



## TRIAXLAB AUTOMATED SYSTEM

### Standards:

BS 1377:5 / ASTM D2850-32, D4767-95, D7181-11 / NF P94-070, P94-074 / CEN-ISO-TS 17892-8,9



### MAIN FEATURES:

- ▼ Automatic execution of independent triaxial tests from start to finish
- ▼ Type of tests: total and effective stress, stress path, K0, optional permeability
- ▼ Servo feedback controlled precision pressure (pressurematic) generation system
- ▼ Real time graphing and configurable real time transducers
- ▼ Pre-programmed user-friendly "Method files" through the TestLab Software
- ▼ Compact and versatile for improving productivity and cost effectiveness
- ▼ No need of air source



TriaxLab Automated System

Matest TRIAXLAB is an outstanding system specifically designed for advanced soil testing.

This system can be used from educational to construction engineering laboratories to reduce to the absolute minimum any form of manual intervention.

Based on the unparalleled performance of CDAS and flexibility of TestLab Software, the new MATEST TriaxLab Automated System is the optimized system to perform fully automatically total and effective triaxial tests such as:

- ▼ CD Consolidated Drained test
- ▼ CU Consolidated Undrained test
- ▼ UU Unconsolidated Undrained test
- ▼ Stress path
- ▼ K0 tests
- ▼ Optional Permeability tests

The **TRIAXLAB automated system** basically consists of 3 major groups:

- Load frame and triaxial cell with accessories
- Control system based on the CDAS Control and Data Acquisition System and Testlab Software controlled by PC
- Data Acquisition System comprising:
  - 1 load cell for triaxial force
  - 1 displacement transducer for axial displacement
  - 2 pressure transducers for cell Pressure and back pressure
  - 1 pressure transducer for pore pressure
  - 2 pressurematic for volume change

To suit the specific customer's requirements the MATEST TriaxLab Automated System basic configuration can be modified by adding or removing the hardware elements which are controlled and monitored under a closed-loop integrated system with the CDAS and TestLab Software.

Pre-programmed "Method files" offer the operator the unique opportunity to run a range of tests without the need for specific computer programming. The possibility to customize the Method files is also given to the operator granting ultimate flexibility and versatility.





## TRIALAB AUTOMATIC SYSTEM

### ORDERING INFO:

#### HARDWARE - SOFTWARE

##### S301-01

##### Special digital triaxial load frame 50 kN

Technical Specifications:

- ▼ Maximum load capacity: 50 kN
- ▼ Infinitesimal testing speed: from 0,00001 to 12 mm/min
- ▼ Minimum vertical clearance: 400 mm
- ▼ Maximum vertical clearance: 1100 mm
- ▼ Horizontal clearance: 380 mm
- ▼ Platen diameter: 177 mm

##### B206

##### Special CDAS and TestLab Software

Technical Specifications:

- ▼ Acquisition 16 Channels 20 bit resolution
- ▼ Sampling rate up to 192 kHz (all channels)
- ▼ Smoothing up to 64 times over-sampling
- ▼ Calibration Automatically on power up
- ▼ Control Axis 4
- ▼ Communication USB or Ethernet
- ▼ Dimensions: 100(h) x 310(d) x 250(w) mm
- ▼ Power supply: 90-264 V 50/60 Hz 1 ph 240 W

##### S305

##### Triaxial cell max. dia. 70x110 mm

Technical Specifications:

- ▼ Max. specimen size: mm Ø 70x140 Ø 100x200
- ▼ Max. cell pressure: 1700 kPa 1700 kPa
- ▼ Overall dimensions: mm Ø 280x480 Ø 310x540
- ▼ Weight: kg 8

#### MEASURE OF AXIAL FORCE

##### S337-41

Load cell 50 kN with signal conditioner calibrated for Triaxlab Automated System

#### MEASURE OF AXIAL STRAIN

##### S336-22

Transducer type "A" travel 25 mm calibrated for Triaxlab Automated System

#### ACCESSORIES:

##### S305-05

Mounting device of the universal coupling pliers mod. S335-15 to fix the displacement transducer/dial gauge to the Triaxial Cell mod. S305 or mod. S306



##### S335-15

Universal coupling pliers to hold the transducer/dial gauge. It fits all Matest displacement transducers and dial gauges (from dia. 8mm to 20mm).



#### DEAIRED WATER SYSTEM

##### S355 +

##### De-airing tank 20 litres capacity

It produces de-aired water when connected to the vacuum pump. It is a perspex tank with an inlet water valve and an outlet air valve. Tank capacity: 20 litres.

Dimensions: 320x320x520 mm  
Weight: 15 kg



#### ACCESSORIES:

##### V205

##### VACUUM PUMP

To produce vacuum up to of 0,1 mbar (see pag. 487)



##### V205-10 - V205-12

##### VACUUM REGULATOR

It is supplied with vacuum gauge, control valve, suction filter and moisture trap.

##### V230-03

Rubber tube. Suitable for vacuum, 3 m

#### MEASURE OF PORE PRESSURE SYSTEM AND VOLUME CHANGE

##### S349

##### Pressurematic PVC for automatic pressure and volume control

Technical Specifications:

- ▼ Output pressure: 3500 kPa
- ▼ Volume capacity: 250 cc

#### ACCESSORIES:

##### S336-53

Pressure transducer 2000 kPa with signal conditioner calibrated for Triaxlab Automated System.

##### S336-55

De-airing block for pressure transducer

##### S342-03

3 ways water distribution panel

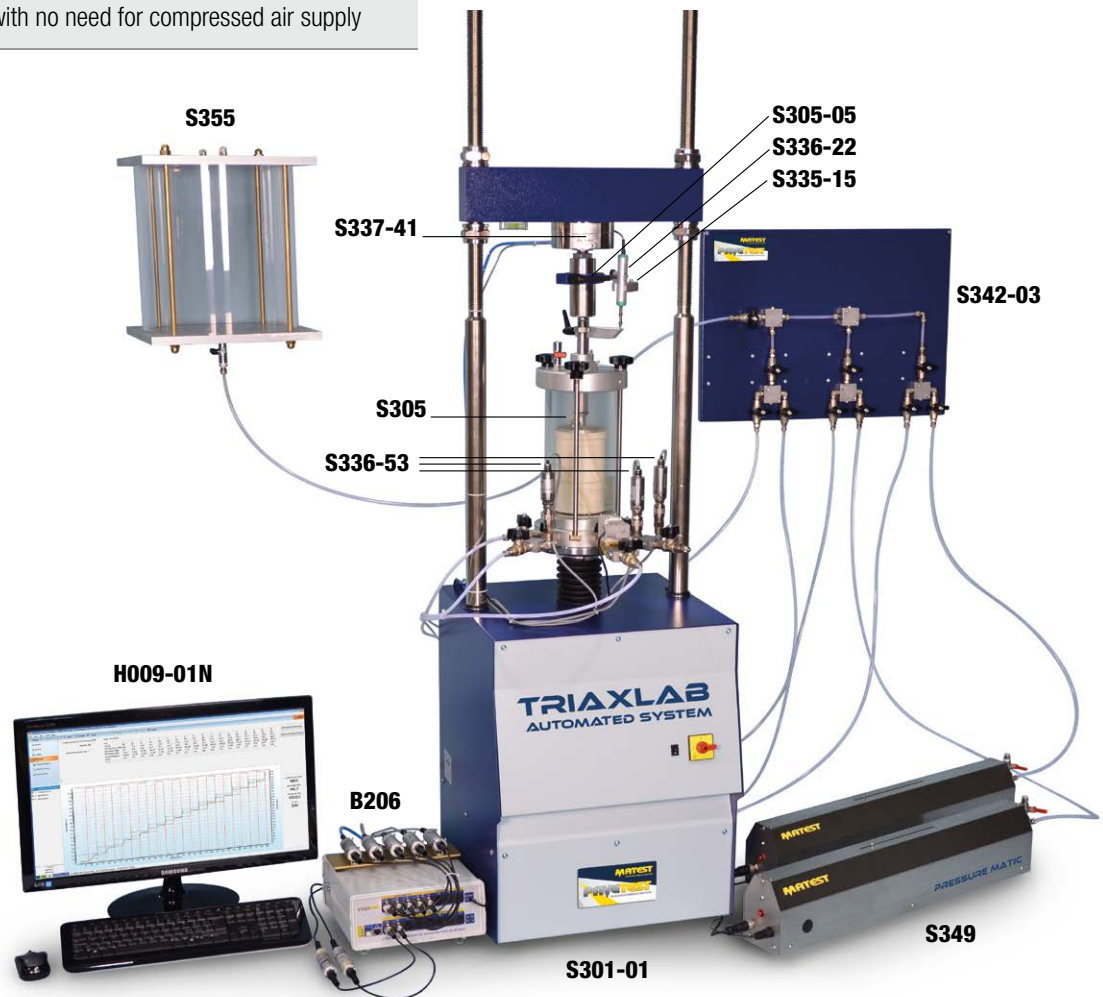
## Recommended typical configuration of the TriaxLab Automated System

APPARATUS SECTION	ITEM CODE	ITEM DESCRIPTION	QUANTITY
Hardware Software	S301-01	TRIAXIAL LOAD FRAME 50KN FOR TRIAXLAB AUTOMATED SYSTEM	1
	B206	CDAS & TESTLAB SOFTWARE	1
	S305	TRIAXIAL CELL MAX DIA 70X140 MM	1
Measure of Axial force	S337-41	LOAD CELL 50 KN CAPACITY WITH SIGNAL CONDITIONER	1
	S336-22	TRANSDUCER TYPE "A" TRAVEL: 25 MM WITH SIGNAL CONDITIONER	1
	S305-05	MOUNTING DEVICE ON TRIAXIAL CELL	1
	S335-15	UNIVERSAL COUPLING PLIERS FOR TRANSDUCER	1
De-aired water system	S355	DE-AIRING TANK	1
	S355-01	FILTER GROUP (WATER TRAP)	1
	V205	VACUUM PUMP	1
	V205-10	VACUM REGULATOR	1
	V205-12	CONDESED WATER TRAP	1
	V230-03	RUBBER TUBING FOR VACUUM, 3 METRES	1
Measure of pore pressure and volume change	S349	SERVOMATIC PCV	2
	S336-53	PRESSURE TRANSDUCER 2000 KPA WITH SIGNAL CONDITIONER	3
	S336-55	DE-AIRING BLOCK	3
	S342-03	3 WAYS WATER DISTRIBUTION PANNEL	1
Specimen preparation and Accessories	S310-01	RUBBER MEMBRANE DIA 50 MM (10 PCS)	2
	S310-02	RUBBER MEMBRANE DIA 70 MM (10 PCS)	1
	S311-01	SEALING RING DIA 50 MM (10 PCS)	1
	S311-02	SEALING RING DIA 70 MM (10 PCS)	1
	S312-01	MEMBRANE STRETCHER DIA 50 MM	1
	S312-02	MEMBRANE STRETCHER DIA 70 MM	1
	S313-01	SPLIT FORMER DIA 50 MM	1
	S313-02	SPLIT FORMER DIA 70 MM	1
	S310-11	SPLIT MOULD DIA 50 MM	1
	S310-12	SPLIT MOULD DIA 70 MM	1
	S314-01	TOP CAP WITH DRAIN DIA 50 MM	1
	S314-02	TOP CAP WITH DRAIN DIA 70 MM	1
	S315-01	PLINTH DIA 50 MM FOR CELL MOD. S305	1
	S315-02	PLINTH DIA 70 MM FOR CELL MOD. S305	1
	S316-01	POROUS DISC DIA 50 MM (2 PCS)	1
	S316-02	POROUS DISC DIA 70 MM (2 PCS)	1
	S317-01	PLEIN DISC DIA 50 MM (2 PCS)	1
	S317-02	PLEIN DISC DIA 70 MM (2 PCS)	1
	S318-01	"O" RING FOR PLINTH DIA 50 MM	1
	S318-02	"O" RING FOR PLINTH DIA 70 MM	1
	S319-01	FILTER PAPER DRAIN DIA 50 MM (50 PCS)	1
	S319-01	FILTER PAPER DRAIN DIA 70 MM (50 PCS)	1
	S320-01	FILTER PAPER FOR BASE DIA 50 MM (100 PCS)	1
	S320-02	FILTER PAPER FOR BASE DIA 70 MM (100 PCS)	1
	S122-14	HOLLOW PUNCH DIA 50 MM - TRIAXIAL	1
	S122-15	HOLLOW PUNCH DIA 70 MM - TRIAXIAL	1
	S123-14	TAMPER DIA 50 MM - TRIAXIAL	1
	S123-15	TAMPER DIA 70 MM – TRIAXIAL	1
	V205-11	SPECIAL OIL FOR PUMPS	1
	S325	NYLON TUBE 4 MM DIA (20 MT)	2
	S326	TERMINAL FOR CONNECTION TUBE (10 PCS)	2
	S327	FLARING TOOL	1
	S329	WATER-REPELLENT GREASE (1000 G)	1
	S330	GREASE PUMP	1
S328	VASELINE OIL 1000 ML	1	
S332-04	SPARES AND WEARABLE 1 CELL AUTOMATIC	1+	



## MAIN FEATURES:

- ▼ **POWERFUL**  
Equipped with Pavetest's leading edge Control and Data Acquisition System (CDAS) and TestLab Software
- ▼ **VERSATILE**  
Designed for routine tests, central laboratories and for research purposes
- ▼ **GREAT EFFICIENCY**  
By working in complete automatic mode, it reduces to absolute minimum the manual intervention
- ▼ **EASY TO USE**  
The system works via the pre-programmed Method Files
- ▼ **FLEXIBLE**  
Multiple triaxial tests with no need for compressed air supply



Triaxlab – Advanced Technology for effective Triaxial Tests

## CDAS – Control and Data Acquisition System



### MAIN FEATURES:

- ▼ Directly communicates with the Testlab software, providing automatic test execution and data processing
- ▼ Compact high reliability data acquisition and control
- ▼ Up to 5 kHz data acquisition and feedback control provides excellent waveform fidelity
- ▼ Normalized (+/-10V ) analog data acquisition inputs provide flexibility to use any transducer in any channel
- ▼ Software and test methods expandable for future requirements

### B206 CDAS 16 Channels

Pavetest's compact Control and Data Acquisition System (CDAS) delivers unparalleled performance, real time control and ultimate versatility in acquisition and provide a flexible and user friendly testing solution for soils when coupled with the Matest TriaxLab Automated System.

The CDAS provides excellent waveform fidelity from integrated acquisition and control functions, with low level sampling at speeds of up to 192,000 samples per second simultaneously on all channels (using up to 64x oversampling).

**B205** or **B206** CDAS models provide an optimized solution for the TriaxLab Automated System. The CDAS works with close synchronization to the Testlab software providing dynamic and precise servo control of the TriaxLab frame, Pressurematic systems. Acquisition and control is provided for:

- ▼ Vertical load and displacement
- ▼ Confining and back pressure (through the solenoid valve)
- ▼ Volume change and water pressures
- ▼ Local strain

Dimension: 100 (h) x 310 (d) x 250 (w) mm  
 Weight: 2 kg  
 Power Supply: 90-264 V 50/60 Hz 1 Ph 240 W

### AVAILABLE MODELS

#### **B205 8 CHANNEL CDAS**

Acquisition 8 CH, 20 bit resolution

- ▼ Sampling rate up to 192 kHz (all channels)
- ▼ Smoothing up to 64 times over-sampling for low noise performance
- ▼ Auto Calibration on power up
- ▼ Control Axis 2
- ▼ Communication USB or Ethernet

#### **B206 16 CHANNEL CDAS**

Acquisition 16 CH, 20 bit resolution

- ▼ Sampling rate up to 192 kHz (all channels)
- ▼ Smoothing up to 64 times over-sampling for low noise performance
- ▼ Calibration automatically on power up
- ▼ Control Axis 4
- ▼ Communication USB or Ethernet

## S349 PRESSUREMATIC PVC



### MAIN FEATURES:

- ▼ Compact stainless steel construction
- ▼ Powered and controlled by the CDAS and TestLab Software
- ▼ Closed loop control up to 3500 kPa
- ▼ 0.001 kPa pressure and 0.0003 cc volume resolution
- ▼ High volume capacity 250 cc
- ▼ Graduated scale for approximate volume change indication
- ▼ No need of air source

### S349 PRESSUREMATIC PVC

Pressurematic is the new solution for geotechnical laboratories demanding automatic pressure and volume control. By using a servo stepper motor directly controlled by the TestLab software and CDAS, Pressurematic allows to build confining pressure and back pressure up to 3500 kPa. The unparalleled performance of the CDAS allows to regulate the pressure under a closed loop control regulated to 0.1 kPa. The operation is continuously monitored by the TestLab software, thus catering to all levels of operator experience. Standard effective stress tests require 2 Pressurematic units: one for cell pressure and the other for back pressure which can be also used to measure the change in volume of the specimen to 0.0003 cc. The latter is provided with a solenoid valve directly installed on the triaxial cell and used to open and close the pressure line whenever it is needed.

### DIMENSIONS:

### WEIGHT:

POWER SUPPLY: 24V DC 1A POWERED FROM CDAS



Graduated scale for approximate volume change indication

### TECHNICAL SPECIFICATIONS:

- ▼ Output pressure: 3500 kPa
- ▼ Volume capacity: 250 cc
- ▼ Pressure accuracy: 0.25% of full scale
- ▼ Pressure resolution: 0.001 kPa
- ▼ Volume resolution: 0.0003 cc
- ▼ Closed loop control of pressure regulated to 0.1 kPa
- ▼ Closed loop control of volume regulated to 0.0003 cc
- ▼ Maximum operational speed: 18.5 cc/s

### ACCESSORIES:

#### S336-51SP

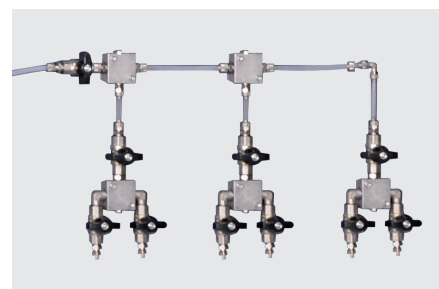
Pressure transducer up to 2000 kPa

#### S336-55

De-airing block for pressure transducer

#### S342-03

3 ways water distribution panel



S342-03 3 ways water distribution panel