Kodak

ThermoFlex Narrow Hybrid

Platesetter

Safety Precautions for Users

English

653-00068B-EN Rev A
Internal 731-00300B-EN Rev A

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Introduction

Read this document carefully before operating or maintaining the Kodak® ThermoFlex® Narrow Hybrid platesetter.

Note: ThermoFlex Narrow Hybrid in this document refers to all ThermoFlex Narrow Hybrid platesetters, including ThermoFlex Narrow Hybrid With Magnetic Drum Option and ThermoFlex Narrow Hybrid With Offset Option, unless otherwise specified. Safety precautions specific to the offset option appear in the ThermoFlex Narrow Hybrid With Offset Option Safety Precautions for Users document.

This product is a Class 1 laser product, according to International Safety Standard IEC825-1 and USA regulation 21 CFR 1040. This implies that there is no hazardous laser radiation, providing that the user and service safety precautions are followed.



Figure 1: ThermoFlex Narrow Hybrid platesetter front view

Symbols Used in This Guide



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.

ThermoFlex Narrow Hybrid Safety At A Glance—How To Avoid Exposure Hazards

The platesetter's lasers, mechanical parts movement, and electrical power constitute the source of hazards.

However, 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.



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

- Keep all external doors and internal protective barriers of the platesetter complete, unharmed, and intact.
- Never defeat the laser or any other interlock switch.
- Never leave any object between the laser head and the drum.
- Do not open any internal doors. Do not use any tools.
- Do not operate the platesetter if there is any doubt whether the instructions in the previous points were followed. Contact your service representative.

- When the platesetter is off, use the metal bar near the main switch on the distribution box to prevent you or others from accidentally switching the platesetter on.

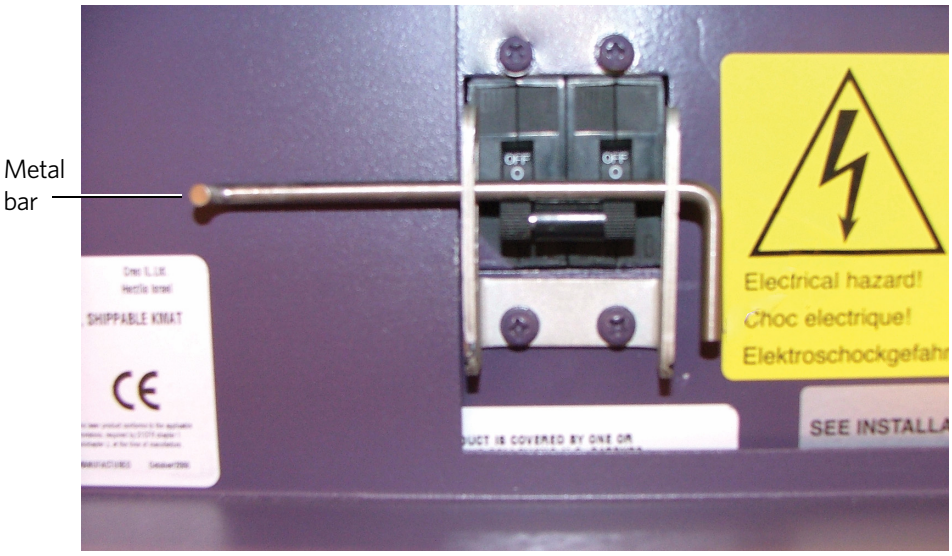


Figure 2: Metal bar used to keep the main power switch off

Power and Electrical Elements and Safety

Installation Safety Precautions



WARNING: Only authorized service personnel are allowed to install and service the ThermoFlex Narrow Hybrid platesetter.

These technicians are trained, authorized, and certified in the proper procedures for working with and adjusting the laser system, and working with the mechanical, cooling, and electrical systems of the platesetter.



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

Electrical and Pneumatic Connections



DANGER: Do not attempt to open or access protective electrical enclosures. Do not use any tool on the protective electrical enclosures.



DANGER: Do not touch singly insulated wires.



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

Electrification Hazard

The electrical circuits are located inside protective electrical enclosures that require a tool to open. The electrical hazards are NOT disconnected by the interlock system.

ThermoFlex Narrow Hybrid platesetter connections:

Two configurations are available for the ThermoFlex Narrow Hybrid platesetter:

- **60 Hz power output:** Line voltage must be 208 V AC (±6%) 60 Hz 1.5%
- **50 Hz power output:** Line voltage must be 230 V AC (±10%) 50 Hz 1.5%

Plug

The plug on the power cord of the ThermoFlex Narrow output device is a 2-pole, 3-wire, 250 V, 32 A, 6 o'clock (6 o'clock orientation of the ground connection) plug.

Debris Removal Cabinet Power

For the UDRC electrical requirements, please see the *UDRC Site Preparation and Requirements* document (725-00089A).

Disconnection from Main Power Supply

The platesetter is equipped with a main power circuit breaker, located on the distribution box on the lower-front panel of the platesetter; and two identical (yellow) On/Off buttons located on both sides of the front panel of the platesetter.

Description	Location
Main power switch	Distribution box
On/off buttons	Front panel
Drum motor power	Distribution box
Drum vacuum pump power	Distribution box
L-box power	L-box cover (inside the platesetter)

Note: The front of the ThermoFlex platesetter is the side where plates are loaded and unloaded, and the rear of this platesetter is the side that usually rests against a wall.

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 laser box (L-box) is located internally on the L-box cover.

WARNING: You can totally disconnect from the main power supply only by deactivating the main power circuit breaker (set to "0"), or by unplugging the main power cable from the main power supply outlet.

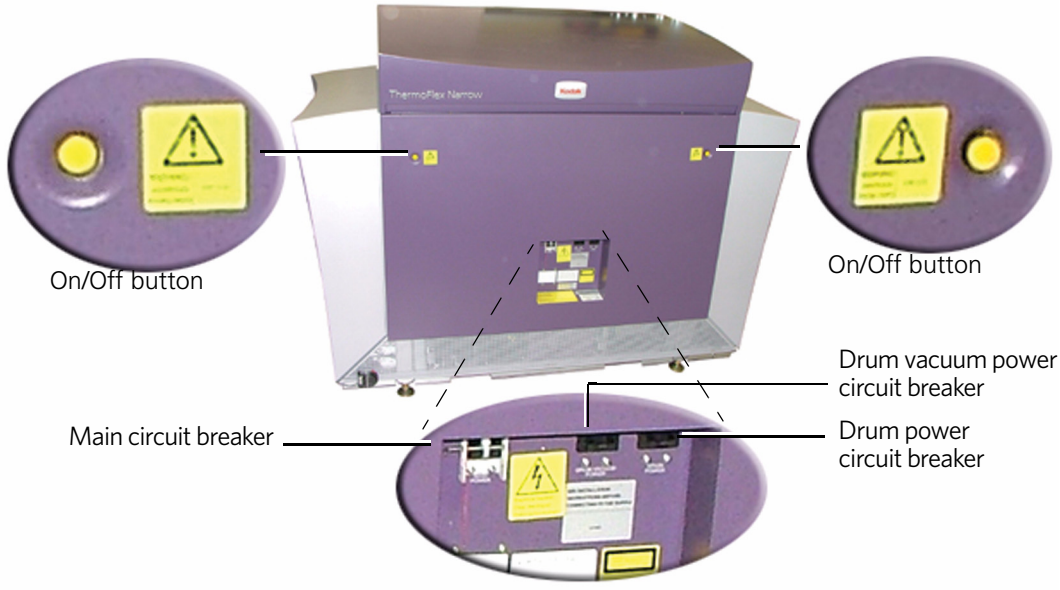


Figure 3: Circuit breakers and On/Off buttons



Figure 4: L-box circuit breaker

Lithium Battery

The platesetter contains a lithium battery. You cannot replace the battery; only qualified service personnel are allowed to replace the battery.

WARNING: There is danger of explosion if the battery is incorrectly replaced.

Laser Elements and Safety Precautions

The following platesetter elements conduct the laser energy:

- Laser box
- Optical fibers
- Laser head

The following means provide protection from the laser energy:

- Platesetter enclosures
- Safety interlocks
- Warning labels



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

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 International Safety Standard IEC825-1 and USA regulation 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 eyes 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 degradation or permanent loss of eyesight.



WARNING: Whenever in doubt, do not operate the platesetter 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 were violated, then you must disconnect the power supply to the platesetter before entering the room.

Laser Box

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



WARNING: You must not, under any circumstances, open the laser box.



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 or is damaged.

Optical Fibers

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



WARNING: You must not, under any circumstances, 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 from 810 to 860 nanometers 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 from 810 to 860 nanometers may be present at the output of the laser head. This laser radiation is hazardous to the eyes 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.

Platesetter 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 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 eyes 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!



CAUTION: A spring loaded mechanism controls the opening of the top door. Make sure your head is not near the door when you open it.



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 described in this chapter.

Interlock switches disconnect power from the laser system, drum motor and other motors when the top door or the left or right doors are open, or the front or rear panel is removed.



DANGER: You must not, under any circumstances, defeat any interlock switch.

Even authorized service personnel are forbidden to defeat the laser interlocks, but are allowed to defeat the motor interlocks while observing the appropriate safety instructions.

Note: The drum does not rotate when a moter interlock switch is defeated.

Interlock Functions and Locations

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 tools on the platesetter.

Each of the platesetter's doors and panels contain the following:

- Laser interlock switch: Disables the lasers when the door or panel is open. The laser interlock switches may not be defeated.
- Motor interlock switch: Disables the motors when the door or panel is open. Only a service representative may defeat a motor interlock switch.

  Note: The drum does not rotate when a moter interlock switch is defeated.

Platesetter Enclosure	Number of Laser Interlock Switches	Number of Motor Interlock switch
Top door	2	1
Front panel	2	1
Rear panel	2	1
Left door	2	1
Right door	2	1



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 eyes 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.



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.

Drum Safety

The ThermoFlex Narrow Hybrid platesetter drum revolves inside the platesetter. The plates are loaded and unloaded manually onto the drum. Special safety precautions are implemented on the platesetter in order to prevent rotation of the drum while the user is loading or unloading media.



WARNING: Opening the upper door is initiated from the ThermoFlex Controller. This releases the solenoids that lock the door. You can then open the door, but you must first make sure the drum is stationary. If five seconds after the door is unlocked the drum is still not stationary, shut off the machine and call your service engineer.

The drum revolves at approximately 500 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, optical head or optical fibers), or force the top door to open, or penetrate through the platesetter enclosures.



WARNING: Do not leave any loose object, tool, or part inside or on the platesetter enclosure. A loose object inside the enclosure may penetrate through the enclosure and injure a person standing nearby.



WARNING: Do not, under any circumstances, defeat any interlock switch.

Magnetic Drum Option

The magnetic drum has a strong magnetic force that enables plates to stay attached to the revolving drum.



WARNING: Make sure that no parts or tools become attached to the drum by the magnetic force.



CAUTION: Beware of the strong magnetic field. Remove your wristwatch and any other metal objects before getting close to the drum.

Universal Debris Removal Cabinet Safety

The UDRC, a separate component connected to the platesetter, is part of the ThermoFlex Narrow Hybrid configuration. The UDRC contains a filtering device that extracts dust, fumes, contaminants, and solvent vapors that accumulate within the platesetter during normal operation and need to be removed.



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.



WARNING: Read the Safety chapter of the Universal Debris Removal Cabinet Operator's Guide (03-4200C-EN-A).

Handling Plates

Loading and Unloading Plates



CAUTION: The plate material may be irritating. Protect your hands by wearing gloves when loading plates.



CAUTION: Be careful that your fingers do not get caught between the drum and other objects.

Removing Stuck Plates

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



WARNING: Before removing a plate, disconnect the main power 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.

For best results, release the entire plate as one piece; do not attempt to cut the plate.

Warning Labels

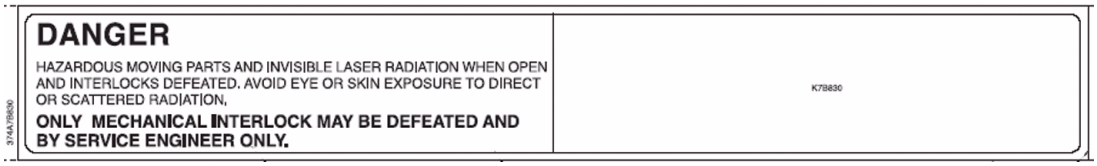
The warning labels appear on the platesetter for user and service personnel safety. Always comply with the warnings!

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: When a language other than English is spoken, the service engineer should attach the translated labels (supplied with the platesetter) in the relevant locations.

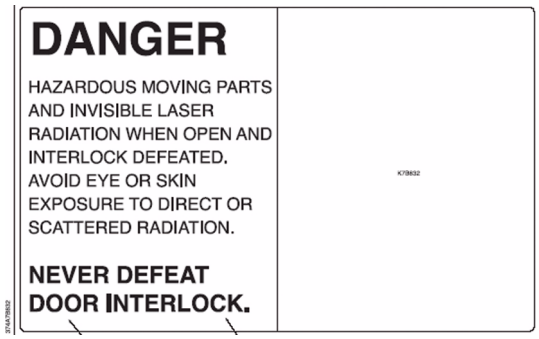
Note: Most of the warning labels are yellow.



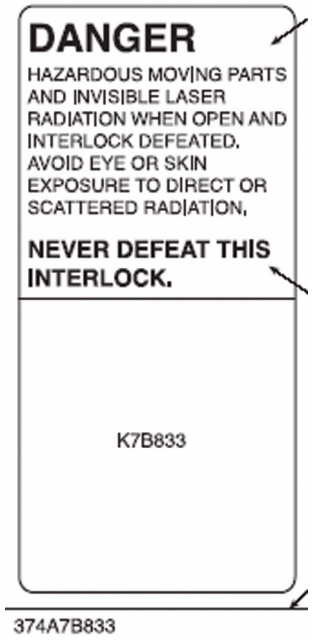
374A7B830



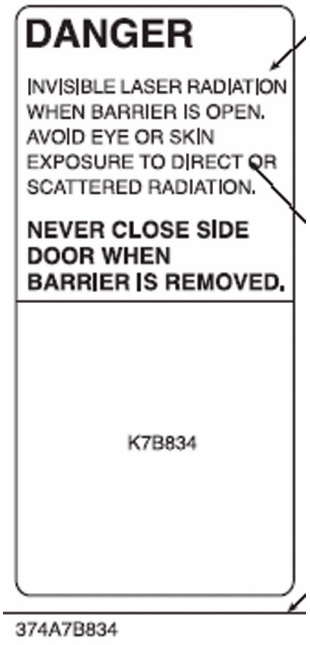
374A7B831



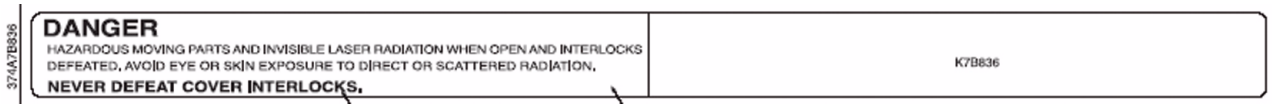
374A7B832



374A7B833



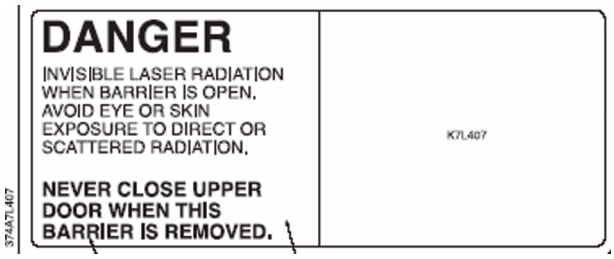
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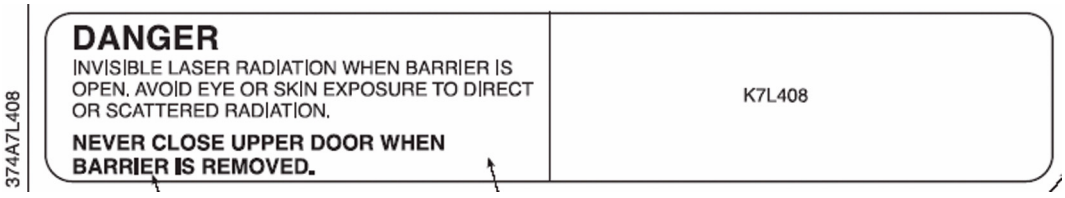
374A7B836



374A7L405

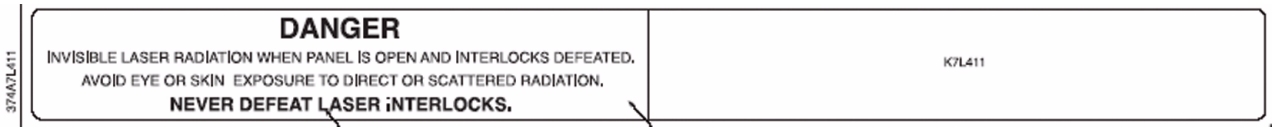


374A7L407



374A7L408

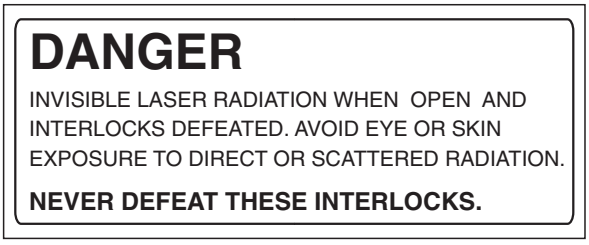
374A7L410 (picture is not available)



374A7L411

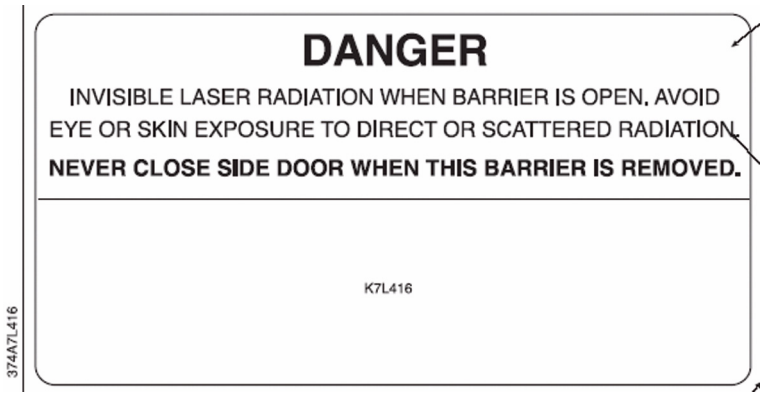


374A7L412

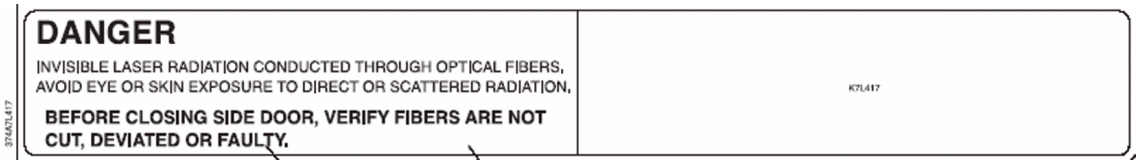


374A7L414

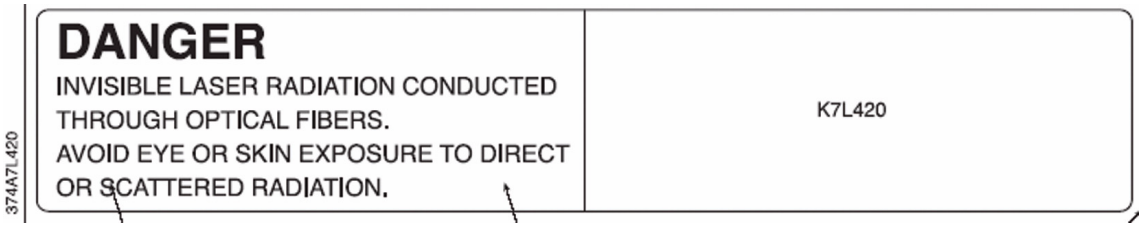
Note: The actual label contains the English version and another language, as relevant.



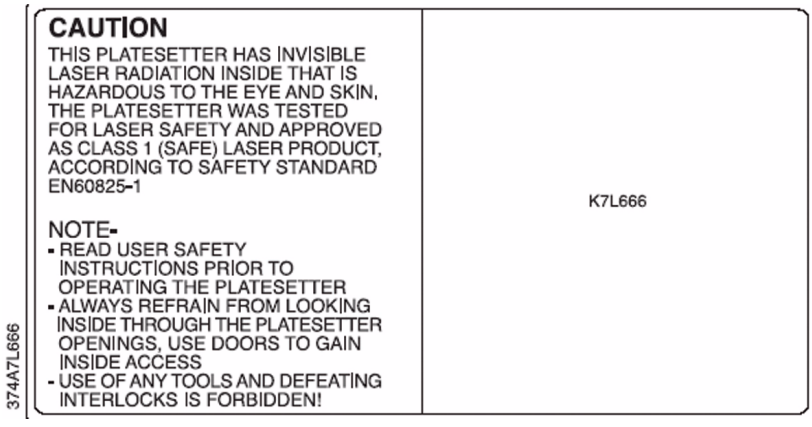
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374A7L417



374A7L420

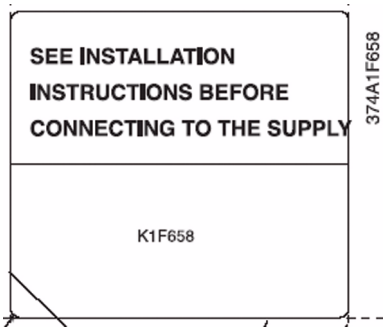


374A7L666



374A8L535

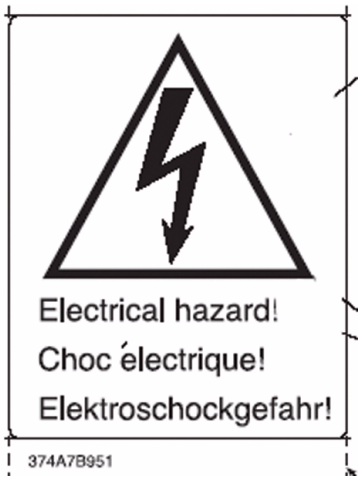
374A8L697 (picture is not available)



374A1F658



374A2G957



374A7B951 (374A30170)



382-00744A

Warning Label Locations

See the following figures for locations of warning labels on the ThermoFlex Narrow Hybrid platesetter.

Make sure that all warning labels are in good order; renew warning labels if needed.

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



Figure 5: Platesetter front view

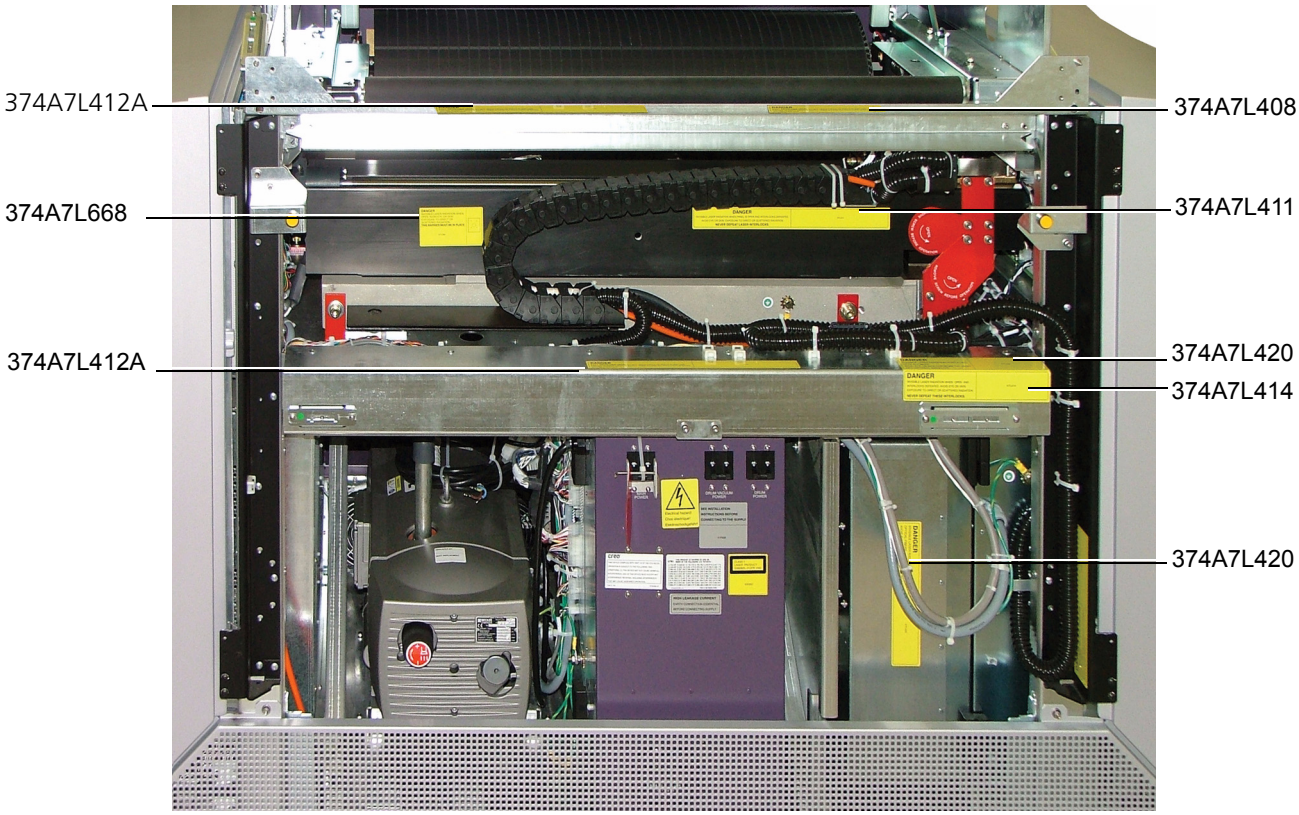


Figure 6: Platesetter front view, panel removed

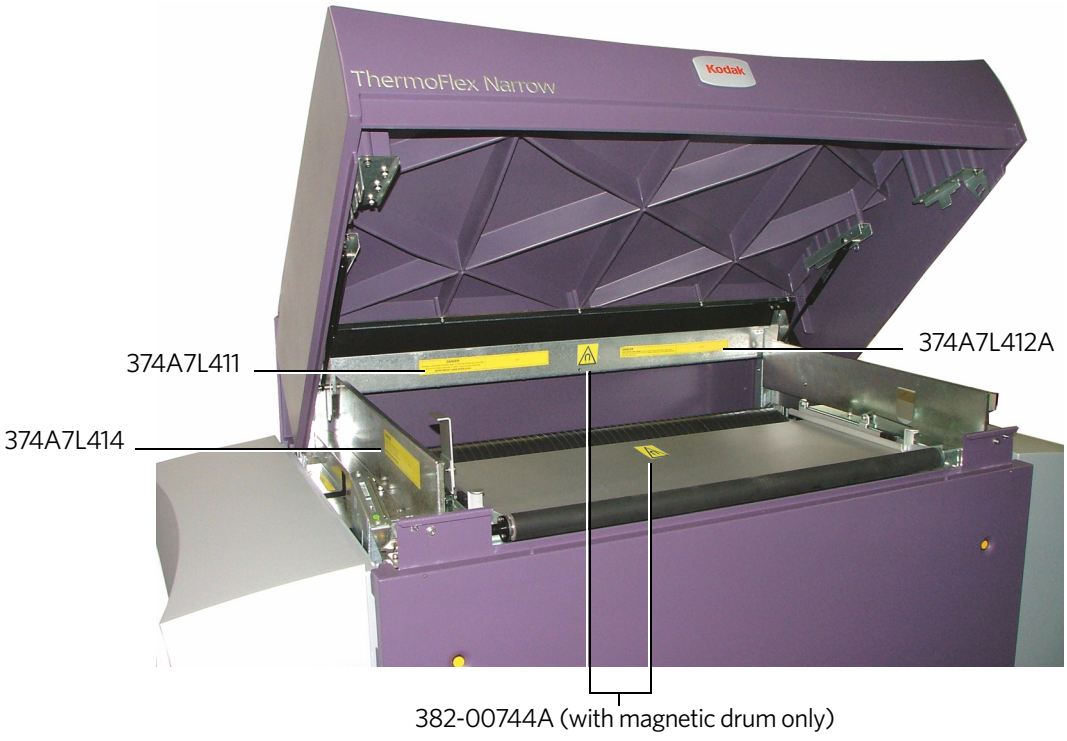


Figure 7: Platesetter front view, top door open



Figure 8: Platesetter front view, loading/unloading tray lifted

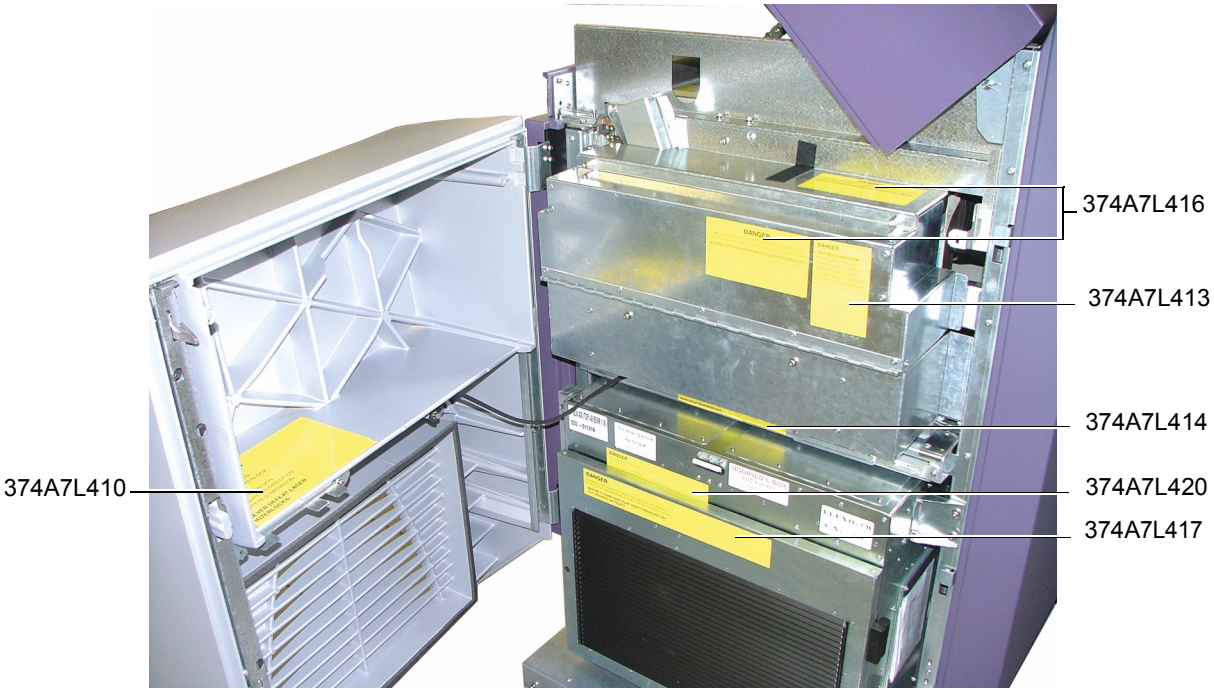


Figure 9: Platesetter right side door open

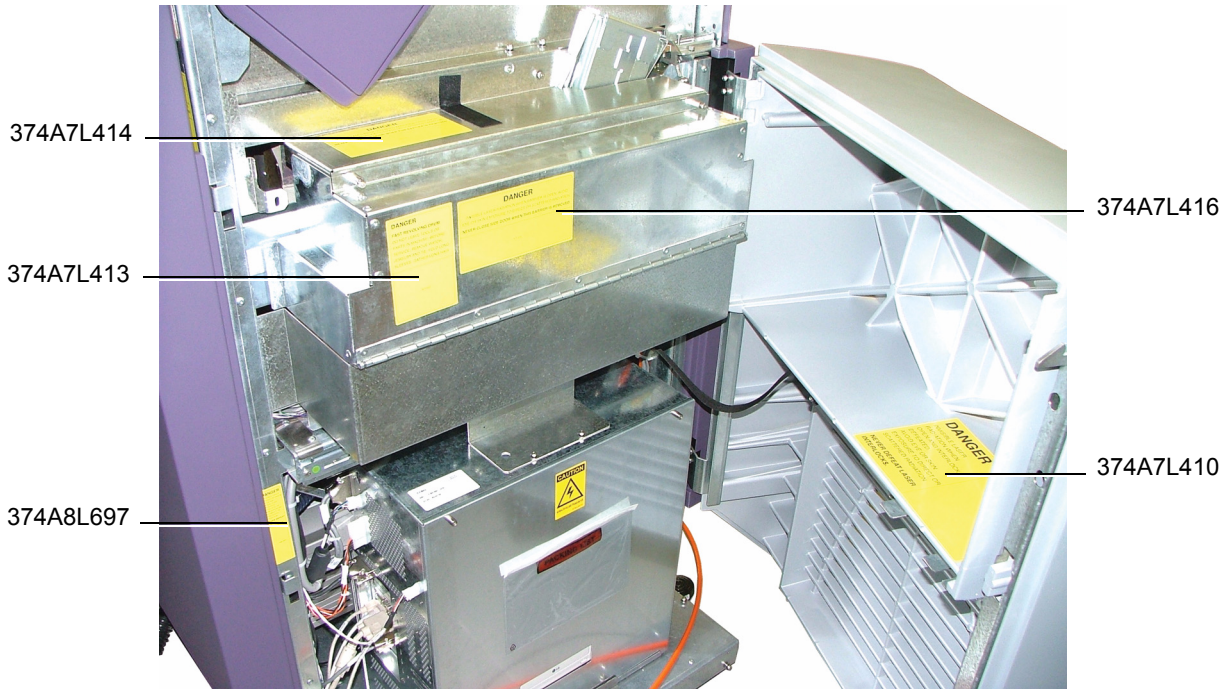


Figure 10: Platesetter left side door open

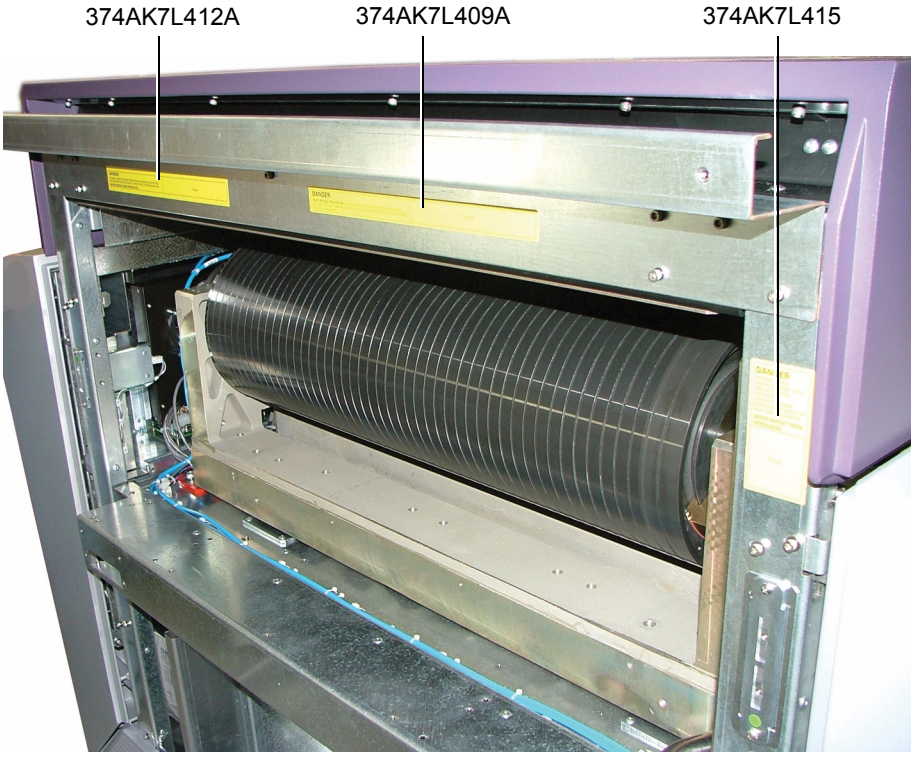


Figure 11: Platesetter back view, panel removed

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