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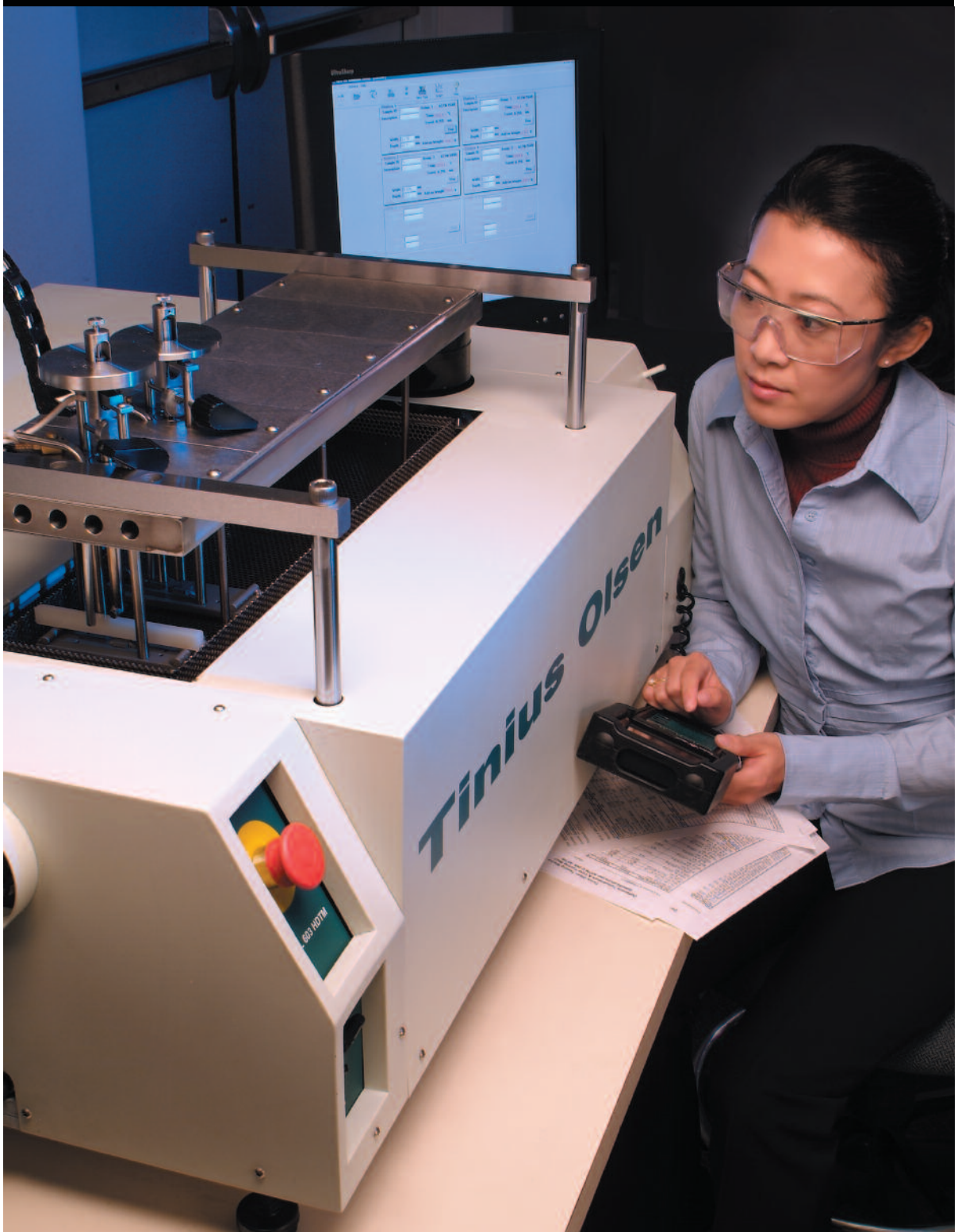
Tinius Olsen

Deflection Temperature and Vicat Testers



Model 603 HDTM AND 303 HDTM

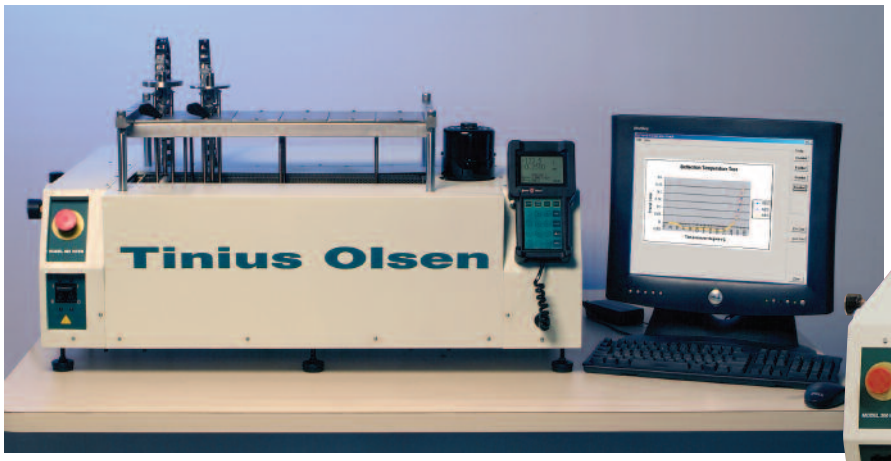


Fig 1. Model 603 HDTM shown with two test stations. The stations are raised for easy and rapid specimen insertion prior to a test and for specimen removal at the end of the test.

Fig 2. Model 303 HDTM shown with optional third station.

Fig 3. Close-up of test station, which is configured for an edgewise DTUL test with a 100 mm span.

The Model 603 HDTM and the Model 303 HDTM are the latest generation of Tinius Olsen's digitally controlled Automatic Deflection Temperature/Vicat test equipment. The 603 HDTM is capable of testing up to six different specimens simultaneously, and the smaller 303 HDTM can test up to three specimens simultaneously, both with an automated testing sequence that proceeds according to user defined control and configuration parameters.

The basic Model 603 HDTM includes a six station bath, two test stations, and a handheld terminal, and up to four more stations can be added. The basic Model 303 HDTM includes a three station bath, two test stations, and a handheld terminal. Each test frame can be configured with optional accessories for either Vicat or deflection temperature testing, including 4" or 100 mm edgewise or 64 mm flatwise deflection temperature. Additionally, the machines are ready to be linked to Tinius Olsen's HDV software so that the PC can configure the controller, collect the test data, generate a test report, and save the results.

All test stations are pneumatically raised from the bath at the touch of a button on the handheld terminal, allowing easy placement of the test specimens. Once the specimens are loaded into the respective test positions, all stations are lowered collectively into the oil bath and the test can start.

The start can be initiated by either the handheld terminal or directly from a PC running Tinius Olsen's HDV software. Once started, the test is completely automatic and is performed according to the user defined program. Upon test completion, the machines automatically cool the bath to the starting temperature in preparation for subsequent tests.

Test parameters are entered through the numeric keypad on the handheld terminal. Entries for each station include test type, deflection/penetration, span, specimen dimensions, and stress or force. Starting temperature, soak time, maximum temperature and rate of temperature rise are also entered for control of the bath unit. These configurations are stored and may be used for future tests.

Both the 603 HDTM and 303 HDTM have a built-in heat exchanger so that once the test is complete a rapid cool down is automatically initiated. Using regular tap water, the temperature of the silicon oil can be reduced from a maximum of 300°C to 20° above the water inlet temperature in approximately 20 minutes for the 603 HDTM, and in approximately 50 minutes for the 303 HDTM.

Once the cooling cycle is complete, all the test stations can be collectively raised allowing easy removal of the tested samples. In the event that a specimen is dislodged from the station during the course of the test, it should be safely caught in the specimen basket, keeping the oil bath as clean as possible.

The handheld terminal also shows a continuous display of temperature and deflection/penetration for each station throughout the test.

Key Features

- Conforms to ISO 75, ISO 306, ASTM D648, and ASTM D1525
- Fully automatic control of entire test cycle
- Bath has port with an exhaust fan to remove interior oil fumes
- Air bearing-guided loading rods for virtually friction-free load application
- Electronic transducers integrated into the loading rod assemblies for 0.001 mm resolution of deflection or penetration
- Loading nose and rod assemblies provide 76 grams nominal load for ISO 75 'flatwise' deflection temperature tests on 4 mm x 10 mm specimens at 0.45 Mpa stress
- Built-in heat exchanger for rapid system cool down
- Pneumatic station lift for easy specimen insertion and removal
- Automatic correction for thermal expansion of test frames
- Built-in specimen basket to catch any dislodged specimens
- Accessories available include additional test stations, deflection temperature loading noses, Vicat loading noses and needles, weights, 64 mm span supports for 'flatwise' deflection temperature testing (the stations are predrilled to accept these supports)

Technical Specifications

MODEL		603	303
MAXIMUM NUMBER OF STATIONS		6	3
TEMPERATURE RANGE	°C	23° to 300°	
TEMPERATURE RAMP	°C	50° or 120° per hour	
TEMPERATURE DISPLAY RESOLUTION	°C	0.1	
TEMPERATURE SENSOR		Platinum RTD located adjacent to the load application point at each station	
DEFLECTION/ PENETRATION MEASUREMENT		LVDT	
DEFLECTION/ PENETRATION DISPLAY RESOLUTION	mm	0.001	
COOLDOWN RATE		Maximum of 20° above cooling water temperature in 20 minutes	Maximum of 20° above cooling water temperature in 50 minutes
TEMPERATURE SAFETY LIMIT		Independent dual systems using thermostatic switch in bath and keypad selectable software limiting	
DIMENSIONS W x D x H	mm in	1067 x 762 x 572 42 x 30 x 22.5	813 x 635 x 585 32 x 25 x 23
WEIGHT (NET)	kg lb	132 290	87 190
REQUIRED UTILITIES	Heat Transfer Medium	18 liters (4.8 US gallons) min	11liters (2.9 US gallons)
	Water	Water supply for cool down	
	Clean Air	Dry air filtered to 50 microns at 40 psi (2.7 bar) min.	
	Power	220 ±10% V, 50/60 Hz, 1 phase, 4.5 kW	

Operating Environment:

Environmental Temperature Range: 60 to 100°F (15 to 38°C)
Storage Temperature Range: 14 to 115°F (-10 to 45°C)
Humidity Range: 10% to 90% non-condensing, wet bulb method
Power: standard voltages 230/240± 10% VAC, 50 – 60 Hz; power must be free of spikes and surges exceeding 10% of the nominal voltage

Notes: All models conform to all relevant European CE Health and Safety Directives.
Specifications subject to change without notice.

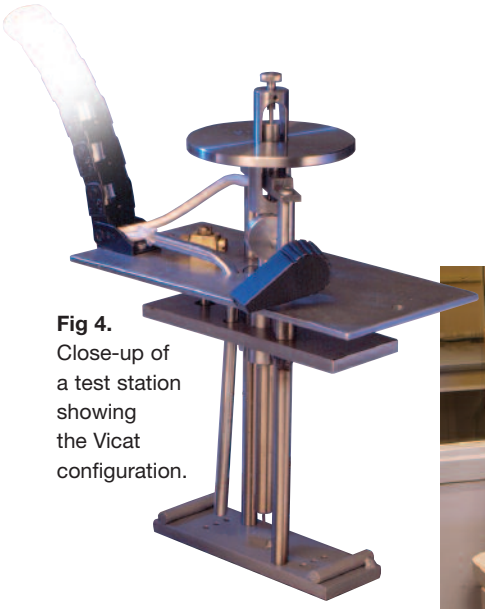


Fig 4. Close-up of a test station showing the Vicat configuration.

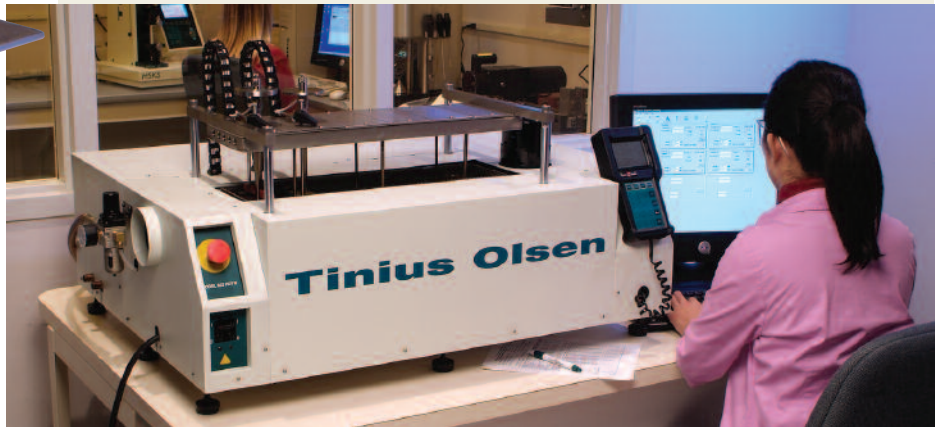
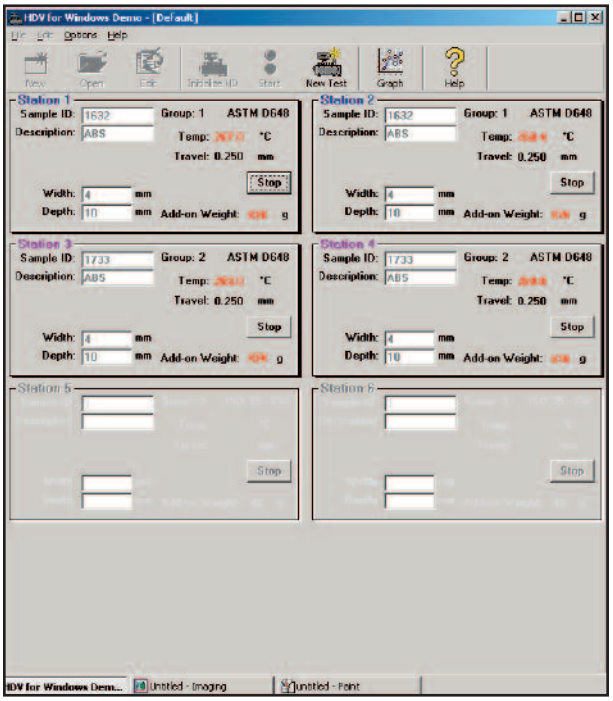
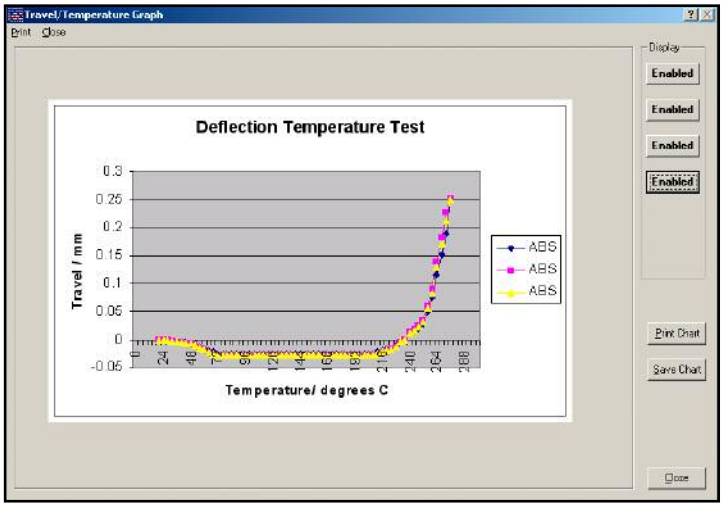


Fig 5. Model 603 HDTM can be controlled by a PC.

HDV Software

- For easy testing control and data storage using a PC.
- User selected reporting and exporting formats including report generation in HTML format.
- Built-in SPC programs for X bar, R, and frequency distribution charts and histograms.
- Produces temperature vs penetration (or deflection) for individual stations in real time.
- Test mode allows configuring, running, and saving of tests and results.
- Recall mode permits viewing of previously saved results and performs database maintenance.
- Demo mode simplifies operator training.
- Two levels of password protection.





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