Operator safety

- Do not place your hand in between the crosshead and the compression plate unless the measurement device is on MODE 0! To operate the clamps, use manual switches located in the clamp body (operator panel does not work in 0 mode).
- In case the machine must be stopped immediately, press the red button on the control panel. To release the button, rotate it clockwise.
- Upper safetylimit is 10 mm for force controlled pulling experiment (e.g. paper creep). It takes more than 10 mm for clamps to stop moving.

This document should probably contain something like:

- Foreword, warnings
- Before experiments
- During experiments
- After experiments

1 Foreword

This is a list of instructions to bring the Instron measurement device and necessary camera gear on-line and to perform wood fatigue tests. Please read the manual through before attempting to use the equipment. The Instron measurement device contain safety mechanisms to stop the user from harming it. Nonetheless, care should be taken not to drive the crosshead into the sample plate. This can cause damage to the force gauge (rather expensive) in the device.

2 Before you start

- reboot windows (clear memory)
- reboot instron (clear memory)

3 After experiments

- put the machine to (analog) position control.

4 Instron initialization

First, before anything else is done with the measurement device, it must be initialized properly. In the case of compression tests, the measurement device

must be configured so that the crosshead does not reach the sample plate when fully extended. Also setting proper safety limits and calibration are necessary.

To begin turn on the measurement device. The power switch is on the back side of the gray box next to the concrete table. The device boots up for a while and remains in MODE 0, untill at some point it can be switched to MODE I. The device itself does not give any signal about this. but if you watch the log on the TTM machine, you will notice activity when the measurement device is ready to be switched to MODE I.

While the machine is booting up, check logs from the *Instron control program* to see when the machine was used last. If you are confident that the machine was last used for the same measurement and has been initialized already, you can skip the rest of this section and set the machine on MODE I.

1. Set machine to MODE I.
    - Clear all safety limits.
    - Loosen the two black screw bolts. When open, the handles are to be set downwards (as if they were valves). When closed, the handles point inwards or toward each other.
    - Lift the machine using the black rocker switch enough so that you can fully extend the crosshead.
    - Using the arrow buttons on the remote, extend the driver head fully taking caution not to allow the driver head to touch the sample pedestal.
    - Using the black rocking switch, bring down the machine slowly until there is only a small gap (about 0.5 mm) between the driver head and the compression plate. **Take care not to ram the driver head into the compression plate!**
    - Secure the machine by tightening the screw bolts. Leave the handles pointing towards each other.
2. Switch the machine to MODE II.
    - Calibrate the force sensor by opening the force tab, clicking "Calibration" and then "Balance".
    - Set force safety limits to $\pm$**1000** N.
    - Set digital position to zero by opening digital position tab, clicking "Calibration" and then "Balance".
    - Set position safety limits to $\pm$**30** mm. To do this, you must set Instron to MODE 1 and moove the crosshead up a bit, as the crosshead is bellow the $-$**30** mm safety limit at this point.