

2024

GDS



LABORATORY SYSTEMS
FOR SOIL AND ROCK

GDS INSTRUMENTS PRODUCT CATALOGUE 2024

GDS Instruments designs, develops and manufactures material testing machines and software used for the computer-controlled testing of soils and rocks.

RESEARCH & COMMERCIAL TESTING SOLUTIONS

GDS apparatus is used to evaluate the mechanical properties that are key in geotechnical and earthquake engineering design. Since being founded in 1979, it is estimated that GDS products have been used to help achieve over 1000 PhDs. GDS apparatus has been installed and used in 84% of the top 50 universities worldwide in "Civil and Structural Engineering", as per the QS world rankings. Within the 84%, GDS have supplied systems to 17 countries across four continents.

As well as the first choice for academic research, GDS products have been used in world renowned commercial developments such as the Three Gorges Dam in China, the Millau Viaduct in France, the Vasco da Gama Bridge in Portugal, Heathrow Airport Terminal Five and the Crossrail links in London. GDS employs over 80 permanent members of staff at their offices in the UK, as well as working with a network of agents spanning 40 countries.

PREFER TO VIEW THE PRODUCTS ONLINE?

WELCOME

DEAR READER

Welcome to our 2024 brochure. Recent years has seen GDS establish itself as the world leader in laboratory testing equipment for the offshore testing industry, for structures such as wind farms. However, many other global infrastructure challenges remain, and we are passionate about being a positive contributor to all of them.

Over 1 billion people globally live more than 2km from an 'all season' road, 675 million continue to lack access to electricity at home, and 4 billion live without access to the internet. As well as ensuring global connectivity, geotechnical engineering plays a critical role in other issues such as aging infrastructure, that in many regions will require significant investment. The vulnerability of infrastructure to natural disasters, especially with climate change intensifying the frequency and severity of extreme weather events, poses an ever increasing threat to infrastructure resilience.

With these fundamental challenges facing world infrastructure growth, the geotechnical testing market shows no signs that it will slow down anytime soon. At GDS we are doing everything we can as a company to assist companies with these challenges now and in the future.

GDSLAB v2024

2024 will see the launch of GDSLAB v2024, our next generation control and acquisition software. This has been a project that I have been personally involved in driving forward. I am delighted to now see our hard work come to fruition and the benefits this will bring to everyone using our software. We have been working closely with users to understand what drives your testing needs and how we can make GDSLAB v2024 exactly what you require. There are a host of new features and functionality (see page 4) however, we have retained a familiar feel for everyone who has used GDS software in the past.



Karl Snelling, Managing Director

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Laboratory images in this brochure were provided by GeoWynd.

visit www.gdsinstruments.com

GDSLAB v2024: WHAT'S NEW...

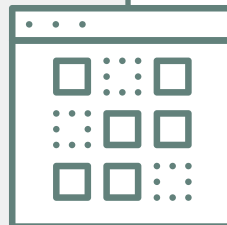
MULTIPLE LANGUAGE USER INTERFACE

The ability to instantly switch between multiple languages, within the same laboratory. This ensures users can get support from their colleagues even if their preferred language is different, facilitating collaboration anywhere in the world.



GRAPHICAL SYSTEM BUILDER

GDSLAB v2024 graphical system builder puts end users in control of setup changes making them easy to implement within the laboratory, without the need for technical assistance & knowledge. The ability to make quick and easy changes, and the removal of ini files means GDSLAB v2024 puts the power back into your hands.



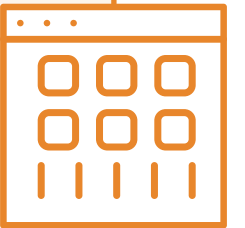
REAL TIME GRAPHS FOR DYNAMIC TESTS

Users can recover dynamic data in true real time even when testing at significant speed, in sync with the test. Our new high speed dynamic data capture can be plotted on screen in real time, so end users no longer need to worry that data capture will continue after the test has completed.



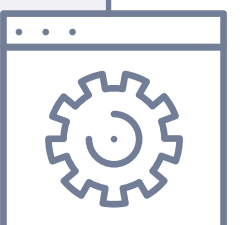
DATASTORE FOR TEST DATA

GDSLAB v2024 stores all test data at the maximum rate. Using the datastore, end users can export the data as many times as they want at any point during or after the test, with the data columns and data saving intervals of their choosing. No data is ever missed so no data is ever lost.



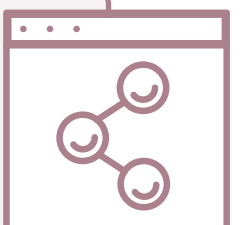
GENERATE CUSTOMISABLE OUTPUT FILES (.gds)

Matching software output files to user's own data analysis eats away at valuable time and resource. GDSLAB v2024 allows user flexibility in formatting the layout of the export data, making it easier than ever to compare and analyse results.



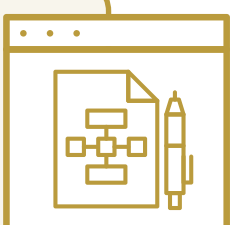
USER DEFINED TEST SCRIPTING

GDSLAB v2024 user defined test scripts allow the end user to perform tests that are outside the standard functionality, giving users the ability to control and acquire their data in unique ways with unique workflows.



CUSTOM DEFINED CALCULATIONS

Combining user defined calculations with user defined test scripting opens up a world of possibilities and removes the normal constraints of testing software. This combination ensures users can control based on their user defined calculations; either standards that have not been published or unique experimental research based outside the usual scope of testing.



Evolution of GDSLAB v2024

▶ GDS launched GDSLAB v1. The control and acquisition software allowed geotechnical testing systems to be configured using a range of different equipment, comprising of both GDS and other manufacturers hardware.

2001

▶ The next generation of GDSLAB v2 was launched in 2010, to enable advanced laboratories and researchers to be at the forefront of geotechnical innovation.

2010

▶ GDSLAB v2024 pre-release sent to selected commercial and research-focused users for beta testing. Their feedback was crucial for making changes to the software ahead of the full launch and for developing our three year roadmap.

2023

▶ GDSLAB v2024 launches for users looking to take advantage of the advanced functionality and feature set available in the new software.

Q1 2024

▶ GDSLAB v2024 will become the default software for users receiving new equipment. Those who wish to stay on the old version can request this from their account manager.

Q3 2024

▶ GDSLAB v2 will end of life, meaning that end users will be able to continue using the software, but it will no longer be supported or updated by GDS. GDSLAB v2025 will be the default software for all new purchases.

Q1 2025

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STATIC TRIAXIAL TESTING

STRESS PATH TRIAXIAL TESTING SYSTEM



TECHNICAL SPECIFICATION:	OPTIONS:
Load Range / Sample Size (Diameter):	7kN - 38 or 50mm 25kN - 70 or 100mm
Cell Pressure Range:	2MPa
Optional Extras:	
Vertical Bender Elements	50, 70, 100mm
Horizontal Bender Elements	50, 70mm
LVDT Local Strain Transducers	50, 70mm
Hall Effect Local Strain Transducers	38, 50, 70mm
Unsaturated Testing	38, 50mm (HKUST Method)
Permeability Testing	Available

TRIAXIAL LOAD FRAMES



TECHNICAL SPECIFICATION:	OPTIONS:
Load Range:	10, 50, 64, 128, 256kN
Sample Size (Diameter):	38, 50, 54, 70, 76, 100, 150, 300mm
Optional Extras:	
Vertical Bender Elements	50, 70, 100, 150mm
Horizontal Bender Elements	50, 70, 100mm
LVDT Local Strain Transducers	50, 70, 100mm
Hall Effect Local Strain Transducers	38, 50, 70, 100mm
Unsaturated Testing	38, 50mm (HKUST Method)

TRIAXIAL AUTOMATED SYSTEM FEATURING GDSVIS LOAD FRAME



TECHNICAL SPECIFICATION:	OPTIONS:
Load Range:	250, 400kN
Sample Size (Diameter):	38, 50, 54, 70, 76, 100, 150, 300mm
Optional Extras:	
P-S Wave Measurement	Dependant on triaxial cell
LVDT Local Strain Transducers	50, 70, 100mm
Hall Effect Local Strain Transducers	38, 50, 70, 100, 150mm
Temperature Control	-20°C to +65°C -20°C to +80°C

PERMEABILITY SYSTEM



TECHNICAL SPECIFICATION:	OPTIONS:
Cell Pressure Range:	2MPa
Sample Size (Diameter):	38, 50, 70, 100mm

FEATURED STATIC TRIAXIAL SYSTEM

TRIAXIAL AUTOMATED SYSTEM



TECHNICAL SPECIFICATION:	OPTIONS:
Load Frame:	50, 64kN
Cell Sizes:	76, 100, 150mm
Cell Pressure:	2MPa standard (alternatives available, dependant on triaxial cell chosen)
Top Caps and Base Pedestals:	50, 70, 100 or 150mm (dependant on triaxial cell)
Optional Extras:	
Alternative Load Cell	2, 4, 5, 10, 25, 38, 40, 50, 64kN
Vertical Bender Elements	50, 70, 100, 150mm
Horizontal Bender Elements	50, 70, 100mm
LVDT Local Strain Transducers	50, 70, 100mm
Hall Effect Local Strain Transducers	38, 50, 70, 100mm
Mid Plane Pore Pressure & Suction Probe	up to 100mm
Stainless Steel (Toxic / Marine)	50, 70, 100mm
Permeability Upgrade	Available
Lifting System	Available
Unsaturated Testing	Available
Dynamic Testing	Upgrade to Quasi-Dynamic Testing (0.1Hz)

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DYNAMIC TRIAXIAL TESTING

GDS IS ONE OF THE MOST EXPERIENCED MANUFACTURERS OF DYNAMIC TRIAXIAL SYSTEMS IN THE WORLD, HAVING SUPPLIED MORE THAN 350 SYSTEMS TO COMMERCIAL AND RESEARCH LABORATORIES OVER THE LAST 35 YEARS.

ENTERPRISE LEVEL DYNAMIC TRIAXIAL TESTING SYSTEM



TECHNICAL SPECIFICATION:	OPTIONS:
Load Range:	5, 10kN
Operating Frequency:	5, 10Hz
Cell Pressure Range:	1MPa (Air)
Cell Size:	76, 100, 150mm
Sample Size (Diameter):	38, 50, 70, 100, 150mm
Optional Extras:	
Vertical Bender Elements	50, 70, 100, 150mm
Horizontal Bender Elements	50, 70, 100mm
LVDT Local Strain Transducers	50, 70, 100mm
Hall Effect Local Strain Transducers	38, 50, 70, 100mm
Unsaturated Testing	50, 70, 100mm
Permeability	Available

RESILIENT MODULUS TESTING SYSTEM



TECHNICAL SPECIFICATION:	OPTIONS:
Load Range:	5, 10kN
Operating Frequency:	10Hz
Cell Pressure Range:	1MPa
Sample Size (Diameter):	70, 71, 100, 150mm
Optional Extras:	
Vertical Bender Elements	50, 70, 100, 150mm
Horizontal Bender Elements	50, 70, 100mm
LVDT Local Strain Transducers	50, 70, 100mm
Unsaturated Testing	50, 70, 100mm

TRUE TRIAXIAL APPARATUS



TECHNICAL SPECIFICATION:	OPTIONS:
Load Range:	20kN
Operating Frequency:	5Hz
Cell Pressure Range:	1MPa
Data Acquisition:	24 Bit
Sample Size (Diameter):	75 x 75 x 150mm
Optional Extras:	
Unsaturated Testing	Available

FEATURED DYNAMIC TRIAXIAL SYSTEM

ADVANCED DYNAMIC TRIAXIAL TESTING SYSTEM



TECHNICAL SPECIFICATION:					
Operating Frequency:	5Hz	5Hz	5Hz	5Hz	5Hz
Load Range:	10kN	40kN	40kN	40kN	60kN
Cell Pressure Range:	2MPa	2MPa	2MPa	4MPa	1MPa
Sample Size (Diameter):	up to 100mm	up to 100mm	up to 150mm	up to 100mm	up to 300mm
Optional Extras:					
Vertical Bender Elements	50, 70, 100, 150mm				
Horizontal Bender Elements	50, 70, 100mm				
LVDT Local Strain Transducers	50, 70, 100mm				
Hall Effect Local Strain Transducers	38, 50, 70, 100mm				
Mid Plane Pore Pressure & Suction Probe	50, 70, 100mm				
Lifting Frame	Available				
Unsaturated Testing	50, 70, 100mm				
Temperature Control	-10°C to +60°C, -20°C to +65°C, -20°C to +85°C (For 5Hz / 40kN / 4MPa only)				
Permeability	Available				
Dynamic Cell Pressure Control	5Hz / 1MPa				

SHEAR SYSTEMS

SHEARBASE SYSTEM



TECHNICAL SPECIFICATION:	OPTIONS:
Load Range:	5, 10kN (both axes)
Max Speed:	0.25mm/s
Sample Size Simple Shear:	50, 63.5, 66, 70, 100mm
Sample Size Direct Shear:	60, 100mm Square 63.5mm Circular
Optional Extras:	
Vertical Bender Elements (Simple Shear)	50, 63.5, 66, 70, 100mm

CONFINED ELECTRO-MECHANICAL DYNAMIC CYCLIC SIMPLE SHEAR



TECHNICAL SPECIFICATION:	OPTIONS:
Load Range:	5kN (both axes)
Operating Frequency:	0 (static) to 5Hz
Sample Size (Diameter):	50, 63.5, 66, 70, 100mm
Optional Extras:	
Vertical Bender Elements	66mm

VARIABLE DIRECTION DYNAMIC CYCLIC SIMPLE SHEAR



TECHNICAL SPECIFICATION:	OPTIONS:
Load Range:	5kN Axial Axis 2kN Shear Axis
Operating Frequency:	0 (static) to 1Hz
Sample Size (Diameter):	50, 70mm

CONFINED VARIABLE DIRECTION DYNAMIC CYCLIC SIMPLE SHEAR



TECHNICAL SPECIFICATION:	OPTIONS:
Load Range:	10kN Axial Axis 5kN Shear Axis
Operating Frequency:	0 (static) to 1Hz
Sample Size (Diameter):	50, 100mm

FEATURED SIMPLE SHEAR SYSTEM

ELECTROMECHANICAL DYNAMIC CYCLIC SIMPLE SHEAR DEVICE



TECHNICAL SPECIFICATION:	OPTIONS:
Load Ratings:	5, 10kN
Sample Sizes (Diameter):	50, 63.5, 66, 70, 100, 150mm
Frequency:	5Hz
Optional Extras:	
Vertical Bender Elements	50, 63.5, 66, 70, 100, 150mm
Local Horizontal LVDT Displacement Measurement	Available
Local Vertical LVDT Displacement Measurement	Available
Load Calibration Jig and Load Cell (5, 10kN)	Available
Direct Shear Sample	60mm Square, 63.5mm Circular
Water Reservoir to Aid Sample Saturation	Available

DIRECT & ROTATIONAL SHEAR

BACK PRESSURED SHEARBOX



TECHNICAL SPECIFICATION:	OPTIONS:
Load Range:	25kN Normal & Shear Force
Pressure Range:	2MPa
Sample Size:	50, 60, 100mm (Circular) 75 x 75 or 100 x 100mm (Square)
Optional Extras:	
Unsaturated Testing	Available

DYNAMIC BACK PRESSURED SHEARBOX



TECHNICAL SPECIFICATION:	OPTIONS:
Load Range:	25kN Axial 10kN Shear
Operating Frequency:	0 (static) to 5Hz
Pressure Range:	2MPa
Sample Size:	50/75/100mm Square, 20mm height

LARGE AUTOMATED DIRECT SHEAR



TECHNICAL SPECIFICATION:	OPTIONS:
Load Range:	100kN Axial, 100kN Shear
Max Speed:	0.1mm/s
Sample Size:	300 x 300mm (Square) 300mm (Circular)
Optional Extras:	
Rock Sample Set	150mm (Circular)

FEATURED SHEAR SYSTEM

RING SHEAR APPARATUS 5kN/200Nm & INTERFACE SHEAR TESTER 5kN/200Nm

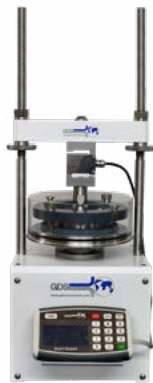


TECHNICAL SPECIFICATION:	OPTIONS RSA:	OPTIONS IST:
Load Range:	5kN	5kN
Torque Range:	200Nm	200Nm
Pressure Range:	N/A	1MPa
Sample Size:	100mm OD x 70mm ID	70 x 22mm
Speed Range:	0.01° to 720°/min	0.01° to 720°/min
Optional Extras:		
Ring Shear	Available	Available

CONSOLIDATION TESTING

ONE-DIMENSIONAL CONSOLIDATION TESTING APPARATUS, AS WELL AS MORE ADVANCED CONSOLIDATION SYSTEMS THAT CAN INCLUDE BACK PRESSURE CONTROL, HIGH CONSOLIDATION FORCES, UNSATURATED TESTING AND BENDER ELEMENTS.

AUTOMATIC OEDOMETER SYSTEM



TECHNICAL SPECIFICATION:	OPTIONS:
Load Range:	10kN (Using standard load frame, horizontal daylight 184mm)
Sample Size (Diameter):	50, 63.5, 70, 100mm
Optional Extras:	
Wide Load Frame: (Horizontal daylight 224mm)	10kN

CONSTANT RATE OF STRAIN CONSOLIDATION CELL



TECHNICAL SPECIFICATION:	OPTIONS:
Load Range:	10kN (Wide load frame required) 50kN (Requires LF50 load frame)
Back Pressure Range:	1, 3, 20MPa
Sample Size:	50, 63.5, 70, 100mm x 22mm
Optional Extras:	
Unsaturated Testing	1MPa cell only
Temperature Control	20MPa cell only
Permeability	Available

ROWE & BARDEN CONSOLIDATION TESTING SYSTEM



TECHNICAL SPECIFICATION:	OPTIONS:
Stress Range:	3MPa
Sample Size (Diameter):	50, 63.5, 76.2, 100mm
Optional Extras:	
Permeability	Available
Unsaturated Testing	Available

UNSATURATED SOIL TESTING

GDS PROVIDES A NUMBER OF SOLUTIONS FOR THE TESTING OF UNSATURATED SOIL, THAT CAN BE SEEN AS OPTIONAL EXTRAS ON MANY SYSTEMS IN THE CATALOGUE. EACH IS BASED AROUND THE REQUIREMENT TO EITHER DEFINE, OR EXPLORE AREAS AROUND THE STRESS DEPENDENT SOIL WATER CHARACTERISTIC CURVE (SDSWCC) BY VARYING THE MATRIC SUCTION OF THE SOIL. THE MATRIC SUCTION IS THE PRINCIPAL VARIABLE IN DEFINING THE STATE OF STRESS IN AN UNSATURATED SOIL.

KEY FEATURES

Axis translation method used to control matric suction.

Various air entry values available for ceramic porous discs.

Options to upgrade consolidation, triaxial, direct shear and small-strain systems.

Unsaturated soil calculations automatically handled by GDSLAB.



OPTIONS:	DESCRIPTION:
Method A:	Direct volume measurement using an air pressure/volume controller
Method B:	HKUST inner cell (As shown above)
Method D:	On-sample strain transducers (Can be combined with method A)
Note: Please check system configuration.	

TEMPERATURE CONTROL TESTING

GDS OFFERS A RANGE OF TEMPERATURE CONTROL SYSTEMS TO ACCURATELY CONTROL THE TEMPERATURE OF SOIL AND ROCK SPECIMENS, FROM FROZEN CONDITIONS TO HEATED STATES.

ENVIRONMENTAL TRIAXIAL AUTOMATED SYSTEM



TECHNICAL SPECIFICATION:				
Pressure Range:	4MPa	20MPa	64MPa	70MPa
Cell Size:	150mm	100mm	100mm	70mm
Balanced Ram:	No	No	Yes	No
Heating Only: Ambient to 60°C Ambient to 100°C	Yes	Yes	Yes	Yes
Heating & Cooling: -20°C to +65°C -30°C to +85°C -30°C to +100°C	No	Yes	No	No
Load Frame:	100kN	50, 64, 128, 256kN	128, 256kN	1MN

BISHOP & WESLEY ENVIRONMENTAL TRIAXIAL TESTING SYSTEM



TECHNICAL SPECIFICATION:		OPTIONS:
Load Range:		100kN
Pressure Range:		10MPa
Sample Size (Diameter):		50mm
Temperature Range:		-20°C to +65°C
Optional Extras:		
LVDT		50mm
Cell Top Lifting Frame		Available
Also available without temperature options.		

CONSTANT RATE OF STRAIN CONSOLIDATION



TECHNICAL SPECIFICATION:		OPTIONS:
Load Range:		50, 64kN
Back Pressure Range:		20MPa
Sample Size:		50 x 20mm
Temperature Options:		
Heating Only:		Ambient 65°C or 100°C
Heating & Cooling:		-20°C to +65°C
Optional Extras:		
Sample Height		40mm

FEATURED TEMPERATURE SYSTEM

TEMPERATURE CONTROLLED HIGH PRESSURE SYSTEM SUITABLE FOR THE TRIAXIAL TESTING OF GAS HYDRATES

KEY FEATURES

Gas hydrates require high pressure and low temperature, from this respect this system is a standard GDS high load temperature controlled system.

Additional ports are available so that pore fluids such as methane can be introduced and controlled, as well as argon for flushing.

Computer controlled gaseous pressure controller used to control the relevant pore gases.

Available as a Resonant Column Gas Hydrate system.



TECHNICAL SPECIFICATION:		OPTIONS:
Load Range:		128, 256kN
Pressure Range:		20MPa
Sample Size (Diameter):		50, 70, 100mm
Temperature Range:		-20°C to +65°C
Gaseous Pressure Control:		20MPa
Optional Extras:		
Lifting Solution		Available

RESONANT COLUMN TESTING

WE MANUFACTURE BOTH A STOKOE TYPE RCA (ISOTROPIC RESONANCE IN TORSION AND FLEXURE, DAMPING BY FREE VIBRATION, AND TORSIONAL SHEAR TESTING) AND A HARDIN TYPE RCA (ANISOTROPIC OR ISOTROPIC TORSIONAL RESONANCE). WE CONSIDER THE INDUSTRY STANDARD RCA AS THE STOKOE VERSION.

STOKOE RESONANT COLUMN



TECHNICAL SPECIFICATION:	OPTIONS:
Cell Sizes:	73, 100mm
Pressure Range:	1, 2MPa
Sample Size (Diameter):	50, 70, 100mm
Lifting Frame:	As standard
Optional Extras:	
Vertical Bender Elements	50, 70mm
Torsional Shear (Slow speed torsional shear test) upgrade	Up to 1MPa only
Unsaturated Testing	50mm

A HARDIN TYPE IS CHOSEN SPECIFICALLY FOR ITS CAPABILITY TO PERFORM ANISOTROPIC TORSIONAL RESONANCE AS THIS IS NOT POSSIBLE IN THE STOKOE VERSION.

HARDIN TYPE RESONANT COLUMN



TECHNICAL SPECIFICATION:	OPTIONS:
Triaxial Cell:	100mm
Pressure Range:	1, 2MPa
Load Range:	2kN
Sample Size (Diameter):	50, 70, 100mm
Lifting Frame:	As standard
Optional Extras:	
Vertical Bender Elements	50, 70mm
Torsional Shear (Slow speed torsional shear test) upgrade	1MPa only

HOLLOW CYLINDER TESTING

GDS SPECIALISES IN DESIGNING AND MANUFACTURING ADVANCED TESTING SYSTEMS FOR RESEARCH, WHICH INCLUDES A NUMBER OF HOLLOW CYLINDER APPARATUS CONFIGURATIONS.



KEY FEATURES

Combined internal submersible load cell measures vertical load and torque while eliminating error from confining pressure variation and ram friction.

Flexibility in system loading capacity, specimen size, and applied pressures ensures the system is configured to suit testing and budgetary requirements of the user.

Options available to include local displacement transducers for small strain measurement, and dynamic cell pressure/volume controllers.

Can be used for triaxial tests.

TECHNICAL SPECIFICATION:		
Operating Frequency:	5Hz	5Hz
Load Range:	10kN	20kN
Axial/Torque Force Range:	100Nm	200Nm
Pressure Range:	2MPa	2MPa
Sample Size:	100mm OD/60mm ID	100mm OD/60mm ID
Lifting Frame:	As standard	As standard

Optional Extras:		
Unsaturated Testing	Available	
Triaxial Sample Upgrade	50, 70mm	

ROCK SYSTEMS

GDS HAS MANUFACTURED HIGH PRESSURE AUTOMATED TRIAXIAL TESTING SYSTEMS FOR ROCK FOR OVER 25 YEARS. WITH SYSTEMS INSTALLED AT LEADING RESEARCH AND COMMERCIAL INSTITUTES AROUND THE WORLD.

1MN STATIC TRIAXIAL ROCK TESTING SYSTEM



TECHNICAL SPECIFICATION:	OPTIONS:
Load Range:	1MN
Pressure Range:	70MPa
Sample Size:	50mm
Cell Size:	70mm
Optional Extras:	
Acoustic Velocity Transducers	50mm (Max load 400kN)

LARGE AUTOMATED DIRECT SHEAR SYSTEM



TECHNICAL SPECIFICATION:	OPTIONS:
Load Range:	100kN Axial, 100kN Shear
Max Speed:	0.1mm/s
Sample Size:	Max 150mm (Circular)
Optional Extras:	
Soil Sample Set	300 x 300mm (Square) 300mm (Circular)

BACK PRESSURE SHEARBOX (HIGH PRESSURE)



TECHNICAL SPECIFICATION:	OPTIONS:
Load Range:	100kN Axial 75kN Shear
Pressure Range:	10MPa
Sample Size:	50 or 100mm (Circular) x 50mm high, 40mm (Square) x 40mm high

ROCK SYSTEMS

HYDRAULIC LOAD FRAMES

KEY FEATURES

Systems are configured to the customer's test specifications and budgets.

Stiff load frames to avoid backlash and spring effects.

Automated system control and data acquisition via GDSLAB software.

Load frames with electro-mechanical or hydraulic actuation available.



HLF100 TECHNICAL SPECIFICATION:	OPTIONS:
Load Range:	100kN
Pressure Range:	2, 4, 20MPa
Sample Size:	70, 100, 150mm
Optional Extras:	
Heating Only	Ambient to 60°C

HLF250 TECHNICAL SPECIFICATION:	OPTIONS:
Load Range:	250kN
Pressure Range:	1MPa
Sample Size:	300mm
Lifting Arrangement:	Included
Optional Extras:	
Sample Table Assembly	Available

PRESSURE/VOLUME CONTROLLERS



ENTERPRISE LEVEL PRESSURE VOLUME CONTROLLER
ELDPC

General purpose water pressure source and volume change gauge. 1MPa pressure rating and 200cm³ volumetric capacity. Typically used in commercial testing, teaching applications and lower cost systems.



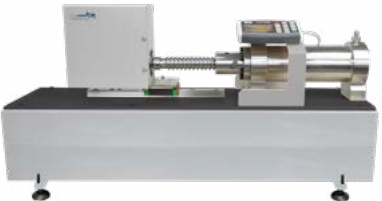
STANDARD PRESSURE VOLUME CONTROLLER
STDDPC

Our mid-range water pressure source and volume change gauge. 1, 2, 3 & 4MPa pressure ratings available all with 200cm³ volumetric capacity. Can also use DigiRFM interface. Typically used in advanced commercial testing and research systems.



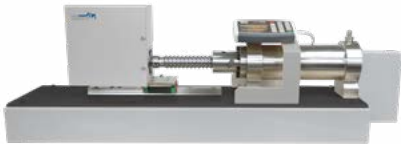
ADVANCED PRESSURE VOLUME CONTROLLER
ADVDPG

Advanced water pressure source and volume change gauge. 1, 2, 3, & 4MPa pressure ratings available in 200cm³ model or 1 & 2MPa available with 1000cm³ volumetric capacity. Compatible with DigiRFM interface. Typically used in research systems. (1000cc shown).



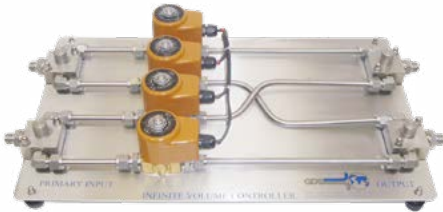
HIGH PRESSURE VOLUME CONTROLLER
HPDPC

Advanced water pressure source and volume change gauge. 8, 10, 16, 20, 32, 64 & 70MPa ratings available with 200cm³ volumetric capacity. Compatible with DigiRFM interface. Typically used in offshore or rock mechanics applications.



HIGH PRESSURE / VOLUME CONTROLLER (CORROSIVE FLUID)
HPDPC-H

Similar to the HPDPC but with upgraded materials for all wetted components. Typically used when unknown contaminants may be present or when actions of corrosive materials are being investigated. Made of Hastelloy, the controller is available in 32 or 64MPa pressure ratings.



INFINITE VOLUME CONTROLLER
GDSIVC

Compatible with all GDS controllers up to 4MPa this automatic switching unit is used to provide seamless pressure or volumetric flow between an external reservoir and test station. Two similar controllers are used with this system. High pressure 64MPa version also available.



PNEUMATIC PRESSURE CONTROLLER (1MPa OR 2MPa)
GDSPPC

An economical computer controlled air pressure regulator, available in 1MPa or 2MPa ranges and in single or dual output. This can be used from a compressor fed airline or compressed gas cylinder. Typically used in unsaturated testing and in low cost dynamic applications.



HIGH PRESSURE GASEOUS CONTROLLER
DCHGP

This high pressure gaseous controller has a capacity up to 20MPa. This allows gases to be used in much higher pressure systems than in traditional systems. It is typically used where confining fluid viscosity is of importance such as in resonant column testing. Available in single or dual output.



DIGITAL REMOTE FEEDBACK MODULE
DIGIRFM

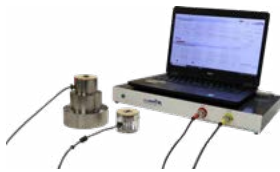
DigiRFM's can provide an additional single channel of data acquisition. They can be added to standard and advanced controllers (not compatible with Enterprise) and GDS' range of load frames. The DigiRFM's can also be used to provide closed loop communication with GDS load cells and displacement transducers.

TRANSDUCERS AND LOAD CELLS



HORIZONTAL BENDER ELEMENTS
GDSBES-H

Enables measurement of the maximum shear modulus of soil. Can perform S- and P- wave testing with the same elements. Vertical and horizontally propagating elements available.



VERTICAL BENDER ELEMENTS
GDSBES-V

Use of horizontally propagating elements, in addition to axial elements, allows the user to quantify the degree of stiffness anisotropy present in the soil specimen.



ACOUSTIC VELOCITY
GDSAV

Systems to measure the P- and S- Wave velocities within a sample. AV sensors are generally used where pressures and load exceed those where bender elements can be used.



LVDT LOCAL STRAIN TRANSDUCERS
LVDT

Mounted locally on a specimen to measure small strain vertical and radial deformations. Working pressures of up to 3.5MPa or 100MPa version for use in non-conducting oil.



HALL EFFECT LOCAL STRAIN TRANSDUCERS
GDSHE

Mounted locally on a specimen to measure small strain vertical and radial deformations. Lightweight to minimise specimen disturbance. Working pressures up to 2MPa.



MID PLANE PORE PRESSURE AND MID PLANE SUCTION PROBES
GDSM4P

Provides direct measurement of the pore pressure or suction at the specimen mid-height. Available for 1.5 or 3.5MPa.



ULTRA LOW RANGE WET-WET PRESSURE TRANSDUCER
ULR-WW

Calibrated to directly measure specimen volume change during saturated and/or unsaturated soil testing. Requires use of HKUST internal cell. Range \pm 1kPa.



INTERNAL SUBMERSIBLE LOAD CELL
GDSISLC

Unique two part submersible load cells, designed for measuring compressive loads ranging from 0.5, 1, 2, 4, 5, 8, 10, 12, 16, 20, 25, 32, 40, 50 & 64kN. Unaffected by variations in confining pressure.



EXTERNAL S-BEAM LOAD CELL
S-BEAM

Mounted externally to provide measurements of force. Available in 1, 2, 4, 5, 10, 16, 25, 50, 64 or 100kN ranges.



FORCE ACTUATOR
GDSFA

General purpose loading system with continuous readout of force and displacement. 10kN, 25kN & 50kN options are available.



BENDER ELEMENT CORE HOLDER
GDSBCH

Facilitates an aligned measurement of S- and P- wave through an unconfined cylindrical soil specimen.



TOXIC INTERFACE UNIT
GDSTIU

Provides a separation chamber with a free flowing bellows rolling diaphragm, to prevent toxic/contaminated fluids and vapours from entering the aluminium base of the cell or pressure/volume controller.

YOUR CUSTOMER JOURNEY...

LEARN ABOUT GDS

WEBSITE

The GDS website gives you all the information you need to learn about the products and make an informed decision, plus helpful content to aid your buying journey.



CASE STUDIES & WHITE PAPERS

On the GDS website you can find case studies and white papers, these provide further information on testing capabilities and product use.



LEARNING ZONE

Located on the GDS website, here you can find videos, technical papers, product applications, and more.



SPEAK TO AN ACCOUNT MANAGER

EXHIBITION

In 2023 we attended 10 exhibitions around the world, and we have many more planned in 2024. Why not attend a conference we are exhibiting at and speak to a team member about your laboratory needs.



CUSTOMER VISIT

We can arrange for your team to visit the GDS factory in Hook, Hampshire, U.K. Take the tour, see our apparatus close-up and discuss your testing requirements in person.



CONTACT US

Call us and discuss further options and testing capabilities with your dedicated account manager. They can help guide you through our product range and discuss which products will best suit your laboratory requirements.



MANUFACTURING & INSTALLATION

DESIGN & DEVELOPMENT

All GDS apparatus is designed by our in-house team of engineers, they are responsible for all design stages of the manufacturing process. This allows GDS to be responsive to the market and adapt to our customer's needs within an evolving industry.



QUALITY ASSURANCE

GDS are ISO9001:2015 compliant, meaning we are at an international standard for all systems, processes, and procedures. All apparatus undertakes comprehensive quality assurance checks by one of our geotechnical system engineers before leaving the factory in Hook, U.K.



INSTALLATION & TRAINING

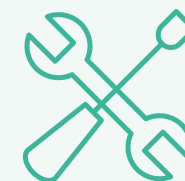
When required, installations are carried out by qualified GDS engineers. GDS also provide comprehensive on-site product training. The training is often carried out by the same engineer who quality assured the product, so they are familiar with any upgrades or modifications to the system.



AFTER SALES SUPPORT

TECHNICAL SUPPORT

Using GDS technical support website, allows you to log any queries and access them with ease. You will be also be able to access useful product helpsheets and frequently asked support questions.



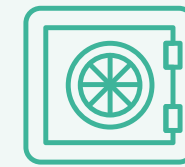
CUSTOMER PROMISE

We actively use our customer promise to make sure you, our customer, have the best experience with GDS that we can provide. Whether you are a first-time or a long-term customer, we aim to give each user a high quality GDS customer experience.



EXTENDED WARRANTY

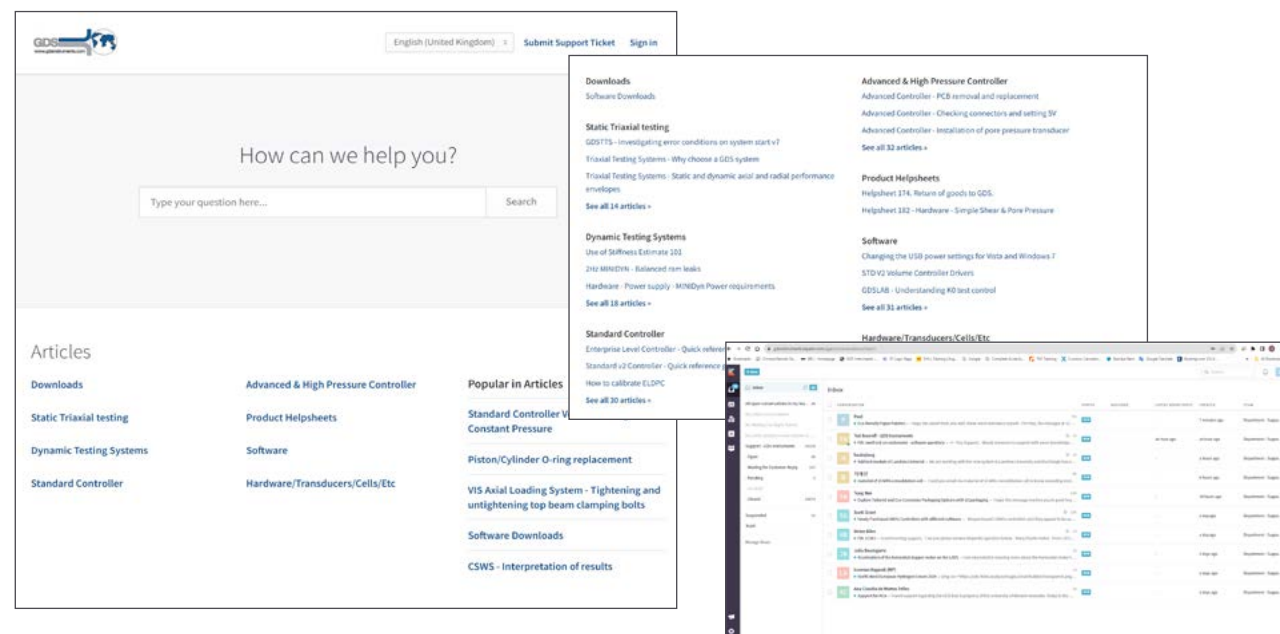
All GDS systems are covered by a 12 month manufacturer's warranty. In addition to the standard warranty, GDS offers comprehensive extended warranties for an additional 12, 24 or 36 months.



TECHNICAL SUPPORT

GDS has its own dedicated online support centre, to provide information on technical questions and log any support queries. The technical support provided by GDS is the responsibility of the Geotechnical Systems Engineers, with installations and quality assurance making up the other areas of their roles. Their product and practical experience mean they have the knowledge to assist with even the most complicated issues. All queries are logged on our dedicated support website (<https://gdsinstruments.kayako.com/en-gb>).

- Centralising all enquiries through the support site enables GDS to enhance its service by:
- Categorising questions and assigning them to the most appropriate engineer.
 - Central location for enquiry information (images etc).
 - Providing regular, trackable updates on the status of enquiries to provide peace of mind.
 - Ensuring faster response times for quicker issue resolution by managing staff workloads.



GDS CUSTOMER PROMISE



- V** **VERSATILE:** Our passion for R&D enables us to apply our geotechnical knowledge to our bespoke systems.
- A** **ACCOMPLISHED:** Being a leader in the sector, our high standards ensure that our quality and knowledge speaks for itself.
- L** **LIFETIME:** With our LIFETIME SUPPORT, once a customer, always a customer.
- U** **UNDERSTANDING:** Our customers can trust us to be approachable, professional and to be treated with care and respect.
- E** **EXPECTATIONS:** Working in close partnership with our customers we strive to exceed expectations.

INDUSTRY TRENDS

SUSTAINABILITY

In recent years there has been an increase in the attention given to sustainable practices within the wider geotechnical industry. The global focus on our environmental consciousness has heightened with multiple new offshore wind farms being built every year. At GDS we are proud to be contributing to these sustainable practices, with our apparatus being used at the forefront of soil testing analysis. Not only do we see these systems being bought for commercial laboratories, but also in research institutes where MSc and PhD students hone their skills into incredible findings, for the benefit of our planet's future.



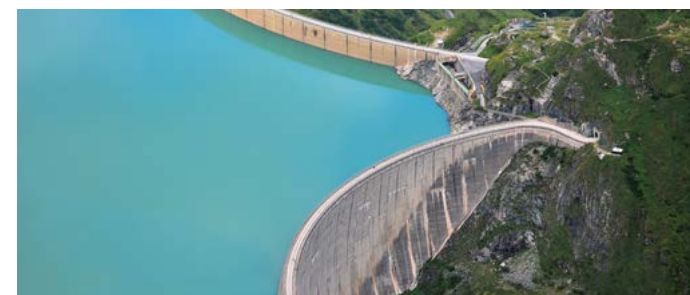
RESILIENCE AND RISK MITIGATION

As environmental projects become the forefront of industry practice, adaptive design in climate resilience has become an important factor. With the development of new infrastructure across all continents, mitigating the risks associated with environmental changes has heightened. However, a lack of skilled professionals in some regions could be a potential threat to the execution of projects and their sustainability. New technologies have been assisting this change providing greater capacity to generate and analyse accurate data. GDS have continued the trend with the release of "GDSLAB v2024", a new data acquisition and logging software. The software was written with our customers to create a better user experience and utilising the latest technologies.



INFRASTRUCTURE DEVELOPMENT

Whilst sustainability is at the forefront of everyone's media and news feed, the geotechnical industry is highly focused on infrastructure development projects. We are seeing an increased demand for geotechnical services in emerging economies, particularly in areas of rapid urbanisation and infrastructure development. In South America, Africa, and underdeveloped areas of Asia, there has been an increase in interest for GDS' laboratory testing apparatus. Up to 30% of all GDS products are transported to these developing locations, with the laboratories in these areas dedicating a large amount of their research to help preserve communities and aid governmental action. We are proud to work with a large range of laboratories from commercial and research backgrounds, providing them with advanced apparatus and technical support.



GDS' FUTURE

GDS Instruments is no different than other companies who are evolving to face an ever-adapting industry landscape with the after-effects of the COVID-19 pandemic. We are focusing on working closer with our agents to mitigate risks in the industry and in our own business practices. We have closely collaborated with our commercial and research laboratories to make sure we are consistently going above and beyond our market competition to provide the best products and services in the geotechnical laboratory systems industry. As a company, we consistently work towards gaining international industry standards for testing types to ensure we are the provider of choice for advanced laboratory apparatus.



LABORATORY SYSTEMS FOR SOIL & ROCK

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