

OPERATING INSTRUCTIONS

Vacuum Pycnometer Apparatus

45-9305

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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> ELE International 2007 ©</p>		

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1 Introduction

Applicable Standard: **EN 12697-5:2002**

The Vacuum Pycnometer is a large capacity unit used in the Rice Test for determining the maximum specific gravity of bituminous mixtures.

The apparatus consists of a Vacuum Pycnometer, Filter Flask, Electric Vacuum Pump and the necessary rubber tubing for connecting the items together.

2 Description

2.1 Vacuum Pycnometer

The Pycnometer has a total volume of approximately 10 litres and will conveniently accept samples of 6000 grams to minimise segregation effects. The unit is constructed of lightweight polycarbonate. The upper section or lid is transparent for visual observation of the effects of the vacuum and is fitted with a quick release coupling at the top for the outlet tee and vacuum gauge. A spigot with a hole through is also provided near the sealing face for the water inlet valve. The lower or base section houses an 'O' ring seal and over-centre clips are fitted to draw the two sections together and effect a pressure tight seal.

2.2 Filter Flask

A plastic conical Filter Flask is supplied with the apparatus for use as a water trap. The flask has a side outlet, and a rubber bung with an inlet tube is fitted in the neck.

2.3 Vacuum Pump

An electric rocking piston type Vacuum Pump is provided to create the vacuum. The pump is supplied with a manifold to which is fitted an inlet connection, bleed valve for controlling the induced vacuum and calibrated vacuum gauge.

3 Specification

3.1 Pycnometer

Dimensions (approximate)	273 x 406 mm (outside diameter x height)
Capacity	Approximately 10 l, 6000 g sample weight
Weight	3.6 kg
Gauge	50.8 mm diameter, 0-30 x 0.5 in Hg

3.2 Vacuum Pump

Dimensions (approximate)	145 x 240 x 205 mm (length x width x height)
Weight	7.3 kg
Maximum vacuum	29 in Hg
Motor	220-204v 50 Hz
Power	0.25 kw
Gauge	60.3 mm diameter, 0-30 in Hg (dual scale)

4 Installation

4.1 Assemble the apparatus as shown in Figure 1.

Connect the clear plastic tube to the water inlet valve nozzle, then push the valve onto the spigot in the upper section of the Pycnometer, ensuring it is tight.

Place the free end of the tube into the water supply reservoir making sure that it can be maintained below the water level.

Fit the outlet tee and vacuum gauge assembly into the quick release coupling at the top of the Pycnometer.

Insert the short length of nylon tube into the hole in the rubber bung (lubrication may be necessary).

Push the rubber bung complete with tube firmly into the neck of the Filter Flask, adjust the tube so that the lower end is just clear of the bottom of the Flask.

Cut two lengths of rubber vacuum tubing as required. Connect one length between the outlet tee at the top of the Pycnometer and the nylon inlet tube of the Filter Flask. Connect the other length of tube between the side outlet of the Filter Flask and the inlet connection of the Vacuum Pump manifold.

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).

Power Supply

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

Important: this equipment must be correctly earthed.

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

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.

5 Test

5.1 For test procedures and calculations please refer to the relevant Standard.

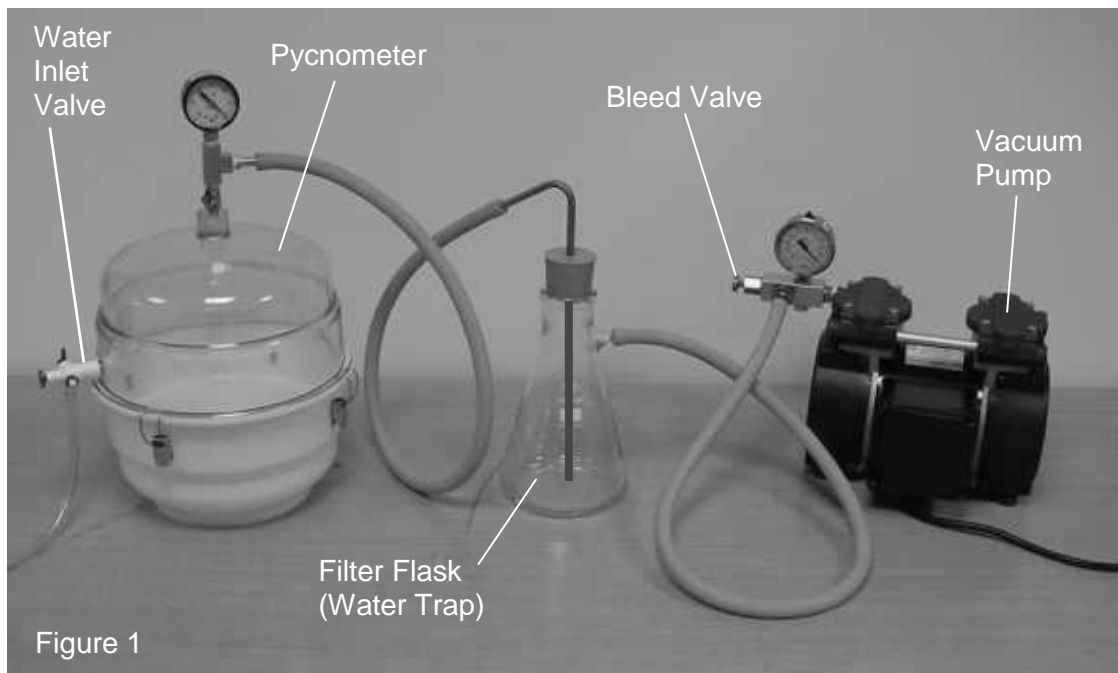
6 Operation

6.1 Switch on the Vacuum Pump and adjust the bleed valve (see Figure 1) to induce the vacuum required.

NOTE: To see the correct vacuum reading on the pump gauge, open the small valve on top of the gauge. Close after use.

7 Maintenance

7.1 The apparatus requires no routine maintenance other than emptying the water trap (Filter Flask) when necessary and periodically checking that all connections are pressure tight.



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.