Safety Precautions for User

English

ThermoFlex Mid II

653-01084A-EN
Internal 761-00014A-EN

www.creo.com

Copyright

Copyright © 2005Creo Inc. All rights reserved.

No copying, distribution, publication, modification, or incorporation of this document, in whole or part, is permitted without the express written permission of Creo. In the event of any permitted copying, distribution, publication, modification, or incorporation of this document, no changes in or deletion of author attribution, trademark legend, or copyright notice shall be made.

No part of this document may be reproduced, stored in a retrieval system, published, used for commercial exploitation, or transmitted, in any form by any means, electronic, mechanical, photocopying, recording, or otherwise, without the express written permission of Creo Inc.

This document is also distributed in Adobe Systems Incorporated's PDF (Portable Document Format). You may reproduce the document from the PDF file for internal use. Copies produced from the PDF file must be reproduced in whole.

Trademarks

The Creo wordmark, Creo logo, and the names of the Creo products and services referred to in this document are trademarks of Creo Inc.

Adobe, Acrobat, Adobe Illustrator, Distiller, Photoshop, PostScript, and PageMaker are trademarks of Adobe Systems Incorporated.

Apple, iMac, Power Macintosh, AppleShare, AppleTalk, TrueType, ImageWriter, and LaserWriter are registered trademarks of Apple Computer, Inc. Macintosh is a trademark of Apple Computer, Inc., registered in the U.S.A. and other countries.

PANTONE, Hexachrome, PANTONE Hexachrome, and PANTONE MATCHING SYSTEM are the property of Pantone, Inc.

PEARL, PEARLsetter, PEARLhdp, PEARLdry, and PEARLgold are registered trademarks of Presstek, Inc.

XEROX®, The Document Company®, the digital X®, and DocuColor are trademarks of XEROX CORPORATION.

Other brand or product names are the trademarks or registered trademarks of their respective owners.

FCC Compliance

The Creo equipment referred to in this document complies with the requirements in Part 15 of FCC Rules for a Class A computing device. Operation of the Creo equipment in a residential area may cause unacceptable interference to radio and TV reception, requiring the operator to take whatever steps are necessary to correct the interference.

Limitation of Liability

The product, software or services are being provided on an “as is” and “as available” basis. Except as may be stated specifically in your contract, Creo Inc. expressly disclaims all warranties of any kind, whether express or implied, including, but not limited to, any implied warranties of merchantability, fitness for a particular purpose and non-infringement.

You understand and agree that Creo Inc. shall not be liable for any direct, indirect, incidental, special, consequential or exemplary damages, including but not limited to, damages for loss of profits, goodwill, use, data or other intangible losses (even if Creo has been advised of the possibility of such damages), resulting from: (i) the use or the inability to use the product or software; (ii) the cost of procurement of substitute goods and services resulting from any products, goods, data, software, information or services purchased; (iii) unauthorized access to or alteration of your products, software or data; (iv) statements or conduct of any third party; (v) any other matter relating to the product, software, or services.

The text and drawings herein are for illustration and reference only. The specifications on which they are based are subject to change. Creo Inc. may, at any time and without notice, make changes to this document. Creo Inc., for itself and on behalf of its subsidiaries, assumes no liability for technical or editorial errors or omissions made herein, and shall not be liable for incidental, consequential, indirect, or special damages, including, without limitation, loss of use, loss or alteration of data, delays, or lost profits or savings arising from the use of this document.

Patents

This product is covered by one or more of the following U.S. patents:

RE37,376	5,412,737	5,699,174	6,014,471	6,189,452	6,396,422	6,579,660
D478,608	5,420,702	5,699,740	6,016,752	6,191,882	6,407,849	6,587,211
4,558,302	5,420,722	5,708,736	6,043,865	6,204,874	6,409,331	6,589,710
4,743,091	5,459,505	5,713,287	6,060,208	6,205,364	6,414,755	6,590,635
4,992,864	5,473,733	5,742,743	6,063,528	6,208,369	6,422,801	6,593,064
5,049,901	5,481,379	5,764,374	6,063,546	6,214,276	6,425,565	6,601,888
5,113,249	5,488,906	5,771,794	6,072,518	6,217,965	6,430,136	6,605,407
5,132,723	5,508,828	5,785,309	6,090,529	6,252,241	6,435,091	6,609,459
5,155,782	5,509,561	5,802,034	6,093,447	6,252,522	6,441,914	6,611,363
5,157,516	5,517,359	5,813,346	6,096,461	6,255,033	6,443,571	6,618,187
5,177,724	5,519,852	5,818,498	6,098,544	6,260,482	6,450,092	6,628,435
5,208,818	5,576,754	5,854,883	6,107,011	6,266,080	6,456,396	6,632,584
5,208,888	5,579,115	5,861,904	6,112,663	6,266,134	6,471,335	6,637,329
5,247,174	5,583,551	5,861,992	6,115,056	6,267,054	6,476,342	6,637,860
5,249,067	5,592,309	5,875,288	6,116,160	6,268,948	6,476,931	6,640,713
5,283,140	5,594,556	5,894,342	6,121,996	6,270,204	6,477,955	6,641,772
5,291,273	5,600,448	5,900,981	6,130,702	6,283,589	6,493,064	6,641,978
5,305,091	5,608,822	5,934,196	6,134,393	6,295,076	6,494,965	6,646,669
5,323,248	5,615,282	5,946,426	6,136,509	6,299,572	6,503,691	6,648,468
5,325,217	5,625,397	5,947,028	6,137,580	6,318,266	6,509,903	6,652,088
5,339,176	5,625,766	5,958,647	6,147,789	6,328,408	6,511,163	6,654,147
5,343,059	5,636,330	5,966,504	6,158,345	6,336,708	6,520,084	6,660,997
5,355,446	5,649,220	5,969,872	6,159,659	6,340,817	6,530,317	6,661,561
5,359,451	5,650,076	5,973,801	6,164,637	6,352,816	6,541,181	6,665,048
5,359,458	5,652,804	5,986,819	6,165,658	6,353,216	6,544,336	6,665,121
5,367,360	5,680,129	5,995,475	6,180,325	6,366,339	6,545,772	6,670,986
5,384,648	5,691,823	5,996,499	6,181,362	6,371,026	6,550,388	6,684,783
5,384,899	5,691,828	5,998,067	6,181,439	6,377,739	6,564,018	6,704,123
5,412,491	5,696,393	6,003,442	6,186,068	6,387,597	6,567,713	

Creo Inc.
3700 Gilmore Way
Burnaby, B.C., Canada
V5G 4M1
Tel: +1.604.451.2700
Fax: +1.604.437.9891

http://www.creo.com
Internal 761-00014A-EN

Revised June 2005

ThermoFlex Mid II Safety Precautions For User

Symbols Used in This Manual 2
Introduction 3
Installation Safety Precautions 4
Basic & Laser Safety Precautions 5
Drum Safety Precautions 23
Debris Removal System 24
Handling Plates 24
Electrical & Pneumatic Connections 26
Lithium Battery 27

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 this document carefully before operating or maintaining the ThermoFlex® Mid II platesetter.

Note: ThermoFlex Mid II in this document refers to both the ThermoFlex Mid II and ThermoFlex Mid II With magnetic drum option. Unless otherwise specified, ThermoFlex Mid II in this document refers to both platesetters.

This product is a **Class 1** laser product, 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.

ThermoFlex Mid II safety at a glance - how to avoid exposure hazards?

WARNING: The laser beam and radiation are hazardous, but 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. 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 engineer.

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 ThermoFlex Mid II 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, cooling 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 ThermoFlex Mid II platesetter.

Disconnection from Mains Supply

The platesetter is equipped with a main 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 circuit breaker. An additional circuit breaker for the l-box is located internally on the l-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 the 3 phase power connector.

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 personnel 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 were 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 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 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.



WARNING: When removing panels, ELV wiring is exposed in the E-Box and there may be 300 V present on the drum motor wires.

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.



WARNING: The safety interlock does not disconnect hazardous electrical voltage from parts and wires inside the platesetter. These parts, however, require tools to access.

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



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

Even authorized service personnel are forbidden to defeat the laser interlocks, but are allowed to defeat the motor 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!

Interlock Functions and Locations

Interlock Location	Interlock Function	Description of interlock Switches	Serviceman only Defeat Allowances
Front Panel	Disable lasers and motors	2 interlock switches	None
Loading Table	Disable lasers and motors	1 interlock switch	None
Left Door	Disable lasers and motors	1 interlock switch	None
Right door	Disable lasers and motors	1 interlock switch	None
Service Door	Disable lasers and motors	2 interlock switches	None
Service Door	Disable lasers and motors	1 defeat switch	Defeat switch only for operating motors (not the drum motor)
Rear Upper Panel	Disable lasers and motors	1 interlock switch	None
Rear Lower Panel	Disable lasers and motors	1 interlock switch	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 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 machine supplied to you should have the warning labels provided in your local language.

WARNING: Notify your service engineer if your local language is not provided on the warning labels.

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



Label 1: 382-00888A



Label 2: 382-00956A



Label 3: 382-01051A



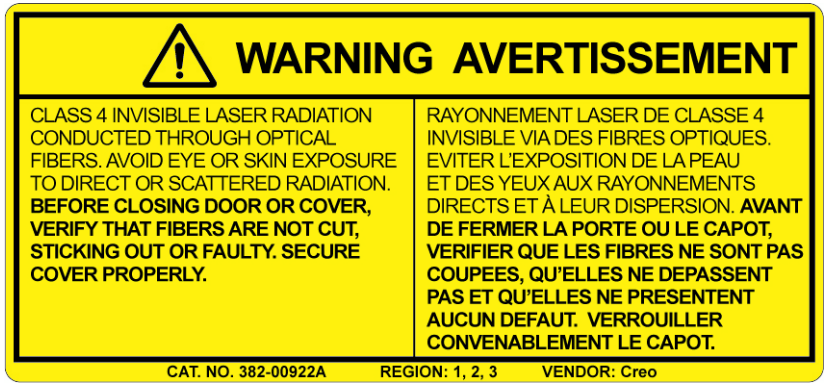
Label 4: 382-01068A



Label 5: 382-00980A



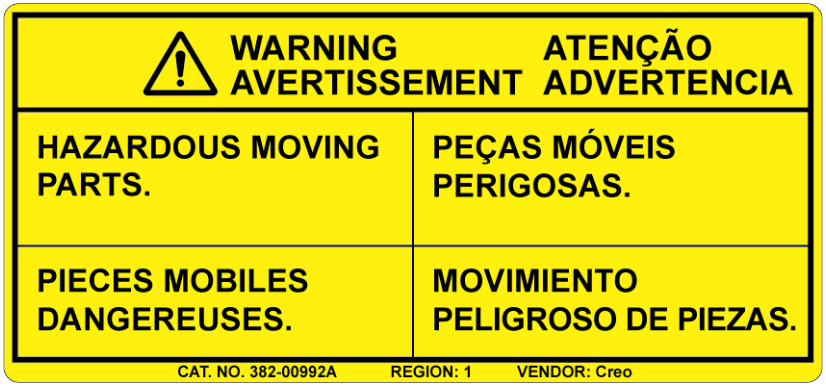
Label 8: 382-00905A



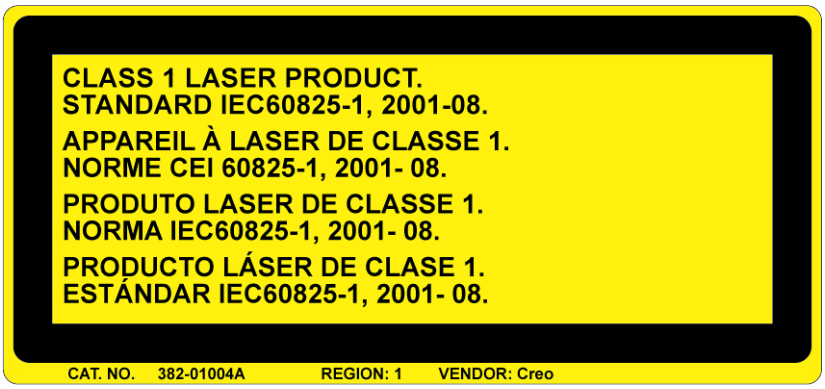
Label 9: 382-00922A



Label 10: 382-00939A



Label 11: 382-00992A



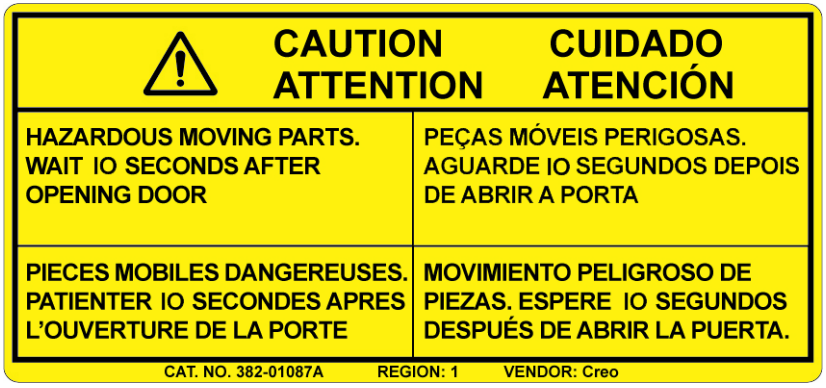
Label 12: 382-01004A



Label 15: 382-00968A



Label 16: 382-01016A



Label 17: 382-01087A



Label 19: 382-01028A



374A7B951



374A63678



382-00744A



382-001146A



382-01210A

Warning label Locations

See the following figures for locations of warning labels on the ThermoFlex Mid II platesetter.

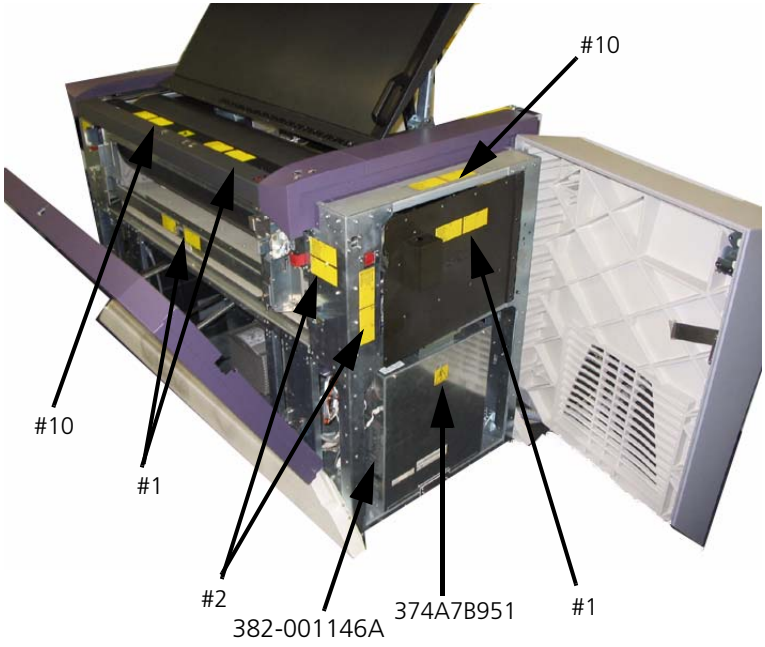


Figure 1: Front panel, right side door, and loading table open and in up position

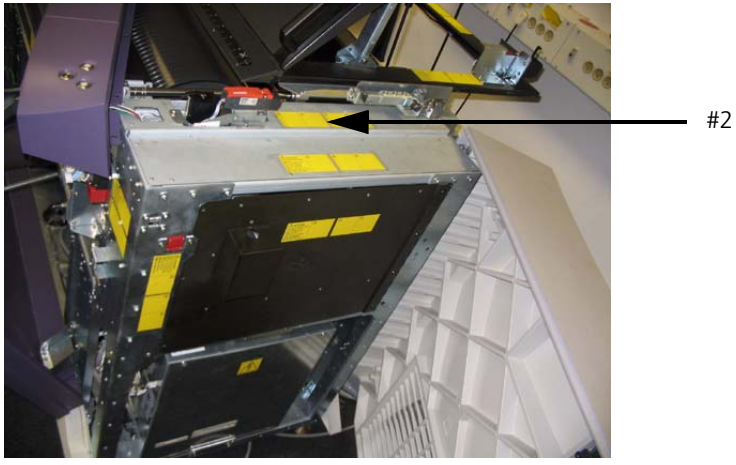


Figure 2: Operator panel removed

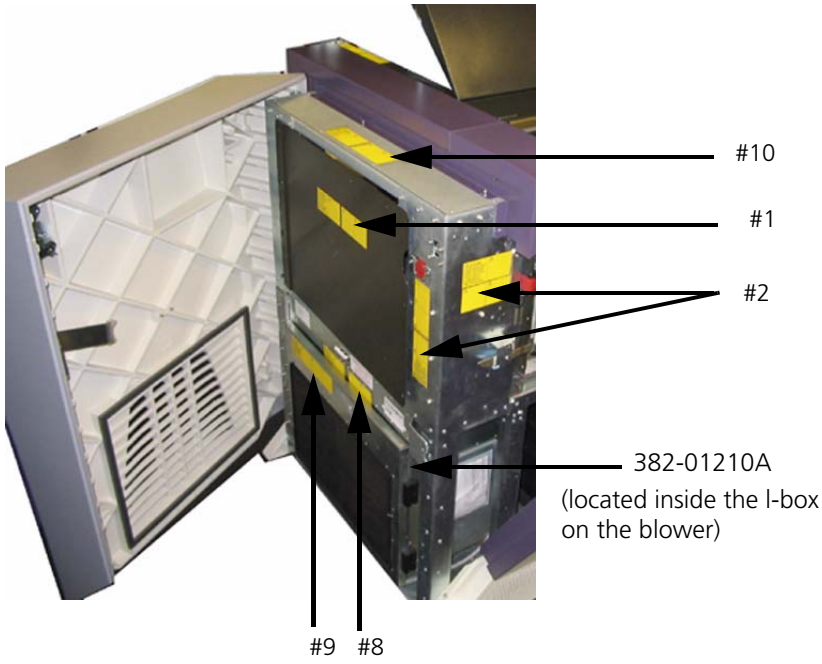


Figure 3: Left side door open

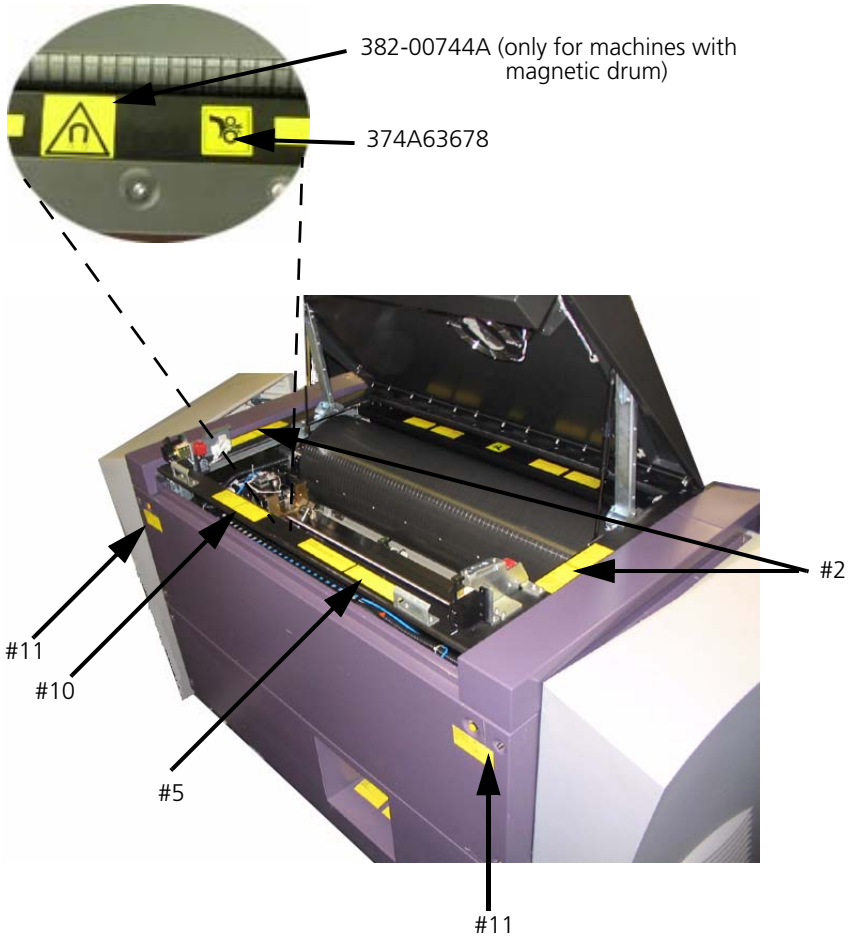


Figure 4: Rear view with the service door open

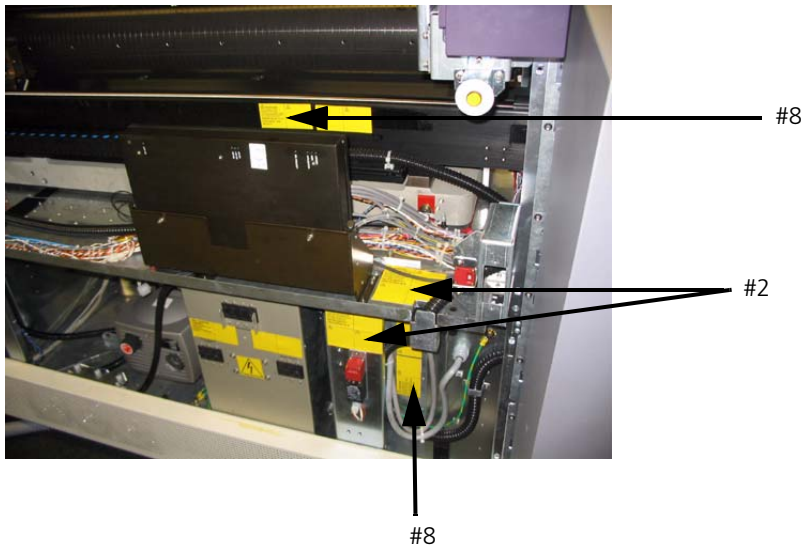


Figure 5: Rear panel removed

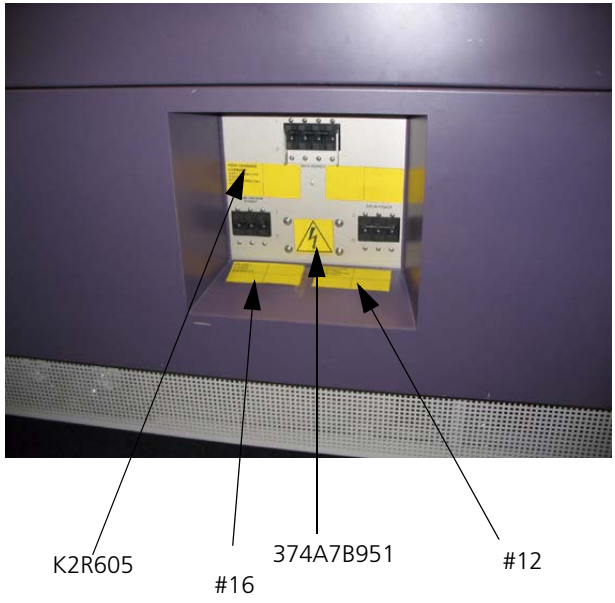


Figure 6: Distribution box

Drum Safety Precautions

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



WARNING: Opening the upper front or rear 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 5 seconds after the door is unlocked the drum is not stationary, shut off the machine and call your service engineer.**



WARNING: If the buzzer is activated this indicates that the drum interlock or laser interlock system has failed. Do the following: remove your hands from the drum, shut down the machine and call your service engineer.

The drum revolves at approximately **200** 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 upper doors to open, or penetrate through the doors.



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

The platesetter may be equipped with a magnetic drum. A strong magnetic force therefore exists close to the drum that enables the plates to stay attached even when the drum is revolving.



CAUTION: High magnetic field exists close to the drum. Take off your wrist watch, or any other metal object before getting close to the drum.



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



WARNING: When removing panels, ELV wiring is exposed in the E-Box. In a single fault phase, there may still be 300V present on the drum motor wires.

Debris Removal System

The debris removal system, a separate component connected to the platesetter, is part of the ThermoFlex Mid II configuration. The debris removal system 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.



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: Please refer to the *Debris Removal System Manufacturer's Operating and Safety Instructions*.

Handling Plates

Loading and Unloading Plates

Follow the procedure for loading and unloading plates, described in the ThermoFlex Mid II User Guide.



CAUTION: For convenient and safer access to either the front side of the platesetter (for loading and unloading plates) or the rear side (for removing stuck plates), use the two platforms supplied with the machines. Place the platforms close to the front and rear sides of the platesetter. Make sure the platform is sturdy.



CAUTION: The plate material may be irritating so it is recommended that you wear gloves when loading plates into the cassette.



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



CAUTION: Do not lean on the loading table. Leaning on it may cause you to lose your balance.



CAUTION: Pressing the Load /Unload buttons cause the drum to slowly rotate. The force of rotation, however, is limited by the sliding clutch.



CAUTION: Beware of sharp plate edges while the drum is rotating.



CAUTION: Do not put your fingers between the drum and the platesetter frame.

Close the loading table by pulling the handle with your right hand.



CAUTION: Beware not to put your left hand between the loading table and the platesetter frame. The loading table is heavy and can injure your hand. A warning label (374A7B678) is provided.



WARNING: You are not allowed to use any tools.



WARNING: Do not tamper with wires and cables routed inside the platesetter.



WARNING: Do not defeat any interlock switches.

Removing Stuck Plates

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



WARNING: Before removing a plate, slide open the loading table, switch off the main drum power switch on the distribution box.



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

To access to the inner parts of the platesetter for removing stuck plates or for maintenance, either raise the service door from the rear side of the platesetter, or open the side doors.



CAUTION: The loading table is equipped with a piston, do not stand too close to it.



WARNING: You are not allowed to use any tools (except scissors or something similar to cut the plate).It is recommended to release the entire plate as one piece; do not attempt to cut the plate.



CAUTION: Do not tamper with wires or cables routed inside the platesetter.



CAUTION: Do not defeat any interlock switches.

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.

ThermoFlex Mid II platesetter connections:

- The connector is supplied by the customer (male & female).
- One 3Ph outlet - 208V/120 Vac ±10%, 3 phase (Star) 20A branch circuit. Frequency – 50/60 ±2%.
- For customers with line power of 230 Vac, a step-down transformer is used, from 346/200, 380/220, 400/230 or 415/240 to 208/120V (3Ph).
- To protect the transformer, a 3-pole circuit breaker must be provided in the power line that feeds the transformer. The circuit breaker must be rated: 10KA IEC 947.2, 230/400 VAC, 16A, tripping curve D or K.

Filtering connection for the ThermoFlex Mid II:



Note: The following information pertains to the Fuchs filtering device, if you have a UDRC, please see the *UDRC Site Preparation Guide*.

- One 3Ph outlet – 400/230 Vac 3-phase 16A slow reacting fuse. The connector is supplied by customer (male & female).
- For customers with 230 Vac line power, the vacuum pump is connected to the wall connector. For customers with 110 Vac, a 3Ph 230V transformer is connected to the wall connector and to the vacuum pump (connectors are supplied).
- To protect the transformer, a 3-pole circuit breaker must be provided in the power line that feeds the transformer. The circuit breaker must be rated: 10KA IEC 947.2, 230/400 VAC, 10A, tripping curve D or K.

Other electrical connections for the ThermoFlex Mid II:

- Two (2) power supply connections for workflow workstation and ThermoFlex Controller monitor – 120V +6% -10% or 230V ±10%, 16A.
- An additional isolated single-phase outlet for service purposes.



Note: The ThermoFlex Mid II is suitable for Norway's IT power system, however it must include an external transformer in addition.

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.