

LINKAM

Linkam Scientific Instruments

ECP
Water Circulation Pump

USER GUIDE

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Important Notice

Please check that your Linkam equipment has not been damaged during transit. If there is any evidence of external damage **DO NOT SWITCH ON ANY ELECTRICAL ITEMS.**

Contact LINKAM SCIENTIFIC INSTRUMENTS Ltd., or their appointed distributor immediately. Your warranty may be impaired if Linkam is not informed of any damage within 7 working days of delivery.

NO attempt should be made to repair or modify the equipment in any way, as there are **NO USER RE-PLACEMENTS PARTS.**

No attempt should be made to open the instrument except by qualified personnel as hazardous voltages are present.

In order to use this equipment successfully, please take time to read this manual all the way through before starting to work.

Warranty

This equipment has a warranty against defects in material and workmanship for a period of **12 months.** Linkam will either repair or replace products that prove to be defective. For warranty service or repair, this product must be returned to Linkam or a designated service facility.

The warranty shall not apply to defects resulting from interfacing, unauthorized modification or misuse, operation outside of the environmental specifications for the product, or improper site preparation or maintenance.

Technical Support

Any technical questions or queries should be addressed to the Technical Support Department at the address shown on the back of this manual.

Equipment Maintenance

The ECP is only to be used with water no other liquid may be used. The water should be changed at regular intervals, every 3-4 weeks to prevent algae and bacterial growth, which can block up the narrow tubing and the water cooling channel inside the stage.

Water additives such as antibacterial and antifungal agents can be added to the water according to the manufacturers instructions to extend the interval for changing the water.

Regulatory Compliance

The ECP is qualified in accordance with the respective national regulation and guidelines and meets EC standards.



Safety Precautions

Read and follow all safety instructions before using the equipment. Save these instructions for later use.

Warning: to guard against injury, basic safety precautions should be observed, including the following:

1. Danger – to avoid possible electric shock, special care should be taken as water is used with the ECP. For each of the following situations, do not attempt repair to the ECP by yourself, contact Linkam or an authorised Linkam dealer for service.
2. If the ECP shows any sign of abnormal water leakage during use, immediately unplug it from the power source. Contact Linkam Technical Support.
3. If the plug or power socket does get wet, DON'T unplug the cord. Disconnect the fuse or circuit breaker that supplies power to the equipment. Then unplug and examine for presence of water in the receptacle.
4. Do not operate the ECP if it has a damaged cord or plug or if it is malfunctioning or has been dropped or damaged in any manner.
5. Always unplug the ECP from an outlet when not in use or before cleaning or re-filling it with water.
6. Never yank the cord to pull out the power plug from the socket. Grasp the plug and pull to disconnect.
7. Do not use the ECP for other than intended use.
8. The ECP is for indoor use only. Do not install or store the ECP where it will be exposed to weather or to temperatures below freezing.
9. Read and observe all important notices on the ECP.
10. If an extension cord is necessary, a cord with proper rating should be used. A cord rated less amperes or watts than the ECP rating may overheat. Care should be taken to arrange the cord so that it will not be tripped or pulled.
11. If for any reason the mains fuse needs to be replaced then it must be replaced by one of the same type and rating as shown in the equipment ratings.
12. Each product is equipped with a 3-wire grounded (earth) mains plug or a free-end 3 wire mains cord. The plug only fits into a grounded-type outlet. The free-end mains lead should be connected to a correctly grounded 3-wire mains outlet. Do not tamper with the grounded (earth) type plug.

Free - end mains leads are colour coded as follows :

Colour:	Function:
Brown	Live
Blue	Neutral
Green/Yellow	Earth (Ground)

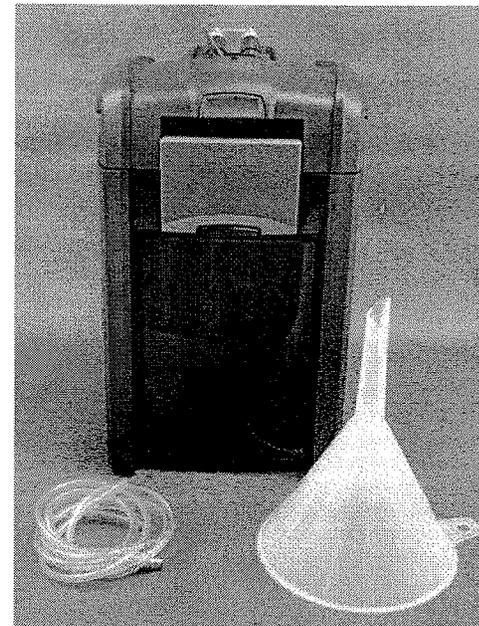
13. If any problems occur then unplug the equipment from the mains outlet and contact Linkam Scientific Technical Support.
14. Always consult your local safety regulations when using any electrical equipment.

Introduction

Thank you for purchasing a Linkam system. Please take the time to read through all manuals, as it will help you to make the most out of the equipment.

The ECP is a water circulating pump used for cooling Linkam instruments. Depending on the country, the ECP is either shipped as a 240V or 110V with a funnel and an appropriate set of tubing to connect to the Linkam stage.

Note: for some countries, an ECP with a 220V / 60Hz rating will be shipped in place of the ECP 240V / 50Hz.

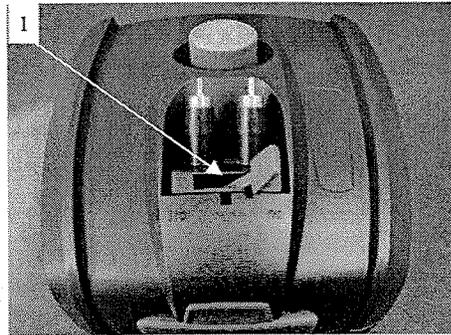


Pump output:	1050l/h
Capacity Volume:	7.4l
Delivery head:	1.8m Hmax
Power consumption:	16W
Dimensions:	398x238x244mm

Tubing: 3.0mm ID (inner diameter)
6.0mm OD (outer diameter)

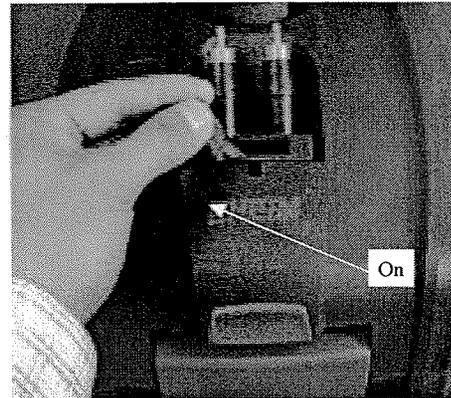
Setting up the ECP

The ECP is shipped with the water connector nozzle (1) connected in place.

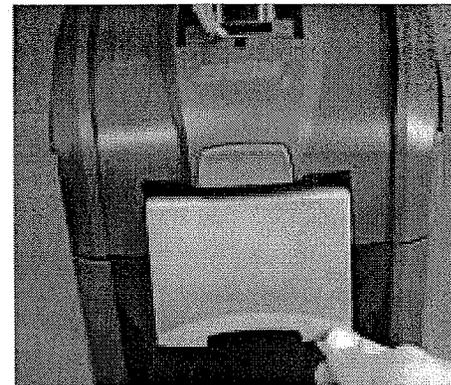


Filling the Water Reservoir

Make sure the lever is pushed all the way to the left to the 'On' position.

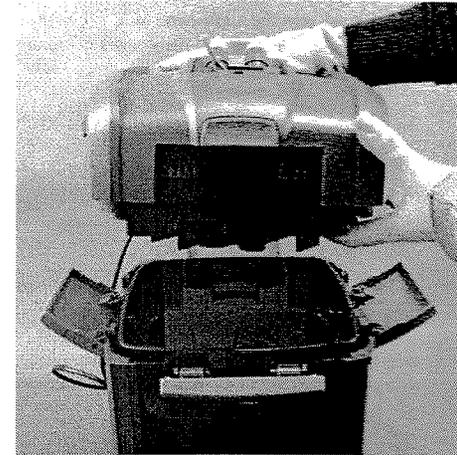


Unclip the four grey plastic catches from each side of the ECP. The catches are released by pulling the grey lever outward from the bottom.



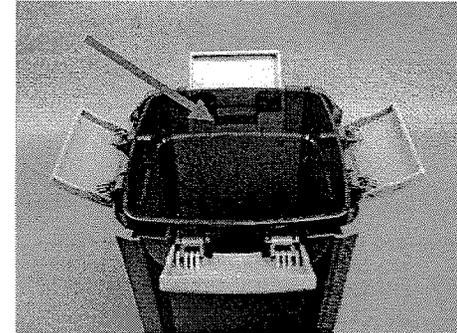
6

Lift the top off.

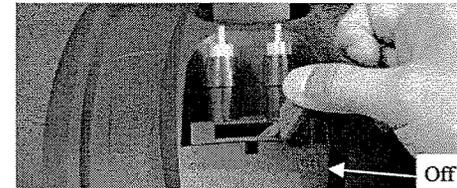


Fill the reservoir with water to the mark indicated by the arrow.

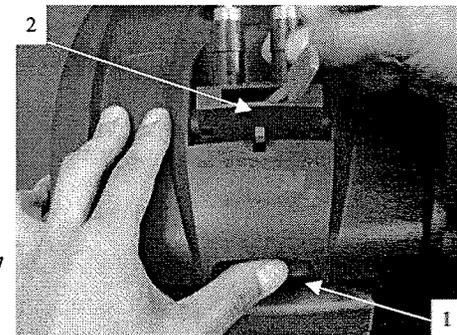
Replace the top and fasten the catches.



Move the lever all the way to the 'Off' position.

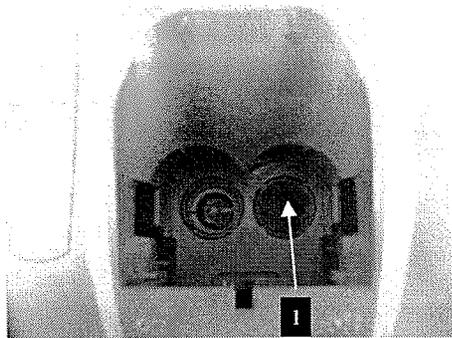


Push the red tab (1) all the way in to eject and remove the water nozzle (2).

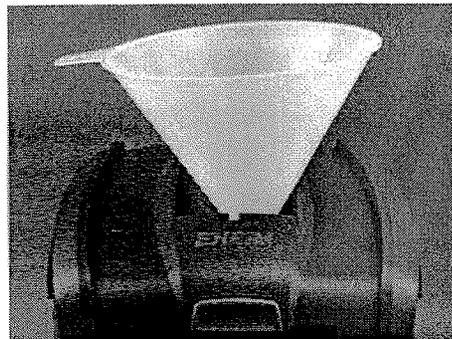


7

Insert the funnel into the right-hand side fill hole (1).



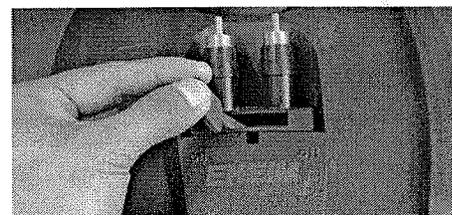
Add water through the funnel to fill the reservoir with more water. Stop filling as soon as the water level can just be seen to cover the fill hole.



Reconnect the nozzle by pushing it down firmly. A 'click' is heard when the nozzle is securely locked into place.

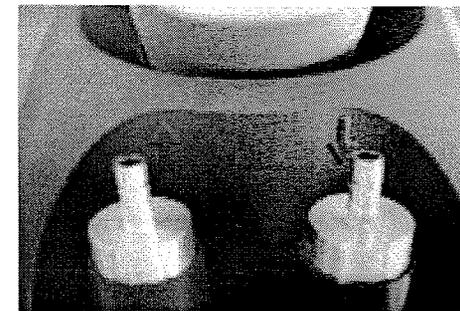


Push the lever all the way to the 'On' position.

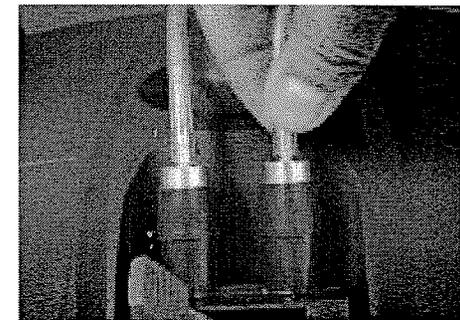


Connect Tubing

There two arrows showing the direction of the water flow, 'Inlet' and 'Outlet' to the ECP.

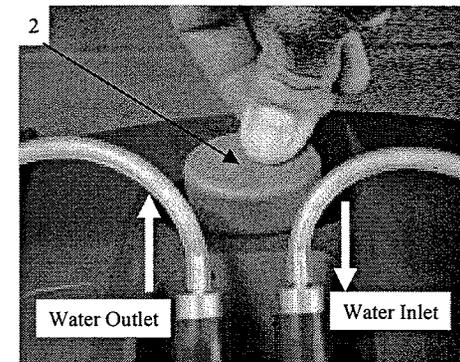


Push the tubing firmly to the inlet and outlet nozzles.



Priming the Water

On first use, firmly push down the Pump Primer (2) button a few times to remove air trapped inside the reservoir before switching on the ECP.

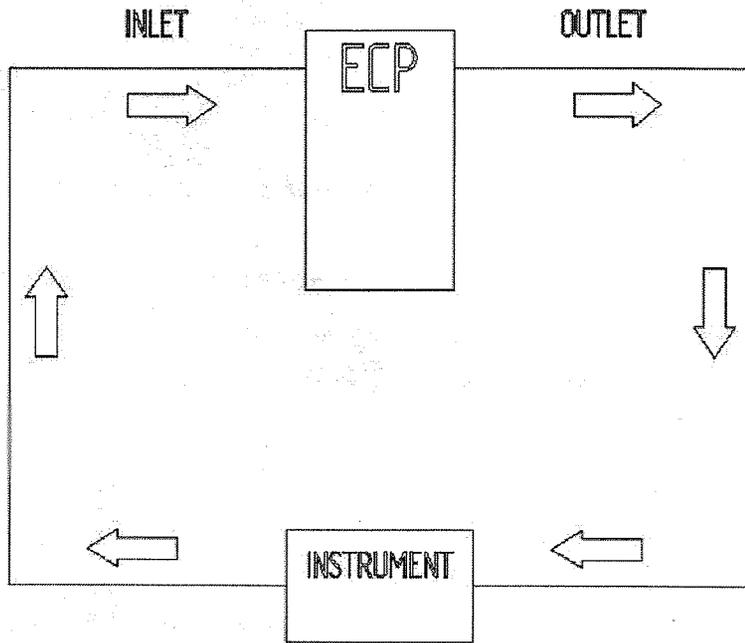


Topping Up the Reservoir

Remove the water nozzle as instructed (Page 7) and use the funnel to top up the ECP with more water when needed.

Water Circulator Flow Diagram

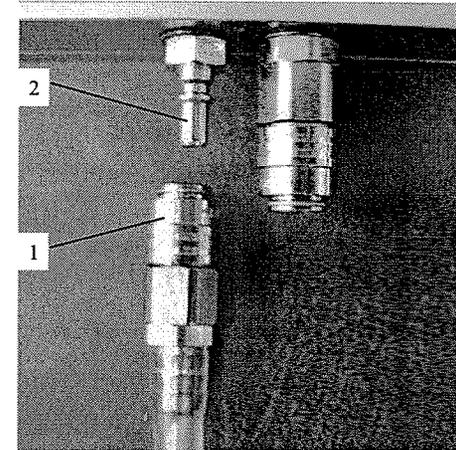
Use the flow diagram below as a guide to connect the ECP to the Linkam instrument.



Stage Tubing Connection

Quick Release Valve Connector

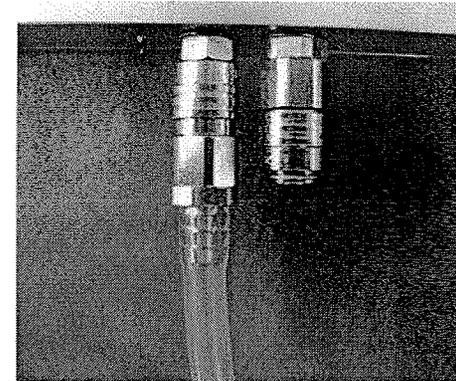
Connect the Water Valve Connector (1) to the Water Valve Insert (2) by pushing them together.



There should be a 'click' when the two parts are connected.

Note: an extra set of Water Valve Connectors (1) are supplied as accessories with the Linkam stage.

See Spares and Accessories Page 19, to purchase extra valve connectors.



Note: To remove the valve connector, hold the outer sleeve of the valve and pull away from the stage

The valve connector is self-seal when it is not connected.



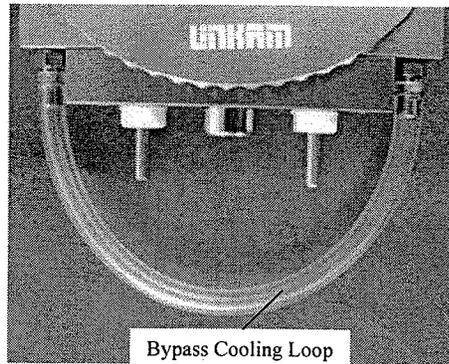
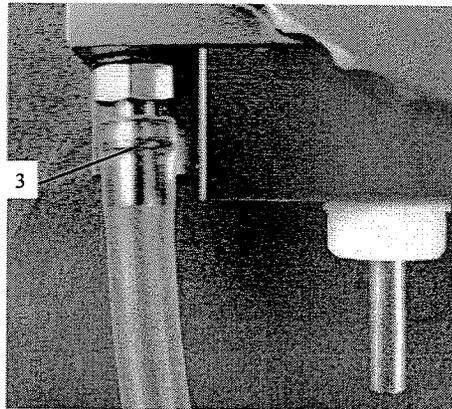
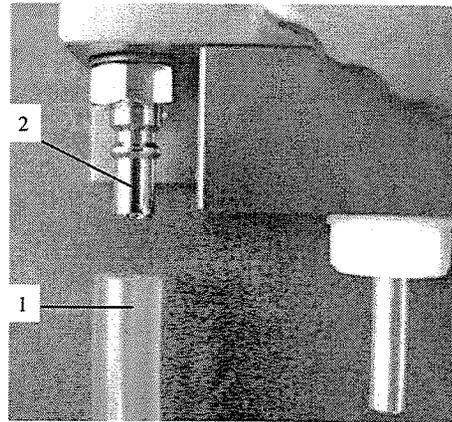
Bypass Cooling Loop

Some models of Linkam stage will require the connection of a Bypass Cooling Loop.

A short 15mm tube is supplied with the accessories of certain Linkam stages.

Push firmly and at the same time twist the tube (1) to the Water Valve Insert (2) as shown.

Make sure the end of the tubing is pushed at least 2mm past the Ring Joint (3).



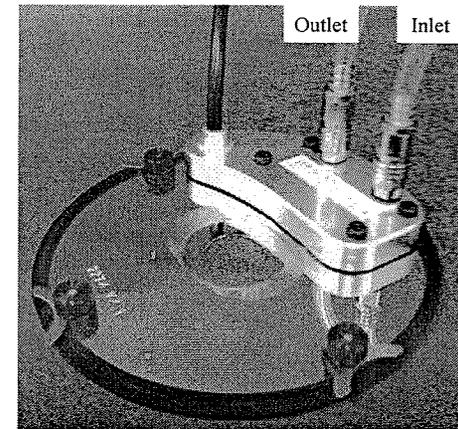
Tubing Connection to the Instrument

Peltier Stage

With Peltier systems, water must always be circulating when the stage is being used in both heating and cooling modes.

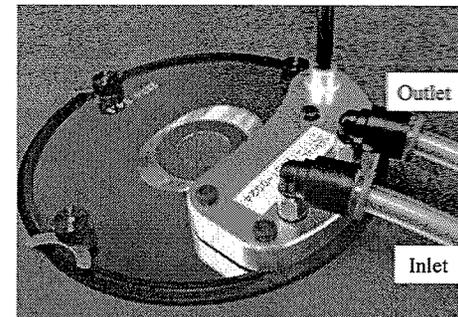
PE100 Type Stage for Inverted Microscope

The PE100 stage is shipped with the default straight plug connectors fitted and tubing is connected as shown.

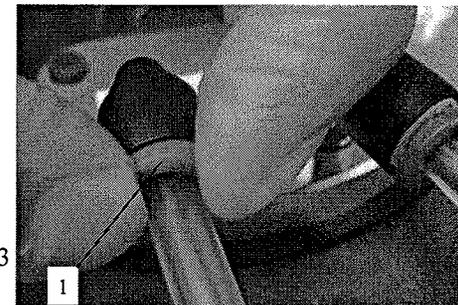


Some versions of PE100 are shipped with a set of push-fit elbow connectors.

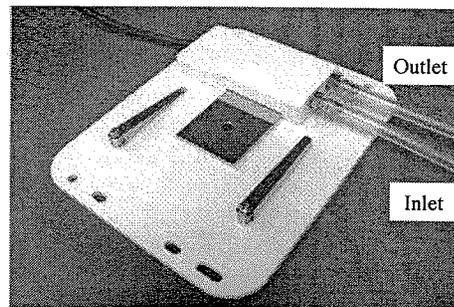
The tubing is connected by firmly pushing it into the socket.



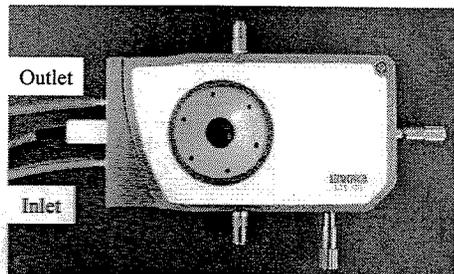
Note: to remove the tube from the elbow. Pull back and hold the blue O-ring (1) and at the same time pull on the tubing.



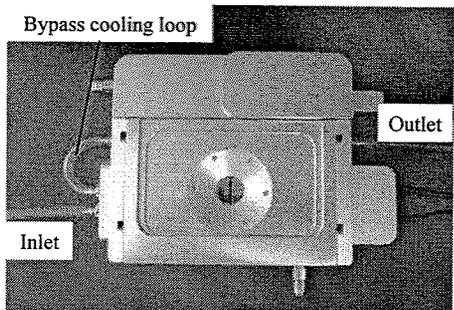
PE120 Stage for Upright Microscope



LTS120 Large Sample Area Stage



GS120 Temperature Gradient Stage

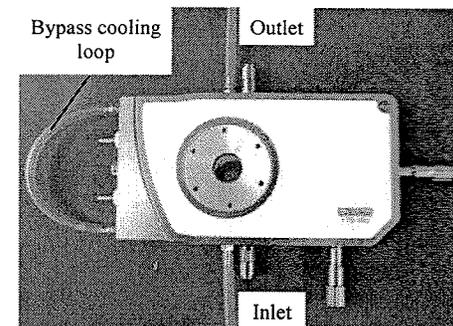


Heating and Freezing Stages

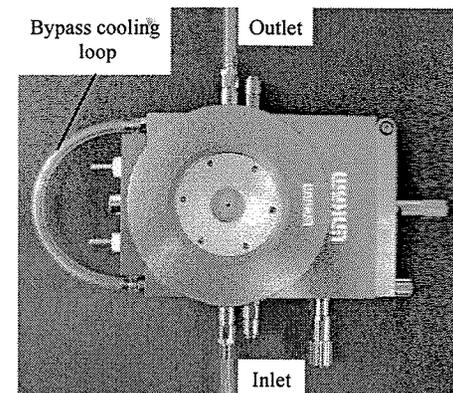
Water cooling is only needed when using the stage above 300°C for an extended period to prevent the stage body from becoming too hot to touch.

The temperature control performance is not compromised if the water circulator is not used.

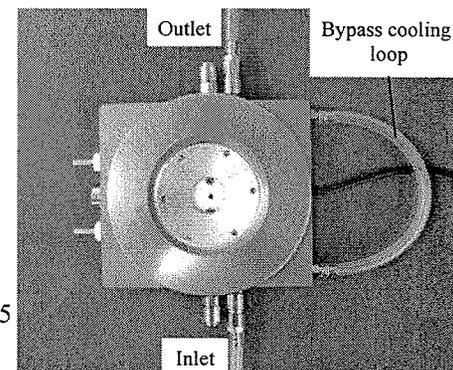
LTS420 Analyza
Large Sample Area Stage



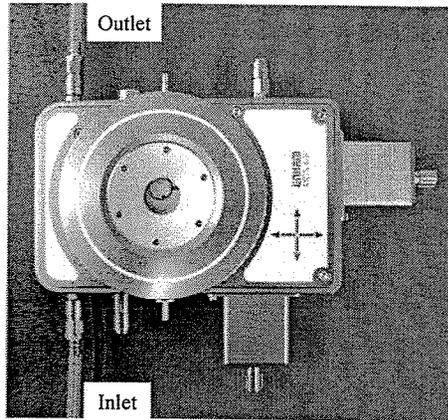
THMS Examina
Precision Temperature Stage



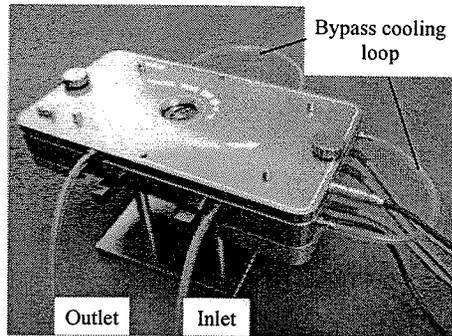
DSC600 Thermatica
Optical Thermal Analysis Stage



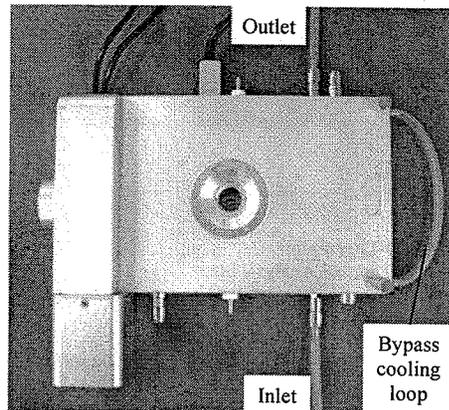
**MDS Examina Pro and Geology Pro
Motorised Stage**



CSS450 Optical Shear Stage



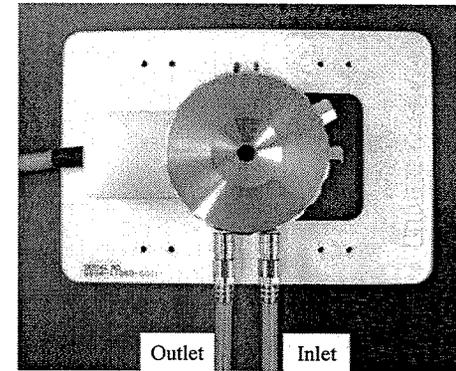
TST350 Tensile Stage



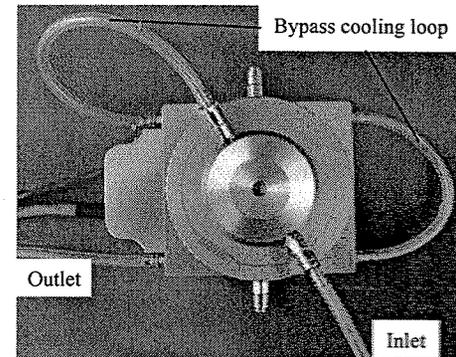
High Temperature Stage

With high temperature systems water must always be circulating when the stage is being use.

CCR1000 Catalyst Stage



**TS1500, TS1200 and TS1000
High Temperature Stage**



Optional Items

Part No	Part Name	Part Description
0998	ECP	Water Circulator Pump (stage body and window cooling) (220-240V / 50Hz)
0997	ECP	Water Circulator Pump (stage body and window cooling) (110-130V / 50Hz)
0995	ECP	Water Circulator Pump (stage body and window cooling) (220V / 60Hz)
2202	WVC	Water/Gas Valve Connector
2096	PVC-TK	Tube Kit for ECP water circulator used with all stages except TS1500
2037	PVC-1500TK	Tube Kit for ECP water circulator used with TS1500