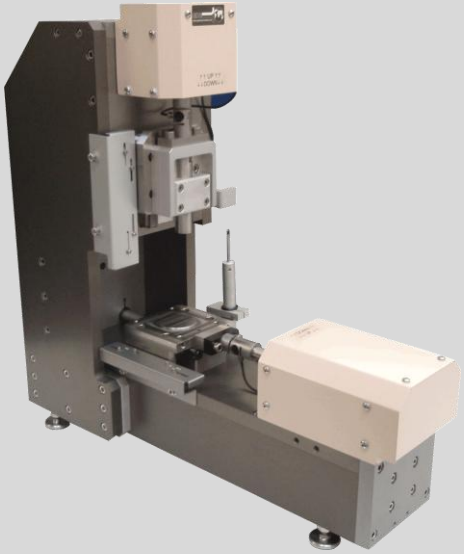
Maximum Load 5kN
Sample sizes to 100mm

Cylindrical samples	✓
Square Samples	✓
International Standards	
Compliant	✓
Test Option Modules:	
Direct Shear	✓
Advanced Shear	✓
Software:	
Fully automated	✓
"Future-proof"	✓
Options:	
Optional Upgrade to 10kN	✓

Note: Simple Shear system is available in the same range.

GDS Automated Direct Shear System (GDSADS)



What is it?

The GDS Automated Direct Shear System (GDSADS) testing system is a fully computer automated direct and advanced shear tests system. GDSADS has been designed to comply with international standards of test execution and data presentation. The system is controlled by the user's PC (running Windows) and GDSLAB control and acquisition software.

Features

The GDSADS system shown above (with Simple shear actuator upgrade) is a fully self contained system with no requirements for compressed air or hanging weights. Normal (axial) and shear forces are applied using GDS electro-mechanical force actuators. The use of GDS Force actuators makes the system very flexible, each axis (normal or shear) can be controlled in displacement (strain or velocity) mode as well as load or stress mode.

As well as standards based direct shear testing the advanced shear module will allow tests such as creep or hydration tests to be carried out under load or stress control.

The Operator chooses the required type of test from a test menu be it a direct or advanced shear test (see technical specifications below).

The test proceeds automatically with all test data being saved to a file. On-line graphics are presented in Windows with up to three graphs displayed together with a block of current live test data. (Tests can proceed overnight and during weekends and holidays).

The test can run from a dedicated computer to each test station or using multiple stations per computer.

The optional GDSLAB Reports for post-test processing and presentation to National/International Standards can also be added to the system.

Technical Specification

- **Direct Shear Test Module Controls:**
  - Simple rate of displacement (forward and reverse)
  - Continuous reversal cyclic displacement (constant velocity)
- **Advanced Shear Test Module Controls**:
  - Shear Load
  - Shear Stress
  - Displacement
- **Available control modes for each control parameter**:
  - Constant, Ramp and Cyclic*.
    *available Cyclic waveforms: triangular and sinusoidal
- **Transducer resolution** = 16 bit
- **Computer automated control of testing** – not just data logging
- **MS Windows Windows® software (GDSLAB)** for test control and post test processing

The Electro-mechanical Advantage

The use of GDS electro-mechanical actuators has the following advantages over pneumatic or weight based systems:

- Energy Efficiency - No inefficient and noisy air compressor is required
- No manual intervention – no operator is required to be present to add weights during consolidation stages, the stage can move on automatically under software control
- The loads applied to the sample are measured by calibrated loadcells not assumed from weight hangers

The Automation Advantage

GDS have consistently demonstrated that the slightly higher cost of automated systems is far outweighed by efficiency savings during the course of the systems life due to the following:

- Less human intervention is needed
- Under software control tests histories can be repeated more easily and more consistently
- Less repeated tests due to human error
- Test can proceed more rapidly, for example where a test stage is due to finish in the middle of the night or at a weekend a manual system would have to wait for intervention where as an automated system can move directly on to the next stage.

If your laboratory already has a shearbox:

Where laboratories already have a shearbox available GDS Instruments have developed an upgrade path to achieve the maximum level of automation possible for each system. Some of the control options for GDSADS are given below:

- run tests up to particular strains set by the user
- continuous reversal for residual strength tests
- user safety limits (on load for example) to protect equipment or specimens

The one possible system is shown opposite.

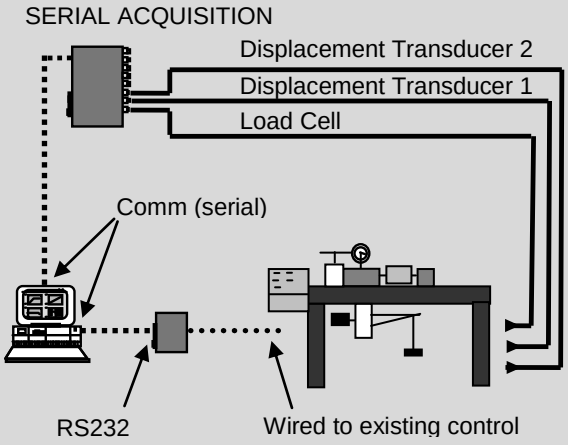


Fig. 1 System Schematic (without RS232 interface).

GDSLAB control software

Additional transducers may be easily configured at any time due to the flexible nature of the GDSLAB software. Spare channels may also be configured for use with an adjacent system, therefore enabling computer control and acquisition from multiple systems simultaneously from the same PC. This makes the system "future proof", as the software is expandable to include additional transducers, hardware or complete systems. GDSLAB has the ability to be configured to your hardware choice, no matter how unique the arrangement.

The GDSLAB control and acquisition software from GDS is a highly developed, yet extremely flexible software platform. Starting with the Kernel module and the ability to perform data acquisition only, additional modules may be chosen for your testing requirements. Some currently available modules available are as follows:

- SATCON (saturation and consolidation)
- Standard triaxial
- Stress path testing (p, q and s, t)
- Advanced loading tests
- Unsaturated testing
- K0 consolidation
- Permeability
- Simple Shear
- Direct shear

Depending on the module, a text file (*.ini) or initialisation file is created that describes the hardware connectivity to the PC. The hardware layout is available in graphical format via the GDSLAB 'object display'. This makes setting up the devices and checking the connectivity extremely simple, as in Fig. 2.

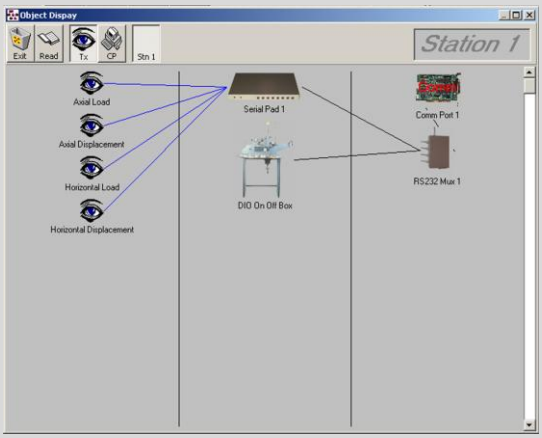


Fig. 2 GDSLAB object display

***Note:* Due to continued development, specifications may change without notice.**