Python Safety Information

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HighWater contact information

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1. Introduction

This manual contains important information about the Python system with regard to your health and safety. Please read this manual carefully.

This manual contains the following chapters:

1. Introduction.

2. Safety notices.

3. Working safely.

4. Stopping the Python engine in an emergency.

5. Additional information for engineers.

6. Labels on the Python engine.

2. Safety notices

WARNING: This equipment must be earthed. Python requires a single power outlet, accessible at all times and located as close as possible to the Python system.

This equipment complies with BS EN 60825-1:1994 +A1 and A2, and with 21 CFR 1040.10 and 1040.11.

Python is a CLASS 1 EMBEDDED LASER product. Once the laser carriage cover is removed Python becomes a CLASS 3B LASER DEVICE and appropriate safety precautions must be taken.

CAUTION: The use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous laser exposure.

WARNING: When the laser carriage cover is removed, the laser beam used in the Python engine is harmful to the eyes. Servicing should be carried out by HighWater qualified personnel only.

Laser properties:

- Wavelength: 405nm

- Laser output: maximum 60mW (some earlier machines were fitted with a 30mW or 5mW laser)

Labels

The labels shown in chapter 6 are present on all Python machines. Please ensure that you follow all the necessary safety precautions.

3. Working safely

WARNING: You must work safely in order to protect yourself and others from injury and the Python engine from damage. Please follow the instructions in this section carefully.

Under normal operating conditions it is not possible for you to come into contact with the laser beam when Python's lid is open. However, you, the user, must ensure that:

- All access doors to the Python room display the BSI-approved warning symbol:

- When engineers are working on the laser, no-one enters the room unless they are wearing safety goggles that meet approved standards.
- You have received training on safety procedures, as well as instructions on how to operate Python.
- Python is never left in a condition where the operator can be exposed to the laser beam.

3.1. Protecting yourself from injury

- Make sure that nothing, especially your clothing, gets trapped in Python's lid.
- The edges of a plate are sharp so take great care when handling plates and, in particular, keep the edges of the plate away from your face.

3.2. Protecting the Python drum and carriage from damage

- Do not put any object, other than a plate, on the tilt-table. When the imaging process starts, anything left on the tilt-table will fall down into Python's drum. This could potentially damage Python's drum/carriage and the plate.

3.3. Protecting the plate from being fogged by light

- In the brightroom, use the appropriate safety light (as recommended by the plate manufacturer) to prevent fogging of your plates.
- While the brightroom is in use you need to prevent its door from being opened. To do this, you could:
  - Use an external light on the brightroom to show when it is in use.
  - Put a message on the door to indicate that the brightroom is in use.

    WARNING: For safety reasons, we recommend that you DO NOT lock the brightroom door.
- After output, protect the plate from unsafe light sources until it has been processed.

4. Stopping the Python engine in an emergency

If you need to stop the Python engine immediately because of potential injury or damage to a person or the Python engine (for example, if something has fallen into the drum), then do one of the following:

Either

Lift the Python engine's lid. This will immediately stop the tilt-table, crossbar and carriage.

Or

Disconnect the system from the power source by removing the mains plug from the wall socket.

WARNING: Switching off Python using the power switch is NOT recommended and should only be used in an emergency.

5. Additional information for engineers

This section is intended for installation and service engineers who may be operating the Python engine when there is a potential risk of being exposed to the Python laser, or a risk of coming into contact with moving mechanical parts.

WARNING: All engineers must carefully read this section and abide by the safety requirements when they work on the Python engine.

5.1. Safety information

Python, under normal operation, is a CLASS 1 embedded laser product and is inherently safe for operators because they cannot operate the laser if the lid is open. Service engineers will be able to override the safety interlock system on the lid and they may then be exposed to the laser, which is a CLASS 3B product.

All engineers must be trained and approved by HighWater, and must follow all safety procedures defined in this document. HighWater will accept no responsibility for any damage to equipment or injury to the person caused by non-approved engineers, or by failure to follow these safety procedures.

Safety warning

Installation and, wherever possible, servicing should be carried out with the interlock system intact. Safety interlocks should only be overridden when this is absolutely necessary as part of the recommended procedures.

Access to Python's internal mechanisms is gained by removing the back panel. This, and all other panels must be replaced, the safety interlock override removed (if fitted), and the mains lead reconnected before leaving the equipment.

WARNING: At no time must the safety interlock bypass key be fitted to the machine whilst the engineer is not present in the work area.

If the machine covers are all fitted, but the lid is open and the safety interlock override is fitted, be aware that there is a 'pinch' risk from moving mechanical parts, particularly the crossbar/tilt-table components.

5.2. Laser precautions

Python has a single laser source for the plate expose beam: a blue-violet laser diode. It is rated at 60mW (some early machines used a 30mW or 5mW diode) and it emits a visible light beam at a nominal wavelength of 405nm. This laser falls into CLASS 3B, which means that direct viewing of the laser beam is **always** hazardous, as is viewing direct reflections. Diffuse reflections are normally safe.

Python is designed as a CLASS 1 embedded laser product and is, therefore, safe for the operator. The CLASS 3 ratings apply as soon as a service engineer removes the covers or overrides the safety interlocks. This can only be done with a special magnetic key which allows the laser shutter to be opened and the expose carriage to be moved with the Python lid in the 'up' position, or when the back panel is removed for servicing when the machine is powered on.

WARNING: CLASS 3B lasers are dangerous and, if the beam is viewed incorrectly, it may cause irreversible retinal damage or blindness. Therefore, you, the engineer, must:

1. **Ensure that you, and those working with you, have adequate eye protection against the laser.**

2. **Ensure that no unauthorised personnel have access to the work area where the laser is exposed.**

3. **Ensure that no laser light escapes from the work area.**

4. **Ensure that the room is clear of unauthorised personnel while you are working on Python.**

5. **Ensure that appropriate warning signs are displayed on all doors leading to the work area.**

6. **Leave Python in a safe state when it is left unattended.**

7. **Ensure that the safety interlock bypass key is removed from the unit when servicing is complete or when you leave the work area.**

   AT NO TIME MUST THE SAFETY INTERLOCK BYPASS KEY BE FITTED TO THE MACHINE WHILST THE ENGINEER IS NOT PRESENT IN THE WORK AREA.
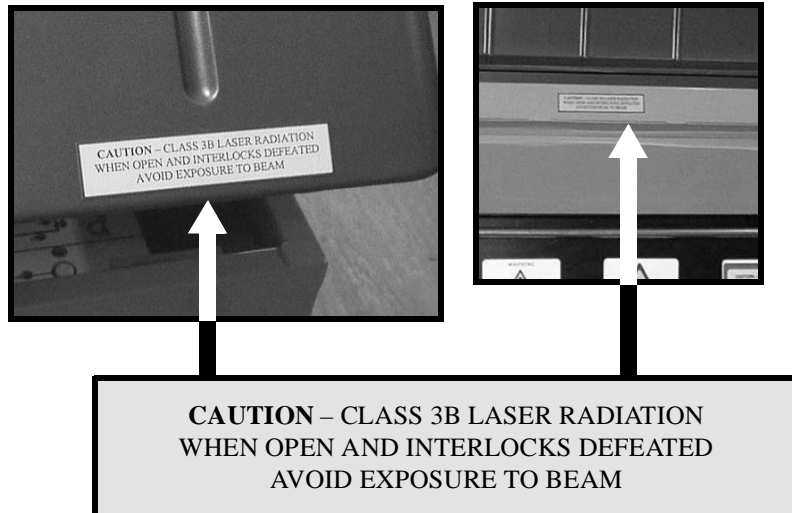
8. **Keep the bypass key in a secure place.**

9. **Replace and secure all panels before leaving the Python work area.**
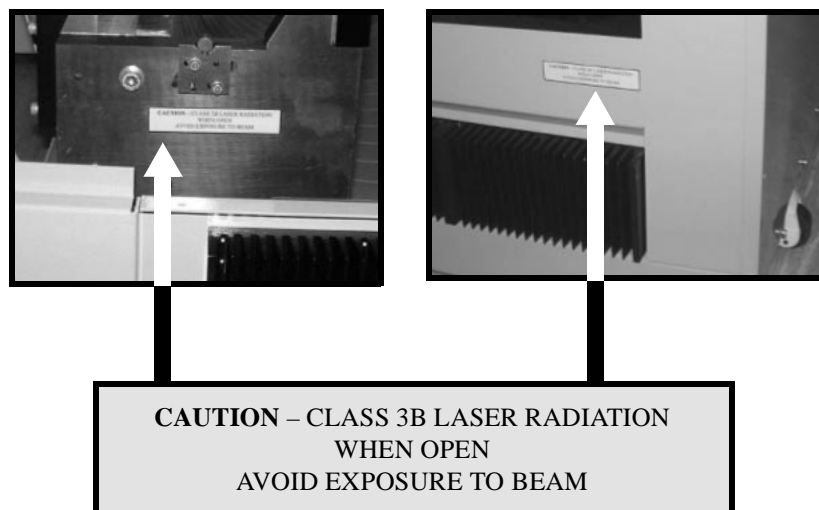
6. Labels on the Python engine

This chapter shows the safety labels that are present on the Python engine:

- On Python's lid (inside and outside).
- On the right-hand side panel (inside and outside).
- On the rear panel (inside and outside).
- On the underside of the tilt-table.
- On the carriage.
- Other warning labels.
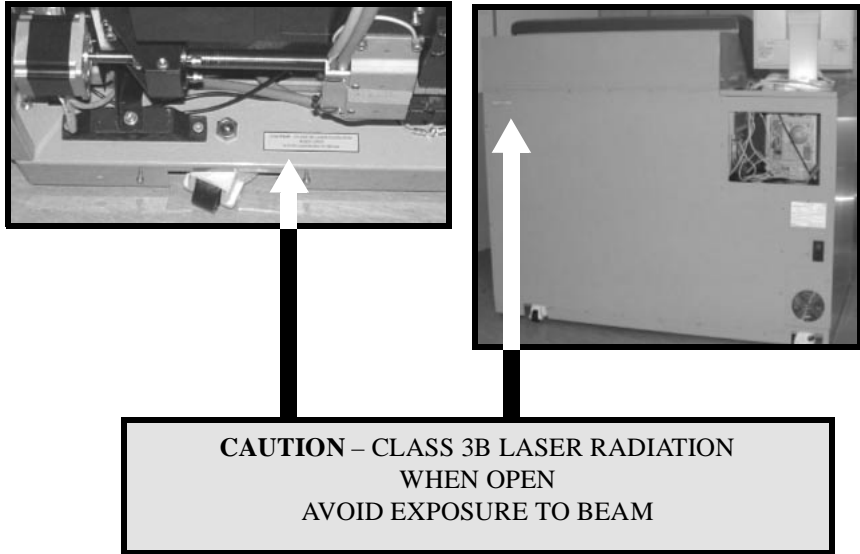- Product ID and Certification labels (EN and IEC versions).
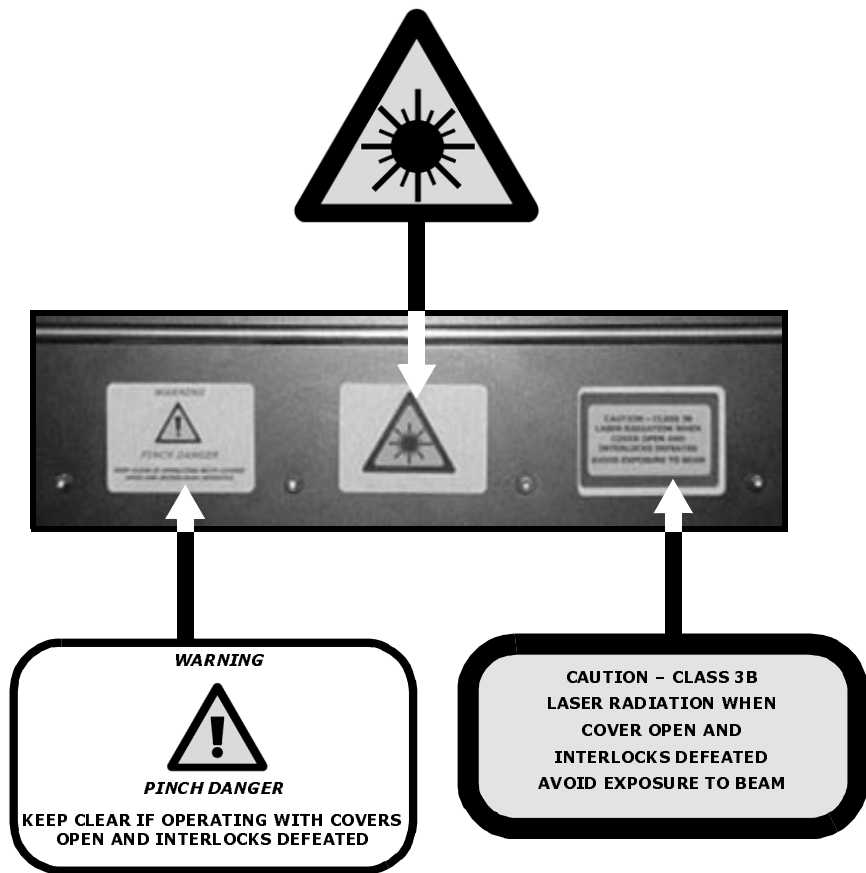- MET label.

On Python's lid (inside and outside)

CAUTION – CLASS 3B LASER RADIATION
WHEN OPEN AND INTERLOCKS DEFEATED
AVOID EXPOSURE TO BEAM

On the right-hand side panel (inside and outside)

CAUTION – CLASS 3B LASER RADIATION
WHEN OPEN
AVOID EXPOSURE TO BEAM

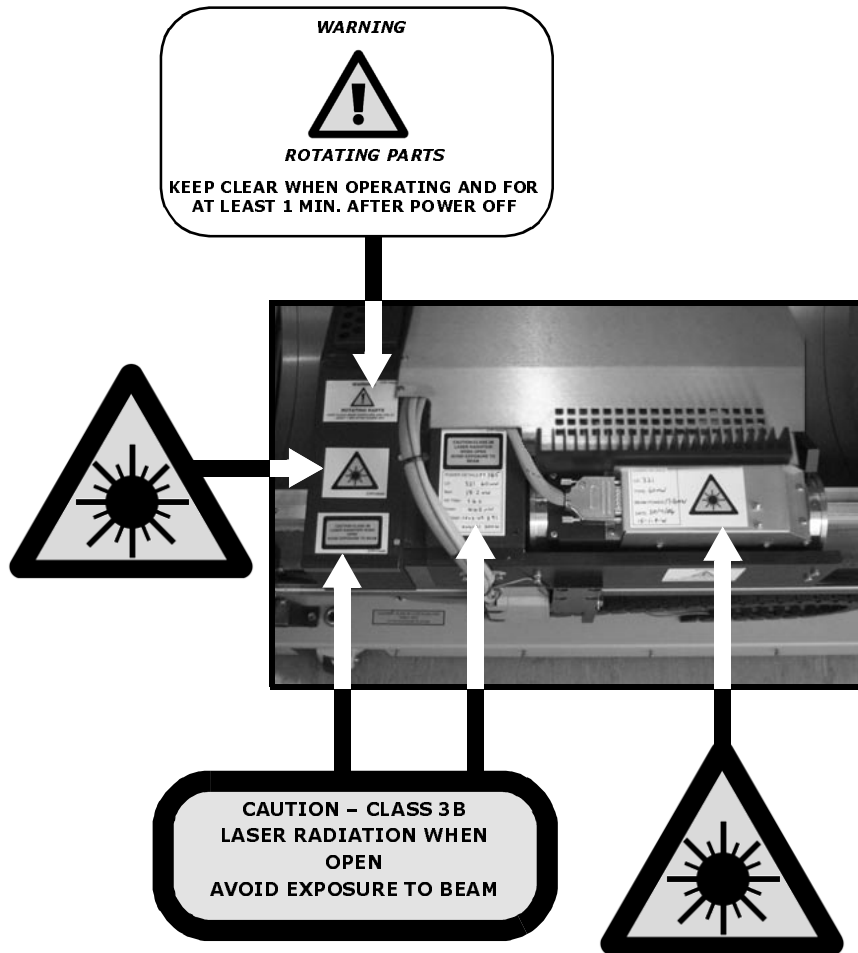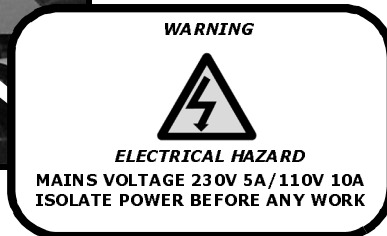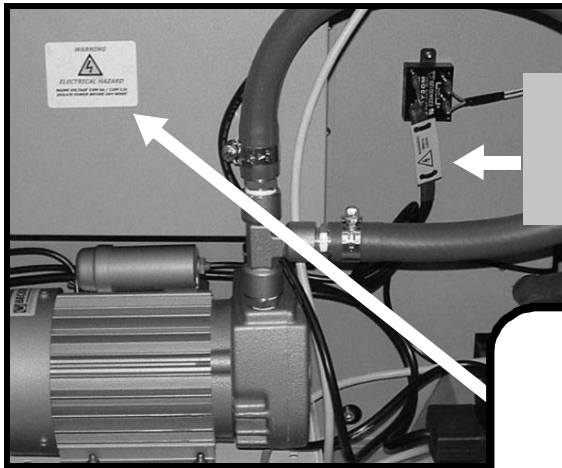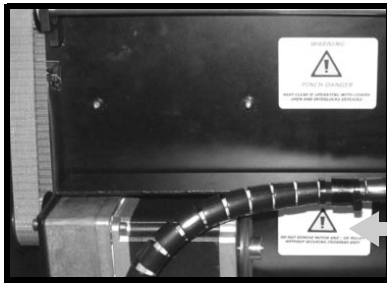## On the rear panel (inside and outside)

CAUTION – CLASS 3B LASER RADIATION
WHEN OPEN
AVOID EXPOSURE TO BEAM

On the underside of the tilt-table

WARNING

PINCH DANGER

KEEP CLEAR IF OPERATING WITH COVERS
OPEN AND INTERLOCKS DEFEATED

CAUTION – CLASS 3B
LASER RADIATION WHEN
COVER OPEN AND
INTERLOCKS DEFEATED
AVOID EXPOSURE TO BEAM

On the carriage

WARNING

ROTATING PARTS

KEEP CLEAR WHEN OPERATING AND FOR
AT LEAST 1 MIN. AFTER POWER OFF

CAUTION – CLASS 3B
LASER RADIATION WHEN
OPEN
AVOID EXPOSURE TO BEAM

Other warning labels

BS1362
3A SLOW

BS1362
3A SLOW

BS1362
5A NORMAL

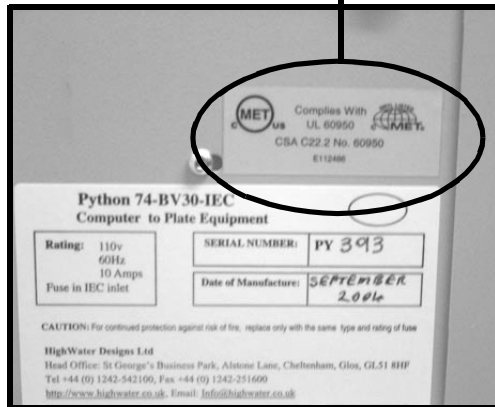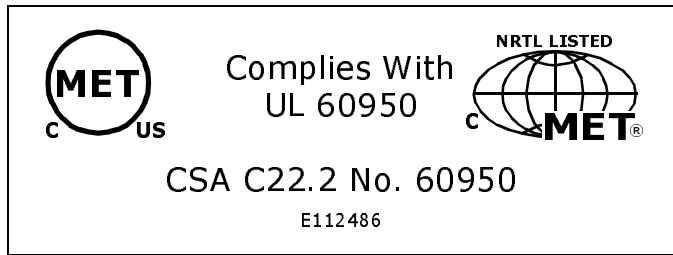## Product ID and Certification labels (EN and IEC versions)

Python 74BV30EN
Computer to Plate Equipment

CE

Serial Number	PY xxx

Rating 230V
50Hz
6 Amps
Fuse in IEC Inlet

Date of Manufacture	July 2010

CAUTION   For continued protection against risk of fire, replace only with the same type and rating of fuse

ATTENTION   Pour ne pas compromettre la protection contre les risques d'incendie, remplacer par un fusible de même type et de mêmes caractéristiques nominales.

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**Complies with
BS EN 60825-1:1994+A1&A2**

See Installation Instructions before connecting to supply
Voir la notice d'installation avant de raccorder au reseau
Fuse 230V – T6.3AH250V

Python 74-BV30-IEC
Computer to Plate Equipment

Rating 110V 60Hz 10 Amps Fuse in IEC Inlet	**SERIAL NUMBER**	**PY xxx**
	Date of Manufacture	**July 2010**

CAUTION: For continued protection against risk of fire, replace only with the same type and rating of fuse

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Complies with: BS EN 60825-1:1994 + A1 and A2 and with 21 CFR 1040.10 and 1040.11	**Fuse 110V – T10AH110V**

MET label

This label is present on 110V machines:

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