

## STANDARD TRIAXIAL SYSTEM (38mm SAMPLE ONLY)

Standard : BS 1377:7, BS 1377:8, ASTM D4767,  
ASTM D2850, ASTM D7181, AASHTO T297

Triaxial test is a common method to determine the stress-strain characteristic and parameters of shear strength, mostly performed on undisturbed soil samples. The data is used for many soil engineering purposes such as ground, foundations, slope, excavations and embankments.

The test is mostly performed on cylindrical soil samples of  $\varnothing$  38 mm to 150 mm, with height being twice its diameter. It is subjected to stress along its vertical axis while applying fluid pressure in perpendicular directions & deformations are recorded until failure.

### Three common triaxial tests namely :

- Unconsolidated Undrained (UU)
- Consolidated Undrained (CU)
- Consolidated Drained (CD)



### Unconsolidated Undrained Test (UU), Consolidated Undrained Test (CU) & Consolidated Drained Test (CD)



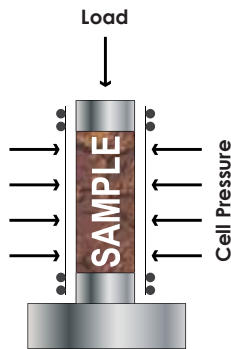
NL 5019 X/003 - P 002 -  
Pressure Volume Control (PVC)



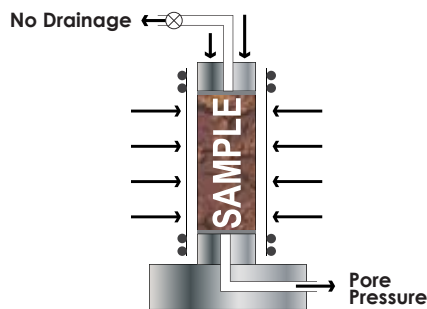
NL 5019 X / 003 - P001 - Triaxial Load Frame



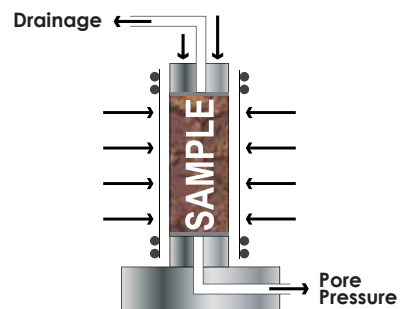
NL PT - 2 kPa  
2000kPa Pressure Transducer with  
De-Airing Block (Pore Pressure)



UU Test



CU Test



CD Test

## Triaxial Load Frame 10kN c/w Load Cell & Pressure Transducer

Precise CNC machined high-performance and advanced load frame which is heavy duty with rigid two columns design. Provides extremely stable & consistent loading during test. High accuracy microprocessor control system loading for precise speed control to perform tests within 0.00001 to 9.99999 mm/min. High quality luxury touch pad panel for ease of operation and long lasting use.

### Main Features:

- Large easy to read LED screen display.
- Versatile high quality keypad.
- Connectable to datalogger for computer control, parameters display and analysis.
- Full variable speed setting from 0.00001 to 9.99999 mm/min.
- Adopt a silent and stable operation, ensures no vibration during test.
- Designed to perform dedicated Triaxial tests – UU, CU and CD.
- Ideal for research laboratories and advanced testing that require high quality tests and high repeatability.
- Built-in datalogger for connection to PC for test data logging.

### Technical Specifications :

Model Number	NL 5019 X / 003 – P 001
Capacity	10 kN
Testing Speed	0.00001 - 9.99999 mm/min
Max. Vertical Clearance	600 mm
Horizontal Clearance	215 mm
Platen Diameter	185 mm
Max. Sample Size	Ø 70 mm
Power	220~240V, 1Ph, 50/60 Hz
Product Dimension (mm)	390(W) x 270(D) x 925(H)
Approx. Weight	36 kg

### Unit Consists Of :

Model Number	Parts Description
NL TLC – 10	10 kN Load Cell
NL PT – 2 kPa	2000kPa Pressure Transducer with De-Airing Block (Pore Pressure)
NL DT – 3DP	25 x 0.001 mm Digital Displacement Gauge c/w COM Cable



Control Panel



Load Cell



Pressure Transducer with De-Airing Block



Displacement Gauge



### Pressure Volume Control (PVC)

The Pressure Volume Controllers is very easy to use and an ideal solution for the most modern laboratories. When used with Test Master Loader, data loggers and software, they can be controlled from a computer to form part of a complete automated triaxial testing system. They may also be used as stand alone units which are fully functioning with or without computer control. All the devices has its own computer interface. The devices come complete with internal volume and pressure transducers. Both channel are pre-calibrated, it can generate pressures up to 2000kPa (20 bar) and provides a maximum volume measurement of 100ml which is readable to 0.001ml.

#### Features:

- Fitted with internal pressure transducer.
- Pressure can be ramped up or down at a selected rate in kPa per min.
- Pressure or volume can be set, and maintained, at either kPa or ml respectively.
- Max. Volume capacity of 60ml, readable to 0.001ml.
- Protected transducer configuration and calibration.
- Non-volatile storage of calibration and control parameters.
- Quiet operation.
- The advanced microprocessor controls screw pump for the precise regulation and measurement of fluid pressure and volume change. The fluid is de-aired water.
- The advanced microprocessor based electronics includes:
  - 1) Fast 16bit A/D converter
  - 2) Serial port for computer control
  - 3) 240 x 128 LCD display
- Connection to PC for data logging via internal datalogger.

#### Technical Specifications :

<b>Model Number</b>	<b>NL 5019 X / 003 – P 002</b>	
Max. Pressure	2 Mpa	
Pressure Resolution	1 kPa	
Max. Volume	75 ml	
Volume Resolution	0.01 ml	
Cell Pressure	Measuring Range : 0 ~ 2 MPa	
	Resolution : 1 kPa	Accuracy : +/- 1 kPa
Back Pressure	Measuring Range : 0 ~ 2 MPa	
	Resolution : 1 kPa	Accuracy : +/- 1 kPa
Power	220~240V, 50/60Hz	
Product Dimension	760 (L) x 520 (W) x 310 (H) (mm)	
Weight	38 kg	

### Triaxial Cell for Sample Size (Max. Ø38 mm)

Precisely made of high quality aluminium alloy & high resistant acrylic cell cylinder to withstand maximum pressure of 2000 kPa. Fitted with industrial grade quality on/off valves for cell pressure, back pressure & pore pressure hose connections. No tools required for dismantling & assembling the cell, as the clamping rods are tightened & loosen using hand knobs.

#### Technical Specifications :

<b>Model Number</b>	<b>NL 5019 X / 003 – P 003</b>
Max. Sample Size	Ø 38 mm
Max. Pressure	2000 kPa
Product Dimension	376 (H) mm x Ø147 mm
Approx. Weight	6 kg



#### Legend :

Parts Description	
Ø38 mm x 76 mm (H) Sample Accessories:-	
<b>A001</b>	<b>Base Adapter</b> . Used to adapt the triaxial cell base for different sample sizes.
<b>A002</b>	<b>Top Cap</b> . Used to spread the load evenly over the whole cross-sectional area of the sample when drainage to the top of the sample required. Includes a nylon tube and connector for the drainage line.
<b>A003</b>	<b>Porous Disc</b> . Acting as a filter to ensure the passage of water into and out of the sample evenly spread over the whole cross-sectional area. 2 are required for the top and bottom of the sample.
<b>A004</b>	<b>Rubber Membrane</b> . To provides a protective waterproof barrier around the sample. Made of Rubber Latex and supplied in pack of 10.
<b>A005</b>	<b>O-ring</b> . Used to seal the membrane against the base adapter and the top cape of the sample. Supplied in pack of 8.

	Parts Description
<b>A006</b>	<b>Membrane Strecher</b> . To stretch the membrane during its positioning.
<b>A007</b>	<b>Filter Paper for Side Drains</b> . Used as a side drain when specimens have low permeability. Very useful when saturating clays before consolidation & shearing. Supplied with pack of 50.
<b>A008</b>	<b>Split Former</b> . To prepare coarse grain soil specimen. It is made of two aluminium halves.
<b>A009</b>	<b>O-ring Placing Tool</b> . Used for applying the O-ring with the minimum to the sample.
<b>A010</b>	<b>Split Mould</b> . Used for trimming the ends of undisturbed soil specimen.
<b>A011</b>	<b>Electrical Water Pump</b> . To pumping water from tank to Triaxial Cell.
<b>A012</b>	<b>Rubber Teat</b> . To sucking for Membrane strecher.
<b>A013</b>	<b>Filter Paper for Base</b> . Used only for specimens of very low permeability soil in order to reduce the max. length of drainage path of a distance equal to the specimen radius.
<b>A014</b>	<b>De-Airing Water Tank (with Mounting Bracket)</b> . Used for water storage.
<b>A015</b>	<b>Nylon Tubing M6</b> . for vacuum (5 meter / roll)
<b>006</b>	<b>Oil Free Vacuum Pump</b> . Supply comes with Regulator

**Accessories for Standard Triaxial Testing System :**

Model Number	Parts Description
<b>NL 5019 X / 38</b>	<b>Ø38 mm x 76 mm (H) Sample Accessories:-</b>
NL 5019 X / 38 – A 001	Base Adapter Ø38 mm Sample
NL 5019 X / 38 – A 002	Top Cap w Drainage
NL 5019 X / 38 – A 003	Porous Disc (2pcs)
NL 5019 X / 38 – A 004	Rubber Membrane (pack of 10)
NL 5019 X / 38 – A 005	O-Ring (pack of 8)
NL 5019 X / 38 – A 006	Membrane Strecher
NL 5019 X / 38 – A 007	Filter Paper Drains (pack of 50)
NL 5019 X / 38 – A 008	Split Former
NL 5019 X / 38 – A 009	O-Ring Placing Tool
NL 5019 X / 38 – A 010	Split Mould
NL 5019 X / 004 – A 011	Electrical Water Pump
NL 5019 X / 38 – A 012	Rubber Teat
NL 5019 X / 38 – A 013	Filter Paper for Base (pack of 100)
NL 5019 X / 004 – A 014	De-Airing Water Tank (with Mounting Bracket)
NL 5019 X / 38 – A 015	Nylon Tubing M6 (5 meter / roll)
NL 7022 X / 006	Vacuum Pump (Oil Free Type)

**Optional Accessories :**

Model Number	Parts Description
TT 6ST – PC1	Compatible Desktop Unit
TT CP – 200	Computer Printer
TT 6ST – PBU	Portable Bench Unit


**Compatible Desktop Unit**