



# POINT LOAD & UCS (DIGITAL)

STANDARD OPERATING PROCEDURE (SOP) FOR OPERATING THE POINT LOAD AND UCS TEST FOR STRENGTH TEST AND ANALYSIS PURPOSES

LOCATION - FACILITY	MOSELEY MORAMORO
SUBDIVISION	MINING - OK TEDI LABORATORY
REVISED EDITION	1 <sup>ST</sup> EDITION
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STANDARD  
OPERATING  
PROCEDURE  
(SOP)

FOR  
OPERATING  
POINT LOAD  
& UCS  
(DIGITAL)



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# NOTE

## USAGE POLICIES & INSTRUCTIONS

- This equipment can only be operated upon approval from either the Laboratory Manager or a Technical Officer, or operated with the assistance or supervision of a technical officer.
- Strict compliance to operating procedures and safety requirements is required to operate this equipment. No Exceptions for substandard practices!
- If this equipment is acting unusual while operating STOP IMMEDIATELY! Please REPORT this malfunction to the Technical Officer and discuss the severity of the fault before proceeding or tag-out as faulty equipment.
- Any accidental damage to equipment or incidents encountered while operating this equipment must be reported immediately.



# EQUIPMENT DETAILS

## Point Load & UCS Testing Machine

### Purpose:

This SOP ensures that the operator may operate this equipment appropriately according to the operating procedures to get reliable output without damages to the equipment or causing injuries to the operator. The Point Load testing machine is used to conduct uniaxial strength tests on industrial materials, mostly rock specimens, to determine the compressive strength of the rock specimen from applying load on the specimen in the axial direction until failure or fracture.

This Point Load Testing machine is composed of a main frame which applies the load to a test specimen and a dynamometer which displays the load applied, as measured.

### Hazards:

- Eye protection (safety glasses) against projectile fragmented pieces
- Footwear (safety boots) for equipment components or test specimen fragments falling on to the foot.

### Safety Requirements:

#### Personal Protective Equipment (PPE)

1. Safety glasses
2. Safety boots
3. Safety gloves (for operator)
4. Industrial Hardware Clothing (Reflector ware)

### Tools & Materials Required:

#### Recommended Test Specimens

1. Rock specimen
2. Brick specimen

#### Test Specimen Prepared

1. Cylindrical
2. Cubic



## Specifications

### Specifications of the GCTS Point Load & UCS Tester

Specification	Units
Frame Dimensions	48 x 23 x 41 cm (19 x 9 x 16 inch)
Net Weight	16 kg (36 lb)
Horizontal Daylight Opening	100 mm (4 inch)
Vertical Daylight Opening	125 mm (5 inch)
Displacement Stroke	50 mm (2 inch)
Operating Temperature	0 - 54°C (32 - 130°F)

## Compositions



# SETTING UP

## Setting-Up Procedures

### Setting up for Point Load Test & UCS (Uniaxial Compressive Strength)

Specimen Type	Graphical Representation	Dimension Guidelines
Diametral	<p><math>L &gt; 0.50 D</math></p>	The length of the specimen should be greater than half its diameter
Axial	<p><math>0.3W &lt; D &lt; W</math></p>	The diameter of the specimen should be less than its width, but greater than 0.3 times its width
Irregular	<p><math>L &gt; 0.50 W</math></p> <p><math>W = (W1 + W2) / 2</math></p> <p><math>0.3W &lt; D &lt; W</math></p>	The length of the specimen should be greater than half its diameter. The diameter of the specimen should be less than its width but greater than 0.3 times its width.



1. The GCTS Point Load & UCS has an adjustable crosshead. It has a load capacity of 100 kN
2. By removing the point platen for Point Load Testing, we can replace with flat base to conduct UCS testing.



3. The GCTS Point Load & UCS Test machine is built with the convenience of switching easily for different tests. And it has a protective casing with glass for clear vision



4. To conduct Point Load Testing, you can use a cylindrical or cube specimen to test. Place the specimen between the two pointing platens and use the pump handle to start applying load till specimen fails or fractures



**GCTS Point Load Tester:  
PLT-2W**



5. To conduct Uniaxial Compressive Strength (UCS) testing, you can use a cylindrical specimen to test. Unscrew and remove the 2 pointed platen and mount the 2 flat base pieces.



**Unconfined Compression  
Load Platens**

6. To conduct Indirect Tension (Brazilian) testing, you can use a cylindrical specimen to test. Screw on to the 2 flat base pieces the 2 ellipsoidal frames for the Indirect Tension test.



**RIT-B-NX Indirect Tension  
Testing**





# OPERATING PROCEDURE

## Operating Procedures

### Operating the GCTS Point Load & UCS Testing Machine

1. First place the specimen in the position between the clamping faces
2. To apply load to the specimen you've placed in the frame, use the pump handle/lever to pump until specimen fractures. Data is automatically logged and will also display on the iPhone screen while the test is conducted



3. Automated Specimen gauging. Specimen can be easily position in which ever position required, either vertical or horizontally, by using the pressure control valve to load or release load.



4. Hands-free data collection. The iPhone has the software application to log data and process data as well.



5. Hold the iPhone slightly tilted vertically position and the data logged displays the stress against strain curve while the load is applying.



6. Hold the iPhone slightly tilted in horizontal position and the data logged displays load in kN digital values while the load is applying.



7. Intuitive App for quick and easy testing. The App logs the data and processes the data and displays stress/strain curves and other statistics for each type of tests



8. Edit data easily from the display screen of the iPhone

