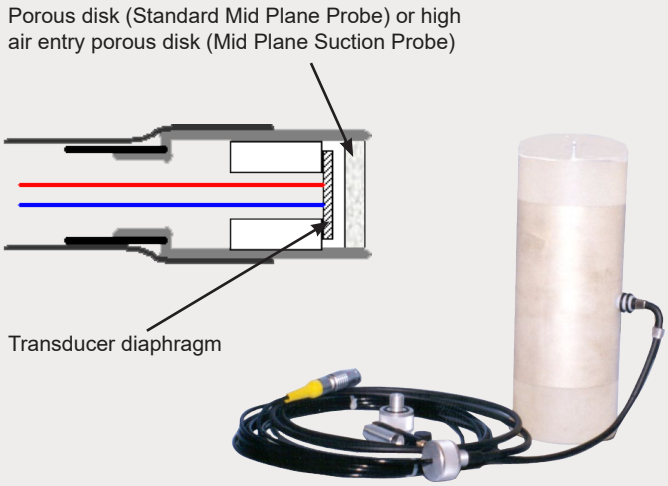

Mid Plane Pore Pressure and Mid Plane Suction Probes (GDSM4P)

Overview: The Mid Plane Pore Pressure Probe provides a direct measurement of the specimen pore pressure at the mid height of the sample. The Mid Plane Suction Probe is a similar device but uses a high air entry porous disk in the tip to enable suction measurements to be made for unsaturated soil testing.

Mid-plane pore pressure measurement is preferred to measurements made in the area of the base pedestal. The reason for this is due to the minimal volume change of pore fluid required to activate the transducer diaphragm compared to that in a base pedestal transducer.

Measurement of Matric Suction in Unsaturated Soil

One of the two stress state variables for unsaturated soils, is matric suction. The GDS suction probe provides a direct measurement of pore water pressure for the measurement of matric suction. This type of direct measurement is preferred in unsaturated soil tests as changes in pore water pressures are more rapidly reflected. When the tip is fully saturated, the response of the suction probe is generally less than 3 seconds, even for relatively large changes in pore water pressure.

The principal of making suction measurements using a suction probe is based on the equilibrium between the pore water pressure in the soil and the pore water pressure in the water compartment of the transducer behind the porous tip. Before equilibrium is attained, water flows from the water compartment into the soil, or vice versa. In an unsaturated soil specimen, negative pore water pressure causes the flow of water from the water compartment into the soil. On the other hand, in a saturated soil specimen, positive pore water pressure causes the flow of water from the soil into the water compartment.

Importance of stone and sensor range selection for Suction Measurement:

Our GDSM4P suction model is based on the design developed by Take & Bolton (2003). Their research focused on developing a tensiometer particularly suitable for suction ranges below 400kPa. A combination of a 15 Bar sensor, a 5 Bar High Air Entry Porous Disk with a specific saturation procedure delivered accurate and highly responsive results during their trials. Their research supports our decision to include sensors of higher pressure rates and stones of higher entry values. This allows our users to achieve higher saturation pressures and theoretically sustain higher suctions. However, it is important to mention that a higher Air Entry Value involves a more demanding saturation process as much as a higher pressure rating for the sensor involves less accuracy and resolution for measurements at the lower end of readings. Please consider these factors when selecting the specifications of the transducer.

References: Take, W. A. and Bolton, M. D. (2003) Tensiometer saturation and the reliable measurement of soil suction, Géotechnique, 53 (2), pp. 159-172.

Mid Plane Pore Pressure Probe:

Pressure Ranges:	Accuracy (%FSO):	Thermal Zero Shift:	Tip Air Entry Value:
1500kPa:	±0.5%	±0.1% FSO/5°C	0.5 bar ceramic
3500kPa:	±0.5%	±0.1% FSO/5°C	0.5 bar ceramic

Mid Plane Suction Probe:

Pressure Ranges:	Accuracy (%FSO):	Thermal Zero Shift:	Tip Air Entry Value:
1500kPa:	±0.5%	±0.1% FSO/5°C	5 bar or 15 bar ceramic
3500kPa:	±0.5%	±0.1% FSO/5°C	5 bar or 15 bar ceramic

Why Buy GDS?

GDS have supplied equipment to over 75% of the world's top 50 Universities:

GDS have supplied equipment to over 75% of the world's top 50 Universities who specialise in Civil & Structural Engineering, according to the "QS World University Ranking 2017" report.

GDS also work with many commercial laboratories including BGC Canada, Fugro, GEO, Geolabs, Geoteko, Golder Associates, Inpijn Blokpoel, Klonn 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".

40 YEARS OF 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.

2 YEAR EXTENDED WARRANTY | 1 YEAR EXTENDED WARRANTY | 3 YEAR EXTENDED WARRANTY

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.