Safety Precautions for User

English

Lotem 400 Family

653-00275A

www.creo.com

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RE37,376	5,283,140	5,517,359	5,699,740	5,969,872	6,134,393	6,283,589
4,456,924	5,291,273	5,519,852	5,708,736	5,973,801	6,136,509	6,295,076
4,500,919	5,323,248	5,526,143	5,713,287	5,986,819	6,137,580	6,299,572
4,558,302	5,325,217	5,532,728	5,742,743	5,995,475	6,147,789	6,318,266
4,743,091	5,339,176	5,561,691	5,764,374	5,996,499	6,158,345	6,340,817
4,992,864	5,343,059	5,568,595	5,764,381	5,998,067	6,159,659	6,352,816
5,049,901	5,355,446	5,576,754	5,771,794	6,003,442	6,164,637	6,353,216
5,079,721	5,359,451	5,579,115	5,785,309	6,014,471	6,180,325	6,366,339
5,081,617	5,359,458	5,592,309	5,802,034	6,016,752	6,181,362	6,371,026
5,103,407	5,367,360	5,594,556	5,813,346	6,031,932	6,181,439	6,377,739
5,111,308	5,384,648	5,600,448	5,818,498	6,043,865	6,186,068	6,387,597
5,113,249	5,384,899	5,608,822	5,854,883	6,060,208	6,189,452	6,396,422
5,122,871	5,412,491	5,615,282	5,861,904	6,063,528	6,191,882	6,396,618
5,124,547	5,412,737	5,625,766	5,861,992	6,063,546	6,204,874	6,407,849
5,132,723	5,420,702	5,636,330	5,875,288	6,072,518	6,208,369	6,414,755
5,150,225	5,420,722	5,649,220	5,894,342	6,090,529	6,214,276	6,422,801
5,153,769	5,459,505	5,650,076	5,900,981	6,096,461	6,217,965	6,435,091
5,155,782	5,473,733	5,652,804	5,934,196	6,098,544	6,252,522	
5,157,516	5,481,379	5,680,129	5,942,137	6,107,011	6,260,482	
5,208,818	5,488,906	5,691,823	5,946,426	6,112,663	6,266,080	
5,208,888	5,497,252	5,691,828	5,947,028	6,115,056	6,266,134	
5,247,174	5,508,828	5,696,393	5,958,647	6,121,996	6,267,054	
5,249,067	5,509,561	5,699,174	5,966,504	6,130,702	6,268,948	

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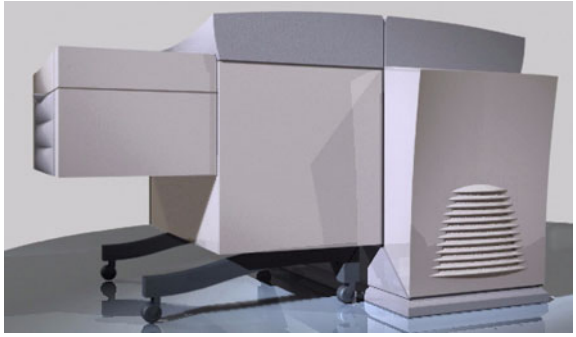
653-00275A

Revised April 2003

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Symbols Used in this Manual



DANGER: This indicates an imminently hazardous situation, which, if not avoided, will result in death or serious injury. This does not alert you to a property damage accident unless personal injury risks are associated with the accident.



WARNING: This indicates a potentially hazardous situation, which, if not avoided, could result in death or serious injury. This does not alert you to a property damage accident unless personal injury risks are associated with the accident.



CAUTION: This indicates a potentially hazardous situation, which, if not avoided, may result in minor or moderate injury. This may also alert you to unsafe practices or potential property-damage-only accidents.



Note: A note provides additional information that you may need to consider.

Introduction

Read the following safety document carefully before operating or maintaining the Lotem 400 platesetter and/or the Lotem 400 with MCU.



Note: Lotem 400 Family in this document refers to the Lotem 400, Lotem 400 Xpose and the Lotem 400 with MCU. Unless otherwise specified, Lotem 400 refers to all the fore mentioned machines.

These products are **Class 1** laser products, according to IEC825-1 and USA 21 CFR 1040. This implies that there is no hazardous laser radiation, providing that the user and service safety precautions are followed.

Lotem 400 safety at a glance - how to avoid exposure hazards?



WARNING: The laser beam and radiation are invisible to the eye.

1. Keep all external doors and internal protective barriers of the platesetter complete, unharmed and intact!
2. Never defeat the Laser or any other interlock switch!
3. Never leave any object between the laser head and the drum.
4. Do not open any internal doors or covers. Do not use any tools!
5. Do not operate the platesetter if there is any doubt regarding the above. Contact your service engineer.

Extensive means were taken in the design and manufacturing of the platesetter to eliminate the hazards for the operator and service personnel.

Carefully follow the instructions in this document to ensure your safety and the safety of others when operating or maintaining the platesetter.

Installation Safety Precautions

Installation must be done only by authorized service personnel.

The Lotem 400 platesetter is installed and serviced exclusively by specialized technicians. These technicians are trained, authorized and certified in the proper procedures for working with, and adjusting the laser system, and working with the mechanical and electrical systems of the platesetter.



WARNING: Do not connect the platesetter to the power supply before it is installed by authorized service personnel.



WARNING: Only certified service personnel are allowed to service the Lotem 400 platesetter.



WARNING: Only certified service personnel are allowed to attach the MCU to the Lotem 400 platesetter!
Only certified service personnel are allowed to dismantle the MCU from the Lotem 400 platesetter!

Disconnection from Mains Supply

The platesetter is equipped with a **Main power circuit breaker,** located on the Distribution box on the lower rear panel of the platesetter; and two identical (yellow) **On/Off** pushbuttons located on both sides of the rear panel of the platesetter.

Special circuit breakers for the **Drum power** and **Drum vacuum pump** are located near the **Main power** circuit breaker**.** An additional circuit breaker for the **Electronic box** is located internally on the Electronic box cover.



WARNING: Total disconnection from the mains supply can only be achieved by deactivating the Main power circuit breaker (set to "0"), or by unplugging the Main power cable from power outlet.

Disconnection from Pneumatic Air Pressure

Switching the air pressure off is done by switching off the air supply. The Lotem 400 receives pneumatic air pressure from the filtration unit located on the wall. Turn the valve to shut the air pressure off.

Basic & Laser Safety Precautions

The basic and laser safety precautions section includes the following topics:

- Optical Fibers
- Laser Head
- Laser Box
- Enclosures
- Safety Interlocks
- Warning labels



CAUTION: Use of controls or adjustments, or performance of procedures other than those specified in this manual may result in hazardous radiation exposure.



DANGER: The above CAUTION note must be included in this manual according to USA 21CFR regulations. However, the hazards involved include not moderate, but SERIOUS bodily injury - especially to the eye!

The platesetter is equipped with a **highly hazardous laser system** that exposes the media. However, the platesetter as a whole, is a **Class 1 laser product**, according to IEC825-1 and the USA 21 CFR 1040. This implies that the operator and service engineer cannot access hazardous laser radiation, providing that the user and service safety precautions are followed.



WARNING: The laser beam and radiation of the platesetter are invisible and are hazardous to the eye and skin. **In the presence of flammable material, the laser beam is also a fire hazard! Even brief exposure of the eyes to the laser radiation or beam, or its reflections from shiny or matte objects may cause permanent loss or permanent degradation of eyesight.**



WARNING: Whenever in doubt, the platesetter should never be operated until it is checked and approved for operation by an authorized service engineer.



WARNING: If you **must** enter the room where the platesetter is located when the platesetter is on, and you suspect that any of the following precautions was somehow violated, then you must **disconnect** the power supply to the platesetter before entering the room.

Optical Fibers

Laser energy is generated in the laser diodes, located in the laser box and conducted to the plotting head through optical fibers.



WARNING: You are forbidden under any circumstances to move, pull or handle the optical fibers and their protective tubing!



DANGER: If the platesetter is on and an optical fiber extends from the enclosure, or if a fiber is damaged inside or outside the platesetter, and even when the doors are closed, invisible laser radiation of up to a watt at a wavelength of 810-860 nanometer may be present. Even brief exposure of the eye to this radiation or its reflection from shiny or matte objects can cause permanent degradation or permanent loss of eyesight!

Laser Head

The Optical fibers conduct the laser radiation in the platesetter from the Laser box to the plotting Laser head.



DANGER: The laser head must never be activated if it is removed from its position on the guide beam. In addition, the laser head must never be activated when it is not in its proper position facing the drum, and with all the internal protective barriers assembled and all the doors closed.



WARNING: Never place any object in the path of the laser beam between the laser head and the drum.



DANGER: Up to several watts of invisible laser radiation at a wavelength of 810-860 nanometer may be present at the output of the Laser head. This laser radiation is hazardous to the eye and skin. Even brief exposure of the eye to this radiation or to its reflection from shiny or matte objects can cause permanent degradation or permanent loss of eyesight!

Laser Box

The Laser diodes are located in the Laser box locates behind the side door of the platesetter. The platesetter must never be activated when the Laser box is not in its proper location and the Laser box door closed and properly fastened and no optical fibers emerge from its enclosure.



WARNING: After performing any service activity and before switching **on** the platesetter, the service engineer must check and ensure that no optical fiber extends from the Laser box enclosures or is damaged.

Enclosures

Together with the Laser interlock system, the platesetter enclosure is designed to protect anyone in the platesetter vicinity from exposure to the laser radiation by enclosing the laser radiation within the platesetter. The enclosure includes the external doors and panels, and the internal protective barriers. The internal protective barriers prevent the laser radiation from escaping through the platesetter loading/unloading openings and through the ventilation openings on the side doors or lower panels. This protection depends upon the completeness and correct assembly of the outer enclosure and the internal protective barriers.



WARNING: You are forbidden, under any circumstances, to dismantle any external door or panel, or internal protective barrier from the platesetter!



WARNING: After performing any service activity and before switching **on** the platesetter, the service engineer must check and ensure that all external and internal enclosures and doors are complete, not broken or cracked, and properly assembled to the platesetter.



DANGER: If the platesetter is ON and the enclosure is damaged or incomplete, and even with the external doors closed, then invisible laser radiation of up to several watts may be present. This radiation is hazardous to the eye or skin. Even brief exposure of the eye to this radiation or its reflection from shiny or matte objects can cause permanent degradation or permanent loss of eyesight!



CAUTION: The opening of the two upper doors is controlled by a spring loaded mechanism. Make sure your head is **not near** the door when opening the door.



WARNING: You are forbidden to open any internal doors (for example, Laser box, Distribution box, and Electronic box).



WARNING: You are forbidden to use tools.

Safety Interlocks

Safety interlocks provide the **main** protective means against the severe **laser** and **mechanical hazards** involved with the platesetter, providing that you carefully follow all the safety precautions detailed in this chapter.

Interlock switches are designed to disconnect power from the Laser system, Drum motor and other motors when:

- the upper, left or right doors are open
- the left or right internal MCU covers are open
- the rear panel is removed
- the front door is open or the MCU is dissasembled from the platesetter



DANGER: The user is not, under any circumstances, allowed to defeat any interlock switch.

- Even authorized service personnel are forbidden to defeat the write laser interlocks, but are allowed to defeat the drum and other mechanical interlocks while keeping the appropriate safety instructions.

The following table is included to provide the operator with information about the safety measures and controls included in the platesetter. The operator is strictly forbidden to defeat any interlock switch or actuate any defeat switch, or use a tool!

Platesetter Interlock Functions and Locations

Interlock Location	Interlock Function	Description of Interlock Switches	Serviceman only Defeat Allowances
Front door (loading)	Disable Lasers and Motors	2 interlock switches	None
Lower front panel	Disable Lasers and Motors	1 interlock switch	None
Platesetter upper rear door	Disable Lasers and Motors	2 interlock switches 1 motor interlock defeater	1 motor interlock **Note:** MCU covers require motor interlock defeat for each cover.
Rear panel	Disable Lasers and Motors	1 interlock switch	None
Left platesetter door	Disable Lasers and Motors	1 interlock switch	None
Right platesetter door	Disable Lasers and Motors	1 interlock switch	None

MCU Interlock Functions and Locations

Interlock Location	Interlock Function	Description of Interlock Switches	Serviceman only Defeat Allowances
Left internal cover- MCU	Disable lasers and motors	2 laser interlock switches 1 motor interlock switch	1 motor interlock switch
Right internal cover- MCU	Disable lasers and motors	2 laser interlock switches 1 motor interlock switch	1 motor interlock switch
MCU upper door	Disable lasers and motors	2 laser interlock switches 1 motor interlock switch	1 motor interlock switch
MCU cassette door	Disable motors	Magnetic mechanic interlock	None



WARNING: It may take up to two seconds for the laser interlock system to shut off the laser sources. Therefore, when opening a door, do not rush to access inside the platesetter.



DANGER: If a door or panel is open and if interlock switch is defeated, or if the interlock system failed, then severe **mechanical hazards** and invisible laser radiation of up to several watts may be present. **The laser radiation is hazardous to the eye and skin**. **Even brief exposure of the eye to this radiation or its reflection from shiny or matte objects can cause permanent degradation or permanent loss of eyesight!**



Note: The **laser** interlock system is equipped with a **buzzer**. If a failure is detected in the operation of the laser interlock system, the buzzer is activated and the laser is shut off. In any case, not every possible failure can be detected, especially failure of a single interlock switch.



WARNING: If the buzzer is activated, shut the platesetter off and do not operate it again until it has been checked and approved for operation by an authorized service engineer.

Warning Labels

The following pages show the laser and other warning labels, and their locations.

Make sure that the warning labels are in good order; notify your service engineer if a label needs to be replaced.

Note: The part numbers for English labels contain the letter A; all other languages contain the letter K instead. For example, part. no. 374A8L697 is the English label; part no. 374K8L697 is for all other languages. The following labels show the English part numbers.

Note: Some labels have the same text but the label shape or size is different. Therefore these labels have different part numbers. The labels on next page show one of these labels, but the other part numbers are also listed.

Note: When a language other than English is spoken, the service engineer should stick the translated labels (attached to the platesetter) in the relevant locations.

The warning labels are provided for user and service personnel safety. Do not fail to comply with the warnings!

DANGER

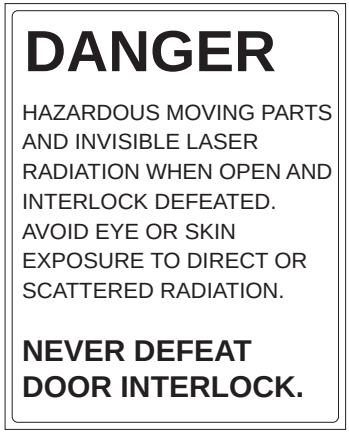
HAZARDOUS MOVING PARTS AND INVISIBLE LASER RADIATION WHEN OPEN AND INTERLOCKS DEFEATED. AVOID EYE OR SKIN EXPOSURE TO DIRECT OR SCATTERED RADIATION.

ONLY MECHANICAL INTERLOCK MAY BE DEFEATED AND BY SERVICE ENGINEER ONLY.

374A7B830



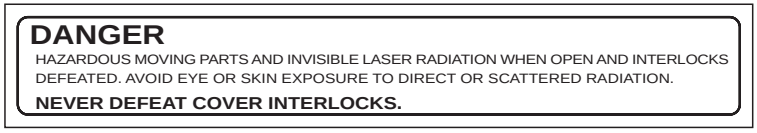
374A7B831



374A7B832



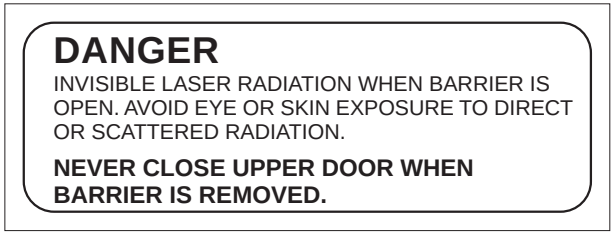
374A7B833



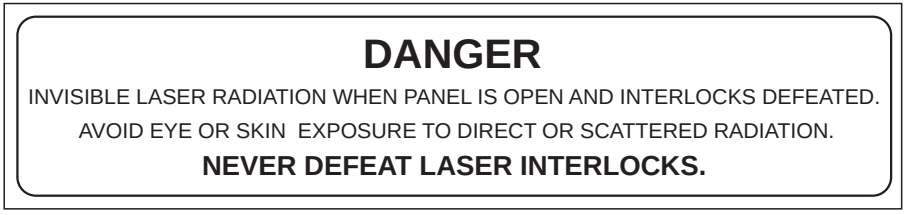
374A7B836



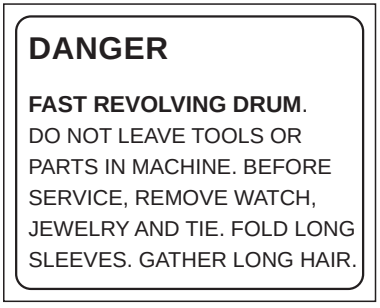
374A7L405



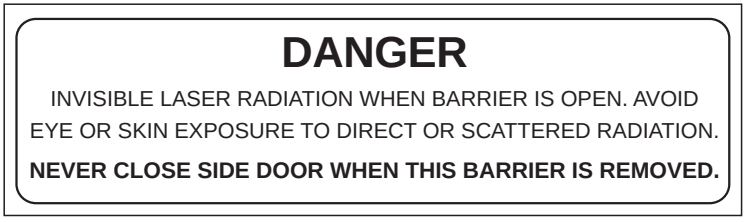
374A7L408



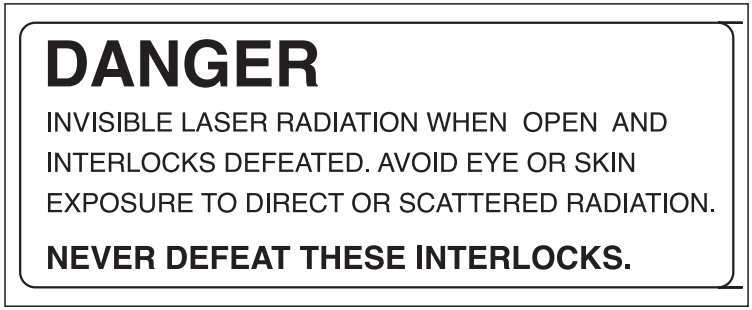
374A7L411



374A7L413 (also 374A7L412A)



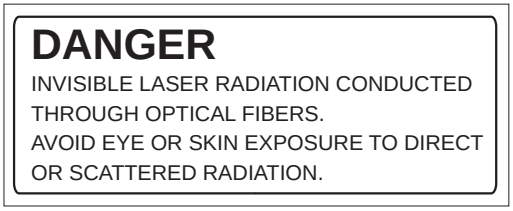
374A7L416



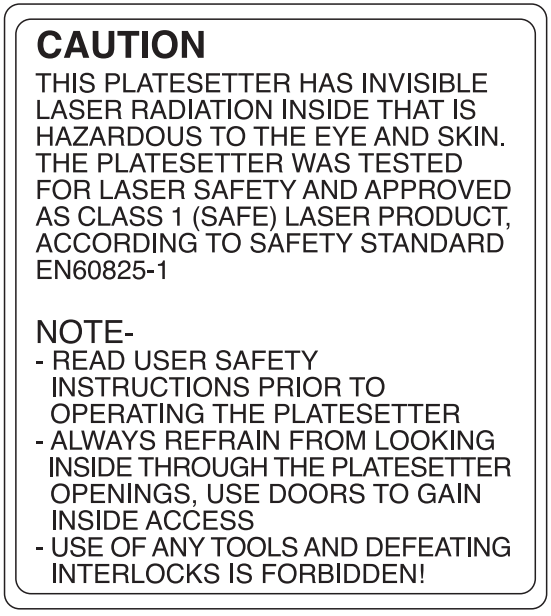
374A7L414



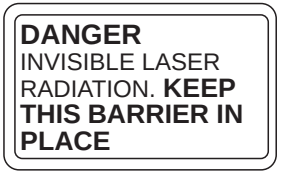
374A7L417



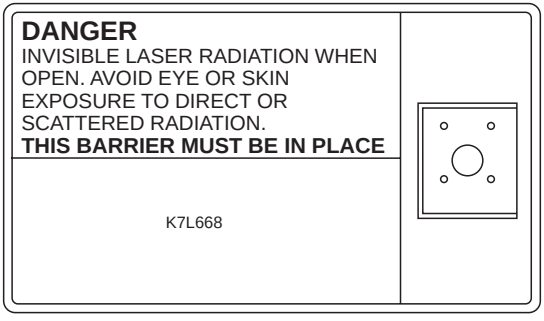
374A7L420



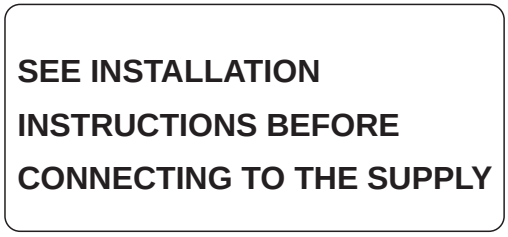
374A7L666



374A7L667



374A7L668

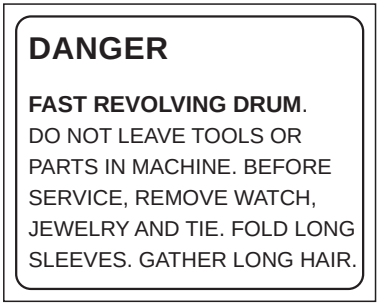


374A1F658



374A8L535

MCU Warning Labels



374A7L413



374A6B016



374A6B011



374A7B154



374A7B678



374A9C009

Lotem 400 Warning Label Locations

WARNING: Some of the figures show protective panels and internal covers removed. The operater is forbidden to dismantle any panel or cover that require a tool to do so.

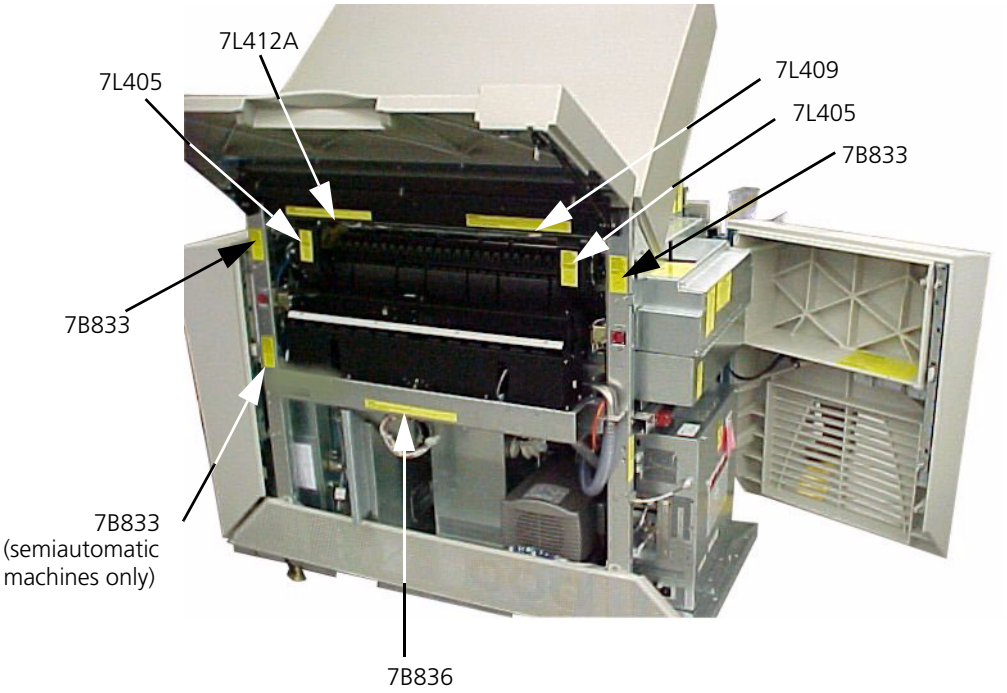


Figure 1: Front view, doors open, panels removed

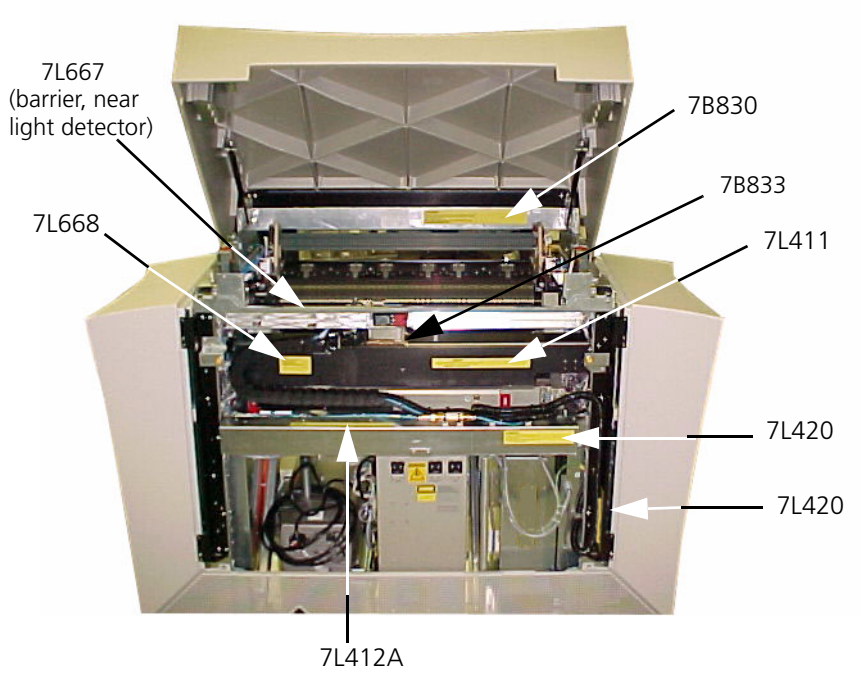


Figure 2: Rear view, upper door open, panels removed

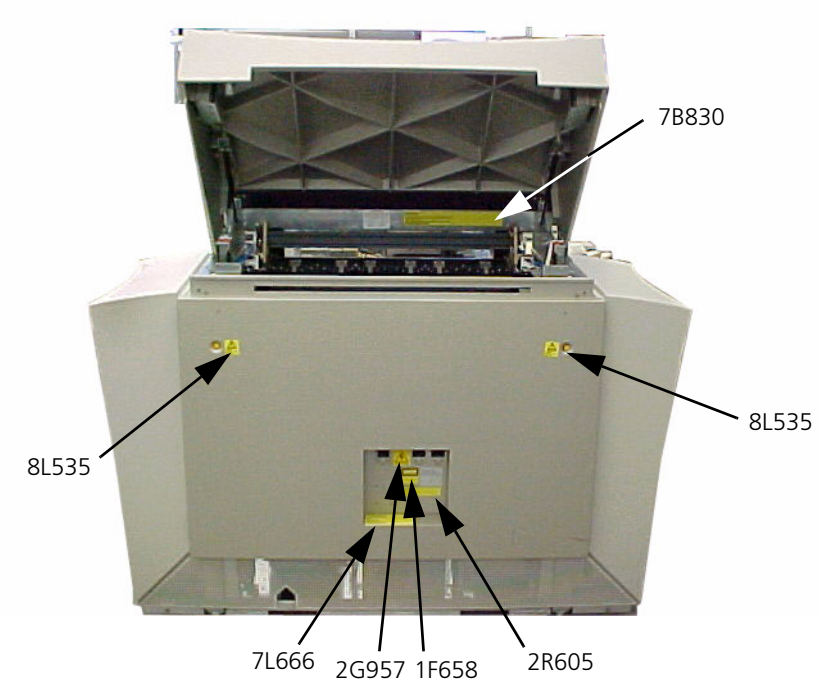


Figure 3: Rear view, upper door open

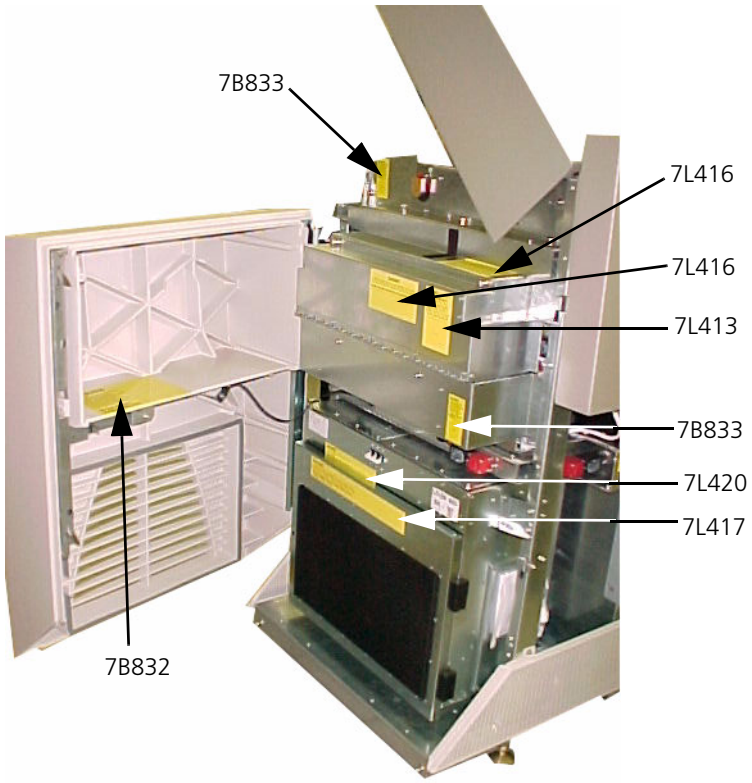


Figure 4: Left side door open

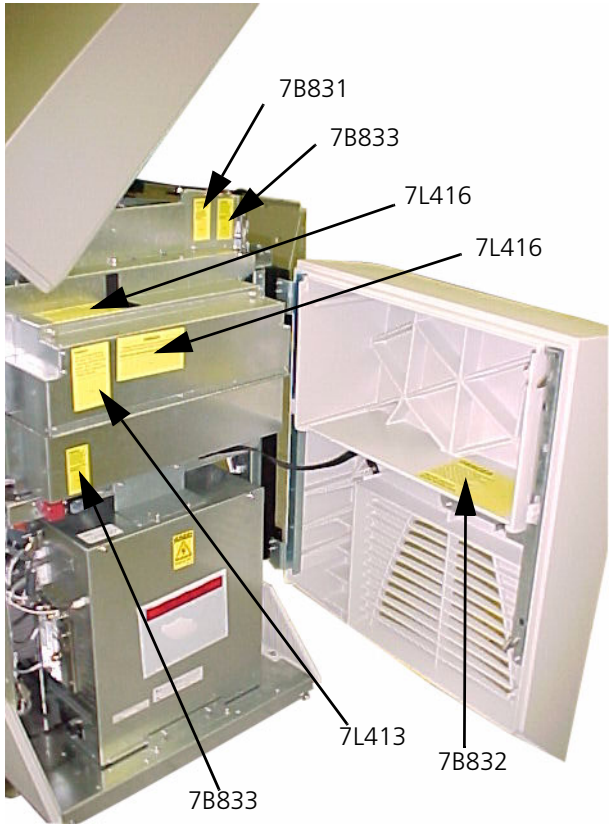


Figure 5: Right side door open

MCU Warning Label Locations



Figure 6: Lotem 400 with MCU (automatic loader)

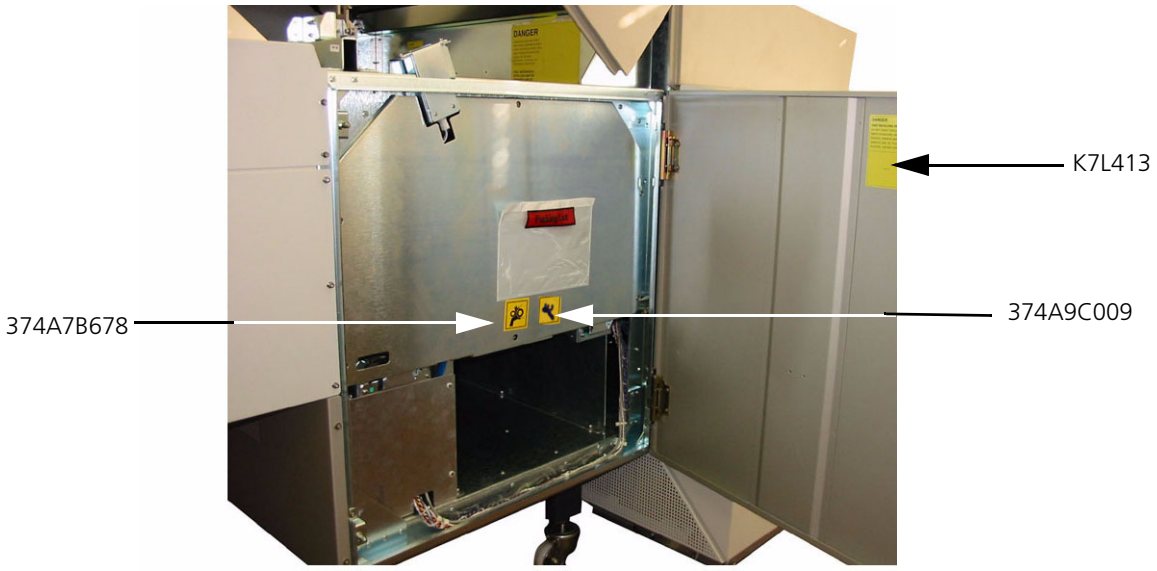


Figure 7: MCU right side door open

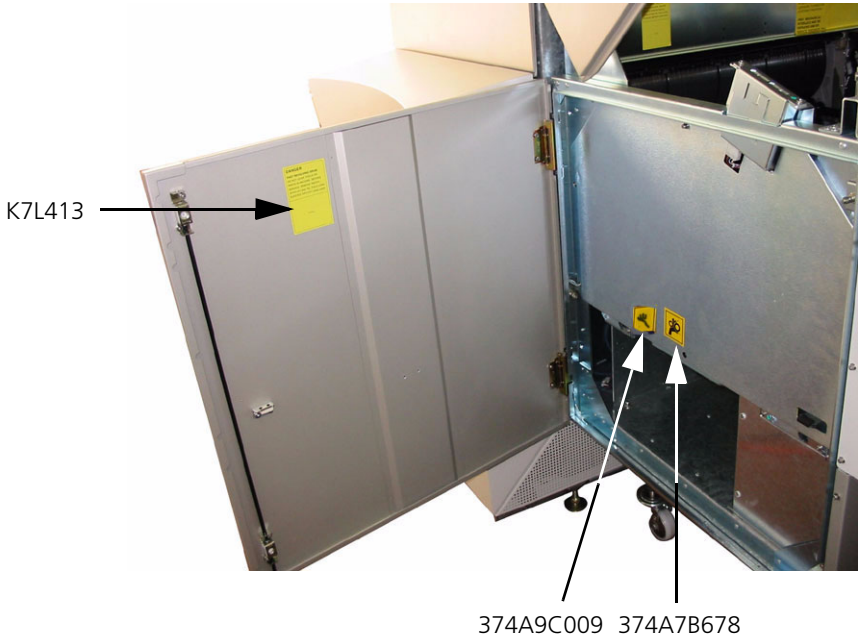


Figure 8: MCU left side door open

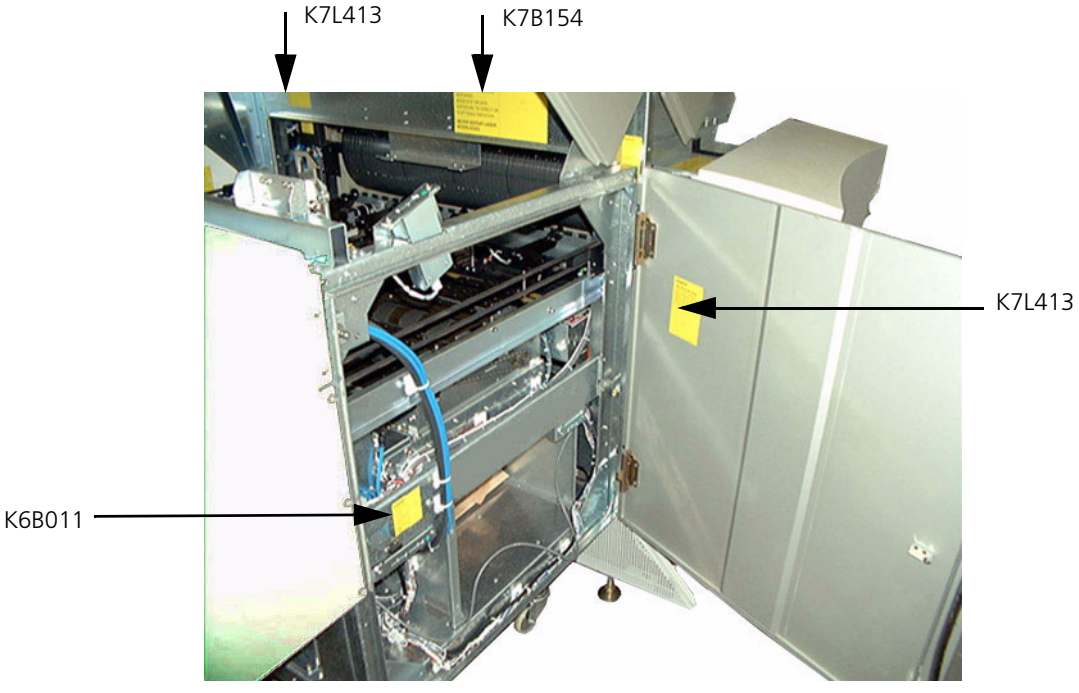


Figure 9: MCU right side view, right and upper doors open, internal right panel removed

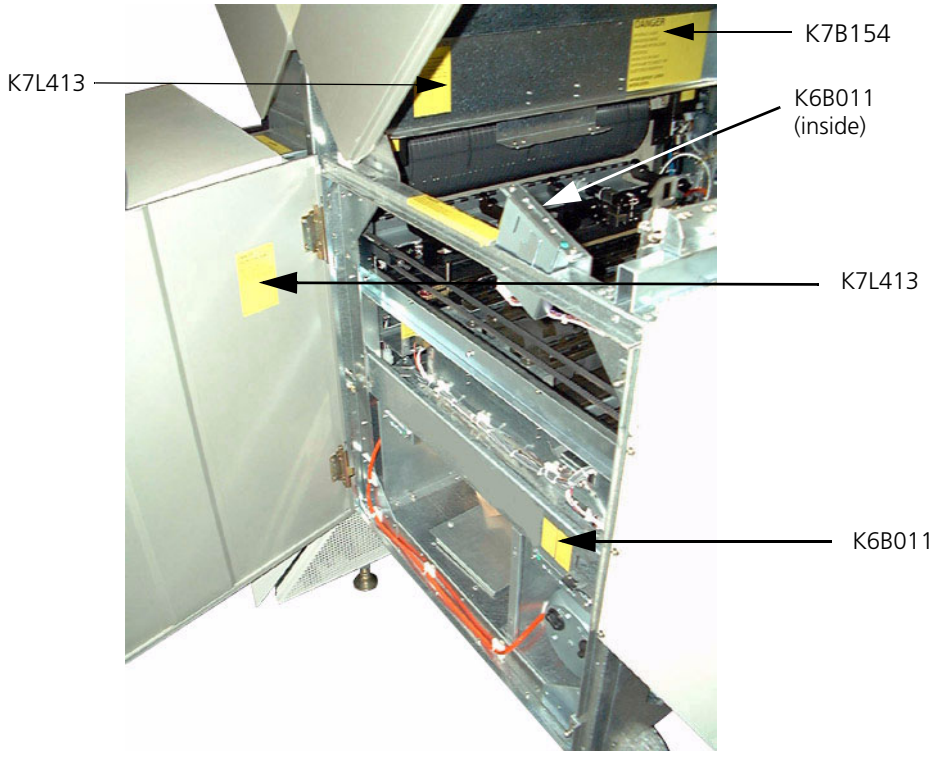


Figure 10: MCU, left side and upper doors open, internal left panel removed

Drum Safety Precautions

The Lotem 400 platesetter contains a drum that revolves inside the platesetter. The plates are loaded, wrapped onto the drum, exposed and unloaded.

The Drum revolves normally at **1200** revolutions per minute. If an object hits the rotating drum, the object may get dislodged inside the platesetter and cause damage (including damage to the safety system and Laser thermal head), or force the upper doors to open, or penetrate through the doors.

Opening the upper doors is initiated from the PC Controller. This activates the solenoids that release the upper door locks, thus enabling the user to open the door. By this time, the drum must be almost stationary.



WARNING: If after the drum door is unlocked, it takes **more than 5 seconds** for the drum to become completely stationary, the machine must be repaired. Shut off the machine and call your service engineer.

Since serious personal injury to the operator, service engineer or anyone in the vicinity may occur by the revolving **drum**, the following precautions must be followed:



WARNING: Do not insert your fingers or hands anywhere near the drum, as they may get caught in the narrow gaps in the drum area!



WARNING: Be sure not to leave any object, tool or part inside or on the platesetter enclosure. If an object gets lodged, it may penetrate through the enclosure and injure a person standing nearby.



WARNING: You are **forbidden**, under any circumstances, to defeat any interlock switch!



WARNING: If the service engineer has defeated the Drum interlock and a door is open, **do not** stand at any distance in front of the platesetter. **Do not** touch any moving part while it is in motion.



WARNING: If you need to open the cover for releasing stuck plates or other maintenance, remove any piece of clothing or object that may get caught in the revolving drum or other moving parts. Remove ties, roll up long sleeves, remove jewelry and gather long hair.

Vacuum Pump

The vacuum pump connected to the platesetter is part of the Lotem 400 configuration. The vacuum pump contains a filtering device that extracts dust, fumes, contaminants and solvent vapors that appear within the platesetter during normal operation and need to be removed.

The filter may be replaced only by the service engineer!



WARNING: The filtering device has been constructed according to recognized technical safety regulations. Nevertheless, danger to life of the user or third parties or damage to property can occur if the filter is not handled properly.

Handling Plates



CAUTION: The plate edges are sharp so it should not be handled with bare hands. Wear gloves if you must handle the plate.



CAUTION: Do not touch the plate after it is placed in the MCU. Close the drawer and the drawer cover to enable automatic plate loading.

When ready to expose, the plate is automatically loaded. After expose, the plate is automatically unloaded from the Plate exit at the rear side.



WARNING: Since the plate is automatically unloaded from the plate exit, be sure not to stand too close to this exit.



CAUTION: Be careful that your fingers do not get caught when closing the cassette drawer.

Removing Stuck Plates

Special precautions are required when removing a plate that got stuck inside the platesetter.



WARNING: Before removing a plate, switch off the **Main Drum Power** switch on the Distribution box.



WARNING: Before removing a plate, remove objects or clothing that might get caught in the revolving drum or other moving parts, such as ties and jewelry. Fold long sleeves and gather long hair.

It is recommended to release the entire plate as one piece; do not attempt to cut the plate.

Electrical & Pneumatic Connections



WARNING: Do not change the power supply installed by the service engineer. Do not alter any electric wiring. Do not alter the pneumatic tubes.

Lithium Battery

The platesetter contains a Lithium battery. The battery **cannot** be replaced by the user. Only qualified service personnel, are allowed to replace it.



WARNING: Danger of explosion if battery is incorrectly replaced.