



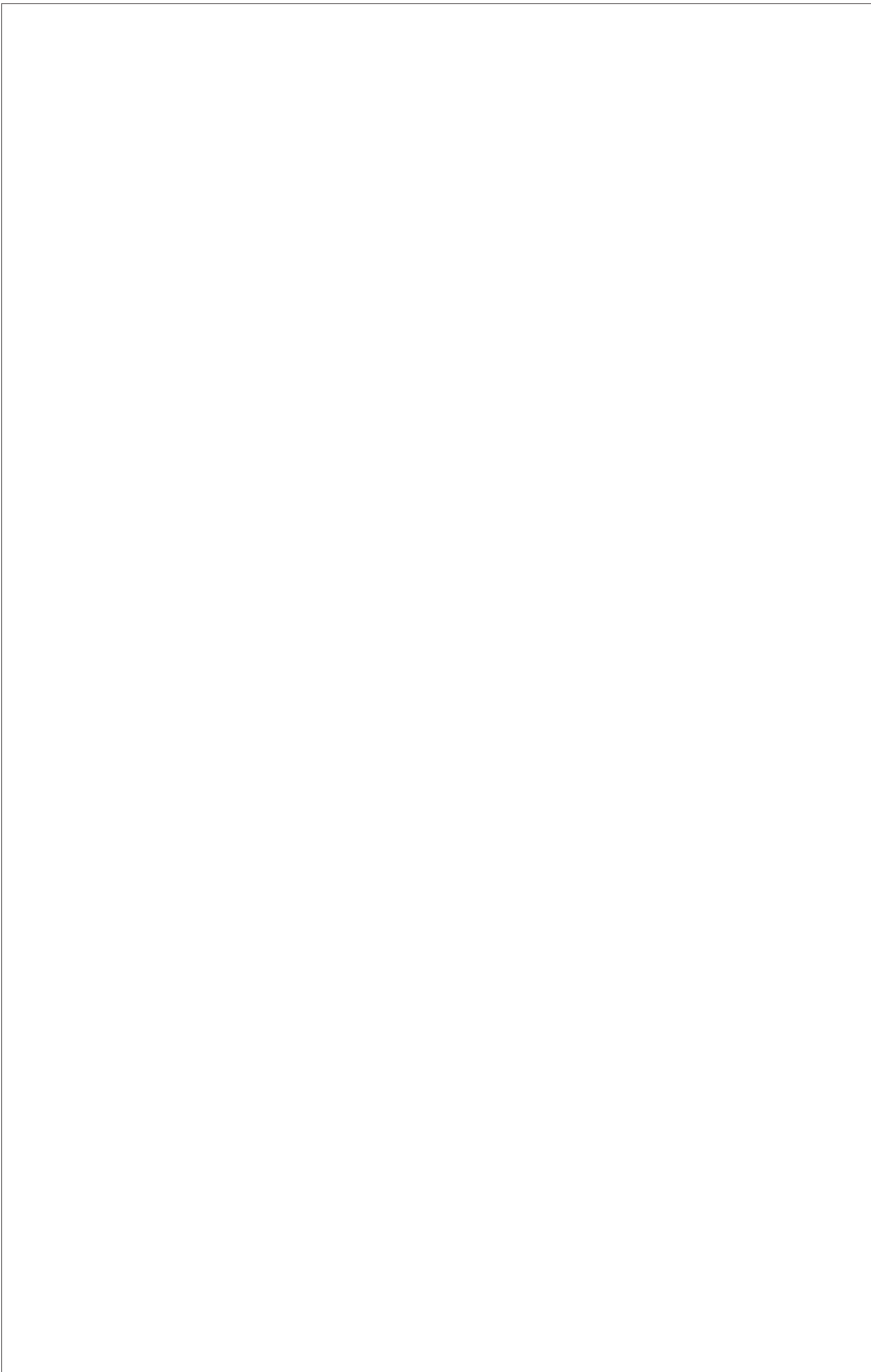
HB-1D

Hybridiser
Operator's Manual

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Techne
Duxford
Cambridge
CB2 4PZ



Declaration of Conformity

Techne's HB-1D complies with the following European Standard:

EN 61326:1998 Electrical equipment for measurement, control and laboratory use.
EMC requirements.

It has also been designed to comply with the following European Standards:

EN 61010-1:1993 Safety requirements for electrical equipment for measurement, control and laboratory use.

EN 61010-2-010:1995 Particular requirements for laboratory equipment for the heating of materials.

I have made all reasonable enquiries regarding the unit stated and its conformance to the following EU directives:

Low Voltage directive, 73/23/EEC and amendment 93/68/EEC, and

EMC Directive 89/336/EEC and amendments 91/263/EEC and 92/31/EEC.

To the best of my knowledge and belief these units conform to these directives.

Techne's HB-1D also complies with CFR 47 Part 15B for a class A digital device.

CFR 47:1997 Code of Federal Regulations: Part 15 Subpart B-Radio Frequency Devices - Unintentional Radiators

This Declaration is controlled under an ISO 9001:1994 system certificated by BSI Quality Assurance, certificate number FM13585.

Signature

Name

B C Coombes

Position

Quality Manager

Issue 20

18/11/2002

Introduction

Please read all the information in this booklet before using the unit.

Warning



HIGH TEMPERATURES ARE DANGEROUS: they can cause serious burns to operators and ignite combustible material.

Techne have taken great care in the design of these units to protect operators from hazards, but users should pay attention to the following points:

- USE CARE AND WEAR PROTECTIVE GLOVES TO PROTECT HANDS;
- DO NOT put hot objects on or near combustible objects;
- DO NOT operate the unit close to inflammable liquids or gases;
- DO NOT place any liquid directly in your unit;
- At all times USE COMMON SENSE.

Operator Safety

All users of Techne equipment must have available the relevant literature needed to ensure their safety.

It is important that only suitably trained personnel operate this equipment, in accordance with the instructions contained in this manual and with general safety standards and procedures. If the equipment is used in a manner not specified by Techne the protection provided by the equipment to the user may be impaired.

All Techne units have been designed to conform to international safety requirements and are fitted with an overtemperature cutout. The cutout is preset to protect the unit.

If a safety problem should be encountered, switch off at the mains socket and remove the plug from the supply.

Installation

1. All Techne units are supplied with a power cable. This may be integral or plug-in.
2. Before connecting the mains supply, check the voltage against the rating plate. Connect the mains cable to a suitable plug according to the table below. **Note that the unit must be earthed to ensure proper electrical safety.**

Connections	220/240V	110/120V
Live	Brown	Black
Neutral	Blue	White
Earth	Green/yellow	Green

The fused plug supplied with the mains lead for use in the UK is fitted with the following value fuse to protect the cable:

230V UK	5 AMP
---------	-------

The fuse in the unit protects the unit and the operator.

Note that units marked 230V on the rating plate work at 220V; units marked 120V work at 110V. In both cases, however, the heating rate will degrade by approximately 8%. The rating plate is on the rear of the unit.

3. Plug the mains cable into the socket on the rear of the unit.
4. Place the unit on a suitable bench or flat workspace, or in a fume cupboard if required, ensuring that the air inlet vents on the underside are free from obstruction.
5. Symbols on or near the power switch of the unit have the following meanings:

I	: mains switch On
O	: mains switch Off

After use



When you have finished heating samples, remember that parts of the unit – the tubes, blocks and associated accessories – may be very hot. Take the precautions listed earlier.

Guarantee

The unit is guaranteed against any defect in material or workmanship for the period specified on the enclosed guarantee card. This period is from the date of purchase, and within this period all defective parts will be replaced free of charge provided that the defect is not the result of misuse, accident or negligence. Servicing under this guarantee should be obtained from the supplier.

Notwithstanding the description and specification(s) of the units contained in the Operator's Manual, Techne hereby reserves the right to make such changes as it sees fit to the units or to any component of the units.

This Manual has been prepared solely for the convenience of Techne customers and nothing in this Instruction Book shall be taken as a warranty, condition or representation concerning the description, merchantability, fitness for purpose or otherwise of the units or components.

User maintenance

NOTE THAT THIS EQUIPMENT SHOULD ONLY BE DISMANTLED BY PROPERLY TRAINED PERSONNEL. REMOVING THE INSIDE FRONT OR REAR PANELS EXPOSES POTENTIALLY LETHAL MAINS VOLTAGES. THERE ARE NO USER MAINTAINABLE PARTS WITHIN THE EQUIPMENT.

In the unlikely event that you experience any problems with your unit which cannot easily be remedied, you should contact your supplier and return the unit if necessary. Please include any details of the fault observed and remember to return the unit in its original packing. Techne accept no responsibility for damage to units which are not properly packed for shipping: if in doubt, contact your supplier. See the Decontamination Certificate supplied with your unit.

1. Cleaning

Before cleaning your unit ALWAYS disconnect from the power supply and allow to cool below 50° C.

Your unit can be cleaned by wiping with a damp soapy cloth. Care should be exercised to prevent water from running inside the unit. Do not use abrasive cleaners.

2. Overtemperature cutout

The overtemperature cutout may be a sensitive mechanical device and mechanical shock can cause it to trip.

- In the event of no heater power, check the mains plug and lead, then reset the cutout control.
- Repeated operation of the cutout indicates a serious fault: you may need to return the unit to your supplier for repair.

3. Fuses



Your unit is protected by one or two fuses. These should only be changed by suitably qualified personnel.

If the fuses blow persistently, a serious fault is indicated and you may need to return the unit to your supplier for repair.

Contact Information

For technical, sales or servicing information, contact your local Techne dealer or,

Techne, Duxford,

CAMBRIDGE, CB2 4PZ, United Kingdom.

Telephone: 01223 832401

Telefax: 01223 836838

Service: 01223 836950

Out of office hours, telephone or fax

e-mail: sales@techne.com

Web site: www.techne.com

or,

Techne Incorporated,

University Park Plaza, 743 Alexander Road,

Princeton, New Jersey, 08540-6328, USA.

Telephone: (609) 452-9275

Toll free: 1-800-225-9243

Telefax: (609) 987-8177

e-mail: salesus@techne.com

Web site: www.techneusa.com

Introduction

Veillez lire attentivement toutes les instructions de ce document avant d'utiliser l'appareil.

Avertissement



DANGER DE TEMPERATURES ELEVEES : les opérateurs peuvent subir de graves brûlures et les matériaux combustibles risquent de prendre feu.

Techne a apporté un soin tout particulier à la conception de ces appareils de façon à assurer une protection maximale des opérateurs, mais il est recommandé aux utilisateurs de porter une attention spéciale aux points suivants :

- PROCÉDER AVEC SOIN ET PORTER DES GANTS POUR SE PROTÉGER LES MAINS.
- NE PAS poser d'objets chauds sur ou près de matériaux combustibles.
- NE PAS utiliser l'appareil à proximité de liquides ou de gaz inflammables.
- NE PAS verser de liquide directement dans l'appareil.
- FAIRE TOUJOURS PREUVE DE BON SENS.

Sécurité de l'opérateur

Tous les utilisateurs de produits Techne doivent avoir pris connaissance des manuels et instructions nécessaires à la garantie de leur sécurité.

Important : cet appareil doit impérativement être manipulé par un personnel qualifié et utilisé selon les instructions données dans ce document, en accord avec les normes et procédures de sécurité générales. Dans le cas où cet appareil ne serait pas utilisé selon les consignes précisées par Techne, la protection pour l'utilisateur ne serait alors plus garantie.

Tous les appareils Techne sont conçus pour répondre aux normes de sécurité internationales et sont dotés d'un coupe-circuit en cas d'excès de température. Il est pré-réglée en usine pour assurer la protection de l'appareil.

Dans le cas d'un problème de sécurité, coupez l'alimentation électrique au niveau de la prise murale et enlevez la prise connectée à l'appareil.

Installation

1. Tous les appareils Techne sont livrés avec un câble d'alimentation qui peut être intégré à l'appareil ou à raccorder.
2. Avant de brancher l'appareil, vérifiez la tension requise indiquée sur la plaque d'identification. Raccordez le câble électrique à la prise appropriée en vous reportant au tableau ci-dessous. **Il est important que l'appareil soit relié à la terre pour assurer la protection électrique requise.**

Connexions	220/240 V	110/120 V
Phase	Marron	Noir
Neutre	Blue	Blanc
Terre	Vert/juane	Vert

Le fusible à l'intérieur de l'appareil est destiné à assurer la protection de l'appareil et de l'opérateur.

Remarque : les appareils dont la plaque indique 230 V peuvent fonctionner sur 220 V, et ceux dont la plaque indique 120 V peuvent fonctionner sur 110 V. Dans les deux cas cependant, le capacité de chauffage diminuera d'environ 8 %. La plaque d'identification se trouve à l'arrière de l'appareil.

3. Raccordez le câble d'alimentation à la prise située à l'arrière de l'appareil.
4. Placez l'appareil sur un plan de travail ou surface plane, ou le cas échéant, dans une hotte d'aspiration, en s'assurant que les trous d'aération situés sous l'appareil ne sont pas obstrués.
5. Les symboles situés sur ou à côté de l'interrupteur de l'appareil ont la signification suivante :

- I : arrêt
- O : marche

Après utilisation



Lorsque vous avez fini de chauffer les échantillons, n'oubliez pas que certaines parties de l'appareil - les éprouvettes, leurs supports et autres accessoires - risquent d'être très chaudes. Il est donc recommandé de toujours prendre les précautions citées plus haut.

Garantie

L'appareil est garanti contre tout défaut ou vice de fabrication pour la durée figurant sur la carte de garantie, à compter de la date d'achat de l'appareil. Au cours de cette période, toutes les pièces défectueuses seront remplacées gratuitement, dans la mesure où la défaillance n'est pas due à une mauvaise utilisation, un accident ou une négligence. Toute réparation sous garantie sera effectuée par le fournisseur.

Malgré la description et les spécifications de l'appareil données dans le manuel de l'utilisateur, Techne se réserve le droit d'effectuer les changements nécessaires à l'appareil ou à tout élément qui entre dans sa composition.

Ce manuel a été exclusivement rédigé à l'attention des clients de Techne, et aucun élément de ce guide d'instructions ne peut être utilisé comme garantie, condition ou représentation concernant la description, commercialisation, adaptation aux conditions d'utilisation ou autre des appareils ou de leurs composants.

Entretien utilisateur

IMPORTANT : CET APPAREIL NE PEUT ETRE DEMONTE QUE PAR DU PERSONNEL QUALIFIE.

LORSQUE LES PANNEAUX AVANT ET ARRIERE SONT DEMONTES, L'OPERATEUR EST EXPOSE A DES TENSIONS QUI PEUVENT ETRE MORTELLES.

CET APPAREIL NE CONTIENT AUCUN ELEMENT QUI DEMANDE UN ENTRETIEN DE LA PART DE L'UTILISATEUR.

Dans le cas peu probable où votre appareil présente un défaut de fonctionnement auquel il est difficile de remédier, il est alors préférable de contacter votre fournisseur et, le cas échéant, de renvoyer le matériel. Veuillez inclure une description détaillée du problème constaté et retourner l'appareil dans son emballage d'origine. Techne ne sera pas tenu responsable des dommages subis par tout appareil dont l'emballage est inadéquat pour le transport. Pour plus de sûreté, contactez votre fournisseur. Voir le certificat de décontamination livré avec le produit.

1. Nettoyage

Avant de nettoyer l'appareil, assurez-vous TOUJOURS que le câble d'alimentation est déconnecté et laissez la température redescendre en dessous de 50 °C.

Utilisez un chiffon imprégné d'eau savonneuse pour nettoyer l'appareil. Veillez à ne pas introduire d'eau dans l'appareil. N'utilisez pas de produits abrasifs.

2. Coupe-circuit d'excès de température

Ce dispositif est un mécanisme très sensible et il peut se déclencher sous l'effet d'un choc mécanique.

- En l'absence de puissance de chauffe, vérifiez la prise et le câble d'alimentation puis réglez la commande du coupe-circuit.
- Si la sécurité se déclenche trop souvent, il s'agit d'un problème plus sérieux. Nous vous conseillons dans ce cas de prendre contact avec votre fournisseur pour réparation.

3. Fusibles



La protection de l'appareil est assurée par un ou deux fusibles dont le remplacement ne peut être effectué que par un personnel qualifié.

Si les fusibles sautent sans arrêt, il s'agit d'un problème sérieux. Nous vous conseillons dans ce cas de prendre contact avec votre fournisseur pour réparation.

Einleitung

Bitte lesen Sie diese Bedienungsanleitung komplett bevor Sie dieses Gerät benutzen.

Warnung



HOHE TEMPERATUREN SIND GEFÄHRLICH: sie können dem Bediener ernsthafte Verletzungen zufügen und brennbare Materialien können sich leicht entzünden.

Techne hat bei der Konstruktion dieses Gerätes sehr darauf geachtet, daß der Bediener vor Gefahren geschützt ist. Dennoch sollten Sie auf die folgenden Punkte achten:

- SEIEN SIE VORSICHTIG UND TRAGEN SIE SCHUTZHANDSCHUHE
- Legen Sie heiße Gegenstände NICHT auf oder in die Nähe von leicht brennbaren Materialien; vermeiden Sie Arbeiten in der Nähe von leicht entzündbaren Flüssigkeiten oder Gasen.
- Bringen sie KEINE Flüssigkeiten direkt in Ihr Gerät.
- Benutzen Sie immer den normalen Menschenverstand

Sicherheit des Anwenders

Alle Benutzer von Techne Geräten müssen Zugang zu der entsprechenden Literatur haben, um ihre Sicherheit zu gewähren.

Es ist wichtig, daß diese Geräte nur von entsprechend geschultem Personal betrieben werden, das die in dieser Gebrauchsanweisung enthaltenen Maßnahmen und allgemeine Sicherheitsbestimmungen und -vorkehrungen beachtet. Wenn das Gerät anders eingesetzt wird als vom Hersteller empfohlen, kann dies die persönliche Sicherheit des Anwenders beeinträchtigen. Die Geräte von Techne entsprechen den internationalen Sicherheitsbestimmungen und sind mit einem automatischen Übertemperaturabschalter ausgestattet. Der Temperaturschutz voreingestellt um Schäden am Gerät zu vermeiden. Wenn ein Sicherheitsproblem auftreten sollte, muß das Gerät ausgeschaltet und vom Stromnetz getrennt werden.

Installation

1. Alle Techne Geräte werden mit einem Stromanschlußkabel geliefert. Dieses ist entweder fest mit dem Gerät verbunden oder zum Einstecken.
2. Vergleichen Sie, ob die Spannung Ihrer Stromversorgung mit den Angaben auf dem Typenschild des Gerätes übereinstimmen. Verbinden Sie das Stromanschlußkabel mit einer geeigneten Stromversorgung gemäß der nächstehenden Tabelle. Achtung: Das Gerät muß geerdet sein, um die elektrische Sicherheit zu gewährleisten!

<i>Verbindungen</i>	220/240V	110/120V
Stromführend	Braun	Schwarz
Neutral	Blau	Weiß
Erde	Grün/Gelb	Grün

Geräte, die für 230 Volt ausgelegt sind, können auch bei 220 Volt arbeiten, Geräte für 120 Volt auch bei 110 Volt. In beiden Fällen verringert sich die Aufheizrate um ca. 8%. Das Typenschild befindet sich hinten am Gerät.

3. Stecken Sie das Stromkabel in die vorgesehene Buchse hinten am Gerät.
4. Stellen Sie das Gerät auf eine ebene Arbeitsfläche bzw. (falls erforderlich) unter einen Laborabzug. Beachten Sie, daß die Entlüftungsrippen an der Geräteunterseite immer frei zugänglich sind.
5. Die Symbole auf oder neben dem EIN/AUS-Schalter an der Geräterückseite bedeuten:

I	: An
O	: Aus

Nach dem Gebrauch



Vergessen Sie nicht, daß Teile des Gerätes (die Gefäße, die Blöcke und andere Zubehörteile) nach dem Erhitzen von Proben noch sehr heiß sein können. Bitte beachten Sie die oben genannten Vorsichtsmaßnahmen.

Garantie

Die Garantiedauer des Gerätes ist auf der beiliegenden Garantiekarte angegeben und schließt Fehler im Material oder der Verarbeitung ein. Die Garantiedauer beginnt am Tag des Einkaufs. Sämtliche defekte Teile werden innerhalb dieses Zeitraumes kostenlos ersetzt unter der Voraussetzung, daß dem Defekt keine unsachgemäße Handhabung, Fahrlässigkeit oder ein Unfall zugrundeliegt. Der unter diese Garantie fallende Service wird vom Lieferanten geleistet.

Ungeachtet der in dieser Gebrauchsanweisung enthaltenen Beschreibungen und Spezifikationen, behält sich Techne hiermit das Recht vor, Änderungen an den Geräten bzw. an einzelnen Geräteteilen durchzuführen.

Diese Gebrauchsanweisung wurde ausschließlich dazu erstellt, um Kunden die Handhabung der Techne-Geräte zu erleichtern. Nichts in dieser Gebrauchsanleitung darf als Garantie, Bedingung oder Voraussetzung verstanden werden, sei es die Beschreibung, Marktgängigkeit, Zweckdienlichkeit oder sonstiges bezüglich der Geräte oder deren Bestandteile.

Wartung durch den Bediener

BEACHTEN SIE, DASS DIESES GERÄT NUR VON TECHNISCHEN FACHKRÄFTEN GEÖFFNET UND DEMONTIERT WERDEN DARF.

DURCH ENTFERNEN DES GEHÄUSES ODER GEHÄUSETEILEN SIND BAUTEILE MIT LEBENGEFÄHRLICHEN SPANNUNGEN FREI ZUGÄNLICH. IM INNERN DES GERÄTES BEFINDEN SICH KEINE TEILE, DIE VOM ANWENDER GEWARTET WERDEN MÜSSEN.

Falls Ihr Gerät nicht ordnungsgemäß arbeitet, wenden Sie sich an Ihren Lieferanten oder senden Sie das Gerät wenn nötig zurück. Fügen Sie eine genaue Beschreibung des Defektes bei. Verpacken Sie das Gerät möglichst im Originalkarton. Bitte beachten Sie, daß Techne keine Haftung bei Transportschäden aufgrund unzureichender Verpackung übernehmen. Setzen Sie sich im Zweifelsfall mit Ihrem Lieferanten in Verbindung. Bitte beachten Sie die Entgiftungsbescheinigung, die Sie mit dem Gerät erhalten haben.

1. Reinigen

Bevor Sie Ihr Gerät reinigen, sollten Sie

- zuerst den Netzstecker ziehen
- das Gerät unter 50°C abkühlen lassen.

Ein feuchtes Tuch mit Seifenlösung reinigt Ihr Gerät am besten. Achten Sie darauf, daß kein Wasser in das Gerät gelangt. Verwenden Sie keine Scheuermittel.

2. Übertemperaturabschalter

- Der Übertemperaturschutz ist ein empfindliches mechanisches Teil. Schon eine Erschütterung kann diesen auslösen.
- Falls die Heizung nicht funktioniert, überprüfen Sie zuerst Netzstecker und Kabel. Setzen Sie dann den Übertemperaturabschalter wieder zurück, indem Sie den roten Knopf einmal bis zum Anschlag drücken.
- Wenn der Übertemperaturabschalter wiederholt auslöst, liegt ein größerer Defekt vor. Das Gerät muß zur Reparatur an Ihren Lieferanten eingesandt werden.

3. Sicherungen



Die Stromzuleitung ist durch ein oder zwei Sicherungen geschützt. Diese sollten nur durch qualifiziertes Fachpersonal ausgetauscht werden. Wenn die Sicherung wiederholt durchbrennt, liegt ein größerer Defekt vor. Das Gerät muß zur Reparatur an Ihren Lieferanten eingesandt werden.

Introducción

Le rogamos lea cuidadosamente la información contenida en este folleto antes de manipular el aparato.

Aviso



LAS TEMPERATURAS ELEVADAS SON PELIGROSAS: pueden causarle graves quemaduras y provocar fuego en materiales combustibles.

Techne ha puesto gran cuidado en el diseño de estos aparatos para proteger al usuario de cualquier peligro; aún así se deberá prestar atención a los siguientes puntos:

- **EXTREME LAS PRECAUCIONES Y UTILICE GUANTES PARA PROTEGERSE LAS MANOS;**
- **NO** coloque objetos calientes encima o cerca de objetos combustibles;
- **NO** maneje el aparato cerca de líquidos inflamables o gases;
- **NO** introduzca ningún líquido directamente en el aparato;
- **UTILICE EL SENTIDO COMUN** en todo momento.

Seguridad del usuario

Todos los usuarios de equipos Techne deben disponer de la información necesaria para asegurar su seguridad.

De acuerdo con las instrucciones contenidas en este manual y con las normas y procedimientos generales de seguridad, es muy importante que sólo personal debidamente capacitado opere estos aparatos. De no ser así, la protección que el equipo le proporciona al usuario puede verse reducida.

Todos los equipos Techne han sido diseñados para cumplir con los requisitos internacionales de seguridad y traen incorporados un sistema de desconexión en caso de sobretemperatura. El sistema de desconexión viene ya ajustado para evitar daños en el equipo.

En caso de que surgiera un problema de seguridad, desconecte el equipo de la red.

Instalación

1. Todos los aparatos Techne se suministran con un cable de alimentación. Puede ser fijo o independiente del aparato.
2. Antes de conectarlo, compruebe que el voltaje corresponde al de la placa indicadora. Conecte el cable de alimentación a un enchufe adecuado según la tabla expuesta a continuación. El equipo debe estar conectado a tierra para garantizar la seguridad eléctrica.

<i>Conexiones</i>	220/240V	110/120V
Línea	Marrón	Negro
Neutro	Azul	Blanco
Tierra	Verde/amarillo	Verde

El fusible una vez instalado protege tanto al equipo como al usuario.

Asegúrese de que los equipos marcados 230V en la placa indicadora funcionan a 220V y de que los equipos marcados 120V funcionan a 110V. No obstante, en ambos casos la velocidad de calentamiento se verá reducida en un 8% aproximadamente. La placa indicadora está situada en la parte posterior del equipo.

3. Conecte el cable a la toma de tensión en la parte posterior del equipo.
4. Sitúe el aparato en un lugar apropiado tal como una superficie de trabajo plana, o si fuera necesario incluso en una campana con extractor de humos, asegurándose de que las entradas de aire en la parte inferior no queden obstruidas.
5. Los símbolos que se encuentran en o cerca del interruptor de alimentación tienen los siguientes significados:
 - I : Interruptor principal encendido
 - O : Interruptor principal apagado

Después de su uso



Cuando haya finalizado el calentamiento de muestras, recuerde que las piezas del equipo, tales como tubos, bloques y demás accesorios, pueden estar muy calientes. Tome las precauciones mencionadas anteriormente.

Garantía

Este aparato está garantizado contra cualquier defecto material o de fabricación durante el periodo especificado en la tarjeta de garantía adjunta. Este plazo inicia a partir de la fecha de compra, y dentro de este periodo todas las piezas defectuosas serán reemplazadas gratuitamente siempre que el defecto no sea resultado de un uso incorrecto, accidente o negligencia. Mientras se encuentre bajo garantía las revisiones las debe llevar a cabo el proveedor.

A pesar de la descripción y las especificaciones de los aparatos contenidas en el Manual del Usuario, Techne se reserva por medio de este documento el derecho a efectuar los cambios que estime oportunos tanto en los aparatos como en cualquier componente de los mismos.

Este manual ha sido preparado exclusivamente para los clientes de Techne y nada de lo especificado en este folleto de instrucciones se tomará como una garantía, condición o aseveración de la descripción, comerciabilidad o adecuación para cualquier fin específico de los aparatos o sus componentes.

Mantenimiento

ESTE APARATO DEBE SER DESMONTADO SOLO Y EXCLUSIVAMENTE POR PERSONAL DEBIDAMENTE CAPACITADO.

EL RETIRAR LOS PANELES FRONTALES O TRASEROS SUPONE DEJAR AL DESCUBIERTO TENSION DE LA RED PELIGROSA.

EL EQUIPO NO CONSTA DE NINGUNA PIEZA DE CUYO MANTENIMIENTO SE PUEDA ENCARGAR EL USUARIO.

En el caso improbable de que experimentara algún problema con su aparato que no pudiera resolver con facilidad, debería ponerse en contacto con su proveedor y devolverlo si fuera necesario. Indique de forma detallada todos los defectos que haya notado y devuelva el equipo en su embalaje original. Techne no aceptará responsabilidad alguna por daños causados en equipos que no estuvieran debidamente embalados para su envío; si tuviera alguna duda, póngase en contacto con su proveedor. Sírvase consultar el Certificado de Descontaminación suministrado con su aparato.

1. Limpieza

Antes de limpiar su aparato, desconéctelo SIEMPRE de la fuente de alimentación y permita que se enfríe por debajo de los 50°C.


Este aparato se puede limpiar pasándole un paño húmedo enjabonado. Hágalo con cuidado para evitar que caiga agua dentro del mismo. No utilice limpiadores abrasivos.

2. Desconexión en caso de sobretemperaturas

El sistema de desconexión en caso de sobretemperaturas es un dispositivo mecánico sensible (una sacudida mecánica podría desconectarlo).

- Si el calefactor no recibiera alimentación, compruebe el enchufe y el cable de la toma de corriente; a continuación vuelva a ajustar el control del dispositivo.
- Una desconexión repetida indicaría una avería grave; puede que tenga que devolverle el aparato a su proveedor para su reparación.

3. Fusibles

 Su aparato está protegido por uno o dos fusibles. Sólo deben cambiarlos personal debidamente capacitado.

Si los fusibles se fundieran repetidamente, esto indicaría una avería grave y puede que tuviera que devolverle el aparato a su proveedor para su reparación.

Introduzione

Prima di utilizzare l'apparecchio, leggere tutte le informazioni contenute in questo manuale.

Attenzione



Le alte temperature sono pericolose: possono causare ustioni gravi all'utilizzatore e possono causare la combustione di materiale infiammabile.

La Techne ha posto particolare cura nel progettare questo strumento, al fine di proteggere gli operatori da eventuali pericoli, ma gli utilizzatori devono prestare attenzione ai seguenti punti:

- Utilizzare con attenzione e indossare guanti protettivi;
- Non mettere vicini oggetti caldi o oggetti infiammabili;
- Non azionare il riscaldatore Techne vicino a liquidi infiammabili o benzine;
- Non introdurre nessun liquido all'interno dell'unità;
- In ogni caso Usare Buon Senso.

Sicurezza per l'utilizzatore

Il personale che utilizza l'apparecchiatura Techne deve avere a disposizione la documentazione necessaria al fine di assicurare la loro incolumità.

È importante che solo personale adeguatamente addestrato utilizzi questo apparecchio, in conformità alle istruzioni contenute in questo manuale e nel rispetto delle normative e procedure generali di sicurezza. Se l'apparecchio è utilizzato in modo non specificato da Techne, la protezione fornita dall'apparecchiatura all'utilizzatore potrebbe essere a rischio.

Tutte le unità Techne sono state progettate in conformità ai requisiti internazionali di sicurezza e sono equipaggiate con un interruttore anti surriscaldamento. Su alcuni modelli, l'interruttore è regolabile e dovrebbe essere impostato secondo l'utilizzo. In tutti gli altri modelli l'interruttore è prerogolato per proteggere l'unità.

Se si dovesse verificare qualche problema di sicurezza, disconnettere l'apparecchio dalla rete.

Installazione

1. Tutti gli apparecchi Techne sono forniti di un cavo di alimentazione. Questo può essere integrato nell'apparecchio o separato.
2. Prima di collegare l'apparecchio alla presa di alimentazione, controllare il voltaggio indicato sulla targhetta. La targhetta identificativa si trova sul retro dell'apparecchio. Collegare il cavo di alimentazione in una presa appropriata secondo la tabella seguente.

L'apparecchio deve essere collegato alla messa a terra per assicurare la giusta sicurezza elettrica.

Connessioni	220V-240V	110V-120V
Tensione	Marrone	Nera
Neutro	Blu	Bianco
Terra	Verde/Giallo	Verde

Il fusibile all'interno dell'apparecchio protegge l'apparecchiatura e l'utilizzatore.

Tenere presente che gli apparecchi riportanti sulla targhetta 230 V funzionano a 220V. Gli apparecchi riportanti 120V funzionano a 110V. Comunque, in entrambi i casi la velocità di riscaldamento diminuirà approssimativamente dell'8%.

3. Collegare il cavo elettrico alla presa di corrente sul retro dell'unità.
4. Posizionare l'unità su un luogo adeguato, su una superficie di lavoro piana oppure, se necessario, sotto una cappa aspiratrice, assicurandosi che le prese di aria sulla parte inferiore siano libere da ostruzione.
5. I simboli sopra o vicino l'interruttore di accensione dell'apparecchio hanno i significati seguenti:

I	Acceso
O	Spento

Dopo l'uso



Quando avrete terminato di riscaldare i campioni, ricordate che le parti dell'apparecchio – le provette, i loro supporti e gli altri accessori – possono essere bollenti. Seguire le precauzioni elencate in precedenza.

Garanzia

L'apparecchio è garantito contro ogni difetto del materiale o fabbricazione per il periodo specificato sul certificato di garanzia accluso. Questo periodo decorre dalla data di acquisto, e durante il quale tutte le parti difettose verranno sostituite gratuitamente purché il difetto non sia causato da un uso non appropriato, da cause non imputabili a difetti di fabbricazione o negligenza. L'assistenza durante questo periodo sarà garantita dal fornitore.

Ferme restando la descrizione e le caratteristiche dell'apparecchio contenute nel Manuale d'uso dell'utilizzatore, la Techne si riserva in ogni caso il diritto di effettuare le modifiche che riterrà necessarie all'apparecchio o ai suoi componenti.

Questo Manuale è stato realizzato esclusivamente a vantaggio dei clienti della Techne e in alcun modo potrà essere utilizzato come garanzia, condizione o rappresentazione concernente la descrizione, commercializzazione, adeguamento alle condizioni di utilizzo o altro degli apparecchi o delle sue componenti.

Manutenzione

Questo apparecchio dovrà essere aperto esclusivamente da Personale adeguatamente addestrato. La rimozione dei pannelli laterali, frontali o posteriori può esporre potenzialmente a voltaggi di corrente letali. All'interno dell'apparecchio non ci sono parti manutenibili da parte dell'utilizzatore.

Nell'eventualità che si riscontri un problema con l'apparecchio che non può essere facilmente risolto, si dovrà contattare il proprio fornitore e restituire, se necessario, l'apparecchio. Si prega di specificare nel dettaglio i difetti riscontrati e di ricordare di restituire l'apparecchio nel suo involucro originale. La Techne non si fa carico di alcuna responsabilità per danni subiti dall'apparecchio che non sia stato propriamente imballato per il trasporto; in caso di dubbio, rivolgersi al fornitore. Vedere il Certificato di Decontaminazione fornito con il vostro apparecchio.

1. Pulizia

Prima di pulire il vostro apparecchio, disconnettere sempre la presa di alimentazione e lasciare raffreddare sotto i 50° C. Questo apparecchio può essere pulito passando un panno inumidito con sapone. Si deve prestare attenzione onde prevenire l'ingresso dell'acqua all'interno dell'apparecchio. Non utilizzare per la pulizia sostanze abrasive.

2. Disconnessione in caso di surriscaldamento

In caso di non funzionamento dell'apparecchio, controllare la spina elettrica e il relativo cavo collegati alla rete. Ripetute interruzioni del funzionamento dell'apparecchio indicano un serio malfunzionamento: in questo caso restituire l'apparecchio al fornitore per la riparazione.

3. Fusibili



L'apparecchio è protetto da uno o due fusibili. Questi dovrebbero essere sostituiti solo da personale qualificato. Se i fusibili si bruciano frequentemente ciò indica un malfunzionamento serio e in questo caso si consiglia di contattare il fornitore per le riparazioni.

Per informazioni tecniche

Per informazioni tecniche di vendita o sull'assistenza contattare l'agente locale Techne o, direttamente la

Techne, Duxford,
CAMBRIDGE, CB2 4PZ, United Kingdom.
Telefono: +44 (0)1223 832401
Telefax: +44 (0)1223 836838
Assistenza: +44 (0)1223 836950
24 ore risposta automatica
e-mail: sales@techne.com
Web site: www.techne.com

Oppure:

Techne Incorporated, University Park Plaza, 743 Alexander Road, Princeton, New Jersey, 08540-6328, USA.
Telefono: (609)452-9275
Toll free: 800-225-9243
Telefax: (609)987-8177
e-mail: salesus@techne.com
Web site: www.techneusa.com

INTRODUCTION

Read the whole of this book before commencing work with the unit.

Blotting techniques in which DNA, RNA or protein are immobilised onto nylon or nitrocellulose filters form a cornerstone of molecular biology. Detection of the desired sequence is usually performed using radioactive probes. Given the expense and hazardous nature of the probes, probing should:

- a) be performed under safe conditions
- b) use minimal volumes (to improve signal and reduce expense)
- c) allow reuse of materials
- d) be simple to use

The Techne HB-1D meets all these requirements.

Up to five 25 x 25cm filters can be probed in one of the large hybridisation tubes. Hybridisations can be performed in a minimal volume of 5ml, an 80% reduction over conventional systems, reducing expense and improving signal. The operator is protected from irradiation throughout and the apparatus is extremely simple to use. However, the chemical manufacturer's safety precautions must be used when using the HB-1D.

The Techne HB-1D also incorporates the following features:

- a) a temperature range of ambient +10°C to 100°C.
- b) it holds 1, 2, 3 or 4 x 80mm diameter hybridisation tubes.
- c) it will hold 3, 6, 9 or 12 x 44mm diameter tubes if you use a three-tube carrier.
- d) it will hold 4, 8, 12 or 16 mini tubes if you use a four-tube carrier.
- e) the HB-1D comes with adjustable feet to enable accurate levelling.

Initial Checks

When you receive your new HB-1D remove all the packing. Check the unit for any transit damage. If there is any transit damage at all inform Techne Sales Department or your Techne dealer immediately.

When unpacking the unit, check that the following have been removed from the packing: **a power cable; a tube of silicon grease; a decontamination certificate and a Guarantee Card.**



Check that the unit is the correct rating for your power supply by looking on the Rating Plate which is on the rear of the unit.

Within the guarantee period, shown on the Guarantee Card, we undertake to supply replacements free of charge for parts which may, on examination, prove to be defective, provided that the defect is not the result of misuse, accident or negligence. Any instrument requiring service under this guarantee should be sent to the supplier through whom it was purchased, or, in the case of difficulty, it should be carefully packed in its original packing and consigned, carriage paid, to us. Techne takes no responsibility for returned goods damaged in transit.

Returned goods will not be processed without a Returns Authorisation Number. Call + (44) (0)1223 832401 for a number. On all correspondence, please quote the Serial Number in full and/or the Sales Order Number. **Please write the Returns Number on the outside of any packing.**

Specification

Maximum Number of Hybridisation Tubes	6 (large and small) 24 mini tubes
Temperature Range #	ambient +10° to 100°C (NOTE: minimum temperature must be greater than 10°C above ambient)
Rotation of Hybridisation Tubes	5 rpm to 20rpm and off
4 steps, 5 positions and off	Approx steps of 4 rpm
Adjustable rocking platform	5-20 or 15-60 opm
Temperature stability in chamber	better than 1.0°C
Stability in the tubes	better than +0.1°C
Temperature uniformity in the chamber *	better than +1.5°C
Temperature uniformity in the tubes *	better than +1.0°C
Temperature set point resolution	0.1°C
Absolute accuracy	better than +0.3°C
Warm Up Time Within Tube (16° to 100°C)	50 mins
Heater Power	750 W
Temperature selection	Digital
Temperature Display	LED
Temperature Sensor	PRT
External Dimensions	
Width	385mm
Depth	285mm
Height	555mm
Internal Dimensions	
Width	260mm
Depth	210mm
Height	330mm
Weight	
Net	20Kg

The Hybridiser includes a preset re-settable overtemperature cutout.

* Temperature measured in the centre of each tube.

Large tubes are fitted with 70°C seals, seals part number 6101488 are required to work to 100°C.

For the Hybridisation Tubes see the list under Accessories

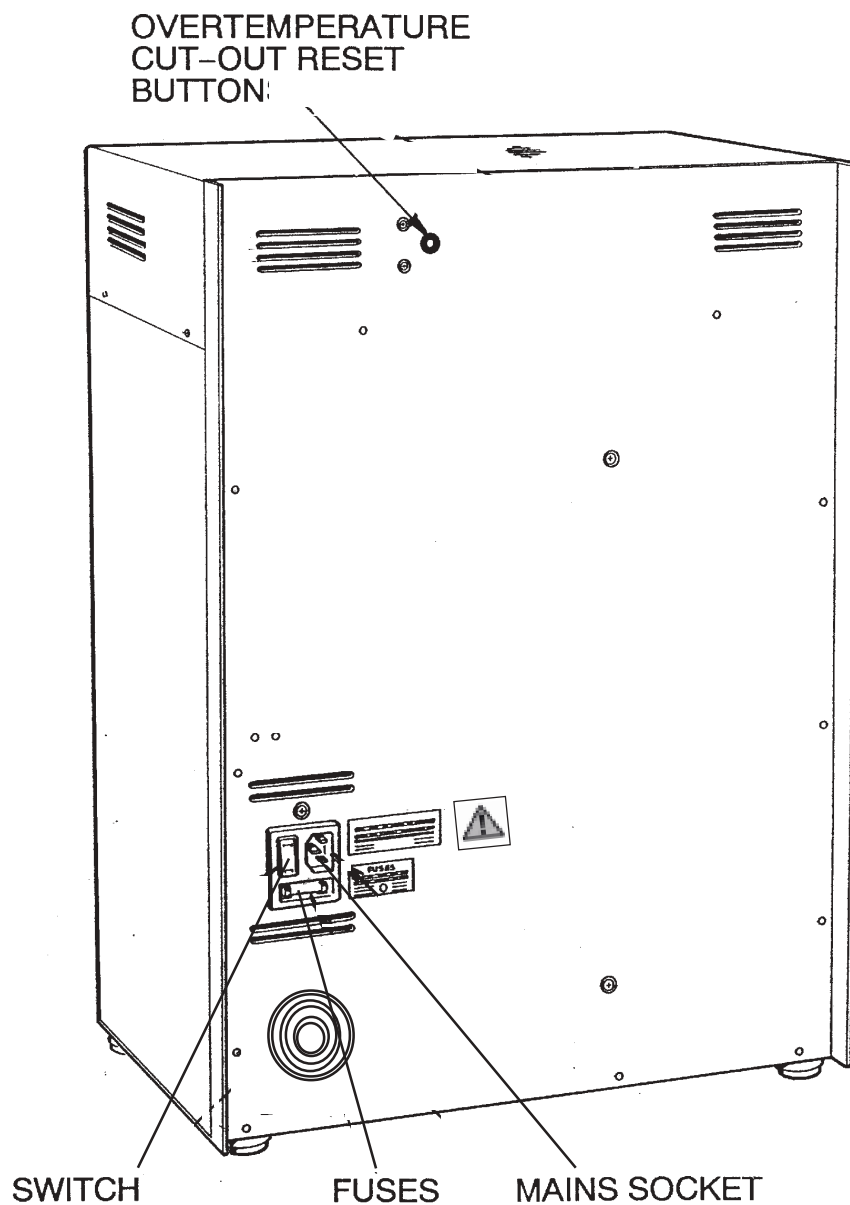
Unpacking

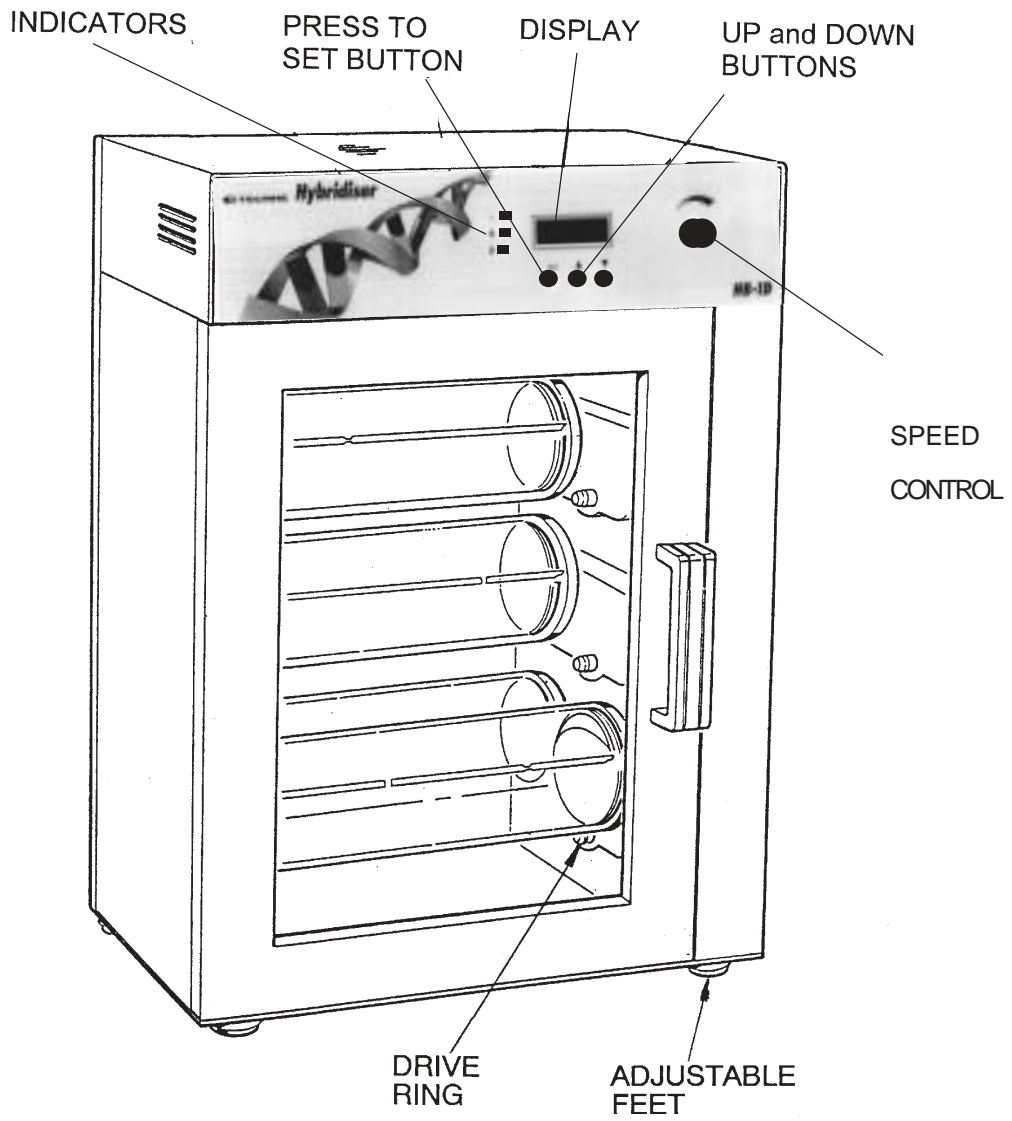
Ensure that the following have been removed from the packing:

- The Hybridiser.
- Drip Tray (not Techne Inc).
- Power Lead.
- Guarantee Card.
- Decontamination Certificate.
- 3 Hybridisation tubes complete with end caps, seals and grease.
- Extra Tubes if ordered especially.

Installation

- 1 Place the unit on a suitable bench, a flat workspace, or in a safety cupboard if required, ensuring that the air inlet and outlet louvres are not obstructed.
- 2 Insert some liquid into a tube and place the tube in the Hybridiser. Adjust the feet by unscrewing them anticlockwise slightly until the unit is level. Check the level by putting the tube in several positions.
- 3 Plug the mains cable into the socket on the rear of the unit.





Warning



THE UNIT WORKS UP TO 100°C. This temperature can cause burns. Techne take great efforts to protect operators from hazards, but the following points are brought to your attention:

- 1 Use care and wear protective gloves to remove hybridisation tubes from the cabinet if the unit is at high temperature.

If the protocol allows, it is better to allow the unit to cool to below 40°C before attempting to remove the tubes.
- 2 The coloured end cap of the 80mm large tube and the 44mm small tube has two holes, so that you have to be careful not to spill the probe through these.

One is the hole which allows the air to expand when the tube is heated.

The other is the filling hole which is revealed when the spindle cap is removed.

DO NOT TIP THE TUBE SO THAT THE COLOURED END IS DOWN AS THIS WILL CAUSE A SPILLAGE.
- 3 The unit has been designed to conform to international safety specifications and is fitted with a resettable over-temperature cutout and an adjustable cutout. If, for any reason, the temperature rises above 115°C, the over-temperature protection cuts out the heater, but the tubes continue to rotate. The over-temperature light comes on. Check the reason for the cut out and, if there is no obvious cause, reset the cutouts once the unit has cooled. The reset, on the back of the unit, is operated by pressing the centre of the button indicated on page 11.

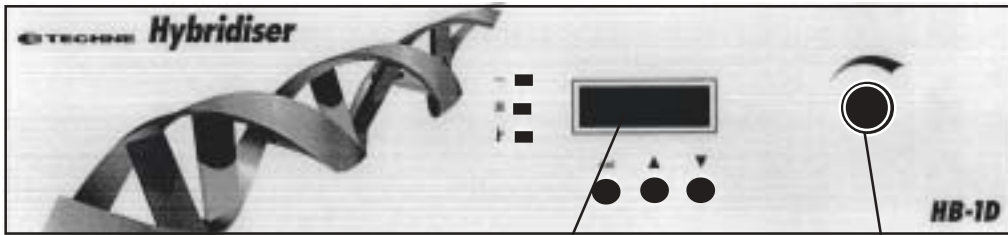
Servicing by Techne and their Agents

Please note that neither Techne nor any of their agents can accept the return of ANY GLASSWARE from these units.

If the unit is returned it must be thoroughly decontaminated and a CERTIFICATE OF CLEANLINESS returned with the unit.

Switching On

Once your HB-1D is connected to a power supply, switch it on using the power switch next to the power inlet socket on the rear panel.

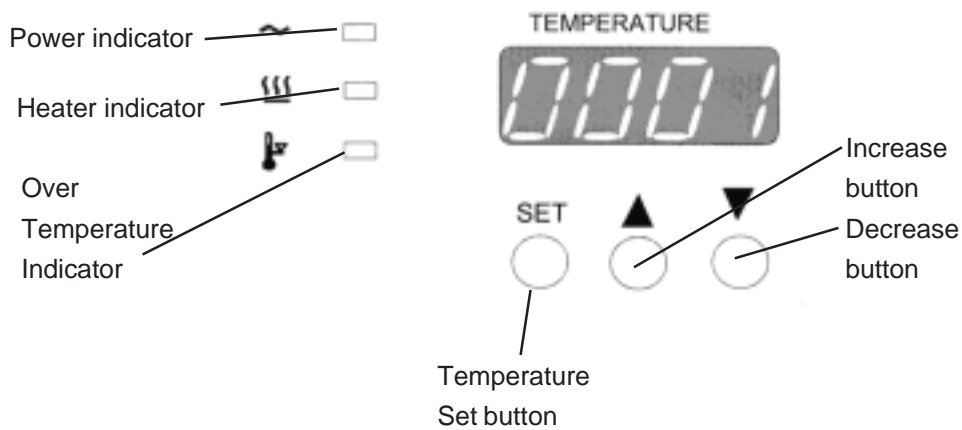


Temperature display

Speed control knob

Front panel of the HB-1D

Temperature Control



Controller Display

When you first switch on, the display will show the edition of the software which your unit uses. For example software issue "1" would be shown as follows:

It will display this for 1 second, then the actual temperature of the incubator will be indicated.

Speed control



Fully anticlockwise the speed control knob switches the rotation of the tubes off

It then increases the speed clockwise and decreases the speed anticlockwise in steps of approximately 4 rpm. Switch the knob until you have the speed you require.

OPERATION

The Tubes

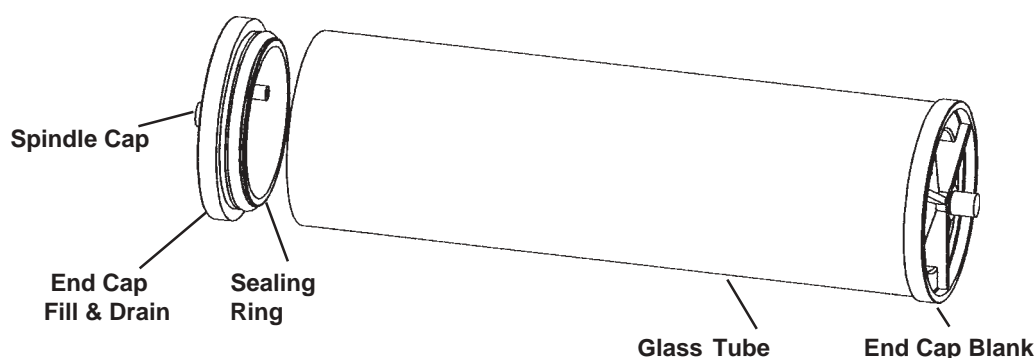
The Hybridisation Tubes must be checked regularly and replaced if any damage occurs. Any damage to the ends of the tubes can cause them to break when the end caps are inserted.

Each tube must be fitted with a radiation shielding end cap if you are using a radioactive probe. These end caps are supplied with all tubes which are supplied with the HB-1D and any other tubes supplied after December 1999. Normal handling procedures must be observed when handling any tube.

Load the membrane and reagents according to which size hybridisation tube you are using.

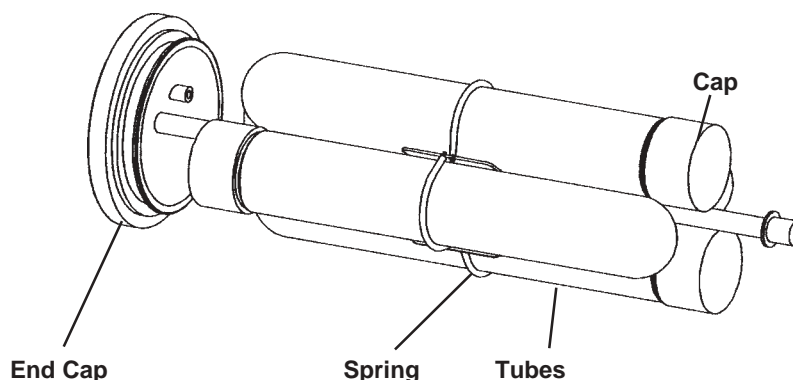
Large tube (80mm diameter) assembly

Remove the tube end cap which has the holes in it. Place the filters in the tube and replace the end cap. A small quantity of Techne O-ring grease, see the list of accessories, **must** be smeared on the seal to facilitate the insertion of the end cap. Remove the spindle cap and the liquids appropriate to the protocol may then be added through the hole in the spindle using a syringe. Replace the spindle cap and press it onto the spindle so that it clicks into place. Note: the tube will not rotate properly if the cap is not fitted securely



Mini tube (4 x 32mm dia) assembly

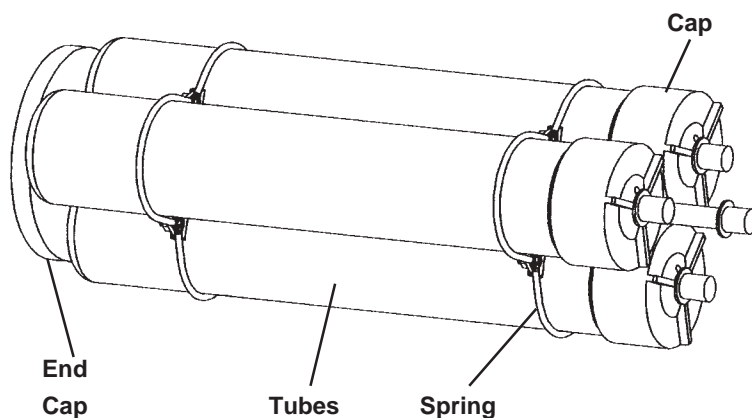
Unscrew the end cap of the tube. Place the filters and the liquids appropriate to the protocol in the tube and replace the end cap. Fix the tube into a multi-tube holder, using the springs, and ensure that there are four tubes in the holder. The end caps must be as shown, on alternate ends. The multi-tube holder will not rotate properly if there are not four mini tubes in it.



Small Tube (3 x 44mm dia) assembly

Unscrew the tube end cap. Place the filters in the tube and replace the end cap. Remove the spindle cap and the liquids appropriate to the protocol may then be added through the hole in the spindle using a syringe. Replace the spindle cap and press it onto the spindle so that it clicks into place.

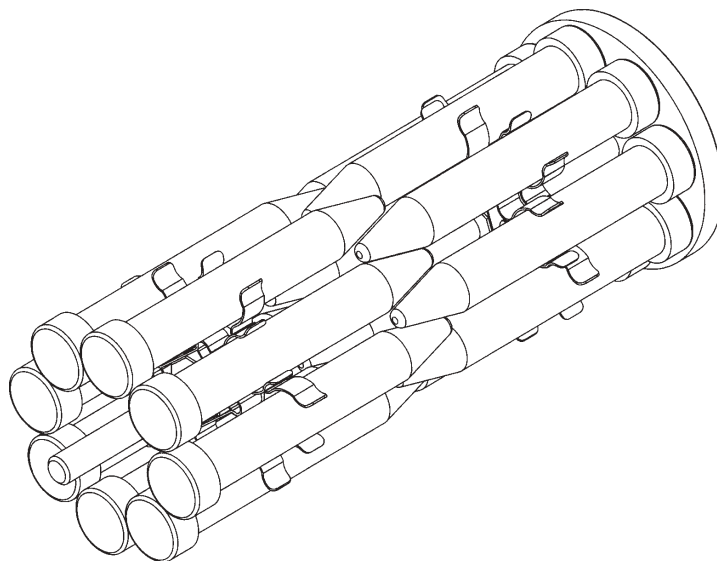
The assembly is similar to the four tube assembly but the end caps do not have to be at different ends of the carrier. Fix the tube into a multi-tube holder, using the springs, and ensure that there are three tubes in the holder. The multi-tube holder will not rotate properly if there are not three small tubes in it.



16 x 15ml Tube assembly

Unscrew the end cap from the tube. Place the filters and the liquids appropriate to the protocol in the tube and replace the end cap.

Assemble the tubes into a multi-tube holder, using the spring clips. The multi-tube holder will not rotate properly if it is not balanced properly. Preferably the multi-tube holder should be filled completely even if all the tubes are not being used.



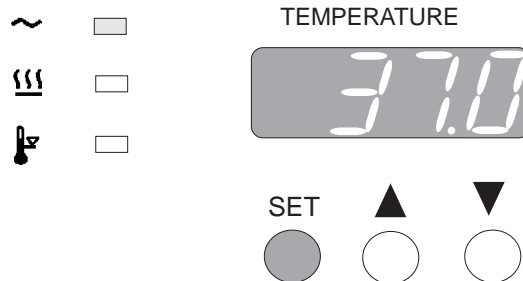
The HB-1D

- 1 Insert the tubes or tube holder into the HB-1D ensuring that they rotate freely and engage on the drive rollers.
- 2 Close the door.
- 3 Connect the mains electricity supply to the mains socket at the rear of the unit. Switch the power ON from the switch located next to the mains input lead. The POWER indicator and the display on the front panel will light.
- 4 The Heater Indicator will be lit while the heater is on.

The Front Panel Controls

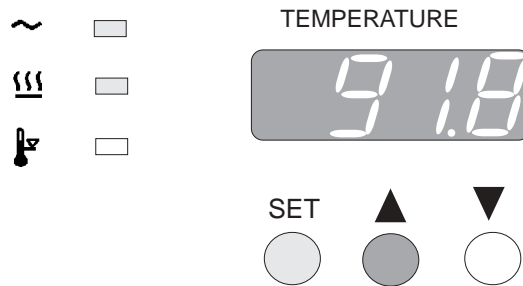
The front panel controls consist of three buttons for controlling the display, a four digit LED display and three indicators.

The SET temperature Button



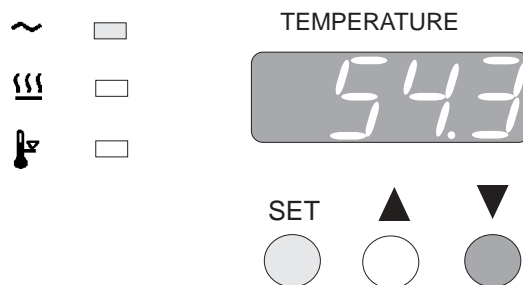
The **SET** temperature button displays the set temperature when pressed.

The UP ARROW Button



When the **SET** temperature button is held down and the **UP ARROW** button is pressed, the set temperature is increased.

The DOWN ARROW Button



When the **SET** temperature button is held down and the **DOWN ARROW** button is pressed, the set temperature is decreased.

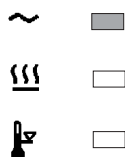
Speed of Change of Set Temperature

Each press of the **UP ARROW** or **DOWN ARROW** buttons will increase or decrease the set temperature by .1°C. If the buttons are held down the temperature change will accelerate to 5° per second.

Tube temperature

NOTE: It takes approximately 50 minutes for the interior of the hybridisation tubes to reach the displayed temperature depending upon the number of filters and amount of hybridisation fluid used.

Power Indicator



TEMPERATURE

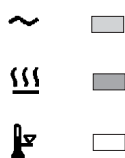


SET



The top indicator shows that there is power to the unit

Heater Indicator



TEMPERATURE

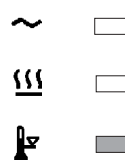


SET



The next indicator shows when the heater is heating the unit. When the temperature is being set, and the new set temperature is higher than the temperature already in the unit, the heater indicator will light as the unit tries to follow the set temperature. If the light is on continuously the heater is getting constant power. The only exception is described under Over-Temperature Indicator. As the temperature approaches the set temperature the heater indicator will flash. When set temperature is reached the indicator will stay on for shorter periods. If the oven is above the set temperature then the indicator will be off, as the heater is not getting any power.

Over-Temperature Indicator



TEMPERATURE



SET



If the unit should, for any reason, exceed the temperature set for the over-temperature cutout, the over-temperature indicator will light. The heater will have been switched off and the unit will begin to cool even if the heater light is on (the light staying on or not depends on which circuit has sensed an over-temperature). The fan will continue to circulate the air.

BASIC PROTOCOL FOR SOUTHERN HYBRIDISATIONS *

INSERTION OF FILTERS

Place a wet or moist filter, DNA side facing inwards, into a hybridisation tube and allow it to adhere to the glass. Large trapped air bubbles should be smoothed out with a glass pipette; smaller air bubbles are acceptable and do not interfere with hybridisation so long as the surface of the filter is covered with hybridisation fluid.

Several filters may be placed in one tube; there is a slight loss of signal, but no increase in background in the lower filters. To improve the signal we recommend the use of separation membranes, part number FMEM2020.

PRE-HYBRIDISATION

Add 5 or 10ml of fluid, according to the number of filters and the size of tube, so that the filters are covered. Allow to pre-hybridise for usual period.

HYBRIDISATION

Drain off the pre-hybridisation fluid by inverting the tube. Add hybridisation liquid with radioactive probe added by using a syringe and needle through the hole in the blue end-cap. The minimum volume for a single filter is 5ml.

WASHES

Washing depends on the stringency required.

One method is to wash genomic blots in the following fashion:

- 1) 2 x SSC, 50ml for 10 minutes
- 2) 2 x SSC, 50ml for 10 minutes
- 3) 0.1 x SSC, 0.1% SDS x 50ml for 10 minutes

This gives very clean backgrounds.

NOTE

- 1) All radioactive waste can be collected for disposal; none need be disposed of down the sink.
- 2) Radioactive probes can be collected and reused several times.
- 3) As the protocols for this unit usually involve the use of radioactive materials the appropriate manufacturer's safety precautions must be taken into consideration.

* Courtesy of: Dr M J S Dyer.

When the Protocol is Finished



When the protocol has finished switch off the unit. Open the door and remove the tubes, again being careful to keep the coloured end-cap uppermost. Remember the tubes may be hot. Either wear gloves or, if the protocol permits, allow the tubes to cool before removal.

TECHNICAL INFORMATION

Brief fault finding notes are given in this section.

NOTE THAT THIS EQUIPMENT SHOULD ONLY BE DISMANTLED BY PROPERLY TRAINED PERSONNEL. REMOVING THE CASE EXPOSES POTENTIALLY LETHAL MAINS VOLTAGES. THERE ARE NO OPERATOR MAINTAINABLE PARTS WITHIN THIS EQUIPMENT.

Operator Maintenance

General

Should you experience any problems with your HB-1D which cannot be easily remedied, you should contact your supplier and return the unit if necessary.

Fill in the Decontamination Certificate provided with the unit and return it to Techne Service department giving as much information as possible to help diagnose the fault. Please remember to return the unit in its original packing, Techne accept no responsibility for damage to units which are not properly packed: if in doubt, contact your supplier.

Overtemperature Cutout

The overtemperature cutout is a sensitive mechanical device and mechanical shock can cause it to trip.

In the event of no heater power, check the mains plug and lead, then reset the cutout control by depressing the centre of the button.

Repeated operation of the cutout indicates a serious fault: you may need to return your unit to your supplier for repair.

Fuses



If the power indicator fails to light when power is supplied to the unit the fuses may have blown. Check that there is no external cause such as a faulty plug; check both fuses and replace any faulty fuse with one of the correct value. Fuse values are given on the label next to the mains input socket.

O ring seals on the Hybridisation Tubes

The O ring seals on the 80mm dia Hybridisation Tubes must be checked regularly and replaced before a leak occurs. Each tube is provided with 6 spare O rings and further O rings can be obtained from Techne or your dealer.

Hybridisation Tubes

The Hybridisation Tubes must be checked regularly and replaced if any damage occurs. Any damage to the ends of the tubes can cause them to break when the end caps are inserted. Further Tubes can be obtained from Techne or your dealer.

Cleaning your HB-1D

Before cleaning your unit ALWAYS disconnect from the power supply and allow to cool.

You can clean the case of the HB-1D with a cloth dampened in soapy water or ethanol. No part of the unit should be immersed in solvents. Do not use acetone or abrasive cleaners.

If You Spill the Fluid

Because of the nature of operation of the HB-1D, the complete ductwork system must be cleaned if a spillage does occur. This is to remove any airborne particles which may have been blown around the system and to guarantee full operator safety.

Switch the HB-1D off and disconnect it from the power supply. Follow this sequence of operations when the HB-1D has been allowed to cool below at least 50°C:

- a) Remove all glassware from the HB-1D.
- b) Remove the drip tray.
- c) Clean all surfaces of the inner chamber using a suitable cleaning and decontaminating solution.

Be careful of the drive shafts.

Cleaning and decontamination materials which Techne recommend include:

Decon 90

Neutracon

or mild detergent.

If an Incorrect Message is Displayed

If a message is displayed which shows a strange temperature or HELP, the PRT (temperature sensor) has probably gone open circuit. This could mean that a wire has broken; a wire or the connector to the PCB has become disconnected; or the PRT has been broken somehow; etc. You should contact your supplier and return the unit if necessary. Remember to fill in the Decontamination Certificate provided with the unit and return it to Techne Service department or your dealer giving as much information as possible to help diagnose the problem.

Accessories and Spares

The following may be purchased from Techne or their dealers. All Techne tubes are made from Borosilicate glass. These tubes are the preferred tubes:

FHB12	80mm external diameter hybridisation tube assembly complete with sealing rings and end caps
FHB11	80mm external diameter tube only
6101082	End cap with holes (blue) less sealing ring
6101387	Spindle cap (for use with 6101082).
6101083	End cap without holes (natural) less sealing ring
6101090	Sealing ring (for 70°C operation)
6101488	Sealing ring (accessory for 100°C operation)
6101351	Techne O-ring Grease (tube)
FHB32	44mm external diameter hybridisation tube assembly complete with seal and screw on end cap
FHB31	44mm external diameter tube only
6007625	Seal (for use with 44mm external diameter tubes).
6101486	Screw on end cap less seal.
6101387	Spindle cap (for use with 6101486).
FHB42	4 x 32mm external diameter hybridisation tubes complete with screw caps, seals and multi-tube holder
FHB41	4 x 31mm external diameter tubes only
FHB43	Multi-tube holder
6102375	End cap for the mini tube
6102376	Seal for the mini tube
6101387	Spindle cap
6101828	Spring for the multi-tube holder
FHBSH1	Shelf
FHBST1	Rocking platform 20/40 Oscillations
FHBST2	Rocking Platform 20/60 Oscillations
FHTRACK	Hybridisation Tube Rack
FMEM2020	Separation Membrane 20cm x 20cm

Contact Techne Sales or your dealer for further details.

