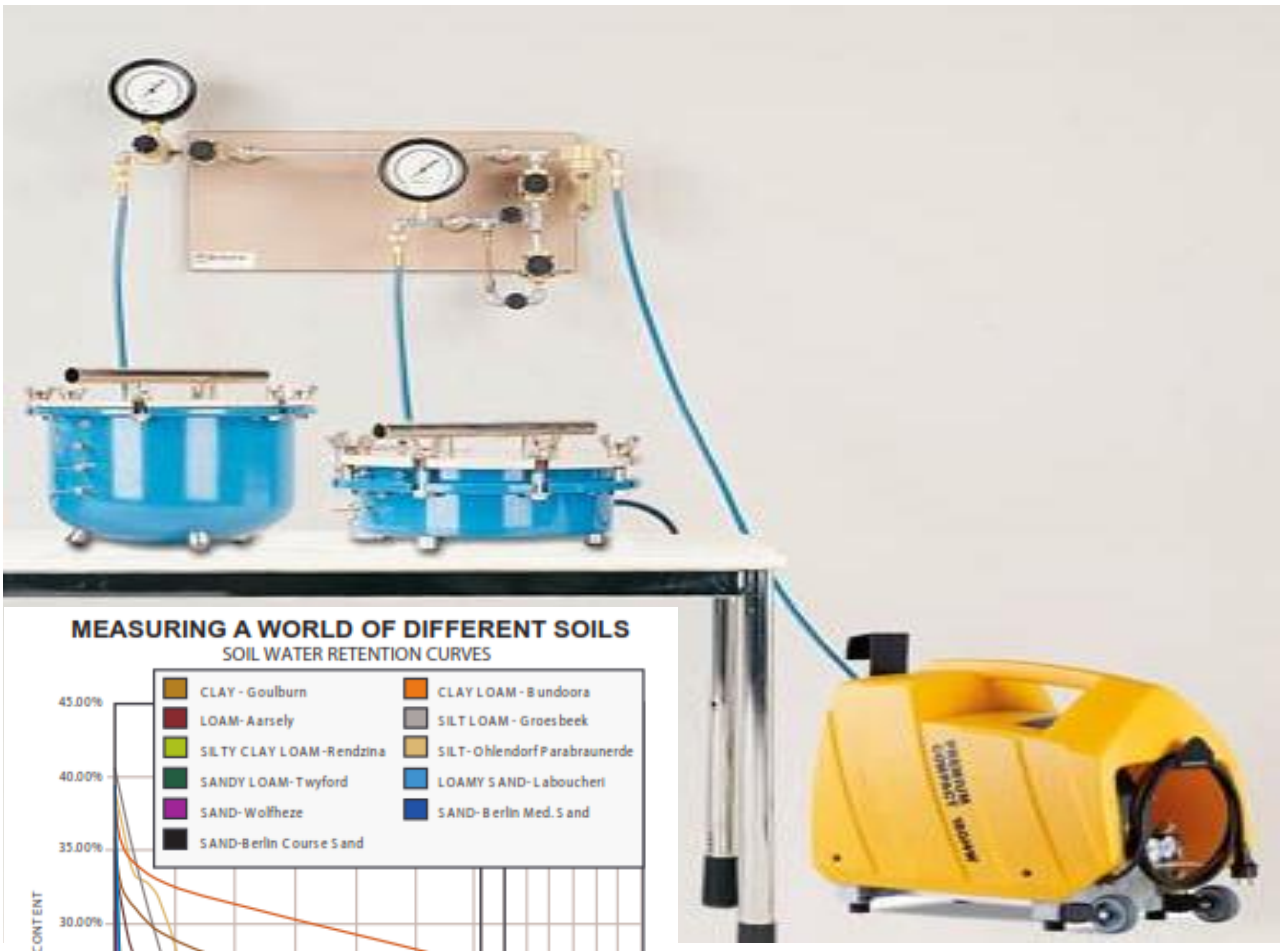
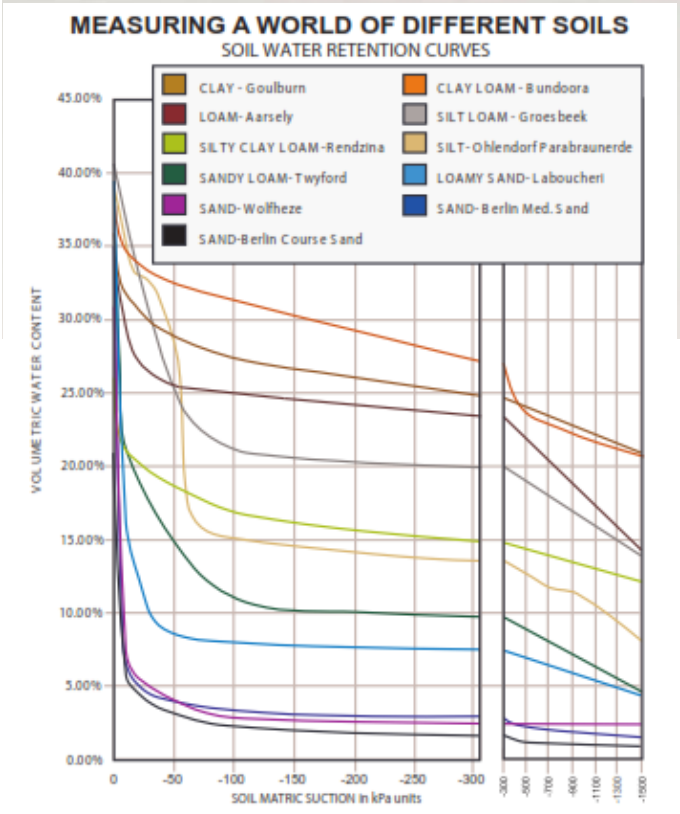
Pressure Plate Apparatus for water retention studies





The characterization of soils according their moisture holding capacities and moisture flow retention characteristics is essential for the development of effective irrigation and plant stress management for the commercial growing of food crops. This is made possible using the pressure plate apparatus
This is the quintessential basic laboratory equipment needed for scientific determine soil water release / retention curves. Knowing the stress / water relationships directly effects yield and quality of the crop.

Being able to predict and manage crop stresses, using pressure plates, will determine vitality and vigor. All this comes from knowing when and how to irrigate to achieve optimum yields and crop grades, all this using minimal water and pump time.

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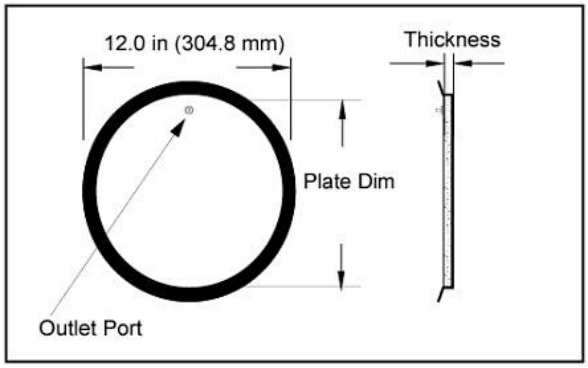
The Pressure plate apparatus Comprises of the following units:

- Pressure Plate Ceramics/ Membranes
- Extractors
- Control systems/ Manifold
- Air supply/ Compressor
- Accessories

Standard Configuration of Pressure Plate Apparatus

Item	Quantity
Manifold To Run 5 Bar & 15 Bar Extractors Together Or 1 By 1	1 unit
Compressor, 230 Volts, 50 Hz/60 Hz	1 unit
Extractor Pressure Plate Cell, 1/2 Bar High Flow	1 unit
Extractor Pressure Plate Cell, 1 Bar Standard	1 unit
Extractor Pressure Plate Cell, 3 Bar Standard	1 unit
Extractor Pressure Plate Cell, 5 Bar Standard	1 unit
Extractor Pressure Plate Cell, 15 Bar Standard	1 unit
Connecting Hose, 60" Length, For 15 Bar Extractors	1 unit
Connecting Hose, 60" Length, For 5 Bar Extractors	1 unit
Soil Sample Retaining Rings, One Dozen	4 unit
5 Bar Pressure Plate Extractor	1 unit
15 Bar Ceramic Plate Extractor With Operating Hinge	1 unit

Pressure Plate Ceramics/ Membranes



Pressure Plate Cells have been the de-facto standard for the measurement of soil moisture retention studies worldwide. The development of these ceramic in the 1950's led to the now universally accepted method for measurement of multiple soil samples extracted on a single reusable ceramic plate. Researchers dedication to Pressure plates is understandable. Each pressure plate is carefully hand fabricated from fine porous ceramic plate materials and covered with a heavy duty neoprene skirting that provides for water holding capabilities used in pressure plate extractors.

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Extractors

The Pressure Membrane Extractor incoporates disposable cellulose membranes in the extraction of water from soil samples over a pressure range of 0 to 15 bars. A compression diaphragm in the lid holds the samples in firm contact with the membrane, ensuring proper hydraulic contact needed for the extraction process.

A common problem in soils research is determining water retention curves for various soil types. The problem is that many soils around the world that provide excellent plant growth potentials are "shrink - swell" soils. This applies to non soil experiments where the material under study "curls" as it dries. The model. The cellulose membrane material is a pure cellulose and has a pore size of 24 angstrom. The cellulose membrane can withstand over 10,000 kPa bubbling pressure.

The Extractor can test up to 6, 2" diameter x 0.39 " (2.5 x 1 cm) high samples and operates in the 0 to 1500 kPa (0 to 15 bar) soil suction.

The 15 Bar Pressure Plate Extractor, is used to analyze the water-holding characteristics of soil samples throughout the pressure range of interest in most agricultural applications.

Water relationships are among the most important physical phenomena that affects agricultural production or structural characteristics of soils. The extractor is used in laboratory study of these many physical relationships, as well as the extraction of soil solution for chemical analysis.

The Extractor now for 4 pressure plate cells. The 15 bar (1500 kPa) Pressure Plate Extractor is the flagship of moisture retention analysis in the 0 to 15 bar range (theoretical wilting point for most plants). Designed to hold up to 48 – 0.4" (1 cm) height samples, 24 – 1.2" (3 cm) height core samples or 12 – 2.4" (6 cm) height cores. Choose plate cells from 0.5 bar, 1.0 bar, 1.0 bar High Flow, 3.0, 5.0 and 15 bars to suit your needs.

Specifications:
15 BAR PRESSURE PLATE EXTRACTOR ONLY
18" L X 17" W X 14" H (45.72 cm X 43.18 cm X 35.56 cm),Weight:94 lbs (43 kgs)

For many, their interests are concerned in the optimum plant growth range of 0-5 Bar soil suction range. For engineers it's the wet zone where soil behavior becomes unstable. **The 5 Bar Pressure Plate Extractor** is the choice when there's a need for careful and precise measurement of water retention, prepping for stability tests or pore water extraction. This versatile Pressure Extractor also finds application in the calibration of various moisture-measuring equipment assuring that the readings match reality of soil moisture by volume or soil water tension. Easy to clean the epoxy coated interior and exterior complete with safety relief valve.

The 5 Bar Pressure Plate Extractor allows analysis of the water-holding characteristics of soil samples in the 0 to 5 bar pressure range. The pressure vessel is 9" (22 cm) deep and has an inside diameter of 12" (30 cm). Up to 4 ceramic plates can be accommodated at one time, allowing approximately 48 each 2-1/4"(5.7 cm) diameter samples to be analyzed simultaneously.

Specifications:
5 BAR PRESSURE PLATE EXTRACTOR ONLY
16" L X 16" W X 16" H (40.64 cm X 40.64 cm X 40.64 cm), Weight:46 lbs (21 kgs)

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Control systems/ Manifold

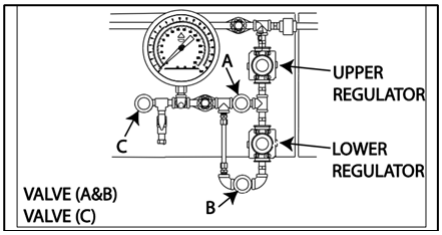
Pressure Manifolds are designed for regulating and monitoring the pressure supplied to pressure plate extractors. It comprises of an air filter, pressure regulators, control valves and Test gauges. The manifolds are mounted by standoffs to a thick baseboard suitable for mounting on a laboratory wall.

PRESSURE REGULATING SYSTEM (MANIFOLD) TO RUN MEMBRANE EXTRACTOR

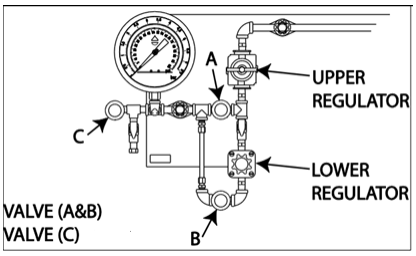
Designed for use with the Pressure Membrane Extractor, output pressure can be regulated from 10 to 250 psi (0.7 to 16 bars). Double regulation is provided in the 5 to 150 psi (0.3 to 10 bars) range. Readout pressure gauge is of range from 0 to 300 psi (0 to 20 bars), in 2 psi and 0.2 bar intervals.

PRESSURE REGULATING SYSTEM (MANIFOLD) TO RUN 15 BAR EXTRACTOR

Designed for use with the 15 Bar Pressure Plate Extractor. Output pressure can be regulated from 10 to 250 psi (0.7 to 16 bars). Double regulation is provided in the 5 to 150 psi (0.3 to 10 bars) range. Readout pressure gauge is graduated from 0 to 300 psi (0 to 20 bars), in 2 psi and 0.2 bar intervals.



PRESSURE REGULATING SYSTEM (MANIFOLD) TO RUN 5 BAR EXTRACTOR



Precise low-pressure control manifold designed for use with the 5 Bar Pressure Plate Extractor. Output pressure can be regulated from 3 to 80 psi (0.2 to 4 bars). Double regulation is provided. Readout pressure gauge is graduated from 0 to 100 psi (0 to 6.8 bars) in 2 psi and 0.1 bar intervals.

Combination manifolds

The Pressure plate apparatus Combi manifold combines the functions of the 5 and 15 bar manifolds and allows operation of the 15 Bar Pressure Plate Extractor and the 5 Bar Pressure Plate Extractor.

The manifold combines the individual manifolds and allows operation of the 15 Bar Pressure Plate Extractor and the 5 Bar Pressure Plate Extractor. Output pressure can be regulated from 10 to 250 psi (0.7 to 16 bars) and from 1 to 75 psi range (0.1 to 5 bars). Double regulation is provided. The 300 psi readout gauge is graduated from 0 to 300 psi (0 to 20 bars), in 2 psi and 0.2 bar intervals. The 100 psi readout digital gauge is graduated from 2 psi and .1 bar intervals.

The 3 in 1 manifold combines the Pressure plate apparatus Combi and Membrane extractor manifolds and allows operation of the Pressure Membrane Extractor, the 15 Bar Pressure Plate Extractor, and the 5 Bar Pressure Plate Extractor.

Air supply/ Compressor

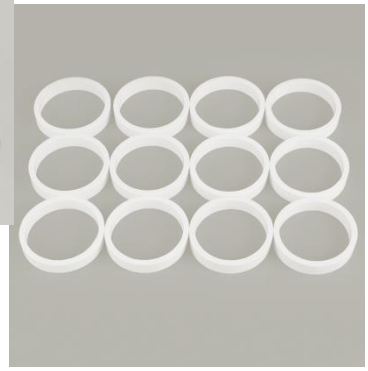
We supply compressors 20 Bar capacity Air Compressor for running Laboratory Setups which are air cooled, oil lubricated reciprocating compressors, working on the single stage principle of compression.

Meant for use as a pressure supply for Pressure Extractors, comes with preset safety relief valves, pressure limit switches and shutoffs for excessive pressures or electrical conditions.

If using Compressed gas cylinders for running experiments, a Tank Regulator is available.

Accessories

Optional Hinge for use with the 15 BAR Extractors. Hinge attaches to the back of the extractor so the user does not have to lift lid, but can simply lift and open the extractor with ease.



For information on the whole array of accessories available for the Pressure plate Apparatus, do contact us.

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