

# OPERATING INSTRUCTIONS

## SoilTest PRO Auto Soils Consolidator (ASC)

**25-0500**

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<p><i>In the interests of improving and updating its equipment, ELE reserves the right to alter specifications to equipment at any time.</i></p> <p><b>ELE International 2019 ©</b></p>		

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## 1 Specification

Specifications are subject to change without notice.

Power Requirements	100-240VAC 50/60 Hz 250VA
Dimensions (L x W x H)	360 x 290 x 680 mm, 14.2" x 11.4" x 26.8"
Weight	38 kg, 84 lb
Operating Environment	Temperature: 0 to 40°C (32°F to 104°F) Humidity: 10% to 90%, non-condensing Operating Altitude: 2000 m maximum
Storage Environment	Temperature: -20°C to 70°C ( -4°F to 158°F)
Protection Class	I, IP30
Pollution Degree/Installation Category	2: II
Capacity and Measurement Range	Default sensors of 15 kN and 15 mm travel
Load cell	Refer to Section 2 to size options

### 1.1 Safety Information

#### NOTICE

The manufacturer is not responsible for any damage due to misapplication or misuse of this product including, without limitation, direct, incidental and consequential damages, and disclaims such damages to the full extent permitted under applicable law. The user is solely responsible to identify critical application risks and install appropriate mechanisms to protect processes during a possible equipment malfunction.

Please read this entire manual before unpacking, setting up or operating this equipment. Pay attention to all danger and caution statements. Failure to do so could result in serious injury to the operator or damage to the equipment. Make sure that the protection provided by this equipment is not impaired. Do not use or install this equipment in any manner other than that specified in this manual.

### 1.2 Use of Hazard Information

#### DANGER

Indicates a potentially or imminently hazardous situation which, if not avoided, will result in death or serious injury.

#### WARNING

Indicates a potentially or imminently hazardous situation which, if not avoided, could result in death or serious injury.

#### CAUTION

Indicates a potentially hazardous situation that may result in minor or moderate injury.

#### NOTICE

Indicates a situation which, if not avoided, may cause damage to the instrument. Information that requires special emphasis.

Read all labels and tags attached to the instrument. Personal injury or damage to the instrument could occur if not observed. A symbol on the instrument is referenced in the manual with a precautionary statement.

	This symbol, if noted on the instrument, references the instruction manual for operation and/or safety information.
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### 1.3 EU Radio Interference and Immunity Regulation

Supporting test records reside with the manufacturer.

The equipment has been tested and found to comply with the following standards.

EN61326-1:2013 Electrical equipment for measurement, control and laboratory use - EMC requirements - Part 1: General requirements, Group 1, Class A equipment (emissions only) and Industrial Environment (immunity section only).

EN55011:2009 (+A1) Limits and methods of measurement of radio disturbance characteristics of industrial, scientific and medical (ISM) radio-frequency equipment, Group 1 Class A equipment.

EN61326-1:2013 Electrical equipment for measurement, control and laboratory use - EMC requirements - Part 1: General requirements.

Basic Environment – (immunity section only).

EN61000-3-2:2014 Electromagnetic compatibility (EMC) - Part 3-2: Limits - Limits for harmonic current emissions (equipment input current  $\leq 16A$  per phase).

EN61000-3-3:2013 Electromagnetic compatibility (EMC) - Part 3-3: Limits - Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current  $< 16A$  per phase and not subject to conditional connection.

EN55032:2012 Electromagnetic compatibility of Multimedia Equipment - Emission Requirements. Class A Emissions.

### 1.4 Other Certification

#### **Canadian Radio Interference-Causing Equipment Regulation, IECS-003, Class A:**

Supporting test records reside with the manufacturer.

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

#### **FCC Part 15, Class "A" Limits.**

Supporting test records reside with the manufacturer. The device complies with Part 15 of the FCC Rules. Operation is subject to the following conditions:

- a. The equipment may not cause harmful interference.
- b. The equipment must accept any interference received, including interference that may cause undesired operation.

Changes or modifications to this equipment not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.

Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at their expense. The following techniques can be used to reduce interference problems:

- a. Disconnect the equipment from its power source to verify that it is or is not the source of the interference.
- b. If the equipment is connected to the same outlet as the device experiencing interference, connect the equipment to a different outlet.
- c. Move the equipment away from the device receiving the interference.
- d. Reposition the receiving antenna for the device receiving the interference.
- e. Try combinations of the above.

## 2 Product Overview

**The ASC SoilTest PRO range of automatic consolidation machines are designed to test characteristics of various soils samples. Machines consist of a consolidation frame and various size options of consolidation cells.**

These instructions are for machines with a frame serial number beginning with 1944, i.e. of the format 1944-X-XXXXX.

 <b>WARNING</b>	
Do not test any specimen material other than those explicitly listed in the Specifications of this manual.	

 <b>WARNING</b>	
	Personal injury hazard. Instruments or components are heavy. Use assistance to install or move.

 <b>DANGER</b>	
	Do not operate machine near open flame or other heat sources.

Compressible soils can be subject to long-term consolidation under the loads imposed by foundations and above ground structures. Settlement may occur even if the applied pressure is within the safe bearing capacity of the soil, so it is important to understand this key soil property, particularly if the settlement characteristics beneath an individual structure vary.

The one-dimensional consolidation test is the most common, and sometimes referred to as the oedometer or incremental loading oedometer test. Radially constrained samples are loaded in a sequence starting with a stress close to the over burden pressure of the sample. The loading is then doubled for each stage; typically 4 or 5 times, with a final unloading sequence.

Traditional consolidation frames load the specimen through a yoke assembly and one of three alternative beam ratios. Different loads are applied manually by adjusting weights, but this is a time-consuming activity and creates an opportunity for human error.

The ASC will minimise staff involvement in test procedures whilst complying with the requirements of international standards, producing accurate, reliable, flexible reports.

The ASC is fully automatic and runs a full consolidation test without user intervention, which saves valuable time. A built-in electronic stepper motor ensures precise control of loading over the entire 15 kN range. This design improves the accuracy of loading and avoids the need for a compressor. Importantly, each Auto Soils Consolidator can also be linked to two external manual consolidation frames, which is an advantage for laboratories wishing to upgrade their consolidation test capability, without making their manual frames redundant.

Operation of these machines is straightforward, with the operator setting up and running the test from a PC based application. Data logging, reporting and automatic analysis is provided through ELE's DS8 software application.

## 2.1 ASC Customer Benefits

- Fully automatic – reduces testing time.
- Compact footprint – saves laboratory space.
- Saves configurations for easy set-up of multiple cells and repeat tests.
- Controls up to 16 Auto Soils Consolidator machines from one PC – improves laboratory efficiency (client network dependent).
- Ability to include manual consolidation frames – avoids redundancy.
- Wide range of sample cells.
- Complies to the following standards: ISO 17892-5, BS 1377-5, ASTM D2435/ D2435M, AASHTO T216, ASTM D4546.

## 2.2 ASC Features

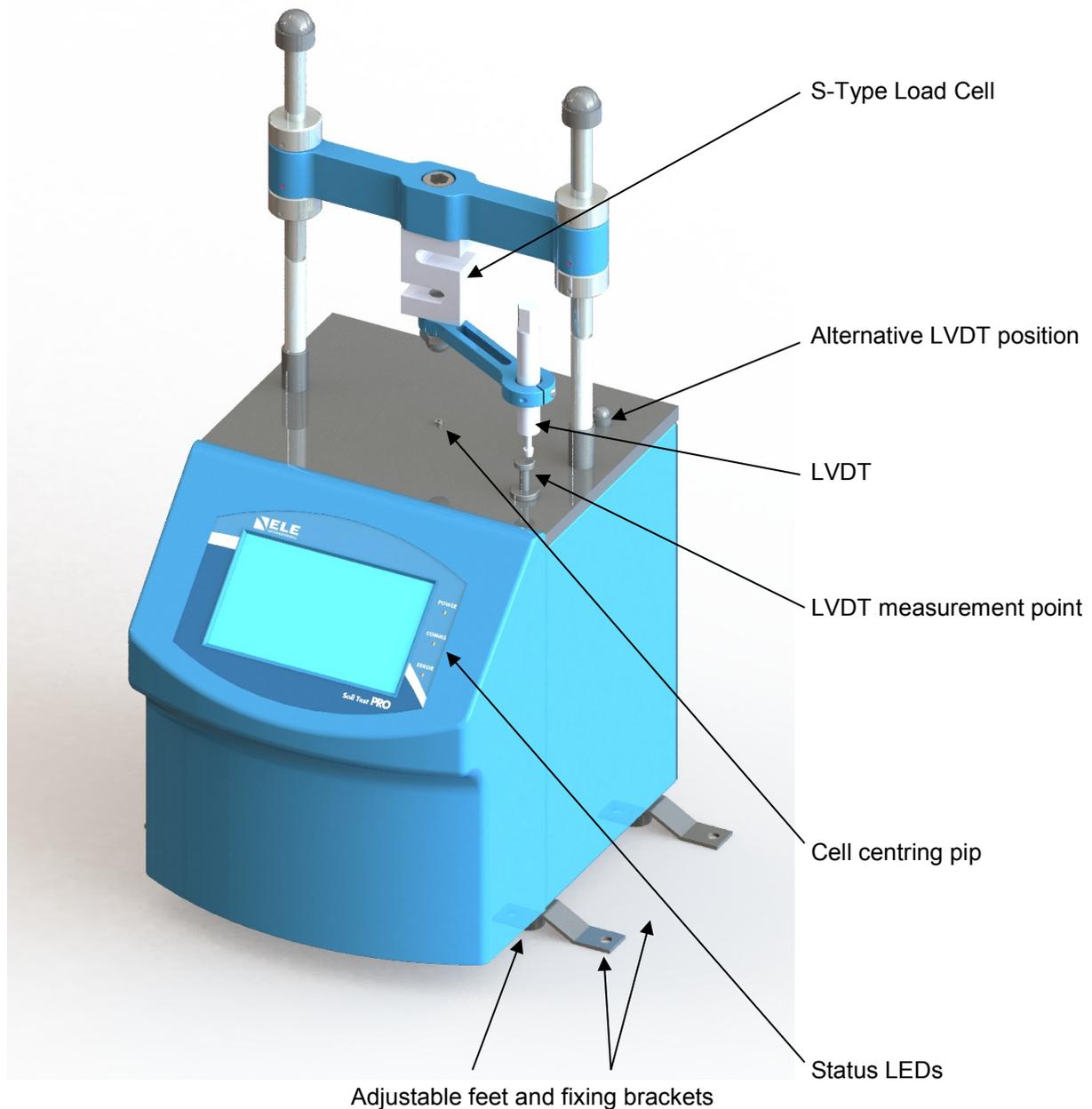
- S type load cell and a precision linear variable displacement transducer (LVDT) are available and are required for use with the ASC.
- Available in one universal model 90-240 V AC, 50-60 Hz, 1 ph.
- 7" splash-proof, colour, graphical touchscreen.
- Multi language.
- No compressor – stepper motor improves accuracy across entire 15 kN load range.
- Variable speed to suit sample type.
- Can change target loads during a test.
- Flexible reports compiled by the latest DS8 software.
- Self-test routines.
- Multi engineering units support (SI, US/Imperial and Metric).

**Warnings:**

 <b>WARNING</b>	
	Disconnect the unit from the mains supply before accessing the machine's electrical circuitry.
 <b>WARNING</b>	
	Inappropriate use of the consolidation frame could result in a risk of crushing.
 <b>WARNING</b>	
	Test sample cells being loaded on the consolidation frame present a pinch point if handled incorrectly.
 <b>CAUTION</b>	
It is recommended that appropriate PPE, safety footwear and eye protection be worn whilst operating consolidation machines.	

### 3 Description

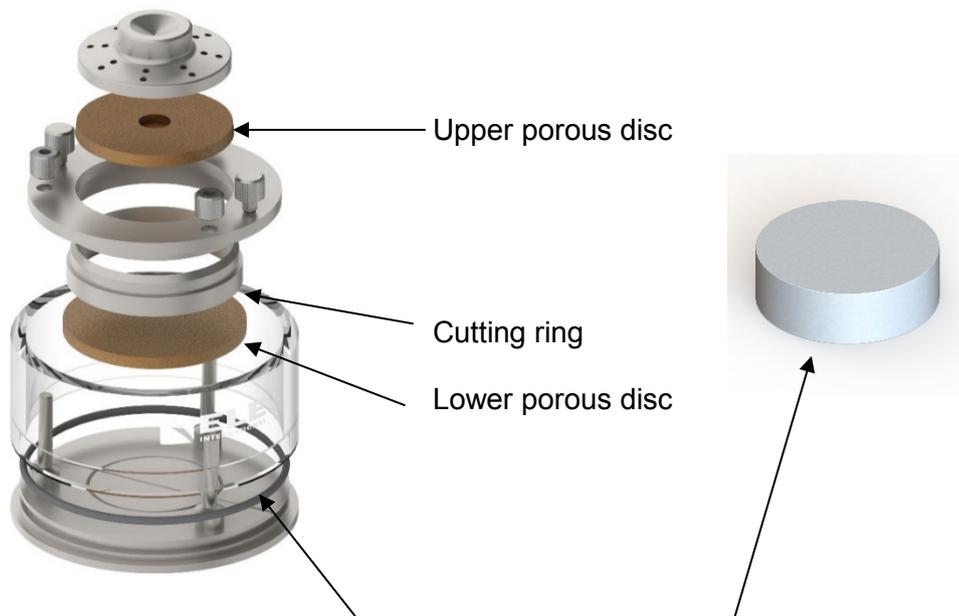
The ASC machine consists of a consolidation frame and sensors. The part number for the frame is 25-0500/09. The frame load capacity is 15 kN. The default S-type load cell is 15 kN and its part number is 27-1565. The default consolidation measurement sensor (LVDT) has a 15 mm range. It's part number is 27-1650. Other ELE S-type load cells or LVDTs may be used.



### 3.1 Consolidation Cell Range

A large number of consolidation cell sizes are available for testing the soil sample. There are 4 overall cell sizes (Series 0444, 0469, 0490 and 0520) that cover the 12 standard sample sizes offered. Refer to the Product Codes in the table below. The cell also includes a cutting ring and porous discs. Spare rings and discs are available. Other custom sizes may also be requested. The part numbers of calibration discs necessary for the deformation calculation are also shown below.

Spare Parts						
Series Code	Product Code	Cell Size	Cutting ring	Lower porous disc	Upper porous disc	Standards
0444	25-0444	35 mm	25-0444/12	25-0444/11	25-0444/10	BS, ISO, ASTM
0490	25-0446	50mm	25-0446/12	25-0490/11	25-0455/10	BS, ISO, ASTM
0469	25-0466	70 mm	25-0466/12	25-0469/11	25-0466/10	BS, ISO, ASTM
0469	25-0467	75 mm	25-0467/12	25-0469/11	25-0503/10	BS, ISO, ASTM
0520	25-0510	100 mm	25-0510/12	25-0520/11	25-0510/10	BS, ISO, ASTM
0520	25-0520	112.8 mm	25-0520/12	25-0520/11	25-0520/10	BS, ISO, ASTM
0490	25-0499	2 inch	25-0499/12	25-0490/11	25-0499/10	BS, ISO, ASTM
0490	25-0489	2.416 inch	25-0489/12	25-0490/11	25-0489/10	BS, ISO, ASTM
0490	25-0490	2.5 inch	25-0490/12	25-0490/11	25-0479/10	BS, ISO, ASTM
0469	25-0469	3 inch	25-0469/12	25-0469/11	25-0469/10	BS, ISO, ASTM
0520	25-0459	4 inch	25-0459/12	25-0520/11	25-0459/10	BS, ISO, ASTM
0469	25-0449	70 x 19 mm	25-0449/12	25-0469/11	25-0466/10	Geospec 3



Series Code	Cell Size	O ring	Calibration Disc
0444	35 mm	25-0444/14	25-0444/15
0490	50mm	25-0490/14	25-0446/15
0469	70 mm	25-0469/14	25-0466/15
0469	75 mm	25-0469/14	25-0467/15
0520	100 mm	25-0520/14	25-0510/15
0520	112.8 mm	25-0520/14	25-0520/15
0490	2 inch	25-0490/14	25-0499/15
0490	2.416 inch	25-0490/14	25-0489/15
0490	2.5 inch	25-0490/14	25-0490/15
0469	3 inch	25-0469/14	25-0469/15
0520	4 inch	25-0520/14	25-0459/15
0469	70 x 19 mm	25-0469/14	25-0449/15

## 4 Installation

### WARNING

Exercise extreme caution when lifting the machine. Use only approved and tested equipment. ELE International will accept no responsibility for damage caused by mishandling.

### NOTICE

Do not lift the machine from the cross-head as this will damage the loading mechanism. ELE International will accept no responsibility for damage caused by mishandling.

### NOTICE

Do not site the machine in an area subject to vibration. The consolidation test requires very precise measurements to be made. Significant local vibration may cause inaccurate measurements being recorded and result in incorrect analysis of soil sample characteristics.

### 4.1 Moving, Lifting and Siting

The ASC frame will be delivered in one part mounted on a pallet. It should remain on the pallet until it is next to its final position.

To remove from the pallet, unscrew the four bolts (accessed from underneath the pallet) which secure the compression frame. The machine may then be lifted/moved away from the pallet and placed into position using a fork lift or hoist and lifting straps under the case.

Once in its final position the machine may be held firmly using the fixing brackets and suitable screws, otherwise the brackets can be rotated out of the way.

Lastly the levelling of the machine should be checked with a suitable spirit level (not provided). If necessary the machine can be levelled by adjusting the feet height using a flat blade screwdriver and 12 mm spanner (1/2" wrench), also not provided.

### 4.2 Safety

Whilst the test is in operation do not remove any covers or attempt to adjust any part of the machine.

Ensure all moving parts are thoroughly secured before attempting any maintenance.

### 4.3 Electrical Safety

 <b>WARNING</b>	
	<p>Before removing any covers or performing maintenance repair and service, isolate from electrical supply by removing mains plug. Where mains supply is required during these activities, only competent persons should perform the work.</p> <p>Check that the power supply is compatible with the requirements stated on the label and connect in accordance with IEE regulations or to local requirements.</p>

This machine may be operated through a standard socket outlet when fitted with an appropriate 3 pin plug fused in accordance with the label.

**Note: Connect cable to plug as follows:**

Brown wire (black)	L	Live or Power
Blue wire (white)	N	Neutral
Green/Yellow (green) wire	E	Earth or Ground

NOTICE
ELE International recommends the use of a UPS for all soil testing equipment given the significant period of time these tests usually take. A loss of power during a test stage will likely result in the test data being lost and the requirement to restart the whole test.

#### 4.3.1 Portable Appliance Tests (PAT)

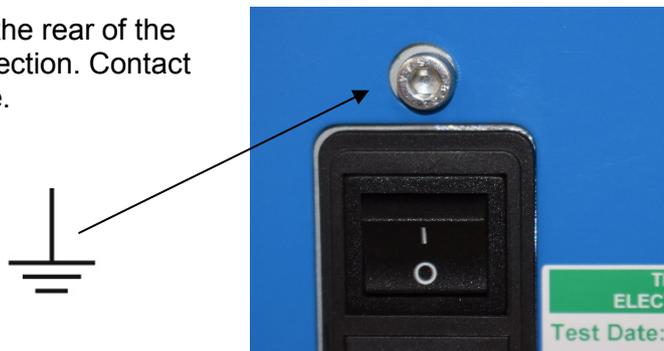
All ELE designed products are tested for electrical safety prior to sale.

An electrical safety test label is fitted (usually adjacent to the mains input socket). Should no label be found, please contact ELE's Service Department quoting the serial number of the equipment.

Organisations have an obligation to ensure equipment is maintained and is safe for use. Regular PAT testing is one means of ensuring equipment continues to be electrically safe.

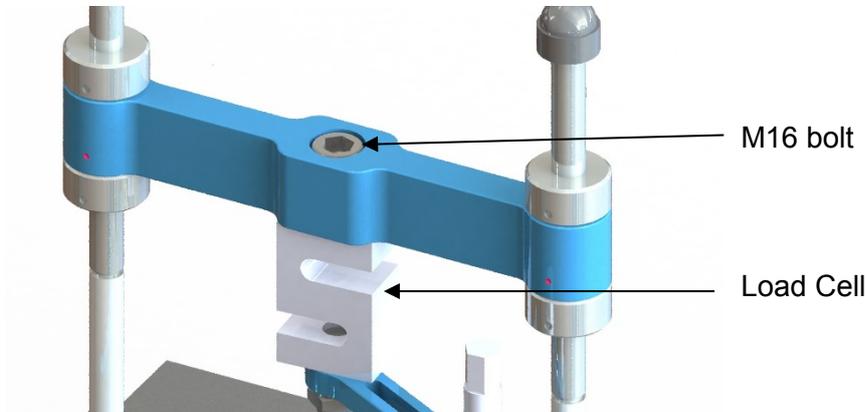
NOTICE
<p>Important: do not connect PAT leads to sensitive components such as PCBs, control switches, etc.</p> <p><b>DO NOT FLASH TEST ELECTRONIC EQUIPMENT.</b></p>

Use the earth stud (M5 socket head) on the rear of the machine panel or an external earth connection. Contact ELE's Service Department for assistance.

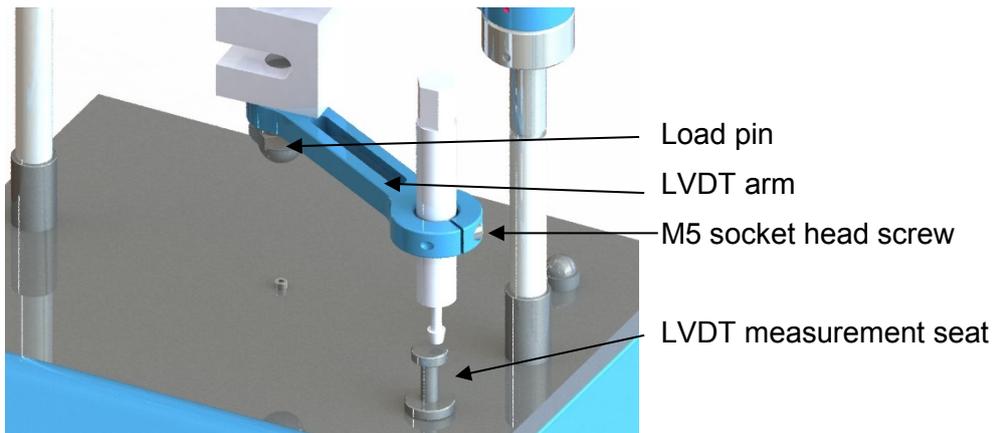


#### 4.4 Mounting the Load Cell and LVDT

The Load Cell is mounted (see below) to the cross head using the M16 bolt and 14 mm hex key (supplied).



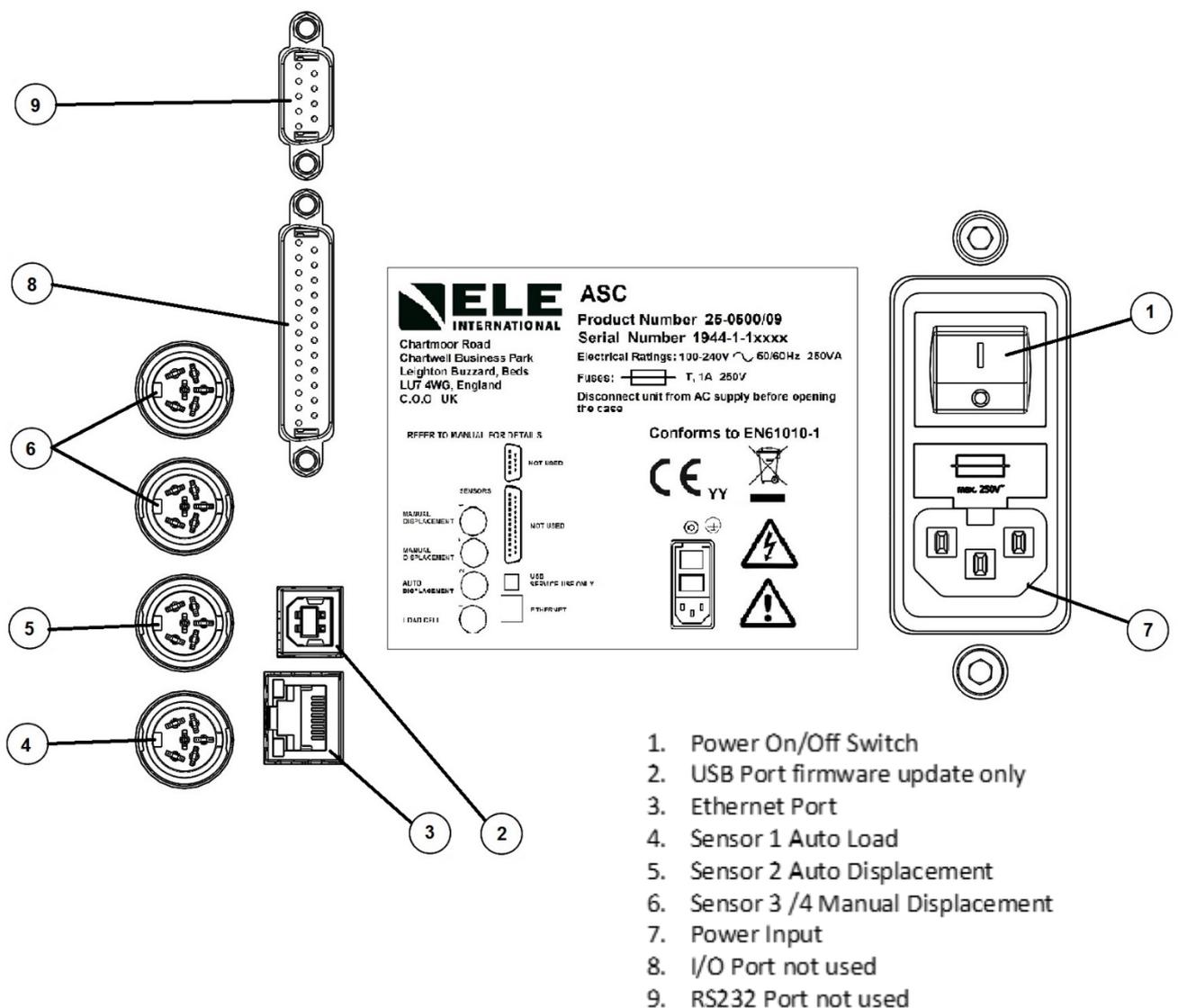
The LVDT is mounted to the base of the load cell (see below) using the load pin and LVDT arm.



Use a 24 mm spanner (15/16" wrench) to attach the LVDT arm to the load cell with the load pin. Insert the LVDT into the arm and tighten the M5 screw to retain it. The height adjustment may be completed later, see **Motor Drive and Home Position Setup** for details.

#### 4.5 Installation Checks

Once the machine is in place and the transducers have been mounted, connection can be made to the rear panel. The load cell must connect to the lower DIN connector (item 4) sensor input 1. The LVDT (displacement transducer) must connect to the next DIN connector (item 5) sensor input 2. Any further displacement sensors associated with manual consolidation arms connect to the manual sensor inputs (item 6) sensor inputs 3 and 4. The AC power connector is an IEC C14 fused/filtered appliance switch (item 7). The supply voltage should be 100 to 240 V AC at 50/60 Hz. The dual pole switch contains two fuses rated at 1A T. The AC mains supply must be connected to the AC input (item 7) using one of the IEC 60320 type C13 cable assemblies provided.



## 5 Operation

Turn the ASC machine ON. The screen display will be of the form below with the ASC in DS Mode (ASC-DS). In this condition tests are configured and initiated from the DS8 application running on a PC.



The front panel LEDs will show the following status:

- Power LED: Blue
  - ON: Power On
  - OFF: Power Off
- Comms LED: Green
  - ON: The machine is connecting with DS8
  - OFF: There is no DS8 connection
- Error LED: Red
  - ON: At power ON, to show power interruption has occurred
  - OFF: After DS8 resets the logging system

### **Front Panel Display and Controls**

All the basic operations of the Auto Soils Consolidator (ASC) are controlled from the 7.0" touch screen display.

#### **NOTICE**

Do not use excessive force when pressing the touch screen panel.

## **Display**

The 7.0" display has a bright, easy to read character set and function icons which can be seen under all internal lighting conditions. The screen is not adjustable but set at a comfortable viewing angle.

## **Home Screen Keys**

There are 4 short-cut function icons that are used to control the operation of the system.

	Test Start Menu
	Software Update Menu
	Tools/Settings Menu
	Calibration Menu

### **Test Start Menu**

This menu screen allows the user to:-

- View the status of test
- Stop a test
- Adjust the frame position

### **Tools/Settings Menu**

This menu screen allows the user to:-

- Change the language and measurement units
- View or adjust comms port settings
- Adjust the date, time and display brightness

### **Calibration Menu**

This menu screen allows the user to:-

- Enter default calibration values for the default transducers
- Use the diagnostic and miscellaneous functions
- Use the service functions

## Tools/Settings Menu

### General Settings

General display settings and test units can be changed by selecting the **Tools/Settings** icon

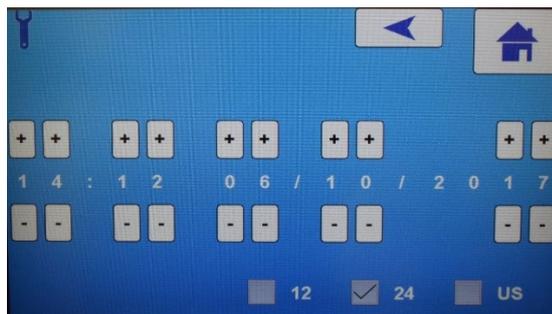


from the Initial screen.



### Setting the Time and Date

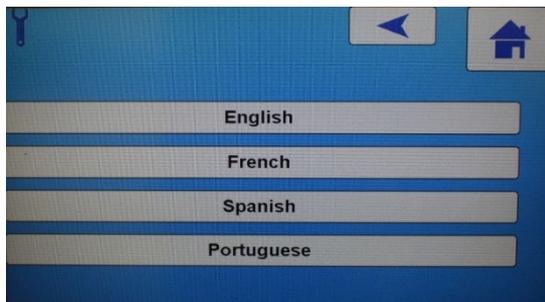
To set the date and time, select **Set Date & Time** and use the various + and - buttons to adjust to the format shown on the screen.



The time can be displayed in 12 or 24 hour format. Selecting the US format box will change the date format to MM/DD/YYYY.

### Setting the Language

The operating language can be changed by selecting **Set Language** and choosing from one of the pre-programmed language options available:

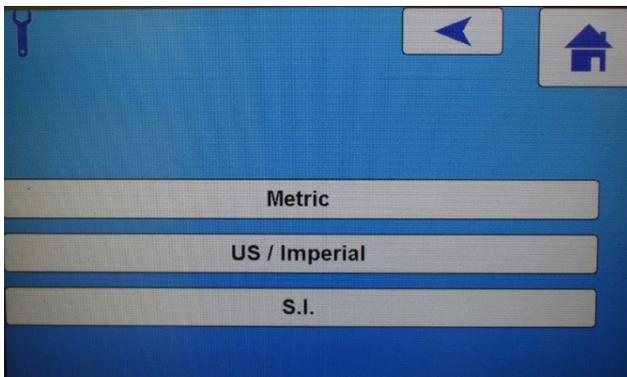


### **Display Units**

The display units selected define the units in which the measurement parameters are displayed, and which units are used for sample dimensions, sample weight and sample density. The following table shows the available section.

<b>Units</b>	<b>Load</b>	<b>Dimensions</b>	<b>Weight</b>	<b>Density</b>	<b>Stress</b>
<b>SI</b>	kN	mm	g	kg/m <sup>3</sup>	kPa
<b>US/Imperial</b>	lbf	inch	lb	lbf/ft <sup>3</sup>	psi
<b>Metric</b>	kgf	cm	g	g/cm <sup>3</sup>	kgs/cm <sup>2</sup>

The default setting for the display units is S.I. To change this press **Set Units** and select the required units.



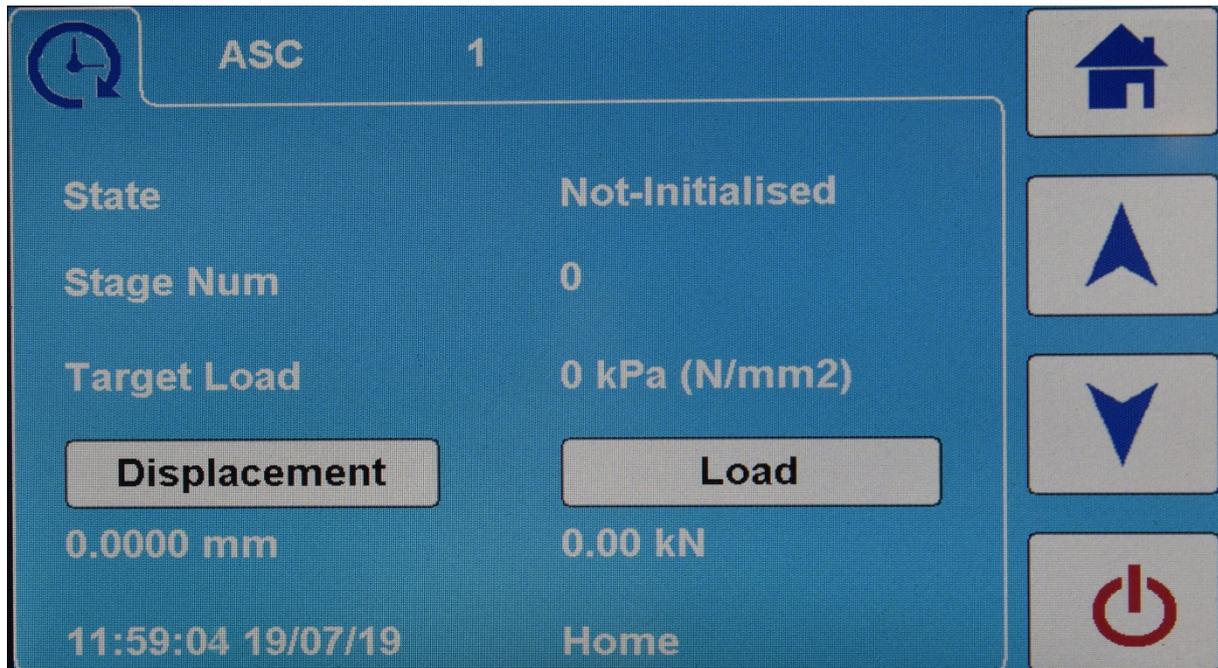
### **Display Version**

The Display Version will show the current version of the firmware running.

### Motor Drive and Home Position Setup

With the machine leveled the cross-head position can be checked or adjusted. Use the Test Start Menu to control the height of the cross-head. Press the move up icon  to move the cross-head to its 'HOME' position.

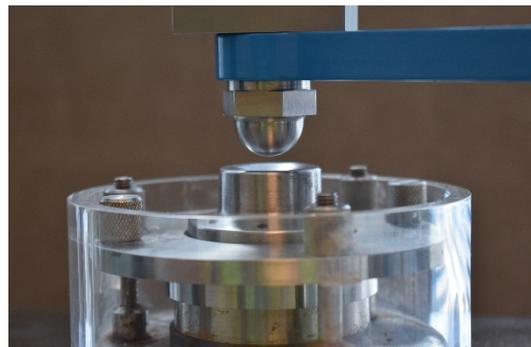
During this process the display will show the 'Status' of the machine as 'Unloading'. A pop-up message will then show when the machine reaches its 'Top Limit' and then returns to the 'HOME' position.



Wait until the machine status shows it is at the 'HOME' position.

With the cell containing a stiff soil or its calibration block, confirm there is sufficient headroom for the cell to be inserted or removed from the frame with about 1 mm (0.04") clearance.

Check the cross-head is level and then lock in position with the top threaded retainers.

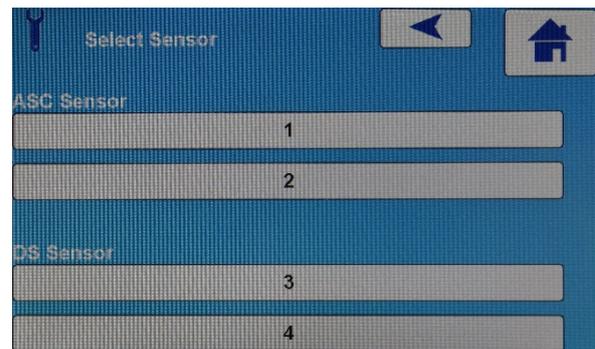
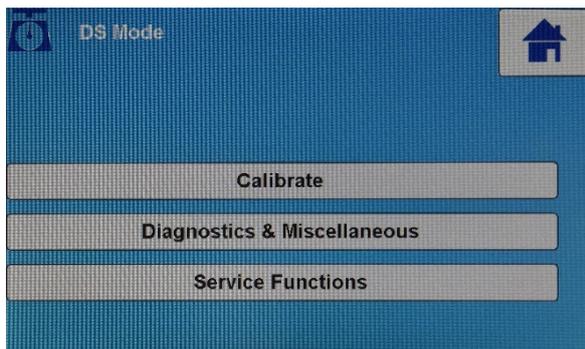


### Default Sensor Calibration

<b>⚠ WARNING</b>
These default calibration values are only applicable to the default transducers supplied by ELE International. The use of other transducers that do not have these characteristics may result in damage to the machine. ELE International will accept no responsibility for damage caused by using default parameters with different transducers.
<b>NOTICE</b>
The calibration data described below is not intended for the purposes of testing samples. It is used as an indication of loading and is for safety purposes to prevent an overload condition on the machine.

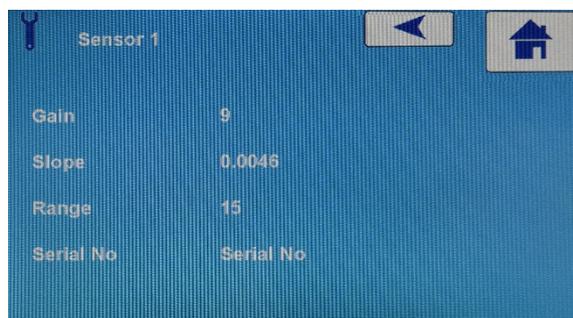
Prior to calibration data from the DS8 application it is useful to use default calibration values for the 15 kN and 15 mm sensors. This will be used to give an indication of the system status.

Select the Calibration icon, enter the passcode (the default passcode is 937707) and 'Calibrate'.



In turn select ASC Sensor 1 and 2. For ASC Sensor 1 and 2 select the DEFAULT option and confirm. The parameters can then be viewed.

Sensor	Gain	Slope	Range (always S.I. Units)
1. Load Sensor	8	-13.75	15000 (N)
2. Displacement Sensor	9	0.0046	15 (mm)

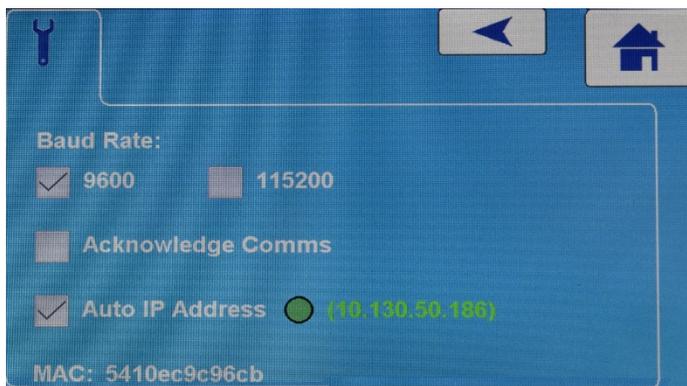


## User Defined Settings

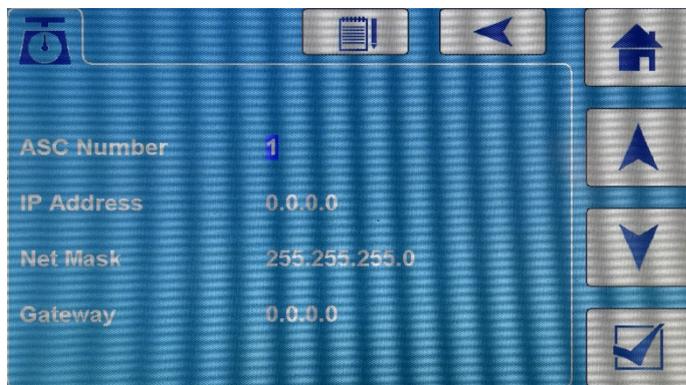
There are a number of other miscellaneous system settings that are adjusted or viewed via the Tools Menu under the User Defined Settings screen.

## Comms Port Settings

The communication between the PC running the DS8 program and ASC is made via an Ethernet connection. By checking the box **Auto IP Address**, the ASC becomes discoverable on the network and the IP Address assigned to the machine is seen. **This IP address needs to be entered in the relevant DS8 screen to link the machine and application together.**



In some situations where DHCP auto IP address is not supported, it is necessary to assign the machine's IP address manually. In this situation deselect the Auto IP Address function and then set up a static IP address from the Calibration Menu, in the Diagnostics & Miscellaneous, Network Set-up section.



Using the up and down arrows, select the parameter to be changed, then select the **'Edit'** button. Change the ASC machine number to that required. Change the Network address parameter and then the **'Enter'** key to store these values. Exiting via the **'Home'** key will leave the Network address values unchanged.

The ASC has an RS 232 serial port for diagnostic connection only.

Settings for the diagnostic serial port are also shown on this menu but are not accessible by the user.

## Key Click Beeper and Adjust Display

From the Adjust Display menu, the Key Click beeper can be switched on or off. Check the box marked Key Click to hear the beeper when a key is pressed. If the screen is not bright enough to read in the ambient light conditions, adjust the Touch Screen Brightness. From the Initial screen, press the Tools icon. Select **Tools>User-Defined Settings>Adjust Display**. Press the + or – buttons to adjust the brightness accordingly. The system will automatically save the new brightness setting in non-volatile memory.

---

## **Miscellaneous Features**

### *Real-time Clock*

A real-time clock is powered by a small LiMn Dioxide battery when no external power is present. This will maintain the internal clock for up to 5 years even when there is no system power present and for much longer when the unit is normally powered up

### *Configuration Data*

All calibration and configuration data is held in non-volatile memory, and cannot be lost under normal conditions. All changes to the configuration are stored as they are made.

### *Error Conditions and Messages*

The ASC continually checks critical performance parameters and displays an error message if a malfunction is detected. If an error is detected, a dialogue box with the error code will be displayed. If the error has resulted in the machine being shut down and unable to operate further, this error must be fixed and cleared before the operation can continue. See Appendices for a list of error codes and their meanings. If the error persists, or further assistance is required, contact the ELE service engineer or consult the Service Manual.

### *Factory Default Values*

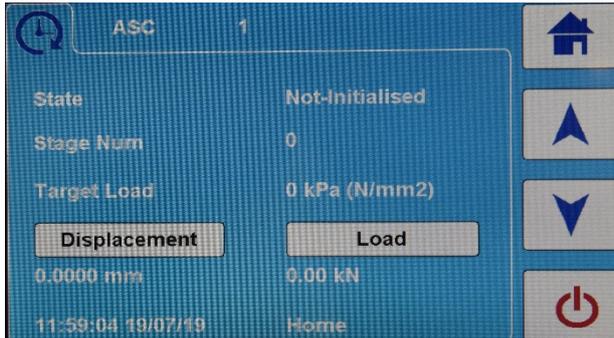
The ASC can be returned to factory default conditions via **Calibration > Service Functions > Reload Defaults**. The parameters reset include Time and Date format, Language, Units, User Passcode, Serial Number, Network Address, Machine Number.

Following a Reload Defaults it will be necessary to re-enter the machine Serial Number to that shown on the rear panel label, **Calibration > Service Functions > Set Serial Number**, in the form 1944-1-nnnnn.

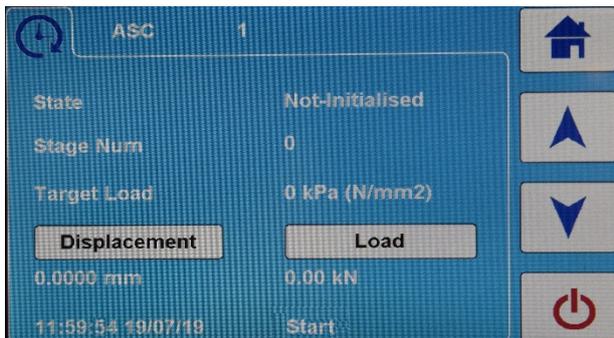
## Running a Test

To run a test, a soil sample should be prepared in the manner laid out in the respective test standard.

The cell containing the sample is then centred on the top plate of the machine with the frame in its 'HOME' position. If the frame is not in this state press the frame up key . The machine will return to its top limit and then return to its 'HOME' position.



Then with the cell in place, press the frame down key  until the frame reaches its 'START' position.



Adjust the LVDT measurement seat so the tip of the LVDT has definite contact, if this is not already the case. Lock the LVDT seat in place with its lower knurled nut.

The machine is now in a position for the test to begin.

All further parameters for the test are received from the DS8 application running on a PC.

---

## **Maintenance**

### *Before each test:*

Check/clean top plate and uprights.  
Check location pin secure.  
Check transducers securely mounted.  
Check condition of ball seat.

### *Occasionally:*

Check crossbar is level to machine.  
Check machine is secure on bench.

### *Annually:*

Calibration of force/displacement transducers.

## **Service, Spares and Accessories**

It is recommended that either the ELE Service Department or an authorised distributor be contacted for details of available spare parts or servicing requirements.

Full part numbers for the spares used on cells are detailed in a previous section.

## **Consolidation Cell Range**

Other spares/accessories include:-

82-2500	Water bottle (500 ml) for inundating samples
25-0500/K	Spare screen cover and fuses
27-1565	S Type Load Cell (0.7 m lead)
27-1650	Displacement Transducer (LVDT) (0.7 m lead)

## Appendix 1: Direct Connection to the ASC (Point-to-Point), PC Configuration

To connect an ASC to a PC with a point-to-point Ethernet connection, take the following actions.

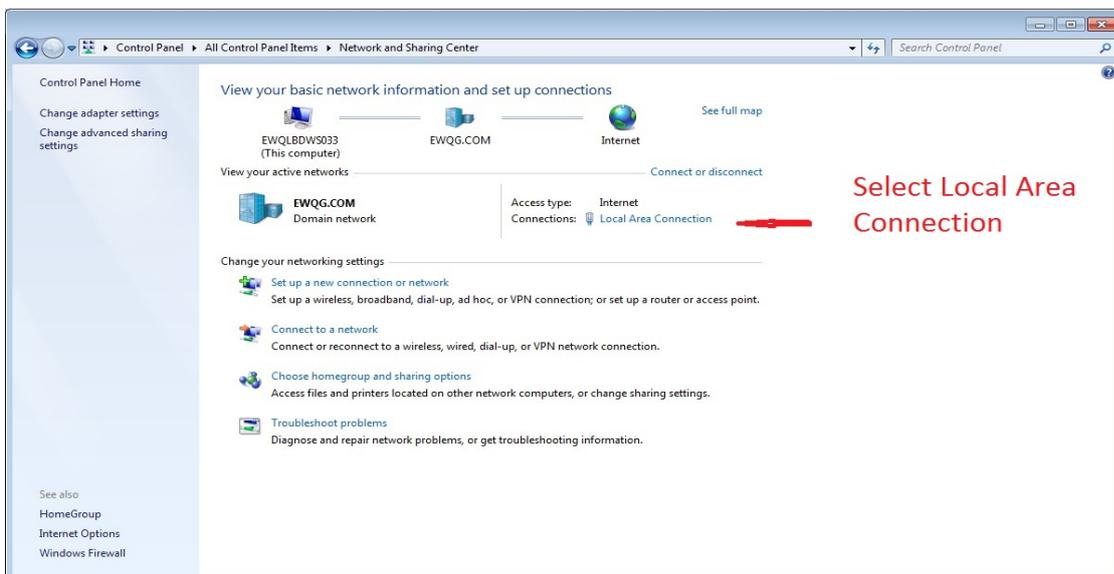
Make an RJ45 Ethernet connection between the PC and the ASC. Access the Control Panel of the PC.

Follow the instructions below; the screen shots are taken from a Windows 7 PC. This same process on a Windows 10 PC is similar, but will have a different screen appearance.

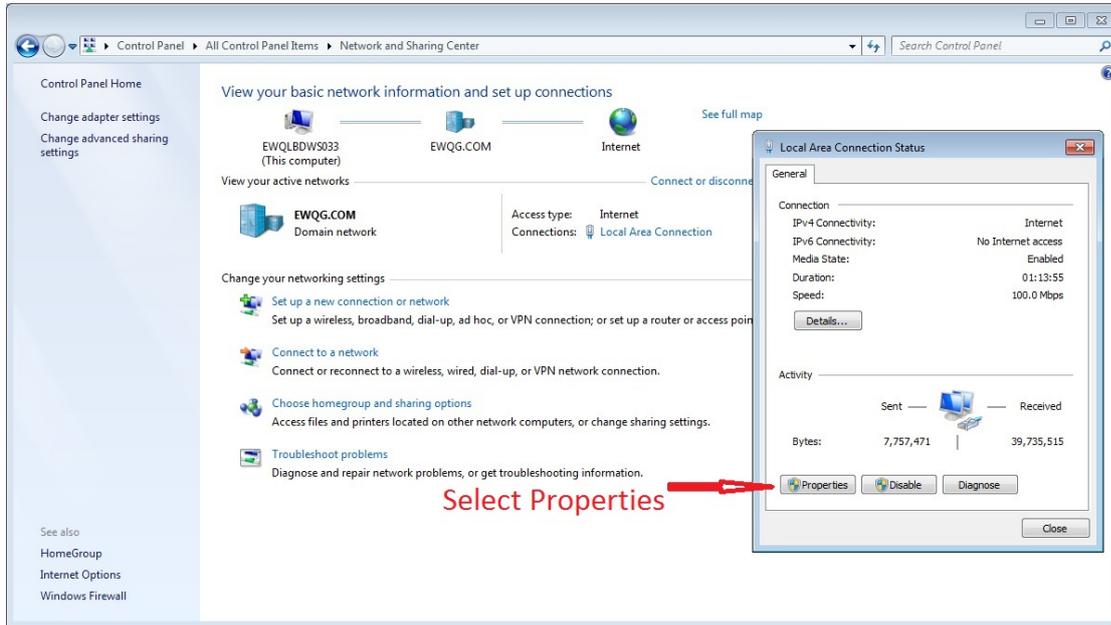
Select Network and Sharing Centre.



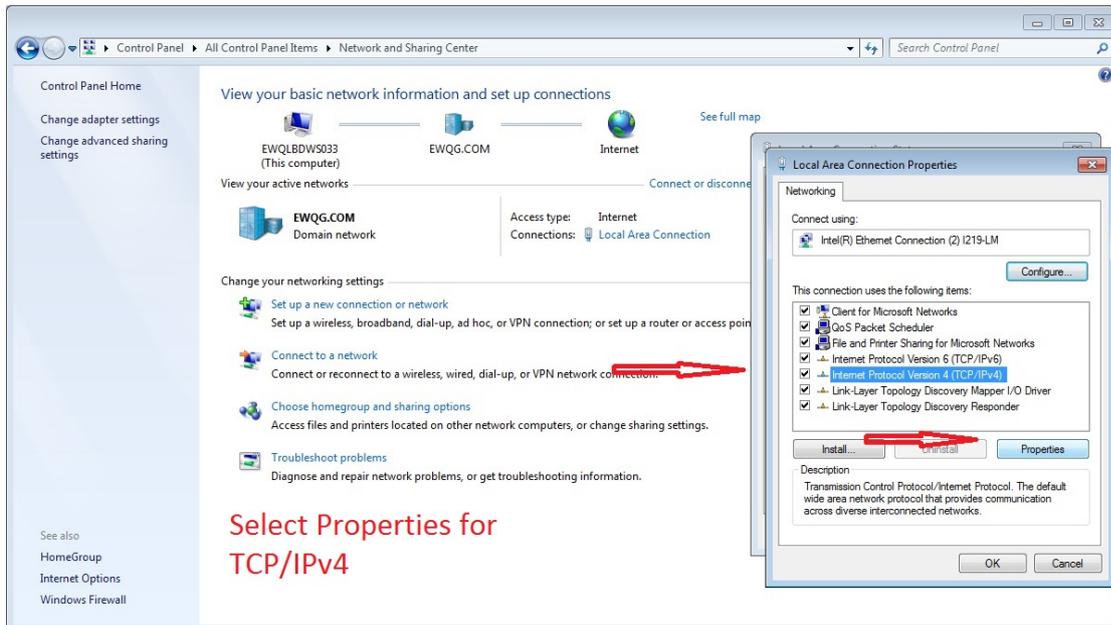
Select the LAN Connection option. If none is shown, check that the Ethernet cable between the PC and the ASC has been connected.



### Select Properties.



### Select Properties for Internet Protocol Version 4 (TCP/IPv4).

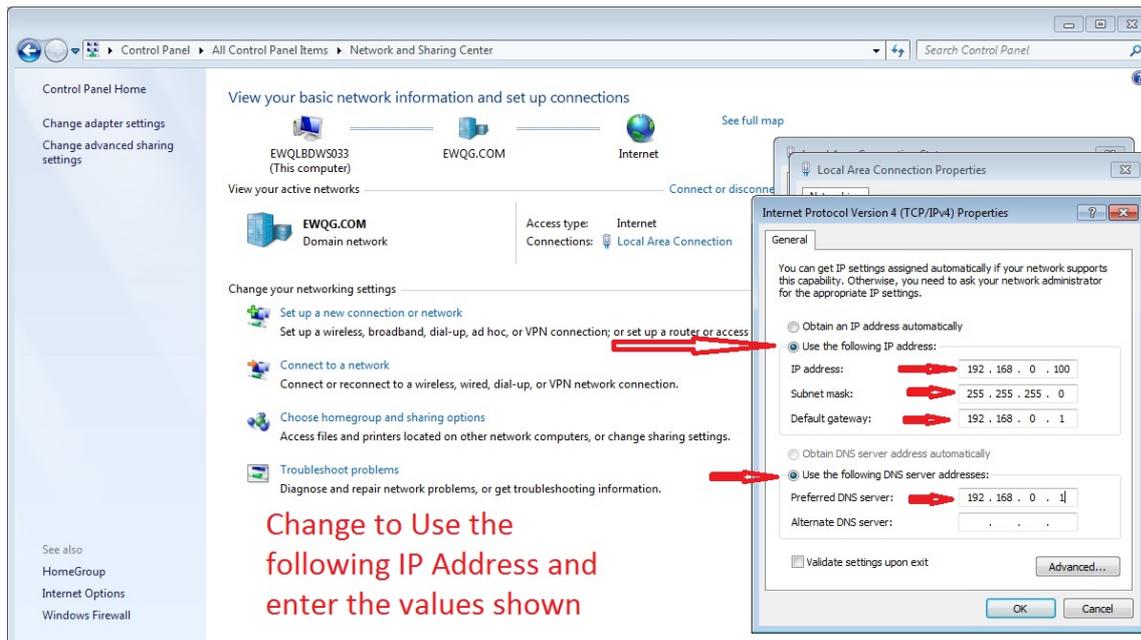


Set the following parameters:

Select 'Use the following IP Address'. The IP address of the PC can be almost anything but an arbitrary value of 192.168.0.100 is chosen.

The Subnet mask should be 255.255.255.0.

The Default Gateway and DNS server address should be 192.168.0.1. This setting is based on the original IP address selected.



Select OK when the values have been entered and then close and exit.

### Connecting the ASC to a Local Area Network

Make a connection between the Ethernet port of the ASC and the host network router. Ensure the host PC running the DS8 application is registered on the network.

Set the ASC to **Auto IP Address** and note the address displayed. Alternatively note the Host Name that will be ELE-ASC01 as a default. This should be changed when multiple ASCs are on the network and is accessed via the Diagnostics & Miscellaneous, Network Set-up menu. The ASC number can be changed from 1 to 99 to modify the Host Name from ELE-ASC01 to ELE-ASC99.

### Configuring the Ethernet Comms

Ensure a connection has been made between the Ethernet port on the ASC and the network router or PC. Confirm the flag in the **Auto IP Address** box is ticked for a connection via a router and note the IP address displayed. This IP address should then be entered in the DS8 application in order for the connection to the ASC to be made.

**Note: When the ASC has been successfully established on the network the solid white symbol and IP address will become green.**

On certain networks, where settings permit, the ASC may be able to register with the Host Name ELE-ASCnn. If further ASC machines are added to the network their addresses can then be set with incremental numeric values.

## Appendix 2: USB Port for Firmware Update

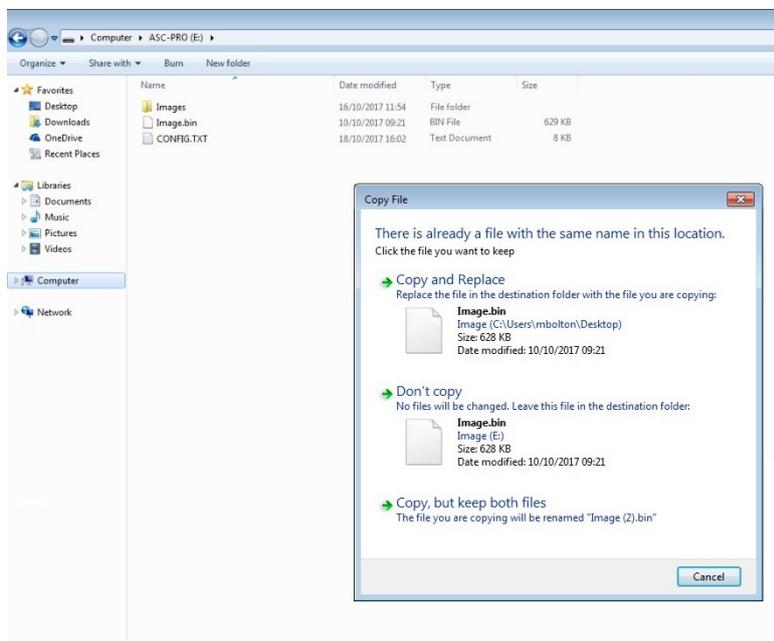
The USB port is used for firmware updates to the system's software (see below), to take copies of configuration data and to export data to a PC.

Connect the ASC to a Windows PC or laptop via the USB port and select the **USB** icon in the **Saved Data** menu.



The ASC will now be visible to the external PC as a removable memory device. The root directory of the ASC will contain a file called Image.BIN - this is the firmware file.

In order to update the firmware file, take a copy of the existing file and save it to another location. Copy and paste the updated firmware file into the root directory of the ASC, selecting "Copy and Replace" when prompted.

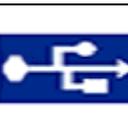


After updating the firmware, safely remove the device from the **PC using the 'Eject' function and remove the USB cable**. Switch the ASC OFF and back ON. Confirm the new update is programmed when the unit powers up, "Programming new image....." is displayed, followed by "success". To check the version of firmware loaded, look in the Display Version Menu section.

### Appendix 3: Troubleshooting Guide

	<b>PROBLEM</b>	<b>SOLUTION</b>
No display showing	No power	Check power supply and fuses
	Screen brightness set too low	Adjust brightness
	Internal cables loose	Refer to ELE Customer Service
Machine not operating	Frame travel on limit	Check cross-head set up
	LVDT sensor over-range	Check sensor position
	Load cell over-range	Check frame
Machine not reaching START position	Frame cross head too low	Move the cross head up, level and secure
Test stopping due to LVDT overload	LVDT not adjusted correctly	Move LVDT up

**Appendix 4: Glossary of Icons and Menu Tree**

	Home		Test Start		Software Update Menu
	Accept/Enter		Calibration/ Protected Area		Tools/Settings Menu
	Test Stop		Edit		USB Connection
	Scroll Left		Scroll Right		Warning
	Scroll Up or Unload		Scroll Down or Load		Reset

<b>Test Start</b>		
Tare Load Tare Displacement Frame Up Frame Down Stop		
User Defined Settings	- Comms Port Settings - Adjust Display	
Motor Status Test		
<b>Calibration</b>		
Calibrate  Diagnostics & Miscellaneous Service Functions	Sensors  Network Setup Autocycle Test New Passcode Set Serial Number Reload Defaults Software Update	View Clear Default  SD Format Auto Update
<b>Software Update</b>		
USB Link		
<b>Tools/Settings</b>		
General Settings  User Defined Settings Motor Status Test	Set Date & Time Set Language Set Units Display Version Comms Port Settings Adjust Display	

## Appendix 5: Error Codes

Error Code	Description
0	Operation successful
1	A hard error occurred in the low level disk I/O layer
2	Assertion failed
3	The physical drive cannot work
4	Not applicable
5	Not applicable
6	Not applicable
7	Not applicable
8	Not applicable
9	Not applicable
10	Not applicable
11	Not applicable
12	Not applicable
13	There is no valid FAT volume
14	The creation of a FAT volume aborted due to parameter error
15	Could not get a grant to access the volume within defined period
16	The operation is rejected according to the file sharing policy
17	LFN working buffer could not be allocated
18	Number of open files > <u>_FS_SHARE</u>
19	Given parameter is invalid
25	SD-card is not present
26	SD-card error (generic)
27	SD-card full
28	Not applicable
29	Invalid filename specified
30	Specified number of bytes were not written to SD-card
31	File too big to load into internal buffer
32	File size is 0
33	Error closing file on SD-card
34	Error reading configuration
35	Error writing configuration
36	I2C read error on primary I2C port (ADC + backlight)
37	I2C write error on primary I2C port (ADC + backlight)
38	I2C read error on secondary I2C port (touchscreen)
39	I2C write error on secondary I2C port (touchscreen)
40	Sensor calibration data is invalid
41	Sensor channel is disabled
42	Sensor voltage is below the allowable value
43	Sensor calibration data is not verified
44	Invalid ADC channel setting

45	Not applicable
46	Not applicable
47	HAL operation timed out
48	HAL resource is busy
49	HAL operation resulted in an error
50	Not applicable
51	Not applicable
52	Not applicable
53	Not applicable
54	Not applicable
55	Not enough space on SD-card
56	Not applicable
57	Not applicable
58	Not applicable
59	Not applicable
60	Log is corrupt
61	Error setting real-time clock
62	Not applicable
63	Not applicable
64	Touch screen controller fault
65	Not applicable
66	Not applicable
67	Not applicable
68	Not applicable
69	Not applicable
70	Not applicable
71	Not applicable
72	Not applicable
73	Not applicable
74	Not applicable
75	Not applicable
76	Not applicable
77	Not applicable
78	Not applicable
79	Not applicable
80	Not applicable
81	Not applicable
82	Not applicable
83	Invalid CRC
84	Command parameter 1 invalid
85	Command parameter 2 invalid
86	Command parameter 3 invalid
87	Command parameter 4 invalid

88	Command parameter 5 invalid
89	Command parameter 6 invalid
90	Comms timeout
91	No connection
92	Motor comms error
93	EEPROM comms fault
94	EEPROM CRC fault
95	EEPROM write failed
96	EEPROM verification failed
97	The home screen is not being displayed
98	Timed out waiting for an event to occur
99	Unable to initialise system
100	The resource is locked by another threadID
101	Unit was reset due to an internal error
102	Generic internal fault
103	Internal inter-threadID comms error
104	Feature is not implemented
105	Not applicable
106	Not applicable
107	Not applicable
108	Not applicable
109	Unknown command, firmware/logger mismatch
110	Invalid number of command parameters, firmware/logger mismatch
111	Generic busy error e.g. result files being scanned, file being saved, etc
200	Operation OK
201	Command response received (but CRC check failed)
202	Data block sent/received (CRC check failed)
203	Command response timeout
204	Data timeout
205	Transmit FIFO underrun
206	Receive FIFO overrun
207	Start bit not detected on all data signals
208	Command's argument was out of range
209	Misaligned address
210	Tx block length not allowed or != tx length
211	An error in the sequence of erase command occurs
212	An invalid selection for erase groups
213	Attempt to program a write protect block
214	Sequence or password error in unlock command
215	CRC check of the previous command failed
216	Command is not legal for the card state
217	Internal ECC was applied but failed to correct the data
218	Internal card controller error

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219	General or unknown error
220	Could not sustain data transfer in stream read operation
221	Could not sustain data programming in stream mode
222	CID/CSD overwrite error
223	Only partial address space was erased
224	Command has been executed without using internal ECC
225	Erase sequence cleared before executing
226	Error in sequence of authentication
227	Invalid voltage range
228	Address out of range
229	Switch error
230	SDIO disabled
231	SDIO function busy
232	SDIO function failed
233	SDIO unknown function
234	Internal error
235	Not configured
236	Request pending
237	Request not applicable
238	Invalid parameter
239	Unsupported feature
240	Unsupported hardware
241	Generic error

## EC DECLARATION OF CONFORMITY



The Original Declaration of Conformity is suitable to Decision No 768/2008/EC of the European Parliament and the Council of 9<sup>th</sup> July 2008 on a common framework for the marketing of products and contains the elements specified in the relevant modules set out in Annex II of that Decision for the applicable Directives.

This declaration relates exclusively to the equipment in the state in which it was placed on the market, and excludes components which are added and/or operations carried out subsequently by the final user.

### Applied Council Directive(s)

2006/42/EC Machinery Directive

2014/30/EU Electromagnetic Compatibility (EMC)

2011/65/EU RoHS2 Directive and Commission Delegated Directive (EU)2015/863

have been demonstrated

We, the Manufacturer:

**ELE International**, Chartmoor Road, Chartwell Business Park, Leighton Buzzard  
Bedfordshire LU7 4WG, UK

declare under our sole responsibility that the following equipment:

**Product: ASC Range**

**Catalogue Number: 25-0500/09**

**Description: Automatic consolidation frame for soil sample testing**

The object of the declaration described above is in conformity with the relevant Union Harmonisation Decision and the provisions of the following standard(s) or other normative document(s) when installed in conformance with the installation instructions contained in the product documentation

### EMC

Emissions: EN61326-1:2013 Group 1 Class A

Immunity: EN61326-1:2013 Basic Environment

### Clauses pertinent to the Machinery Directive of

EN61010-1:2010 Safety requirements for electrical equipment for measurement, control and laboratory use.

RoHs2: EN50581:2012 Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances.

Date of issue: 2.8.19

Signed

A handwritten signature in black ink, appearing to read 'Tony Power', written over a light blue horizontal line.

Name: Tony Power  
Position: Managing Director

BS EN ISO9001:2008 approved Certificate number 860461
--

# Suppliers Declaration of Conformity Compliance Information Statement:

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**IDENTIFICATION OF PRODUCT:**

ASC Model 25-0500/09

**APPLICABLE COMPLIANCE STATEMENTS:**

CFR 47 Group 1 Class A per PART 15 b)

per §15.19(a)(3)

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and

(2) this device must accept any interference received, including interference that may cause undesired operation

**TEST REPORT INFORMATION:**

dB Technology TR# R000637\_V00

**RESPONSIBLE PARTY (IN USA) NAME:** ELE International, Inc.

**ADDRESS:** PO Box 389, 5600 Lindbergh Drive, Loveland, CO 80539, USA

**TELEPHONE:** +1 970 663 9780

[www.ele.com](http://www.ele.com)

## DIRECTIVE ON WASTE ELECTRICAL & ELECTRONIC EQUIPMENT (WEEE)

	<p>Electrical equipment marked with this symbol may not be disposed of in European public disposal systems after 12 August of 2005. In conformity with European local and national regulations (EU Directive 2002/96/EC), European electrical equipment users must now return old or end-of life equipment to the Producer for disposal at no charge to the user.</p> <p><b>Note:</b> <i>For return for recycling, please contact the equipment producer or supplier for instructions on how to return end-of-life equipment for proper disposal.</i></p> <p><b>Important document. Retain with product records.</b></p>
<p><b>GERMAN</b></p> <p>Elektrogeräte, die mit diesem Symbol gekennzeichnet sind, dürfen in Europa nach dem 12. August 2005 nicht mehr über die öffentliche Abfallentsorgung entsorgt werden. In Übereinstimmung mit lokalen und nationalen europäischen Bestimmungen (EU-Richtlinie 2002/96/EC), müssen Benutzer von Elektrogeräten in Europa ab diesem Zeitpunkt alte bzw. zu verschrottende Geräte zur Entsorgung kostenfrei an den Hersteller zurückgeben.</p> <p><b>Hinweis:</b> <i>Bitte wenden Sie sich an den Hersteller bzw. an den Händler, von dem Sie das Gerät bezogen haben, um Informationen zur Rückgabe des Altgeräts zur ordnungsgemäßen Entsorgung zu erhalten.</i></p> <p><b>Wichtige Informationen. Bitte zusammen mit den Produktinformationen aufbewahren.</b></p>	
<p><b>FRENCH</b></p> <p>A partir du 12 août 2005, il est interdit de mettre au rebut le matériel électrique marqué de ce symbole par les voies habituelles de déchetterie publique. Conformément à la réglementation européenne (directive UE 2002/96/EC), les utilisateurs de matériel électrique en Europe doivent désormais retourner le matériel usé ou périmé au fabricant pour élimination, sans frais pour l'utilisateur.</p> <p><b>Remarque :</b> <i>Veuillez vous adresser au fabricant ou au fournisseur du matériel pour les instructions de retour du matériel usé ou périmé aux fins d'élimination conforme.</i></p> <p><b>Ce document est important. Conservez-le dans le dossier du produit.</b></p>	
<p><b>ITALIAN</b></p> <p>Le apparecchiature elettriche con apposto questo simbolo non possono essere smaltite nelle discariche pubbliche europee successivamente al 12 agosto 2005. In conformità alle normative europee locali e nazionali (Direttiva UE 2002/96/EC), gli utilizzatori europei di apparecchiature elettriche devono restituire al produttore le apparecchiature vecchie o a fine vita per lo smaltimento senza alcun costo a carico dell'utilizzatore.</p> <p><b>Nota:</b> <i>Per conoscere le modalità di restituzione delle apparecchiature a fine vita da riciclare, contattare il produttore o il fornitore dell'apparecchiatura per un corretto smaltimento.</i></p> <p><b>Documento importante. Conservare con la documentazione del prodotto.</b></p>	
<p><b>DANISH</b></p> <p>Elektriske apparater, der er mærket med dette symbol, må ikke bortskaffes i europæiske offentlige affaldssystemer efter den 12. august 2005. I henhold til europæiske lokale og nationale regler (EU-direktiv 2002/96/EF) skal europæiske brugere af elektriske apparater nu returnere gamle eller udtjente apparater til producenten med henblik på bortskaffelse uden omkostninger for brugeren.</p> <p><b>Bemærk:</b> <i>I forbindelse med returnering til genbrug skal du kontakte producenten eller leverandøren af apparatet for at få instruktioner om, hvordan udtjente apparater bortskaffes korrekt.</i></p> <p><b>Vigtigt dokument. Opbevares sammen med produktdokumenterne.</b></p>	

#### SWEDISH

Elektronikutrustning som är märkt med denna symbol kanske inte kan lämnas in på europeiska offentliga sopstationer efter 2005-08-12. Enligt europeiska lokala och nationella föreskrifter (EU-direktiv 2002/96/EC) måste användare av elektronikutrustning i Europa nu återlämna gammal eller uttrangerad utrustning till tillverkaren för kassering utan kostnad för användaren.

**Obs!** Om du ska återlämna utrustning för återvinning ska du kontakta tillverkaren av utrustningen eller återförsäljaren för att få anvisningar om hur du återlämnar kasserad utrustning för att den ska bortskaffas på rätt sätt.

**Viktigt dokument. Spara tillsammans med dina produktbeskrivningar.**

#### SPANISH

A partir del 12 de agosto de 2005, los equipos eléctricos que lleven este símbolo no deberán ser desechados en los puntos limpios europeos. De conformidad con las normativas europeas locales y nacionales (Directiva de la UE 2002/96/EC), a partir de esa fecha, los usuarios europeos de equipos eléctricos deberán devolver los equipos usados u obsoletos al fabricante de los mismos para su reciclado, sin coste alguno para el usuario.

**Nota:** *Sírvase ponerse en contacto con el fabricante o proveedor de los equipos para solicitar instrucciones sobre cómo devolver los equipos obsoletos para su correcto reciclado.*

**Documento importante. Guardar junto con los registros de los equipos.**

#### DUTCH

Elektrische apparatuur die is voorzien van dit symbool mag na 12 augustus 2005 niet meer worden afgevoerd naar Europese openbare afvalsystemen. Conform Europese lokale en nationale wetgeving (EU-richtlijn 2002/96/EC) dienen gebruikers van elektrische apparaten voortaan hun oude of afgedankte apparatuur kosteloos voor recycling of vernietiging naar de producent terug te brengen.

**Nota:** *Als u apparatuur voor recycling terugbrengt, moet u contact opnemen met de producent of leverancier voor instructies voor het terugbrengen van de afgedankte apparatuur voor een juiste verwerking.*

**Belangrijk document. Bewaar het bij de productpapieren.**

#### POLISH

Sprzęt elektryczny oznaczony takim symbolem nie może być likwidowany w europejskich systemach utylizacji po dniu 12 sierpnia 2005. Zgodnie z europejskimi, lokalnymi i państwowymi przepisami prawa (Dyrektywa Unii Europejskiej 2002/96/EC), użytkownicy sprzętu elektrycznego w Europie muszą obecnie przekazywać Producentowi stary sprzęt lub sprzęt po okresie użytkowania do bezpłatnej utylizacji.

**Uwaga:** *Aby przekazać sprzęt do recyklingu, należy zwrócić się do producenta lub dostawcy sprzętu w celu uzyskania instrukcji dotyczących procedur przekazywania do utylizacji sprzętu po okresie użytkowania.*

**Ważny dokument. Zachować z dokumentacją produktu.**

#### PORTUGUESE

Qualquer equipamento eléctrico que ostente este símbolo não poderá ser eliminado através dos sistemas públicos europeus de tratamento de resíduos sólidos a partir de 12 de Agosto de 2005. De acordo com as normas locais e europeias (Directiva Europeia 2002/96/EC), os utilizadores europeus de equipamentos eléctricos deverão agora devolver os seus equipamentos velhos ou em fim de vida ao produtor para o respectivo tratamento sem quaisquer custos para o utilizador.

**Nota:** *No que toca à devolução para reciclagem, por favor, contacte o produtor ou fornecedor do equipamento para instruções de devolução de equipamento em fim de vida para a sua correcta eliminação.*

**Documento importante. Mantenha junto dos registos do produto.**