MOPEC USER MANUAL

HIGH CAPACITY SECTION DRYER - BK701

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HIGH CAPACITY SECTION DRYER

BK701

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INTRODUCTION

Mopec's High Capacity Section Dryer is the perfect solution for high workload laboratories. Similar to the Mini Section Dryer, it's designed to efficiently and rapidly blow temperature-controlled air through the base of the instrument to dry specimens without the risk

of overheating. Through this process, drying times are dramatically reduced by 75% compared to conventional drying ovens.

Featuring a large chamber, the system can house up to 30 slides within each of its 13 slide racks. The transparent lid can be positioned at any angle, allowing users to use both hands to place or remove items from the dryer. Additional options include a rack holder and two timer units.

GENERAL NOTES

1. This product is designed for laboratory use only. Always follow good laboratory practice.
2. If this product is not used in accordance with these instructions then basic safety protection may be affected.
3. If damaged or in case of failure the power supply unit supplied with this product should be replaced with an equivalent power supply unit.
4. Before using any cleaning or decontamination method please refer to the Maintenance and Cleaning section to ensure the proposed method will not damage the unit.
5. Connect only to a power supply with the corresponding voltage to that specified on the rating label positioned on the rear of the unit.
6. Ensure that the power supply has a ground terminal.

SPECIMEN SAFETY

It is the users responsibility to ensure that the temperature set on the instrument is at a level where no damage is caused to diagnostic specimens used with the equipment. In the event of this instrument malfunctioning, all specimens within the device should be checked to ensure no harm or damage to the specimen has been caused.

Amendments:

Issue 6: May 2021

Symbols:

This symbol appears in documents and on equipment to warn the user that there are hot surfaces on the equipment.

This symbol appears in documents and on equipment to warn the user that instructions must be followed to ensure correct or safe operation.

USER SAFETY

The equipment you have purchased complies with the following European Directives EMC Directive 2004/108/CE Electromagnetic Compatibility and Low Tension 2006/95/CE as indicated in the EC Declaration of Conformity included in the document. This instrument has been designed and constructed in a manner which minimizes the risk of electrical shock to the operator, offers maximum protection from overheating and provides clear and adequate labeling of instrument controls.

The instrument requires no regular servicing, but Mopec does recommend an annual inspection, as detailed in the manual, which will prolong the life of the instrument to ensure continued safety.

Do not touch any electrical contacts or open any closure plates. RISK OF ELECTRIC SHOCK!

DO NOT:

1. Place slide trays directly on the ‘drip tray’ of the section dryer. Blocking holes in the base of the instrument will affect airflow and can potentially lead to the instrument overheating. Slide trays must be mounted in a purpose built drying rack, which raises the slide trays from the base of the instrument, and ensures that trays are separated to allow improved airflow across the slides.
2. Use for purposes which are not specified by the manufacturer without first consulting the supplier.
3. Use for drying slides mounted using a flammable medium (unless you have carried out your own validation). Drying of slides mounted with DiaPath Cristallo liquid mounting medium is accepted.

DO:

1. Position the unit so it can be disconnected from the power supply with ease.
2. Carry out your own validation if using section dryer for drying coverslipped slides.

POWER LEAD & CONNECTION TO ELECTRICAL SUPPLY

Check the electrical supply is compatible with the rating label. IF IN DOUBT CONSULT AN ELECTRICIAN. THE PRODUCT MUST BE EARTHED!
Where the mains supply or plug connection differs refer to local regulations or consult an electrician.

SPECIFICATION

The Mopec High Capacity Section Dryer is designed for busy histopathology laboratories providing maximum drying area whilst taking up the minimum of bench space. The section dryer operates by circulating digitally controlled warm air from the base of the instrument, which rises through the slide staining racks. This efficient air flow across the surface of the slides enables sections to be rapidly dried, with sections dried in approximately 10-20 minutes at 65°C. The instrument can be fitted with optional LEAN Timer Units which enables a user to track the drying process for up to eight racks. The LEAN Timer Units utilize both visual and audible indicators, to alert a user that a rack has been dried for the correct amount of time, and is ready for staining. The High Capacity Section Dryer features digital control, over temperature cut out and miniature circuit breakers for safety.

Dimensions: Width 469mm x Depth 320mm x Height 346mm
Capacity: Up to 13 slide racks (Dependent upon slide rack width) or 8 racks (with optional eight slide rack holder/identifier)
Weight: 15.35 Kgs (33.8 lbs)
Temperature Range: Ambient to 70°C (+/-1°C) at 20˚C
Display: Digital Display with 0.5° accuracy
Safety: Class 1 cut out
Heater power: 1000 watts
Power Supply: 110-120V a.c 50-60Hz

LOCATION

The product must be placed on a smooth, level and sturdy work surface. Suitable for use in ambient temperatures 5°C to 40°C with a maximum humidity 80% (temperature 31°C) decreasing to 50% (temperature 40°C).

OPERATING INSTRUCTIONS

1. Place the High Capacity Section Dryer on a smooth and level surface.
2. Connect the mains plug to the electrical supply and switch on the socket (Ensure the power supply is properly earthed).

   Note: *As the socket is switched on, the fans at the rear of the section dryer will begin to operate. This is entirely normal and ensures that a flow of air is always passing through the heating elements utilized in the section dryer. This enables the section dryer to reach a set temperature more rapidly, and also ensures the heating elements cool more quickly once the section dryer is turned off.*

3. Turn on the High Capacity Section Dryer.
4. Select the desired temperature (Recommended Temperature 60°C).
    a. Press the DOWN arrow then release it (do not hold down the DOWN arrow continuously for 5 seconds).
    b. The display will show SP1 alternating with the current set temperature.
    c. To change the set temperature press the UP key to increase the value or the DOWN key to decrease it. These keys increase or decrease the value one digit at a time, but if the button is pressed for more than one second the value increases/decreases rapidly and after two seconds pressed, the speed increases even more to allow the desired values to be reached rapidly.
    d. Exiting the Set mode is achieved by pressing the P key or automatically if no key is pressed for 15 seconds. After that time the display returns to the normal function mode.
    e. The heater indicator will illuminate to show heater activity.
    f. The instrument will then warm up to the desired temperature, you will observe the temperature rise on the display.
    g. The instrument is designed to warm up quickly (roughly 9 minutes to reach 60°C at 110V).
5. It is recommended that when the High Capacity Section Dryer is first turned on, once it has reached the set temperature the instrument should be left for 20 minutes before use, to allow the dryer chamber to fully equilibrate to the set temperature.
6. As slide racks are placed or removed from the chamber, the door will be open, this will result in the temperature of the chamber dropping from the set value. Once the door is closed the temperature of the chamber will quickly return to the set temperature.

LEAN TIMER UNIT AND SLIDE RACK HOLDER/IDENTIFIER

Function Keys:

1. **Rack 1- Rack 8 Keys** - Press to select corresponding Rack Countdown Timer
2. **Start/Stop Key** - Press to start and stop countdown, press to stop an alarm and reset countdown timer.
3. **M (Memory) Key** - Press and hold to set a memory time.
4. **HR (Hour) Key** - Press to adjust the hour value. To increase the speed at which the digits change, hold down the key.
5. **RESET** - Press the **HR** and **MIN** key at the same time to reset the selected timer.
6. **MIN (Minute) Key** - Press to adjust the minute value. To increase the speed which the digits change hold down the key.
7. **SEC (Second) Key** - Press to adjust the second value. To increase the speed which the digits change hold down the key.

LEAN TIMER UNIT OPERATION

1. Place a slide rack containing sections to be dried into position 1, 2, 3, 4, 5, 6, 7 or 8 in the Slide Rack Holder.
2. Select the corresponding timer on the Lean Timer Unit by pressing the corresponding blue button, Rack 1, Rack 2, Rack 5 etc.
3. Press **HR/MIN/SEC** key to set the desired time for the sections to dry. To increase the speed in which the digits change hold down the key.
4. Press the **Start/Stop** key to start/stop the countdown function.
5. During the count down the indicator around the blue button will flash green.
6. When the count down reaches 0:00, an alarm will sound and the indicator will turn red, to indicate that the sections in the slide rack have dried for the correct amount of time.
7. The alarm sound will last for 1 minute and the timer will keep on counting up, until the user cancels the alarm and timer.
8. The user may cancel the alarm/light and reset the timer by pressing the **Start/Stop** key.
9. When several alarms are sounding, press the rack selector button to select the correct rack and then press the Start/Stop key to cancel the alarm and reset the timer.

   Note: *When the LCD screens start to become dim, please replace the AAA batteries used in the LEAN Timer Unit. Access to the battery compartment can be found at the rear of the LEAN Timer Unit.*

INSTALLATION RACK SYSTEM

1. Install the Slide Rack Holder/Identifier, making sure the holder locates directly onto the four holes in the drip tray.
2. Ensure the Slide Rack Holder/Identifier is installed correctly with the **FRONT** facing forward.
3. When using the Slide Rack Holder/Identifier, please ensure that the movable 3rd baffle in the drip tray is moved to the proper position. This will ensure optimal drying performance when using the Slide Rack Holder/ Identifier.

CLEANING INSTRUCTIONS

1. The case work and door of the High Capacity Section Dryer, including the control panel, may be wiped using small quantities of mild detergent or polishes applied with a soft cloth.
2. The Section Dryer chamber will require cleaning at regular intervals, using a minimal quantity of mild domestic detergent applied with a soft synthetic sponge.

3. The mesh filters which cover the three fans at the rear of the instrument, need to be cleaned once a month to prevent build up of debris which will affect airflow through the instrument.
4. Build up of wax in the instrument drip tray should be checked and removed on a weekly basis. Wax debris can be removed using a plastic wax scraper and a xylene free cleaning agent.

WARNING: Solvents such as Xylene or Acetone should not be used to clean the door, as they will cause discolouration and fogging of the Perspex used in the manufacture of the door.

SCOURING PADS OR DESCALING AGENTS MUST NOT BE USED TO CLEAN THIS INSTRUMENT.

MINIATURE CIRCUIT BREAKERS

Located at the rear of the instrument. In the event of a fault, push back in to reset. If fault situation continues, please contact your Service Engineer or Mopec.

SAFETY CUT OUT

Each fan is protected by a safety cut out, if the section dryer goes into a fault condition due to overheating. Heating will cease and the display will turn blank. The unit will naturally cool allowing safety cut out to reset returning it to normal operation after a short period. Please investigate the cause! Should after a prolonged period the unit still not return to normal operation it can be reset by a qualified engineer.

RECOMMENDED CHECKS TO BE MADE:

1. Check sufficient space at rear of unit for fan ventilation and airflow.
2. Check vents are not obstructed and mesh filters are clean.
3. Check tray is fitted correctly.
4. Do not overload or obstruct tray holes.

LATCHING SAFETY CUT OUT

The latching safety cut out operates if the section dryer goes into a fault condition due to overheating. Heating will cease and the display will turn blank. The safety cut out must only be reset by a qualified engineer.

RECOMMENDED CHECKS TO BE MADE:

1. Check fans are operating correctly.

PORTABLE APPLIANCE TESTING

Portable appliance testing should be carried out by a qualified person.

THIS EQUIPMENT MUST NOT BE FLASH TESTED!

DOOR ADJUSTMENT

If the door/lid of the High Capacity Section Dryer are not closed as desired, it is recommended that the user checks the amount of tension which is set in the friction hinges of the lid. The hinges on the door hold the door open so that racks can be placed in the chamber with two hands. The amount of friction set on the hinge could be slightly too high, causing the door to not close properly. The friction force can be reduced or increased by turning the middle (black) screw on each hinge anti-clockwise (less friction) or clockwise (more friction) using a screwdriver. The friction force should be set to just enough to keep the door open.

The gaps around the door of the High Capacity Section Dryer are there by design. The instrument is a forced air dryer, utilizing a stream of thermostatically heated air to dry slides, without the gaps around the door the airflow inside the instrument becomes chaotic and slides do not dry as efficiently.

CALIBRATION INSTRUCTIONS

1. Place a slide rack in the center of the drying chamber of the Section Dryer and then attach the reference temperature probe in a central position in the chamber at the height of the top of the slide rack.

   Important: All temperature measurements should be made with a calibrated thermometer fitted with an air temperature probe. Using a fridge thermometer is not recommended.
2. Close the section dryer door and turn on the High Capacity Section Dryer.
3. Set the temperature of the High Capacity Section Dryer to the desired temperature.
4. Let the instrument reach working temperature and leave for 60 minutes before carrying out a calibration check, this ensures that the chamber of the section has equilibrated and that the walls and drip tray in the chamber have reached working temperature.

5. Compare the temperature shown on the High Capacity Section dryer display with the temperature shown on your external digital probe.
   If the two numbers are in close agreement i.e. within ± 1°C, then the instrument is within calibration. If the temperatures are not in agreement i.e. a difference greater than± 1°C , then the instrument will need to be re-calibrated.

SETTING CONTROLLER OFFSET PARAMETERS

1. Press the P button and keep it pressed for 5 seconds until the display flashes showing SP1.
2. Then press the down arrow, the display will change to r.P.
3. Then Press the P button again and the display will show 0.
4. Press the UP arrow until the number shows 146 then press P.
5. Once the controller is unlocked the display will show SPL.
6. Press the down arrow 5 times until the display shows CA.
   CA = calibration and is where adjustments can be made to the temperature on the display so that the temperature shown is the same as the temperature shown on your reference digital thermometer.
7. Press the P button. The display will now show a number, this number is the current adjustment (offset) applied to the temperature display. This was the adjustment (offset) which was used when the High Capacity Section Dryer was manufactured to calibrate the instrument.
8. Use the up and down arrows to select the correct adjustment to match the temperature shown on your reference thermometer. Then press the P button to set the adjustment (offset).
9. The screen should now show CA.
10. Press the Up arrow and keep it pressed (for about 5 seconds) until the display shows the measured temperature on the display again.
11. The temperature on the display should be in close agreement i.e. within ± 1°C of the temperature shown on your reference thermometer.
12. It is recommended to leave the instrument heat for a further 15 minutes before re-checking the calibration of the instrument. To make sure you do not need to make a further small change to the adjustment (offset).

ROUTINE INSPECTION RECOMMENDATIONS

Mopec recommends that a simple annual inspection be made for all Mopec laboratory equipment in order that any malfunction can be identified and rectified as early as possible. This is to ensure user safety and prolong instrument lifespan.

RECOMMENDED CHECKS TO BE MADE:

1. Condition of Power Lead: A visual inspection to ensure the insulation is not damaged and that the correct fuse is fitted.
2. Functioning of Heater On Lamp: Heater lamp should be on when the instrument is warming up.
3. Functioning of the Airflow Fans: All fans at the rear of the section dryer should operate. All fans should begin to operate as soon as the instrument is plugged into a power socket. All fans should spin freely with indication of rubbing/friction.
4. Cleanliness of Fan Air Intake Filters: A visual inspection of the mesh filters which the three fans at the rear of the instrument, should be carried out once a month. Any build-up of debris should be removed to prevent reduction of airflow through the instrument.
5. Cleanliness of Wax Drip Tray: A visual inspection of the instrument drip tray should be checked on a weekly basis. Wax debris should be removed using a plastic wax scraper and a xylene free cleaning agent such as CellPath Parashield.

THINGS TO CHECK

1. The section dryer is recommended to be positioned 10 cm away from a wall to ensure good flow of air to the fans in the rear of the instrument.
2. Is there a build-up of fluff/debris in the fans at the rear of the High Capacity section dryer? If there is a build up of debris, this will reduce air flow and will in turn affect the flow of heated air entering the chamber and will affect the efficiency of the instrument to dry slides and in turn will affect the temperature consistency. The grills on the rear of the instrument should be cleaned regularly (every 4-6 weeks).
3. Is there any build up of wax in the drip tray which is stopping heated air from leaving the vents in the rear of the chamber? This can affect temperature consistency.
4. Is there any build up of wax in the holes of the drip tray which are blocking heated air moving through to the slides? If yes, this will affect drying efficiency.
5. Slide racks should not be placed in regions of the baffle/drip tray where there are no holes. The section dryer dries slides/sections using a flow of heated air. If the slide racks are not above the hole, then the heated air cannot reach the slides. Slide racks should not be placed against the walls of the instrument as there are no holes in these regions to dry slides.
6. The High Capacity Section Dryer has been designed with a drying chamber which can accommodate up to twelve (12) slide racks side by side. However, for optimal drying times it is recommended that the High Capacity Section Dryer not be loaded with greater than eight (8) slide racks at a time. As a general rule the greater the number fully loaded racks within the chamber the longer it will take to dry slides. Where the slides are positioned within the chamber will have an effect upon the drying potential of this instrument. The optimal drying positions are indicated by the positions within the black rectangles indicated in the image below.

7. To ensure optimal flow of heated air through these positions it is recommended to move the third baffle (metal plate secured with ‘wing nuts’) from its default position at the edge of the tray as shown in the image below to the second position further into the tray.
8. The recommended drying positions will line up over the baffles which sit in the drip tray. These baffles guide the heated air up through slide racks positioned in the drying chamber. Baffles in the drip tray are shown in the image below. Also shown in the image is an optional slide rack identifier tray which ensures that slide racks are positioned in the optimal drying position.
   WARNING: If the third baffle is moved to the new position, drying time for any slide racks which are positioned out of the recommended drying regions may be affected.

WARRANTY TERMS AND CONDITIONS

1. Mopec warrants to the Customer that the product purchased is free from defects in materials and workmanship.
2. Provided the terms of payment are duly complied with, Mopec undertakes to remedy any original defects arising from faulty materials or workmanship, in any goods manufactured/supplied by Mopec, which under proper and normal conditions of use, may develop within a period of twelve months from the date of delivery.
3. In the case of components which by their nature of application have an unpredictable life, this guarantee shall only be to the extent of the guarantee given by the manufacturers of these articles.
4. Mopec will accept no liability, where in the opinion of the company the defect has been caused by damage due to the Customers failure to follow operating instructions, correct installation, wear and tear, or damage due to the use of spare parts other than those spare parts of Mopec or which are recommended by Mopec, the defect has been caused by alterations or repairs being undertaken by a person(s) other than an authorized representative of Mopec.
5. Any damage claim must be in writing, and give the serial number and description of the goods, order number and date of delivery, and will not apply where any names or serial numbers or other information which may be attached to or inscribed upon the goods have been removed, covered up or defaced in any way.
6. Any goods or parts thereof, which may require repair or replacement, shall be repaired or replaced (at the election of Mopec) at the works of Mopec. The product to be repaired shall be delivered to Mopec by the customer at the Customer’s risk and expense. Any such goods or parts will be delivered by Mopec to the Customer free within the United States but if required to be borne by the Customer. All faulty parts removed from the equipment will become Mopec’s property. Any other repairs or work by Mopec will be carried out under the terms and conditions for specialist engineers currently in force.
7. In the event of replacement with a new or reconditioned model, the replacement unit will continue the warranty period of the original equipment.

8. If any goods or parts thereof are returned unnecessarily all costs involved, including a charge for inspection, handling and the return carriage must be paid by the sender.
9. Please retain the original packaging over the warranty period.
10. Mopec offers an Extended Warranty Option for instruments in the Mopec equipment range. This includes all parts and labor (exceptions may apply dependent upon the type of equipment) and supply a swap out instrument whilst the customers equipment is repaired.

    The extended warranty is only available at the date of purchase of the equipment. The warranty is immediately upgraded to a “swap out” service and is increased to 24 or 36 months depending on how long the warranty is extended for.

    The “swap out” service covers a loan unit being sent to the customer whilst the faulty unit is returned for repair (or replacement if necessary). A response to a customer request will normally be within 24 hours.

    If equipment is returned and the fault is found to be due to misuse or abuse, this falls outside the terms of the extended warranty and therefore a quotation for the inspection and repair of the equipment will be issued prior to any work being carried out.

    On return of the repaired equipment to the customer, it is the customer’s responsibility to ensure that the loan equipment is returned in the same condition as it was received and if required decontaminated with a signed decontamination sheet enclosed with the instrument.

    It is the customers responsibility to ensure that the loan equipment is packed in the packaging provided by Mopec, in order that Mopec can arrange collection of the loan instrument. If the loan instrument is not packed and ready for collection within 48 hours of a repaired instrument being returned to the customer, costs for collection and equipment rental fee will be applied.

NON-WARRANTY INFORMATION

Spare parts shall be made available for a period of 5 years after a piece of equipment is discontinued.

Mopec
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CE

EC DECLARATION OF CONFORMITY

We herewith confirm the following products:

High Capacity Section Dryer - BK701

Conforms with requirements outlined by the following European Directives:

Low Voltage Directive 2014/35/EU
EMC Directive 2014/30/EU

We confirm the declaration:

Mopec
800 Tech Row
Madison Heights, MI 48071

Conforms with the requirements of the following standards:

BS EN 61010-1:2010
BS EN 61010-2-010:2014
Safety requirements for electrical equipment for measurement, control and laboratory use.
BS EN 61326-1:2013
Electrical equipment for measurement control and laboratory use - EMC requirements.