

# Safety

The laser cutter while generally quite safe to use when operated correctly, however it can be a dangerous machine as it works by vapourising and burning material using a high power laser focused onto a combustible material.

## Risks include:

1. **Unattended operation** - This could result in a fire that destroys the laser cutter, causes serious damage to the building, or could kill people.
2. **Using unsuitable materials** - Materials like PVC can cause corrosive and carcinogenic fumes that will destroy the machine and cause severe breathing problems. Check which materials are approved for use.
3. **Defeating the safety interlocks** - This will enable the invisible infrared (IR) laser to bounce around the room in an uncontrolled manor burning people and materials it contacts, this could result in fires, skin burns, or instant blindness.
4. **Inhalation of fumes** - Opening the lid during operation, or defeating the safety interlocks will enable the fumes inside the machine to escape which are carcinogenic, and toxic, causing short term breathing problems, and longer term issues such as occupational asthma.

## Rules

By following these simple rules you can ensure that you and others are kept safe, anyone breaking these rules will be permanently banned from using the laser cutter.

1. Never leave the laser cutter running unsupervised under any circumstances for any period of time.
2. Only use approved materials.
3. Never bypass any safety systems, open panels, or ignore safety alerts from the machine.
4. Never permit someone else to use your access to the laser cutter.

## Fire safety

Because of how the laser cutter operates there will always be a risk of fire, being near the laser cutter to react quickly is what stops this happening:



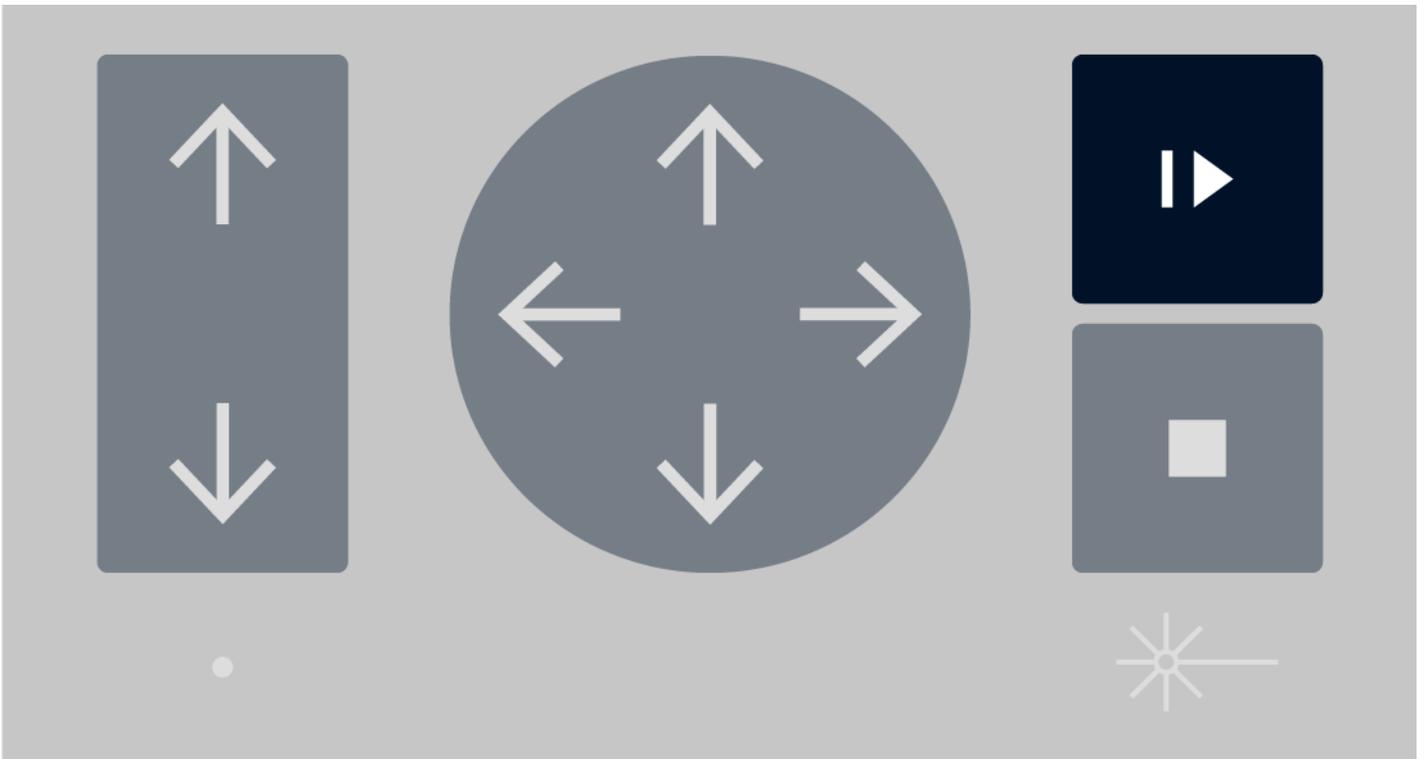
This UK school workshop was destroyed in 2015 after a laser cutter fire.

## Flaming up

Some materials will "flame up" when you are cutting, this is caused by the vapourised material gases burning, this isn't necessarily a problem, but it can be hard for in-experienced users to tell the difference and it can be scary.

Over prolonged periods of time this flame can deposit soot on the lens and will need regular cleaning - please seek advice from a technician.

If you are unsure whether the material is on fire, or the gases are burning press the run/pause button on the laser cutter, the flames should stop as soon as the laser does:



## What to do

If the material is on fire **press the emergency stop button** this will cut all power to the laser cutter, the fire should go out immediately.

## Small fires

If the fire is small (<5 cm):

1. Lift the lid of the laser cutter.
2. Use the CO2 (black and red) fire extinguisher:
  - Point the horn outwards
  - Pull the pin
  - Squeeze the handle while pointing the horn at the base of the flames.

Do not touch the horn it will get very cold and could injure your hands.

If the fire continues after the extinguisher has run out proceed to large fires:

## Large fires or not extinguished

If the fire is large, or the extinguisher has run out:

1. Press the emergency stop button if it's safe to do so.
2. Leave the room closing the door behind you.
3. Press the fire alarm call point outside the classroom by the lift lobby doors.

4. Leave the building and encourage others to go with you.
5. Call 999 or 112 from your phone or 5999 or 5112 from a UAL desk phone, tell a member of estates staff or the emergency services:

“ Laser Cutter on fire in B block, 4th floor, room B401A

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