

# FORNEY TEST MACHINES

CA-0399-VFD AUTOMATIC RETROPAK

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### CONTROL SYSTEM

RetroPak

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

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## HARDWARE

Designed and built by Forney, the CA-0399 RetroPak converts your manual machine to an automatic machine.



Forney RetroPak™ is an automatic control system that easily retrofits to most manual testing machines. The CA-0399 series of drive and control packages are specifically designed for testing a variety of materials in compression and flexure on machine frames with larger cylinder diameters. Additional pump flow and reservoir size have been incorporated into the design in anticipation of large hydraulic piston and a variety of accessories. It allows seamless conversion of a manual machine to fully automatic and arrives pre-wired and pre-assembled making installation and connection quick and simple. RetroPak is the easiest way to upgrade a testing machine to fully automatic operation. It's also the only one that works with ForneyVault.

## WHAT'S INCLUDED

ForneyLink TA-1258 touchscreen HMI, hydraulic pump and Automatic (VFD) control system. The entire system is incorporated into a single console to allow easy field retrofit to existing manual compression testing machines. Comes assembled.

## 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 a variable frequency drive, power supplies, and additional electrical equipment to control the load frame; and a hydraulic power chamber housing the pump, valves and other necessary equipment.

## CONVERT TO EASY AUTOMATIC TESTING

The Forney automatic control system provides fully automatic, "one touch" testing for many construction material test specimens. 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.

## EASY TO INSTALL

Installation work consists of the removal of the existing hydraulic power pack and digital readout, along with the pressure transducer, hoses, and any other miscellaneous wiring.

The new system is connected via a single hose to the compression machine and then plugged into a standard electrical outlet (available for 110V to 240V). No further field modifications are required, except, at the customer's request, or to incorporate non-standard features such as over-travel limit switches or specialized testing protocols.

The system works with most compression testing machines and is especially suited to machines utilizing 5,000 to 10,000 psi hydraulic operating pressures.

## HYDRAULIC

The hydraulic unit is supplied as a complete, fully integrated assembly. The console houses the pumping system, consisting of a submerged, vertically-mounted radial piston pump, in-line coupled with a supercharged/rapid advance pump. Appropriate valves for safety relief and pressure discharge are mounted on top of the reservoir, which is mounted inside the bottom of the console.

The system utilizes a variable frequency drive to adjust motor speed and therefore pump output to coincide with programmed demand per the test set up. This provides the most efficient hydraulic power arrangement as only the amount of flow needed is developed. Excess oil is not generated, and does not therefore require discharge over the relief valve. This minimizes heat and greatly extends hydraulic system longevity.

An optional proportional valve for controlled piston retract required by code for Modulus of Elasticity and Poisson's Ratio tests is available.

The ForneyLink human machine interface (HMI), hydraulic unit, E-Stop, and dump valve are directly connected to the unit. Single unit design permits easy installation and provides portability without disassembling of hydraulic or electrical components.

## 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

Single phase current is required. The operational system is available in a number of configurations – 110V/220V single phase, 50/60Hz. Other electrics are available upon request

## SAFETY FEATURES

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

- ▲ Maximum Capacity Protection: A high-pressure safety relief valve protects the hydraulic circuit and load frame from exceeding maximum capacity.
- ▲ Overextension Protection: A piston over-extension limit switch system protects against piston extension beyond maximum travel.

## SOFTWARE

### 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.

### DIGITAL CONTROL SYSTEM

Setup of testing protocol, real-time display of test data, and post-test data transfer is accomplished through the ForneyLink touchscreen HMI. The operator can navigate options for:

- ▲ Test Run
- ▲ Test Setup
- ▲ Machine Setup
- ▲ Calibration
- ▲ Reporting and Data Transfer
- ▲ Diagnostics

Provides simultaneous display of force, stress, and rate of load and displays a real-time graph of Load vs. Time, or Stress vs. Strain. 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.

### 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.

## 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	110/220VAC Single Phase
Optional Test Protocol Capabilities	ASTM C469 MOE (M) ASTM C469 MOE & Poisson's Ratio (MP) ISO 13503-2 Proppant (SW-0010)  *Additional accessories required  *Inquire about other test types
Capacity Options	Contact Us for Special Requests
Frame Options	Contact Us for Special Requests

#### SPECIFICATIONS

Load Capacity Range	frame dependent
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