

# ST XX28

Stainless Steel  
Thermostatically Controlled Electric Model

## Operators Manual

Issue 5

For correct operation of this autoclave it is essential that the chamber be filled with water up to the height of the studs before every use.

Warning - All external body and lid surfaces are hot during and immediately after sterilisation. Lift or move the autoclave by the top handle only.



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## 7. Illustration



- |   |                |   |               |
|---|----------------|---|---------------|
| A | Draw-off Cock  | E | Thermometer   |
| B | Aircock        | F | Wing Nut (6)  |
| C | Pressure Gauge | G | Drop Bolt (6) |
| D | Safety Valve   | H | Switch        |

## Notes

## Foreword

Before using this Dixons Portable Autoclave please read this booklet carefully. Please ensure that all persons likely to use this product are correctly trained in its use in accordance with these instructions.

Your Dixons Portable Autoclave, operated in accordance with the manufacturers instructions, will give years of trouble free service without the need for any major servicing.

Every Dixons Portable Autoclave has been manufactured to the highest quality standards by a company complying with BS EN ISO 9000 and is fully tested and ready for immediate use.

Dixons Portable Autoclaves are suitable for sterilisation of:

- Laboratory equipment (glass and metal)
- Culture media
- Pharmaceutical preparations in sealed containers
- Surgical and Veterinary instruments
- Dressings and drapes

For the sterilisation of dressings and drapes it is recommended that a Dressing Drum or Wire Mesh Basket be used. These are available as a part of the range of accessories.

All Dixons Portable Autoclaves are particularly suitable for destructive sterilisation, as the operator is not restricted to a set cycle time. This can be adjusted to suit the application.

This users manual consists of seven sections:

1. Installation Procedure
2. Operation
3. Sterilising Periods
4. Maintenance
5. Specification
6. Record of Inspection
7. Illustration



## 6. Record Of Inspection

An annual safety check will normally be sufficient unless the autoclave is in very regular use. The date of the next examination should be clearly marked on the autoclave once the examination is completed.

The purpose of this form is to provide a written record of inspection. It is merely a guide as to what to look for. It does not remove the need to routinely inspect and maintain the autoclave as described in section 4.

Model Type: ST XX28	Insert <input type="checkbox"/> or <input type="checkbox"/> as applicable				
Serial No: _____					
Date of Examination					
Is the autoclave free from all signs of physical damage and distortion?					
Are the internal surfaces free from major 'pitting' (surface rusting is acceptable)?					
Is the Silicone Gasket flexible, unperished and undamaged?					
Is the Pressure Gauge undamaged and does it read zero at atmospheric pressure?					
Is the Safety Valve undamaged, free moving and in working order?					
Are all the Wing Nuts and Drop Bolts undamaged and in working order?					
Are the Aircock and Draw-off Cock undamaged and in working order?					
Is a written set of instructions available for reference by users of the autoclave?					
Inspectors Signature					

## 2. Operation

Please read these operating instructions before using the autoclave to avoid any chance of misuse.

The autoclave is factory set to run at 121°C. This is the maximum setting, which is suitable for most purposes. A lower setting can be used if required.

Many materials can be autoclaved at 121°C. These include most metals, glass, silicone rubber and many plastics. If in doubt, consult the manufacturer of the instrument or equipment concerned as the manufacturer of the autoclave does not accept liability for damage of this nature.

- 2.1 Remove the Inner Liner. Fill the chamber of the autoclave with water up to the height of the studs.
- 2.2 Articles to be sterilised should be placed into the Inner Liner, a Wire Mesh Basket or a Bottle Rack. To sterilise porous loads (i.e. dressings and drapes) it is recommended that a Dressing Drum be used. The container should not be packed tightly, especially when dressings are being sterilised. It is important that steam can circulate freely. Place the Inner Liner / Wire Mesh Basket / Bottle Rack / Dressing Drum inside the autoclave.
- 2.3 Check that the Lid Gasket is correctly seated in its groove on the underside of the lid. Place the lid on the autoclave and rotate clockwise until it hits the stops and the slots for the Drop Bolts line up in the lid and body ring. The 6 Wing Nuts and Drop Bolts should now be lifted up and lightly tightened in opposite pairs. This should be done - one in each hand - until the slack is taken up. Now tighten up in opposite pairs. Normal finger tightness is adequate.
- 2.4 Close the Draw-off Cock and open the Aircock approximately 6 turns.

- 2.5 Plug the power lead into the autoclave. Plug the lead into the mains (the green light will show connection to the mains). Turn on the red Switch (the red light will show power on).
- 2.6 When the water begins to boil, steam will start to emit from the Aircock. It will splutter at first. Close the Aircock once it has stopped spluttering and a clean jet of steam is visible. **It is imperative that a clean jet of steam is visible before closing the Aircock as this ensures all the air in the autoclave is expelled. Air pockets in the autoclave will cause sterilisation to be incomplete.** It is advisable to use some form of sterilisation test e.g. the TST indicator strips supplied.
- 2.7 The temperature will now continue to rise until it reaches the preset level.
- 2.8 It is at this time that the sterilisation period begins. Section 3 deals with sterilisation periods.
- 2.9 When the sterilisation period is complete, turn off the red Switch. Depending on the materials being sterilised, see section 2.10 or 2.11.
- 2.10 **Bottles or other sealed vessels containing liquid** - do not, under any circumstances, open the Draw-off Cock or the Aircock or release pressure from the autoclave in any manner. **To release pressure from the autoclave at this point could cause the containers to explode.** Allow the autoclave to cool until the Thermometer shows 80°C or less.

## 5. Specifications

Model Type:		ST XX28
Capacity:	ST 1528	15 litres
	ST 2228	22 litres
	ST 3028	30 litres
Internal Diameter:		280mm
Internal Height:	ST 1528	245mm
	ST 2228	360mm
	ST 3028	490mm
Overall Width:		380mm
Overall Depth:		390mm
Overall Height:	ST 1528	455mm
	ST 2228	570mm
	ST 3028	700mm
Net Weight:	ST 1528	19.0Kg
	ST 2228	21.0Kg
	ST 3028	23.0Kg
Chamber Material:		Stainless Steel 316
Heat Source:		Internal Electric Element 230V - AC 50Hz - 2.0kW Electronic Thermostatic Control
Design Pressure:		1.3 bar (18 psi)
H T Pressure:		2.0 bar (30 psi)
S W Pressure:		1.3 bar (18 psi)
Complies With:		H&SE PM73 (Lid Locking) BS3456 : Part 101 : 1987 (Electrical Safety) PED - 97/23/EC EMC - 89/336/EEC

- 4.6 **Electrical Maintenance (by a qualified Electrician only)** - One element is internally fitted - 2.0kW - requiring a minimum 10A fuse. Check that the terminals on the elements are tight and that the elements are securely mounted in the base.

Check the Switch and light for damage. Replace if necessary. See that the IEC connector fits firmly in the socket.

- 4.7 **Overheat Cutout** - To avoid damage to the element, should the autoclave boil dry, it is fitted with an automatic overheat cutout. This is clamped to the base of the chamber. If the device should cutout it must be manually reset. Before doing this switch off the mains to the autoclave and remove the plug. Allow the autoclave to cool down. To reset the cutout turn the autoclave upside down and remove the perforated protection plate from the bottom. The cutout will now be visible. It is a round black unit approximately 15mm in diameter with a red button protruding from the middle. To reset the cutout press this red button. You should hear an audible 'click' as the cutout is reset. Refit the protection plate and turn the autoclave the right way up. The autoclave will now work as before.

- 4.8 **Thermostat Adjustment** - The autoclave is controlled by an electronic thermostat mounted in the base. The working temperature is adjusted using a potentiometer mounted on the skirting band. Remove the protective cap to the left of the rating plate to access the potentiometer adjuster. The adjuster is a blue fluted shaft. Bring the autoclave up to working temperature. To increase the working temperature turn the adjuster clockwise and to decrease the set temperature turn the adjuster anti-clockwise. A turn of 30° equates to approximately 5°C. The autoclave should be left to settle for about 2 minutes after each adjustment. When the desired setting is reached replace the protective cap. The maximum setting allowed is 121°C.

- 2.11 **Dressings, instruments and apparatus** - (providing the apparatus does not have sealed glass containers holding liquid). **Warning - The water and steam that is released from the autoclave at this stage is extremely hot. Wear suitable protective equipment at this stage.** Place a suitable receptacle beneath the Draw-off Cock and open the Draw-off Cock to release water and steam under pressure from the autoclave. When steam ceases to emit, close the Draw-off Cock and allow the autoclave to cool until the Thermometer shows 80°C or less. During the cooling period a partial vacuum will form inside the autoclave. This will help in drying the contents.

- 2.12 When the autoclave is cooled, the Aircock should be opened approximately 6 turns. Check that the Pressure Gauge is reading zero. Unscrew the 6 Wing Nuts in opposite pairs - one in each hand - 2 full turns. This will allow the lid to rise to a safe position, where it is still held captive, but has clearance enough to release any residual pressure still in the Autoclave. Unscrew the 6 Wing Nuts fully in opposite pairs - one in each hand - and swing down the Drop Bolts. Twist the lid anti-clockwise until the Locking Lugs disengage. Remove the lid.

- 2.13 Remove the sterilised contents.

### 3. Sterilising Periods

The following times apply to a loosely packed load. Dressings in particular should not be packed tightly as steam will not penetrate. Wire Mesh Baskets or Dressing Drums are recommended for this application.

When large packs of dressings or large volumes of liquid are being sterilised, it is advisable to allow a further 10 minutes sterilisation time. This ensures adequate penetration of the materials by steam and heat.

**Use these times as a general guide only - always use a sterilisation test e.g. the TST indicator strips supplied.**

Instruments and Equipment	121°C	15 minutes
Dressings and Drapes	121°C	30 minutes
Liquid in Sealed Containers (0ml - 50ml)	121°C	20 minutes
Liquid in Sealed Containers (50ml - 100ml)	121°C	20 minutes
Liquid in Sealed Containers (100ml - 200ml)	121°C	20 minutes
Culture Media (up to 1 litre)	121°C	15 minutes

Notes on sterilisation of Culture Media:

1. Always follow the manufacturer's instructions.
2. Use volumes up to 1 litre.
3. Use similar volumes in the same load.
4. After cycle test for sterility.
5. Check microbiological performance before use.

### 4. Maintenance

UK users - this autoclave comes within the scope of '**The Pressure Systems and Transportable Gas Containers Regulations 1989**' and should be inspected and maintained accordingly. General maintenance should be carried out by a **competent person** only, as and when deemed necessary.

- 4.1 **Lid Gasket** - Check the white silicone Lid Gasket for distortion or wear and tear. The Lid Gasket is located in the groove on the underside of the lid. Check that it has not become brittle. Replace the Lid Gasket with a new one if necessary.
- 4.2 **Body Rim** - Check the rim of the body where the Lid Gasket seats for damage to the metal rim which would cause the lid seal to leak. If the damage is only minor, then the rim can be repaired by filing and smoothing with emery cloth. Major damage should be referred to the manufacturer or a qualified service engineer.
- 4.3 **Draw-off Cock** - Check the Draw-off Cock for signs of leaking around the seals and from the valve. Replace the seals or complete Draw-off Cock with a new one if necessary.
- 4.4 **Cleaning** - Use normal household detergent to clean the interior of the autoclave.
- 4.5 **Safety Valve Adjustment and Maintenance** - The Safety Valve is factory set using a test rig to release pressure at 1.3 bar (18 psi).

**Adjustment** - The safety valve should be adjusted using a test rig. The maximum working pressure is 1.3 bar (18 psi).

**Maintenance** - Remove the top cap, undo the locking grub screw and unscrew the Slotted Adjuster. Remove the spring and spindle to expose the Silicone Seal. Clean all parts and check the Silicone Seal for wear. Replace if necessary. Reassemble using a small smear of Autoclave Grease on the spindle and threads. Set a gap of about 4mm between the Slotted Adjuster and the top of the Safety Valve body. Set the Safety Valve to the desired setting using a test rig.