6640
-01-139-9488

Instructions

Isotemp® Dry Bath Model 145

Catalog No. 11-715-100 & -101

The Fisher Model 145 Isotemp® Dry Bath provides the precise temperatures required in clinical laboratory procedures. For reliability, it employs uniquely designed, interchangeable dry blocks which virtually eliminate horizontal-and-vertical sample temperature gradients.

Bath temperatures from just above ambient to 125°C are selected with a calibrated control. Once the set temperature has been reached, it is precisely maintained by a solid-state control circuit, thermally linked to the bath by a thermistor probe.

In addition, the front panel contains a power switch and a dual pilot lamp. The red-lensed lamp indicates when power is applied to the apparatus, and the white-lensed lamp cycles on and off with the heating element.

Even heat distribution to all sample dry blocks is ensured by a fully-insulated heating element, mounted in direct contact with the dry-block support plate. The element is designed to provide more heat at the extreme ends where thermal losses are greatest.

The Model 145 simultaneously holds any four of the ten accessory dry blocks available. Eight of these handle from 5 to 35 glass tubes, ranging from 6 to 25mm in diameter (see ACCESSORIES section for tube sizes and quantity). A ninth is a special shallow-well block which accepts 20 standard 10mm Placentex* pregnancy test tubes, and a tenth is a special block which accommodates 12 standard 12.5mm square, glass or plastic cuvets of the type used with diagnostic enzyme analyzers.

Molded of a aluminum alloy, most dry blocks (except the shallow well model) feature conical sample wells. Smaller at the top than at the bottom, the wells minimize the thermal gradients which commonly develop in samples heated in cylindrical wells. When inserted into the dry block, the sample tube is surrounded by a cone of air that gradually widens towards the bottom of the well. Consequently, as heat rises in the dry block, transfer time from the well wall to the tube surface gradually decreases toward the top, in effect regulating flow so that heat reaches all portions of the tube at an even rate.

Sample uniformity is further enhanced by a plastic plug that supports the tube and seals the well. The low thermal conductivity of the material effectively insulates the bottom of the tube from the heated support plate and virtually eliminates hot spot development.

Typical applications for the Model 145 are blood chemistries, blood studies, dry incubations, solution concentrations, pipet warming, or any clinical, serological, biochemical or chemical process or test requiring a uniform sample temperature.

Unpacking

The Dry Bath is shipped in a single carton completely assembled. It is supplied with these instructions and a warranty card, which should be completed and returned as soon as possible. In cases where shipping damage is observed, keep the unit and carton intact, including the packing material, and file claim with the final carrier. Usually the firm will send an inspector to ascertain liability.

NOTE: Because of the wide variety of applications and sample block designs, no blocks are included with the basic unit. The user must select and order the blocks best suited to his particular application (see ACCESSORIES).

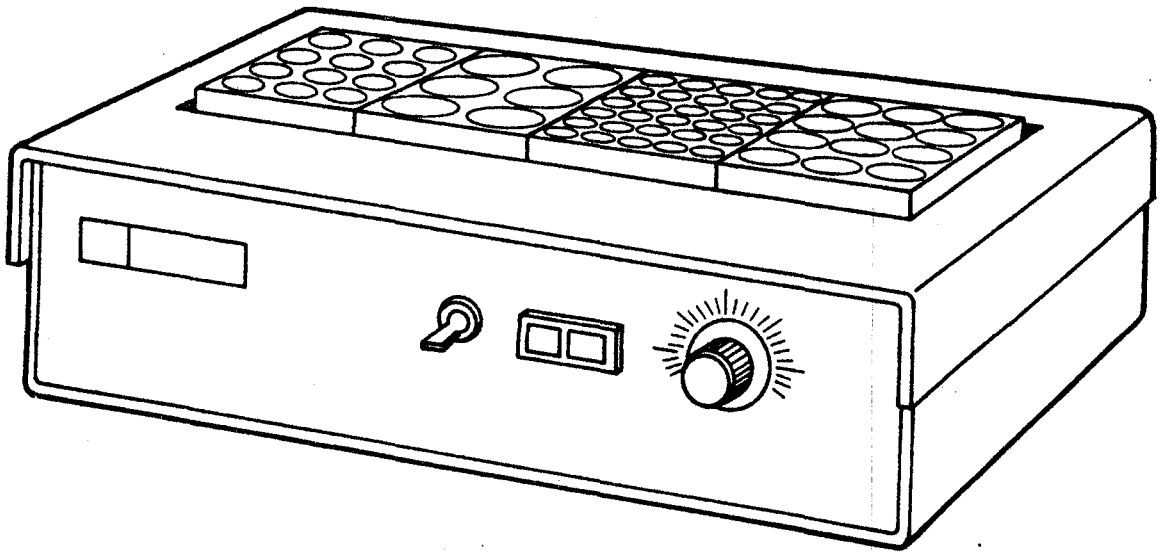
Operation

To operate the Model 145, proceed as follows:

1. Place unit on flat, level surface which is free of drafts.
2. Position four dry blocks in bath cavity.

   NOTE: No heat transfer medium is required in the bath cavity; however, make certain that all interfacing surfaces are free of foreign matter to assure good thermal conductivity.

   CAUTION: Bath cavity must be filled with four blocks to obtain stated performance parameters.
3. Set POWER switch to OFF.



ALLIED Fisher Scientific

II-2-4

data plate for power requirements
nnect line cord to suitable ac
tlet.
t TEMPERATURE control to desired
nperature.

*TE: Dial settings are approximate. To
ain improved set point accuracy,
rform Calibrating Temperature Con-
l Procedure.*

ce POWER switch in ON position.
ow approximately 30 minutes for
nperature of blocks to stablize.
ce tubes containing samples in block
lls and proceed as required for the
rticular process or test being per-
med.

UTION: Level of sample in tubes
ould not extend above top surface of
cks.

rmance Characteristics

erature	
ge:	Ambient to 125°C
ancy:	±0.1°C*
rmity:	±0.1°C*
city:	4 dry blocks

e deviation from mean of 37°C.

r Requirements

No.	
-100	120V, 50/60Hz, 5.5A
No.	
-715-101	240V, 50/60Hz, 2.7A

cal Data

nsions	4⅛"Hx14$^{15}/_{16}$"Wx8⅞"D (10.48cm x 37.94cm x 22.54cm)
Weight	11½ lb (5.22kg)

ntenance

ry Bath requires no maintenance
han routine cleaning of blocks, cavity
ainted surfaces. These can normally
aned using a mild detergent and
solution. Avoid the use of scouring
and harsh abrasives.

ice

ry Bath is designed and constructed
able service. However, because of
certain components eventually will
e replacement.

ng Access to Components

n access to the internal components:

ce POWER switch in OFF position
disconnect line cord from electrical
et.
e dry blocks from bath cavity.
ath assembly, top down, on
ch.
nove the seven screws on bottom of
net base.
nove the two screws securing rear of
nle to rear of cabinet
e.

Replacing Heating Element

To replace the heating element, proceed as follows:

1. Perform all steps under Gaining Access to Components.
2. Remove the four hex stand-offs securing heater cover, then remove cover.
3. Remove fiberglass insulation by lifting it up and off mounting studs.
4. Disconnect the two heating-element wires at rear of pilot light assembly.
5. Remove the screw securing hold-down clamp at center of heater.
6. Remove the four screws securing heater to underside of bath cavity.
7. Install replacement heater and reassemable bath by generally reversing steps 1 through 6.

Replacing Front Panel Components

All operating controls and indicators are located on the front panel and can be quickly and easily replaced as follows:

1. Perform all steps under Gaining Access to Components.
2. Using a nut driver, remove the three nuts securing front panel to underside of stainless-steel top deck.
3. Lift front panel up and off studs. Lay panel face down on bench.
4. Replace defective component.

   NOTE: When replacing PCB, note location of wires before unsoldering, and after completing step 5 below, perform Calibrating Temperature Control procedure.
5. Reassemble bath by generally reversing steps 1 through 4.

Replacing Thermistor Probe

The thermistor probe is located in a drilled hole in the dry-block support plate and can be replaced as follows:

1. Perform steps 1 through 4 under Replacing Front Panel Components procedure.
2. Unsolder the two probe leads from control board terminals.
3. Grasp leads near probe body and gently pull outward.
4. Apply thermal compound (Fisher No. 29553, or equivalent) liberally to the tip of the replacement probe, insert probe into heater block to within $^{1}/_{16}$" of end of heat shrink tubing, then secure probe in place by applying GE RTV-106 silicone rubber cement around opening.
5. Reassembly bath by generally reversing steps 1 through 3 above.
6. Perform Calibrating Temperature Control procedure.

Calibrating Temperature Control

The factory-calibrated temperature control will require recalibration if the control potentiometer, the PCB, or the thermistor probe is replaced. To do this, proceed as follows:

2. Place a tube containing customer sample material or Fisher O-2 bath oil into a sample well near center of bath cavity, and suspend a Fisher 14-985C thermometer, or equivalent, into bath oil in such a way that thermometer does not touch sides or bottom of tube.

   NOTE: Use a No. 24 gauge iron-constantan thermocouple in place of thermometer if utmost temperature accuracy and resolution is required.
3. Set TEMPERATURE control to 37°C or other preferred operating temperature.
4. Place POWER switch in ON position, and allow approximately 60 minutes for temperature to stabilize.
5. Adjust TEMPERATURE control as necessary to obtain preferred temperature as indicated by thermometer.

   NOTE: Allow sufficient time for stabilization between adjustments.
6. After obtaining preferred temperature, loosen setscrews in temperature control knob, being careful not to move or disturb control setting, and remove knob.
7. Reposition knob such that pointer is set to indicate preferred temperature on dial, then tighten setscrews.

atalog Accessories

	Number
y Block, holds 35 -mm tubes	11-715-105
y Block, holds 20 0-mm tubes	11-715-107
y Block, holds 20 0-mm Placentex™ est tubes	11-715-120
y Block, holds 12 2-mm tubes	11-715-109
y Block, holds 12 3-mm tubes	11-715-111
y Block, holds 12 5-mm tubes	11-715-113
y Block, holds 12 6-mm tubes	11-715-115
y Block, holds 6 0-mm tubes	11-715-117
y Block, holds 5 5-mm tubes	11-715-119
Block, holds 12 2.5-mm square cuvets	11-715-121
ceps Heating ock	11-715-123

TE: See your Fisher catalog or repre- ative for a full line of applicable sware.

A

Replacement Parts

Item	Symbol	Number
Heating Element	HTR1	
120V, 600W		31355
240V, 600W		32476
Line Cord & Plug	P1	
120V		07103
240V		09172
Line Cord Bushing		09183
Rubber Bumper		30445
Dual Pilot Lamp	PL1	
120V		30420
240V		30429
Triac, ECC, Q4010B	Q1	36404
Teflon™ Bushing for Q1		33808
Potentiometer, 10K, 1%, 4W	R7	32042
Knob for R6		18953
RC Network, 0.1μf/100Ω, 600V, Paktron, QC100	RC1	35133
Switch Toggle	S1	42115
Thermistor Probe	THR1	35053

Printed Circuit Board, Complete

115V		42111
230V		42112
Consisting of:		
Capacitor, Electrolytic, 100MFD/50V	C1	36717
Rectifier Bridge, 1A, 400V, Varo UM48	CR1	41797
Integrated Circuit, Op Amp, RCA CA3160S	IC1	41980
Transistor, Silicon, NPN, Fairchild 2N2222	Q1	31107
Resistor, MF, 3.01K, 1%, ⅛W	R1	32894
Resistor, MF, 1.10K, 1%, ⅛W	R2	27937
Resistor, MF, 2.61K, 1%, ⅛W	R3	37223
Resistor, MF, 20K, 5%, ¼W	R4	31184
Resistor, CC, 51Ω, 5%, ½W	R5	00908
Resistor, CC, 130Ω, 5%, ½W	R6	39443
Transformer, Signal DPC-10-20	T1	42005
Opto-Isolator, 12V Lamp, 24mA, 400V, Sigma 301T1-12B1	OC1	38626