

Océ | LightJet 430 Maintenance Guide



Wide Format Photo Laser Printer

Revision F · April 2002



Océ Display Graphics Systems

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Document History

Date	Doc. No.	Revision	Revision Summary
May 14, 2001	45574	C	Additional compliance information; new manual format.
Jan. 22, 2002	45574	D	Changed all Gretag references to Océ; new format.
Feb. 13, 2002	45574	E	Added info that manual also covers LightJet 430RS.
Apr. 23, 2002	45574	F	Added note on page 2-4 about clean dry air being necessary. Updated phone numbers for service contacts.

Product Support, Documentation and Service

For further information on documentation and support for your LightJet® 430 or for information on other Océ Display Graphics Systems products, please contact:

Océ Display Graphics Systems

13231 Delf Place, #501

Richmond, British Columbia, Canada V6V 2C3

Phone: (604) 273-7730 Fax: (604) 273-2775

Web: <http://www.dgs.oce.com>

Tech Support Site: <http://www.dgs.oce.com/rgi/tech/index.html>

Comments on this manual?

Please forward to the above address, marked “Attention: Technical Writer”.

Océ maintains a comprehensive support structure for its LightJet® customers. Upon installation of your printer, you will be provided with the name of the sales and service office responsible for your account. Record this information, along with the serial number of your LightJet 430. Always report service problems to the office assigned to your account at installation. Contacting the factory directly may cause unnecessary delays in resolving your service issue.

US and Canadian Customers:

Océ Display Graphics Systems
13231 Delf Place, Building #501
Richmond, British Columbia, Canada
V6V 2C3

Service: 1-800-456-3473
Fax: 604-232-3154
Spares Orders: 1-800-295-6433 ext. 4

European Customers:

Océ Display Graphics Systems
6 Waltham Park
Waltham Road
White Waltham
Berkshire SL6 3TN
England

Service: 44 (0) 1628-519720
Service Fax: 44 (0) 1628-519589
Spares Enquiries: 44 (0) 1628-519736
Spares Orders Fax: 44 (0) 1628-519751

Asia Pacific Customers:

Océ Display Graphics Systems
Grand Palace Tamachi 601
4-9-18 Shibaura, Minato-ku
Tokyo, Japan 108-0023

Service: 81-3-5484-8033
Fax: 81-3-5484-2071

Other Customers:

Your regional distributor

When you call one of our customer service numbers you will be provided with telephone technical support. Outside of office hours, you can leave a message and your call will be returned the next working day. When you call, identify yourself as a LightJet® customer and provide the following information:

- The serial number of your LightJet 430
- Your company name
- Your name
- Your telephone number
- Nature of the problem

If we are unable to resolve your problem over the telephone, field engineers can be dispatched to your site to conduct repairs. Service visits are paid for by the customer, either under a maintenance agreement or by purchase order or prepayment. Time and material rates are charged for any service not covered under a maintenance agreement. Before calling to report a problem, gather as much information about the problem as possible and have it ready to provide to the customer care center engineer. The more information you can provide initially, the more quickly the problem can be corrected.

Product Compliance and Standards

Electromagnetic Compatibility

This equipment generates, uses and radiates radio frequency energy and if not installed and used as designed or intended, may cause interference to radio communications. This equipment has been tested and found to comply with the limits for a Class A computing device. This equipment has been designed to provide reasonable protection against such interference when operated in residential and commercial environments. Operation of this equipment in a residential area may cause interference, in which case the user, at his own expense, is required to take whatever measures are required to correct the interference.

United States Of America - FCC

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation.

Canada - ICES-003

This Class A/B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe A/B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

European Community - EMC

This device complies with Class A/B emission limits in accordance with EN55022.

Electromagnetic compatibility - Emissions

89/336/EEC

Electromagnetic compatibility - Immunity

89/336/EEC

Electrical Safety

This equipment has been tested and found to comply with the following electrical safety standards:

North America

Canada

CSA 950

United States of America

UL 1950

European Community

EN60950

Low Voltage Directive

73/23/EEC

EN60204-1

Machinery Directive

93/68/EEC

Laser Safety

This equipment is a Class 1 laser product which is safe under all operating conditions. The following standards were used to evaluate compliance:

<u>United States of America</u>	
Center for Devices and Radiological Health (CDRH)	21 CFR 1040
<u>Canada and European Community</u>	
Safety of Laser Products	EN60825-1

End of Section

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1 LightJet 430 Safety Information

This manual is applicable to both the LightJet 430 and LightJet 430RS printers. All references to the LightJet 430 also refer to the LightJet 430RS.

Important Safety Information For Maintenance Personnel

The LightJet® 430 is equipped with laser safety warning labels that are strategically placed to remind user and maintenance personnel of laser safety issues before any exposure can occur. Please note that the panels at the home (left) end cannot be removed by maintenance personnel. These panels can only be removed by a qualified service engineer.

This is a Class 1 laser product meeting laser safety requirements of 21 CFR 1040 and EN60825-1 as applicable. Laser devices contained within this equipment are hazardous. All procedures necessary to perform user maintenance functions are outlined in this document. Internal lasers have the following output characteristics under maximum conditions:

Laser Type	Wavelength (nm)	Output Power (mW)	Beam Divergence (mRad)
Helium Neon (HeNe) Red Laser:	633	14	1.4
Helium Neon (HeNe) Green Laser:	543	1.7	1.0
Argon (Ar+) Blue Laser:	458	2.5	1.0

Table 1-1. LightJet® 430 laser specifications

CAUTION DANGER: LASER RADIATION: THIS EQUIPMENT WILL EMIT LASER RADIATION WHEN OPEN AND INTERLOCK SWITCHES DEFEATED. AVOID EYE EXPOSURE TO DIRECT AND SCATTERED LASER RADIATION.

DANGER: RADIATIONS LASER: CET ÉQUIPEMENT PEUT ÉMETTRE DES RADIATIONS LASER LORSQU'IL EST OUVERT ET EN CAS DE DÉFAILLANCE DES INTERRUPTEURS DE SECURITÉ. EVITER TOUT CONTACT DES YEUX AUX RAYONS DIRECTS ET INDIRECTS DES LASERS.

GEFAHR: LASERSTRAHLUNG: IM OFFENEM ZUSTAND UND MIT ÜBERBRÜCKTEN SICHERUNGSSCHALTERN WIRD VON DIESEM GERÄT LASERSTRAHLUNG EMITTIERT. VERMEIDEN SIE DIE BESTRAHLUNG DER AUGEN DURCH DIREKTE ODER GETREUTE LASERSTRAHLUNG.

CAUTION CAUTION: USE OF CONTROL OR ADJUSTMENTS OR PERFORMANCE OF PROCEDURES OTHER THAN THOSE SPECIFIED HEREIN MAY RESULT IN HAZARDOUS LASER RADIATION EXPOSURE.

ATTENTION: LE CONTROLE ET L'AJUSTEMENT AINSI QUE LA MODIFICATION DES PERFORMANCES AUTRES QUE CEUX STIPULÉS DANS CE MANUEL PEUVENT CRÉER DES EFFETS IMPRÉVUS DE LA RADIATION LASER.

VORSICHT: ANDERE, ALS HIER VORGESCHRIEBENE, BENUTZUNG VON KONTROLLSCHALTERN, JUSTIERUNGEN UND DURCHFUEHRUNG VON VORSCHRIFTEN, KANN ZU GEFAEHRLICHER BESTRAHLUNG FUEHREN.

End of Section

2 Routine Maintenance Procedures

NOTE The LightJet® 430 is a digital photo printer intended for operation under conditions of a controlled environment. Photo printers are classified as information technology equipment (ITE), and are subject to applicable ITE test and working environment standards. Deployment of this equipment in an environment or under conditions other than specified and/or recommended may result in degradation of machine performance.

Preventative Maintenance Service Visits

Customers who hold a service contract for their LightJet® 430 receive regular Preventative Maintenance (PM) service visits. During a PM visit, our service engineer will:¹

- Review customer log and address potential problems
- Verify acceptable level of image quality
- Verify media transport operation
- Verify electrical and optical systems using LJ Explorer
- Verify that a hard copy of the EEPROM data is on file at the customer site
- Record software and firmware versions
- Record ND Light Levels from LJ Explorer / Optical Motors
- Inspect all optics, clean and adjust if necessary
- Clean media load and unload area
- Clean rubber rollers and drum
- Clean all air filters

Customers who do not have a service contract can request a PM (and provide a purchase order number) in order to receive this service. To ensure consistent and reliable operation of your LightJet® 430, we recommend that a PM service visit be performed every 6 months.

Cleaning Your LightJet® 430

Cleaning the LightJet® 430 on a regular basis will prevent build up of particles in the drum and media transport system that can cause imaging artifact problems. The following schedule is a guideline only; machines that experience heavy use should be cleaned more often.

Notes:

¹ PM activities may change without notice.

Maintenance Activity	Weekly	6 Mths	Annually
Clean media load & unload area	■		
Clean output pinch rollers	■		
Clean drum	■		
Clean the light shield	As required.		
Clean or replace the intake air filter		■	
Replace the coalescing filter			■

Media Load and Unload Area

Paper dust and small shavings from cutting media can build up in this area over time. To clean:

1. Open front media door.
2. Use a vacuum cleaner with an appropriate attachment to remove dust and shavings.

Output Pinch Rollers

Paper dust and small shavings from cutting media can build up on the roller's rubber surfaces over time. To clean:

1. Open front media door.
2. Using the control panel, select Set Up/Cleaning Mode/Clean Output Rollers. Press ENTER to rotate the output pinch rollers 1/8 revolutions at a time so they can be properly cleaned (do this 9 times for a full rotation).
3. Use a vacuum cleaner with an appropriate attachment to remove dust and shavings from the rollers.
4. Close the front media door.

Drum

Paper dust and particles can build up on the drum's surface over time. To clean:

1. Using the control panel, select Set Up/Cleaning Mode/Clean Drum. Press ENTER to park the media guides at their home position and move the light shield away from the customer access side of the machine.
2. Open right side door to access the drum. DO NOT step into the drum.

3. Use a vacuum with a soft brush attachment or a dust mop with an electrostatic cleaning cloth to remove dust and particles from the inside drum surface.
4. Close right side door.

Light Shield

The light shield consists of two structures; the imaging beam scans in a gap between them. Cleaning the light shield is only required if a foreign particle or hair on the light shield is blocking the laser, causing an image artifact. It is recommended the drum be free of paper dust and particles before cleaning the light shield. This will minimize the chance of recontaminating the light shield. To clean the light shield:

1. Examine the image exhibiting the artifact to ascertain approximately where in the light shield the hair or particle is located.
2. Using the control panel, select Set Up/Cleaning Mode/Clean Light Shield. Press ENTER to park the media guides at their home position and move the light shield to the customer access side of the machine.
3. Open the right side door to access the light shield.
4. The spokes of the light shield are spaced far enough apart that you can put your head between them and look through the gap to find any debris. A small flashlight can be helpful. Use compressed air or tweezers to remove debris. Use caution when handling the light shield. It can be damaged if any appreciable weight is applied to it.
5. Using a can of clean air, spray the problem area liberally. Direct the air so that it is blowing air outward through the gap in the radial direction.
6. Close the right side door.

Intake Air Filter

The intake air filter is located at the base of the machine on the left-hand side. To clean or replace:

1. Remove media from the LightJet® 430. When in place, the air intake filter blocks light from entering the machine.
2. Remove the filter grill to access the filter.
3. If the filter is dirty but otherwise undamaged, clean it using a mild solution of water and dish detergent.
4. Thoroughly dry the filter using a cloth and/or forced air dryer. Water must never contact the ECU circuit boards.

5. If the filter is damaged, replace it. Contact Océ (see “Product Support, Documentation and Service” on page ii) for a replacement filter (part #39958).
6. Re-install the filter and grill.

NOTE If anything other than clean dry air is sent to the air bearings in the micropositioner, the air ports within the micropositioner can become clogged. There is no way to repair this in the field and the entire LightJet must be returned to the factory for repair.

Coalescing Filter

The coalescing filter is located just inside the right side door. Examine the filter monthly, checking for the following:

- Dirt
- Liquid or oil in the bowl - should not be above the lower baffle holding the filter element.
- Differential pressure indicator - should not extend more than half way into the clear dome located above the retaining ring on top of the filter body.

If one or more of the above conditions exists, replace the coalescing filter. Otherwise, replace once per year. To examine or replace the coalescing filter:

CAUTION CAUTION: THE FILTER CONTAINER IS UNDER PRESSURE (60 PSI). TURN OFF THE HOUSE AIR SUPPLY AND DEPRESSURIZE ALL AIR LINES CONNECTED TO THE FILTER ASSEMBLY. THERE IS A RISK OF PERSONAL INJURY IF RELEASED UNDER PRESSURE.

ATTENTION: LA CARTOUCHE DU FILTRE EST SOUS PRESSION (4.1 BAR). DÉCONNECTEZ LA SOURCE D'ALIMENTATION D'AIR COMPRIMÉ ET DÉPRESSURISEZ TOUTES LES LIGNES À AIR CONNECTÉES AU PORTE-FILTRE. IL EXISTE UN RISQUE DE BLESSURE SI LE PORTE-FILTRE SE RELÂCHE SOUS PRESSION.

VORSICHT: DER LUFTFILTER IST UNTER DRUCK (4,1 BAR). DIE LUFTZUFUHR MUSS ABGESTELLT UND DIE LEITUNGEN ZUM LUFTFILTER ENTLEHRT WERDEN. ES BESTEHT VERLETZUNGSGEFAHR SOLLTE ER UNTER DRUCK GEÖFFNET WERDEN.

1. Shut off the house air supply and depressurize the machine by disconnecting the 6 mm (¼”) air hose from the bulkhead tube connector on the right side of the machine.
2. Open the right side door to access the drum.
3. Unscrew the threaded collar and carefully remove the bowl.
4. Clean (using mild soap and water only) and thoroughly dry all internal parts and the bowl before reassembling.

If a new filter element is required:

1. Unscrew the lower baffle and remove the old filter element. Insert the new filter element and replace the lower baffle; tighten firmly.
2. Replace bowl and lubricate seal, if necessary, to help keep it in position. Use only mineral based oils or grease.
3. Install bowl into body and tighten collar firmly with your hands.
4. Close the right side door.
5. Reconnect the 6 mm (¼”) air hose and turn on the house air supply.

Power Distribution Checklist

Maintenance of the AC power system involves checking the following parts:

- Building circuit breaker for dedicated power
- Input power cord condition
- Input power cord connection at the wall outlet
- Input power cord connection on the power distribution unit (PDU).

Checking the Cooling System

The cooling system consists of two cooling fan assemblies and one air blower. One (dual) cooling fan assembly is located under the electronic control unit (ECU). The other (single) fan assembly is located on the rear panel left side of the LightJet® 430.

The greatest heat source is the blue laser head, which is cooled by the blue laser blower. It is imperative that the airflow through the vent hose never be restricted or the blue laser could be damaged and image quality degraded. If overheating does occur, the blue laser will shut down, interrupting image production. Refer to the LightJet® 430 Site Preparation Guide for heat removal specifications.

Clearing Media Jams

Load Jam

To clear a media jam that has occurred during media loading:

1. Using the control panel, select Set Up/Motor Control/All Motors Reverse. Attempt to retract 10 inches of media.
2. If the media moves freely, use “All Motors Reverse” again for 135 inches to rewind the loaded media onto the infeed roll. Inspect leading edge of media for damage. Cut away damaged media if necessary.

3. If the media does not move freely, it must be removed manually from the drum. Cut the media before the infeed pinch rollers by running a knife in the slot between the idler roller and the first guide vane. Remove the infeed media roll.
4. Power down the LightJet® 430 (use the procedures described in the LightJet® 430 User Guide to ensure proper cool down of the blue laser) and disconnect the AC power cord from the wall outlet.
5. Open the right side door to access the drum.
6. Using caution, extract the media from the drum. To facilitate the removal of media the media guides should be in their parked position. The guides can be retracted by hand by applying a force at their drive point. Be careful not to exert any appreciable force on the light shield.
7. Close the right side door.
8. Connect the AC power to the wall outlet and power up the LightJet® 430.

Advance Jam

To clear a media jam that has occurred while media is advancing through the machine:

1. Cut the media before the infeed pinch rollers by running a knife in the slot between the idler roller and the first guide vane.
2. Using the control panel select Set Up/Motor Control/All Motors Forward. Attempt to advance 10 inches of media.
3. If the media moves freely, use “All Motors Forward” again for 135 inches to wind the media onto the outfeed roll. Inspect the media for damage. If media is torn, inspect the inside of the imaging drum for debris. Clean drum if necessary.
4. If the media does not move freely it must be removed manually from the drum. Cut the media at the cutter bar. Remove the infeed and outfeed media rolls.
5. Power down the LightJet® 430 (use the procedures described in the LightJet® 430 User’s Manual to ensure proper cool down of the blue laser) and disconnect the AC power cord from the wall outlet.
6. Open the right side door to access the drum.
7. Using caution, extract the media from the drum. To facilitate the removal of media the media guides should be in their parked position. The guides can be retracted by hand by applying a force at their drive point. Be careful not to exert any appreciable force on the light shield.
8. Close the right side door.
9. Connect the AC power to the wall outlet and power up the LightJet® 430.

End of Section

3 Troubleshooting

Problems with the LightJet® 430 generally fall into four categories:

- Power-up Failures
- Electronic, Optical and Mechanical Failures
- Communication Failures
- Undesirable Artifacts on Media

Retrieving the LightJet® Log

LightJet Explorer maintains a log of the actions performed by the LightJet 430. This is an excellent diagnostic tool and Océ service representatives may request that you refer to or send in a copy of the log to assist them during a support call. To retrieve the log:

1. In LightJet Explorer, select Utilities/Retrieve Log.
2. The log can then be saved as a text file by selecting File/Save As.

Power-up Failures

Power problems that can occur include:

- The power circuit breaker switch is on, but nothing operates.
- The power circuit breaker switch is on and the air blower, outfeed exhaust cooling fan and cardcage cooling fans are operating, but the control panel is off (no display or backlight indicator).

If either of these conditions occur:

1. Check that the power circuit breaker switch is operating by turning it off and back on once. Wait at least 15 seconds between cycles.
2. Check that the power cord is properly connected to both the wall outlet and the LightJet® 430.
3. Check that the dedicated circuit breaker for the LightJet® 430 in the building's main circuit breaker panel is on.
4. If you don't find the problem, contact Océ (see "Product Support, Documentation and Service" on page ii).

Other power-up problems include:

- The LightJet® 430 takes longer than 15 minutes to power up. This indicates a servo laser test failure. The LightJet® Explorer Optical Motors Window displays which laser failed the test in the attenuator fields.
- If the power circuit breaker switch and the control panel are on, but the blue laser blower, exhaust cooling fan and cardcage cooling fans are off, contact Océ.

Electronic, Optical and Mechanical Failures

This section provides a list of error conditions for the LightJet® 430. When an error occurs, the control panel displays:

Errors Encountered <ENTER to View, ESC to Clear>
--

1. Press ENTER to display the error (ESC will clear the error buffer without displaying the error).
2. After viewing the error, press the SETUP, MEDIA or ON LINE keys to clear the error buffer. Note that this clears the error buffer, but does not correct the cause of the error.
3. Use the recommended recovery methods described below to troubleshoot the error. If the printer does not allow you to initiate the recovery process, power down and restart the printer, then continue the process. Wait at least 15 seconds between powering off and on. Rapid power cycling can harm the electronics.

If you are unable to resolve the problem, contact Océ (see “Product Support, Documentation and Service on page ii).

Error 01 – End of Roll During Load

Possible Cause:	Loaded media is less than 125” in length. Loading the machine requires a minimum of 125” of media.
Recovery Method:	Select Set Up/Motor Control/All Motors Reverse. Retract 135 inches of media.

Error 02 – Media Seating Failed

Possible Cause:	Media has buckled in the drum.
Recovery Methods:	<i>Load Failure:</i> Select Set Up/Motor Control/All Motors Reverse. Retract 135 inches of media. <i>Advance Failure:</i> Select Media/Cut and Unload.

Error 03 – Excessive Media Slip

Possible Cause:	<i>Load Failure:</i> Leading edge of media has excessive curl or a folded corner. This will create excessive drag as media travels between the media guides and the drum.
Recovery Method:	<i>Load Failure:</i> Select Set Up/Motor Control/All Motors Reverse. Retract 135 inches of media.

Error 04 – Infeed Timeout Fault

Possible Cause:	User took too long to feed media into the machine.
Recovery Method:	Reload media.

Error 05 – Media Guide Location Unknown

Possible Causes:	A) The media has come off the drum surface and is causing drag against the movement of the media guides. B) The media guides or brushes are dragging against the drum surface. C) The media guide sensor is not functioning properly.
Recovery Methods:	A) Select Media/Cut and Unload. If problem persists call a field service representative. B) The media guides have shifted. Contact Océ. C) Contact Océ.

Error 06 – Micropositioner Location Unknown

Possible Cause:	Micropositioner has lost servo.
Recovery Method:	Select Media/Cut and Unload. If problem persists, contact Océ.

Error 07 – Media Guide Stuck at Home

Possible Causes:	A) Media guides are stuck in their parked position. B) Mechanical component failure.
Recovery Methods:	A) Select Media/Cut and Unload. Inspect media guides. Clear physical obstruction if present. B) Contact Océ.

Error 10 – Outfeed Timeout Fault

Possible Cause:	The bottom-of-drum sensor did not sense any media within 30 seconds.
Recovery Method:	Select Set Up/Motor Control/All Motors Reverse. Retract 150 inches of media. If error persists, contact Océ.

Communication Failures

Problems that prevent proper communication between the LightJet® 430 and the host computer can cause total loss of communication, prevent certain functions, or corrupt the data used to generate the image. The LightJet® 430 cannot detect:

- Whether the host computer is unable to generate the proper commands.
- Some cases of data corruption.¹
- When a SCSI cable is bad or disconnected.
- When the wrong SCSI ID has been selected.²

Notes:

¹ The LightJet 430 can detect some, but not all, types of data corruption.

² The LightJet 430 is shipped from the factory with the SCSI ID set to 6 (binary 110).

If communication failure is suspected, check the following:

- The application software is loaded and functioning properly.¹
- The SCSI ID is set correctly in the host computer configuration file.²
- The SCSI cable is properly connected to the host computer.
- The SCSI cable is no longer than 6 meters (20 feet)
- The image can be displayed properly on the computer screen.

Undesirable Artifacts on Media

Problems that create undesirable artifacts but are not reported as a fault by the LightJet® 430 diagnostics may be related to:

- Deterioration of moving parts.
- Contamination of the optical and mechanical parts due to airborne particles.
- Light leakage due to damaged or worn light seals.
- Media damage.
- Corrupted image file.

Problems with image artifacts may be difficult to pinpoint over the telephone. Save a sample image showing the problem and contact Océ (see “Product Support, Documentation and Service” on page ii) for shipping instructions.

End of Section

Notes:

¹ Check whether all the functions have failed, or only certain ones.

² The SCSI ID switch on the main processor board should only be checked by a qualified service engineer.

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