



50kN Load Frame (GDSL50)

Overview: The GDS 50kN laboratory load frame can be used via standalone keypad operation or via USB interface for computer control. This load frame has enhanced position/velocity accuracy and direct load/local position control by DigiRFM upgrade while still fulfilling the role of a traditional velocity controlled 50kN load frame.

The GDSL50 includes a large built-in OLED graphic display that shows current speed, displacement, DigiRFM values and can be used for stand-alone programming.

Standards:

BS1377:7

BS1377:8

ASTM D-2850

ASTM D-4767

ISO17892-8,9

NFP94 070

Key Features:

Benefits to the User:

Displacement control:	Traditional load frames only operate in speed/velocity control mode. All GDS load frames can also operate in displacement control mode via their keypad or software. This function is very useful in setting up or breaking down a test, and provides higher fidelity control than a velocity only frame can achieve.
Status indicator:	Directional & velocity indicator LEDs show at a glance how the frame is moving. A bright status light under the display indicates frame status and is visible from afar when indicating any error.
Safety loop:	While under computer control the USB connection status is continually monitored by the load frame. If a break in communication is detected the load frame will stop automatically to ensure no damage to sample or transducers can occur. This has saved many test specimens as well as test equipment when brief powercuts occur or laptop batteries have run out of charge during a test.
Digi RFM Upgrades	Up to 2 DigiRFM units can be added to the loadframe to enhance its performance by giving high rate closed loop control within the frame. The most typical use cases for this are: <ol style="list-style-type: none"> 1. To connect a loadcell or local displacement transducer for direct control – this allows for more aggressive tracking of load/displacement. 2. To provide a self-contained system with no other acquisition for UCS or oedometer tests where load and local displacement are logged via the frame.

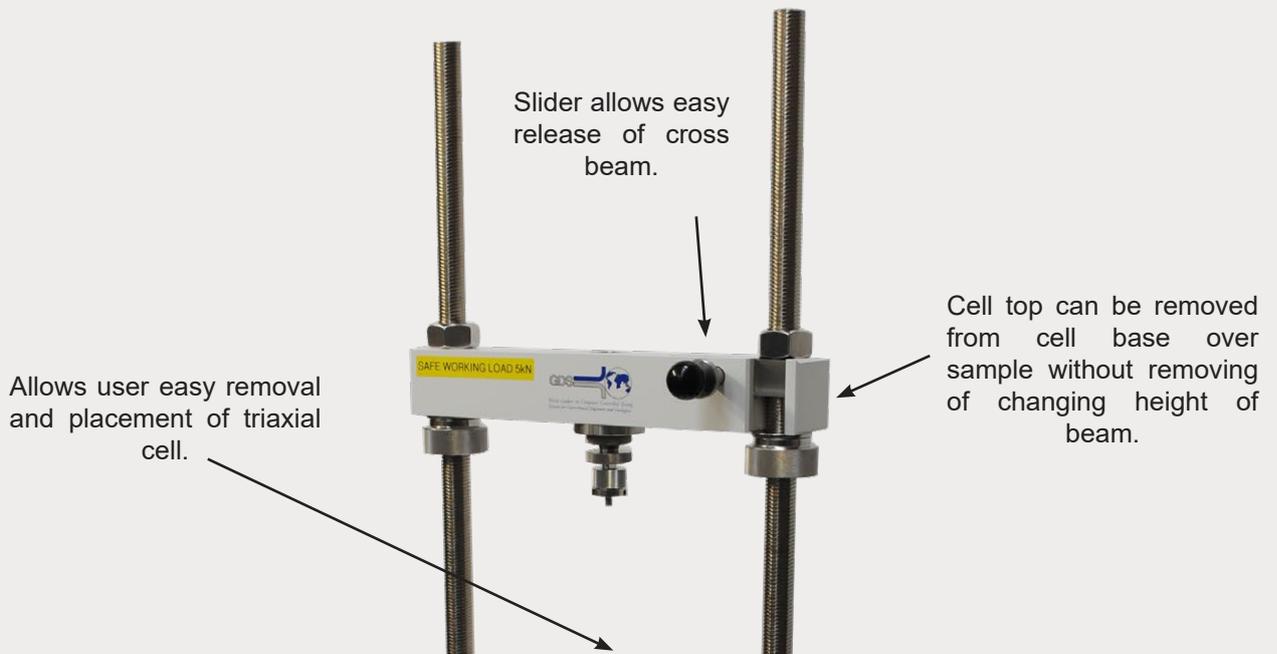
Tests that can be Performed: Triaxial (Quick Undrained, UU, CU, CD), Stress Path, K0, Unsaturated Triaxial, Stepped loading, CRS, CBR and UCS.

Technical Specification:

Maximum Load (Compression) (kN):	50
Maximum Load (Tension) (kN):	15 using upper ball connection, 50 with upgraded connection
Speed range(mm/min):	0.00001 to 89.9999
Travel (mm):	100
Platen Diameter (mm):	158
Communication port:	USB
Horizontal daylight (mm):	380
Vertical daylight (mm):	800 (crossbeam to platen)
Weight (kg):	95
Dimensions (mm):	475 x 360 x 1430 (w x d x h)
Power:	90-240V, 50/60Hz, single phase

Upgrade Options: Drip tray and swing arms available. DigiRFMs for additional data acquisition and/or closed loop control from other local transducers.

Swinging Arm



Drip Tray

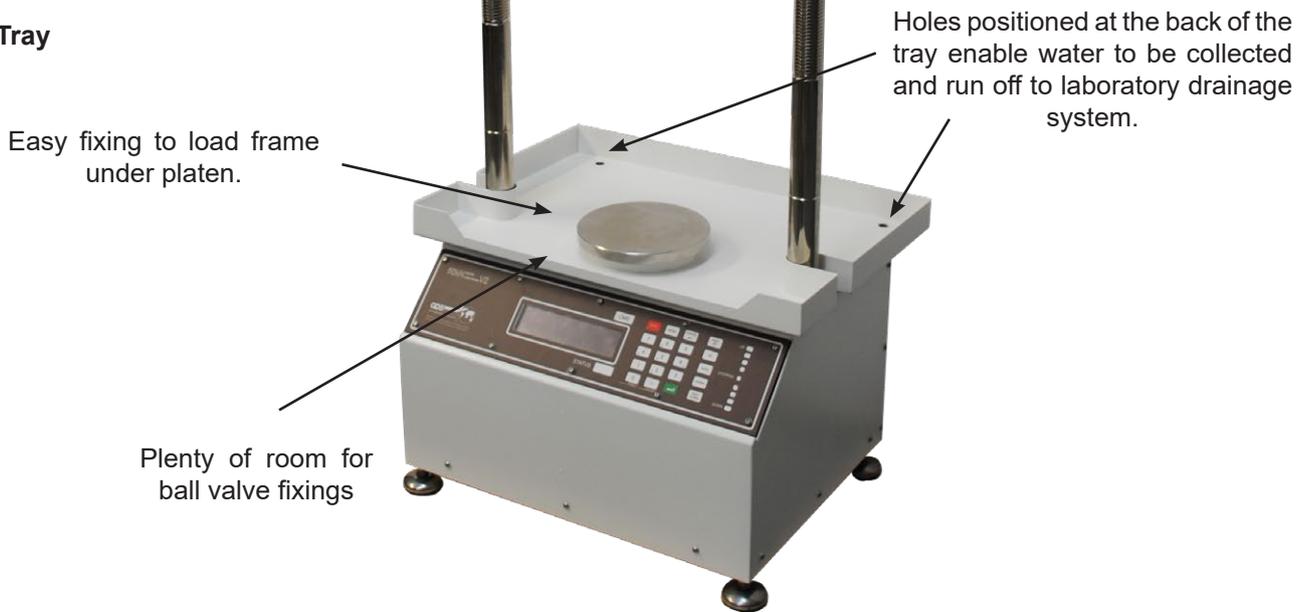


Fig 1. Shows the swinging arm and drip tray options on a GDSL50.

Optional closed loop feedback control using Digital Remote Feedback Module (Digi RFM)

Open Loop (no RFM)

Typically, velocity controlled load frames are used with no transducer feedback as the velocity is set and considered to be correct (open loop).

Closed Loop (no RFM) see Fig 3

Using GDSLAB control and data acquisition software the load frame can be controlled under a closed loop via the software (the software reads the appropriate transducer from a data acquisition device, and the software sends commands to the load frame to achieve particular targets for that external transducer). This can work extremely well and allows a velocity controlled load frame to successfully be used for accurate strain controlled tests where the measurement of strain is closer to the sample thus removing system compliance, or load/stress controlled tests as routine.

Closed Loop (RFM) see Fig 4

The next logical level is to create closed loop control of either displacement or load (or both) within the load frame. GDS has developed this into an elegantly engineered enhancement which is the Remote Feedback Module (RFM). The RFM (see Fig 2.) enables the output of a number of external transducers to be measured and displayed by the load frame and via software. It also enables the load frame platen to be controlled directly from the feedback of the external transducer.

Fig 2. DigiRFM attached to the back of the load frame and connects via the CAN bus/



Benefits of the DigiRFM include:-

- Precision when regulating from the external transducer due to closed loop control.
- Closed loop control ensures a faster more direct response to load/displacement targets.
- Load control and/or displacement control can be achieved on the load frame in stand-alone mode without the requirement for software.

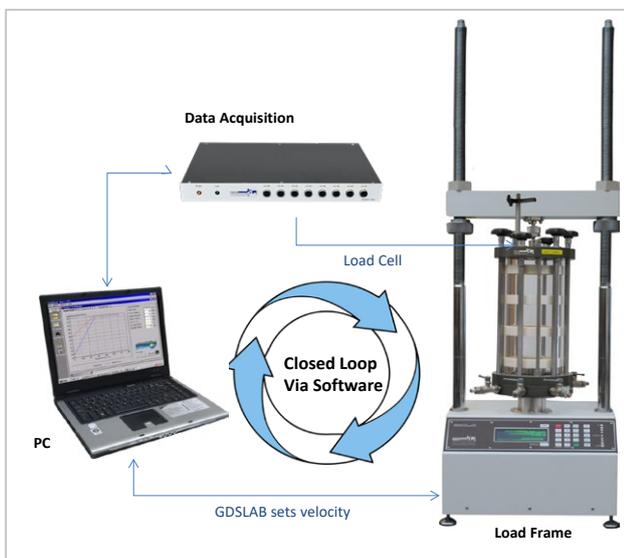


Fig 3. Closed-loop control via software feedback.

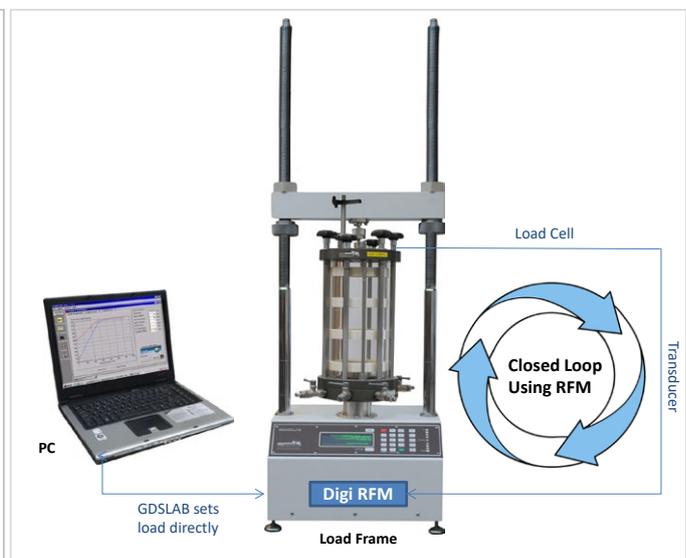


Fig 4. Closed-loop control via RFM feedback.

Why Buy GDS?

GDS have supplied equipment to over 86% of the world's top 50 Universities:

GDS have supplied equipment to over 86% of the world's top 50 Universities who specialise in Civil & Structural Engineering, according to the "QS World University Ranking 2020" report.

GDS also work with many commercial laboratories including BGC Canada, Fugro, GEO, Geolabs, Geoteko, Golder Associates, Inpijn Blokpoel, Klohn Crippen, MEG Consulting, Multiconsult, Statens Vegvesen, NGI, Ramboll, Russell Geotechnical Innovations Ltd, SA Geolabs, SGS, Wiertsema and Partners to name a few.

**TOP
50**

Would you recommend GDS equipment to your colleague, friend or associate?

100% of our customers answered "YES"

Results from our post-delivery survey asked customers for feedback on their delivery, installation (if applicable), supporting documentation, apparatus and overall satisfaction with GDS. The survey ran for two years.



Made in the UK:

All GDS products are designed, manufactured and assembled in the UK at our offices in Hook. All products are quality assured before they are dispatched.

GDS are an ISO9001:2015 accredited company. The scope of this certificate applies to the approved quality administration systems relating to the "Manufacture of Laboratory and Field Testing Equipment".

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BRITISH
INNOVATION**



Extended Warranties:

All GDS apparatus are covered by a 12 month manufacturers warranty. In addition to the standard warranty, GDS offer comprehensive extended warranties for 12, 24 and 36 months, for peace of mind against any repairs in the future. The extended warranties can be purchased at any time during the first 12 months of ownership.



GDS Training & Installation:

All installations & training are carried out by qualified engineers. A GDS engineer is assigned to each order throughout the sales process. They will quality assure the apparatus prior to shipping, if installation has been purchased, install the apparatus on the customers site & provide the training.



Technical Support:

GDS understand the need for ongoing after sales support, so much so that they have their own dedicated customer support centre. Alongside their support centre GDS use a variety of additional support methods including remote PC support, product helpsheets, video tutorials, email and telephone support.

