



## Hydraulic Retrofit and Upgrade Options

Tinius Olsen's testing machines are designed to withstand the tests of time as well as your specimens. While older testing machine frames are still very usable and serviceable, the demands of today's industrial standards for higher levels of accuracy and resolution in test results go beyond the capabilities of older dial, and early digital, displays. Additional concerns arise with consistent interpretation and calculation of results, generation of reports, and the availability and cost of spare parts.

To address all these problems, Tinius Olsen has developed a variety of retrofit and upgrade packages that meet your technical and budgetary needs, that bring your older test frame up-to-date with today's standards.

Older dial and early digital displays from Tinius Olsen are replaced with new electronic displays and system monitors, allowing you to benefit from the inherent resolution and accuracy of your system.

In addition to the display upgrade options, Tinius Olsen can also offer upgrades or replacements to existing pumping systems and implement closed-loop servo control, so increasing your testing capabilities and productivity.



**Fig. 1.** Older dial display shown with model 51 recorder.



AFTER

**Fig. 2** Our most basic retrofit involves the replacement of the display only; shown here with an optional pc.

With any of these upgrade options, all test data generated by your system can be acquired and analyzed by Tinius Olsen's Windows based Test Navigator software.

With the closed-loop servo control option, this software can also allow complete testing control, graphical reporting of results with statistical process control data, all at the click of one button.

The software can improve your productivity by up to 50% depending upon your testing requirements.

### Model 602 retrofit

Our most basic retrofit involves the

replacement of the display only. The dial display is removed and a tabletop with the new handheld display and signal conditioner hub is mounted in its place. The table-top also provides a convenient location for an optional pc loaded with our Test Navigator software for data acquisition, analysis and graphical display (provided all necessary hardware is available for position or strain data capture).

All electronic components are located in the existing housing. The key advantage of this upgrade is that the system is completely digital and expandable. Since the individual assemblies are digital, they can be calibrated separately, and remotely, from the machine.

# Upgrades

## Model 602 retrofit

While the handheld terminal/display provides a major improvement in the resolution and accuracy of the system, control of the testing machine is still effected by using the captain's wheels on the existing pumping/control unit. The 602 retrofit comes as standard with a signal conditioning module that allows the data capture from the load channel. Additional signal



**Fig 3.** Close-up of 602 handheld display/controller

conditioners for other data channels, such as position and strain, can be added to the hub by simply sliding the conditioner into the hub and connecting to the CPU. The 602 retrofit can be expanded to accommodate additional input signals, each with its own conditioning module; these signals can come from different types of transducers including strain gage based transducers, LVDT type transducers, DC voltage transducers or simple encoders.

## Complete Servo Retrofit

The benefit of the manual retrofit is that there is an improvement in the accuracy and resolution in the display; operation still involves the use of existing captain's wheels to initiate the test and return the piston at the end of the test. The alternative is to replace the the complete unit and display with a new servo controlled pumping unit.

This closed-loop servo retrofit system constantly monitors the test in progress and regulates the testing rate to maintain preset conditions. This option enables you to conduct tests automatically and ensures consistent testing control, free from operator variability. Tests requiring different, or multiple, control modes, such as piston displacement control, strain rate control through yield and back to piston displacement through sample break; or a proof (load hold) test, can be performed using a pc and our Windows based Test Navigator software. If the test frame is in good condition, the upgrade to a complete closed-loop servo system and optional software will result in significantly improved accuracy of results and improved efficiency of your testing.



**Fig 4:** Original pumping unit with dial display.



**Fig 5:** Complete servo retrofit shown with pc based data acquisition, analysis and control software



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