Kodak

Magnus 400 II and Magnus 400 II Quantum

Platesetters

Safety Precautions for Service

English

731-01211A-EN Rev A

Copyright

© Kodak, 2008. All rights reserved.

Kodak, Creo, Magnus, and Thermoflex are trademarks of Kodak.

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

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

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

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

XEROX is a trademark of XEROX CORPORATION.

http://graphics.kodak.com/

Internal 731-01211A-EN Rev A

Revised February 2008

Contents

Introduction 1

Symbols Used in This Manual ... 1
Device Views ... 2
Platesetter ... 2
LDA Laser System ... 3
Platesetter With MCU II ... 3
Platesetter With Punch Conveyor ... 5
General Safety Precautions ... 6
Before Beginning Service ... 7

Power and Electrical Elements 8

Electrical Safety Precautions ... 8
Electrical Enclosures ... 8
Double-Insulated Wiring ... 8
Grounding ... 9
Installation ... 9
Electrical Connections ... 9
Power Line ... 9
Platesetter Connections ... 9
Debris Removal Cabinet Connections ... 10
Disconnecting From the Main Power Supply ... 10
Precautions to Take When Servicing Boards or the Power Supply ... 11
Disconnecting From the Pneumatic Air Pressure ... 11
Lithium Battery ... 11

Laser Elements and Radiation 12

Laser System Replacement ... 13
LDA Laser Source ... 14
Optical Fiber Bundle ... 14
Fiber Welding Box ... 15
Laser Head ... 15
Thermal Imaging Head ... 16
Enclosures ... 17

Safety Interlocks 18

Magnus 400 II and Magnus 400 II Quantum Laser Interlocks ... 20
Magnus 400 II Quantum-Specific Laser Interlocks ... 20
Write Laser ... 20
Focus Laser ... 21
Motor Interlocks ... 22
Stop Motors Button ... 23

Drum 25

Gripper Actuators ... 26

Handling Plates and Cassette Trays 27

Cooling System 28

Debris Removal System 29

Punch Conveyor 30

Remote Support 33

Interlock Defeat Permissions 33
Activating Remote Control 34
Terminating Remote Control 34

Warning Labels and Locations 35

Platesetter, MCU II, and Punch Conveyor Warning Labels 35
Platesetter Warning Label Locations 41
Magnus 400 II 41
Magnus 400 II Quantum 46
MCU II Warning Label Locations 50
Punch Conveyor Warning Label Locations 54

Introduction

Read this safety document carefully before installing, operating, servicing, or maintaining the Kodak® Magnus™ 400 II and Kodak Magnus 400 II Quantum platesetters and/or the Magnus 400 II and Magnus 400 II Quantum with multi-cassette unit II (MCU II).

Extensive care was taken in the design and manufacturing of the platesetters to eliminate hazards to operators and service personnel. Follow the instructions in this document to ensure your safety and the safety of others when operating or maintaining the platesetters.

These products are Class 1 laser products, according to IEC60825-1 and USA 21 CFR 1040. This implies that there is no hazardous laser radiation, provided that the safety precautions are followed.

Note: For operator safety instructions, see the *Magnus 400 II and Magnus 400 II Quantum Safety Precautions for Operators* document (731-01210A).

Symbols Used in This Manual



DANGER: Indicates a hazardous situation, which, if not avoided, will result in death or serious injury.



WARNING: Indicates a hazardous situation, which, if not avoided, could result in death or serious injury.



CAUTION: Indicates a hazardous situation, which, if not avoided, could result in minor or moderate injury. It also may be used to alert against possible damage to property.

Device Views

Platesetter



Figure 1: Manual loader platesetter—front view



Figure 2: Platesetter—rear view

LDA Laser System

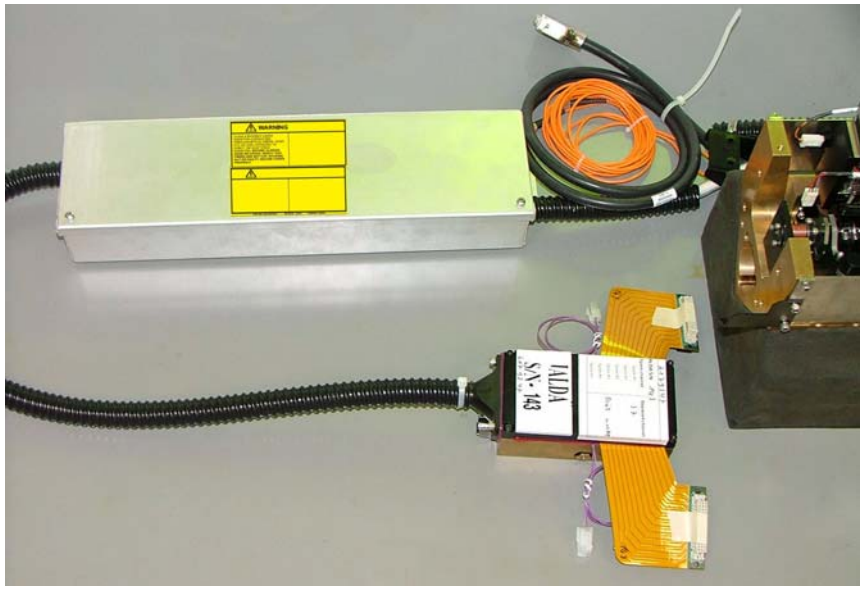


Figure 3: LDA laser system

Platesetter With MCU II



Figure 4: Platesetter with MCU II



Figure 5: MCU II with loader door opened



Figure 6: MCU II with left door opened

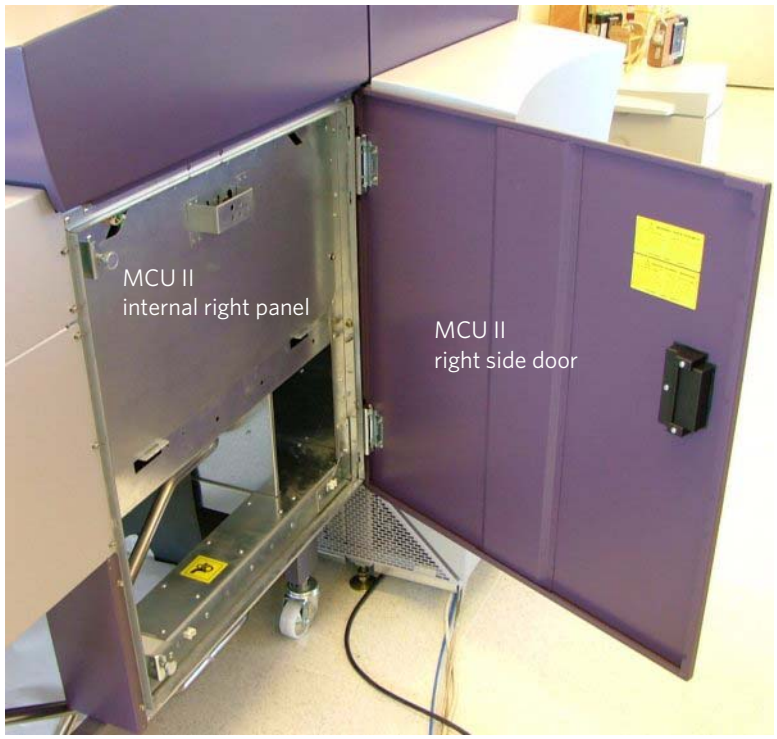


Figure 7: MCU II right side door open

Platesetter With Punch Conveyor



Figure 8: Platesetter with punch conveyor

General Safety Precautions

- Read the *Magnus 400 II and Magnus 400 II Quantum Safety Precautions for Operator* document—an indispensable part of the service safety instructions.
- Many service procedures can be performed when the entire platesetter or some of its assemblies are turned off. Whenever possible, perform service when the platesetter is turned off.
- When the platesetter is turned off, use the safety bar near the main power circuit breaker to prevent anyone from accidentally turning on the platesetter.
- Two yellow On/Standby buttons are located on the rear panel on both sides of the plate exit. These buttons are *not* emergency stop buttons. It takes approximately one minute to stop the revolving drum by pushing these buttons.



WARNING: It takes one minute or longer for the drum to stop rotating when you push an On/Standby button, or when you turn off the main power circuit breaker.

- Keep all external doors and internal protective barriers of the platesetter complete and undamaged.
- *Never* defeat the write laser interlock switches.



WARNING: The laser beam and radiation are hazardous, and may be either visible or invisible to the eyes.

- Avoid actuating the focus laser or motors' interlock defeat switches unless absolutely necessary.



WARNING: If you must defeat the focus laser or motor interlock switches, use only the dedicated defeaters. You must *never* use any other interlock defeater.

- If you must handle optical fibers or the laser diode array (LDA) laser source, follow the specific service instructions for these components, and do so with extreme caution. You must either turn off the platesetter, or open a door that has two interlock switches and keep it open to ensure that no laser radiation is present.
- *Never* cut or damage the optical fibers' protective tubing.
- *Never* allow an optical fiber to extend from the outer enclosure or from the laser welding box.
- *Never* leave any object between the laser head and the drum.
- If there is any doubt regarding the proper function of the laser interlock system, or if you suspect that the platesetter protective panel or barrier is broken, cracked or otherwise damaged, turn off the platesetter. Do not turn on the platesetter until you have checked and fixed the problem.

- Only certified service personnel are allowed to attach the MCU II to the Magnus 400 II and Magnus 400 II Quantum platesetters.
- Only certified service personnel are allowed to dismantle the MCU II from the Magnus 400 II and Magnus 400 II Quantum platesetters.
- Do not move the platesetter with the MCU II attached. To move either, you must first disconnect the MCU II entirely from the platesetter.

Before Beginning Service

Never begin service on the platesetter until you complete the following precautions:

- Post copies of the following sign close to the keyboard, and close to the platesetter:
  "CAUTION: Machine in service—do not operate."
- Remove any clothing or any objects that might get caught in a moving part of the platesetter—for example, remove ties, roll up long sleeves, remove rings and bracelets, and gather long hair.
- Remove any reflective objects such as jewelry, wristwatches and so on from your hands, wrists, and shirt, and use only non-reflective tools. This reduces the risk of hazardous laser reflection in case of a failure in the laser interlock system or in a protective barrier.

Power and Electrical Elements

Electrical Safety Precautions

The following elements provide protection from electrical hazards:

- Electrical enclosures
- Double-insulated wiring
- Grounding

Many service procedures can be performed when the entire platesetter or some of its assemblies are turned off. Whenever possible, perform service when the platesetter is turned off.



DANGER: The safety interlocks do not neutralize electrical hazards in the device.



DANGER: Electronic boards and modules may have hazardous electrical voltage. Do not touch.

Electrical Enclosures

The electrical enclosures are grounded metal boxes that require a tool to open. These enclosures may have warning labels with a lightning symbol in a triangular border (see page 40).



DANGER: The electrical circuits are located inside protective electrical enclosures that require a tool to open. The interlock system does *not* neutralize the electrical hazards.

Double-Insulated Wiring

Wires that carry hazardous voltages have double insulation.



WARNING: Wires near connectors may be single-insulated. Do not touch single-insulated wires.

Grounding

The device must be grounded.



DANGER: There is a hazard of fatal electric shock if the device is not connected to a safety ground.



WARNING: Do not alter the internal grounding means.

Installation



WARNING: Only qualified service personnel are allowed to install or service the Magnus 400 II and Magnus 400 II Quantum platesetters.

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

Electrical Connections

Power Line

The total power consumed by your system depends on the specific site configuration. See the *Magnus 400 II and Magnus 400 II Quantum Site Preparation Guide* (731-01214A-EN).

All voltage settings, fuses, and cords should be in full compliance with local standards.

Platesetter Connections

- Rating: 200–240 V AC
- Line voltage
  - ❒ Dual-phase supply in a 120 V configuration
  - ❒ Single-phase and neutral in a 230 V configuration
- Supply frequency: 50/60 Hz ±1.5%
- Power line connections *must* include three pins: two phases (or phase and neutral) and one safety ground.



DANGER: There is a hazard of fatal electric shock if the device is not connected to a safety ground.

- The cable connector (male, 3-pin: 2 phases and safety ground) is supplied with the platesetter
- For branch circuit requirements, refer to the *Magnus 400 II and Magnus 400 II Quantum Site Preparation Guide* (731-01214A).

Debris Removal Cabinet Connections

See the *UDRC Site Preparation and Requirements* document (725-00089A).

Disconnecting From the Main Power Supply

The platesetter has circuit breakers that disconnect power from the entire platesetter, or from one of its assemblies.

WARNING: Complete disconnection from the main power supply can only be achieved by setting the main power circuit breaker to 0 or by unplugging the main power cable from the power outlet.

Table 1: Circuit breakers and their locations

Description	Location
Main power circuit breaker	D-box
Drum motor power circuit breaker	D-box
Drum vacuum pump power circuit breaker	D-box

WARNING: For service purposes, when turning off the main power circuit breaker, use the safety bar near the main power circuit breaker to prevent anyone from accidentally turning on the power.



Figure 9: Safety bar used to keep the main power circuit breaker off

Precautions to Take When Servicing Boards or the Power Supply

- Turn off the power by setting the main power circuit breaker on the D-box to 0.
- When the platesetter is turned off, use the safety bar near the main power circuit breaker to prevent anyone from accidentally turning it on.
- Wear an antistatic wrist band when handling boards.
- Verify that you are using the correct test point.

Disconnecting From the Pneumatic Air Pressure

The platesetter receives pneumatic air pressure from the filtration unit located on the wall.

Before working with any pneumatic component, turn off the main air pressure valve, and discharge the air pressure from the system.

➢ To turn off the air pressure, on the air pressure unit, turn the valve clockwise.

Lithium Battery

The CPU board in the platesetter computer contains a lithium battery.



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

The operator must not replace the battery; only a qualified service person must replace it.

Precautions to Take When Replacing the Battery

- Turn off the power by setting the main power circuit breaker on the D-box to 0.
- When the platesetter is turned off, use the safety bar near the main power circuit breaker to prevent anyone from accidentally turning on the power.
- Follow the battery manufacturer's instructions.
- Replace the battery with the same or equivalent type of battery that is recommended by the manufacturer.
- *Never* short the battery terminals.
- Install the new battery with the correct polarity.
- Dispose of the used battery according to the manufacturer's instructions.

Laser Elements and Radiation

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

The platesetter is equipped with a highly hazardous laser system that exposes the media. However, the platesetter is a Class 1 laser product according to International Safety Standard IEC60825-1 and USA regulation 21 CFR 1040. This implies that the operator and service engineer cannot access hazardous laser radiation provided that the safety precautions are followed.

On Magnus 400 II (LDA) platesetters, the laser radiation is generated in the following way:

1. The LDA laser source generates the write (invisible) laser radiation.
2. The optical fibers bundle, routed inside flexible plastic tubing, carries the laser radiation to the fiber welding box.
3. The laser radiation reaches the fiber welding box.
4. The optical fibers bundle is routed inside flexible plastic tubing and carries the laser radiation from the fiber welding box to the laser head.
5. The laser head projects the laser radiation toward the drum.

On Magnus 400 II Quantum platesetters, the thermal imaging head generates the write (invisible) and focus (red, visible) laser energy and radiates it toward the drum.

On both the Magnus 400 II and Magnus 400 II Quantum platesetters, the following means provide protection from the laser radiation:

- Enclosures
- Interlocks
- Warning labels

.

DANGER: The service engineer must *never*, defeat any of the laser interlock switches, except to activate the intended focus laser interlock override switch (in Magnus 400 II Quantum), as described in *Focus Laser* on page 21.

WARNING: It takes approximately three seconds for the laser interlock system to shut off the laser sources. Therefore, when opening a door or panel, do not hurry to access the inside of the platesetter.

WARNING: *Never* open the platesetter's side doors unless the rear door has been opened first and has activated the interlock system. Failure to adhere to this rule may cause exposure to hazardous laser radiation and permanent eye damage.

WARNING: On Magnus 400 II, the laser beam and radiation are invisible to the eyes, and are highly hazardous.



WARNING: On Magnus 400 II Quantum, the write laser beam and radiation are invisible to the eyes, and the focus laser is visible (red). Both lasers are highly hazardous.



WARNING: The focus laser beam inside the platesetters is visible (red) and is hazardous to the eyes. Even brief exposure of the eyes to the visible laser radiation or beam, or its reflections from shiny objects, may cause permanent loss or degradation of eyesight.



WARNING: The write laser beam and radiation inside the platesetters is invisible and hazardous to the eyes and skin. Even brief exposure of the eyes to the invisible laser radiation or beam, or its reflections from shiny or matte objects, may cause permanent loss or degradation of eyesight.



WARNING: In the presence of flammable material, the write laser beam is also a fire hazard.



WARNING: If there is any doubt regarding the proper function of the laser interlock system, or if you suspect that the platesetter protective panel or barrier is broken, cracked or otherwise damaged, turn off the platesetter. Do not turn on the platesetter until you have checked and fixed the problem.



WARNING: If you must enter the room where the platesetter is located when the platesetter is turned on, and if you suspect that any of the precautions in the following sections were violated, disconnect the power supply to the platesetter before entering the room.

Laser System Replacement

You may replace the laser system only as an entire system. The laser diode array (LDA) laser system includes the following elements:

- LDA laser source
- Optical fibers and their protective flexible plastic tubing
- Fiber welding box
- Laser head (optical head)



WARNING: Dismantling the LDA laser source or handling the optical fibers in a way other than what is permitted is forbidden and may cause hazardous exposure to the laser radiation. For more details about what is permitted, see *Fiber Welding Box* on page 15.

LDA Laser Source

The LDA laser source is located behind the left side door of the platesetter. The LDA laser source contains 48 laser diodes that generate the hazardous laser radiation. (Up to 42 of the laser diodes are active; the others are spares.) Each laser diode is connected to an optical fiber that conducts the laser radiation. The fibers are bundled inside a flexible plastic tube and conduct the laser radiation to and from the fiber welding box toward the laser head.



WARNING: *Never* dismantle or try to repair the LDA laser source. If faulty, it must be replaced together with the entire laser system.



WARNING: The LDA laser source must be in its proper place and correctly secured mechanically during device operation.

Precautions to Take When Performing Service in the LDA Laser Source Area

- Turn off the main power circuit breaker, or open a door with two interlock switches and keep it open before you handle the LDA laser source to ensure that no laser radiation is present.
- Before operating the platesetter, verify that all optical fibers are intact, not cut or broken, nor abruptly bent.

Optical Fiber Bundle

The optical fiber bundle inside the plastic tubing carries the hazardous laser radiation from the laser source through the fiber welding box to the laser head.

The optical fibers inside the plastic tubing must be intact, not cut or broken, nor abruptly bent.

Precautions to Take When Handling an Optical Fiber Bundle

- Do not cut or damage the optical fibers' plastic tubing.
- *Never* allow an optical fiber, even if not cut, to extend from the plastic tubing.
- Verify that the optical fiber bundle guards are intact and undamaged.



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

Fiber Welding Box

The optical fibers are routed through the fiber welding box without the protective plastic tubing. The purpose of the fiber welding box is to retain 42 operative laser beams. The service engineer can then replace a faulty diode by splicing its optical fiber with a spare diode. The box is not intended for connection and disconnection of all the optical fibers.



WARNING: Before opening the fiber welding box, turn off the main power circuit breaker and secure it in the off position with the safety bar. Also, while servicing the fiber welding box, keep open an interlocked door or panel that has two interlock switches.



WARNING: Make sure that any unconnected fibers inside the fiber welding box are properly spliced.



WARNING: Before operating the platesetter, make sure that the fiber welding box is properly closed and that no fibers extend from it.

Laser Head

Several tens of watts of hazardous invisible laser radiation at a wavelength of 810–860 nm may be present at the output of the laser head.



DANGER: Do not activate the laser head if it is removed from its position on the guide beam. Do not activate the laser head if it is not in its proper position facing the drum, with all the internal protective barriers assembled, and all the doors closed.



DANGER: Several tens of watts of invisible laser radiation at a wavelength of 810–860 nm 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 eyes to this radiation or to its reflection from shiny or matte objects can cause permanent degradation or loss of eyesight.



WARNING: *Never* dismantle the laser head. If faulty, it must be replaced with the whole laser system.



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



WARNING: In the presence of flammable material, the laser beam is also a fire hazard.

Thermal Imaging Head

Several tens of watts of hazardous invisible laser radiation at a wavelength of 810–860 nm and tens of milliwatts at a wavelength of 670 nm may be present at the output of the laser head.



DANGER: Do not activate the laser head if it is removed from its position on the guide beam. Do not activate the laser head if it is not in its proper position facing the drum, with all the internal protective barriers assembled, and all the doors closed.



DANGER: Several tens of watts of invisible laser radiation at a wavelength of 810–860 nanometers and tens of milliwatts at a wavelength of 670 nm 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 eyes to this radiation or to its reflection from shiny or matte objects can cause permanent degradation or loss of eyesight.



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



WARNING: In the presence of flammable material, the write laser beam is also a fire hazard.

Enclosures

Together with the laser interlock system, the platesetter enclosure is designed to protect anyone in the platesetter vicinity from exposure to 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 that may be dismantled by a service engineer have warning labels on them indicating that the barrier must be in place. The internal protective barriers prevent the laser radiation from escaping through the platesetter loading and unloading openings, the ventilation openings, and the gaps between the external doors and panels. This protection depends upon the completeness and correct assembly of the outer enclosure and the internal protective barriers.



DANGER: If the platesetter is turned on and the enclosure is damaged or incomplete, even with the external doors closed, 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 eyes to this radiation or its reflection from shiny or matte objects can cause permanent degradation or loss of eyesight.



WARNING: After performing any service activity and before turning on the platesetter, you must ensure that all external and enclosure parts and doors are complete and intact, not broken or cracked, and that all internal protective barriers are correctly assembled on the platesetter.

Safety Interlocks

Safety interlocks provide protection against the severe laser and mechanical hazards, provided that you follow all the safety precautions in this guide.

The safety interlocks are located on the doors and panels of the platesetter and the MCU II (Table 2 and Table 3). The interlock switches disconnect power from the LDA laser source (on the Magnus 400 II platesetters), from the laser head (write and focus) on Magnus 400 II Quantum platesetters, and from the motors, including the drum motor and the MCU II XY bar motor, under the following conditions:

- A door is open
- A panel is removed
- The MCU II is disassembled from the platesetter



WARNING: It takes approximately three seconds for the laser interlock system to shut off the laser sources. Therefore, when opening a door or panel, do not hurry to access the inside of the platesetter.



WARNING: *Never* open the platesetter's side doors unless the rear door has been opened first and has activated the interlock system. Failure to adhere to this rule may cause exposure to hazardous laser radiation and permanent eye damage.

The front and rear doors each have two interlock switches. The side doors and panels each have one interlock switch. In order not to depend on the reliability of a single switch, keep the front or rear door open when a side door or a panel is open.

Table 2: Platesetter laser and motor interlock switch locations

Platesetter Enclosure	Number of Laser and Motor Interlock Switches	Notes
Magnus 400 II		
Front door	2	
Front panel	1	
Rear door	2	
Rear door	1	There is a defeater switch (on the right side) to enable motors in platesetter and MCU II.
Rear panel	1	
Left side door	1	
Right side door	1	

Platesetter Enclosure	Number of Laser and Motor Interlock Switches	Notes
Magnus 400 II Quantum		
Front door	2	
Front panel	1	
Rear door	2	
Rear door	1	There is a defeater switch (on the right side) to enable motors in platesetter and MCU II.
Rear door	1	There is a defeater switch (on the left side) to enable the focus laser *only* if the motors' defeater switch is also actuated.
Rear panel	1	
Left side door	1	
Right side door	1	

Table 3: MCU II laser and motor interlock switch locations

Platesetter Enclosure	Number of Laser and Motor Interlock Switches	Notes
MCU II		
Left internal panel	1	
Right internal panel	1	
Front door	1	There is a large interlock switch that enables opening of the door and disables laser and motors.
Front door	1	There is a red button with a yellow base that disables the motors by canceling the defeater switch action (see *Remote Support* on page 33).
Loader door	1	There is a magnetic motor interlock switch.



DANGER: If a door or panel is open and the interlock switch is defeated, or if the interlock system failed, severe mechanical hazards and visible and/or 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 eyes to this radiation or its reflection from shiny or matte objects can cause permanent blindness or damage to eyesight.



WARNING: If there is any doubt regarding the proper function of the laser interlock system, or if you suspect that any of the platesetter's protective panels or barriers are broken, cracked or otherwise damaged, turn off the platesetter. Do not turn on the platesetter until you have checked and fixed the problem.

Magnus 400 II and Magnus 400 II Quantum Laser Interlocks

The laser interlock system is equipped with a buzzer. If a failure is detected in the operation of the laser interlock system, the buzzer activates and the laser shuts off. In any case, not every possible failure in the interlock system can be detected.



WARNING: The service engineer must *never* defeat any of the laser interlock switches.

In order not to depend on the reliability of a single switch, if either a side door or the rear panel is open, keep the front or rear door open.



DANGER: If a door or panel is open and the interlock switch is defeated, or if the interlock system failed, severe mechanical hazards and visible and/or 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 eyes to this radiation or its reflection from shiny or matte objects can cause permanent blindness or damage to eyesight.



WARNING: It takes up to two seconds for the laser interlock system to shut off the laser sources. Therefore, when opening a door or panel, do not hurry to access the inside of the platesetter.



WARNING: If there is any doubt regarding the proper function of the laser interlock system, or if you suspect that any of the platesetter's protective panels or barriers are broken, cracked or otherwise damaged, turn off the platesetter. Do not turn on the platesetter until you have checked and fixed the problem.

Magnus 400 II Quantum-Specific Laser Interlocks

The Magnus 400 II Quantum platesetter contains a highly hazardous laser thermal imaging head that exposes the media. The imaging head uses two separate laser emitters:

- Write laser— invisible
- Auto focus laser—visible (red)

Write Laser

The write laser beam is invisible to the eyes (class IV, approximately 830 nm) .



DANGER: The laser output can cause severe and permanent eye and skin damage, and is a fire hazard in the presence of flammable materials. Even brief exposure of the eyes to the write laser radiation or beam, or its reflections from shiny or matte objects, may cause permanent loss or degradation of eyesight.



WARNING: The service engineer must *never* defeat any of the laser interlock switches.

Focus Laser

The auto focus laser beam is visible (red, class IIIB, approximately 670 nm).

WARNING: *Never* look into the auto focus laser beam or at its reflections from shiny objects. The laser radiation can cause permanent eye damage if reflected directly or indirectly into the eyes.

The focus laser interlock may be defeated by authorized service personnel *only* by activating the two defeater switches [by inserting two red rectangular dedicated defeaters (part number 290B2P411)] for the purpose of focus alignment.

Precautions

DANGER: *Never* leave the platesetter while one or both of the defeater switches is activated.

WARNING: While the platesetter's interlocks are defeated, ensure that anyone else in the room also follows these safety instructions

WARNING: Before activating the focus laser defeater switch (near Warning label 4; see page 36), you must take precautions to avoid exposure to the focus laser during focus alignment. To ensure that the focus laser beam originating from the laser head is not hazardously reflected by any object, and that it hits only the plate placed directly on the drum, you must make sure that:

- A plate is properly wrapped on the drum and held by the grippers.
- The carriage and the drum are stationary and oriented so that the beam hits the middle of the plate, far from the grippers and the plate edges.
  See the following auto focus laser interlock defeat procedure.

WARNING: Failure to comply with the safety precautions while defeating a focus laser interlock may cause permanent loss or degradation of eyesight.

To defeat the auto focus laser interlock:

1. Load a plate and wrap it on the drum. Keep all doors and panels closed, except the rear door and rear panel.
2. On the right side of the platesetter, near Warning label 3 (see page 36), activate *only* the motors' defeater switch. Align the drum and carriage so that the focus laser beam hits the middle of the plate, far away from the grippers and the plate's edges.
3. On the left side of the platesetter, near Warning label 4 (see page 36), activate the focus laser defeater switch and perform focus alignment using the focus alignment screws.

   WARNING: When both defeater switches are activated, you must position yourself directly behind the laser head so that the path of the beam between the head and the drum is concealed by the head enclosure. Stay behind the laser head and watch either the alignment LEDs located in the head, or the monitor.

4. Deactivate the focus laser defeater switch.

5. Deactivate the motors' defeater switch.



WARNING: Beware of mechanical hazards when the mechanical interlock is defeated.

Motor Interlocks

The service engineer may defeat the motor interlocks using the intended defeater switch.



WARNING: If you must defeat the motor interlocks, use *only* the red rectangular dedicated defeaters (part number 290B2P411) that are supplied for Magnus 400 II and Magnus 400 II Quantum service. Use of any other interlock defeater is unsafe and not allowed.



WARNING: Make sure that no one is standing in front of the drum while the motors' interlock is defeated.



WARNING: *Never* leave the room while a motor interlock is defeated.

Stop Motors Button

The MCU II is equipped with one Stop Motors button (red with yellow base) that is located inside the device. See Figure 10. This button is intended to assist the service engineer by disconnecting power from motors and pneumatic actuators to halt the motion of mechanical movements even though the motors' defeater is actuated.

Attention: Due to drum inertia, it takes considerable time for the drum to slow down and stop revolving.

The Stop Motors button stops the mechanical movements in the platesetter and in the MCU II.

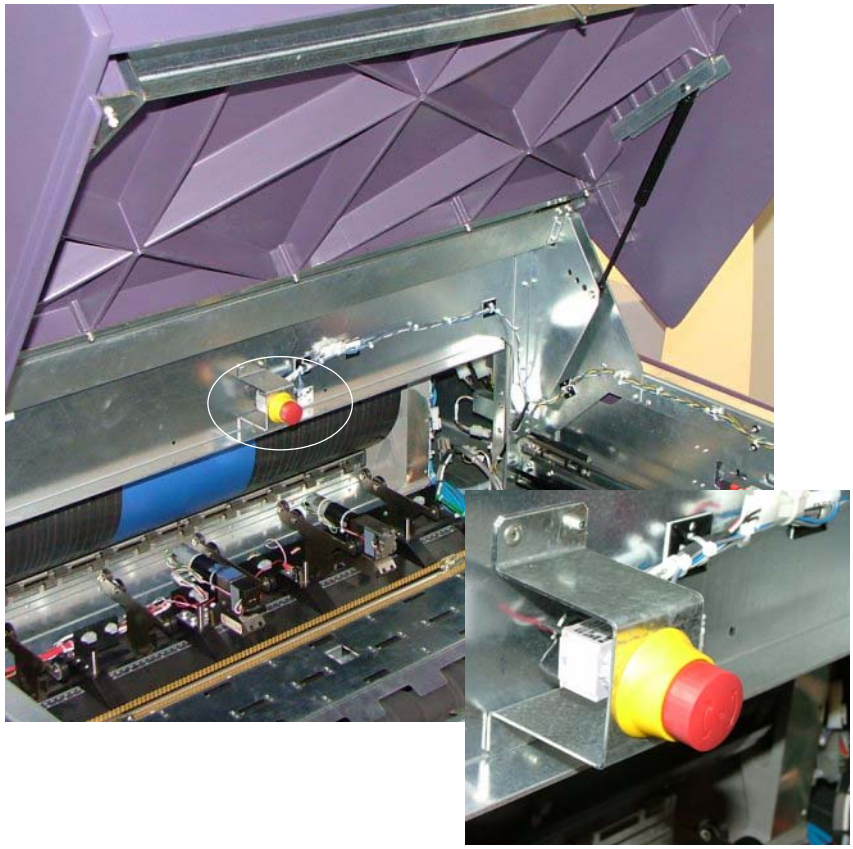


Figure 10: Stop Motors button on the MCU II

Pushing the Stop Motors button stops the mechanical movements and the pneumatic components of the MCU II. It also disconnects power to all the motors, even though the motors' defeater is actuated.

WARNING: The Stop Motors button does not disconnect the main power, nor does it disconnect laser or electrical hazards.

WARNING: When the Stop Motors button is pushed, it may take more than a minute for the rotating drum to stop due to drum inertia.

WARNING: When the Stop Motors button is pushed, it may take a few seconds for the pneumatic components to come to a complete standstill.

When the Stop Motors button is released, the motors should not be reactivated unless the command has been re-sent from the workstation. For the Magnus 400 II and Magnus 400 II Quantum platesetters, this attribute is provided by the software.



WARNING: If a motor reactivates after the Stop Motors button was released and a command to renew operation was not sent from the workstation, shut down the platesetter system until it is repaired.



WARNING: Because of a possible software failure, prior to actuation of the motors' defeater switch, you must verify that reactivation of the motors after release of the Stop Motors button does not occur, as described in the following Warning.



WARNING: The service engineer must verify that reactivation of the motors does not occur after the Stop Motors button is released unless a new command from the workstation is sent.

To verify that reactivation of the motors does not occur:

1. Actuate the defeater switch.
2. Activate a motor.
3. Push the Stop Motors button.
4. Visually observe the motor stopping.
5. Release the Stop Motors button.
6. Visually observe that the motor remains stationary until a new command is sent from the workstation.

Drum

On Magnus 400 II platesetters, the drum revolves inside the platesetter at 1300 rpm. On Magnus 400 II Quantum platesetters, the drum revolves inside the platesetter at 500 rpm.

If an object hits the rotating drum, the object may damage the safety system, optical fibers or laser head, or damage the platesetter enclosure.



WARNING: Do not leave any object, tool, or part inside or on the platesetter enclosure. A loose object inside the enclosure may be hit by the revolving drum and create a safety hazard.

The plates are loaded, wrapped onto the drum, exposed, and unloaded. Special safety measures that include solenoids and an interlock system prevent the drum from rotating while the operator is loading or unloading media.

To prevent the operator or service engineer from accessing the drum while the drum is revolving, the following doors and panels are equipped with solenoids that lock the doors in a closed position. The solenoids unlock these doors *only* after a command is issued from the workstation and the drum has stopped revolving.

- Front door
- Rear door
- MCU II front door

Accessing the drum area through interlocked machine panels or the side doors requires the use of tools. During such access, the service person is exposed to the revolving drum for several minutes (due to inertia).



WARNING: Do not touch or get close to the revolving drum.



WARNING: When you open the front or rear door from the workstation, if the drum is not completely stationary within three seconds after the door is unlocked, you must repair the device.



WARNING: If you actuate the motors' interlock defeater switch, all motors and air pressure actuators can work.



WARNING: When you stop the drum by pushing one of the two yellow On/Standby buttons, or by turning off the machine, the drum continues to rotate at high speed for several minutes before it stops.

Precautions to Take When Accessing the Drum Area

- Before performing service, remove any clothing or objects that may get caught in the revolving drum or other moving parts. Remove ties, roll up long sleeves, remove jewelry, and gather long hair.
- If the drum motor interlock is defeated and the doors or panels are open, make sure that no one is standing in front of the drum, even if it is stationary.
- Before touching the drum surface, make sure that the drum motor circuit breaker on the D-box is turned off.
- If you must insert your fingers or hands anywhere near the drum, make sure not to get them caught in the narrow gaps in the drum area.

Gripper Actuators

Before working with any pneumatic component, turn off the main air pressure valve (located on the air pressure unit on the wall), and release the air pressure from the system.



WARNING: *Never* put your hand or fingers beneath the grippers or gripper actuators. If air pressure remains in the system, your fingers could get caught in a pneumatic component, such as the gripper actuators.

Handling Plates and Cassette Trays

When the platesetter is ready to expose a plate, the plate is automatically loaded. After the plate is exposed, it is automatically unloaded from the plate exit at the rear of the platesetter.



WARNING: Because the plate is automatically unloaded from the plate exit, do not stand too close to this exit.



CAUTION: The plate edges are sharp. Wear gloves if you must handle the plate.



CAUTION: Do not touch the plate after it is placed in the MCU II. Close the cassette tray and loader door to enable automatic plate loading.



CAUTION: Be careful that your fingers do not get caught when closing the cassette tray. If your fingers are placed inside the MCU II near the cassette trays, make sure that no one is moving the cassette trays from the other side. This may cause injury to your hands.

When working with the MCU II, you may need to lift a box of 50 plates. The plates are heavy.



CAUTION: Make sure to lift the plates in a manner that will not injure your back.

Cooling System

The Magnus 400 II platesetter includes a cooling system (*chiller*) to cool the laser source. The chiller is a complete unit and must not be opened. If the unit malfunctions, you must replace the entire unit.

During installation or service, filling or adding coolant may be required. Filling the chiller is allowed while the cooling system is electrically connected. Filling is allowed only through the nozzle, which is visible when the left side door is opened.



WARNING: Do not spill the coolant.

The Magnus 400 II Quantum has a different cooling system that uses a water-based coolant to cool the thermal head. The cooling system is sealed to prevent coolant leakage. However, if the coolant does leak inside the head, it may cause electrical shock and fire hazards due to hazardous voltage inside the thermal head.

To prevent coolant leakage, the cooling system pump contains a safety valve that does not allow the pressure to exceed more than 65 psi. Before shipment, the pump valves are tested to open (release of pressure) between 60–65 psi. After passing the test, the pump is labeled accordingly.



DANGER: If the coolant leaks and the platesetter is not turned off, electrical shock and fire hazards are present.

Magnus 400 II Quantum Cooling System Precautions

- During maintenance, or when you perform service on the cooling system, follow the *Cooling System Pressure Test* maintenance procedure on TechPlanet.
- If you replace the pump, verify that the new pump has the test label.

Debris Removal System

The Magnus 400 II and Magnus 400 II Quantum configurations include a filtering device—the Universal Debris Removal Cabinet (UDRC), which is a separate component connected to the platesetter. The UDRC extracts dust, fumes, contaminants, and solvent vapors that accumulate inside the platesetter during normal operation and need to be removed.



WARNING: For more information, see the *Debris Removal System Manufacturer's Operating and Safety Instructions*.



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

Precautions to Take When Replacing Filters

- Only a service engineer should replace the filter.
- Handle and dispose of filters according to manufacturer's instructions and the service procedure on TechPlanet.

Punch Conveyor

Only qualified service engineers are authorized to install the punch conveyor.

WARNING: Before operating the punch conveyor, make sure that all four punch conveyor wheels are securely locked and that all the inter-connection cables are properly routed through the opening in the rear trapezoid on the platesetter.

WARNING: When servicing the punch conveyor, remove objects or clothing that might get caught in the conveyor belts, such as ties and jewelry. Fold long sleeves and gather long hair.

CAUTION: Some of the edges of the punch conveyor are not smooth. Be careful not to cut your fingers or hands while working with this device.

The punch conveyor connects to Magnus 400 II ContinuousLoad (CL) platesetters, and has a six-punch configuration capacity. The punch conveyor is powered by two 24-V DC supply lines coming from the platesetter. One of the supply lines powers the punch conveyor motors and is interlocked, stopping the motors when a door or panel in the platesetter is open.



Figure 11: Punch conveyor with cover off and optional slider

WARNING: The punch conveyor has exposed hazardous moving parts. Keep fingers and other body parts away.

WARNING: To prevent motor operation and plate movement while servicing the punch conveyor, always keep a platesetter door open. Keeping a platesetter door open will disconnect the 24-V DC line that powers the punch conveyor motors.

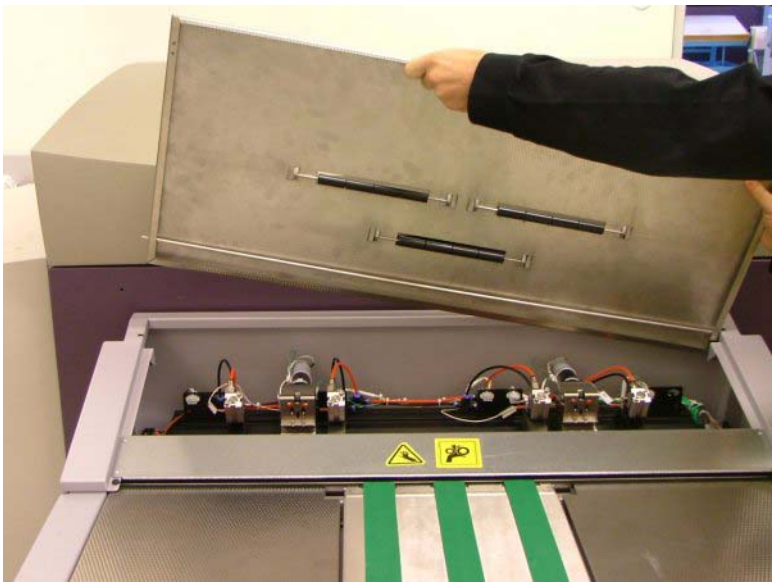


Figure 12: Removing the punch cover

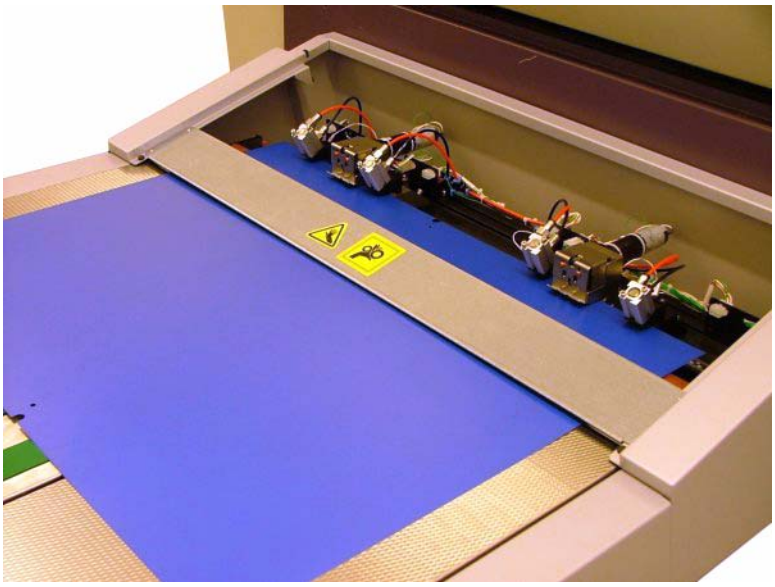


Figure 13: Plate moving toward the punches with the punch cover removed

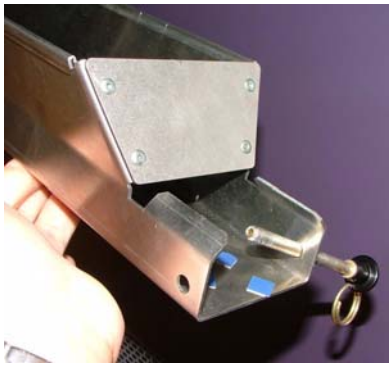
WARNING: The punch cover is heavy. To avoid injury to your hands, when removing a stuck plate or performing any other service in the area under the punch cover, use *both* hands to lift up the punch cover, remove it from the punch conveyor and set it aside. Reinstall the punch cover after completing the task.

CAUTION: When the punch cover is removed, plates moving toward the punches (see Figure 13 on page 31) may be hazardous to your fingers and hands. To prevent plate movement, keep a platesetter door open.

The punch conveyor includes a slug bin that is located under the punch conveyor unit.



Slug bin



Slug pin released



Removing slugs

Figure 14: Punch conveyor slug bin

CAUTION: When removing slugs, be careful not to bump your head, or to injure your hands.

Remote Support

A service representative can control the platesetter from a remote location to provide support. If an interlock is defeated while the platesetter is operated from a remote location, the service engineer or a Kodak-certified operator on-site may be exposed to hazardous motor and/or focus laser radiation. Therefore, it is important to coordinate remote support between the remote service representative and the on-site service engineer or Kodak-certified operator.

Although the platesetter can be operated via a remote location under any of the following three conditions, the first method is unsafe and forbidden:

- Doors, panels, or hoods that have no interlocks are open. This is an unsafe method of remotely operating the platesetter, and you must avoid it.



WARNING: It is strictly forbidden to remotely operate the platesetter if any doors, panels, or hoods of the platesetter (or the Magnus 400 II with MCU II, including the Magnus 400 II Quantum) that have no interlocks are open.

- All doors, panels, and hoods of the platesetter (or Magnus 400 II with MCU II including the Magnus 400 II Quantum) are closed. This is the safest method of remotely operating the platesetter.
- Doors, panels, and hoods that have interlocks are open and the mechanical interlock is defeated only by the service engineer or by the Kodak-certified operator. This is a potentially unsafe method of remotely operating the platesetter, and it should be employed only when strictly adhering to all information and warnings in the following remote support-related sections:



WARNING: The remote service representative must contact the local site by telephone before beginning to operate the platesetter from a remote location.

Interlock Defeat Permissions

	Write laser interlock defeat	**Focus laser interlock defeat**	**Mechanical interlock defeat**
Service engineer	Not allowed	Allowed	Allowed
Kodak-certified operator	Not allowed	Not allowed	Allowed
Operator	Not allowed	Not allowed	Not allowed

Note: ThermoFlex® Hybrid and Magnus 400 II LDA platesetters contain only *write* lasers; they do not contain focus lasers.



WARNING: Only a service engineer or a Kodak-certified operator who has undergone specialist training regarding safety interlocks is permitted to defeat the mechanical interlock (by inserting one red, rectangular dedicated defeater into the platesetter's mechanical defeater switch).



WARNING: Only a service engineer who is located at the site and is adhering to service safety instructions, is allowed to defeat the focus laser interlock.



WARNING: *No one* is allowed to defeat the write laser interlock.

Activating Remote Control

The service representative must request permission from the local site before the platesetter can be remotely operated.
The following request message appears on the local monitor (at the site):

```
Machine Name\User Name is requesting to control your session
remotely. Do you accept the request?
```

The request message has a time-out of 30 seconds. If the service engineer or Kodak-certified operator does not accept the request within 30 seconds, it is automatically canceled.

WARNING: Before accepting a request to operate the platesetter from a remote location, the service engineer and/or Kodak-certified operator must make sure that the following conditions are met:

- No person can be potentially exposed to either mechanical or laser hazards.
- Constant telephone contact is maintained between the remote service representative and the service engineer or Kodak-certified operator.

WARNING: *Never* defeat the laser interlock.

Terminating Remote Control

Remote control of the platesetter can be terminated (disconnected) by any of the following methods:

- By pushing an Emergency Stop button (if one exists on the platesetter)
- By removing the red rectangular dedicated defeater from the platesetter's mechanical defeater switch
- By pushing the Stop Motors button or one of the two On/Off yellow buttons (if either of these exist on the platesetter).
- By turning the main power circuit breaker to off
- Via the remote service representative's computer
- Via the local computer, by double-clicking the remote support icon on the local desktop and confirming that you want to terminate the session



Warning Labels and Locations

WARNING: The warning labels are provided for operator and service personnel safety. Always comply with the warnings.

The following pages show the warning labels and their locations.

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

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.

Platesetter, MCU II, and Punch Conveyor Warning Labels



Label 1: 382-00888A



Label 1: 382-00889A



Label 2: 382-00956A



Label 3: 382-01051A



Label 3: 382-01052A

Note: Label 3 applies to Magnus 400 II Quantum platesetters *only*.



Label 4: 382-01068A



Label 4: 382-01069A

Note: Label 4 applies to Magnus 400 II Quantum platesetters *only*.



Label 5: 382-00980A



Label 5: 382-00981A

Note: Label 5 applies to Magnus 400 II (LDA) platesetters *only*.



Label 8: 382-00905A



Label 8: 382-00906A

Note: Label 8 applies to Magnus 400 II (LDA) platesetters *only*.



Label 9: 382-00922A



Label 9: 382-00923A

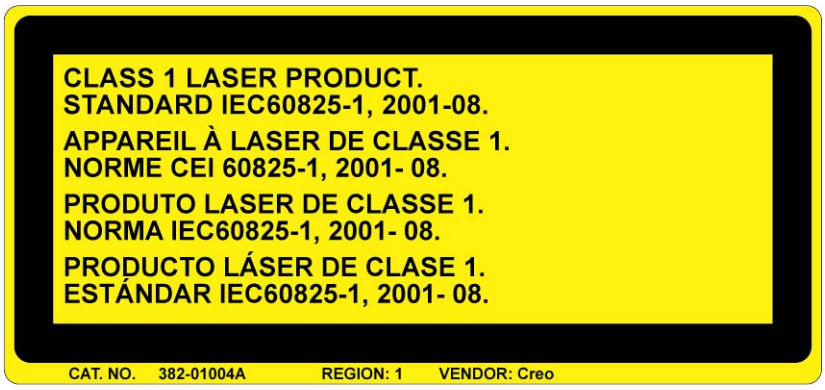
Note: Label 9 applies to Magnus 400 II (LDA) platesetters *only*.



Label 10: 382-00939A



Label 10: 382-00940A



Label 12: 382-01004A



Label 15: 382-00968A

Note: Label 15 applies to Magnus 400 II (LDA) platesetters *only*.



Label 16: 382-01016A



Label 19: 382-01028A



382-01117A

Note: Label 382-01117A applies to Magnus 400 II (LDA) platesetters *only*.



374A7B678



374A9C009



374A7B951



382-01209A

Platesetter Warning Label Locations

WARNING: Some of the figures show protective panels and internal protective barriers removed. Operation of the platesetter with protective barriers removed is strictly forbidden.

Magnus 400 II

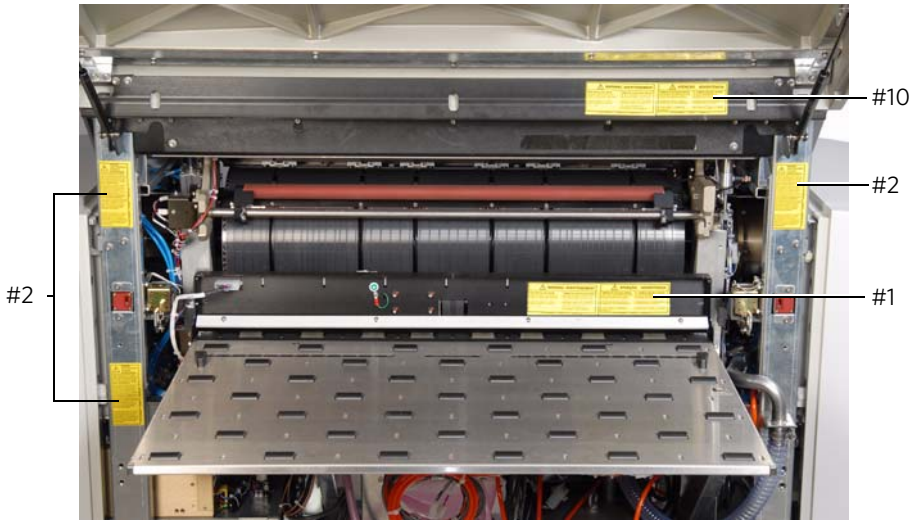


Figure 15: Front view, doors open, panels removed, with loading tray

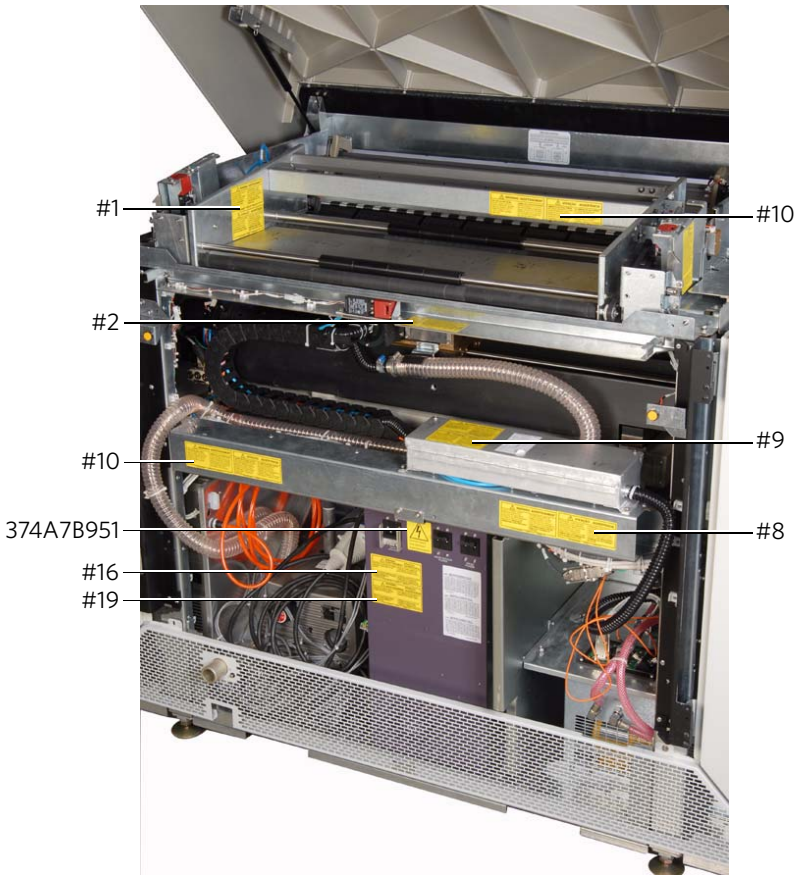


Figure 16: Rear view, doors open, panels removed, with unloading tray

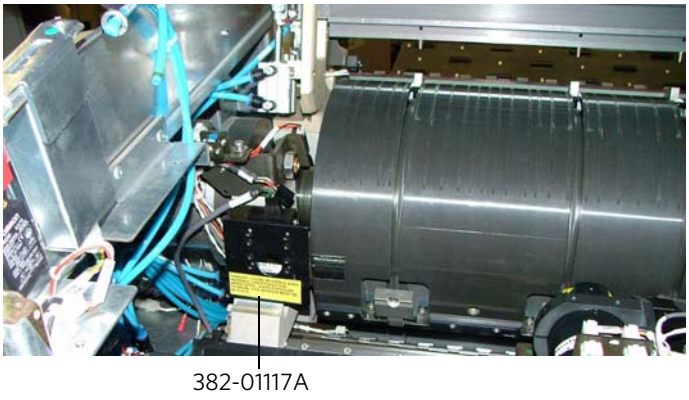
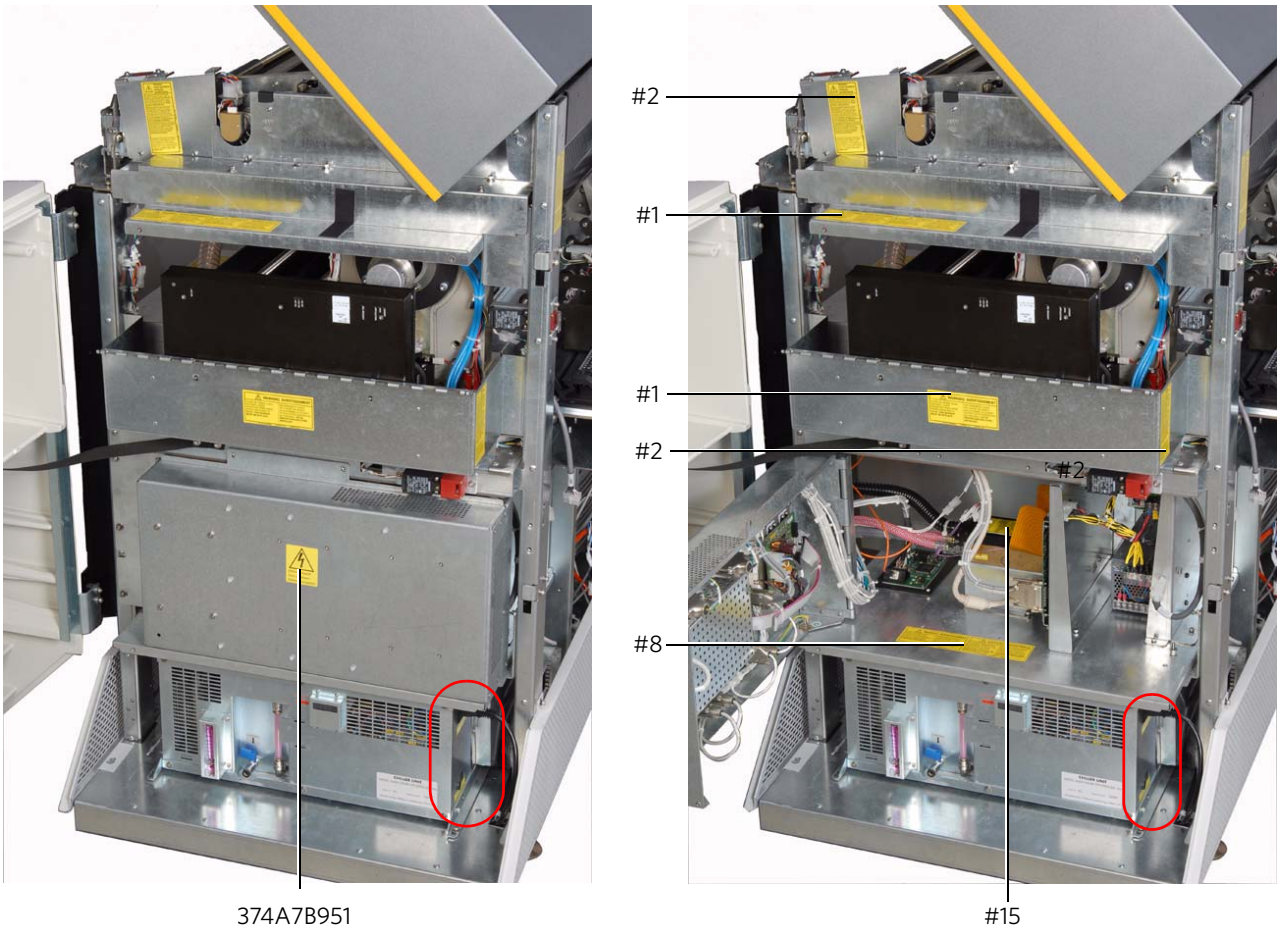


Figure 17: Rear view, doors open, panels removed, without unloading tray

Note: Figure 17 applies to Magnus 400 II (LDA) platesetters *only*.



Figure 18: Rear view, rear panel closed



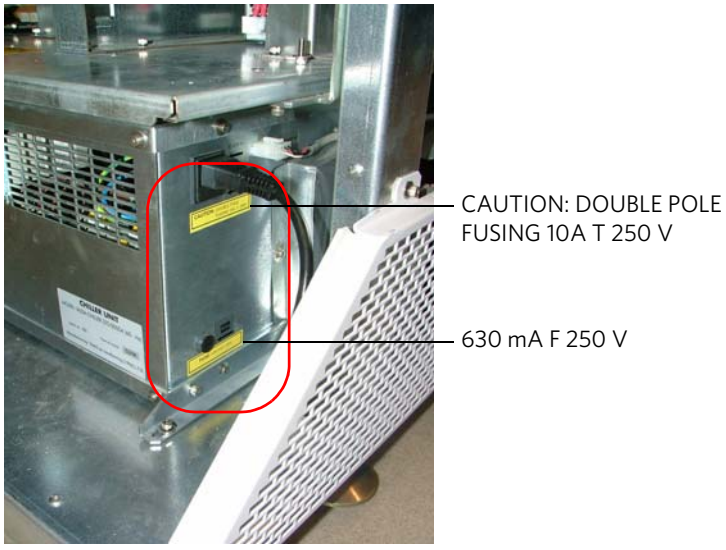


Figure 19: Magnus 400 II—left side door open

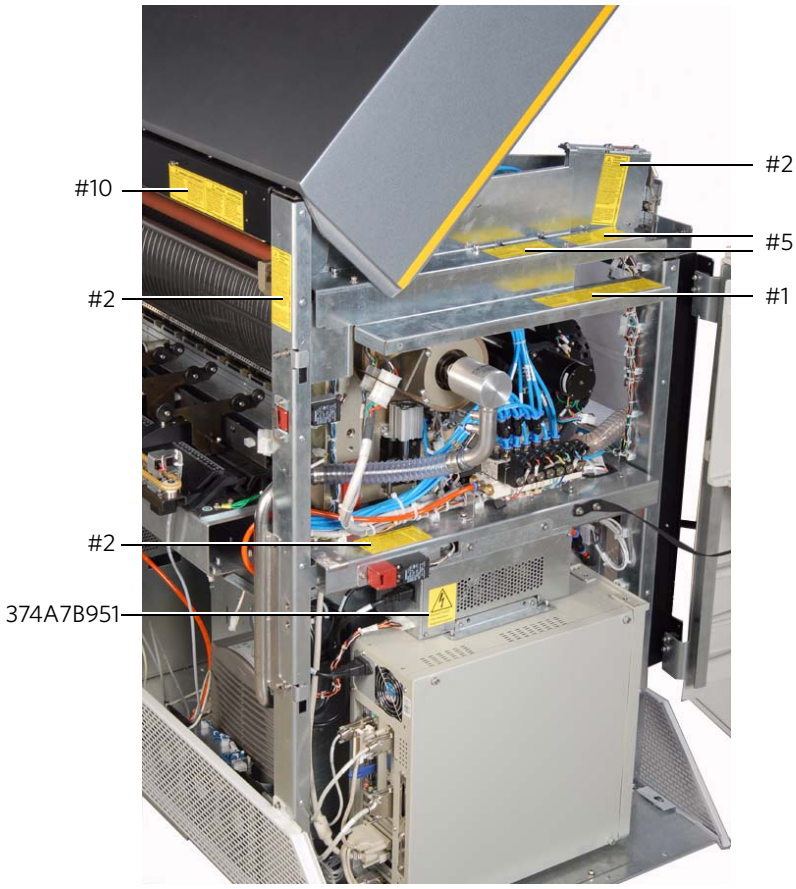


Figure 20: Magnus 400 II—right side door open

Magnus 400 II Quantum

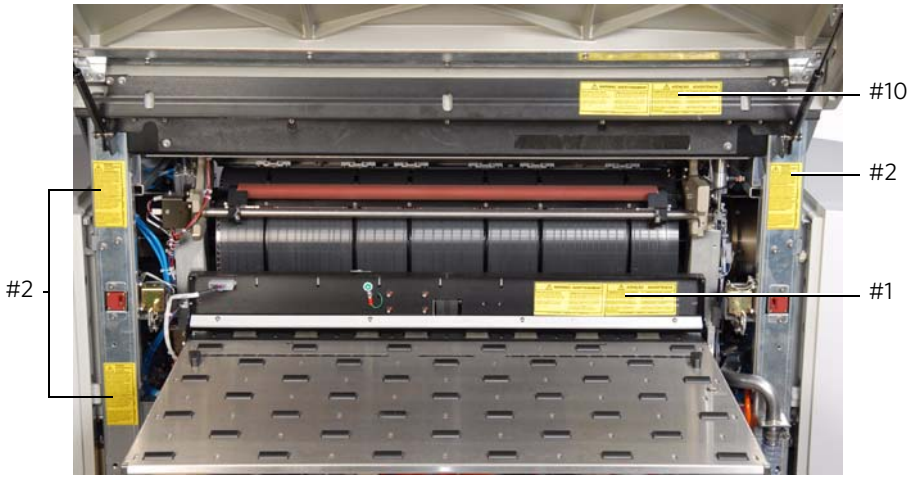


Figure 21: Front view, doors open, panels removed, with loading tray

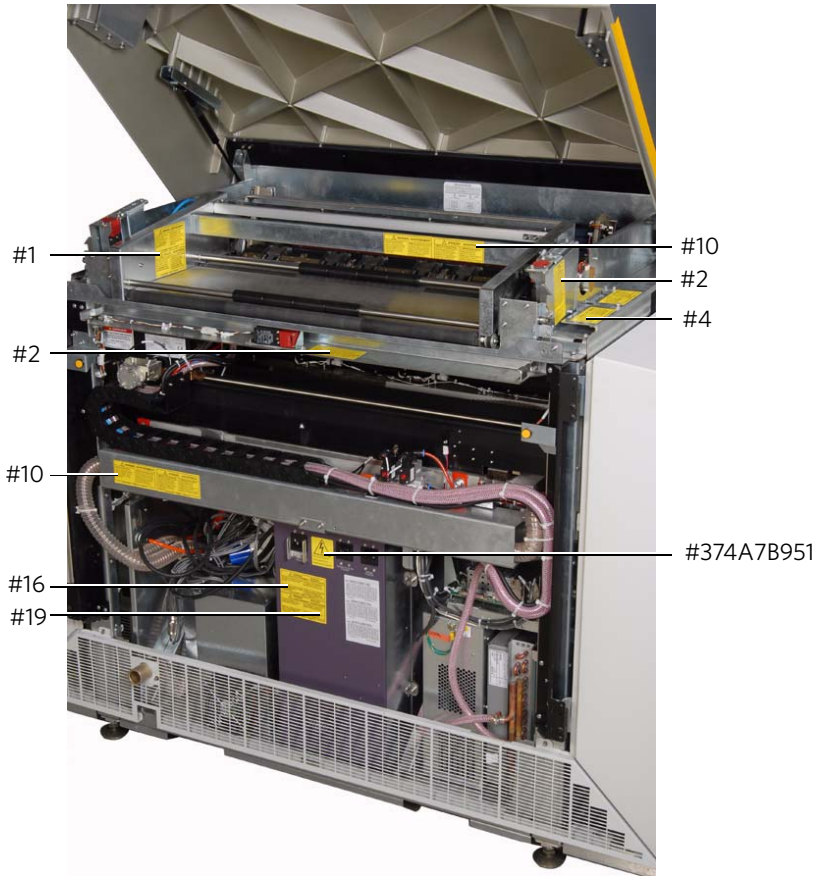


Figure 22: Rear view, doors open, panels removed, with unloading tray



Figure 23: Rear view, rear panel closed

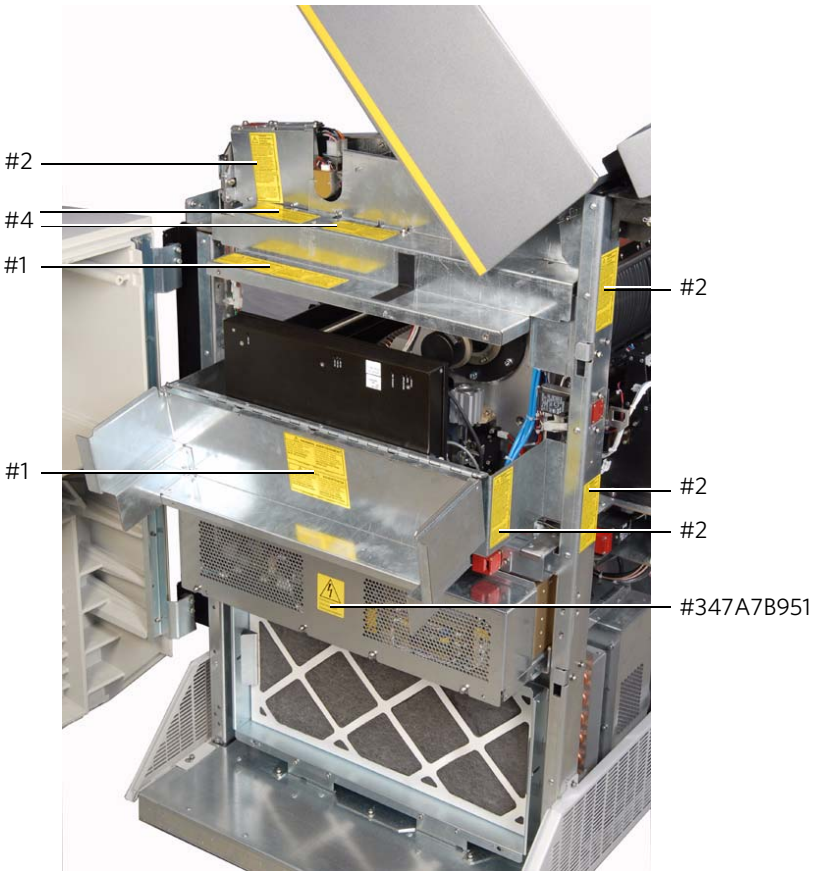


Figure 24: Magnus 400 II Quantum—left side door open

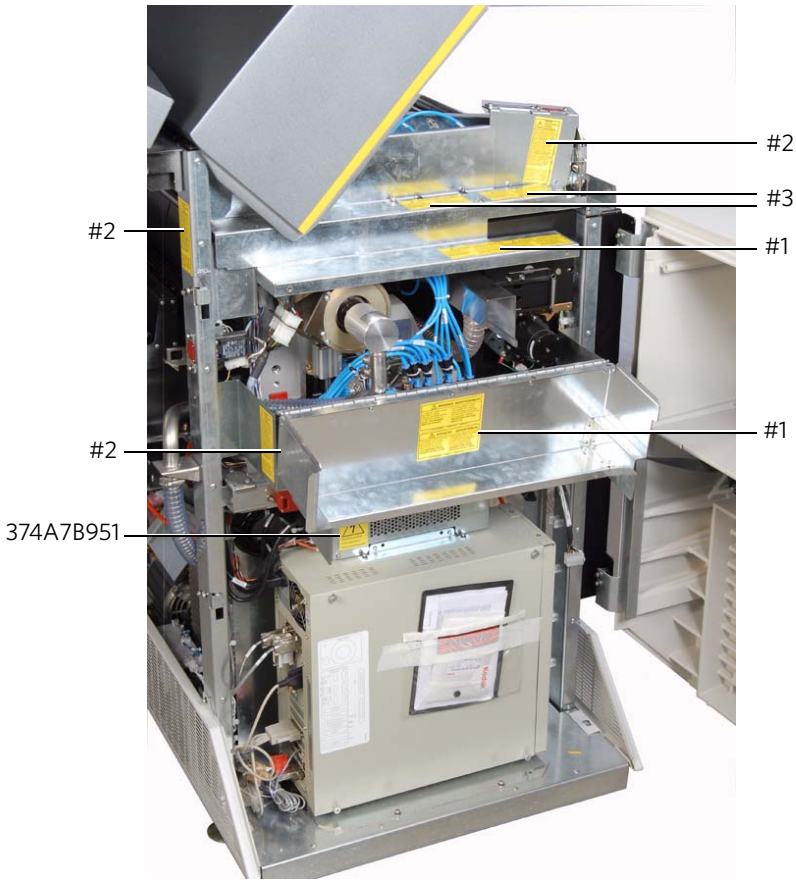


Figure 25: Magnus 400 II Quantum—right side door open

MCU II Warning Label Locations

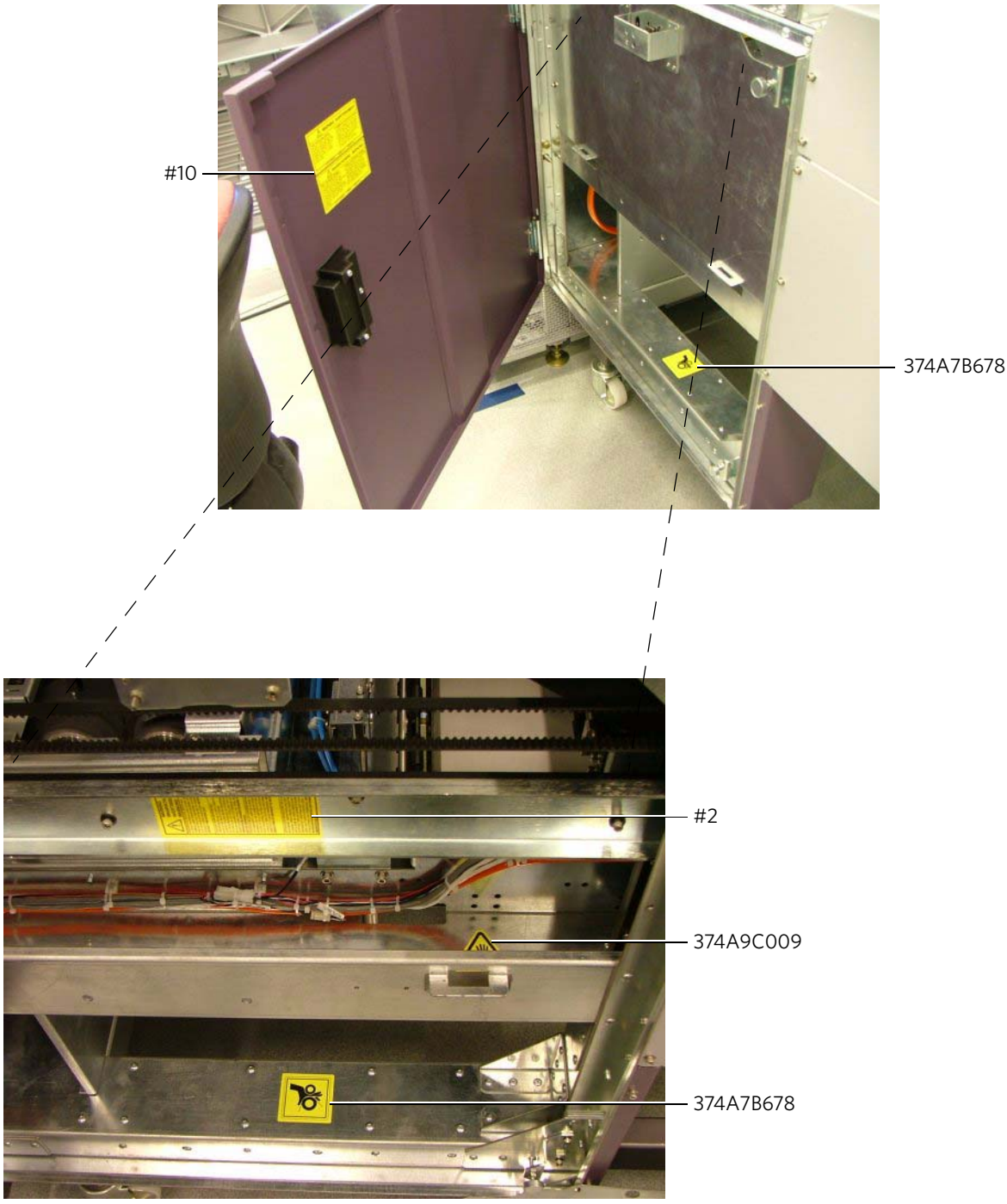


Figure 26: MCU II front and left side doors open, internal left panel removed

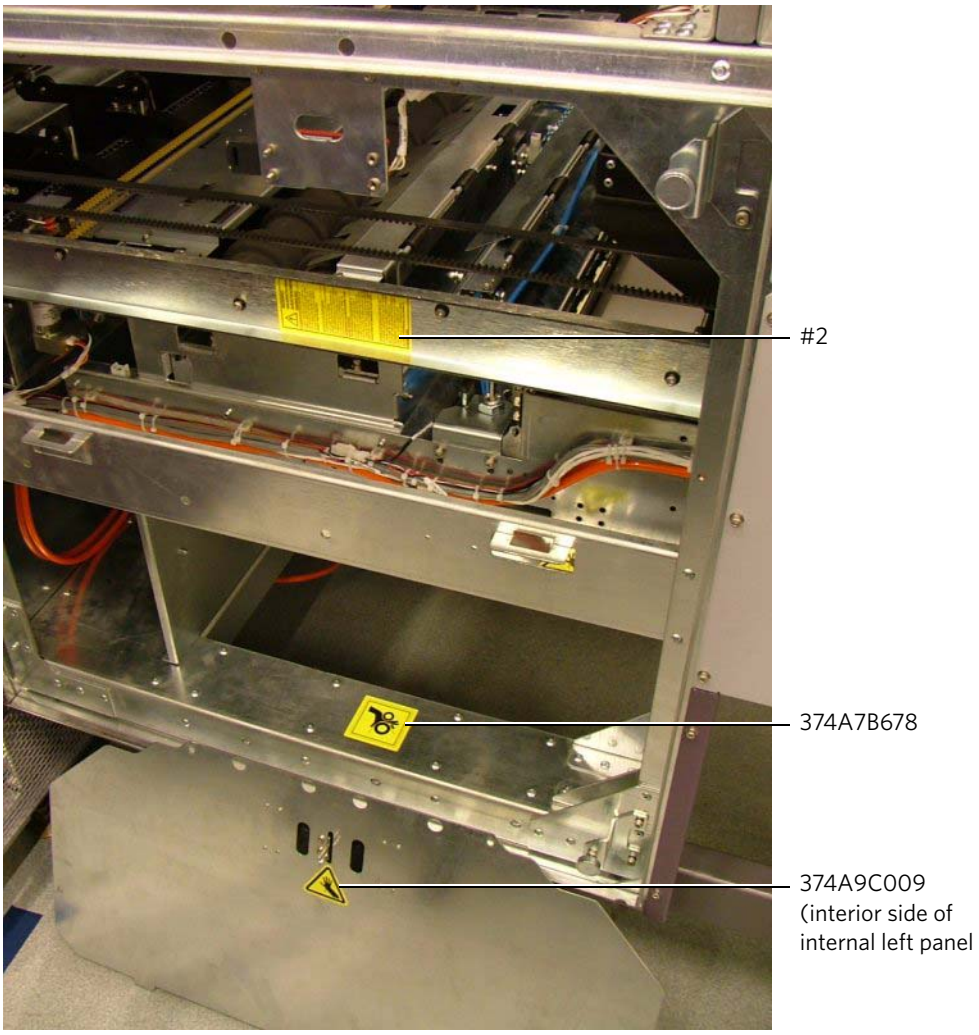


Figure 27: MCU II front and left side doors open, internal left panel removed (with view of label on the interior side of the internal left panel)

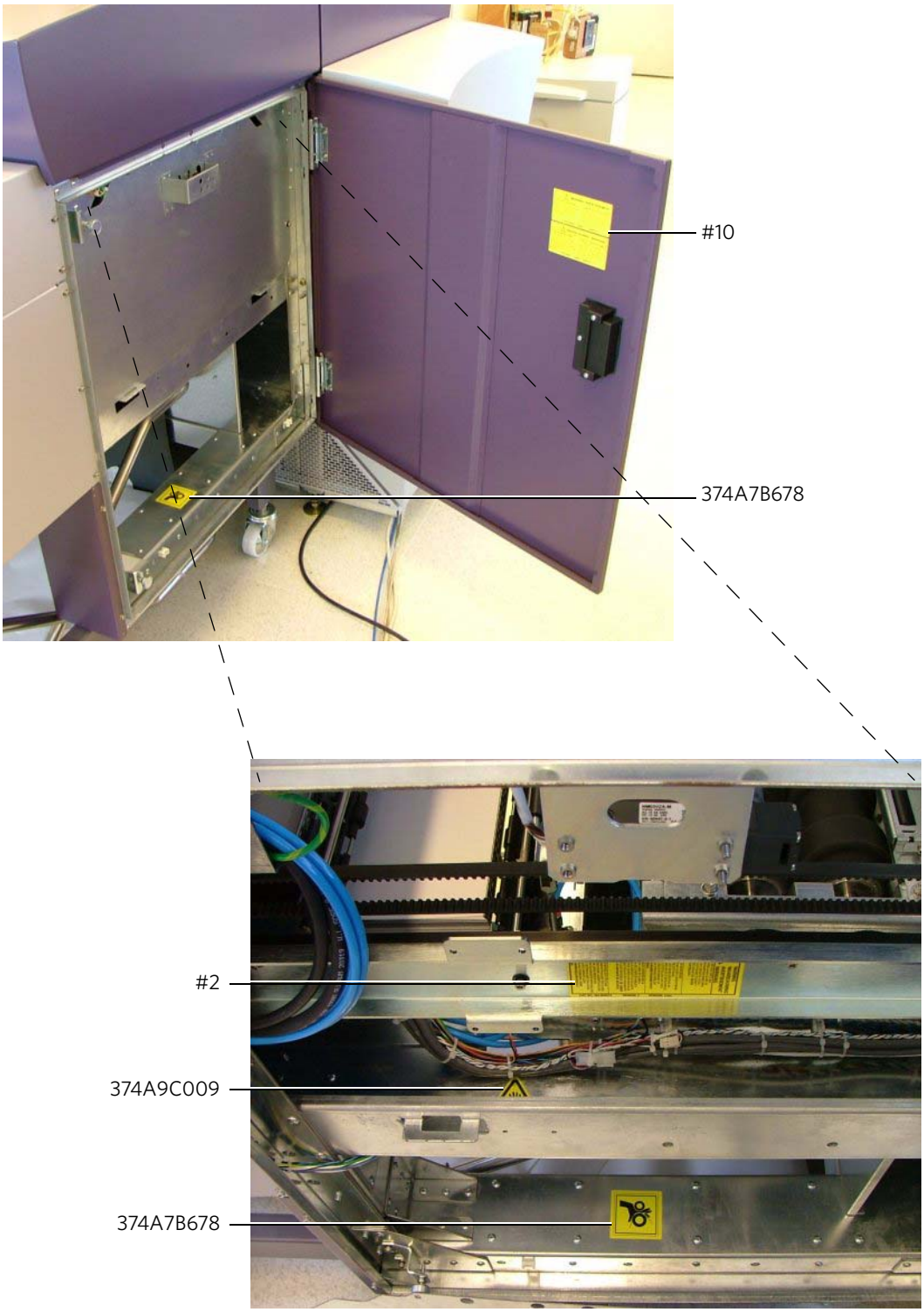


Figure 28: MCU II front and right side doors open, internal right panel removed

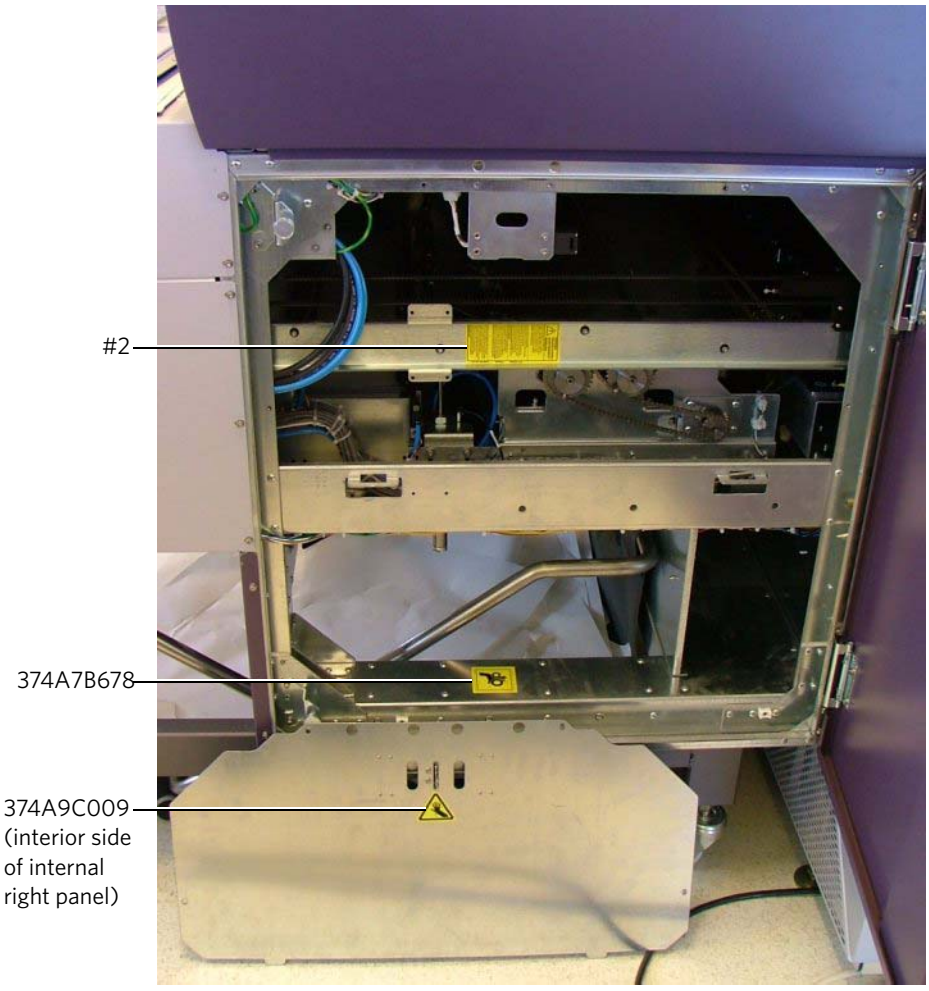


Figure 29: MCU II front and right side doors open, internal right panel removed (with view of label on the interior side of the internal right panel)

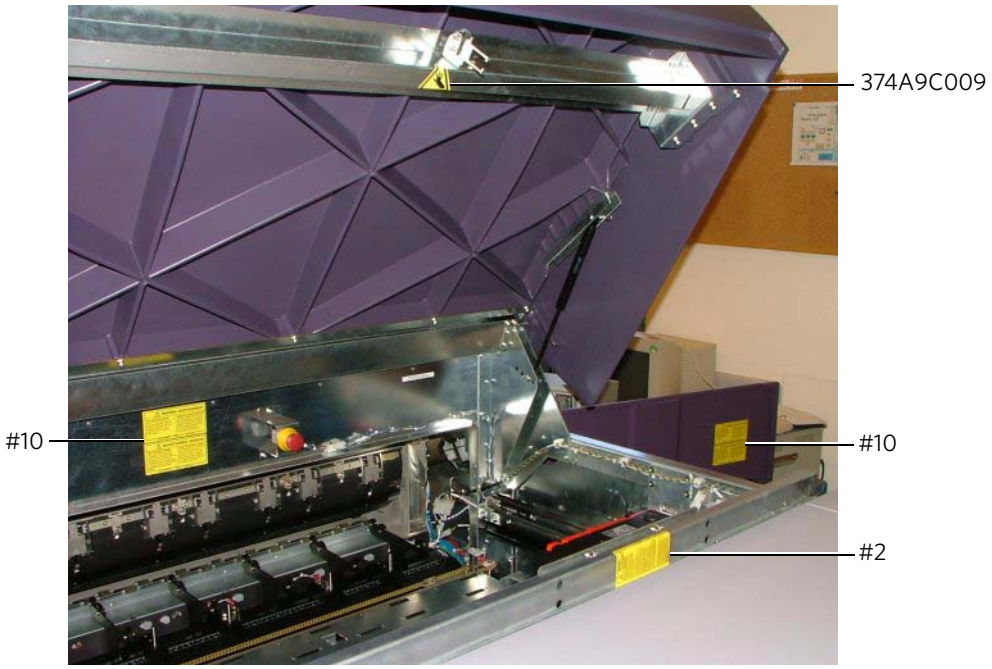


Figure 30: MCU II, front and right doors open

Punch Conveyor Warning Label Locations

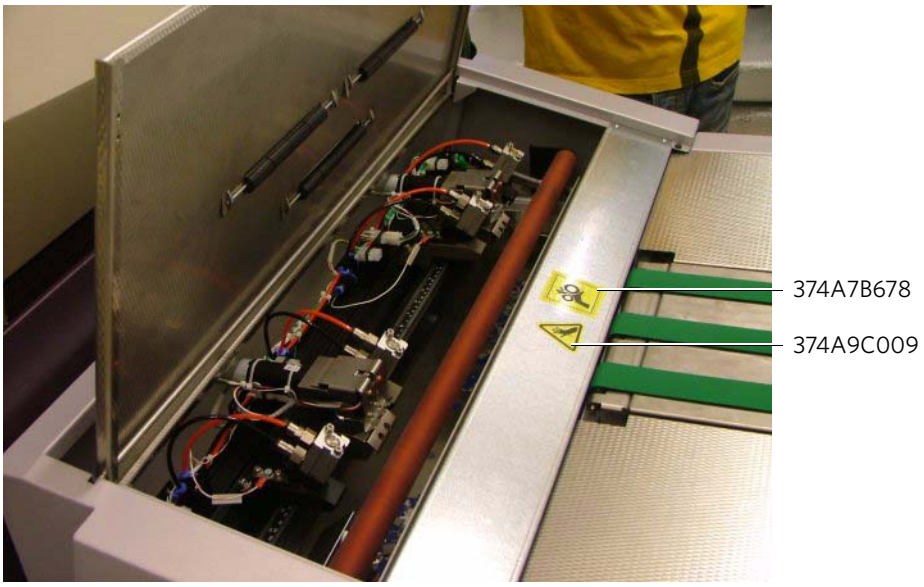


Figure 31: Punch conveyor with cover open