FORNEY TEST MACHINES

LT-1000-VFD UNIVERSAL

UNIVERSAL TESTING MACHINE

LOAD CAPACITY	FRAME	CONTROL SYSTEM
600,000lb	Universal	VFD

TEST TYPES	TESTING MATERIALS	DESIGNED & BUILT BY FORNEY
Compression, Tension, Modulus of Elasticity/Poisson's Ratio (MP), Tensile Splitting	Cylinders, Cubes, Grout Prism, Rebar, Screws, Bolts, Wire, Bars, Coupons	Exceeds ACI Recommendations

CLICK HERE FINANCING OPTIONS AVAILABLE

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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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HARDWARE

FRAME

Designed and built by Forney. The LT-1000 Series Universal Testing Machines are specifically designed for high strength universal testing a variety of materials in tension and compression– including cementitious and metallic materials like briquettes, cubes, cylinders, rebar, rebar with joints or T-Caps, and bolts, as well as other non-cementitious and non-metallic materials. Universal Testing Machines measure Force, Displacement, Velocity and Strain.

The main frame is fabricated from solid steel with 4.00″ (101.6mm) thick side members. The top crosshead or cylinder mounting plate is 6.00″ (150mm) thick x 35.00″ (889mm) wide x 17.00″ (431.8mm) deep. The bottom crosshead is 10.00″ (254mm) thick x 35.00″ (889mm) wide x 24.00″ (609.6mm) deep.

The moveable crosshead for tension testing is fabricated from 10.00” (254mm) thick x 26.00” (660.4mm) wide x 24.00” (609.6mm) deep solid steel, and is positioned on strain rods 3.75″ (95.25mm) in diameter. Metallurgical samples of various lengths ranging from 20.00″ (508mm) to 30.00″ (762mm) can be tested, using the 24” (609.6mm) piston stroke. The hydraulic cylinder assembly is mounted on top of the unit frame and force is applied in the upward direction. This method of mounting positions the tension and compression work area at a convenient working level.

SYSTEM DESIGN

The control console is separated from the load frame. The two-unit design incorporates a tensile/compression load frame and a separate control console. The Universal (Compression and Tension) Testing Machine is of the open-frame type design, incorporating two side members fully welded into fixed top and bottom crossheads. The moveable platen or crosshead is suspended by 4 strain rods between these side members. Due to the design of the two crossheads, it is not necessary to remove the grips from the machine when changing from a tension mode to a compression mode or, when changing from a compression mode to a tension mode, the cylinder testing head need not be removed. 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 pressure is applied by an 13.00″ (330.2mm) diameter power piston. Stability length of the piston is 31.875″ (809.625mm) and the working stroke is 24.00″ (609.6mm). 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.

COMPRESSION PLATEN

A removable compression platen mounts directly on the movable compression crosshead. This special alloy steel platen is hardened to 60 RC or greater, chrome plated and scribed with a centerline and concentric circles for test specimen centering and alignment.

HYDRAULIC GRIPPING SYSTEM

Hydraulic gripping is standard equipment on the LT-1000 testing machine. Both gripper controls and the crosshead jog switch 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 2.50″ (63.5mm) 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.

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.

HYDRAULIC PUMPING SYSTEM

The pump and motor group 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 5000 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. It incorporates hydraulic valves, including a Proportional Valve. This valve allows close tolerance, closed loop control of machine functions, under any combination of flow and pressure conditions. Low pressures and low flow conditions are often found in testing of smaller specimens. The performance is not compromised at the low end of the testing range and enjoys the same accuracy and repeatability as found in the mid to upper ranges. 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 servo valve to control the hydraulic pump motor.

Here are the main components of the system:

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

SAFETY FEATURES

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

- Maximum Capacity Protection: A high-pressure safety relief value 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), all Forney UTM systems are 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.**

ACCESSORIES

Cylinder Compression (6" Dia x 12" L with Pad Caps) (150mm x 300mm)	TA-0103 Cylinder Top Platen Assembly TM-0095 Bottom Platen (included w/ machine) TM-2035 Centering Stud (included w/ machine)
Cylinder Compression (6" Dia x 12" L with Capping Compound or Ground Ends) (150mm x 300mm)	TA-0103 Cylinder Top Platen Assembly TM-0095 Bottom Platen (included w/ machine) TM-2035 Centering Stud (included w/ machine)
Cylinder Compression (4" Dia x 8" L with Pad Caps) (100mm x 200mm)	TA-0103 Cylinder Top Platen Assembly TM-0095 Bottom Platen (included w/ machine) TM-2035 Centering Stud (included w/ machine)
Cylinder Compression (4" Dia x 8" L with Capping Compound or Ground Ends) (100mm x 200mm)	TA-0103 Cylinder Top Platen Assembly TM-0095 Bottom Platen (included w/ machine) TM-2035 Centering Stud (included w/ machine)
Cylinder Tensile Splitting (6" Dia x 12" L) (150mm x 300mm)	TAG-0023 Cylinder Splitting Kit
Cylinder Tensile Splitting (4" Dia x 8" L) (100mm x 200mm)	TAG-0023 Cylinder Splitting Kit
Cube (2") (50mm)	TAG-0002 Cube (2") Accessory Kit
Cube (6") (150mm)	TAG-0025 Cube (6") Accessory Kit
Grout Prism (3" x 3" x 6") (75mm x 75mm x 150mm)	TA-0103 Cylinder Top Platen Assembly TM-0095 Bottom Platen (included w/ machine) TM-2035 Centering Stud (included w/ machine)
MOE (6" diameter) (150mm)	LA-0488-E6-SG Compressometer *Must have compression accessories *Must have -M or -MP machine
MOE (4" diameter) (100mm)	LA-0488-E4-SG Compressometer *Must have compression accessories *Must have -M or -MP machine

FACTORY INSTALLED OPTIONS

Voltage	220/440VAC Three Phase
Displacement	Factory Installed Upgrade Included
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
Travel Limit Switch	Standard Equipment

SPECIFICATIONS

Load Capacity Range	6,000lbf - 600,000lbf
Vertical Opening	34"
Horizontal Opening	11"
Ram Diameter	13"
Piston Stroke	24"
Platen Hardness	60HRC
Lower Platen Dimension	6.5" Diameter
Upper Platen Dimension	*See Available Accessories
Oil Reservoir Capacity	30 Gallons
Overall Width	52"
Overall Depth	31"
Overall Height	125" (+24" stroke)
Unit Weight	16,000lbs
Test Standard Ready	(1) set of grips ASTM E4

MOE & Poisson's Ratio (6" Diameter) (150mm)	LA-0488-P6-SG Compressometer/Extensometer *Must have compression accessories *Must have -MP machine
MOE & Poisson's Ratio (4" Diameter) (100mm)	LA-0488-P4-SG Compressometer/Extensometer *Must have compression accessories *Must have -MP machine
MOE & Poisson's Ratio (2" Diameter) (50mm)	TA-3542-03 Axial Extensometer 2" TA-3975-01 Diametral 0.030" *Must have compression accessories *Must have -MP machine
Rebar/Round Tensile	(4) TA-0187 Grips (4) TA-0186 Grips (4) TA-0185 Grips *Can test #3 - #18 rebar
Flat Tensile Specimens	(4) TA-0188 Grips * Can fit up to 2" thickness x 4" width
Threaded Fasteners	TA-0212-01 Bolt Test Set (.25" to 1.5" diameter flat and wedge)
Cold Bend Rebar	TA-0160 Cold Bend Test Set, #3 - #11 TA-0160-01 Cold Bend Test Set, #14 - #18
7 Strand Cable/Wire	TA-0185-02 - Grips for 0.5" Cable/Wire, 7-Strand, (4 Required) TA-0185-03 - Grips for 0.6" Cable/Wire, 7-Strand, (4 Required)

Test Standard Capable	ASTM C39, C78, C293, C109, C469, C496, C1019, D7012 A370, A1061, F606, E290 AASHTO T 22, T 97, T 106 BS 1610, BS 1881, EN ISO7500-1, EN 12390-3, EN 12390-4