

FORNEY TEST MACHINES

CA-0496-LT AUTOMATIC RETROPAK

CA-0496-LT | LT-1000 CONTROL CONSOLE UPGRADE



CONTROL SYSTEM

RetroPak

TEST TYPES

Tension

DESIGNED & BUILT BY FORNEY

Exceeds ACI
Recommendations

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GET A CONNECTED MACHINE AND SAVE \$1,500

NATIVE TWO-WAY INTEGRATION WITH CMT SOFTWARE

Connected Testing Machines allow technicians to get more done faster with minimal human error through a two-way integration with ForneyVault. Resulting in 99.9%+ fewer manual errors, 66%+ increase in productivity, and 100% unalterable, unquestionable data.

- ▲ “One-touch” test starts and automatic controls
- ▲ Pre-test “Smart Checks” to validate test parameters
- ▲ Automatic preload calculations, notifications for individual and average low breaks and excessive variance, automatic data transfer, and more

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**UPGRADE YOUR TESTING CAPABILITIES WITH FORNEY’S UNIVERSAL SERIES
RETROFIT SOLUTIONS**



Engineered by Forney, the Universal Series machines are built for precision tension testing across a wide range of materials—including rebar, rebar assemblies with joints or T-Caps, bolts, and select non-metallic materials like fiber-reinforced polymers (when properly equipped). These machines accurately measure force, displacement, velocity, and strain. All new models feature Forney's advanced Variable Frequency Drive (VFD) and control technology, delivering enhanced automation and streamlined data and workflow management. Many legacy machines—regardless of original manufacturer—can be upgraded with this same cutting-edge technology, significantly extending their capabilities.

The CA-0496-LT is a powerful retrofit solution for high-force, high-speed testing applications, making it an ideal upgrade for virtually any Universal load frame.

PRODUCT SPECIFICATION

SYSTEM DESIGN:

The control console is designed as a separate unit from the load frame.

When installed with an existing load frame, both units are floor-mounted, with the load frame located approximately 24" to the left of the console, thus reducing the possibility of shock transfer to the load indicating system.

HYDRAULIC POWER PISTON ASSEMBLY:

Testing force is generated by applying hydraulic pressure to large diameter power piston. Precision ground and polished to an 8 RMS (0.20um) finish, the piston is mounted in a honed, solid steel cylinder with a non-frictional "O" ring and Teflon back-up ring for sealing.

HYDRAULIC GRIPPING SYSTEM:

Hydraulic gripping is standard equipment on larger universal testing machines. Actuation is by pushbutton. Both gripper controls and the crosshead jog pushbutton are mounted on the side frame of the testing unit within arm's reach. Front loading access makes positioning the grips, inserting and removing specimens, a one man operation. Gripper jaws are easily interchanged for testing metallurgical specimens from 0.375" (9.525mm) to 2.38" (60.5mm) in diameter and flat plate jaws for up to 4.00" (101.6mm) wide X 2.00" (50.8mm) thick gripping dimensions. Rapid traverse while inserting specimens is easily obtained by momentarily depressing the jog button.

EASY AUTOMATIC TESTING:

Push one button and the machine performs the complete test, including piston retract. Accurately controls the rate of load at the desired setting, thus no question about meeting ASTM (or other) specifications and ensuring repeatable results. Frees the operator to do other tasks while testing is in process.

CONTROL CONSOLE:

The control console is a separate unit from the load frame and is positioned to the right of the load frame. The console houses the pumps, hydraulic control, the ForneyLink touchscreen operator interface (HMI), and electrical systems.

CONSOLE DESIGN:

The console consists of a welded frame with removable side and end covers to allow access to two areas: an electronic control chamber, housing power supplies, and additional electrical equipment to control the load frame; and a hydraulic power chamber housing pumps, valves and other necessary equipment.

OVERVIEW:

There are two major components that make up the control system of this machine: the ForneyLink touch-panel and the Variable Frequency Drive (VFD). The ForneyLink allows you to set up and run the machine, as well as view, analyze, and export test data. The touch-panel design allows for intuitive setup and use of the machine. The VFD controls the motor speed allowing very efficient use of hydraulic power.

HYDRAULIC PUMPING SYSTEM:

The pump and motor groups are vertically mounted, with the pump submerged in a welded steel reservoir. This arrangement provides for quiet operation, and greatly reduces possible leakage points, with filler breather, sight gauge, and appropriate external connections. The power unit is rated at 6,000 psi maximum. Appropriate pump flow rates are determined by testing specifications.

The hydraulic unit is supplied complete, as a fully integrated assembly. Customer hook up is limited to the connection of the hose supplying the load frame cylinders. The unit is pre-piped and pre-wired. Wherever possible, valving is manifold mounted to reduce external connections. This simplifies piping, resulting in fewer leakage points, and provides for quicker system response, necessary for close tolerance hydraulic system performance.

ELECTRICAL

A PC-based system utilizes a variable frequency drive to control the hydraulic pump motor. This maximizes efficiency – only running the pump at speeds necessary to achieve the desired pressure. This energy-efficient approach dramatically reduces heat build-up in the hydraulic system and greatly extends hydraulic component life.

Here are the main components of the system:

- ▲ Variable frequency drive (VFD)
- ▲ Windows-based touchscreen human machine interface (HMI)
- ▲ Pressure transducer that provides pressure feedback
- ▲ E-stop PB
- ▲ Limit switch
- ▲ Solenoid-operated dump valve

230 VAC 3 Phase, 32 amps is necessary and is determined by the specific drive capacity.

SAFETY FEATURES:

Several safety features are incorporated to protect both the operator and the testing machine.

- Maximum Capacity Protection: A high-pressure safety valve protects the hydraulic circuit and load frame from exceeding their maximum capacity. This high-pressure relief valve, directly connected to the hydraulic pump, is preset at the factory. Once maximum system capacity is reached, the high-pressure relief valve stops the machine from going beyond the maximum capacity of the load frame.
- Piston Travel Limit Switch: To prevent the hydraulic power piston from overextending, a limit switch is electrically wired to the pump start circuit. When the piston travels the maximum allowable distance, the limit switch signals the system to release hydraulic pressure, preventing further piston extension.

ARCHITECTURE AND SOFTWARE

DATA ACQUISITION:

Standard functionality includes data collection by the ForneyLink HMI for printing and transfer.

Data from optional extensometer and compressometer displacement transducers are also collected by the HMI. This data is captured with the same timestamp as the load data.

DATA MANAGEMENT:

The ForneyLink HMI provides data acquisition in real-time throughout test execution up to specimen failure. The readings are displayed in both a graphical and numerical format and the force vs. time plot is shown in real-time. Standard functionality includes easy navigation for printing and local data file management. Two data sets are stored on the ForneyLink HMI device. The summary data has summary information about the test performed, like peak break info, the test ID, and some basic specimen information. The second data set is the test data and contains the force-vs-time information for the completed test(s). To move the summary or test data sets, an external USB drive, such as a USB thumb or USB flash drive must be attached to the touchscreen.

These data files are saved as .CSV files which can be opened with Excel or any other spreadsheet software on your computer.

OPERATOR INTERFACE:

A ForneyLink touchscreen interface allows all setup, data logging, calibration, and password protection.

The ForneyLink incorporates "touchscreen" technology. Manual pushbuttons are limited to those necessary for safety precautions (emergency stop).

At the operator's discretion, the system allows for a hard copy printout of individual test data including the following (some items require additional machine options):

- ▲ Machine make, model, and capacity
- ▲ Machine serial number
- ▲ Calibration date.
- ▲ Date
- ▲ Time
- ▲ Test type
- ▲ Specimen Dimensions
- ▲ Correction Factor
- ▲ Ramp Rate
- ▲ Load at Break
- ▲ Stress at Break
- ▲ Break Type
- ▲ Graph of load versus time, or stress versus strain
- ▲ Testing lab name, address and contact information

The operator also has the option of printing test data from a previous test with the information listed above.

The system prints to a manufacturer-specified printer via USB, Ethernet, or Wi-Fi, located either at the machine, or in a nearby office.

The operator can transfer individual or summary test reports to a portable "flash" drive storage device.

The ForneyLink system provides the capability for remote troubleshooting and the addition of factory supported system updates.

The system can incorporate password protection to prevent unauthorized use.

CMT SOFTWARE INTEGRATION

Connected testing machines natively integrate with ForneyVault CMT software, improving important processes before and after an automatic test.

Before the test, Connected machines will:

- ▲ Enable positive specimen identification via barcode scan
- ▲ Provide pre-test "Smart Checks" based on preloaded sample and specimen data to validate sample date, ample size and type, and expected strength.
- ▲ Validate specimen geometry.
- ▲ Calculate preload settings based on actual and/or expected strength.

After the test, Connected machines will:

- ▲ Provide a detailed XY plot data for every test performed.
- ▲ Transfer data automatically to LIMS packages, QC systems, or other software.
- ▲ Alert to warn calibration expiration.
- ▲ Notify correction factor use, individual low breaks, and excessive variance.
- ▲ Enable intelligent workflows for detailed reporting and approvals.

UNIT COLOR:

The control console is painted harbor blue with orange countertops.

SHIPPING:

The control console is shipped in the normal, upright position on a shipping skid and crated. Uncrating, setting up and positioning will require professional riggers.

REMOTE SUPPORT

With a user-provided Internet connection (either Wi-Fi or Ethernet), the RetroPak system is capable of real-time, online support from the Forney Support Team for basic settings and test setup to advanced troubleshooting, fault finding, and software updates.

We offer unlimited Remote Technical Support for all Forney Testing Machines during the two-year warranty period.

For ForneyVault® subscribers, post-warranty remote technical support fees are waived for the life of your subscription.

Please refer any special requirements to a Forney sales representative.

*** Specifications are subject to change without notice.**

FACTORY INSTALLED OPTIONS

Voltage	230 VAC 3 Phase, 32 amps is necessary and is determined by the specific drive capacity
Capacity Options	Contact Us for Special Requests
Frame Options	Contact Us for Special Requests

SPECIFICATIONS

Load Capacity Range	Frame Dependent
Oil Reservoir Capacity	30
Overall Width	50"
Overall Depth	34"
Overall Height	44"
Unit Weight	450lbs Console Gross Weight
Test Standard Capable	ASTM A370 ASTM F606 ASTM A1061