

# ZX4 Safety Standards and Compliance

Safety Standards and Compliance

## Contents

1. CE Safety Standards, Hazard Identification & Compliance
  - 1.1.Moving Slides and Rotating Ballscrews
  - 1.2.Revolving Spindles
  - 1.3.Harmonised Safety Standards
2. Emergency Stop Buttons
  - 2.1.Safety Doors
  - 2.2.Long Length Warning
3. Ring Exhaust Valve
- Comments

## 1. CE Safety Standards, Hazard Identification & Compliance

Consideration has been made to ensure that the ZX conforms to or exceeds all current international safety standards.

### 1.1.Moving Slides and Rotating Ballscrews

The ZX machining centre has CNC Driven axes including a rotary axis which could present possible trapping and crushing dangers. This has been addressed by isolating and disabling these axes via approved safety hinges or locking safety switches fitted to all access doors. These switches control an approved safety gate relay which disables the Servo drives by removing voltage to them by de-energising the drive contactors.

### 1.2.Revolving Spindles

The ZX has revolving spindles in the Multihead and a rotating blade in the Saw. Consideration of any danger to the operator has been addressed by the interlocked guarding mentioned above. Neither spindles or saw will run if any of the interlocked guarding is open.

### 1.3.Harmonised Safety Standards

It is considered that the machine meets the following safety standards.

**Safety of Machinery:** *Code of Practice: BS5304 1988 with revisions*

**Safety of Machinery:** *Electrical Equipment of Machines BS EN60204-1 1998*

## 2. Emergency Stop Buttons

There are 4 Emergency Stop buttons located around the ZX as shown below.

{PIC}

The Multihead includes buttons on the control console and the machining centre. When pressed the buttons shuts off power to the complete ZX machine, stopping the Multihead and Saw operations.

### 2.1.Safety Doors

Doors on the Machining and Saw centres are linked to the Emergency Stop circuit such that you cannot open the doors until the individual machine has stopped.

The Machining Centre has front and rear doors, which are interlinked to prevent opening whilst in operation. They are linked to the Emergency Stop circuit. There is also a safety gate on the transfer table.

[PIC]

The **Saw** has 3 guard doors, which only open when the Saw has stopped. These are:

- Front door
- Rear door
- Top door

[PIC]

The front door only opens when the Saw has stopped, and the top and rear doors can only be opened if the front door is open.

The three doors are interlinked to prevent the saw blade starting when any one is open.

## 2.2. Long Length Warning

When an offcut is produced that is longer than the length of the Saw Outfeed Table, then a warning siren sounds and the warning light on the Outfeed Table is illuminated.

## 3. Ring Exhaust Valve

The R axis Ring pneumatic circuit is fitted with a non return valve. This maintains air pressure to the slide bases after the main air has been dumped via the emergency stop. This enables the ring to be rotated manually without the slide bases moving.

Should free movement of the slide bases be required the air pressure can be released via the ring exhaust valve. Once the air has been released the valve must be returned to the closed position.

**Caution: When rotating the ring after releasing the slide base air pressure the spindles can slide under gravity. This presents a possible trapping hazard. Ensure that no part of the body is in the cutter path when rotating the ring and that the spindles have fully dropped before reaching inside the ring.**