

Manual Uniframe – ITS Test

1 Introduction

Various tests can be carried out with the Uniframe unit. In this manual only the ITS version is discussed.

Before starting to carry out the tests, one goes through this document completely, checks whether the right attachments have been installed, whether the press is clean and tidy and whether the test pieces have been brought to test temperature long enough.

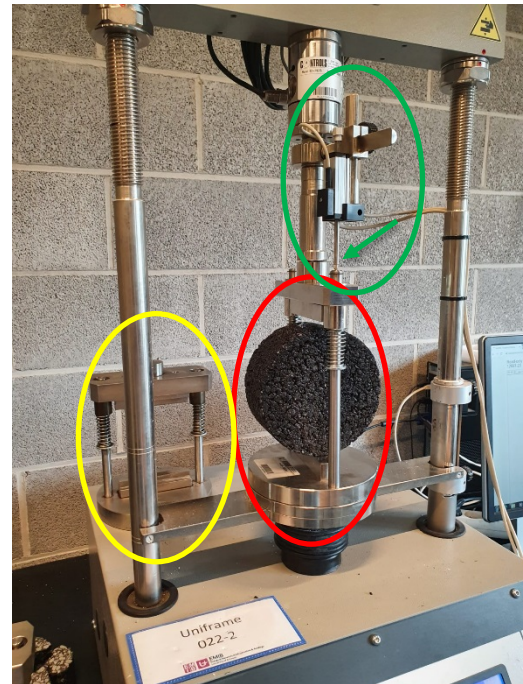
2 Preparations & checklist

2.1 Uniframe

Check that the correct attachment is fitted. There are 2 different intermediate pieces available in the lab for ITS testing, i.e. one intermediate piece for test specimens with $\varnothing 100\text{mm}$, and one intermediate piece for test specimens with $\varnothing 150\text{mm}$. These must comply with the values in table 1.



Figuur 1: Setup for ITS test



Figuur 2: Attachements for ITS

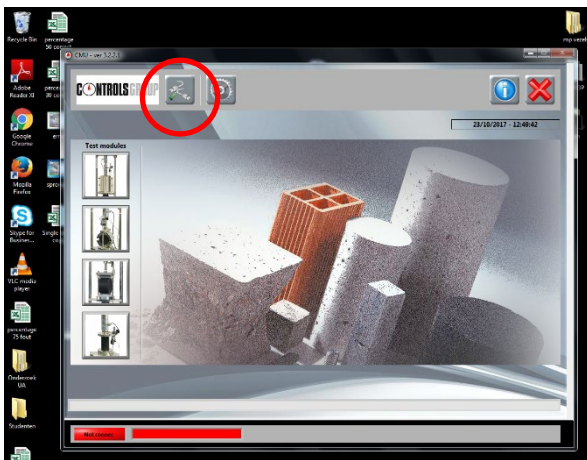
On figure 2 the attachment for 100mm samples is circled yellow, the attachment for 150mm samples is circled red. If you wish to change these, please contact a lab assistant. Always make sure that the LVDT (green circled in figure 2) rests on the guide of the intermediate piece.

	Dimensions mm				
Specimen diameter (mm)	80 ± 2	100 ± 3	120 ± 3	150 ± 3	160 ± 3
Loading strip width, W (mm)	10,2 ± 0,1	12,7 ± 0,2	15,2 ± 0,2	19,1 ± 0,2	20,0 ± 0,2
Maximum height difference at the curved side of the loading strip, h (mm)	0,33	0,40	0,48	0,61	0,63

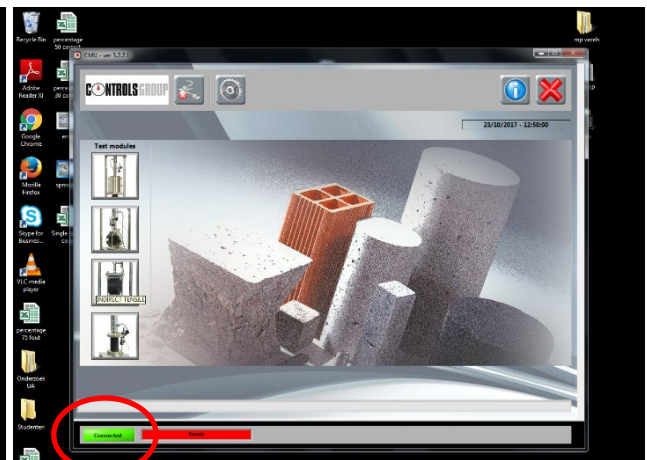
Tabel 1: Overview dimensions for ITS attachments

2.2 PC

Make sure the PC is booted up (there is no need to shut it down). Open the program 'CMU' and click on 'yes' when asked to open it. The following screen (figure 3) then appears:



Figuur 1: Initial screen CMU software




Figuur 2: check connection pc - uniframe

Once the software has been started up, the connection between PC and ITS device is ensured. This is

done by clicking on the button  next to control groups.

You should then get a green indication with 'connected' (see Figure 4) at the bottom of the software. If this is not the case, contact the person responsible for the device.

3 Execution ITS test

Once the connection between the PC and the Uniframe is ensured, select the 3th icon  (Indirect Tensile Strength). You will get the following screen (figure 5) :

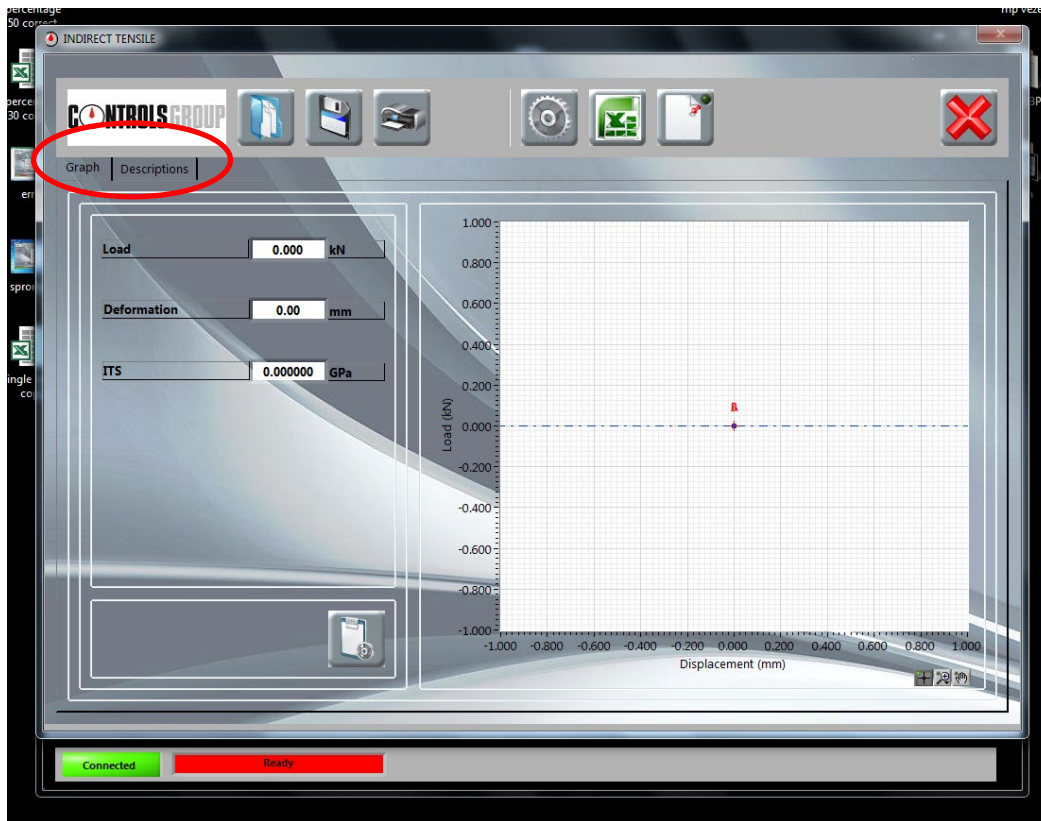


Figure 5: Indirect Tensile Strength-initial screen

Here you have 2 tabs, "Graph" and "Descriptions". With Graph (Figure 5) one can consult the graph, max force and corresponding displacement and the ITS value after execution of the test. Attention, the ITS value can only be correct if the correct data is entered. This data is entered in the "Descriptions" tab (Figure 6).

At least the following data must be entered:

- (average) diameter & thickness of the sample,
- date of testing,
- sample number,
- sample description,
- operator

INDIRECT TENSILE

Graph | Descriptions

Standard: EN 12697-23

Test organization: Uni | Testing apparatus: []

Diameter [mm]	10.0	Thickness [mm]	10.0	Correction factor	0.00
Weight [g]	0.0	Aggregate density [Kg/m ³]	0	Bitumen density [Kg/m ³]	0
Bitumen on mixture [%]	0.00	Mixture density [Kg/m ³]	0	GMM theoretical [Kg/m ³]	NaN
Voids [%]	NaN	VMA [%]	NaN	VFB [%]	NaN

Test speed [mm/min]: 50.0 | Test date: 19/10/2017

Operator: [] | Specimen number: 5

Specimen description: test demo 2

Type of binder: [] | Type of aggregate: []

Production site: [] | Production date: 05/09/2017

Certificate name: [] | Certificate date: DD/MM/YYYY | Client: []

Note: [] | Reference: []

Connected | Ready

Figuur 6: parameters to be entered

At this point, you are ready to carry out the test. Remove the sample to be tested from the cooling chamber and place it correctly between the splitting machine (Figure 7). From then on, one continues on the touch screen of the ITS test machine itself.

Here first 'test run' is selected, then **Test-set 02** is selected. The settings of the uniframe are checked, which should indicate the following values:

- Test Type = Marshall
- Displacement Channel = Transd. CH3
- Peak [kN] = 050.000
- Preload = 000.050
- Limits = 050.000 LOAD
- Test Speed = 50.00 mm/min

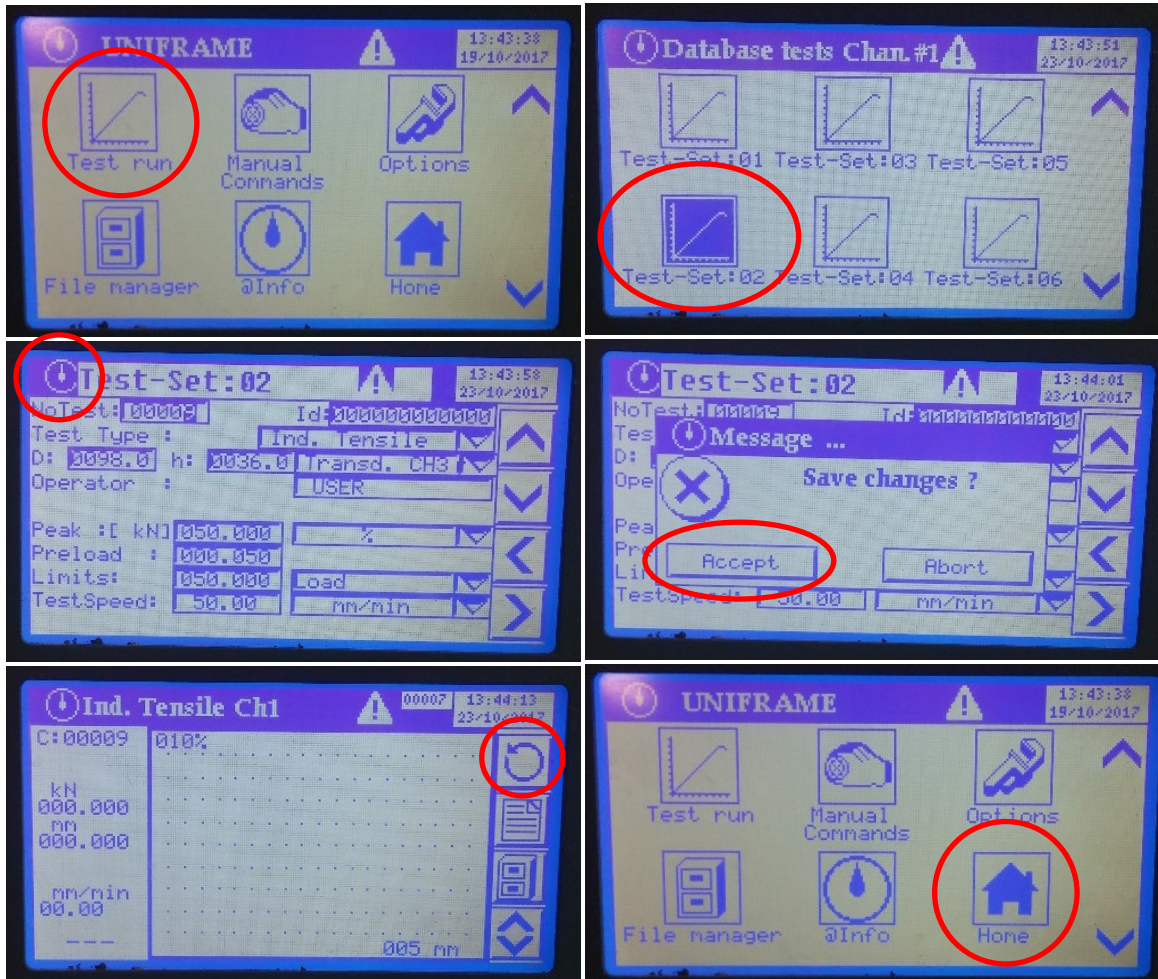


Figuur 7: setup ITS with sample

These settings will not be changed without permission from the Device Manager!

You continue by pressing the 'clock' icon in the top left corner and then **accept**. You are now ready to start the test. If everything is in order (sample correctly placed, connection with PC in order, ...) you can start the test by pushing the upper symbol on the right (circular arrow).

After carrying out the test, you can return to the home screen by pressing the 'clock' icon on the top left of the screen and return the press to its original position by using the HOME button.



Figuur 8: overview actions uniframe

Once the test has been carried out, it is checked that the maximum force and corresponding displacement displayed on the screen of the ITS machine match the values in the software on the PC.

If this is the case, transfer the values to excel by tapping the excel icon (Figure 4). Please note that this document will be saved under a self specified name in such a way that the 'basic Excel' (blank file) will not be overwritten with your results.

After testing all samples, the necessary (Excel) documents are put on USB and taken with you so that they can be processed.