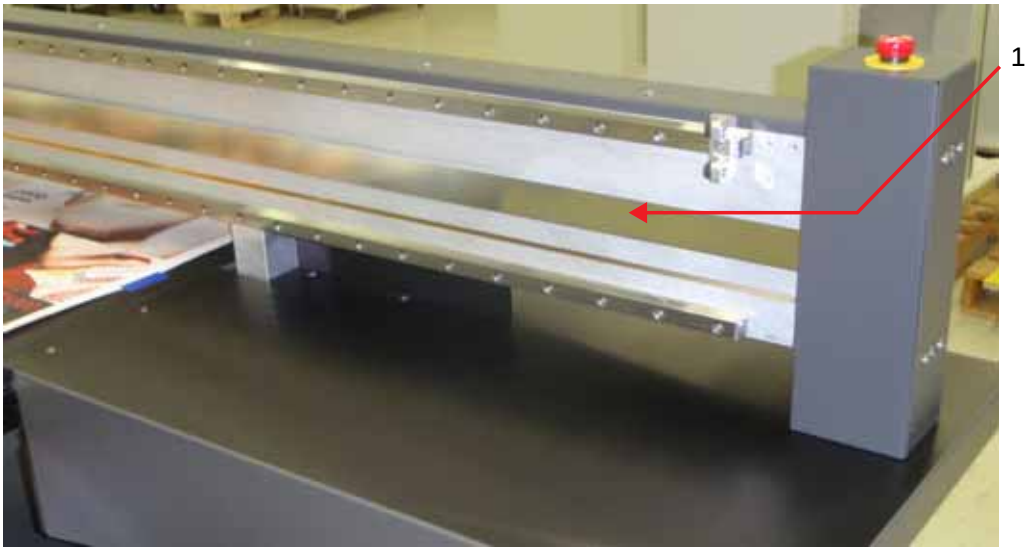
A. Park the carriage in **Home** position.

B. Wipe down entire length of exposed carriage drive belt using a clean, knitted polyester wipe dampened with Isopropyl Alcohol.

C. Move carriage to opposite end and repeat step B. for the other belt end.

Caution! Use extreme care when cleaning this metal belt, as the edges are sharp and present a cutting hazard.

Figure 1-12: Carriage Drive Belt



1	Carriage drive belt

3. Soak Print Heads; Vacuum Print Heads and Jet Plate

A. Park the carriage in **Home** position.

B. Turn off UV lamps and allow lamps to cool.

Danger! To prevent potential fires, never place materials under the carriage if UV lamps are either on or hot.

C. Cover a 8” x 19” piece of foam core with plastic wrap, then cover entire piece with clean Knitted Polyester Wipes.

D. Saturate wipes with approved Flushing Solution.

E. Raise carriage and place foam core under jet plate; foam core should be identical in size to the jet plate.

F. Lower carriage onto foam core and soak for a minimum of one hour or overnight.

G. After soaking, remove foam core; discard wipes and plastic wrap.

H. Vacuum clean print heads and jet plate as described in the Basic Operator's Guide.

4. Wipe down and Grease Carriage Rails

A. Park the carriage in **Home** position.

B. Wipe down entire length of top and bottom carriage rails with a knitted polyester wipe to remove existing grease and debris.

C. Apply a thin coat of lithium grease to the three exposed sides of the top and bottom carriage rails.

Caution! Care should be taken not to get grease or fingerprints on the linear encoder strip.

D. Move carriage to opposite printer end.

E. Wipe down and grease carriage rails where carriage was parked as outlined in steps B. and C. to complete cleaning and greasing procedure.

Quarterly Maintenance

Perform the following task every three months of printer operation.

1. Clean printer cabinets and components

A. Shutdown printer as outlined in the Basic Operator's Guide.

B. Remove electronics cabinet cover.

C. Using a vacuum with brush attachment, remove dust and debris from components, fans, boards, and any other locations where dust and debris collects, such as cabinet corners and fan exhaust ports.

D. Replace electronics cover.

Figure 1-13: Printer Electronics Cabinet

2. Wipe down and Grease Gantry Rails

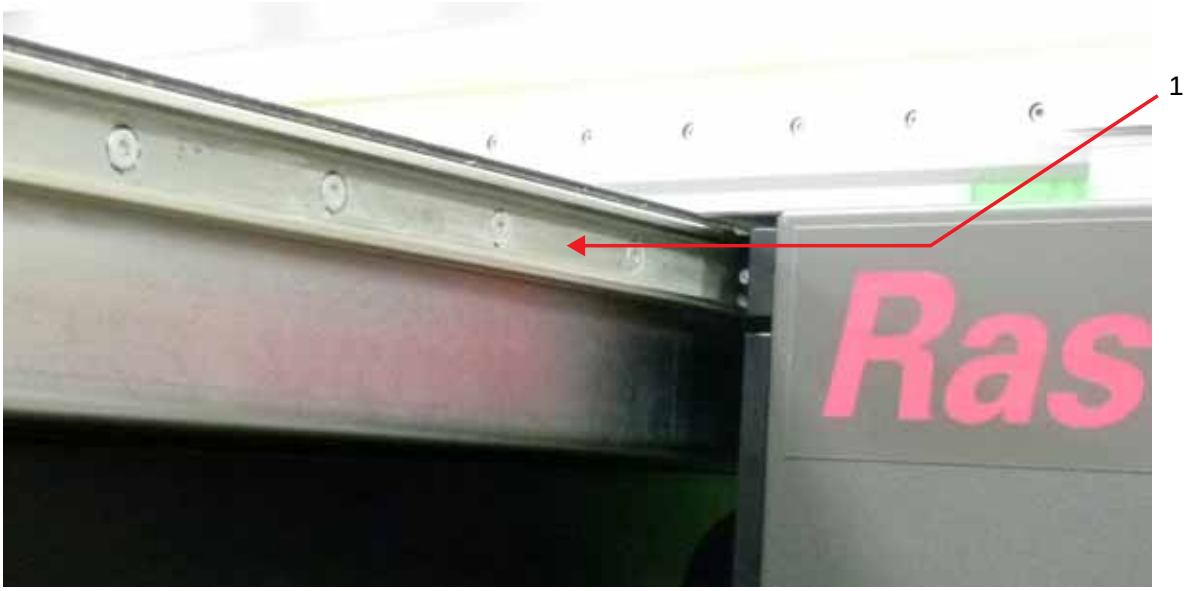
A. Park the gantry in **Home** position.

B. Wipe down entire length of exposed gantry rails with a knitted polyester wipe to remove existing grease and debris.

C. Apply a thin coat of lithium grease to the interior gantry rails.

Caution! Care should be taken not to get grease or fingerprints on the gantry encoder strip or the Gantry drive screws.

Figure 1-14: Gantry rail



1	Gantry interior rail

D. Move gantry to printer front.

E. Wipe down and grease gantry rails where gantry was parked as outlined in steps B. and C. to complete cleaning and greasing procedure.

Semi Annual Maintenance

Perform the following tasks every six months of operation.

1. Replace all primary ink filters

A. Locate primary ink filter for each color. See Figure 1-15.

Figure 1-15: Primary Ink filters - six total

1	Primary ink filter

B. Pinch ink lines with hemostat pliers near ink filter.

Note: Place a cloth under each filter, as ink will flow from ink filter and tubes.

C. Unscrew and remove primary ink filter from ink line.

D. Unscrew and remove filter from printer and discard old filter.

E. Thread new filter into printer frame and tighten by hand.

F. Thread ink line into new filter and tighten by hand.

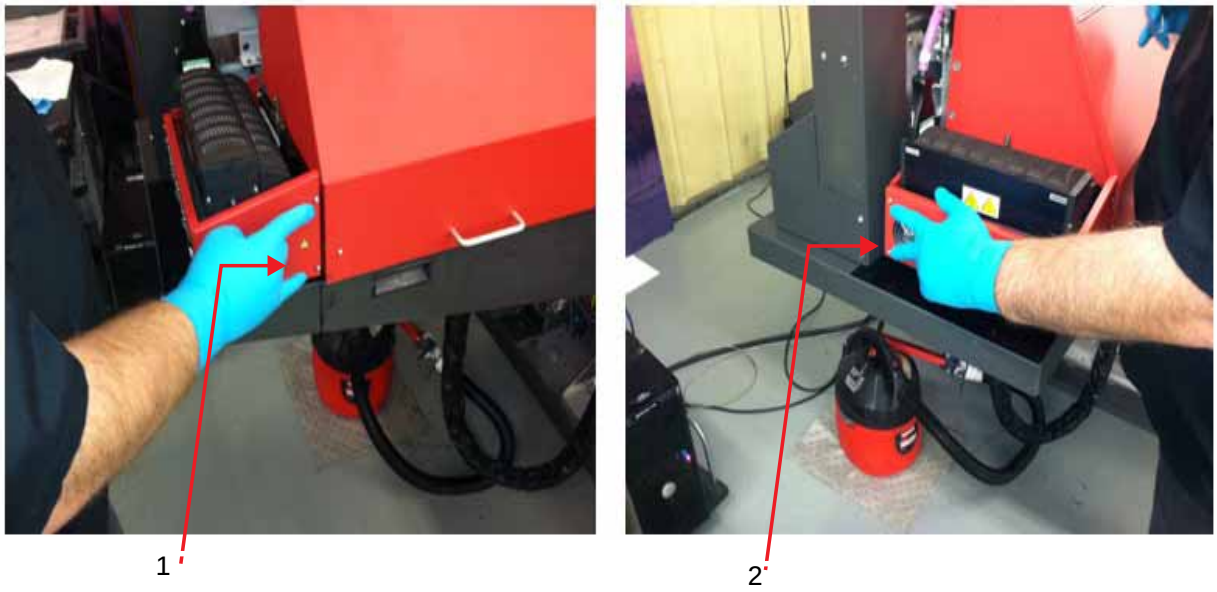
G. Repeat for remaining filters.

H. Perform an Ink Purge as outlined in the Basic Operator's Guide to remove air in the ink lines.

2. UV Bulb Replacement

A. Shut OFF Lamps.
B. Check to ensure the UV bulbs have cooled properly. Allow bulbs to cool if still hot.
C. Shutdown the T1000 printer (optional)
D. Perform a “Lock-Out, Tag-Out” on the printer.
E. Remove four screws from on the front and side of the enclosure to access the Bulb Base. Set screws aside to be reused.
F. Pull the enclosure clear of the Bulb Base and allow it to hand beside the carriage allowing access to the Bulb Base.

Figure 1-16: UV Lamp Enclosure Screw Locations



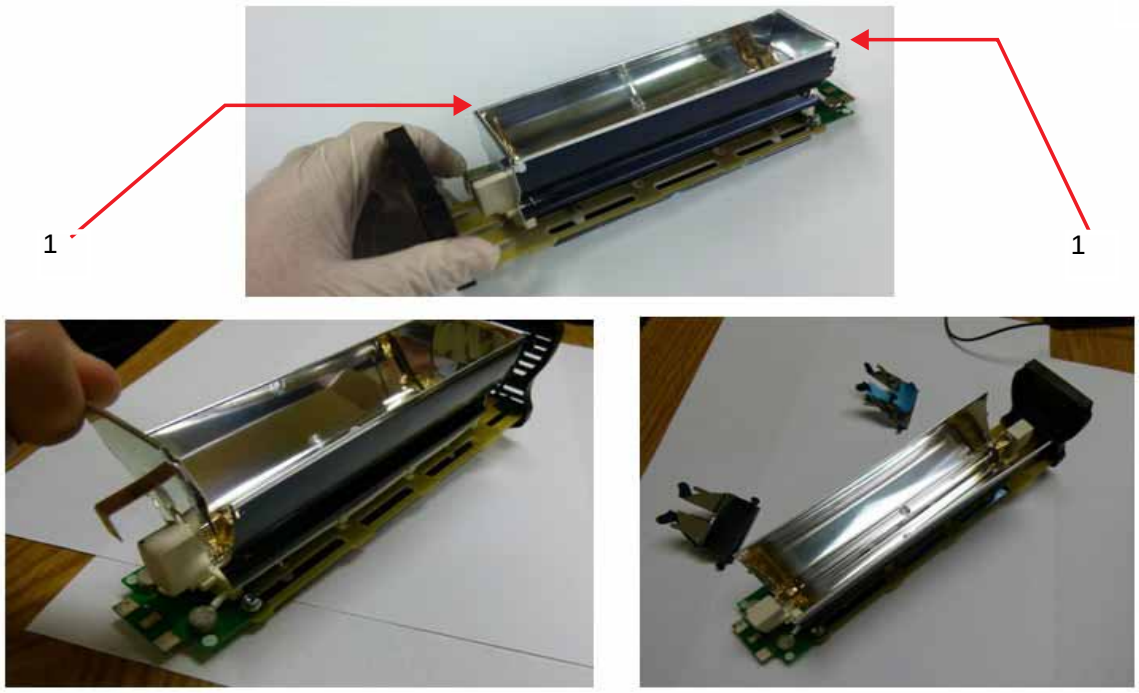
1	Front Screws
2	Side Screws

Figure 1-17: UV Bulb Base Removal

1	Enclosure Cover
2	Bulb Base Screw
3	Bulb Base

G. Lift the enclosure cover and set it to the side of the carriage.
H. Remove the Bulb Base support screw.
I. Slide the Bulb Base out of the housing

Figure 1-18: End Reflector Removal



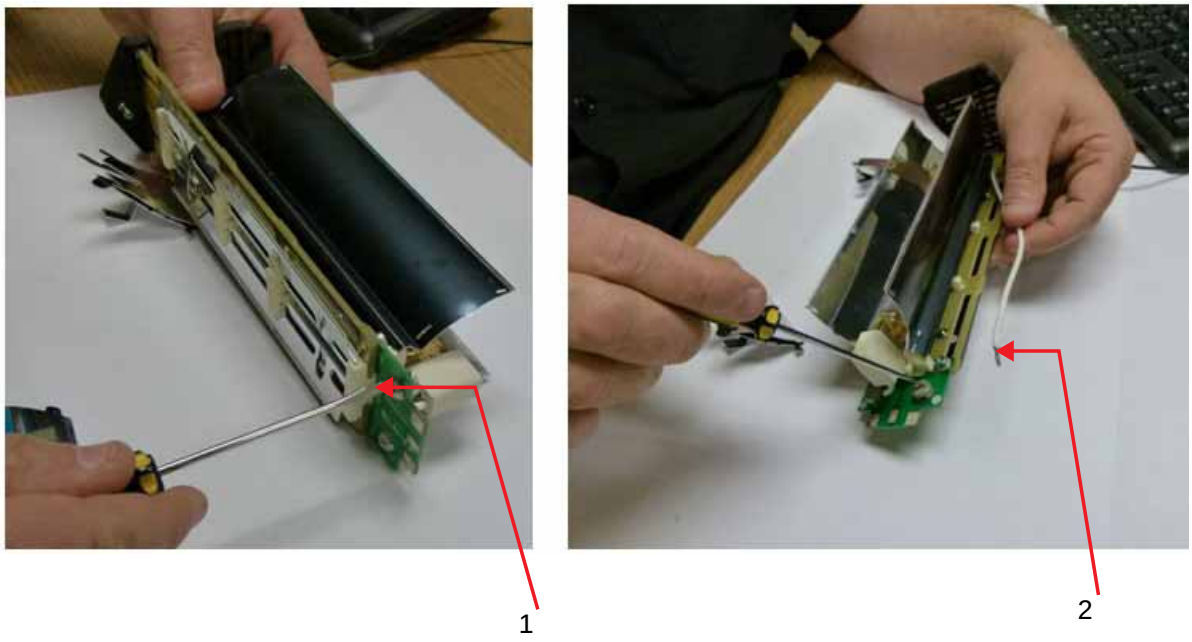
1	End Reflector Tabs

J. Carefully observe the position of the end deflectors and make notes to ensure proper reassembly.

K. Bend the two small tabs on the outside of the End Reflectors so they can be removed.

L. Remove the End Reflectors and set aside for re-installation.

Figure 1-19: UV Bulb Terminal Block Disconnect



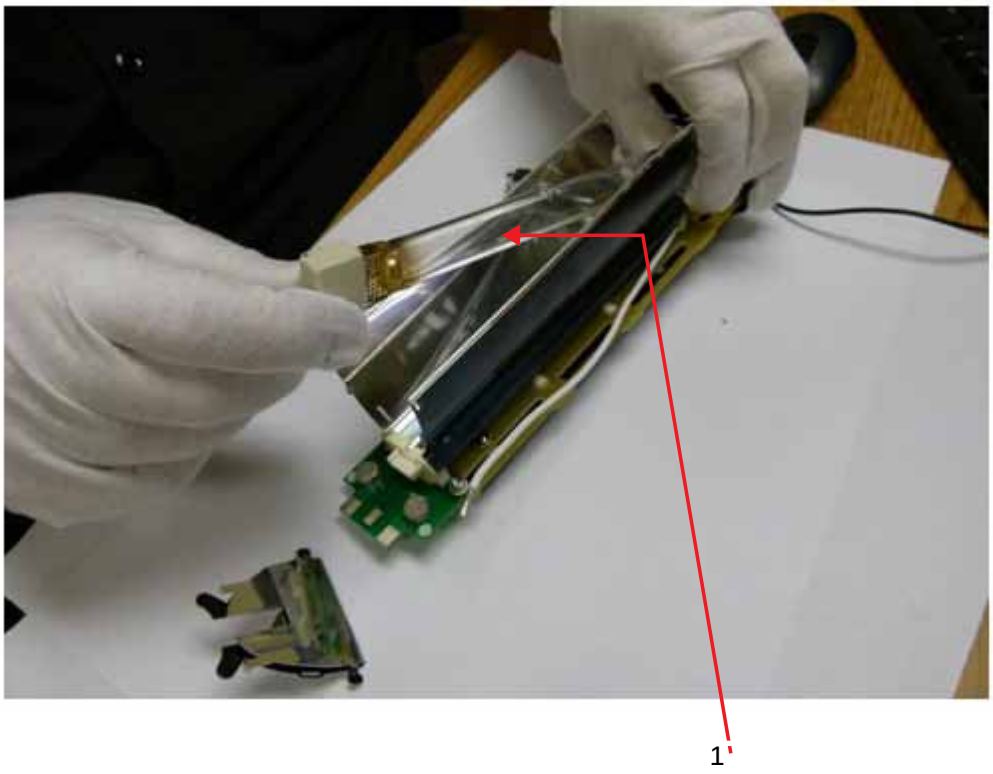
1	Retaining Screw
2	Wire

M. Turn the UV Bulb Base over to expose the Bulb Lead Retaining Screws

N. Loosen the Bulb Lead Retaining Screw on the UV Bulb Terminal Block.

O. Remove the wire from the clips leading to the UV Bulb Terminal Block on the other side.

Figure 1-20: UV Bulb Replacement



1	T1000 UV Bulb

P. Grasp the spent UV bulb and pull it away from the UV bulb base.

Q. Install new UV bulb in the bulb base. Pay close attention to feeding the leads into the receptacle.

R. Reroute the wire and tighten bulb lead retaining screw using a flat blade screwdriver.

S. Replace end reflectors and bend metal tabs down to secure reflectors.

T. Reinstall bulb base to lamp module and Secure using one screw set aside earlier.

U. Slide lamp module back into place and secure with the one screw set aside earlier.

V. Reinstall the enclosure covers and secure using four screws set aside earlier.

W. Allow the bulbs to achieve full operating temperature before printing.

T1000 Maintenance Log

Weekly Maintenance Chart: ___ /___ /___ to ___ /___ /___

Every Two Hours of Operation	Day 1			Day 2			Day 3			Day 4			Day 5			Day 6			Day 7		
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
1. Vacuum print head surfaces and print head plate using the included vacuum and head attachment.																					

Every 4 Hours	Day 1			Day 2			Day 3			Day 4			Day 5			Day 6			Day 7		
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
1. Print a Nozzle Check; purge and vacuum print heads after test, if necessary.																					

Daily Tasks (Perform prior to Printing and every eight hours	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day7
1. Check the ink bottle levels and replace ink bottles which are very low or empty.							
2. Check waste tray level and empty if more than 3/4 full.							
3. Verify carriage height setting as outlined in the Basic Operator's Guide.							
4. Wipe dust and debris off carriage end plate with a clean **Knitted Polyester Wipe** (part# 45084568) saturated with **Isopropyl Alcohol**.							
5. Print a 1'x1' section of White to keep white ink system functioning properly.							

Weekly	Date	Initials
1. Clean static bars and pins with a soft bristle **Brass Wire Brush**, if equipped.		
2. Clean linear encoder strip with a clean **Knitted Polyester Wipe** (part# 45084568) dampened with **Isopropyl Alcohol**.		
3. Clean gantry encoder strip with a clean **Knitted Polyester Wipe** (part# 45084568) dampened with **Isopropyl Alcohol**.		
4. Clean UV lamp housing filters with toothbrush and vacuum any debris.		
5. Wipe down the jet plate using a clean **Knitted Polyester Wipe** (part# 45084568) saturated with Jet Flush Solution (part# 45080261).		
6. Inspect entire length of top and bottom carriage rails and remove any large debris with a dry, clean **Knitted Polyester Wipe** (part# 45084568).		

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Instructions: Print the first page of the T1000 Printer Maintenance Log each week to maintain a record of daily and weekly maintenance activities.
Print the second page once per year to maintain a record of monthly, quarterly, semi-annual, and annual maintenance activities. When a task is complete, enter your initials.

Maintenance Chart for 20___

Monthly	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
1. Vacuum umbilical assembly and shelf.												
2. Clean carriage drive belt with a clean **Knitted Polyester Wipe** (part# 45084568) and **Isopropyl Alcohol**.												
3. Lower carriage onto foam core covered with clean **Knitted Polyester Wipes** (part# 45084568) soaked with Flush Solution (part # 45080261) and soak for a minimum of one hour or overnight; after soaking, vacuum jet plate and print heads clean as described in the Basic Operator's Guide.												
4. Wipe down entire length of top and bottom carriage rails with a clean **Knitted Polyester Wipe** (part# 45084568) saturated with **Isopropyl Alcohol**; grease top and bottom carriage rails with **lithium grease** (P8030-A), prior to moving carriage.												

Quarterly	Quarter 1	Quarter 2	Quarter 3	Quarter 4
1. Clean/remove dust from AC power cabinet, power supplies, exhaust ports, servo controllers, and all cabinet fans.				
2. Wipe down entire length of top and bottom gantry rails with a clean **Knitted Polyester Wipe** (part# 45084568) saturated with **Isopropyl Alcohol**; grease top and bottom carriage rails with **lithium grease** (P8030-A), prior to moving gantry. **Warning!** Never grease the gantry lead screws underneath the gantry rails.				

Semi Annually	January	July
1. Replace all primary ink filters with **Primary Ink Filters** (part# 45078587).		
2. UV Bulb Replacement		

Common Maintenance Items							
Description	**EFI Part Numbers**		**Description**	**EFI Part Numbers**		**Description**	**EFI Part Numbers**
Lithium Grease	P8030-A		Knitted Polyester Wipes	45077321		Primary Ink Filter	45078587
Cotton Gloves	P3775-A		Stiff bristle brush, nylon	N/A		Print Head Flush	45080261

Support			
	United States	**Europe and Middle East**	**Other**
Technical Support	+1 855-334-4457, ext. 4	+32 2 749 94 50	+1 650-357-4790
Part Orders	+1 855-334-4457, ext. 1	+31 20 658 8070	internationalorders@efi.com
Online Support	http://inkjet.support.efi.com/	http://inkjet.support.efi.com/	http://inkjet.support.efi.com/

The maintenance guidelines are based on a production schedule of eight hours of printing, five days / week.
Adjust your maintenance intervals if your operating shifts are longer than eight hours of printing.

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