

Environmental Testing

The Environmental Division at ELE International supplies environmental monitoring equipment for Industry, Education, and Government Institutions. This Division was launched in 1983, and the product range has developed to provide a comprehensive range of high quality instruments for environmental monitoring professionals.

One of ELE's best known environmental products is the Paqualab Water Quality Test Kit, a portable modular system enabling physical, chemical and microbiological analysis of water to be performed.

ELE's main areas of environmental interest focus on:

- ▶ Survey
- ▶ Soils
- ▶ Water
- ▶ Meteorology
- ▶ Crop Science
- ▶ General Laboratory Equipment

Physical Survey

Aerial Survey

Pocket Stereoscope

Product Code: 500-010



- 2x magnification with plastic frame.
- Complete with storage bag.

Mirror Stereoscope

Product Code: 500-012



- 3x binocular eyepiece.
- 1.2x magnification eyepiece.
- Parallax wedge and carry case.

Surveying Equipment

Binoculars, 10 x 50

Product Code: 500-190



- Suited to twilight and night observations.
- Supplied complete with carrying case.

Altimeter/Barometer

Product Code: 500-112



- Monitors barometric pressure, temperature and altitude.
- Built in stopwatch.

Electronic Digital Theodolite

Product Code: 500-175



- Supplied complete with instruction manual, protective cover, carrying case and a heavy duty, aluminium tripod.

Specifications

Magnification	30x
Clear Objective Aperture (mm)	45
Shortest Focusing Distance (mm)	1.4
Accuracy	2 mgon (10 inches)
Min Reading	1 mgon (5')

Automatic Level

Product Code: 500-170



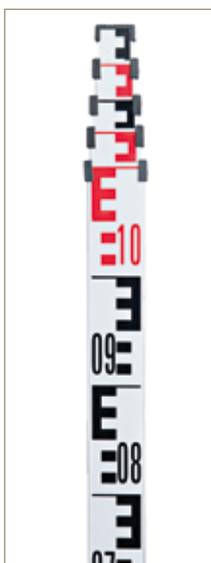
- Supplied complete with instruction manual, protective cover, carrying case and heavy duty, aluminium tripod.

Specifications

Magnification	32x
Objective Dia (mm)	38
Shortest Focusing Distance (mm)	0.3
Working Range of Compensator	±15'
Levelling Accuracy	±0.5
Circular Bubble	8'/2 mm
Horizontal Circle	400 gon/360°
Dust/Waster Protection	IP 54
Weight (kg)	1.5

Levelling Staff, 5 metres

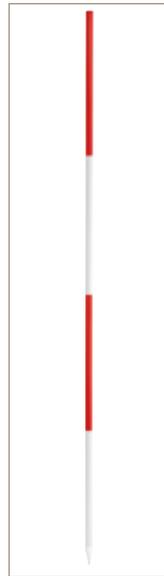
Product Code: 500-145



- Aluminium 5 section telescopic, complete with carry bag.

Ranging Pole

Product Code: 500-146



- 2 metres ranging pole, aluminium.
- 2 sections with red/white markings.
- Pack of 6 in a bag.

Ranging Pole Tripod

Product Code: 500-150



- Tripod in bag.

Land Chain

Product Code: 500-154

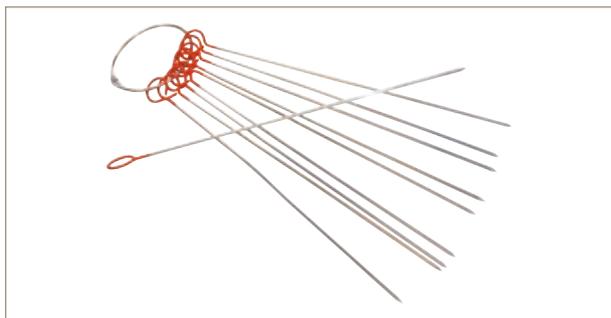


- 30 metres, black enamelled.

Physical Survey

Land Chain Arrows

Product Code: 500-156



► Pack of 10.

Clinometer

Product Code: 500-106



A hand-held precision instrument for determining heights, slopes and vertical angles. The direct sighting device has the peak scale reading visible through the eye piece. Percentage and degree scales permit quick calculation of object heights using a known base line distance. Used by foresters, geologists and surveyors throughout the world.

Sighting Compass

Product Code: 500-108



With inclinometer. A folding pocket instrument with sighting mirror in the lid. Used for defining map locations and measuring geological equipment.

Land Measuring Wheel

Product Code: 500-118



► For rough terrain.

Double Prismatic Square

Product Code: 500-126



► Case with plumb bob.

Abney Level

Product Code: 500-132



► 133 mm Abney level with belt looped leather case.

Digital Planimeter

Product Code: 500-140



- ▶ Lightweight device with an 8 digit LCD display capacity.
- ▶ Measures in cm², metres², km², inches², ft² and acres.
- ▶ Solid plastic carry case supplied.

Specifications

Accuracy	± 0.2%
Measuring Range (mm)	3000 x 300 (120 x 12 inches)
Power	Internal NiCad or AC adaptor
Operating Hours	30 hours (After 15 hours recharge)
Dimensions (mm)	150 x 240 x 39
Weight (g)	650

Fast Speed Tape

Product Code: 500-162



- ▶ 50 metres fast speed tape on open frame winder.

Laser Distance Meter

Product Code 500-116



Soils

Soil Sampling

One Piece Augers

For increased versatility and convenience it may be preferred to have sectional augers. When joined with a bayonet and sleeve connection, the resulting unit has a working length of 1.25 metres. If required the augers may be further extended by either 0.5 or 1 metre increments.

Edelman Auger



One piece model, length 1.25 metres. Suitable for use in most soft soil types. 3 cutting head sizes available.

Specifications

Product Code	Head Size/Dia (mm)	Head Type / Suitability	Weight (kg)
510-078	50	Edelman Auger	1.5
510-080	70	Edelman Auger	1.5
510-082	100	Edelman Auger	2

Riverside Auger (Two Sizes)



One piece model, length 1.25 metres. This auger is used in hard stiff soils above and below ground water level. It is also satisfactory in most fine gravel soils. 2 cutting head sizes available.

Specifications

Product Code	Head Size/Dia (mm)	Head Type / Suitability	Weight (kg)
510-086	70	Riverside Auger	2

Auger for Stony Ground

Product Code: 510-092



One piece model, length 1.25 metres with 70 mm diameter cutting head. Used when the Riverside auger is inadequate to deal with the larger sizes of gravel and stones.

Grass Plot Sampler (Small)

Product Code: 510-106



For collecting samples from the top 50 mm of the turf.

Further Information:

Diameter 23 mm, operating length 50 mm, total length 600 mm.

Gouge Auger

Product Code: 510-100



One piece model with 30 mm diameter cutting head. Operating length 1 metre.

Root Auger

Product Code: 510-104



One piece model with 80 mm diameter cutting head. Sample length 150 mm.

Sectional Augers

Spiral Auger

Product Code: 510-119



40 mm diameter cutting head. 600 mm long with bayonet connector. For use with 510-109, 510-110 and 510-111.

Auger for Stony Ground

Product Code: 510-118



70 mm diameter cutting head, 600 mm long with bayonet connector. For use with 510-109, 510-110 and 510-111.

Edelman Clay Auger (Two Sizes)



One piece head and rod, approximately 600 mm long with bayonet connector. For use with 510-109.

Specifications

Product Code	Head Size/Dia (mm)	Head Type / Suitability	Weight (kg)
510-112	70	Edelman Clay Auger	0.9
510-113	100	Edelman Clay Auger	1

Edelman Sand Auger

Product Code: 510-117



70 mm diameter cutting head, approximately 600 mm long with bayonet connector. For use with 510-109.

Auger Handles & Extension Rods

Auger Handle & Down-Tube Assembly

Product Code: 510-109



600 mm long with bayonet connector and coupling sleeve.

Auger Extension Rod (Two Sizes)



With coupling sleeve.

Specifications

Product Code	Length (m)	Weight (kg)
510-110	1	2
510-111	0.5	0.8

Edelman Combination Auger



One piece head and rod, approximately 600 mm long with bayonet connector. For use with 510-109.

Specifications

Product Code	Head Size/Dia (mm)	Weight (kg)
510-114	40	0.7
510-115	70	0.85
510-116	100	1.2

Soils

Auger Sets (Two Sizes)



For augering all types of soil above and below the water table to a depth of 5 or 7 metres. Supplied complete in an aluminium transport case with padlock.

Specifications

Product Code	Kit Depth (m)	Case Dimensions (mm)	Weight (kg)
510-124	5	1080 x 230 x 140	33
510-128	7	1120 x 390 x 320	150

Peat Auger Set

Product Code: 510-120



For sampling to a depth of 10 metres. Supplied complete in an aluminium transport case.

Specifications

Kit Depth (m)	Case Dimensions (mm)	Weight (kg)
10	1080 x 230 x 140	32

Sampling Kit with Water Retentivity Rings

Product Code: 510-144



This kit contains the necessary items to sample above and below the water table and comprises the handle and beating head, Edelman auger, a Riverside auger, a closed ring auger and spare cutting shoe, a hammering head and guide cylinder for the rings, a nylon headed hammer, 3 extension rods 500 mm long, 24 numbered sample rings with end caps in an aluminium case, a bent spatula, brush and a carrying bag for all the equipment.

Sample Rings 50 mm Diameter 24 Supplied with Case

Product Code: 510-146



Supplied in a special synthetic case which is strong and resistant against humidity and heat. 50 mm inside diameter, 53 mm outside diameter, 51 mm long. Includes 48 plastic end covers.

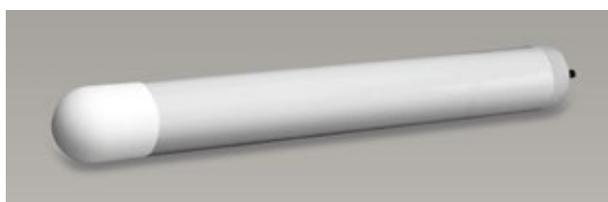
Soils

ELE International are exclusive UK distributors for Soil Moisture Equipment Corp. in a number of countries around the world. See our range of Soil Moisture products in the sub-categories below.

Soil Water Samplers

Samples water from saturated and unsaturated soils. This range of soil water samplers can be installed either above or below the water table. They are designed to collect soil water, which can then be extracted from the device and taken to the laboratory for analysis. The sampler is installed into a hole made with a screw or bucket auger. A negative pressure of up to 85 centibars is applied to the tube using a hand pump. Water enters the sampler through the porous ceramic cup at the end of the sampler. Water samples can be collected as required utilising the universal extraction kit (450-066). The rate of water accumulation depends on the soil type and moisture content. Nitrate leaching from fertiliser applications can be monitored simply and effectively using these instruments. Please note the 450-066 Universal extraction kit is required for the operation of soil water samplers. Each soil water sampler has; plastic tube, ceramic cup, stopper assembly, neoprene tubing and pinch clamp.

Soil Water Samplers (Various Sizes)



- Easy installation.
- Requires no maintenance.
- Ideal for nitrate monitoring.
- 3 sampler sizes available.

Specifications

Product Code: 450-060	
Sampler Length (mm)	300
Outer Dia (mm)	48
Weight (kg)	0.26
Dimensions (mm)	305 x 127 x 127
Product Code: 450-062	
Sampler Length (mm)	600
Outer Dia (mm)	48
Weight (kg)	0.38
Dimensions (mm)	609 x 127 x 127
Product Code: 450-064	
Sampler Length (mm)	914
Outer Dia (mm)	48
Weight (kg)	0.48
Dimensions (mm)	914 x 127 x 127

Spares/Consumables:

Nylon Tube 7.5 metres (450-060/10)

Stopper Assembly including neoprene tubing and pinch clamp (450-060/12)

Accessories:

Universal Extraction Kit (450-066)

Universal Extraction Kit

Product Code: 450-066



This kit is designed for use with Soil Water Samplers 450-060, 450-062, 460-064 by withdrawing collected samples from near-surface or column soil water samplers. The Extraction Kit comes with a 50 ml syringe, 3.16 inches outside diameter tubing, 3.32 inches outside diameter nylon tubing and luer connectors, a vacuum dial gauge, capable of developing vacuums to 800 kPa. Rugged portable design for prolonged use in the field. Field repairable valve and pump pad pressures to +50 PSI, vacuums to 0.8 bars suction. All parts are Brass, Stainless Steel or rugged plastic for long service.

Soils

Soil Analysis

Soil Test Kits

No weighing required. Safe and accurate to use. Consistency of test results. No storage or shipping hazards. Our range of soil test kits enables people without access to normal laboratory facilities to obtain accurate information about the nutrient status of a soil sample. The tests are based on a system which uses reagents compressed into stable tablet form. The tests are conducted without the intricacies of weighing out chemicals or dispensing liquid reagents. Applications include soil classification, identification of nutrient deficiencies, routine soil analysis, field and educational uses.

Soil pH & Lime Requirement Test Kit

Product Code: 513-012



The Soil pH and Lime Requirement Kit includes reagents for 50 tests.

Further Information:

Includes a soil scoop, de-ion pack, crush/stir rod and cuvette brush.

Soil Analysis Test Kit For Major Nutrients

Product Code: 513-016



Test Kit includes

- Soil pH Test
- Lime Requirement Test
- Nitrate Nitrogen Test
- Phosphate Phosphorous Test
- Potassium Test

Further Information:

Includes a soil scoop, de-ion pack, soil tester for pH, nitrogen and phosphorous. Double tube assembly for potassium.

Soil Management Test Kit

Product Code: 513-018



This test kit measures soil pH, conductivity, N/P/K, magnesium and calcium using simple visual test methods. It is durable, designed for field use and includes:

Pocket conductivity sensor for soil conductivity and soluble salt testing for areas of salinisation concern. Provided in a shoulder bag and hard case containing all components required to commence soil testing immediately.

Visual Testing Hardware: Soil tester for soil pH. Soil tester for nitrogen (N), phosphorous (P) and magnesium (Mg). Double tube assembly for potassium (K). Tablet count container for calcium (Ca).

Electrochemical Testing Hardware:

Pocket conductivity sensor for soil conductivity and salinity including calibration standard.

Reagents:

Complete reagent set for 50 tests for soil pH, lime requirement, nitrogen, phosphorous, potassium, magnesium and calcium including extraction and test reagents.

Sample Preparation/Accessories:

De-ion pack, soil sample bags, soil scoops, filter funnels and paper, sample container/dilution tubes, syringe, crush/stir rods, cuvette brush.

Test Kit includes

- Soil pH Test
- Lime Requirement Test
- Conductivity Test
- Nitrate Nitrogen Test
- Phosphate Phosphorous Test
- Potassium Test
- Magnesium Test
- Calcium Test

Soil Management Test Kit For Principal Nutrients

Product Code: 513-019



For 50 tests of each of the principal nutrients.

Test Kit includes

Soil pH Test
Lime Requirement Test
Conductivity Test
Salinity Test
Nitrate Nitrogen Test
Phosphate Phosphorous Test
Potassium Test
Magnesium Test
Calcium Test

Further Information:

Includes soil scoop, de-ion pack, multi parameter pocket sensor.

Soil Analysis Test Kit

Product Code: 513-024



Test Kit includes

Soil pH Test
Lime Requirement Test
Conductivity Test
Salinity Test
Nitrate Nitrogen Test
Phosphate Phosphorous Test
Potassium Test
Magnesium Test
Calcium Test
Aluminium Test
Ammonia Test
Copper Test
Iron Test
Manganese Test
Sulphur Test

Soils

Soil Water

Permeability

Double Ring Infiltrometer Kit

Product Code: 514-440



A comprehensive kit used for the determination of infiltration capacity above the water table. Allows synchronous determination of infiltration capacity in triplicate. The components are manufactured from high-quality materials for exhaustive field use.

Kit includes	Qty
Double Ring Infiltrometers	3
Inner Ring 280 mm, Outer Ring 530 mm Dia	1
Inner Ring 300 mm, Outer Ring 550 mm Dia	1
Inner Ring 320 mm, Outer Ring 570 mm Dia	1
Driving Plate with Handle for Inner and Outer Rings	1
Adjustable Measuring Bridges	3
Floats with Measuring Rods	3
Nylon Headed Hammer	1
Stop Watch (0-30 sec x 0.1 sec accuracy)	1

Specifications

Measured Parameters	Infiltration Ratio
Reading Accuracy (mm)	1
Registration Type	Manual
Package Size (mm)	650 x 650 x 500
Weight (kg)	56

Spares/Consumables:

Soft Headed Mallet (29-5020)

Stopwatch (81-0521)

Accessories:

Club Hammer (29-5040)

Double Ring Infiltrometer

Product Code: 514-444

With measuring bridge and float.

Infiltration Ring Driving Plate

Product Code: 514-446

With handle for placing. For hammering in infiltration rings with 280 to 570 mm diameter.

Driven Wellpoint Piezometer Tip

Product Code: 514-380



Comprising a porous plastic element. 19 mm diameter x 300 mm long, in a perforated steel tube with hardened steel driving point. Terminates in a 3/4 inch BSP pocket.

Soil Moisture

Soil Moisture Meter

Product Code: 514-126



This instrument is rugged, hand-held for field derivation of soil moisture. Buriable soil moisture blocks allow moisture levels to be measured throughout the soil profile. It is easy to use and battery operated. This instrument is the ideal companion for the new, slim design moisture blocks, which are placed in the soil and leads connected in turn to the meter. The measured resistance of the block, in ohms, is converted to a corresponding reading between 0 and 100 on an empirical scale. In practical terms this empirical range covers the soil suction range 0.2 to 15 bar, and using the calibration graphs of soil moisture content (dry weight percentage) against soil suction in bars, the soil moisture content may be determined. In practical situations, resistance blocks are often placed at various depths in the soil to monitor soil moisture content profiles across the root zone. Experience will determine the optimum depth of placement depending on the particular soil type. The soil moisture blocks are designed for use with this particular meter and give a uniform and quick response, made possible by their slim design (20 mm diameter).

Specifications

Measuring Range	0-100 empirical range corresponds to 0.2-15 bar
Power Requirements	1 x 9 V battery (supplied)
Weight (kg)	0.90

Accessories:

Product Code	Product	Lead Length (m)
514-128	Soil Moisture Block	0.9
514-130	Soil Moisture Block	2.7
514-132	Soil Moisture Block	4.5

Soils

TDR

Trase Soil Moisture Analyser

Product Code: 514-160/01



- Measures volumetric water content of soil.
- Time Domain Reflectometry yields an unsurpassed level of accuracy.
- Direct readout of volumetric water content.
- Rugged, waterproof and portable.
- Graph display for in-depth soil physics studies.

The Trase system uses Time Domain Reflectometry (TDR) to measure the volumetric water content of soils and other moist media. Waveguides for depth measurement ranging from 150 mm to 700 mm are available. The volumetric moisture content is displayed, and the graph of the TDR pulse can also be displayed. The moisture reading and the graph of the TDR pulse can be tagged for identification and stored for later analysis. The Trase system can be programmed to auto log moisture readings. All stored data can be transferred via an RS 232 port to an external printer or computer for further processing. The Trase is designed for rugged field use and is environmentally sealed to prevent damage to sensitive electronic components.

Specifications

Dimensions (mm)	540 x 440 x 380
Measuring Range	0-100% volumetric moisture content
Measuring Accuracy	+/- 2% FS or better
Operating Temperature	-5°C to +45°C Autologging without use of display
Power Supply (supplied)	2 x 7 amp hr, sealed electrolyte batteries
Recharge Time (hrs)	12
Auxillary Power Input	18-24 V AC or DC, 1.5 amp, for battery recharge or operation from mains
Operating Temperature	0°C to 45°C Do not store below -20°C
Memory	256 Kb, capacity for 180 graphs/5600 readings
Graphic Display	128 x 256 dot, black lit LCD
Weight (kilos)	11.92

Spares/Consumables:

Buriable Wave Guide (514-166)

Accessories:

20 metre Cable Extension (514-168)

Alignment Block (514-169)

Insertion Tool (514-167)

Wave Guide 150 mm (514-160/10)

Wave Guide 300 mm (514-162)

Wave Guide 600 mm (514-164)

Wave Guide 700 mm (514-165)

Buriable Wave Guide

Product Code: 514-166



2 x 200 mm long parallel Stainless Steel tubes with 2 metre coaxial lead.

MiniTrase Kit with Bluetooth & Android

Product Code: 514-190/01



The MiniTrase uses Time Domain Reflectometry (TDR) to measure instantaneously the volumetric water content of soils and other moist media. A variety of connectors and waveguides for depth measurements ranging from 150 mm to 700 mm are available, and can be used in a portable manner or permanently installed for periodic moisture monitoring. The volumetric moisture content is displayed on the Android tablet, and the graph of the TDR pulse can also be tagged for identification and stored for later viewing and analysis on the tablet or a PC. All stored data can be transferred either by hotsyncing the Android to your PC or via an RS 232 port connection from the MiniTrase to the PC. The MiniTrase unit is designed for rugged field use and is environmentally sealed to prevent damage to sensitive electronic components. Kit includes: Multiplexer card, cables, chargers, Android tablet, and software.

Specifications	
Dimensions (mm)	540 x 440 x 380
Measuring Range	0-100% volumetric moisture content
Measuring Accuracy	+/- 2% FS or better
Operating Temperature	0° to +45°C
Power Supply (supplied)	1.7 amp hr, sealed NiCad battery
Recharge Time (hrs)	12
Auxiliary Power Input	18 V DC, 2.2 amp AC
Connecting Ports	BNC (waveguide connection) DB-9 Serial (data transfer) DB-15 Multiplexer (multiplexing) Power (8-pin DIN)
Memory	256 Kb, capacity for 180 graphs/5610 readings
Measuring Pulse Amplitude	1.6 volt peak
Sampling Resolution	10 picoseconds
Hardware	5 slot card cage: 3 system boards, 1 optional slot, and multiplexing board
Weight (kilos)	7

Kit includes	Qty
MiniTrase with Multiplexer Card	1
Android Tablet	1
Flash Drive with WinTrase and Android to PC Software	1
WinTrase Software on CD	1
Standard Waveguide Connector	1
Set of 150 mm long Waveguides	1
Internal Bluetooth Module	1
Connector Cable from MiniTrase to PC RS 232	1
Power Supply Unit for MiniTrase	1
MiniTrase Backpack	1
Set MiniTrase Operating Instructions on Mini CD	1
Set of 3-Letter Code Instructions	1

Soils

Tensiometers

Tensiometers are used to measure soil tension, which is directly related to the amount of soil moisture available to plants. Capillarity is established between the waterfilled tensiometers and the soil water via a ceramic cup or tip. As soil water tension increases, water is drawn by suction from the tensiometer and the negative pressure created, which is representative of soil tension, may be read from a vacuum gauge.

Quickdraw Soil Moisture Probes (Two Sizes)

Product Codes: 514-010, 514-012



The world's only portable, fast reading tensiometer. Accurately measures soil water tension. Supplied with coring tool and carrying case. 2 sizes available. The quickdraw soil moisture probe is an accurate, portable, inexpensive means for measuring the moisture available in the soil for plant uptake. The quickdraw probe is ready for immediate use and requires no adjustment or calibration. No batteries are required and its ease of maintenance means that these tensiometers give years of continuous, trouble free service. Used extensively and accepted enthusiastically by farmers, growers, groundsmen and agronomists, world-wide. The coring tool is first used to core an access hole to the desired depth of measurement. The tensiometer is then inserted into the access hole and the ceramic sensing tip is placed in contact with the soil. The Null knob can be used to reach equilibrium and provide a measurement more rapidly.

Specifications

Tensiometer Type	Quickdraw
Product Code: 514-010	
Length (mm)	305
Dimensions L x W x H (mm)	635 x 230 x 230
Weight (kg)	1.04
Product Code: 514-012	
Length (mm)	460
Dimensions L x W x H (mm)	762 x 230 x 230
Weight (kg)	1.31

Spares/Consumables:

Replacement Dial Gauge (514-010/12)

Dial-Type Gauge Tensiometer (Various Sizes)

Product Codes: 514-020, 514-021, 514-022, 514-024



Durable weather and soil resistant tensiometer. Designed for permanent installation. Rapid response. Accurate yet inexpensive, this tensiometer is ideal for long term deployment in both field and greenhouse environments. The tensiometer is easy to install, via the use of the custom insertion tool (514-030), and maintain, with a full range of spares available. Rapid response is ensured by the sensitive 0-100 centibar dial gauge, having a re-calibration facility. For convenience, a range of lengths are available for monitoring at variable depths. Note: For operating these tensiometers, a Service Kit (514-034) is required. The Insertion Tool (514-030) is used to provide a clearance hole and also to maintain existing hole diameter for the tensiometer.

Further Information:

Requires Service Kit (514-034)

Specifications

Tensiometer Type	Dial-Type
Product Code	Length (mm)
514-020	300
514-021	450
514-022	600
514-024	900

Spares/Consumables:

Screw-Top Porous Ceramic Cup with O-Ring Cup Seal (514-020/11)

Vacuum Dial Gauge (514-020/13)

Accessories:

Insertion Tool (514-030)

Service Kit (514-034)

Jet Fill Tensiometer (Various Sizes)

Product Codes: 514-035, 514-036, 514-037, 514-038
514-040, 514-041



The most advanced and sensitive instrument available for the field measurement of soil moisture. The Jet fill range includes patented features for superior accuracy and even faster response time whilst retaining the ease of use, maintenance and durability of its counterparts. At the push of a button, the Jet fill action releases water into the tensiometer body with no disturbance of the surrounding soil. The large volume, detachable water reservoir enables the unit to be left in place for several months. The recalibrator-style gauge permits zero-point adjustments for research applications.

- Advanced, sensitive tensiometer.
- Patented Jet fill system.
- High accuracy.
- Fast response.
- 6 length options available.

Further Information:

Requires Service Kit (514-034)

Specifications	
Tensiometer Type	Jet Fill
Product Code	Length (mm)
514-035	152
514-036	300
514-037	457
514-038	609
514-040	914
514-041	1220

Accessories:

Insertion Tool (514-030)

Service Kit (514-034)

Tensiometer Extension Tube (514-042)

Tensiometer Service Kit

Product Code: 514-034



This kit is designed to service and maintain soil moisture tensiometers. Kit includes a vacuum hand pump, 455 ml natural colour plastic bottle, rubber washer, 3 mm outside diameter nylon tubing, spout/cap assembly, herbicide/ algaecide additive and 12 monthly chart forms.

Specifications

Weight (kg)	0.77
Dimensions (mm)	330 x 330 x 170

Tensiometer Spare Parts

Replacement Dial Gauge

Product Code: 514-010/12

Vacuum dial gauge

Product Code: 514-020/13

Insertion Tool

Product Code: 514-030

To provide clearance hole and maintain hole diameter for tensiometers.

Specifications

Length (mm)	1370
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Soils

Soil Physics

Density Measurement

In this method of determining the dry density of in-situ soil, a core-cutter of known volume is driven into the soil by a rammer. The core-cutter is dug out, trimmed and the soil inside weighed and dried for a moisture and density check.

Core-Cutter Apparatus



Sample Ring

Product Code: 530-175

53 mm outside diameter. 50 mm inside diameter. Content 100 cc. Made from Stainless Steel.

Sample Ring Plastic Covers

Product Code: 530-176

For Sample Rings 53 mm. Pack of 2.

Sample Ring Hammering Head

Product Code: 530-178

For Sample Rings 53 mm.

Sample Ring Guide Cylinder

Product Code: 530-179

Penetrometer

Computerised Cone Penetrometer complete with GPS Receiver 128K

Product Code: 516-045



Supplied complete with rechargeable battery, case and 64K memory.

Spares/Consumables:

Spare Cone and Shaft Assembly (516-045/10)

Spare Cone & Shaft Assembly

Product Code: 516-045/10

Pressure Plate Extractors

Used to determine available water capacity, water retentivity, hydraulic conductivity and field capacity. Applications include soil classification and survey, optimisation of irrigation and drainage, calibration of soil water and measuring apparatus for field use. The pressure plate apparatus is used to determine soil water retention and suctions greater than 0.4 bar. The apparatus consists of strongly built metal chambers containing one or more ceramic plates onto which uniform soil samples are placed. Having attained maximum moisture retention (field capacity) the samples within the cells are then subjected to controlled positive air pressures and water is gradually removed. By careful control of pressure, the various equilibrium conditions of pressure and soil water tension or suction are obtained. The air pressure is provided either from a compressor, compressed air bottle or nitrogen bottle, but must always be routed through a manifold having pressure regulators and gauges. ELE can supply three types of pressure plate extraction systems which cover the pressure range 0-15 bar.

Pressure Plate Extractor 5 Bar

Product Code: 532-100



Specifications	
Capacity	4 pressure plate cells (Up to 48 samples)
Pressure	0-15 bar (75 psi)
Closure	6 bolts with wing nuts; O-ring seal on lid
Support Clips	Stainless Steel, adjustable
Outflow	4 tube assemblies with 3 plug bolts; screw into side wall
Dimensions (mm)	300 dia x 220 depth
Weight (kg)	18.6

Spares/Consumables:

- Hose Manifold to 15 Bar Extractor (532-112)
- Hose Manifold to 5 Bar Extractor (532-111)
- O-Ring Lid Seal, Pack of 2 (532-100/10)
- Outflow Tube Assembly with Seal (532-120/14)
- Plug Bolts with Seal (532-120/16)
- Right-angle Outflow Adaptor Kit (532-120/12)

Accessories:

- 1 Bar Pressure Plate Cell (532-104)
- 15 Bar Ceramic Cup (532-124)
- 3 Bar Pressure Plate Cell (532-106)
- 5 Bar Pressure Plate Cell (532-107)
- Electrical Lead-through (532-126)
- Soil Sample Retaining Rings, Pack of 12 (532-108)

Pressure Plate Extractor 15 Bar

Product Code: 532-120



Specifications	
Capacity	4 pressure plate cells (Up to 36 samples)
Pressure	0-15 bar (220 psi)
Closure	8 bolts with wing nuts; O-ring seal on hinged lid
Outflow	5 ports with outlet tubes NPT outlet
For Electrical Leads	1/4 inch (6.45 mm)
Internal Dimensions (mm)	305 dia x 101.6 depth
Weight (kg)	40.4

Spares/Consumables:

- Hose Manifold to 15 Bar Extractor (532-112)
- O-Ring Lid Seal, Pack of 2 (532-100/10)
- Outflow Tube Assembly with Seal (532-120/14)
- Plug bolts with Seal (532-120/16)
- Right-angle Outflow Adaptor Kit (532-120/12)

Accessories:

- 1 Bar Pressure Plate Cell (532-104)
- 15 Bar Ceramic Cup (532-124)
- 15 Bar Pressure Plate Cell (532-120/10)
- 3 Bar Pressure Plate Cell (532-106)
- 5 Bar Pressure Plate Cell (532-107)
- Electrical Lead-through (532-126)
- Soil Sample Retaining Rings, Pack of 12 (532-108)

Pressure Plate Cells



Pressure Plate Cell 1 Bar

Product Code: 532-104

Developed from a high fired Alumina body. Extremely porous, inert to most solutions, possesses hard exterior and interior surfaces, and pure white in colour. Recommended for standard differentials under 1 Bar.

Specifications

Pressure (Bar / PSI)	1 / 14.5
Approx. Bubbling Pressure (PSI)	28 - 32
Effective Pore Size (micron)	2.5
Hydraulic Conductivity (cm/sec)	0.0000086
Approx. Porosity	45% by volume
Weight (kg)	1.18

Pressure Plate Cell 5 Bar

Product Code: 532-107

Developed from a complex mixture of ball clays fired to a ceramic body. Good porosity and good hydrologic flow capability. The material is very hard and brownish-white in colour. Not recommended for fluid sampling. Recommended for specialised applications where the pressure differentials are under 5 Bar.

Specifications

Pressure (Bar / PSI)	15 / 217.5
Approx. Bubbling Pressure (PSI)	220
Effective Pore Size (micron)	0.16
Hydraulic Conductivity (cm/sec)	0.00000000259
Approx. Porosity	32% by volume
Weight (kg)	1.05

Pressure Plate Cell 3 Bar

Product Code: 532-106

Developed from a complex mixture of ball clays fired to a ceramic body. Good porosity and good hydrologic flow capability. The material is moderately hard and tannish-white in colour. Not recommended for fluid. Recommended for specialised applications where the pressure differentials are under 3 Bar.

Specifications

Pressure (Bar / PSI)	3 / 43.5
Approx. Bubbling Pressure (PSI)	46 - 70
Effective Pore Size (micron)	0.7
Hydraulic Conductivity (cm/sec)	0.00000025
Approx. Porosity	34% by volume
Weight (kg)	1.18

Pressure Plate Cell 15 Bar

Product Code: 532-120/10

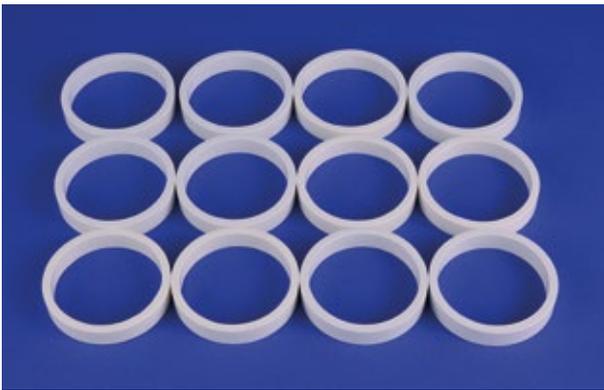
Developed from a proprietary mixture of ball clays fired to a ceramic body. Pinkish-tan in colour, moderately hard and will withstand pressure differentials of 15 Bar.

Specifications

Pressure (Bar / PSI)	15 / 217.5
Approx. Bubbling Pressure (PSI)	220
Effective Pore Size (micron)	0.16
Hydraulic Conductivity (cm/sec)	0.00000000259
Approx. Porosity	32% by volume
Weight (kg)	0.82

Soil Sample Retaining Rings (Pack of 12)

Product Code: 532-108



Low Pressure Manifold

Product Code: 532-110



Required to regulate gas pressure source in pressure plate extraction systems. 3 types available to cover all requirements. Enables precise control of pressure. The 532-110 Pressure Control Manifold is designed for regulating and monitoring the pressure supplied to pressure extractors. It is comprised of an air filter, pressure regulators, control valves, and test gauges. Mounted by standoffs to a 19 mm 3/4 thick baseboard suitable for mounting on a laboratory wall. (The connecting hose, from the manifold to the compressor, is ordered separately). Precise low-pressure control manifold designed for use with the 532-100 5 Bar Pressure Plate Extractor. Output pressure can be regulated from 3 to 60 psi (0.2 to 4 bars). Double regulation is provided. Readout pressure test gauge is graduated from 0 to 60 psi (0 to 4 bars) in 0.2 psi and 0.02 bar intervals.

Specifications

Dimensions (mm)	635 x 482 x 330
Output Pressure Range	3-60 psi (0.2 to 4 bars)
Double Regulation Pressure Range	0-60 psi (0 to 4 bars)
Readout Pressure Test Gauge	0-60 psi (0 to 4 bars)
Weight (kg)	5.6

Extractor Hose Manifolds

Specifications

Product Code	Product	Length (m)
532-111	Hose Manifold to 5 Bar Extractor	1.5
532-112	Hose Manifold to 15 Bar Extractor	1.5

Low to High Pressure Manifold

Product Code: 532-128



Required to regulate gas pressure source in pressure plate extraction systems. 3 types available to cover all requirements. Enables precise control of pressure. Pressure manifolds are an essential component in pressure plate extraction systems. They are required to control the air pressure, from a compressor or compressed air vessel, into the extractor. ELE can supply three different types to cover all requirements; low pressure manifold, for 0.5 bar systems, low to high pressure manifold, for 1-15 bar systems, combination manifold, for both 0-5 and 1-15 bar systems running in parallel. The combination manifold combines both the low pressure and low to high pressure manifolds.

Specifications

Dimensions (mm)	635 x 482 x 330
Output Pressure Range	10 to 250 psi (0.7 to 16 bars)
Double Regulation Pressure Range	5-150 psia (0.3 to 10 bars)
Readout Pressure Test Gauge	0-300 psi (0-20 bars)
Weight (kg)	6.6

Soils

Combination Manifold

Product Code: 532-136



This is required to regulate gas pressure source in pressure plate extraction systems. There are 3 types available to cover all requirements and they enable precise control of pressure. Pressure manifolds are an essential component in pressure plate extraction systems. They are required to control the air pressure, from a compressor or compressed air vessel, into the extractor. ELE can supply three different types to cover all requirements; low pressure manifold, for 0-5 bar systems, low to high pressure manifold, for 1-15 bar systems, combination manifold, for both 0-5 and 1-15 bar systems running in parallel. The combination manifold combines both the low pressure and low to high pressure manifolds.

Specifications

Dimensions (mm)	939 x 452 x 330
Pressure Range	1 to 75 psi
Weight (kg)	12.7

PM Compressor 220-240 V AC, 50 Hz, 1 ph

Product Code: 532-180/01



Ideal for pressure plate extraction systems. Electrically powered and fully accredited. Conforms to EC Directive 98/37/CE. This unit provides compressed air for all ELE's pressure plate apparatus. The compressor is designed for sustained, continuous operation and provides up to 20 bar operating pressure. These compressors are compact and can be transported easily by one person. The compressor consists of a motor and block, which is cast in one piece. This improves heat dissipation considerably. Pistons, piston rings, con-rod, bearings and crank flange have been designed with efficiency and durability in mind. Valves in the compressor block are machined in non-corrosive Stainless Steel and the valve reeds are fitted with heat dissipating lift limiters. This ensures air-tight valves and longer life. The robust electric motor features strengthened bearings and a generously-sized winding which lengthens motor life considerably. The motors start without problem even if the supply voltage is low. Every compressor is filled with special temperature resistant, top performance lubricating fluid. The result is almost no oil carbon deposits on the valves. This compressor must be used in conjunction with a manifold assembly if intended for use in pressure plate extraction systems.

Specifications

Max Gauge Working Pressure	20 bar
Dimensions (mm)	525 x 260 x 430
Air Receiver Capacity (ltrs)	4
Highest Sound Pressure Value	75 dB when tested to DIN 45635
Theoretical Inlet Capacity	160 l/ min
Free Air Delivered	20 bar (at 8 bar working pressure)
No. of Cylinders	1
Oil Capacity (ltrs)	0.13
Oil Top-Up Qty (ltrs)	0.05
Max Mains Fusing (slowblow or gl glass)	16 amp
Max Rated Current	6.2 amp
Rated Power (kW)	1.1
Rated Speed (rpm)	2850
Protection Class	IP54
Max Cut-in Frequency	30 times / hour
Weight (kg)	29.5

Accessories:

Connection Set for 532-180 series (532-182)

Connection Set for 532-180 Series

Product Code: 532-182



Ceramic Cup 15 Bar

Product Code: 532-124



Used to calibrate all types of electrical moisture measuring blocks. The Cup Extractors are (83 mm) 3-1/4 inch overall height by (64 mm) 2-1/2 inch outside diameter and will fit into the 532-120 and 532-100 extractors. Inside cup dimensions are (45 mm) 1-3/4 inch diameter by (51 mm) 2 inch deep.

Specifications

Outer Dia (mm)	61
Inner Dia (mm)	44.7
Outer Height (mm)	81.3
Interior Height (mm)	56.1

Electrical Lead Through

Product Code: 532-126



This Stainless Steel 1/4 NPT fitting leads through 10 electrical wires (26 AWG), connected to the fitting with epoxy seal. Handles up to 300 PSI.

Specifications

Dimensions (mm)	77 x 77 x 25.4
Weight (kg)	0.03

Outflow Tube Assembly with Seal

Product Code: 532-120/14



Plug Bolts with Seal

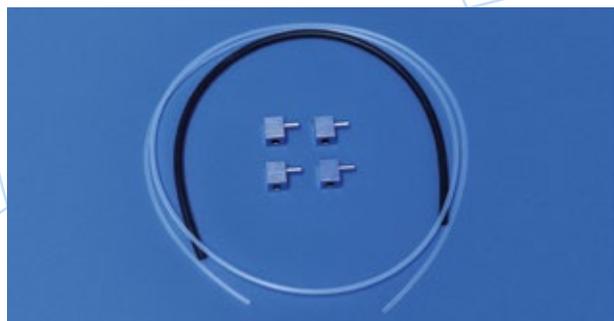
Product Code: 532-120/16



Set of 5.

Right Angle Outflow Adaptor Kit

Product Code: 532-120/12



Set of 4.

Water Level Measurement

Water Level Indicators

Water Level Indicator (Dipmeter) with Audio & Light Indicator

Product Codes: 450-008, 450-010, 450-011, 450-012, 450-013, 450-015, 450-017



Portable, lightweight, simple, reliable and easy to operate. Clear interval markings. Audible and visual water level alert signals. Dipmeters are portable instruments for measuring the water level in wells, standpipes and boreholes. They are simple to use, portable and can be used at many locations. The tape design prevents it from sticking to wet surfaces, such as the lining of a borehole, ensuring accurate measurements. The dipmeters have a Stainless Steel probe fitted to a flexible graduated cable which is wound onto a hand reel containing a transistorised switched circuit, audio (buzzer) and visual (LED light) indicators and a battery. Sensitivity adjustment for variations in water conductivity, non-stretch polyethene coated steel tape. The sensor probe incorporates an insulating gap which acts as a switch, the circuit being completed when contact is made with the water. The cable consists of non-stretch contoured tape with standard steel conductors, graduated at one millimetre intervals. The probe is lowered down a borehole on the end of the tape. When it makes contact with water a buzzer sounds and an LED light comes on, both located on the reel. A reading can then be taken from the tape at the top of the borehole to indicate the water depth. A sensitivity control is accessible inside the hand reel to enable adjustment to suit the water conductivity.

Available Lengths:

See Specifications table below.

Further Information:

Graduated every 10 mm.

Specifications		
Indicator	Audio and visual	
Tape Graduation	m/cm/mm	
Product Code	Tape Length (m)	Weight (kg)
450-008	30	1.7
450-010	50	2.0
450-011	100	3.0
450-012	150	3.8
450-013	200	4.6
450-015	300	7
450-017	500	11.5

Water & Sediment Sampling

Water Samplers

Water samplers fall into 3 main categories: those which collect a heterogeneous sample from, at, or just below the water surface; those which collect a sample from a specific depth in still water; and those which collect a mid-stream sample from a river, stream or irrigation channel. The ELE selection of samplers covers all applications.

Tube Water Sampler

Product Code: 520-200



To collect up to 250 ml. Complete with Stainless Steel measuring tape with grip and eye (20 metres).

Water Trap Sampler

Product Code: 520-215



This sampler is designed to be used in a flowing river or stream at any desired depth to 25 metres. The design is such that the open ends through which the water flows can be simultaneously closed, thus retaining the 1250 ml sample which may then be raised to the surface. The accessories include a hand winch, 25 metres of steel wire and a depth meter. The complete set is contained in a wooden transport case with padlock.

Further Information:

Case dimensions: 700 x 370 x 270 mm

Combination Sampling & Measuring Outfit

Product Code: 521-020



With colour scale, water sampling bottle, plankton net, bottom sampling dredge, sounding lead and calibrated line, 20 metres long marked at 1 and 5 metre intervals, armoured thermometer and Secchi disc (for turbidity check).

Further Information:

Supplied with carrying case.

Flow Measurement

Flow Meters

The method used for measuring the rate of a particular flow is determined by the course rate of flow and by the nature of the flow channel. The ELE range therefore encompasses equipment for measuring the faster flows encountered in rivers and streams, down to the low rates occurring during run-off from field drains.

Miniature Current Flow Meter Wading Set

Product Code: 520-265

For velocities 0.025 up to 5.0 metres/second. Consisting of current meter, revolution counter, wading rods, base and knob, 3 metre wading cable.

Further Information:

Complete with carrying case 850 x 180 x 220 mm.

Specifications

Velocity Range (m/s)	0.025 to 5
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Accessories:

PC Download Cable for Current Flow Meter (520-261)

Water

Large Current Flow Meter Wading Set

Product Code: 520-260



Consisting of current meter, revolution counter, wading rods, base and knob, 3 metre wading cable.

Further Information:

Complete with carrying case 850 x 180 x 220 mm.

Specifications

Velocity Range (m/s)	0.025 to 10
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Gauging Weirs & Flumes

Water is a precious agricultural resource. Careful monitoring is essential to ensure that it is used as effectively as possible. The comprehensive range of equipment offered has been specifically designed to measure or estimate the mass flow in both natural, or man-made, irrigation and drainage channels.

Parshall Flume (Small)

Product Code: 520-360



Having a throat width of 25 mm for flows 0.3 to 5 litres/second.

Further Information:

Overall dimensions 710 x 360 x 270 mm.

Parshall Flume (Large)

Product Code: 520-365



Having a throat width of 50 mm for flows 0.5 to 14 litres/second.

Further Information:

Overall dimensions 860 x 420 x 305 mm.

WSC Flume (Small)

Product Code: 520-375



For flows 0.1 to 2 litres/second.

Further Information:

Overall dimensions 500 x 250 x 175 mm.

WSC Flume (Large)

Product Code: 520-380



For flows 1 to 7.5 litres/second.

Further Information:

Overall dimensions 780 x 350 x 230 mm.

Weir Plate Set with Weir Plate Carrier & Four Interchangeable Weir Plates

Product Code: 520-390



1200 mm wide x 750 mm high x 5 mm thick.

Simple Cut-Throat Flume

Product Code: 520-345



Throat width 100 mm, for measuring flows in the range 0 to 15 litres/second.

Water Quality Testing

Comparator Reagents

Where only a few chemical tests need to be done, and accuracy is less important, it is cost-effective to use a colour comparator. These units can be used to perform the following tests: Ammonia, Chlorine, Iron, Nitrate, Manganese and pH.

Chlorine Starter Pack including Colour Disk & Reagents. Sufficient for 50 Tests.

Product Code: 432-032

Specifications

Measurement Range (mg/l)	0-5.0
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Chlorine Reagent Pack for Comparator. Sufficient for 250 Tests.

Product Code: 432-032/10

Specifications

Measurement Range (mg/l)	0-5.0
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Paqualab Standard Systems

The two Paqualab systems are designed so that all the necessary equipment to determine the physical, chemical and microbiological parameters can be stored in one easily carried case. Results are obtained within 16 hours. The numerical results have precision and reproducibility. The method is simple and economical, enabling regular analysis to be carried out. This technique is accepted worldwide and Paqualabs are used in over 50 countries. Reusable components can be sterilised in the field. Consumables are pre-sterilised and have a long shelf life. Sample deterioration through transport and handling is eliminated.

Paqualab System 50 & 25 for Analysis of Drinking Water to EC Standard Categories 1 & 2

Product Codes: 418-160, 418-150



Portable drinking water quality testing system. Microbiological - Coliform and E.Coli. Physical - temperature, conductivity and turbidity. Chemical - pH, Cl, NH₃, NO₂ and NO₃ plus over 40 chemical tests available. AC/DC and rechargeable battery powered incubator. On-site testing for fast, accurate results. Long-term monitoring and emergency testing of drinking water to EC and WHO guidelines. Comprising of the ELE Paqualab incubator 25 and 50, pH/temperature/mV meter, conductivity/temperature meter, turbidity meter, 0-1000 FTU, ELE Paqualab photometer, and consumables for 200 tests on faecal or total coliforms, chlorine, ammonia, nitrates and nitrites. The Paqualab is a portable testing system for the key drinking water quality parameters. The Paqualab allows the laboratory to be carried to water so that accurate results are obtained sooner, even in remote areas. Laboratory standard results can be obtained by operators with the minimum of training.

The equipment provided in each Paqualab has been specifically designed for field use. Aluminium replaces glass for many components for improved strength and lighter weight. The incubators have 2 pre-set temperatures that are usually set to 37°C and 44°C. The internal battery provides sufficient power for a full incubation cycle. Over 1000 Paqualabs are in use throughout the world for monitoring drinking water in remote areas, emergency situations, research and education. The Paqualab is a completely modular system. Standard kits are available as shown below. All items are also available individually to enable the user to build a system to meet their specific requirements. In addition, Paqualab Incubator systems contain all the hardware required for microbiological tests. Paqualab standard systems are based on the Incubator systems and also include tests for other parameters as shown below.

Further Information:

418-150: Overall dimensions 335 x 230 x 275 mm

418-160: Overall dimensions 475 x 230 x 275 mm

Standard System	50	25
	Product Code	
Item Supplied	418-160	418-150
(420-035) Universal and Incubator 50	Yes	-
(420-030) Universal Incubator 25	-	Yes
(430-020) pH/Temp/mV Meter	Yes	Yes
(513-160) Conductivity/TDSTemp Meter	Yes	Yes
(430-260) Turbidity Meter	Yes	Yes
(430-550) Photometer	Yes	Yes
(433-115/10) Chlorine Reagent System, Free, Total. Pack sufficient for 250 tests.	Yes	Yes
(433-102/10) Ammonia Reagent System, Pack sufficient for 250 tests.	Yes	Yes
(433-166/10) Nitrate Reagent System, Pack sufficient for 200 tests.	Yes	Yes
(433-168/10) Nitrite Reagent System, 4 Packs of 50 tests.	Yes	Yes
(422-010) Coliform Starter Pack sufficient for 200 tests.	Yes	Yes

Spares/Consumables:

Aluminium Petri Dishes (Pack of 25) (422-560)

Coliform Starter Pack, sufficient for 200 Tests (422-010)

Filtration Unit Aluminium Construction complete with Sampling Cup (420-450)

Membrane Lauryl Sulphate Medium 38.1 g Pack sufficient for 200 Tests (422-110)

Pad Dispenser (422-515)

Sterile Filter Membranes and Absorbent Pads (Pack of 200) (422-508)

Paqualab Portable Incubators & Filtration Unit

The ELE Paqualab incubators are fully portable which enables microbiological water analysis to be carried out in remote locations which lack normal laboratory facilities. Various power supply options are available including internal rechargeable batteries or an external 12 V DC, 24 V DC, 110 V AC, or 240 V AC supply. This flexibility means that samples can be incubated on-site, in a car or in a laboratory thereby producing accurate results in the shortest possible time.

Paqualab Incubator 50:- Dual Incubator Filtration Unit 50 Aluminium Petri Dishes & Paqualab Incubator 25:- Single Incubator Filtration Unit 25 Aluminium Petri Dishes

Product Code: 420-035, 420-030



The ELE Paqualab 50 includes two incubators - the standard and universal (each with 2 pre-set temperatures, normally 37°C and 44°C), a membrane filtration unit, microbiological accessories kit, connecting cables and operating manual. All components are housed in a convenient rigid carrying case which can also accommodate a number of electronic meters from the ELE Paqualab range.

The ELE Paqualab 25 includes a universal incubator with 2 pre-set temperatures (normally 37°C and 44°C), a membrane filtration kit, connecting cables and operating manual. All components are housed in a convenient rigid carrying case which can also accommodate a number of electronic meters from the ELE Paqualab range.

Further Information:

The system will operate on 12 V or 24 V DC, 110 V or 240 V AC, or the internal 12 V rechargeable battery supplied.

Spares/Consumables:

Filtration Unit, aluminium construction complete with Sampling Cup (420-450)

Incubator System	50	25
Item Supplied	Product Code	
	420-035	420-030
Large Rigid Carrying Case	Yes	-
Standard Rigid Carrying Case	-	Yes
Universal Incubator	Yes	Yes
Standard Incubator	Yes	-
Incubator Linking Lead	Yes	-
Filtration Unit	Yes	Yes
Mains Lead	Yes	Yes
Battery Lead	Yes	Yes
Cigar Lighter Plug	Yes	Yes
Aluminium Petri Dishes	Yes	Yes
Plastic Autoclavable Bottles (x4)	Yes	Yes
Dropping Pipettes (x2)	Yes	Yes
Forceps	Yes	Yes
Magnifying Glass	Yes	Yes
Thermometer (Spirit)	Yes	Yes
Trim Tool	Yes	Yes
Grease	Yes	Yes
Instruction Manual in Binder	Yes	Yes

Filtration Unit, aluminium construction complete with Sampling Cup

Product Code: 420-450



- Anodised Aluminium Membrane Filtration Unit.
- Light compact and field sterilisable.
- Fits together for storage into a size of 120 mm high x 80 mm diameter.
- Supplied with sampling cup and nylon cord.
- Filtration unit graduated with 50 ml and 100 ml levels.
- Supplied with hand-operated suction pump.

Spares/Consumables:

Spare Parts Kit for Filtration Unit (420-451)

Membrane Filtration Unit Spare Parts Kit

Product Code: 420-451

For Filtration Unit (filter disc, gasket kit and O-ring).

Water

Microbiological Starter Packs & Consumables

Coliform Starter Pack

Product Code: 422-010



Sufficient for 200 tests. Comprising 200 grid membranes and absorbent pads, one pad dispenser and 38.1 g membrane Lauryl Sulphate broth.

Spares/Consumables:

Membrane Lauryl Sulphate Medium 38.1 g Pack. Sufficient for 200 Tests (422-110)

Pad Dispenser (422-515)

Sterile Filter Membranes and Absorbent Pads. Pack of 200 (422-508)

Faecal Streptococci Starter Pack

Product Code: 422-020

Suitable for 200 tests. Comprising 200 grid membranes and 200 sterile plastic Petri dishes, 100 g Slanetz and Bartley medium.

Aluminium Petri Dishes

Product Code: 422-560



Reusable pack of 25.

Membrane Lauryl Sulphate Medium

Product Code: 422-110

38.1 g to make approximately 500 ml of medium (200 tests).

Spares/Consumables:

Coliform Starter Pack. Sufficient for 200 tests (422-010)



Slanetz & Bartley Medium

Product Code: 422-120

21 g to make approximately 500 ml of medium (200 tests)



Sterile Plastic Petri Dishes

Product Code	Product	Pack Size
422-569	Plastic Petri Dishes	200
422-570	Plastic Petri Dishes	700

Pad Dispenser

Product Code: 422-515



Spares/Consumables:

Coliform Starter Pack. Sufficient for 200 tests (422-010)

Sterile Filter Membranes & Absorbent Pads

Product Code	Product	Pack Size
422-510	Filter Membranes and Absorbent Pads	1000
422-508	Filter Membranes and Absorbent Pads	200

Spares/Consumables:

Coliform Starter Pack. Sufficient for 200 tests (422-010)

Paqualab Test Meters

Digital pH/mV/Temperature Meter with Electrode, Carrying Case & pH 4 & 7 Buffers

Product Code: 430-020



- Robust waterproof case offering IP66/67 protection.
- Manual/automatic temperature compensation.
- Easy to use re-calibration function The 430-020 pH meter is a three-in-one instrument that features a large easy to read, LCD display which indicates pH over the range of -2 to 16 pH with a resolution of 0.01 pH, mV over the range of -1000 to 1000 mV and temperature over the range of -39.9°C to 149.9°C with a resolution of 0.1°C. The LCD display features both low battery indication and a user selectable backlight. The pH readings are either manually or automatically temperature compensated over the range of 0°C to 100°C. To automatically compensate it is necessary to utilise a thermistor temperature probe.

Each unit incorporates a power-off facility that automatically turns the instrument off after ten minutes, maximising battery life. The 430-020 has an integrated rubber seal to ensure complete water resistance and help to reduce the possibility of damage in harsh environments. At the touch of a button the instrument will automatically re-calibrate itself (two-point autocal) when used in conjunction with pH buffer solutions. Each unit incorporates an easy to use BNC connector and Lumberg screw-locking type connector.

Specifications

Range	Resolution, Accuracy
-2 to 16 pH	0.01 pH, ± 0.02 pH
± 1000 mV	1 mV, ± 1 mV
-39.9°C to 149.9°C	0.1°C, ± 0.4 °C (-10°C to 70°C)
Battery	3 x 1.5 volt AAA
Battery Life	Max 5 years (2500 hours)
Sensor Type	Combination electrode/thermistor
Display	12 mm LCD
Dimensions (mm)	32 x 71 x 141
Weight (g)	230

Spares/Consumables:

pH Electrode for use with 430-020 meter (430-020/10)

Spare pH Electrode for use with 430-020 Meter

Product Code: 430-020/10

General purpose, epoxy bodied electrode with gel fill solution (maximum temperature 60°C).

Water

Portable Conductivity/TDS Meter with Electrode & Carrying Case

Product Code: 513-160



Dissolved Oxygen/Temperature Meter with Electrode & Carrying Case

Product Code: 521-050



Portable Turbidity Meter, Range 0-1000 FTU, supplied with Carrying Case, Batteries & Calibration Solutions

Product Code: 430-260



Suitable for testing either natural and treated water, or waste water and effluents. This portable microprocessor-based turbidity meter provides lab-grade accuracy even in the field. With 4 keys and weighing only 510 g, the meter measures turbidity from 0 to 1000 FTU (NTU). For best field accuracy, it measures from 0 to 50 FTU in steps of 1/100th of FTU. Unlike standard lamps, the infra-red LED has a long life. More significantly, it maintains constant emission for the entire life of the instrument. The wavelength peaks at 890 nm, which provides the required intensity of diffused light even in samples with low turbidity values, and also reduces the interference from any colours. The meter is very easy to use. All operations can be carried out with only four keys and troubleshooting functions can be performed with error code on LCD. Moreover, the meter's versatility and durability ensure low maintenance. The meter can store and retrieve the last calibration data.

At the touch of a key the last calibration data, together with time and date, are displayed, allowing the user to maintain an accurate calibration schedule. Auto shut-off turns the meter off after 5 minutes of non-use to save batteries. The turbidity meter comes supplied with 2 cuvettes, tissues, cleaning solution and calibration solutions for 0 and 10 FTU.

- Easy to use.
- High range.
- Calibration data storage facility.
- Results displayed as FTU.
- Water resistant.

Specifications

Range	0.00 to 50.00 FTU; 50 to 1000 FTU.
Resolution	0.01 FTU (0.00 to 50.00 FTU); 1 FTU (50 to 1000 FTU).
Accuracy	± 0.5 FTU or ± 5% of reading (whichever is greater)
Battery Life	60 hours or 900 measurements. Automatic shut-off after 5 minutes of non-use. (4 x 1.5 V AA batteries)
Dimensions (mm)	220 x 82 x 66
Weight (g)	510 g (including case and calibration solutions)

Turbidity Tube

Product Code: 430-250

The turbidity test is designed to give a measure of the suspended solids content of the final effluent. It is also useful in following the day to day variation in quality of sewage and effluent.

- Two-part tube 660 mm long.
- Range 5 to 500 JTU.
- Weight: 217 g.

Paqualab Photometer

Product Code: 430-550



Lightweight and portable for laboratory or field use. Accurate results using tablet reagents which have a long shelf-life. Over 40 different water tests available for use with the photometer. Ideal for use with ELE's Paqualab systems. This Paqualab photometer is simple to use, robust in construction and designed for on-site analysis. The photometer provides dependable results to enable decisions on water quality to be made instantly and with confidence. Simple operation with automatic set-up for each test.

Designed for reagent systems in tablet form. Rapid access to frequently used tests from a choice of over 100 parameters/methods. With dilution tube, 8 glass cuvettes, operating instructions and hard carrying case.

Further Information:

Test reagent tablets are not supplied. Available separately under Photometer Reagents.

Specifications

Instrument Type	Dual light source photometer offering direct-reading of pre-programmed test calibrations, absorbance and transmittance
Wavelengths (nm)	450, 500, 550, 570, 600, 650
Accuracy	± 1.0% T
Display	320 x 240 pixel LCD with backlight and contrast adjustment
User Interface	On-screen prompts available in English, French, Spanish, German, Italian, Turkish and Mandarin (Chinese)
Dimensions L x W x H (mm)	250 x 150 x 70
Weight (g)	975
IP Rating	IP67
Power Supply	3 x 1.5 V AA batteries (typically 40 hours)
Test Cuvettes	Automatic centring for cylindrical cuvettes from 13 to 20 mm outside diameter

Standard Colour Comparator Kit in Carrying Case

Product Code: 432-020



Supplied without Colour Disks and Reagents.

Water Test Kit, includes tests for pH, Chloride, Total Hardness & Iron

Product Code: 521-080

Test Kit includes	Range (mg/l)
pH	4 to 11
Chloride	0 to 5000
Total Hardness	0 to 500
Iron	0 to 10

Supplied complete in a carrying case with reagents for 50 tests of each parameter.

Photometer Reagents

Over 40 different water tests are available. The chemical reagents required for each water test are compressed into stable tablet form eliminating the possible errors that can result when measuring out chemical solutions.

Table of Photometer Reagents

	Measurement Range	50 Test Reagent System*	150/200/250 Test Reagent Refill Packs**	Details
Alkalinity	0 – 500 mg/l CaCO ₃	433-094	433-094/10	Natural and treated waters contain a variety of dissolved alkaline substances (e.g. bicarbonate).
		433-098	433-098/10	
		433-096	433-096/10	Test for Alkalinity P in boiler water and other industrial waters.
Aluminium	0 – 0.5 mg/l	433-100	433-100/10	Aluminium salts are found in natural waters. High levels can be toxic to fish. Aluminium Sulphate is used in drinking water treatment.
Ammonia	0 – 1.0 mg/l	433-102	433-102/10	Occurs when nitrogenous products break down in water. Ammonia is harmful to aquatic life, particularly fish.
Boron	0 – 25 mg/l	433-103	433-103/10**	Normally found as calcium or sodium borate. Some crops are very sensitive to Boron. Widely used in industrial processes so may be present in effluent discharges.
Bromine	0 – 6.0 mg/l	433-105	433-105/10	A powerful disinfectant used for water treatment and swimming pool management.
Calcium Hardness	0 – 500 mg/l CaCO ₃	433-108	433-108/10	Test for Calcium hardness in natural and treated waters.
Chloride	0 – 50,000 mg/l NaCl	433-110	433-110/10	Test for Chloride salt in water.
Chlorine (DPD)	0 – 5.0 mg/l	433-115	433-115/10	Free, total and combined Chlorine test. Chlorine is used for the disinfection of drinking water and swimming pools.
Chlorine	0 – 250 mg/l	433-118	433-118/10	Total Chlorine test. High levels of Chlorine are used to disinfect or sterilise water distribution systems.
Chromium	0 – 1 mg/l Cr	433-120	433-120/10	Test for soluble Chromium in natural and industrial waste water.
Copper	0 – 5.0 mg/l Cu	433-130	433-130/10	Test for free, chelated and total Copper in natural and treated waters.
Cyanuric Acid	0 – 200 mg/l	433-134	433-134/10	Used as a Chlorine stabiliser in swimming pool water treatment.
Fluoride	0 – 1.5 mg/l	433-138	433-138/10**	Found naturally in some waters, but more usually introduced into drinking water to prevent tooth decay.
Hardness	0 – 500 mg/l CaCO ₃	433-139	433-139/10	Test for Hardness in natural and treated waters.
Hydrazine	0 – 0.5 mg/l N ₂ H ₂	433-141	433-141/10***	Test for Hydrazine in industrial water.
Hydrogen Peroxide	0 – 2.0 mg/l	433-142	433-142/10**	Used in water treatment processes.
Hydrogen Peroxide	0 – 100 mg/l	433-146	433-146/10	High levels of hydrogen peroxide are used in many industrial processes such as textile bleaching and paper making.
Iron	0 – 1.0 mg/l	433-150	433-150/10	Widely found in natural water. Affects the taste of water and causes staining. Insoluble iron deposits can cause small pipes to block.
Iron	0 – 10 mg/l	433-152	433-152/10	In industry, high levels of iron may occur due to corrosion or as a result of industrial processes.
Magnesium	0 – 100 mg/l	433-154	433-154/10	Magnesium salts contribute to the hardness of water.
Manganese	0 – 0.3 mg/l	433-156	433-156/10	Commonly found in many natural waters. Causes staining to laundry and plumbing fittings.
Molybdate	0 – 100 mg/l MoO ₄	433-160	433-160/10	Used as a corrosion inhibitor in industrial water treatment and so may be present in effluent discharges.
Nickel	0 – 10 mg/l Ni		433-164/10	Test for Nickel in natural and treated water.
Nitrate	0 – 1.0 mg/l N	433-166	433-166/10**	Nitrates are found in many natural and waste waters. They originate from chemical fertilisers, breakdown of vegetation and the oxidation of nitrogen compounds in effluents.
Nitrite	0 – 0.5 mg/l N	433-168	433-168/10	Nitrites are an intermediate product in the nitrogen cycle. Nitrites are harmful to fish and aquatic organisms.
Organophosphate	0 – 20 mg/l PO ₄	433-170	-	Test for Organophosphate in cooling water.
Ozone	0 – 2.0 mg/l	433-172	433-172/10	Ozone is used in water treatment and swimming pool water disinfection.
pH	6.8 – 8.4	433-180	433-180/10	Uses the phenol red method to determine hydrogen ion activity.
Phenol	0 – 5 mg/l C ₆ H ₅ OH	433-182	433-182/10	Test for Phenol and ortho meta substituted Phenols in natural drinking and industrial waste waters.
Phosphate	0 – 4.0 mg/l	433-186	433-186/10**	Used extensively in food processing. Also present in many detergents and fertilisers. Not directly toxic, but phosphates are associated with the eutrophication of rivers and lakes.

* Reagent Systems contain reagents for 50 tests together with test instructions and plastic calibration chart

** 200 Reagent Refill Test Pack

*** Sufficient for 150 Tests

	Measurement Range	50 Test Reagent System*	150/200/250 Test Reagent Refill Packs**	Details
Phosphate	0 – 10 mg/l	433-188	433-188/10	High levels of phosphates are used to treat water in industrial boilers so may be present in effluents.
Potassium	0 – 12mg/l	433-189	433-189/10	An abundant natural element. High levels can be an indication of brackish waters.
Silica	0 – 4.0 mg/l SiO ₂	433-190	433-190/10**	Colloidal silica and soluble silicates are abundant in many natural waters. Causes scale problems in many industrial processes.
Sulphate	0 – 200 mg/l	433-192	433-192/10	Occurs naturally in water, but often introduced during water treatment. High levels can cause corrosion to metalwork by sulphate reducing bacteria. Damage to cement can also take place.
Sulphide	0 – 0.5 mg/l	433-194	433-194/10**	Found in many natural waters, particularly hot springs. Present in many industrial effluents especially tanneries. Toxic to fish and aquatic organisms.
Sulphite	0 – 500 mg/l Na ₂ SO ₃	433-196	433-196/10	Test for Sulphite in boiler water.
Zinc	0 – 4.0 mg/l	433-198	433-198/10	Used as a corrosion inhibitor in industrial cooling water so may be present in effluent discharges.

Daily Raingauges

De-Luxe Plastic Raingauge

Product Code: 460-010



Made from strong UV stabilised plastic. The detachable internal collecting jar is calibrated in mm and inches of rain.

Further Information:

Supplied with fixing bracket.

Copper Raingauge

Product Code: 502-012

127 mm diameter rim with inner can and measuring cylinder calibrated in mm.

Splayed-Base Daily Raingauge

Product Code: 502-013

British Meteorological Office MK 2 model, constructed from copper with splayed base to provide extra stability, and bevelled brass rim of 127 mm diameter. The inner copper can has a pouring lip and crass handle. Supplied with Meteorological Office pattern taper-base glass measure graduated in mm.

Specifications

Dimensions (mm)	490 x 216
Weight (kg)	3

Raingauge

Product Code: 502-040



Meteorology

Wind Measurement

Hand-Held Anemometer

Product Code: 503-062



A robust, easy to use instrument of durable plastic construction. Wind strength/speed is clearly and accurately displayed on 4 scales (m/s, km/h, knots and Beaufort). A secure fitting transparent cap protects the cups when not in use.

Further Information:

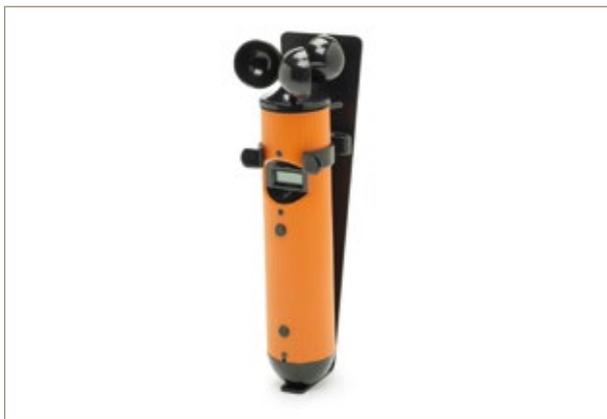
Measurement Range 0 to 35 m/s, 0 to 120 km/h, 0 to 12 Beaufort, 0 to 70 knots.

Accessories:

Anemometer Cups. Set of 3 (503-062/10)

Digital Hand-Held Anemometer

Product Code: 460-050



The battery operated digital hand-held anemometer is particularly suited to site investigations, environmental surveys and meteorological observations. It is lightweight, manufactured from non-corrosive materials and has replaceable cups. At least 2000 readings can be obtained from a single battery, and an error message is shown when the power is low. When the instrument is switched on the wind speed is averaged over a 12 to 15 second period after which the result is shown on the display.

- Displays maximum gust.
- 4 selectable measuring units.
- Clear LCD display.

Further Information:

Complete with 2 support legs, storage bracket and spare cup.

Temperature Measurement

Maximum Thermometer

-20°C to +55°C Mercury Filled

Product Code: 504-014



Stem divided, mounted on a strong weather-resistant plastic scale with indelible figures; two drilling holes for fixing to a wall. Records maximum temperature since last reset. Usually mounted inside a meteorological screen at about 5° to the horizontal. Range -20°C to +55°C, expected accuracy +/- 0.2°C; divided to 0.5°C.

Specifications

Dimensions (mm)	340 x 13
Weight (kg)	0.07

Minimum Thermometer

-35°C to +40°C Spirit Filled

Product Code: 504-016



Mounted on plastic scale to match maximum thermometer. Specification as maximum thermometer but recording minimum temperature since last reset, in the range of -35°C to +40°C x 0.5°C.

Portable Soil Thermometer

-10°C to +50°C

Product Code: 504-024



Range -10°C to +60°C, in a rugged brass case with stem graduated at 5, 10, 15, 20, 30 cm to enable measurement at various depths. Ideal for use in education.

Sheathed Earth Thermometer 300 mm

Product Code: 504-032



Temperature recordings are made by lowering the thermometer down a tube with a rope or chain. The thermometer bulb is encased in wax to allow a slow change of temperature to be recorded and when the instrument is recovered retaining the reading.

Further Information:

The tube is supplied with a solid brass sealing cap. Measuring range from -10°C to 45°C x 0.5°C.

Insulated Earth Thermometer

The insulated pattern thermometer is left in the soil, with the added advantage that readings can be taken in-situ without disturbing the instrument. The lower portion is placed vertically in the earth with the bulb at the required depth, and the insulated thermometer stem and opal scale are supported on a black-enamelled mild steel angle bracket. The range is -10°C to +55°C divided into 0.2°C intervals.

Further Information:

For use from 50 to 1000 mm depth.

Specifications	
Product Code	Length (mm)
504-038	50
504-040	100
504-042	200
504-044	300
504-045	500
504-047	1000

Earth Thermometer Support Bracket

Product Code: 504-046



Metal support frame for use with Earth Thermometers.

Meteorology

Digital Inside/Outside Thermometer

Product Code: 504-019



This digital thermometer can be wall-mounted or free standing to display the ambient temperature. A plug-in probe with 3 metres of cable can be used to obtain the temperature in another area or from outside. The instrument has a memory to recall the maximum and minimum inside and outside temperatures since the last reset. Switchable between °C and °F.

- Remote temperature probe.
- Digital display.
- Maximum/minimum memory.

Further Information:

Supplied complete with display unit, remote temperature probe and 3 metres of cable.

Laboratory Thermometer with Low Toxicity Filling

Product Code: 504-023



General purpose insertion type thermometer containing no toxic filling. This thermometer features a reinforced stirring tip and an integral bulb. Ideal for propagators, greenhouses and laboratories.

Further Information:

Length 305 mm.
Range -10°C to 110°C.
Supplied in plastic tube.

Light Measurement

Campbell-Stokes Sunshine Recorder complete with 1 year's supply of charts

Product Code: 505-062



This instrument is used to record the duration of sunshine each day. The sun's rays are focused by a precision glass sphere onto a curved card. The intense heat burns a trace on the card. As the sun moves across the sky, so does the position of the spot across the card. If the sun is obscured by cloud then no trace is made. At the end of the day, the length, less gaps, is proportional to the duration of sunshine.

- Records duration of sunshine.
- Accurate measurements.
- Simple to use.

Further Information:

For latitudes 0° to 40° North or South.
Complete with one year's supply of cards.

Accessories:

Cards (one year's supply) for 505-062 (505-062/10)

Accupar Ceptometer with 800 mm Probe Datalogger & RS 232 Interface, Battery Powered

Product Code: 505-067

Digital Lux Meter

Product Code: 505-092



This portable lightmeter is for monitoring illuminance and gives a digital display in Lux. This simple to use instrument has only two controls; a power button and a range switch. It is ideal for field survey work and initial investigations.

- ▶ High accuracy and wide range.
- ▶ Remote sensor head.
- ▶ Ideal for field work.

Further Information:

Supplied complete with sensor head.

Light Measuring Unit (Lux Meter) with Sensor

Product Code: 505-106



General measurement for human activities. The visible light is that part of the wavelength spectrum received by the human eye. The peak sensitivity is 555 nm for the adapted eye but with 'dark adaption' a peak response is 507 nm. The ranges allow for readings between 0 to 200 K Lux. The sensor has a cosine-corrected head, and the FET input circuitry of the cc measuring and display unit preserves linearity. The unit also incorporates dual slope integration with "auto zero" for A/D conversion.

- ▶ Direct readout in energy units of visible light.
- ▶ Range 0 to 200 K Lux in 3 ranges of sensitivity.
- ▶ Used for siting of buildings, measuring light variations.

Further Information:

Complete with sensor, 1.2 metre cable, carrying case and battery.

Meteorology

Humidity Measurement

Hand-Held Therma-Hygrometer

Product Code: 506-150



Remote or integral % RH and temperature probe. Displays maximum/minimum humidity or temperature. Optional backlit display. The therma-hygrometer is an easy to use, relative humidity and air temperature measuring instrument. The units measure % RH over the range of 0% to 100% RH with a resolution of 0.1% RH and temperature over the range of -20°C to 70°C with a resolution of 0.1°C. It incorporates a custom LCD, displaying % RH, °C/°F, dew point indication, maximum/minimum and hold.

There is an automatic display of both open circuit and low battery. The 506-150 displays the temperature and humidity at the push of a button separately. The 506-150 is powered by three AAA batteries with a minimum life expectancy of 10,000 hours. An auto power-off facility turns the therma-hygrometer off automatically after ten minutes, maximising battery life. This hand-held battery operated instrument is operated by a single keypad button. It is suitable for a wide variety of applications where fast and accurate measurements of relative humidity and temperature are required. The probe is connected to the display unit via a one metre flexi-cable which enables its measurements to be taken in areas where access is limited.

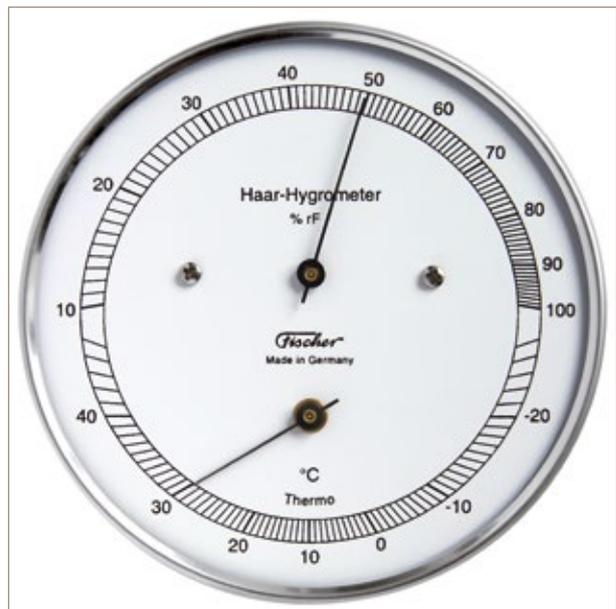
Specifications

Range	-20°C to 70°C, 0% to 100% RH
Resolution	0.1°C/°F, 0.1% RH
Accuracy - Temperature:	Accuracy ±0.4°C over the range 10°C to 40°C otherwise ±1°C ±1 digit
Accuracy - Humidity:	±2% RH (10% to 90% RH)
Hysteresis	± 1% RH
Sensor Type	Silicone bandgap, capacitance polymer
Battery	3 x 1.5-volt AAA
Battery Life	Min 5 years (10,000 hours)
Display	12 mm LCD
Dimensions (mm)	25 x 56 x 128
Weight (g)	130/160

Hygrometer/Thermometer 100 mm Diameter Dial 10% to 100% RH -25°C to +45°C

Product Code: 506-122

A precision instrument using specially treated strands of human hair to measure relative humidity. The 100 mm diameter gauge covers the range 10% to 100% RH. A separate set hand with a centre button is fitted to the case to enable the user to monitor changes. Can be wall-mounted or fitted inside a Stevenson screen.



Digital Electronic Temperature/Humidity Meter

Product Code: 506-124

This simple to use instrument shows both temperature and relative humidity on a clear LCD display. The internal memory stores the maximum and minimum temperature since the last reset. Ideal for installing in a greenhouse, propagator or vegetable store.

- Designed for wall-mounting.
- Shows temperature and humidity.
- Maximum/minimum internal memory.

Kew Pattern Masons Hygrometer supplied with Conversion Chart

Product Code: 506-104



A high quality hygrometer with accurate, stem-divided, mercury-filled thermometers made to British Meteorological Office design. The thermometers are fitted to laminated plastic mounts with indelible dividing and figuring. The mounts themselves are fitted to a laminated plastic back-plate which will not warp and is very strong. The water reservoir is supported by a metal strip attached to the back plate, and the bulb of one thermometer is kept constantly wet by capillary action. A cotton wick runs up from the reservoir and is threaded round a circle of muslin covering the bulb.

Further Information:

Temperature ranges -20°C to +55°C, complete with simple slide rule.
360 x 160 x 50 mm

Accessories:

Threaded Muslins and Wicks (506-104/12)

Wet & Dry Bulb Hygrometer

Product Code: 506-106



The wet and dry bulb hygrometer is designed for general use and consists of two undivided thermometers mounted on a printed plastic scale. Between the thermometers is a unique slide pointer which allows relative humidity to be easily read. The scale is housed in a plastic case which also holds a reservoir with anti-frost device.

- Easy to read.
- Use outdoors in a screen.

Further Information:

Easy to read pattern, range -5°C to +50°C.

Portable Humidity & Temperature Meter with Dewpoint & Wet Bulb Temperature Measurement

Product Code: 506-160



A hand-held instrument that displays relative humidity, temperature and dew point.

Specifications

Range	-10°C to 60°C / 0% to 100% RH
Accuracy	23°C ± 5 K; 1% RH, 0.2 K

Meteorology

Evaporation Measurement

Hook Gauge Evaporimeter with Aluminium Pan

Product Code: 506-250



Because of the recognition of the accuracy of this instrument, reliable equations have been devised by which the readings obtained may be converted into useful figures for evaporation from lakes and reservoirs. The water level in a standard cylindrical tank (1220 mm diameter) is measured, usually every 24 hours, by adjusting the height of a hook until its point just breaks the surface. The measurement is taken inside a still-well which provides a small area of water surface free from ripples. The still-well, made of brass, stands on three levelling screws and has an opening in the base to equalise the water levels inside and out. The hook gauge, also brass, rests on top of the well supported by three horizontal arms, and has a micrometer head to provide very fine adjustment. A useful accessory is a maximum/minimum thermometer which floats just under the water surface in the main tank. A magnet is supplied for resetting the indices.

- Measures evaporation rate from a free water surface.
- Used by meteorologists and water engineers throughout the world.
- Manufactured to the American Weather Bureau pattern.

Further Information:

Consisting of hook gauge, still-well and galvanised iron tank as specified. Supplied without floating thermometer.

Spares/Consumables:

Class A Evaporation Tank (506-250/10)

Hook Gauge (506-250/14)

Still-Well (506-250/12)

Class A Evaporation Tank

Product Code: 506-250/10

Specifications

Dimensions (mm)	1220 diameter x 254 height
Weight (kg)	64

Still-Well

Product Code: 506-250/12

Specifications

Dimensions (mm)	215 x 254 x 254
Weight (kg)	18

Hook Gauge

Product Code: 506-250/14



Specifications

Dimensions (mm)	165 x 115 x 115
Weight (g)	340

Atmospheric Pressure Measurement

Precision Aneroid Barometer 890-1050 mb

Product Code: 506-042



The precision aneroid barometer is used for measuring the absolute atmospheric pressure. The motion of the aneroid barometer is conducted to the axle of the pointer by driving a segment and wheel with an excellent fine finish of the gearing and bearings. This instrument has only got a minimum of idle friction because of the advantageous shape of the bearings and levers. Housing chromed brass with screw on flange diameter 165 mm.

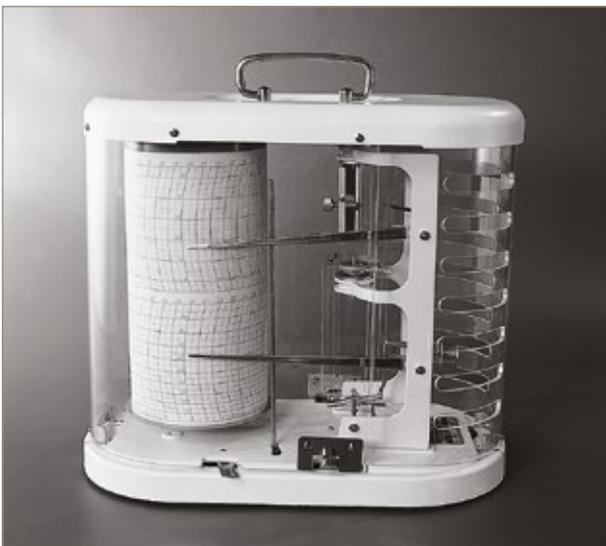
Specifications

Measuring Range	760 to 960 hPa / 570 to 720 mm Hg (800 to 2000 m above sea level)
Accuracy	± 0.7 hPa / ± 0.5 mm Hg
Scale Division	0.5 hPa / 0.5 mm Hg
Dial (mm)	130

Chart Recording Instruments

Thermo-Hygrograph -15°C to +65°C 0-100% RH, complete with 1 Year Supply of Charts & 2 Spare Pens

Product Code: 506-206



This combination instrument records both temperature and relative humidity on the same chart.

Further Information:

Mechanical movement, supplied with 52 weekly charts and a bottle of ink.

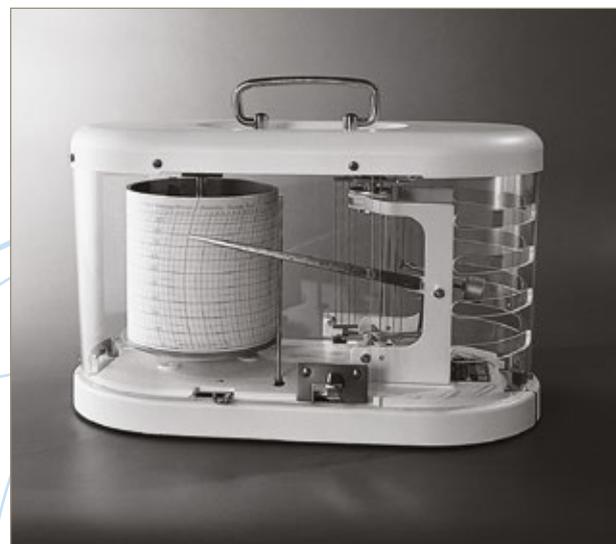
Spares/Consumables:

Weekly Charts for Thermo-Hygrograph Pack of 52 (506-206/12)

Refillable Black Fibre Pen for Chart Recording Instruments. (506-212)

Hygrograph 0-100% RH complete with 1 Year Supply of Charts & Spare Pen

Product Code: 506-203



The hygrograph uses hair to detect changes in humidity. The expansion or contraction of the hair is transferred into a vertical movement which is recorded on the revolving drum.

Further Information:

Mechanical movement, supplied with 52 weekly charts and a bottle of ink.

Spares/Consumables:

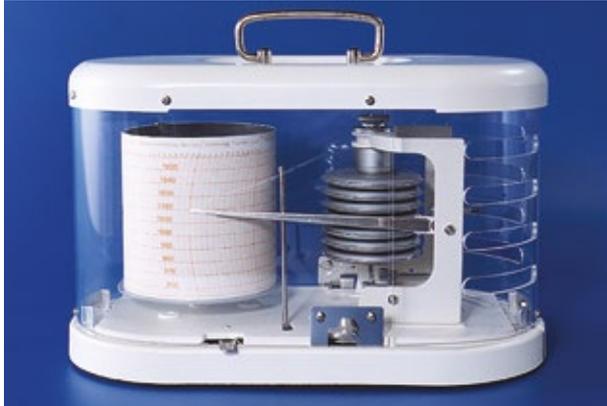
Weekly Charts for Hygrograph Pack of 52 (506-203/12)

Refillable Black Fibre Tip Pen for Chart Recording Instruments (506-212)

Meteorology

Barograph, 955-1055 mb complete with 1 Year Supply of Charts & Spare Pen

Product Code: 506-204



The barograph uses a vacuum capsule to detect changes in atmospheric pressure. The expansion or contraction of the capsule is transferred into a vertical movement which is recorded on the revolving drum.

Further Information:

Mechanical movement, supplied with 52 weekly charts and a bottle of ink.

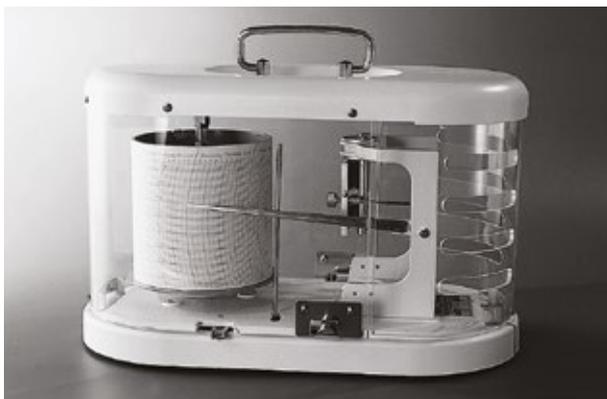
Spares/Consumables:

Weekly Chart for Barograph Pack of 52 (506-204/12)

Refillable Black Fibre Tip Pen for Chart Recording Instruments (506-212)

Thermograph -15°C to +65°C complete with 1 Year Supply of Charts & Spare Pen

Product Code: 506-201



The thermograph uses a bi-metallic element to detect changes in temperature. The expansion or contraction of the element is transferred into a vertical movement which is recorded on the revolving drum.

Further Information:

Mechanical movement, supplied with 52 weekly charts and a bottle of ink.

Spares/Consumables:

Weekly Chart for Thermograph Pack of 52 (506-201/12)

Refillable Black Fibre Tip Pen for Chart Recording Instruments (506-212)

Manual Weather Stations

Stevenson Screen

Product Code: 504-120



The Stevenson screen is designed to hold maximum and minimum thermometers, and a wet-and-dry bulb hygrometer. It is available either in the finished form, ready for use, or more cheaply as a make-it-yourself kit. Both are suitable for use in all climates. The screen is made from top quality seasoned wood, with double-louvred sides, a double layer roof, and a floor of overlapping boards separated vertically by an airspace. The front panel is hinged at the bottom to form a door, and is retained in the horizontal position by two chains; it may be padlocked shut.

Further Information:

Supplied without instruments or stand, painted white to reflect radiation.

Interior dimensions 435 x 250 x 445 mm.

Accessories:

Iron Stand for Stevenson screen (504-120) (504-124)

Budget Weather Station

Product Code: 461-050

This package of equipment provides low cost but accurate instruments to enable daily weather readings to be taken. Instruments include a maximum and minimum thermometer, soil thermometer, wet and dry bulb thermometer and Rain-o-matic electronic raingauge. A simple DIY screen is provided to house the thermometers.

Weather and Monitoring Stations

Environmental Weather Station

The Environmental Weather Station provides an automatic method of recording a wide range of meteorological and environmental data. It overcomes the problem of manual recording methods and replaces them with a simple to use data logging system which can be left unattended in remote areas and harsh environments. The data can be collected at convenient intervals using a portable computer.

Environmental Monitoring Station

Product Code: SP509-103



9 Channel Logger:

- ▶ Anemometer (Wind Speed) with 3 metre Cable Connector.
- ▶ Wind Direction Vane with 3 metre Cable and Connector.
- ▶ Relative Humidity and Temperature Probe.
- ▶ Pyranometer Sensor with Levelling Unit, 3 metre Cable and Connector.
- ▶ Raingauge with 6 metre Cable and Connector.
- ▶ Barometer with 3 metre Cable and Connector.
- ▶ Evaporation Pan and Gauge with 3 metre Cable and Connector, Solar Power System, 2 metre Portable Mast Mounted on Meta; Plate with Guylines and Pegs.

Accessories:

Wind Monitoring System (509-110)

Wind Monitoring System with Solar Panel

Product Code: 509-112

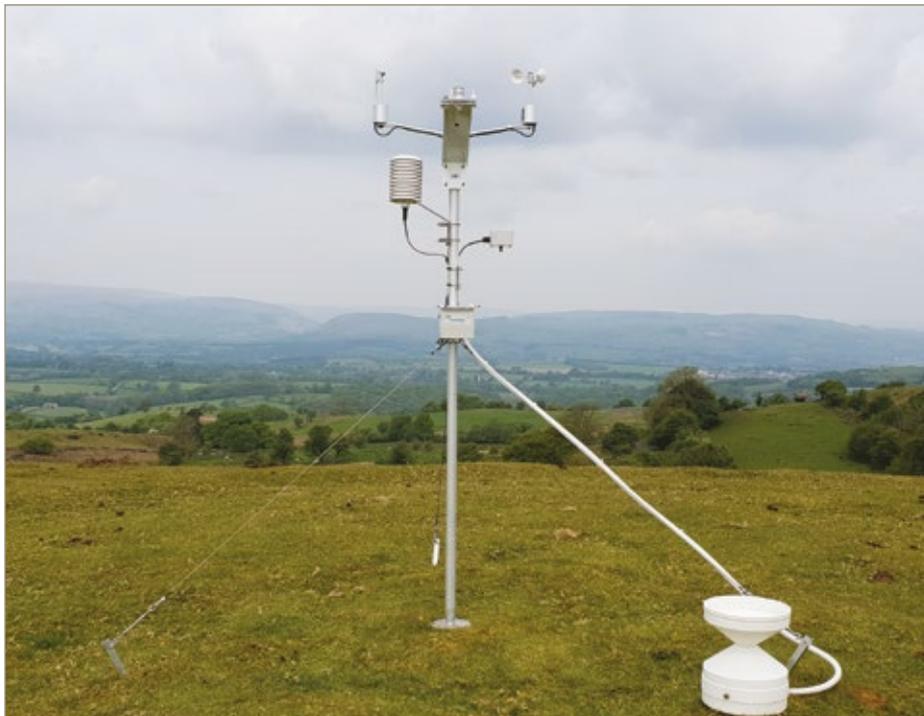


- ▶ Wind Monitoring System, comprising Logger with batteries, Wind Sensors and Pole Mounts.
- ▶ Solar Power Pack.
- ▶ Portable 2 metre Mast mounted on Metal Plate, with Guylines and Pegs.

Meteorology

Automatic Weather Station

Product Code: 509-105



Comprising of:

- ▶ 8 Channel Logger.
- ▶ Anemometer.
- ▶ Wind Vane.
- ▶ Relative Humidity and Temperature Probe.
- ▶ Pyranometer.
- ▶ Barometer.
- ▶ Raininguage.
- ▶ Soil Temperature Probe.
- ▶ 2 Metre Mast and Solar Panel.

Wind Monitoring System

Product Code: 509-110



Comprising of:

- ▶ Logger with batteries.
- ▶ Windspeed and Wind Direction Sensors.
- ▶ Pole Mounts.
- ▶ 2 Metre Mast with Metal Plate.
- ▶ Guylines and pegs.

Microbiology

Hand Lens

Product Code: 535-208

Complete with 15 mm diameter achromatic lens mounted in metal case.

Further Information:

Magnification x10.

Colony Counter

Product Code: 535-210/01



The petri dish is placed on the viewing screen and every time a colony is pressed a count is registered and accompanied by an audible tone. Both the amount of pressure needed to register a count and the volume of the tone are adjustable. The built-in adjustable magnifier enables samples to be examined more easily. For use with up to 100 mm glass or plastic petri dishes.

- Uniform glare-free illumination.
- Angled front for operator comfort.
- Counter triggered by depressing petri dish.
- Digital display of results.
- Built-in magnifier.

Further Information:

220-240 V AC, 50 Hz, 1 ph.

Single Tullgren Funnel

Product Code: 535-245/01

This apparatus is used for both dry and wet extraction of soil organisms. A soil or leaf litter sample is placed in the removable upper part of the funnel. Heat and light from the lamp creates a temperature gradient of approximately 14°C in the soil sample. This stimulates the downward movement of soil arthropods, and similar organisms, through the gauze to a receiver attached to the base of the funnel. The position of the lamp is adjustable to enable the temperature of the soil to be raised gradually, thus preventing the slower moving species from becoming trapped in hard dry cakes of soil. For wet extraction, the funnel is filled with water and the gauze is placed in position. Nematodes and other swimming forms collect in the base of the funnel and can be drawn off at intervals (this method is suitable for collecting potato eel worm). This method can be used either with or without the use of the lamp.

- Wet or dry extraction of soil organisms.
- Precision aluminium funnel construction.
- Stoppered collection vessel prevents loss of creatures.

Further Information:

220-240 V AC, 50 Hz, 1 ph.

Complete with funnel, wire gauze, soil retaining cylinder, length of rubber tube, lamphouse with lampholder, retort stand and instructions.

Spore Sampler complete with Sampler, Wind Vane, Rain Shield, Drum, Cutting Block, 1 kg Gelvatol, Tape, Scalpel

Product Code: 535-260/01

The spore sampler uses a pump to draw air through an orifice. Fungal spores and pollen are impacted onto a strip of adhesive coated plastic strip fitted to the clockwork driven drum. The sampling head can revolve and a large fin is fitted so that air is always drawn from upwind.

- Continuous sampling for up to 7 days.
- Built-in vacuum pump.
- 7 jewel clockwork recording drum.

Further Information:

220-240 V AC, 50 Hz, 1 ph.

Plant Physiology

Plant Water Status Console (No Tank)

Product Code: 540-310



12 inch Pressure Vessel, G4 Specimen Holder, 40 Bar Gauge. Tension in plant xylem can be measured using a plant water status console device. The petiole of a leaf or stem is placed in a rubber grommet so the leaves are inside the pressure chamber and the stem is outside at atmospheric pressure. By pressurising the chamber and watching the point where the sap oozes out of the stem at atmospheric pressure, the two forces are in balance.

Further Information:

Various sizes of Specimen Holders, Pressure Vessels and Gauges are available upon request.

Plant Water Status Console with Tank

Product Code: 540-315



The Plant Water Status Console is supplied with a compressed gas cylinder and connected to a pressure regulator for field operation. The pressure regulator has been set at the factory for the maximum operation pressure of the unit which, for standard units, is 600 psi.

Further Information:

Various sizes of Specimen Holders, Pressure Vessels and Gauges are available upon request.

Portable Leaf Area Meter

Product Code: 470-010/01



The portable leaf area meter enables samples to be measured without detaching them from the plant. The unit is operated using only two buttons to select options from the display. Individual readings can be stored, or areas can be accumulated as a running total. The unit is supplied with an RS 232 cable and IBM compatible software. This enables data to be transferred to a computer for further analysis if required. A full range of parameters can be measured including leaf area, width, perimeter length, shape factor and ratio. The sensitivity of the scanner can be adjusted so that healthy or diseased parts of the leaf can be recorded. This flexibility makes the instrument ideal for the field scientist investigating the effects of pollution on plants. The leaves do not have to be removed for measurement so the same plant can be monitored over a period of time in detailed experiments.

- Enables non-destructive measurements.
- Lightweight and fully portable.
- No calibration required.
- 32 K internal memory.
- Rechargeable battery.

Further Information:

For 220-240 V AC, 50 Hz, 1 ph.

Chlorophyll Content Meter for Plants & Crops with Battery, RS 232 Cable & Software

Product Code: 470-045



This instrument has been designed to accurately determine the chlorophyll content in plants and crops. Especially useful for improving Nitrogen management programs and is ideal for research and teaching. The ample on-board data storage and hand-held design makes this meter the most field efficient chlorophyll content meter on the market.

- Accurate and reliable results.
- Non-destructive.
- Lightweight, hand-held design.
- Storage of 160,000 data sets.

Plant Photosynthesis Analyser with Battery, 120-240 V AC, 50-60 Hz, 1ph

Product Code: 470-020/09



The plant photosynthesis analyser enables the scientist to investigate growing plants either in the field or laboratory. Since the plant is not damaged by the analysis it can be repeatedly tested under different conditions to observe the results. The leaf chamber is placed over the selected sample and a measured flow of air is pumped over the leaf surface. Sample data is typed into the keypad when requested. This includes leaf area details which can be estimated or measured using the Portable Leaf Area Meter. The concentrations of the carbon dioxide and water vapour in the incoming air are measured. By comparing these with the outgoing concentrations, the gas exchange rate and photosynthetic rate are calculated and shown on the display. Data is stored on removable cards and can be transferred to a computer via the built-in RS 232 port.

- Fully portable.
- Built-in self-checking system.
- Data storage.
- Automatic atmospheric pressure compensation.

Further Information:

Complete with battery, charger, carrying bag, harness, air probe and spare parts. Requires a leaf chamber for use.

Plant Efficiency Analyser with Control Unit & Sensor, Field Neck Support & Strap, Charger

Product Code: 470-040



When light shines on a plant it is absorbed by the chlorophyll molecules in the leaf. The absorbed energy is then utilised in a variety of ways including photosynthesis, the process by which carbon dioxide in the atmosphere is converted by the plant to organic compounds. A proportion of the absorbed energy is re-emitted as chlorophyll fluorescence. The Plant Efficiency Analyser measures this fluorescence and calculates key parameters to provide a direct measurement of photochemical efficiency and thus indicate stress conditions at an early stage. Many factors may influence the well-being of plants including the temperature and light conditions, shortage of water or nutrients, contaminated soil, air pollution and acid rain. All of these have an effect on chlorophyll fluorescence making this an ideal instrument for the serious study of plant health, crop selection or plant breeding.

- Lightweight, compact, portable field instrument.
- No moving parts for reliable operation.
- State-of-the-art microprocessor and logic control.
- Fast accurate measurement and calculations.
- PC link and analysis software included.

Further Information:

Includes carrying bag, sensor unit, battery charger unit, serial cable, analogue lead, instruction manuals, 20 leaf clips, and data analysis software for IBM PC compatible computers supplied on 5.25 inch and 3.5 inch discs.

Spares/Consumables:

Leaf Clips 4 mm Pack of 10 (Spare for 470-040). (470-040/10)

Crop Science

Porometer complete with Sensor Head
220-240 V AC, 50-60 Hz, 1 ph

Product Code: 540-026/01



When the sensor head is clipped onto a leaf, a small cup is gently pressed onto the leaf surface. Water vapour diffuses out of the leaf via the stomata and this raises the humidity in the cup. The instrument times the rise in humidity between two electronically preset levels. This RH transit time is a measure of water vapour loss and is automatically converted into diffusion resistance or conductivity. Calibration should be carried out at the start of each session and when environmental conditions change significantly. A polypropylene plate with 6 groups of precisely moulded holes is used to simulate a leaf. The diffusion resistance of each group is known from the physical dimensions of the holes. The instrument is calibrated using these values, and will also give a warning if changing conditions require recalibration.

- Direct readout of conductance or resistance.
- Simple field calibration.
- Stores up to 1500 readings.
- Leaf stress minimised during measurements.

Further Information:

Includes calibration plate, rechargeable battery, carrying case, RS 232 cable, adapter, data collection software, consumables and battery charger.

Spares/Consumables:

Porometer Spares Kit including Electronic Components, Pump Cables and Fuses (540-026/10)

Seed Technology

Laboratory Seed Blower

Product Code: 542-044/01



The Laboratory Seed Blower is a precision built laboratory machine designed to separate light and heavy fractions of a great variety of seeds. The blower is equipped with a synchronous motor to ensure uniform RPM and therefore consistent test results. Air flow is regulated with a calibrated vernier gate and adjusted with a calibrated hand wheel for precise adjustments that can be easily repeated. Large tube kit is standard with the Seed Blower.

Further Information:

For 220 V AC, 50-60 Hz, 1 ph

Specifications

Dimensions (mm)	580 x 560 x 460
Weight (kg)	32

Jacobsen Seed Testing Bath

Product Code: 542-100/01



The Jacobsen Seed Testing Bath provides the conditions specific for seed testing according to the regulations of the International Seed Testing Association.

Further Information:

Includes Stainless Steel water bath with cooling coil, floor standing frame (can also be bench mounted), 13 Stainless Steel shelves for maximum thermal transfer, and cold water feed hoses.

Capacity for 65 cones (90 mm diameter).

For 220-240 V AC, 50 Hz, 1 ph.

Accessories:

Glass Plate for Jacobsen Seed Testing Bath
(13 Plates required for each bath) (542-104)

Plastic Covers, Pack of 10, for Seed Testing Bath
(7 Packs required for each bath) (542-106)

Stand for Jacobsen Seed Testing Bath (542-102)

Germination Cabinet with Sealed Stainless Steel Chamber

Product Code: 542-124/01



This robust germination unit is constructed in white polyester powder-coated steel, for a smooth, tough, easy-to-clean finish. The plastic coated wire mesh shelves are fully adjustable with 32 shelf positions at 29 mm centres. The dual temperature controller and thermistor system enable two temperatures to be set to correspond with "day" and "night" environments. An adjustable over-temperature safety cut-out protects the contents from accidental overheating.

- Electronic sensing of temperature with digital indication.
- Cooling provided by a built-in refrigeration unit.
- 24 hour timer on temperature and fluorescent lighting.

Further Information:

With sealed Stainless Steel chamber.
220-240 V AC, 50 Hz, 1 ph.

Crop Science

Crop Processing

Laboratory Winnower

Product Code: 543-820/01



This machine is suitable for pre-cleaning a large number of agricultural products including hulled rice and coffee, wheat, barley and vegetable seeds, by removing light extraneous material such as shrivelled seed, chaff and leaf. Heavy particles including metal and stones can also be eliminated. It consists of an aspirated column with an adjustable flow rate, expansion chamber, air-return ducts and motor driven fan. The fan can easily be removed for cleaning. The unit is bench mounted.

Further Information:

For 220-240 V AC, 50 Hz, 1 ph.

Grinder for Sample Preparation of Grains

Product Code: 543-860/01

Further Information:

For 220-240 V AC, 50 Hz, 1 ph.

Micropropagation

Laminar Flow Cabinet

Product Code: 548-550/01



Laminar flow cabinets force sterile air over the work surface and minimise the risk of external contamination and cross-contamination between samples which is essential for sterile inoculation of media during techniques such as tissue culture and micropropagation.

- Self-contained unit.
- Requires no external ducting.
- Variable fan speed controller.
- Pressure gauge.

Specifications

Pre-filter	92% efficient at 5.0 micron
HEPA Filter	99.995% efficient
Air Velocity	0.45m/sec
Work Surface Lit To	1000 lux by internal lights
Controls	Front mounted 13 amp power outlet
Dimensions: Internal W x D x H (mm)	1190 x 505 x 579
Dimensions: External W x D x H (mm)	1290 x 720 x 1145
Weight (kg)	150
Power Supply	230-240 V Ac, 50-60 Hz, 1 ph

Seed Samplers

Once a grain crop has been harvested and put into store, tests need to be carried out periodically to measure the quality and to check for pest or disease attack. Such samples must be representative of the bulk material and so need to be taken at various depths and from different locations.

Sack Spear Samplers

Product Codes: 560-210, 560-212



Specifications

Product Code	Dimensions Dia x Length (mm)
560-210	12.7 x 650
560-212	19 x 650

Sampling Spear, Double Tube 32 mm outside diameter

Supplied with carry case.

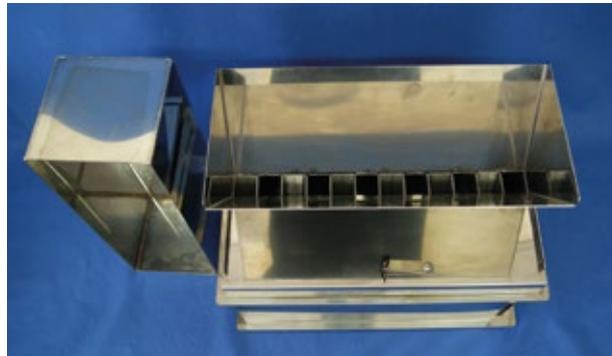
Specifications

Product Code	Length (m)	Slots
560-220	1	1
560-226	2	5

Sample Dividers

Sample Dividers

Product Codes: 560-194, 560-196



Specifications

Product Code	Slot Width (mm)
560-194	12 x 12.7
560-196	12 x 6.35

Harvesting & Storage

Moisture Meters

Protimeter Grainmaster Moisture Meter with 15 Pre-Programmed Crop Calibrations

Product Code: 560-020



A completely portable unit suited to in-store or field use. Incorporates instant digital-readout of moisture content and automatic temperature compensation for rapid and accurate moisture determinations.

- Microprocessor controlled.
- Automatic temperature compensation.
- Instant LCD readings for many crops.
- Temperature measurement facilities.

The simple 4 stage operation takes less than a minute per sample:

- Insert the program key for the crop to be tested.
- Place grinder over sample cell and grind sample.
- Compress the sample.
- Press "ON" switch and read moisture content.

The unit is battery powered and can be used with a wide variety of crops using interchangeable program keys for direct readings. In addition, by using the probe accessory the meter may also be used to measure the temperature of stored grain, thus enabling the principle grain quality and storage checks to be carried out with one instrument.

Further Information:

Supplied in a hard carrying case, compressor, hand grinder, quick check standard, high check standard, storage case for program keys, calibration chart and program keys for ground samples of wheat and barley to ISO standard. Requires one PP3 battery - not included.

Accessories:

Fast Response Temperature Probe, 1 metre length (560-022)

Moisture Meter for Baled Hay & Straw complete with 600 mm Long Probe

Product Code: 560-038



This lightweight hand-held instrument can be used for the rapid moisture measurement of baled hay or straw. The strong Stainless Steel probe is inserted into the bale and the test button pressed. The result is shown instantly on the clear analogue display. A separate button can be used to check the calibration and battery voltage.

- Fast measurement of baled hay or straw.
- Easy to read analogue display.
- Built-in battery and calibration check.

Further Information:

Supplied complete with probe and operating instructions.

Harvesting & Storage

Universal Moisture Meter

Product Code: 560-095



The universal insertion moisture meter has been designed to measure the moisture content of powders, grain and granules. It has applications throughout industry but is particularly suited for use with stored seeds and grains. It can be used both for batch testing materials as they are loaded or unloaded as well as periodic checks while in storage. The probe is inserted into the sample and the result is shown instantly on the display. No weighing, grinding or other sample preparation is required. By pressing the membrane keypad the temperature of the sample can also be measured. The instrument can be programmed by the user for use with up to six crops. The simple calibration procedure means that data for new crops can be added as required.

- Microprocessor controlled.
- User programmable.
- Displays temperature and moisture content.
- 1 metre long insertion probe.

Further Information:

Complete with 1 metre long insertion probe and operating instructions.

Grain Airflow Meter

Product Code: 560-050



An essential aid for monitoring the airflow through stored crops to ensure adequate ventilation and prevent spontaneous heating and associated condensation in grain stored slightly warm or above optimum moisture content. The information provided by this device will help prevent mildew development in store and the associated loss of revenue or benefit from cash and feed crop. The instrument is simply placed upon the stored grain and the upward airflow can then be read off one of two scales ranging from 8 to 30 ft/minute or 2.5 to 9 m/minute.

Seed Counters

Precision Seed Counter with Container for Cereals 220-240 V AC, 50 Hz, 1 ph

Product Code: 560-105/01



The precision seed counter is invaluable for laboratory work, research applications, 1000 grain counting and packaging of costly seeds. A special feature of the instrument is the very wide range of seed sizes which can be processed from 0.3 to 15 mm in diameter. The built-in vibrating unit automatically determines the optimum seed counting rate, although this can be set manually if required. The seed size can also be selected so that the damaged seeds or fragments of husk are eliminated from the result. Various count modes can be selected including normal, aggregate and differential. The unit is extremely quiet in operation, has an easy to read LCD display, RS 232 output and a membrane key pad.

- Automatic feed rate selection.
- Very accurate results with small seeds.
- Filter for under-sized or damaged seeds.

Further Information:

Supplied with counting head for cereals and grains.

Accessories:

Small Counting Head for small seeds down to 0.3 mm diameter (560-105/10)

Large Counting Head for large seeds up to 15 mm diameter (560-105/12)

Small Counting Head for Small Seeds Down to 0.3 mm Diameter

Product Code: 560-105/10

Large Counting Head for Large Seeds Up to 15 mm Diameter

Product Code: 560-105/12

Harvesting & Storage

Yield Quality

Hectronic Test Weight Kit

Product Code: 560-115



- Rapid and consistent results.
- Compact and easy-to-use.
- Accurate for all grains.

This instrument will benefit growers and merchants alike, providing useful feedback for the grower and easy-to-use method of grain quality for the merchant. The kit comprises an accurately measured cylinder and hopper (chondrometer) ensuring that a precise and replicable volume of grain is measured. The sample of grain is allowed to fall into the chamber of the chondrometer under the restriction of a falling weight so that a constant packing density is achieved. The grain is weighed on battery powered scales (6 x 1.5 V AA batteries required) which are included in the kit. The weight is then converted on the chart supplied to give the bushel or hectolitre weight. The unit is simple to use, provides accurate results to $\pm 5\%$ and can be used with all grains including wheat, oats, barley and maize. Conforms to British Standard EN ISO 7971-2:2009.

Chondrometer

Product Code: 560-118

This light and accurate laboratory chondrometer is suitable for use with any gramme balance capable of weighing up to 1400 g.

Further Information:

Supplied with calibration chart.

Size Grading

Grain Sieves Set of 6

Product Code: 560-142



A set of 6 laser-cut stacking grain sieves ensuring the utmost accuracy in grading. The set comprises four sieves with slots 20 mm long x 1.0, 2.0, 2.2, and 3.5 mm wide, made from hard-wearing Stainless Steel plate to BS 6219 and ISO 5223. Also included in the set are two Stainless Steel insect sieves 1.7 mm mesh and 710 μm mesh, to aid the control of storage pests such as weevils and mites. A lid and receiver complete the set. Sieves conforming to other standards are available on request.

- Laser cut for accuracy.
- Non-magnetic Stainless Steel mesh.
- Conform to BS 6219 and ISO 5223.

General Laboratory Instrumentation

Binocular Stereo Zoom Microscope

Product Code: 550-025/01



This binocular microscope has a sound, ergonomic design and is manufactured to a high standard. The excellent optical performance makes the instrument suitable for both laboratory and teaching purposes. The built-in illumination with daylight filter provides an excellent light source for a wide range of applications.

- 4 objective nosepiece.
- High quality optics.
- Mechanical stage.

Further Information:

For 220-240 V AC, 50 Hz, 1 ph.

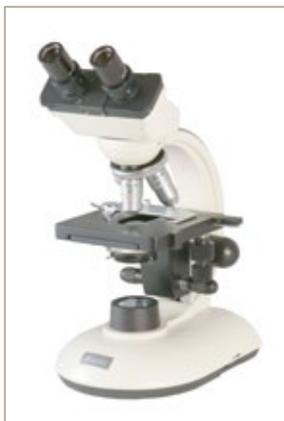
Spares/Consumables:

Bulb (Bottom Illumination)
12 V / 20 W (550-025/12)

Bulb (Top Illumination)
12 V / 10 W (550-025/10)

Binocular Microscope 45° Inclined, 360° Rotating Head, Eye-Piece 10x Widefield, 4x 10x & 40x

Product Code: 550-035/01



Accessories:

Objective Lense 100x/1.25
Oil for use with 550-035/01
(550-035/10)

Conductivity Meter complete with Conductivity Cell, Swing Arm Electrode Holder & Manual

Product Code: 525-180/01



This laboratory conductivity meter is a versatile unit which utilises the best of modern technology to simplify operation without sacrificing accuracy or reliability. With push button operation and a customised liquid crystal display, determination of conductivity and TDS can readily be achieved with the minimum of operator training. The meter includes a 32 reading memory facility. Remote monitoring and data collection is facilitated by the provision of both analogue and digital outputs and in the event of power removal all user defined parameters are retained.

Further Information:

Supplied complete with Swing Arm Electrode Holder, conductivity cell (K=1) and full operating instructions.

Spares/Consumables:

Conductivity Cell K=1 (525-180/10)

Environmental Laboratory Equipment

Visible Range Spectrophotometer

Product Code: 485-030/01



This instrument combines advanced electronics with a high quality optical system operating over the range 320 to 920 nm. The monochromator is a modified Czerny Turner design. It incorporates a cam-driven 1200 lines/mm holographic diffraction grating and features automatic second order resonance suppression. The complete optical system is housed in an independently enclosed unit for maximum protection. Careful design has ensured that heat transfer to the sample is minimised. This enables precise measurements to be performed on a temperature dependent basis. A low noise, high stability and solid state detector for accurate reproducible results, combined with a rigid structure, provides a system with fast warm-up, low drift and high reliability.

- Microprocessor-controlled.
- Digital display 320 to 920 nm wavelength.
- Automatic zero and calibration.

Further Information:

Supplied complete with 100 plastic 10 x 10 mm cuvettes, 10 x 10 mm cell holders and mains lead.

UV/Vis Spectrophotometer

Product Code: 485-031/01



Further Information:

Supplied complete with 100 plastic 10 x 10 mm cuvettes, 10 x 10 mm cell holders and mains lead.

Spares/Consumables:

Spare Xenon lamp module (485-031/10)

Digital Colorimeter

Product Code: 525-242/01



This range of colorimeters features a number of advanced measurement functions and is designed for educational laboratory and industrial functions. The instruments are housed in rugged, chemically resistant, structural foam mouldings and have ergonomically-efficient, sloping front panels. Both models feature 8 built-in gelatin filters covering the visible spectrum fitted onto a switched wheel. The dual cuvette holder enables the sample and a reference to be processed. Measurements can be taken in % transmittance, absorbance or concentration.

- 8 built-in filters.
- Dual cuvette holder.
- Large LCD display.

Further Information:

A general purpose laboratory or portable unit which operates from mains supply or an external 12 V supply. It is supplied complete with 9 built-in filters, 100 disposable cuvettes, recorder output, mains lead and manual.

Accessories:

Microsample Cuvettes 10 ml (Pack of 100) (525-246)

Microsample Cuvettes 10 ml

Product Code: 525-246

Pack of 100.

Bench Dissolved Oxygen Meter

Product Code: 525-235/01



This unit has been designed for use in the laboratory for the measurement of dissolved oxygen accurately and with ease. Measurements can be obtained as % or mg/l and are automatically temperature compensated. All adjustments are made using multi-turn rotary controls and the results are displayed on an LED display.

- Measures DO₂ over ranges 0 to 200%, 0 to 25% and 0 to 19.9 mg/l (ppm).
- Measures temperature over the range -50°C to +199.9°C.
- Barometric pressure compensator.

Kjeldahl Apparatus

Digestion Unit 8 Place, Semi-Auto, complete with Block, Rack, Heat Shield & Exhaust System

Product Code: 525-355/01



Supplied with digestion block, carrying rack with heat shield, exhaust system, two-tier console, instruction manual and 8 digestion tubes, 250 ml, 300 x 42 mm.

Further Information:

For 220-240 V AC, 50-60 Hz, 1 ph.

Spares/Consumables:

Digestion Tube, macro 250 ml (525-355/10)

Digestion Unit 20 Place, Semi-Auto, complete with Block, Rack, Heat Shield & Exhaust System

Product Code: 525-356/01



Supplied with digestion block, carrying rack with heat shield, exhaust system, two-tier console, instruction manual and 20 digestion tubes, 250 ml, 300 x 42 mm.

Further Information:

For 220-240 V AC, 50-60 Hz, 1 ph.

Spares/Consumables:

Digestion Tube, macro 250 ml (525-355/10)

Environmental Laboratory Equipment

Turbosog Fume Scrubber

Product Code: 525-370/01



The Turbosog is specially designed for the complete removal of fumes from both Kjeldahl and other inorganic acid digestions. It allows Kjeldahl digestions to be performed outside the fume cupboard on the open bench. The fume scrubber consists of two separate parts, the pre-separator and the Turbosog. The pre-separator consists of two glass bottles in line between the exhaust manifold and the Turbosog. The first bottle acts as a condensate trap collecting moisture from the digestion of both water and H_2SO_4 . The second bottle contains a neutralizing solution which removes over 90% of the acid fumes.

The Turbosog is a centrifugal suction pump which pulls the reduced fumes and air flow through an inlet pipe into a water reservoir. A magnetic valve restricts water flow to a maximum of 50 litres per hour. The water level is kept constant as the unit empties by displacement. Any residual fumes are diluted and expelled with the waste water.

- Compact and space saving.
- Corrosion proof and maintenance free.
- Efficient, with low operating costs.

Further Information:

For 220-240 V AC, 50-60 Hz, 1 ph.

Supplied with Turbosog pre-separator, 2 glass bottles, 1 glass insert for washing bottle, 1 glass insert for condensation bottle, isoversinic tubing and instruction manual. Power supply 220-240 V, 50-60 Hz, 1 ph.

Automatic Distillation Unit

Product Code: 525-375/01



This distillation unit is fully automatic with full microprocessor control. The operator has only to insert the digestion tube and the distillate receiver vessel. The control display is a back-lit LCD with 2 x 16 character lines. Information is entered via the touch sensitive keypad which has numerical characters for entering distillation program parameters, and manual function keys to activate the chemical addition pumps and for programming.

There are 10 programmes with 0-8 for Kjeldahl and associated distillations and 9 for alternative distillation work. Each of the programmes has the following variables entered in sequence. All the programme steps are controlled by time with chemical addition pumps having a known flow rate of 13 ml/second. The unit is divided into 4 chambers, distillation, instrumentation, steam generation and chemical pumps, for maximum protection of the various components. All the functions of the unit are monitored and errors are displayed on the character display. This unit has a manual end point titration.

- Fully automatic steam generator.
- Electronic control of steam pressure and water level.
- Programmable, utilising microprocessor control.

Further Information:

For 220-240 V AC, 50-60 Hz, 1 ph.

Accessories:

Storage tanks for automatic distillation units, Set of 3 (525-376)

Soxhlet Apparatus

Basic 6-Place Soxhlet Extraction System
(Glassware & Connections supplied separately)

Product Code: 525-402/01



The soxhlet apparatus is used for the continuous extraction of fats and oils from solid material using an organic solvent such as petroleum ether. In a practical agricultural context the method is usually applied to the determination of "oil content" in agricultural produce such as sunflower and other oil seeds. The material to be extracted is usually placed in a porous paper thimble and continuously condensing solvent allowed to percolate through it before returning to the boiling vessel either continuously or intermittently. The solvent can then be evaporated off to leave the fat. Each heating unit has individual hotplates of 85 mm diameter with stepless heating control so that the temperature of each hotplate can be operated individually. The heating unit has a lacquered sheet steel casing with an enamelled top plate. The basic extraction system is supplied complete with top moulds, air bath inserts support rods, 600 x 12 mm, and a connection cable.

Further Information:

For 220-240 V AC, 50-60 Hz, 1 ph.

Accessories:

Cooling Water Feed Pipe for 525-402 series with 6 Fastening Clamps (525-406)

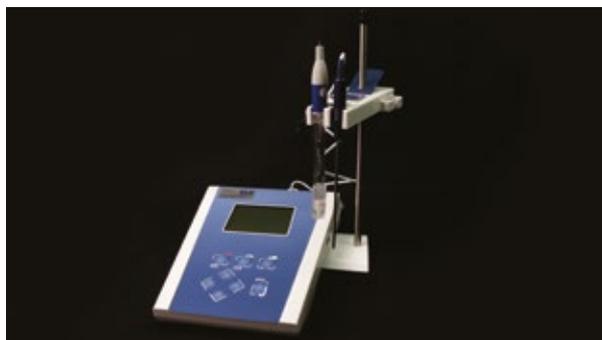
Holder with Clamp for Soxhlet Glass Parts (525-404)

Extraction Thimble 33 x 80 mm Box of 25 (525-424)

Set of Soxhlet Glass Parts Including 1 Flask 500 ml, 1 Extractor 150 ml, and Condenser (525-403)

Laboratory pH Meter with pH Electrode, Swing Arm, Temperature Probe, Manual & Buffer Capsules

Product Code: 525-210/01



This is a versatile, simple to use pH, mV and temperature meter that is ideal for routine analysis. With up to three decimal place resolution and a choice of up to three calibration points, the 525-210/01 provides the user with added flexibility where future demands for enhanced performance may be required. The pH measurement meter also has the ability to store up to 32 results.

- Ideal for routine laboratory applications.
- 3 decimal place resolution.
- 1, 2, or 3 point pH calibration.
- Back lit custom LCD.
- Simultaneous readout of pH and temperature.
- Automatic or manual buffer selection.

Specifications

pH Range	-2.000 to +19.999
pH Resolution	0.001, 0.01, 0.1
pH Accuracy	± 0.003
Calibration	User selectable 1, 2, or 3 point
Automatic Buffer Recognition	DIN, NIST, JIS
mV Range	± 1999.9 mV
mV Accuracy	± 0.2 mV
Temperature Range	-10°C to 105°C
Temperature Resolution	0.1°C
Temperature Accuracy	± 0.5°C
ATC Range	0 to 100°C
Connector	BNC
Display	LCD
Power Supply	9 V AC ± 10 @ 50-60 Hz
Dimensions L x W x D (mm)	210 x 250 x 55
Weight (g)	850

Environmental Laboratory Equipment

Orbital Shaker

Product Codes: 583-132/01, 583-134/01



- Available with orbital or reciprocating action.
- Variable speed with soft start.
- Any size or mix of vessels.
- Fully adjustable cradle system.

The cradle type platforms have four rubber cushioned horizontal securing bars which can be easily adjusted both vertically and horizontally to hold most sizes and types of vessel, including flasks, bottles and beakers.

Speed is variable between 0 to 300 rpm/strokes per minute and an electronic feedback system accurately maintains the set speed.

Model 583-132/01 provides a smooth orbital shaking action with an orbit of 16 mm, ideal for most culturing/mixing applications.

Model 583-134/01 has a reciprocating shaking action with an amplitude of 20 mm.

Specifications

Product Code	583-132/01	583-134/01
Platform Size	335 x 35 mm	335 x 35 mm
Speed Range	30 to 300 rpm	25 to 250 rpm
Orbit/Amplitude	16 mm	16 mm
Dimensions W x D x H (mm)	360 x 420 x 270	360 x 420 x 270
Max Load (kg)	10	10
Net Weight (kg)	11	11

Laboratory Incubator

Product Code: 548-573/01



- Heated incubator.
- Stainless Steel work chamber.
- Inner glass door.
- Safety thermostat with indicator.

The exterior is constructed from sheet steel finished in an easy clean powder coated paint. The interior chamber is made from Stainless Steel.

The incubator has a solid steel door as standard, or, as an alternative, a door with an integral viewing window can be fitted. As an option a double door, comprising steel outer with an inner glass door is also available.

Heated by Incoloy sheathed elements; positioned below the chamber floor for natural convection units and fitted around the fan on the back wall of the chamber for mechanical convection units.

The control system consists of a direct reading thermostat and overheat thermostat, both with calibrated scales and tamper-proof locks. They also include a mains switch with indicator and heat and overheat indicators.

Specifications

Temperature Range	Ambient +5° to 70°C
Fluctuation	±0.25°C at 37°C
No. of Shelves	2
No. of Shelf Positions	3
Internal Dimensions (mm)	330 x 490 x 450
External Dimensions (mm)	590 x 610 x 600
Capacity (ltrs)	75
Weight (kg)	34