

OPERATING INSTRUCTIONS

De-aired Water Apparatus

25-1833

<p>ELE International Chartmoor Road, Chartwell Business Park Leighton Buzzard, Bedfordshire, LU7 4WG England phone: +44 (0) 1525 249200 fax: +44 (0) 1525 249249 email: ele@eleint.co.uk http://www.ele.com ELE International, a division of Hach Lange Ltd.</p>	<p>Distributor:</p>	<p>ELE International Soiltest Product Division PO Box 389, Loveland, CO 80539 USA phone: +1 (800) 323 1242 fax: +1 (970) 663 9781 email: soiltest@eleusa.com http://www.eleusa.com</p>
<p><i>In the interests of improving and updating its equipment, ELE reserves the right to alter specifications to equipment at any time</i> ELE International 2005 ©</p>		

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1 Introduction

Water obtained from most sources contains dissolved air. Under atmospheric pressure and at a temperature range of 15 to 25°C (60 to 75°F), the amount of oxygen dissolved in water is approximately 10 PPM.

De-aired water is required for many types of laboratory soil tests including triaxial tests and permeability tests.

The De-aired Water Apparatus is a self-contained unit which only requires connection of water supply and electrical power. Air is removed from the water by passing the water through a continuous vacuum. An internal pump generates vacuum above the water level in the tank while water is sprayed into the tank via the upper assembly. The water tank has a capacity of 15 litres. The upper mechanical assembly contains all mechanical and electrical components including the control panel.

Operating the De-aired Water Apparatus for approximately 30 minutes will reduce the level of Dissolved Oxygen to a level sufficient for the test.

De-aired water for laboratory use is obtained through a side outlet by operating the control on the front panel. The tank is filled with raw water at an inlet located to the right of the control panel. An internal water pump draws water from the tank and continuously sprays the water into the tank.

2 Unpacking, Assembly and Installation

The De-aired Water Apparatus consists of the following:

- Upper mechanical assembly
- Suction pipe
- Tank ((Replacement Tank 25-1833/10).

2.1 Remove the equipment carefully, making sure that none of the components are left in the packing material.

2.2 Fit the nylon suction pipe to the underside of the upper assembly.

2.3 DO NOT at this stage fit the upper assembly to the tank.

Warning: do not operate apparatus without water as this could result in damage to the water pump.

2.4 Connecting the water supply: it is recommended that a shut-off valve be provided in the water supply line and at least 750 mm of flexible tubing such as 9 mm OD be extended from the valve to the de-airing system.

This flexibility is required in order that the upper mechanical assembly may be removed from the tank for cleaning or servicing.

Connect the water supply to the hose nozzle fitting under the label marked 'Water Supply' at the right front corner of the upper assembly.

2.5 Install the upper assembly centrally on the tank. The gasket provided must form a good seal with the top of the tank.

Note: no oil, grease, adhesive or sealant should be used on the gasket.

The locators used to position the upper unit are correctly placed when all the locators are on the outside rim of the tank.

3 Electrical Supply

3.1 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.

Ensure all appropriate measures are taken to protect the operator from excessive noise.

See noise certificate (when supplied).

Electrical safety

Warning: 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.

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.

It is advised that this machine be connected via a residual current device (not supplied), and it should operate if earth leakage current exceeds 0.03 amps.

The power cable is coded as follows:

Brown wire	L	Live or Power
Blue wire	N	Neutral
Green/Yellow wire	E	Earth or Ground

A red light on the control panel indicates when power is on.

Note: exercise extreme caution when using the machine with wet hands. Dry hands before operating machine.

Important: this equipment must be correctly earthed.

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 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.

Important: do not connect PAT leads to sensitive components such as PCBs, control switches and the like.

DO NOT FLASH TEST ELECTRONIC EQUIPMENT.

If in doubt as to the most suitable connection point (which will usually be an earth stud or an external earth connection) contact ELE Service Department for assistance.

4 Operation

4.1 Ensure a free flow of air around the appliance and do not obstruct air grills/louvres.

4.2 Check the control is at the 'Off' position. Turn on water supply and move control to the 'Fill' position.

The filling operation is either by gravity or mains water supply. Fill the tank with fresh water to a maximum depth of 200 mm.

Note: if necessary the water should be filtered before use.

4.3 Connect to mains electricity

In order to ensure the water pump is fully primed, it is recommended that the machine is switched to 'De-aired Water Supply' position and held until water comes from the output.

Move the control to the 'Off' position. Switch on electricity supply. Move the control to the 'De-Air' position. After approximately 30 minutes De-aired water may be removed from the tank.

During the de-aired process it may be noticed that the pressure of the re-circulating pump is reduced as the vacuum is applied, this is normal and will not affect the de-airing process.

Warning: do not allow the water level to fall below the bottom of the suction pipe.

4.4 If the machine is turned off during the 'De-Air' phase, it will be necessary to relieve the vacuum in order to re-prime.

Switch the control, briefly, to the 'Fill' position. Return the control to the 'De-Air' position anti-clockwise through the 'Off' position. Failure to follow the above sequence may cause water in the tank to drain away.

4.5 Obtaining De-aired water: turn the control on the front of the panel to the 'De-Aired Water Supply' position. De-aired water will be pumped out of the tank via the outlet located to the right of the control panel.

The water pump in the De-aired Water Apparatus may be used to fill Triaxial cells or holding tanks. Once the cell is full, the machine must be returned either to 'De-Air' or 'Off'. **Failure to comply with this may cause overheating of the water pump and subsequent failure.**

In the interests of longevity of the water and vacuum pumps, it is recommended that the apparatus is switched off once the required De-aired water is obtained. **Under no circumstances should the apparatus be run continuously for more than 8 hours.**

Depending on the quantity of De-aired water removed from the tank, the period of 30 minutes may be substantially reduced.

Note: in the circulate mode, the water will appear to contain fine bubbles, caused by the churning action of the spray. This is normal, and is an indication that the unit is performing satisfactorily. The water will clear as it approaches a de-aired condition.

1. **Off** – Machine is at rest.

2. **Fill** – Water is supplied to the tank via mains water inlet marked 'Water Supply'. The mains water inlet is located on the lower right side of the unit and is identified by the hose tail fitting.

3. **De-Air** – Water from the tank is pumped into the top half of the unit and re-circulated through a spray nozzle. A pump applies vacuum to the space above the water, de-airing the fine water spray.
4. **De-Aired Water Supply** – De-aired water is pumped from the tank to the de-aired water supply outlet marked 'De-Aired Water' located on the lower right hand side of the unit. This outlet is fitted with a 6 mm outside diameter, 4 mm inside diameter tube fitting. See figure 1.

5 Maintenance

- 5.1 In order to remove the tank for cleaning, relieve any vacuum as in section 4.4.

Clean the tank periodically with a warm wash using mild soap or detergent solution and rinse with clear water. Dry with a chamois or moist cellulose sponge to prevent water spotting.

Benzene, leaded petrol, acetone, carbon tetrachloride abrasive or highly alkaline cleaners should not be used for cleaning purposes.

Do not expose the tank to strong bases, DMSO, halogenated hydrocarbon and their derivatives, esters, ether keytones or amines.

Note: later models of the De-aired Water Apparatus are fitted with a diaphragm type water pump, the diaphragm of which has a life expectancy of 1000 hours. If the apparatus is to be used frequently and for long periods, it is recommended that a spare diaphragm is purchased from ELE International Ltd and held in reserve. The diaphragm part number is 5020X0053 for Pump PC3/35D4 and 5020X0075 for Pump SD4/42.

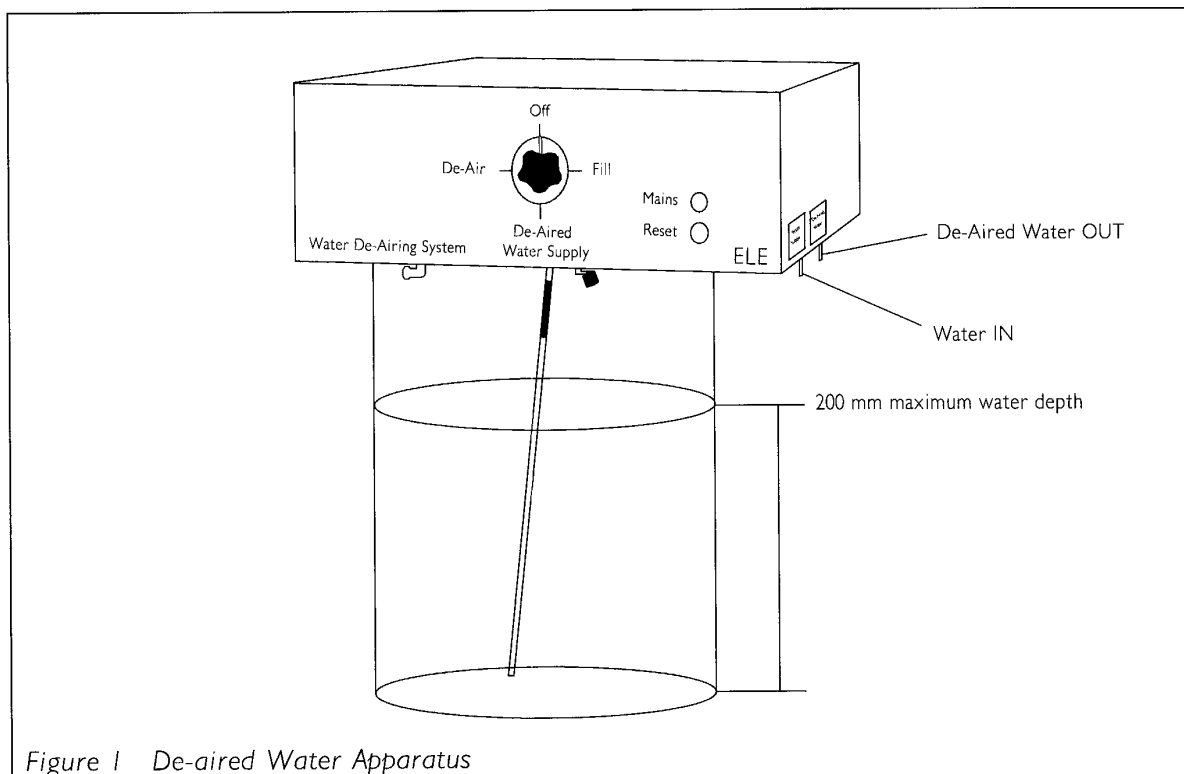
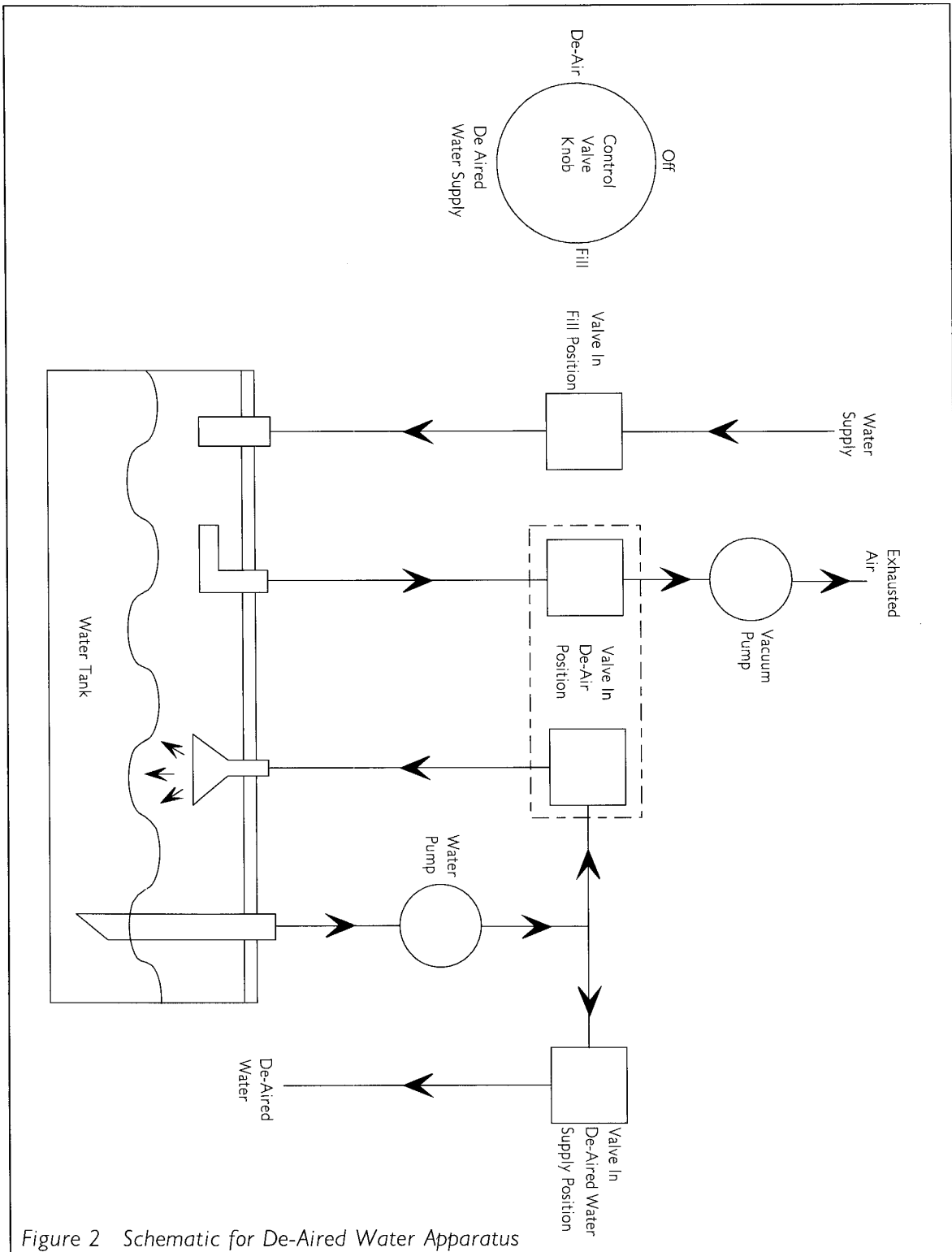


Figure 1 De-aired Water Apparatus



Declaration of Conformity

ELE
International

Issued By: **ELE International**

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Date of Issue: 1 August 1999 ELE doc ref: 9901X0002

Approved
Signatory



We, ELE International, Chartmoor Road, Chartwell Business Park, Leighton Buzzard, Beds LU7 4WG, England, declare under sole responsibility that the following product(s) to which this declaration relates is (are) in conformity with the provisions of:

73/23/EEC Electrical Equipment Directive implemented in the UK by S1728/1989 amended by 93/68/EEC 1/1/1997.

Electrical Safety tested to BS EN 60204-1.

89/392/EEC, 91/368/EEC, 93/44/EEC and 93/68/EEC Machinery Directive implemented in the UK by S13073/1992 and S12063/1994.

89/336/EEC, 91/263/EEC, 92/31/EEC (the EMC Directive) amended by 93/68/EEC and implemented in the UK by SI/2372/1992 and SI/3080/1994.

Emissions tested to BS EN 50081-1 Domestic/Light Industrial.
Immunity tested to prEN 50082-2 Industrial.

Product Description	Serial No.
25-1833 series De-aired Water Apparatus	(See details on product identification plate)



BS EN ISO9001: 1994 approved
Certificate number 860461

Responsible person's/approved signatory
M Green, Managing Director

This Declaration of Conformity complies with BS
7514 (EN 45014), General Criteria for suppliers'
Declaration of Conformity

ELE International
Chartmoor Road, Chartwell
Business Park, Leighton
Buzzard, Beds, LU7 4WG
England
phone: + (0)1525 249200
fax: + (0)1525 249249
email: ele@eleint.co.uk
http: www.ele.com
ELE International, a division of
Danaher UK Industries Ltd

Noise Test Certificate

Issued By: **ELE International**

Date of Issue: 1 August 1999 ELE doc ref: 9901X0002

Date of Test: 1 July 1999



Page 1 of 1

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89/392/EEC, 91/368/EEC, 93/44/EEC and 93/68/EEC Machinery Directive implemented in the UK by S13073/1992 and S12063/1994.

<p>Product Description</p> <p>25-1833 series De-aired Water Apparatus</p>	<p>Serial No.</p> <p>(See details on product identification plate)</p>																					
<p>Notes:</p>	<p>Measurements/recorded noise level</p> <table> <tr> <td>Position A</td> <td>64</td> <td>dB</td> </tr> <tr> <td>Position B</td> <td>64</td> <td>dB</td> </tr> <tr> <td>Position C</td> <td>64</td> <td>dB</td> </tr> <tr> <td>Position D</td> <td>64</td> <td>dB</td> </tr> <tr> <td>Position E</td> <td>70</td> <td>dB</td> </tr> <tr> <td colspan="3">(Normal operator position)</td> </tr> <tr> <td>Background Noise level</td> <td>58</td> <td>dB</td> </tr> </table>	Position A	64	dB	Position B	64	dB	Position C	64	dB	Position D	64	dB	Position E	70	dB	(Normal operator position)			Background Noise level	58	dB
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BS EN ISO9001: 1994 approved
Certificate number 860461

Noise tests were carried out using Test Meter, serial No.

N30863

which has been calibrated using calibrated standards traceable to national standards of measurement.

ELE International
Chartmoor Road, Chartwell
Business Park, Leighton Buzzard,
Beds, LU7 4WG England
phone: + (0)1525 249200
fax: + (0)1525 249249
email: ele@eleint.co.uk
http: www.ele.com
ELE International, a division of
Danaher UK Industries Ltd

DIRECTIVE ON WASTE ELECTRICAL & ELECTRONIC EQUIPMENT (WEEE)



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.

Note: For return for recycling, please contact the equipment producer or supplier for instructions on how to return end-of-life equipment for proper disposal.

Important document. Retain with product records.

GERMAN

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.

Hinweis: 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.

Wichtige Informationen. Bitte zusammen mit den Produktinformationen aufbewahren.

FRENCH

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.

Remarque : 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.

Ce document est important. Conservez-le dans le dossier du produit.

ITALIAN

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.

Nota: 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.

Documento importante. Conservare con la documentazione del prodotto.

DANISH

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.

Bemærk: I forbindelse med returnering til genbrug skal du kontakte producenten eller leverandøren af apparatet for at få instruktioner om, hvordan udtjente apparater bortskaffes korrekt.

Vigtigt dokument. Opbevares sammen med produktdokumenterne.

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 utrangerad 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.