Thermo Scientific Varistain® V24-4

AUTOMATIC SLIDE STAINER

ENGLISH
Issue 8

OPERATOR GUIDE

74210099

Thermo SCIENTIFIC

SYMBOLS

The following symbols and conventions are used throughout this manual and on the instrument.

THIS SYMBOL WARNS YOU THAT YOU MUST FOLLOW INSTRUCTIONS FOR SAFE AND CORRECT OPERATION. IF THIS SYMBOL APPEARS ON THE INSTRUMENT, ALWAYS REFER TO THIS OPERATOR GUIDE.

THIS SYMBOL WARNS YOU THAT THERE MIGHT BE A BIOHAZARD ASSOCIATED WITH THE INSTRUMENT. ALWAYS ACT WITH COMMON SENSE AND TAKE SUITABLE PRECAUTIONS.

THIS SYMBOL WARNS YOU THAT HARMFUL CHEMICALS ARE USED WITH THE INSTRUMENT. REFER TO THE MATERIAL SAFETY DATA SHEETS FOR THE CHEMICALS USED. ALWAYS ACT WITH COMMON SENSE AND BE AWARE OF LOCAL LABORATORY PROCEDURES. TAKE SUITABLE PRECAUTIONS.

WARNING **A warning is given in the document if there is a danger of personal injury or damage to samples or equipment.**

Note

Notes give more information about a job or instruction but do not form part of the instruction

Thermo Shandon Limited is an ISO 9001 and TickIT Accredited Company
Thermo Fisher Scientific is the trading name of Thermo Shandon Limited

Thermo Fisher Scientific makes every endeavour to ensure that the information contained in its support documentation is correct and clearly stated but does not accept responsibility for any errors or omissions. The development of Thermo products and services is continuous. Make sure that any published information that you use for reference is up to date and relates to the status of the product. If necessary, check with Thermo or your local Thermo representative.

CE

The Thermo Scientific Varistain® V24-4 meets the following CE Mark requirements:
In Vitro Diagnostic Directive 98/79/EC
Machinery Directive 2006/42/EC

C SA® US

The Thermo Scientific Varistain® V24-4 is referred to throughout this, and other supporting documents, as the Varistain V24-4.

TABLE OF CONTENTS

WELCOME

Welcome to the Varistain 24-4 slide stainer, a fully automatic slide stainer intended for use in Pathology Laboratories by appropriately trained Medical Laboratory Technicians.

Designed and made with care, the instrument is safe to use, simple to operate, and easy to maintain. Varistain 24-4 incorporates a safe storage area for all the processing reagents and an innovative, unique in-process reagent rotation management system.

This Operator Guide gives instructions for the correct operation and use of Varistain 24-4.

Refer to your own laboratory procedures and material safety data sheets (MSDSs) when using reagents.

SAFETY

THIS PARAGRAPH DETAILS IMPORTANT SAFETY INFORMATION. PLEASE READ THIS SECTION CAREFULLY.

Thermo products are designed for convenient and reliable operation and to accepted standards of safety. Its use does not entail any hazard if operated in accordance with the instructions given in this manual. However, incorrect actions by a user may damage the equipment, or cause a hazard to health. It is important for you to obey the following safety precautions:

i **All users must read and understand the Operator Guide and only operate the unit in accordance with the instructions. If the instructions are not followed, then the protection provided by the instrument may be impaired.**

ii **Do not modify the instrument - if unauthorised modifications are carried out, the instrument may be made unsafe and the warranty may be invalidated.**

iii **Potentially lethal voltages above 110Vac or 50Vdc are present inside the instrument.**

iv **This instrument must be properly connected to a good earth (Ground) via the mains input supply.**

v **Do not remove any panels or covers. Varistain 24-4 does not have any user serviceable parts inside the instrument.**

vi **Varistain 24-4, as supplied, conforms with IEC1010-1. However, the addition of chemicals introduces potential hazards. Good laboratory practice must be followed when dealing with these chemicals, and consideration must be given to the potential for hazard when dealing with particular chemicals. Be aware that many of the reagents used with Varistain 24-4 are flammable. Do not introduce any source of ignition into, or near, the instrument once it has been loaded with reagents.**

vii **It is important that normal standards of safety and good laboratory practices are employed. Always use common sense and the best known practice when operating the instrument.**

viii **Refer to your own laboratory procedures and manufacturer's data sheets when using reagents.**

ix **Varistain 24-4 weighs approximately 60 kilograms (113 lbs) when empty; get help to move it.**

x **If the instrument has been used with materials that are toxic or contaminated with pathogenic micro-organisms, follow the cleaning instructions given in Chapter 5. The Product Return Certificate (found in Appendix B) must be completed if the instrument is to be returned to Thermo.**

xi **The instrument should be regularly cleaned as described in Chapter 5 of this Operator Guide.**

xii **Use only factory approved accessories or replacement parts with Varistain 24-4.**

xiii **Correct maintenance procedures are essential for consistent performance. It is recommended that a Maintenance Contract is taken out with your supplier.**

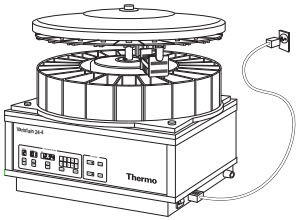
xiv **The instrument must be serviced annually by a Thermo trained engineer in accordance with the instructions contained in the Varistain 24-4 Service Manual (74210098).**

xv **It is the responsibility of the user to ensure that local water regulations are complied with.**

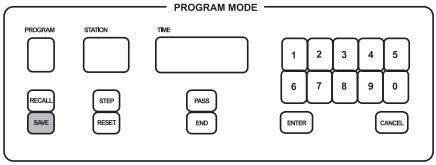
xvi **Any problems and queries should be referred to your supplier.**

QUICK PROGRAMMING GUIDE

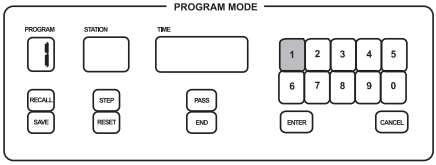
1. Connect instrument to mains supply and switch on.



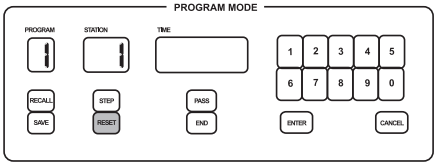
2. Press ‘SAVE’.



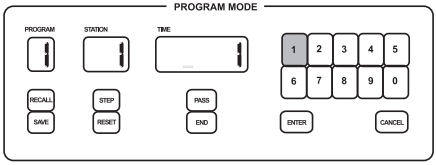
3. Select program e.g. ‘1’.



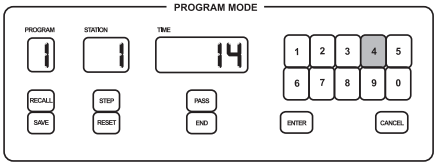
4. Set to step ‘1’ by pressing ‘RESET’.



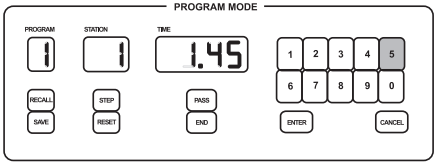
5. Enter time for step ‘1’ e.g. 1m:45s. Press ‘1’.



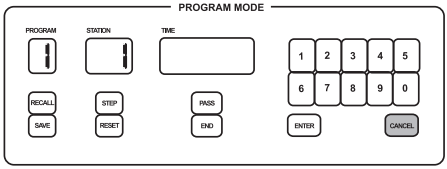
6. Press ‘4’.



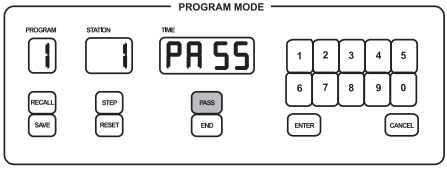
7. Press ‘5’.



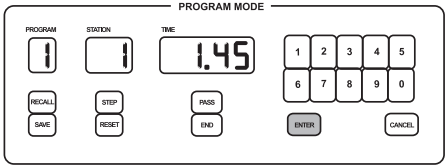
8. To cancel time press ‘CANCEL’.



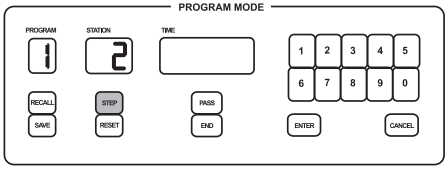
9. To miss a step out of the program press ‘PASS’.



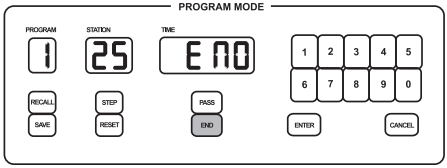
10. To confirm the time entered press ‘ENTER’.



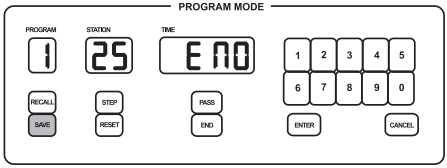
11. Advance to next step by pressing ‘STEP’.



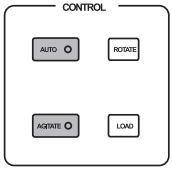
12. Repeat ‘5’ - ‘11’ until the last step in your method has been entered (e.g. 24 steps) then press ‘END’.



13. Save program into memory by pressing ‘SAVE’.



14. Press ‘AUTO’ to run program(select agitation if required by pressing the ‘AGITATE key).



INSTALLATION AND SETTING UP

2.1 INTRODUCTION

The Varistain 24-4 is a versatile 24 position automatic staining instrument for processing microscope slides. It has been designed for simplicity and safety in operation and is intended for use in medical and research laboratories.

Flexible means of programming the unit enable it to be used for a wide variety of staining routines, using as few or as many of the 24 positions as are required, with periods of immersion at each stage from a few seconds upwards. More than one load of slides can be processed at the same time. Two identical 12 stage routines may be programmed for example, and continuous staining is also possible.

During the staining programme an agitation facility can be switched on which caused the slides to be moved gently up and down in the reagents, increasing the staining efficiency and reducing the time required at each stage. At the end of the staining routine the slides remain immersed in the final trough until removed by the operator.

The Varistain 24-4 incorporates the following safety features:-

- The power switch acts as an emergency stop control, immobilising the unit and disconnecting the power supply.
- A battery back-up retains programmed information in the event of power loss.
- Should a power failure occur during an automatic staining procedure, the instrument will resume operation from the point of interruption once power is restored.
- The top canopy (from which the slides are suspended) may be raised manually during an emergency situation without power to the unit.

2.2 PRE-INSTALLATION ADVICE

1. To the Operator This instrument has been designed to safeguard the operator and slides, provided it is operated according to the instructions in this manual. Make sure that the bench area that is to receive the instrument is:

   i level, with a 300mm clearance zone that is free from personnel and hazardous materials;

   ii dust free;

   iii capable of supporting the weight of an instrument filled with processing fluids; The Varistain 24-4 weighs approximately 60kg (133lbs) and it is transported in a substantial shipping carton. Get help to move or lift the carton. Not less than two persons, and suitable mechanical handling equipment, are required to manoeuvre the carton to the installation site. After the instrument is unpacked use the underside of the base to gain hand holds for lifting.

Make sure that the instrument is connected to a good Earth/Ground contact, marked:

Make sure that it is possible to interrupt the mains supply from a place remote from the instrument in an emergency – either near an exit or outside the room. It must be possible to remove the plug from the mains supply socket to interrupt the mans supply at source.

The mains ON/OFF switch on the right hand side of the instrument is marked I/O. Press O to switch OFF. Make sure that the instrument is switched of before the mains plug is connected to the mains supply socket. Press I to switch the instrument on.

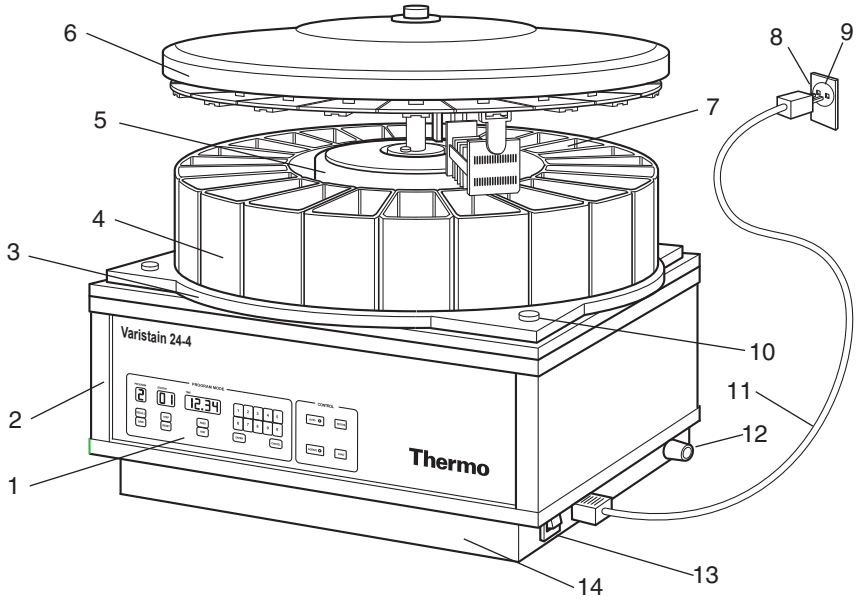
2. Warnings In the event of a major spillage, especially if fluid could have spilled inside the casing, switch off and disconnect the unit from the mains supply immediately Make sure that everything is completely dry and have the unit checked before use by a service engineer.

HIGH VOLTAGES ARE PRESENT IN THIS INSTRUMENT. DO NOT REMOVE ANY PANELS OR COVERS WHILE THE INSTRUMENT IS CONNECTED TO THE MAINS SUPPLY.

The agitate and lift motors of this instrument are fitted with an oil filled gearbox. To prevent oil leakage during shipment, the reservoir filling aperture has been sealed with a red plastic plug. This plug must be removed prior to the instrument being put into service.

Ensure the instrument is disconnected from the mains supply and remove the right-hand side panel by loosening the retaining screw at the rear of the unit. The red plug at the upper front end of each motor may then be removed with a pair of pointed pliers. (The plugs may be kept for future use if required).

2.3 SET-UP



1 Wipe-clean Touch Control Panel
2 Rectangular Casing
3 Trough Location Platform
4 Reagent Troughs (Dishes)
5 Central Housing
6 Top Canopy Assembly
7 Slide Carrier
8 220-240V or 110-120V Source with Ground/Earth
9 Earthed Mains Supply or 3-Pin Grounded Outlet
10 Location Pins
11 Mains Lead (Electrical Cord)
12 Water Outlet Tube
13 On-Off Power Switch
14 Plinth

The Varistain 24-4 consists of four main parts; a top-canopy assembly, a central housing incorporating a circular water collection channel, the trough location platform and rectangular case.

a. Top Canopy Assembly

The top canopy can rise, turn clockwise and descent. On the undersurface of the top canopy are 24 anti-evaporation covers and supports for the microscope slide carriers. The covers reduce evaporation from the troughs and are free to move, so that the troughs are kept covered while mechanical agitation is moving the top canopy up and down.

DO NOT EXERT UNDUE PRESSURE ON ANY AREA OF THIS LID CAUSING IT TO BEND OR BECOME UNEVEN.

b. Central Housing

The housing encloses the index motor drive shaft and 'Geneva' mechanism for lifting, turning and lowering the top canopy. A circular trough surround the housing and acts as a water collection channel. This trough is connected to a drain outlet at the rear of the instrument case.

c. Trough Location Platform

The platform has indentations for the feet of the moulded segmental troughs and the positions are numbered to simplify loading and programming. The platform has been designed to permit rotation if desired to enable access to reagent troughs at the rear, by simply raising and turning the location pins and then rotating the turntable.

d. Rectangular Casing

This casing is the base of the Varistain 24-4. It houses the timer, power supply and controls circuits and the motors and lifting mechanisms. The control and timer panels occupy the font of the case. The power cable and instrument fuse are on the lower right side. The two outlets at the rear of the unit are the water wash drain tubes.

e. Reagent Troughs and Slide Carriers

The reagent troughs are wedge-shaped containers with three feet which fit into the indentations in the trough location platform to locate them accurately in their working positions. An alternative running-water trough is also available incorporating the additional feature of a water inlet connector and an overflow outlet.

A stainless steel slide carrier which can accommodate up to 64 slides is the standard means of loading the slides onto the instrument. The basket has separate channels into which the slides fit vertically end-on, so that they remain suitably space apart. The two upright ends of the basket have slots in the top which slide over the support under the evaporation cover beneath the top canopy.

Two optional slide carriers are also available for use with the Varistain 24-4:

i Horizontal slide carrier (Thermo part number 66610028) - 10 slide capacity. This can be used to reduce the volume of reagent used per trough from 750ml to 350ml or to carry 3" x 2" and 3" x 3" slides.

ii Varistain 24/Consul slide carrier (Thermo part number 52610052) - 40 slide capacity. This is used when the Varistain 24-4 and Consul automatic coverslipper are used together.

2.4 INSTALLING THE VARISTAIN 24-4

1. Decide where the instrument is to be positioned in a suitable location, leaving ample space above it for the top canopy to rise to approximately 650mm above the bench surface. Ensure that any surface on which the unit is to stand is level and supports the weight of the instrument. If running water is to be connected, make sure that the supply and the drain for waste are close at hand. Do not subject the unit to avoidable effects of heating or draughts that could increase evaporation of reagents.

2. Carefully unpack the unit.

3. Check the components for signs of damage in shipment (broken plastic, dents, etc.). If something is missing or damaged notify Thermo or your supplier immediately. Quote the order number(s), inspection number, serial number, date and number of the invoice.
4. Please refer now to Section 2.3 illustration.

DO NOT FIT THE REAGENT STAINING/WATERWASH TROUGHS AT THIS STAGE.

Place the trough location platform onto the casing with the numbered trough location holes uppermost. Engage the two location pins at positions 1 and 7 with the holes at the front of the casing. Carefully remove the top canopy assembly from its packaging and position above the casing. Lower gently into position while supporting the weight with both hands. Rotate the canopy until it engages and then continue to lower the canopy to its final position.

The instrument is now ready for switching on (see Section 3). The reagent staining and waterwash troughs may be fitted once the canopy is in the raised position.

5. If the power cable is not already fitted with a suitable plug, connect it to a suitable plug of the type required as follows:

   Brown wire Live (L or L2) terminal

   Blue wire to Neutral (N or L1) terminal

   Green/Yellow wire to Earth (E or Ground) terminal

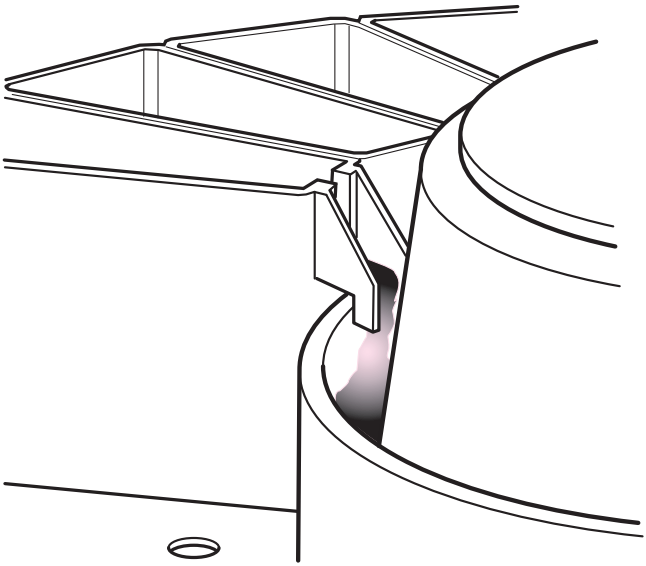
   Check that the mains voltage is as shown on the label close to the power cable entry on the right-hand side of the unit plinth and connect the power cable to the IEC inlet. Switch on by pressing the on-off power switch on the side of the plinth.

6. Record the serial number of your instrument and the date.

   Serial Number: _____

   Date: _____

7. Waterwash Facility - Water enters each water wash trough through an inlet on the lower outside wall of the trough. The outlet is a weir at the rear of the trough. This weir controls the level of water in the trough and directs excess water into a circular water collection vessel.



Determine in which direction from the unit the waste water will be conducted. Your Varistain 24-4 is built with the drain connected to the right-hand side of the instrument when viewed from the front. In situations where it is desirable to convert to left-hand drainage, please observe the following:-

i Disconnect the instrument from its power source by removing the mains lead (electrical cord).

ii Loosen the retaining screw securing the labelled side-panel using the allen key supplied.

iii Remove this side panel by gently easing it out from behind the rear cover and then sliding it forward to release at the front. Lay this panel alongside the unit.

THE SIDE PANEL CANNOT BE FULLY REMOVED AS IT IS CONNECTED TO THE MAIN CHASSIS VIA AN EARTH STRAP.

iv Observe that two grey, convoluted tubes are installed in the instrument. Carefully remove the connected tube at its uppermost level and replace with the alternative adjacent tube, ensuring a firm fit.

v Replace the side panel and secure.

Run the waste water to the nearest drain, as the system works more efficiently with a short length of drain tube. Connect the large diameter tube fitted with rubber adaptor to one of two drain outlet tubes visible at the lower rear of the Varistain V24-4. Using the black end cap supplied, seal off the drain outlet tube on the opposite side of the unit. The drain outlet must be higher than the waste drain receptacle; in fact, the greater that distance, the better the drainage. Under no circumstances constrict the drain tube, or use a smaller diameter tubing than that supplied by Thermo.

Water inlet tubing supplied with the Varistain 24-4 conducts the water to the troughs from a single source. If you use more than one running water position on the instrument, 'T' connectors are supplied to increase the plumbing capability of the single water source. Hose clamps are also supplied to seal the connection sites at all locations.

WARNING **Do not set the waterwash flow too high. Only a gentle exchange of water is required.**

Waterwash Regulator - USA

1. Attach one end of the water inlet tubing to the bottom nozzle and the other end of the water inlet tubing to the top nozzle of the waterwash regulator.

2. Remove left side panel from base of Varistain 24-4.

3. Hand regulator by sliding it over the top of the panel.

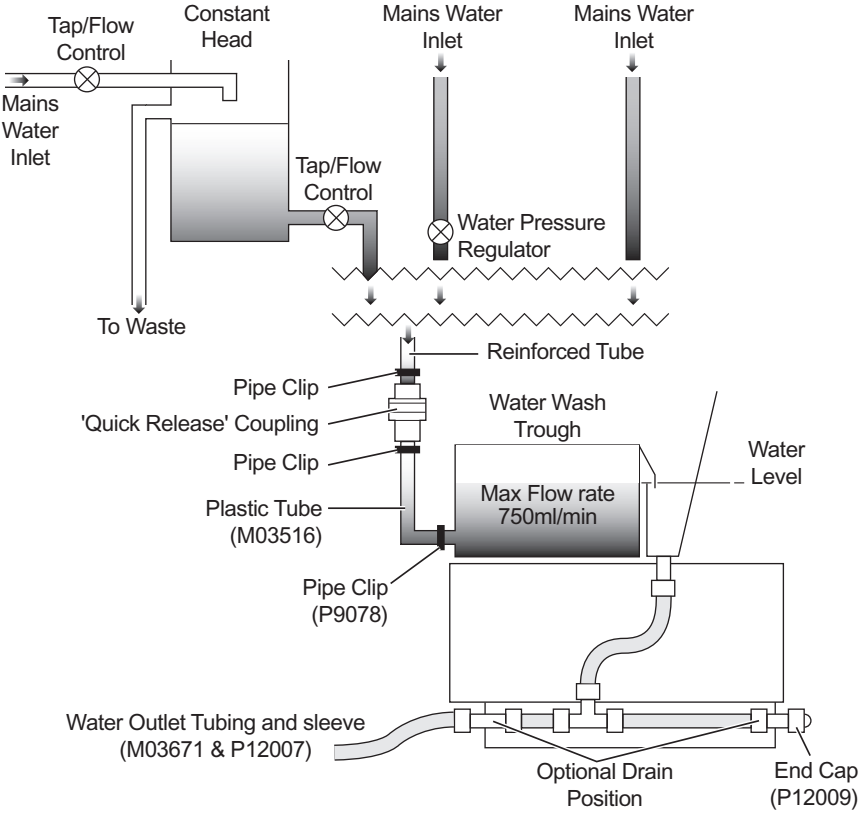
4. Replace and secure panel. Tubing attached to the bottom nozzle will need to be connected to the running water source. Inlet tubing attached to the top nozzle of the regulator will be directed to the waterwash troughs.

5. Measure and cut to appropriate lengths and complete plumbing connections.

6. Turn regulator switch off and make decrease adjustment of flow knob.

7. Turn on water at source.

8. Turn on waterwash regulator. As water enters Varistain 24-4 troughs, adjust waterflow knob for gentle exchange. Running water for the staining procedures may be turned on and off at the regulator rather than at the water source.



Varistain 24-4 Water Wash Trough Installation

Note: The V24-4 does not contain a backflow protection device. The waste water pipe should be connected to a suitable drain or collection facility. It is the responsibility of the operator to ensure that any waste water is dealt with in accordance to the environmental laws currently in place.

OPERATING THE VARISTAIN 24-4

3.1 INSTRUMENT CONTROLS, FUNCTIONS AND FACILITIES

3.1.1 Controls and Functions

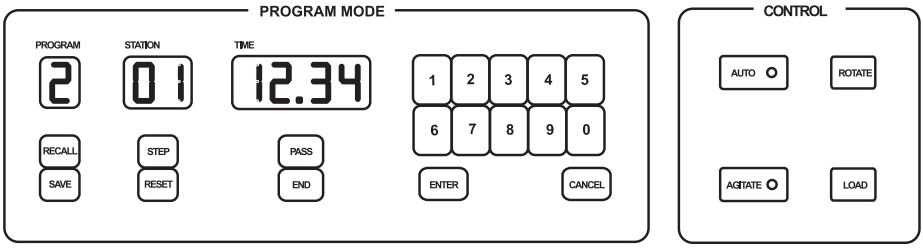
The Varistain 24-4 has a pressure- sensitive touch control panel. It is only necessary to apply a slight pressure or touch to the centre of each area to activate a command.

Initialization of the instrument and resetting after a run will be prompted by a tone.

The user interface display has 4 (four) digits of run time (minutes and seconds) or 'PASS' or 'END' indication, 2 (two) digits of reagent step position (station) and one program number. The user interface keys are split into 2 functional groups:

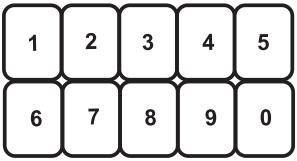
i Program Mode - utilises 'RECALL', 'SAVE' for loading and saving programs. 'RESET', 'STEP' may be used to adjust the station position. Buttons '0-9', 'PASS', 'END', 'ENTER', 'CANCEL' may be used to amend time displays.

ii Control - contains action buttons, 'ROTATE', 'LOAD', 'AGITATE' and 'AUTO'.



CONTROL FUNCTION

CONTROL		FUNCTION
AGITATE		When illuminated indicates agitation is selected. This function is only active in the 'AUTO' mode.
AUTO		When illuminated indicates that the unit is operating. When not illuminated it indicates that operation is under MANUAL control.
LOAD		When instrument is in MANUAL mode can be used to raise or lower the canopy. This control is inactive in the AUTO mode.
ROTATE		When instrument is in MANUAL mode and the canopy is RAISED it can be used to advance the canopy clockwise. This control is inactive in the 'AUTO' mode.
RECALL		Use to select program 1,2 or 3. The program selected is indicated by a display. This control is inactive in the 'AUTO' mode.
RESET		This switch is used to return the program to STEP 1. The switch is inactive while the instrument is switched to 'AUTO'.
STEP		When the instrument is in the MANUAL mode this button may be used to move the program on to the next step. Each time the button is pressed the program will move one step. This control should be used when it is necessary to check that the program is correct or, if a program amendment is to be made, to advance to the step which is to be amended. This control is inactive during the 'AUTO' mode.

CONTROL		FUNCTION
0-9		Used for entering immersion time values. Numerals 1, 2 and 3 are also available for program memory identification.
PASS		Used for entering a 'PASS' command, i.e. to rate past the next stage without immersion.
END		Used for entering the last step of a staining program.
SAVE		Utilised to begin programming mode and then again after program information is entered to hold or save the program in a particular memory.
CANCEL		Used for cancelling time values that have been entered.
ENTER		Used to record each step of the procedure being programmed into the Varistain.
ALARM CANCEL BUTTON (situated near the power switch)		Used to silence the alarm sounder when the unit has been switched off.

3.1.2 Facilities

Batteries (rechargeable x 2)

Batteries are installed in stainer units with the electronic program control for two purposes:

i to activate the alarm on power loss, and

ii to retain the program steps in memory when the unit does not have power.

Power loss to the timer can occur inadvertently when mains (line) voltage is lost or whenever the instrument power is switched OFF. To prevent loss of memory when power is removed, the batteries are used to supply the small amount of power required to prevent loss of entered programs.

Audible Signal

The audible signal is heard whenever a valid key is pressed.

Audible Tones

Nature of Signal	**Indication**
Short Tone	Valid Key press
Long Tone	Invalid Key press or Invalid time entered
Double pulsing tone	Alarm condition
Single pulsing tone	End of Program

Alarms

Should there be a fault in the system, the Varistain 24-4 will automatically stop, an audible alarm will sound and the visual displays will indicate an alarm message.

The program display will show ‘E’ (signalling Error) and the station display will highlight an error code number, explained below. Similarly the time display will show ‘FAIL’. Please consult the error chart below for detailed descriptions. You may attempt to recover from an error by switching the unit off and on again (see notes on ‘power failure’).

ERROR CODE NO.	PROBLEM	SOLUTION
01	Internal electronic fault	Please call Thermo Service Engineer.
02	Battery failure	Leave unit powered for 12 hours. If still defective, please call Thermo Service Engineer
03	Top motion	Failure to detect that canopy has raised. Clear any external obstructions. (Should the fault persist, call Thermo Service Engineer)
04	Bottom motion	Failure to detect that canopy has lowered. Clear any external obstructions. (Should the fault persist, call Thermo Service Engineer).
05	Rotation	Failure to detect that canopy has rotated. Clear any external obstructions. (Should the fault persist, call Thermo Service Engineer).
06	Keyboard error	Ensure that no keys are pressed while switching the unit on.
07	'Head' position (power failure during a run)	Please call Thermo Service Engineer
08	Power failure	See notes on 'Power Failure'.

Power Failure

In the event of a power failure during staining, the instrument has the capability to 'remember' information regarding its current operation, in the unit's battery back-up memory. When power is restored, operation will continue from where it left off. However, an audible alarm tone will sound and the display will signal "E08 FAIL". Please note that a flashing decimal point in the display indicates that processing is continuing. Processing will continue to the end instruction or until the operator intervenes.

To stop the unit following power failure, press 'AUTO' when the top canopy is fully lowered and the display will signal "E nn tttt", where nn depicts the station position of the Varistain 24-4 and tttt indicates the time remaining for that step when the power failed. Press 'CANCEL' to clear the display and enable the instrument for use. (Note: should the time remaining show 0 then the canopy was in the process of moving to the next reagent.)

Continuous Rotation/Continuous Feed

When there is no END statement to a program, continuous rotation is possible. Under these conditions the program "loops" through 24 steps and then repeats.

To run a continuous program:

1. Press 'AUTO'.
2. Observe that the time display flashes 'END'. Other displays will be blank.
3. To confirm continuous rotation, press 'ENTER' and the program will start.
4. To cancel the program, press 'CANCEL'.

Please note that continuous rotation programs only utilise the first 24 steps. Should you attempt to start a continuous program in steps 25/26 then an alarm will sound and the visual display will 'flash' the station number and 'End', but the program will not commence

3.2 OUTLINE OF OPERATION

When the power is switched on, the displays will illuminate and the unit performs a self-test procedure.

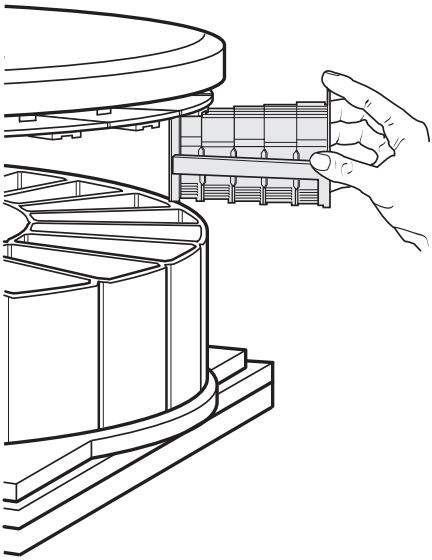
The LOAD and ROTATE buttons are manual controls of the canopy. They are operative when the unit is not in the automatic cycle. To raise the top canopy for loading, the LOAD button has to be pressed to start the load motor running. (The load motor is used both to raise and to lower the top-canopy assembly.)

The ROTATE button is operative only with the canopy in the raised position. Once pressed the rotate motor runs until the canopy has moved clockwise one position. Only one step is made at a time. Each canopy position advancement required manual activation of the ROTATE button after the previous action is completed.

With the canopy in the raised position, slide carriers may be loaded into the desired position as illustrated Push the slotted handle of the carrier to the back of the support/ hanger. Be sure to secure the front handle of the carrier with the latch at the front of the support/hanger.

The running water could be turned on now if used in the program.

When the instrument has been fully loaded, press AUTO to commence processing. Agitation of the top canopy assembly, which moves the slides gently up and down in the reagent, starts if AGITATION has been selected. (Pressing the agitate button again will switch it off if not required.) The timer for this step starts when the canopy has lowered the slides fully into the reagent. When the timer has expired the slides are moved into the next reagent. Should the next step be a “PASS” command then this step is skipped and processing continues at the following step.



The timer does not count down until the canopy is fully lowered. This sequence is repeated until the end instruction (END) is detected. When the slides reach the last trough in the sequence, they remain immersed in the final reagent.

At any stage during a program, the slides can be examined or another load can be added. To do this press 'AUTO' to stop the program, then if necessary press 'LOAD' to raise the canopy. Pressing 'AUTO' will restart the program from where it left off.

DO NOT ROTATE THE CANOPY OR PROCESSING WILL BE OUT OF STEP WITH THE PROGRAM. SHOULD A POWER FAILURE OCCUR, THE INSTRUMENT HAS BEEN DESIGNED TO RESTART EXACTLY FROM WHERE IT LEFT OFF. ALTHOUGH THIS SHOULD REDUCE ADVERSE EFFECTS ARISING FROM A SHORT-TERM POWER-SUPPLY FAILURE, A PROLONGED INTERRUPTION OF THE SUPPLY WILL ALMOST INEVITABLY DAMAGE THE SECTIONS OR SMEARS BEING STAINED.

GUIDANCE NOTES

To remove the slides from the unit, simply reverse starting procedure.

1. Press AUTO button which cancels the automatic control and enables manual controls.
2. Press LOAD button to raise the canopy.
3. Lift the securing latch at the front of the support/hanger and pull the slide carrier off the Varistain.
4. Press the LOAD button to lower the canopy.
5. Turn off the running water if used.

3.3 PROGRAMMING THE VARISTAIN 24-4

This section illustrates how the Varistain 24-4 is programmed and how programs may be stored, viewed and run. Examples of programs are provided to illustrate the versatility of the unit.

A specific staining program has to be prepared for any staining routine that the instrument is to carry out. The electronic timer has three memories - each with 26 programmable steps. The desired time is entered for each step - changes can be made to the program at any time, except when a program is in use. Such changes erase the previously selected time.

3.3.1 General Staining Considerations

Before entering any program details, it is essential to establish the details of the staining routine, whether more than one load of slides is to be stained at the same time, whether a single cycle or continuous staining is required, and so on, and this is most conveniently done be preparing a program table similar to Table 1, which is described in Section 3.3.3. When preparing a table, a number of general limitations and other factors must be taken into account:

- The minimum immersion period at any stage is 1 second.
- When determining short immersion times, it is important to take account of the contribution of reagent on the slides during the transfer from one trough to the next. The total transfer time is 20 seconds, i.e. the time between the start and finish of the transfer movement, and none of this time is included in the timed immersion period.
- The times programmed indicate the end of an immersion period.
- An immersion period must be entered for every position - even the last trough, although the time in the last trough will normally be an arbitrary one.
- An end of program (END) instruction must be entered at the step immediately following the final reagent position.
- Mechanical agitation affects the immersion period required and allowance must be made for this when compiling the table.

3.3.2 Utilising the Memories, Immersion Times and 'PASS' Facilities

Memory

There are three memories - each with 26 programmable steps (1-26). The memory in use at any time is indicated by a number in the program display. When the 'AUTO' mode is selected it is not possible to change from one memory to the other.

Immersion Times

The immersion time can be selected at each step of memory 1, 2 and 3. The immersion time is programmable in minutes and seconds from 00:01 to 59:59 in 1 second increments.

A 4 digit display indicates the time selected for each step and, when 'AUTO' is selected, the time remaining at the STEP indicated by the 2 digit LED display. The decimal point between the minutes and seconds display will pulse when the 'AUTO' mode is selected and the timer is operating.

When the immersion timer reads 0, the canopy will raise, then the next step will be displayed. If there is an immersion time programmed into the next step then the canopy will rotate and lower into the next reagent. If, however, the time for the next step, when the immersion timer reaches 0, is 'END' then the canopy will not raise and the slides will remain in the last reagent.

PASS Facility

A special feature incorporated into the Varistain 24-4 allows the user to instruct the instrument to bypass or 'jump' selected reagent positions.

You may initiate a 'PASS' step by pressing the 'PASS' key when entering a program. If a step is programmed, then when the timer reaches 0 in the previous step, the canopy raises and rotates one position. The PASS step is recognised and the canopy rotates until the next programmed immersion step. The canopy then lowers and processing continues.

The 'PASS' instruction can be used at any 'STEP' and at more than one consecutive 'STEP' - TAKE CARE however to bear in mind that the slides are exposed to the air during the 'PASS' operation - the more consecutive 'PASS' instructions, the longer the exposure to air and the greater is the possibility of slides drying. A maximum of 4 consecutive 'PASS' instructions is recommended.

NEVER WRITE A PROGRAM WITH A 'PASS' INSTRUCTION OR SERIES OF 'PASS' INSTRUCTIONS IMMEDIATELY PRECEDING THE END INSTRUCTION AS THE SLIDES WILL BE EXPOSED TO AIR. EXAMPLE OF INCORRECT USE OR 'PASS' FACILITY:

STEP	IMMERSION TIME
17	1.30
18	PASS
19	PASS
20	End

Example of correct use of 'PASS' facility.

STEP	IMMERSION TIME
17	1.30
18	PASS
19	PASS
20	1.00
21	End (End of Program)

End of Program

The end of program instruction, 'End', can be entered by pressing the END key when entering a program.

TABLE 1
STAIN PROCEDURE TITLE: SAMPLE HISTOLOGY
PROGRAM NUMBER: 1
STEPS 1 THROUGH 18

PLATFORM POSITION	REAGENT	STATION	MIN-SEC	COMMENTS
1	XYLENE	1	5:00	
2	XYLENE: ALCOHOL	2	1:00	
3	ABSOLUTE ALCOHOL	3	1:00	
4	70% ALCOHOL	4	1:00	
5	DISTILLED WATER	5	1:00	
6	ALCIAN BLUE	6	:20	1% AQUEOUS
7	DISTILLED WATER	7	:30	
8	HAEMATOXYLIN	8	5:00	
9	RUNNING WATER	9	5:00	
10	EOSIN	10	1:00	1% AQUEOUS
11	DISTILLED WATER	11	:30	
12	70% ALCOHOL	12	1:00	
13	ABSOLUTE ALCOHOL	13	13	
14	ABSOLUTE ALCOHOL	14	14	
15	XYLENE: ALCOHOL	15	1:00	
16	XYLENE	16	1:00	
17	XYLENE	17	1:00	
18	END OF PROGRAM	18	END	
19				
20				
21				
22				
23				
24				

Thermo has not validated the protocol illustrated here, and takes no responsibility for its use. Customers should always validate protocols before placing any reliance on them.

REFER TO THE MATERIAL SAFETY DATA SHEETS (MSDS) WHEN HANDLING THE REAGENTS LISTED IN APPENDIX A.

TABLE 2
STAIN PROCEDURE TITLE: PRE-SPECIAL STAIN
PROGRAM NUMBER: 1
STEPS 20 THROUGH ____

PLATFORM POSITION	REAGENT	STATION	MIN-SEC	COMMENTS
1	XYLENE	20	5:00	
2	XYLENE: ALCOHOL	21	1:00	
3	ABSOLUTE ALCOHOL	22	1:00	
4	70% ALCOHOL	23	1:00	
5	DISTILLED WATER	24	1:00	
6	DISTILLED WATER	25	END	
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				

Thermo has not validated the protocol illustrated here, and takes no responsibility for its use. Customers should always validate protocols before placing any reliance on them.

REFER TO THE MATERIAL SAFETY DATA SHEETS (MSDS) WHEN HANDLING THE REAGENTS LISTED IN APPENDIX A.

TABLE 3
STAIN PROCEDURE TITLE: HAEMATOXYLIN & EOSIN
PROGRAM NUMBER: 1
STEPS 1 THROUGH 25

PLATFORM POSITION	REAGENT	STATION	MIN-SEC	COMMENTS
1	XYLENE	1	5:00	
2	XYLENE	2	2:00	
3	96% ALCOHOL	3	2:00	
4	96% ALCOHOL	4	2:00	
5	70% ALCOHOL	5	1:00	
6	WATER	6	2:00	
7	WEIGERT HAEMAT.	7	PASS	
8	WATER	8	PASS	
9	1% HCI IN ALCOHOL	9	PASS	
10	DISTILLED WATER	10	1:00	
11	HAEMATOXYLIN: STABILISED ACTIVITY 3	11	3:30	
12	RUNNING WATER	12	1:00	
13	DISTILLED WATER	13	1:00	
14	VAN GIESON	14	PASS	
15	1% AQUEOUS EOSIN	15	5:00	
16	WATER	16	5:00	
17	96% ALCOHOL	17	PASS	
18	70% ALCOHOL	18	2:00	
19	96% ALCOHOL	10	2:00	
20	ABSOLUTE ALCOHOL	20	2:00	
21	ABSOLUTE ALCOHOL	21	2:00	
22	ABSOLUTE ALCOHOL	22	PASS	
23	XYLENE	23	2:00	
24	XYLENE	24	2:00	
		25	END	

Thermo has not validated the protocol illustrated here, and takes no responsibility for its use. Customers should always validate protocols before placing any reliance on them.

REFER TO THE MATERIAL SAFETY DATA SHEETS (MSDS) WHEN HANDLING THE REAGENTS LISTED IN APPENDIX A.

TABLE 4
STAIN PROCEDURE TITLE: VAN GIESON
PROGRAM NUMBER: 2
STEPS 1 THROUGH 25

PLATFORM POSITION	REAGENT	STATION	MIN-SEC	COMMENTS
1	XYLENE	1	5:00	
2	XYLENE	2	2:00	
3	96% ALCOHOL	3	2:00	
4	96% ALCOHOL	4	2:00	
5	70% ALCOHOL	5	1:00	
6	WATER	6	PASS	
7	WEIGERT HAEMAT.	7	6:30	
8	WATER	8	2:30	
9	1% HCI IN ALCOHOL	9	:30	
10	DISTILLED WATER	10	PASS	
11	HAEMATOXYLIN: STABILISED ACTIVITY 3	11	PASS	
12	RUNNING WATER	12	5:00	
13	DISTILLED WATER	13	PASS	
14	VAN GIESON	14	4:00	
15	1% AQUEOUS EOSIN	15	PASS	
16	WATER	16	PASS	
17	96% ALCOHOL	17	2:00	
18	70% ALCOHOL	18	PASS	
19	96% ALCOHOL	10	PASS	
20	ABSOLUTE ALCOHOL	20	2:00	
21	ABSOLUTE ALCOHOL	21	2:00	
22	ABSOLUTE ALCOHOL	22	2:00	
23	XYLENE	23	2:00	
24	XYLENE	24	2:00	
		25	END	

Thermo has not validated the protocol illustrated here, and takes no responsibility for its use. Customers should always validate protocols before placing any reliance on them.

REFER TO THE MATERIAL SAFETY DATA SHEETS (MSDS) WHEN HANDLING THE REAGENTS LISTED IN APPENDIX A.

TABLE 5
STAIN PROCEDURE TITLE: 12-STAGE DOUBLE LOAD
PROGRAM NUMBER: 1
STEPS____ THROUGH____

PLATFORM POSITION	REAGENT	STATION	MIN-SEC	COMMENTS
1	95% ALCOHOL	1	1:00	Load carrier in this position - and -
2	95% ALCOHOL	2	PASS	Load carrier in this position
3	WATER	3	1:00	
4	WATER	4	PASS	
5	HAEMATOXYLIN	5	2:30	
6	HAEMATOXYLIN	6	PASS	
7	WATER	7	1:00	
8	WATER	8	PASS	
9	BLUING REAGENT	9	1:00	
10	BLUING REAGENT	10	PASS	
11	WATER	11	1:00	
12	WATER	12	PASS	
13	95% ALCOHOL	13	:45	
14	95% ALCOHOL	14	PASS	
15	EOSIN	15	:30	
16	EOSIN	16	PASS	
17	95% ALCOHOL	17	:45	
18	95% ALCOHOL	18	PASS	
19	ABSOLUTE ALCOHOL	10	1:30	
20	ABSOLUTE ALCOHOL	20	PASS	
21	ALCOHOL: XYLENE	21	1:00	
22	ALCOHOL: XYLENE	22	PASS	
23	XYLENE	23	2:00	“TRAILING” rack holds in this position
24	XYLENE	24	END	“LEADING” rack holds in this position

Thermo has not validated the protocol illustrated here, and takes no responsibility for its use. Customers should always validate protocols before placing any reliance on them.

REFER TO THE MATERIAL SAFETY DATA SHEETS (MSDS) WHEN HANDLING THE REAGENTS LISTED IN APPENDIX A.

TABLE 6
STAIN PROCEDURE TITLE: SINGLE RACK HISTOLOGY PROCEDURE
PROGRAM NUMBER: 1
STEPS____ THROUGH____

PLATFORM POSITION	REAGENT	STATION	MIN-SEC	COMMENTS
1	XYLENE	1	5:00	
2	XYLENE	2	5:00	
3	ABSOLUTE ALCOHOL	3	3:00	
4	95% ALCOHOL	4	3:00	
5	WATER	5	3:00	
6	HAEMATOXYLIN	6	5:00	
7	RUNNING WATER	7	3:00	
8	ACID ALCOHOL	8	:06	
9	RUNNING WATER	9	4:00	
10	BLUING REAGENT	10	:30	
11	RUNNING WATER	11	5:00	
12	95% ALCOHOL	12	:06	
13	EOSIN	13	2:00	
14	95% ALCOHOL	14	:30	
15	ABSOLUTE ALCOHOL	15	:30	
16	ABSOLUTE ALCOHOL	16	:30	
17	ABSOLUTE ALCOHOL	17	:30	
18	ABSOLUTE ALCOHOL	18	:30	
19	XYLENE	10	:30	
20	XYLENE	20	:30	
21	XYLENE	21	1:00	
22	XYLENE	22	:30	
23	23	END		
24				

Thermo has not validated the protocol illustrated here, and takes no responsibility for its use. Customers should always validate protocols before placing any reliance on them.

REFER TO THE MATERIAL SAFETY DATA SHEETS (MSDS) WHEN HANDLING THE REAGENTS LISTED IN APPENDIX A.

TABLE 7
STAIN PROCEDURE TITLE: DOUBLE RACK HISTOLOGY PROCEDURE
PROGRAM NUMBER: 2
STEPS____ THROUGH____

PLATFORM POSITION	REAGENT	STATION	MIN-SEC	COMMENTS
1	XYLENE	1		Load “trailing” rack over # 1
2	XYLENE	2	5:00	Load “leading” rack over # 2
3	ABSOLUTE ALCOHOL	3	5:00	
4	95% ALCOHOL	4	2:00	
5	WATER	5	1:30	
6	HAEMATOXYLIN	6	2:00	
7	RUNNING WATER	7	2:00	
8	ACID ALCOHOL	8	3:00	
9	RUNNING WATER	9	2:00	
10	BLUING REAGENT	10	2:00	
11	RUNNING WATER	11	:01	
12	95% ALCOHOL	12	:01	
13	EOSIN	13	1:00	
14	95% ALCOHOL	14	1:00	
15	ABSOLUTE ALCOHOL	15	1:00	
16	ABSOLUTE ALCOHOL	16	1:00	
17	ABSOLUTE ALCOHOL	17	:30	
18	ABSOLUTE ALCOHOL	18	1:30	
19	XYLENE	10	:30	
20	XYLENE	20	:30	
21	XYLENE	21	1:00	
22	XYLENE	22	1:30	TRAILING rack holds in this reagent trough
23		23	1:30	LEADING rack holds in this reagent trough
24		24	1:30	
		25	END	

Thermo has not validated the protocol illustrated here, and takes no responsibility for its use. Customers should always validate protocols before placing any reliance on them.

REFER TO THE MATERIAL SAFETY DATA SHEETS (MSDS) WHEN HANDLING THE REAGENTS LISTED IN APPENDIX A.

3.3.3 Preparing a Program Table

The procedure for preparing a program table such as the example given in Table 1 is as follows:

1. Allocate a title to the program.

2. List the reagents, allocating them to their specific steps, as in the first two columns of the table.

3. List the steps at which the 'PASS' instruction is to be used.

4. Insert details of any critical immersion times first and then build up the rest of the program round them. If more than one load is to be processed at the same time ensure that the immersion times are the same throughout the program.

5. Indicate which program is to be allocated to the program.

6. Mark the space at the top of the table to show whether mechanical agitation is required. Compare the Varistain agitation with whatever was the practice in previous staining methods. After a trial run, adjustment to slightly increase or decrease times in certain steps may be necessary.

7. Indicate 'END' in Period Entered column for end of program step.

8. Make a final check through the list of general staining considerations in Section 2.3a to ensure that no mistakes have been made.

Alternative ways of programming the instrument are possible, taking full advantage of the flexibility introduced by the electronic timer and some of the possible program variations are outlined below.

i A program for continuous operation can be arranged by using 24 steps in the memory and not entering 'End' at any step. Strictly equal immersion periods in each reagent are essential. The presence of the operator is required for loading the slides on at the beginning of the program and attaching subsequent loads at each change over. The operator will also have to be present to remove the completed loads as they arrive at the last stage.

ii For a complete routine of no more than 12 stages, double-load staining can be arranged with duplicate sets of reagents in troughs 1 to 12 and 13 to 24. The slides are then loaded at positions 1 and 13 and the end of cycle instruction is entered at step 13 to halt the instrument at the end of the program. Further program examples are given for reference in Tables 2 to 7.

3.3.4 Entering a Program

WITH POWER APPLIED, CHECK TO SEE WHETHER THE AUTO INDICATOR IS ILLUMINATED. PROGRAMS CAN ONLY BE ENTERED WHEN THE AUTOMATIC OPERATION IS NOT IN USE. PRESSURE TO THE AUTO KEY WILL SWITCH THE UNIT BETWEEN MANUAL AND AUTOMATIC MODES.

1. Press SAVE to enter programming mode. (All 3 sets of displays will start 'flashing'.) Note, if desired, pressing 'CANCEL' now will exit from programming mode without altering any stored programs.

2. Select the program to alter by pressing 1, 2 or 3. The program number will remain steady and the station and time displays will continue to 'flash'. The time displayed will be the currently programmed time for the program and station displayed. Again 'CANCEL' may be utilised, if desired, to exit without making any changes.

3. Pressing the 'RESET' key will return the station display to 1 and 'STEP' will advance the display.

4. When the station time that you wish to change is displayed you may enter the new desired time. Enter the time using the keys '0-9', 'PASS' or 'END'. The station display will remain steady while the time display 'flashes' the newly entered time. Press 'ENTER' to confirm this time or 'CANCEL' to revert to the original time.

   Should an invalid time be inadvertently entered then an alarm will sound and the display will revert to the previous time. Please try again.

5. Repeat steps 4 and 5 above until the program is complete. Ensure that an 'End' step is entered or the program will continue indefinitely 'looping' through the steps. If you wish to use this continuous rotation capability only the first 24 steps of a program are used.

6. When the program is complete it may be saved in the non-volatile memory of the Varistain 24-4 for future use. Press 'SAVE' and 3 short audible tones will signify that the program is being saved. The program is then available for use. If 'CANCEL' is pressed instead then the original program is not altered.

GUIDANCE NOTES

If it is not necessary to use all 24 stainer positions, enter 'END' into the step position after the last active station. For example, when 15 solutions are required for a procedure enter 'END' into STEP 16. When the timer encounters the 'END' entry, the memory will end the program in the step prior to the step containing the 'END' entry. Thus, in the 15 step procedure example mentioned above, the 'End' is entered in STEP 16. The slide carrier will remain in the solution of STEP 15.

Providing the total number of step instructions including 'END OF CYCLE' instructions does not exceed 24, it is possible to enter more than one program into one memory.

3.3.5 Recalling a Previously Entered Program

To recall and review a previously entered program:

1. Press 'RECALL'. The program display will 'flash'. Note that pressing 'CANCEL' will exit from the recall mode without changing the displayed program.

2. Enter the program number (1, 2 or 3) to review or recall. The program display will continue 'flashing' and the station and time displays will show the newly recalled program information.

3. 'RESET' and 'STEP' may be used to examine the times in the various station positions.

4. When reviewing is complete, press ‘ENTER’ to make this program available for use. ‘CANCEL’ may be used to return the previously displayed program.

5. Should you wish to review another program while the program display is still flashing, then repeat steps 2 - 4 inclusive.

3.3.6 Amending a Program in Memory

It is often desirable to make small adjustments in selected program steps (to compensate for stain or reagent dilution or ageing for example). Adjustments as small as ± 1 second can be made at any program step without affecting other steps.

This can be achieved by entering programming mode as in section d. Then simply enter the new time for the station to be changed and press ‘SAVE’ to complete the amendment.

3.3.7 Running a Program

1. Make sure the ‘AUTO’ light is not illuminated. Select desired program and starting position.

2. Press LOAD to raise the canopy.

3. Attach the slide carrier above first reagent position.

4. Switch to ‘AUTO’ mode by pressing the ‘AUTO’ key and the light will illuminate.

   NOTE: When the AUTO mode is selected, the countdown starts as indicated by the flashing point in the time display. The TIME display counts down from the selected time to 0 - the time displayed at any time is the time remaining in that STEP. Before the change over period the timer will indicate the next step number and the total time selected in that position. The countdown - as demonstrated by the flashing decimal point - does not commence until the slide carrier is completely lowered into the next staining trough.

5. The instrument will operate automatically until it reaches a step at which ‘END’ has been programmed, or until the MANUAL mode is reselected or until the power is removed. If MANUAL control is resumed prior to the End step or there is a power cut, the countdown will stop at the point of interruption. When AUTO is again selected (or power regained) the countdown will recommence from the time and step of interruption.

CLEANING AND MAINTENANCE

4.1 CLEANING THE VARISTAIN 24-4

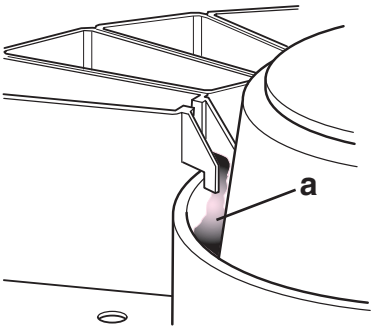
ALWAYS WIPE UP ANY SPILLS IMMEDIATELY. IN THE EVENT OF A MAJOR SPILLAGE, DISCONNECT THE INSTRUMENT FROM THE MAINS SUPPLY WITHOUT DELAY AND DO NOT RECONNECT AND SWITCH ON UNTIL THE INSTRUMENT HAS BEEN THOROUGHLY DRIED OUT AND CHECKED BY A SERVICE ENGINEER.

The main parts of the instrument, the material of which they are made or their surface finishes, are tabulated below. These have been chosen for their resistance to staining and suitability for their purpose. Normally washing in detergent and water will be sufficient.

Any accidental spillage of stains on the touch control panel should be removed by wiping with alcohol immediately.

ITEM	MATERIAL
Slide carrier	Stainless steel
Troughs	Polyethylene
Evaporation covers	Anodised aluminium
Trough location platform	Bakelite
Top canopy	Epoxy paint
Central housing	Epoxy coated metal spinning
Plinth base unit	Epoxy paint
Front touch panel	Polyester

To avoid any bacterial build up, periodically rinse the water wash system with a 10% commercial bleach solution. Pour the solution into the water wash troughs and circular water collection area around the central housing (a). Allow to drain throughout the system.



4.2 CARE OF THE PLASTIC STAINING AND WASH TROUGHS

The plastic staining troughs (66610023) and water wash troughs (66610024) supplied with this instrument have been found suitable for use with most solutions and reagents used in staining routines, although a low degree of distortion may be observed in some instances.

The troughs are NOT suitable for use with chloroform or other halogenated hydrocarbons, since these solvents cause severe distortion. If you wish to use these solvents, please contact your area representative or agent.

Solutions containing iodine may be used in the troughs, although ageing is accelerated and the troughs will require replacing at approximately six-monthly intervals.

WASHING PROCEDURES

Severe distortion may occur if the troughs are washed in an automatic washing machine, due to excessively high temperatures during either the washing or drying cycles.

It is recommended that the troughs are washed at a maximum temperature of 45°C and that they are allowed to drain or hand dry. Detergent or soap solutions should not affect the troughs.

4.3 LUBRICATION

Lubrication of the mechanisms should only be necessary at prolonged intervals and should be carried out by the service engineer during routine service.

SPECIFICATIONS

5.1 TECHNICAL DATA

Electrical:

Voltages:	110-120V a.c. (60Hz) 220-240V a.c. (50Hz)
Power:	150VA
Mains plug fuse:	5A 250V where applicable
Instrument Mains fuses:	2 x T1A

Note: Fuses should only be replaced by a technically competent person.

Switch Convention:	I = Power On O = Power Off

Environment:

General:	Indoor use only
Temperature *(operation)*:	+5°C to +40°C
Temperature *(transit/storage)*:	-25°C to +55°C *(+70°C for short exposure)*
Humidity:	80% max for temperatures < 31°C 50% max for temperatures > 31°C but < 40°C. (Non-condensing environment)
Altitude:	up to 2000m
Pollution degree:	2
Installation Category:	II

Physical:

Width:	74 cm ($29\frac{1}{8}$”)
Depth:	74 cm ($29\frac{1}{8}$”)
Height:	51 cm ($22\frac{1}{2}$”)
Clearance Height:	65 cm ($25\frac{5}{8}$”)
Turning Diameter:	86 cm ($33\frac{7}{8}$”)
Weight:	60 kg (133lb) nett

Program information:

Transfer time between troughs:	20 seconds approx.
Trough working capacity:	750 ml
Minimum programmable working period:	1 second
Maximum programmable working period:	59 mins, 59 secs
Minimum programmable increment:	1 second
Program memory:	3
Programmable steps per memory:	26

5.2 PARTS LIST

5.2.1 Varistain® 24-4, Automatic Slide Stainer

Description	Catalogue Number
220 - 240V, 50Hz	74200001
110 - 120V, 60Hz (USA)	74200002
110 - 120V, 60Hz	74200003
110 - 120V, 50Hz	74200006
220 - 240V, 60Hz	74200007

5.2.3 Accessories for Varistain® 24-4 (sold separately)

Description	Catalogue Number
Vertical Slide Carrier 64-slide capacity	66610021
Slide Carrier for Consul®	52610052
Staining Trough (plastic) 750 ml capacity	66610023
Waterwash Trough	66610024
Horizontal Slide Carrier 10 slide capacity (accepts 3” x 1”, 3” x 2”, 3” x 3”)	66610028
Trough Cover (stainless steel)	9990526
Trough (stainless steel)	9990525
Plastic Coverslipping Trough with Lid (USA)	9990527

5.3 OTHER INSTRUMENTS IN THE VARISTAIN® PRODUCT RANGE

Varistain® 24-4K

This instrument is designed for continuous operation and allows multiple baskets to be used simultaneously. Note - all steps of the program must be the same length.
Supply voltage and frequency ranges available include:

Description	Catalogue Number
220 - 240V, 50Hz	74200010
110 - 120V, 60Hz (USA)	74200011
110 - 120V, 60Hz	74200012
110 - 120V, 50Hz	74200013
220 - 240V, 60Hz	74200014

5.4 WORKSHEET

STAIN PROCEDURE TITLE: _____

PROGRAM NUMBER: _____

STEPS: _____

THROUGH: _____

PLATFORM POSITION	REAGENT	STATION	MIN-SEC	COMMENTS
1 :				
2 :				
3 :				
4 :				
5 :				
6 :				
7 :				
8 :				
9 :				
10 :				
11 :				
12 :				
13 :				
14 :				
15 :				
16 :				
17 :				
18 :				
19 :				
20 :				
21 :				
22 :				
23 :				
24 :				

APPENDIX A APPROVED REAGENT LIST

A.1 INTRODUCTION

REFER TO THE MATERIAL SAFETY DATA SHEETS (MSDS) WHEN USING REAGENTS FROM THESE LISTS.

This appendix lists all the reagents that Thermo specify can be used with the Varistain 24-4 stainer. If you want to use a reagent not included in this list, contact your Thermo agent for advice.

A.2 REAGENTS

Xylene	
Toluene	
Xylene Substitute	(Thermo)
Industrial Methalated Spirits (IMS)	(up to 5% methanol in ethanol)
Ethanol	
Isopropanol (IPA)	
Acid Alcohol	(1% HCI in 70% Ethanol)
Acid Alcohol	(10% Glacial Acetic Acid in 70% Ethanol)
Eosin	(Aqueous and Alcohol based)
Haematoxylin	
EA50/65	
OG6	
Phosphotungstic acid	(1% in water)
Ammonia Water	(1% Ammonium Hydroxide in water)
Scotts Bluing Reagent	
Sodium Hypochlorite	(10% in water)
Water	
Schiff's Reagent	
Periodic Acid	

ALWAYS FOLLOW GOOD LABORATORY PRACTICE AND COMPLY WITH LOCAL LEGISLATION REGARDING STORAGE, USE AND DISPOSAL OF REAGENTS

Thermo
SCIENTIFIC

PRODUCT RETURN SAFETY DECLARATION

Part 1 DECONTAMINATION CERTIFICATE

Any instrument or part of any instrument must be clean before being returned, and where necessary accompanied by a completed Decontamination Certificate. Should the instrument or any part of it be received in an unclean condition, or Thermo Fisher Scientific consider it to be a hazard, the instrument or part will be returned unrepaired at the expense of the customer.

It is important that the certificate is forwarded by post or fax, and a copy attached to the exterior of the container. Containers will not be opened until the company is in possession of the required certificate.

This form MUST be completed by the customer and NOT a Thermo or distributor employee.

If an instrument or part is to be returned to THERMO, please note the following:-

1 If the instrument or any part of it has been exposed to, or been in contact with potential pathogenic or radioactive material, it is essential that it is decontaminated.

2 Set procedures are laid down in the European Health and Safety Directives for decontamination. To avoid any misunderstanding, we request that all instruments or parts returned to us must be accompanied by a certificate stating the following:

We certify that this (Model) . . . . . Serial No

· has not been exposed to pathogenic, radioactive or other hazardous material and has been cleaned

OR

· has been decontaminated and cleaned (if exposed to the above) according to approved procedures, following exposure to:

. . . . . .

· Has the instrument been used for work with human, or animal, Transmissible Spongiform Encephalopathies, e.g. Creutzfeld-Jacob disease, Scrapie or BSE? **YES / NO**

If yes, please contact Thermo Service before taking any further action.

Signed . . . . . Position . . . . . .

Name (Block Capitals) . . . . . .

Company or Organisation . . . . . .

Full address . . . . . .

. . . . . .

Part 2 Guidelines for Returning Instruments

Please use the checklist below to ensure that the instrument being returned is ready for collection.

· All reagents / wax removed from instrument, including vapour traps (if applicable). . . . . ☐

· Accessories are secured / itemised . . . . . ☐

· Instrument has had transit clamps fitted as per operator guide . . . . . ☐

· Instrument is packed in original packaging . . . . . YES / NO

RMA NUMBER . . . . . .

CARRIER . . . . . .

FOR ATTENTION OF . . . . . .

Thermo Fisher Scientific, Tudor Road, Manor Park, Runcorn, WA7 1TA, United Kingdom
Tel: +44 (0) 1928 534000; Fax: +44 (0) 1928 534001; www.thermoscientific.com/pathology

WARRANTY STATEMENT

Thermo is proud of its quality and reliability, and of its after-sales service. Thermo continuously strives to improve its service to its customers.

Please ask your distributor or representative about Service Contracts, which can keep your purchase in peak condition for many years to come.

Warranty provisions necessarily vary to comply with differences in national and regional legislation, and you can find details in your delivery documents, or from your dealer or representative.

Please note that your warranty may be invalidated if:

- The instrument is modified in any way
- Accessories and reagents are used that are not approved by Thermo
- The instrument is not operated or maintained in accordance with the instructions in this Operator Guide

ThermoFisher SCIENTIFIC

The world leader in serving science

Declaration of Conformity

This Declaration of Conformity, issued under our sole responsibility, is only valid when the instrument is used in accordance with the instructions for use.

Manufacturer's Name: Thermo Shandon Limited (Trading as Thermo Fisher Scientific)

Manufacturer's Address: Tudor Road, Manor Park, Runcorn,
Cheshire, WA7 1TA
UNITED KINGDOM

Product Description: Automatic Slide Stainer

Product Designation: **Varistain® 24-4**

Part numbers: *74200001, 74200002, 74200003, 74200006, 74200007, 74200010, 74200011, 74200012, 74200013, 74200014 including accessories supplied as standard*

Year of Marking (CE): 1996

This product conforms to the essential requirements of the following directives:

In Vitro Diagnostics Directive 98/79/EC

Machinery Directive 2006/42/EC

This product complies with the following International Standards:

EMC: EN 61326-2-6
EN 61000-3-2
EN 61000-3-3

Safety: IEC 61010-2-101
CAN/CSA C22.2 No. 1010.1-92
UL Std No. 3101.1

Issued by: K. Waldron
Quality Manager
Thermo Fisher Scientific
Anatomical Pathology Division

Date: 20 April 2010

Optional accessories considered subject to the In Vitro Diagnostic Medical Devices Directive (IVDD) are specifically identified on this Declaration of Conformity. Further supplies of standard accessories are treated as spares. Convenience aids offered as accessories are not subject to the IVDD.

Anatomical Pathology Division
Tudor Road
Manor Park
Runcorn
Cheshire
WA7 1TA
UK
+44 (0) 1928 534000
+44 (0) 1928 534001 fax
www.thermo.com

Thermo Shandon Limited
Registered Office: 19 Mercers Row, Cambridge CB5 8BZ, UK. Registered in England and Wales – No. 330973

Index