



Linkam Scientific Instruments

LNP95

Liquid Nitrogen Pump Cooling System

USER GUIDE

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Declaration of Conformity

Manufacturers Name: Linkam Scientific Instruments Ltd

Manufacturers Address: 8 Epsom Downs Metro Centre
Waterfield
Tadworth
Surrey
KT20 5LR
UK

Declares that the product as originally delivered:

Product Name: Liquid Nitrogen Pump
Product Number: LNP95

has been independently tested and found to comply with the following applicable European Directives, and carries the CE marking accordingly:

EMC Directive 2004/108/EC using product standard EN 61326-1:2006
Low Voltage Directive 2006/95/EC using product standard EN 61010-1:2001

and also carries the additional certification:

EMC

FCC CFR47 Part 15

Safety

CB IEC 61010-1/ EN 61010-1

MET UL 61010-1/ CSA C22.2 No.61010-1 under listing E112928

28th August 2009

Date

Peter Grocutt
R&D Manager

Important Notice

Please check that your Linkam equipment has not been damaged during transport.
If there is any evidence of external damage to electrical items:

DO NOT CONNECT THE POWER CORD OR SWITCH THE ITEM ON

Contact Linkam Scientific or their appointed distributor immediately. Your warranty may be impaired if Linkam is not informed of any transport damage within 7 working days of delivery.

Safety Precautions

- 1) Read all of this guide before using the equipment. Save these instructions for later use.
- 2) Follow all warnings and instructions, marked on any of your Linkam equipment, or contained within the manuals.
- 3) 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.
- 4) To prevent electric shock, do not remove the cover of the equipment.
- 5) Never use the equipment if the power cord has been damaged. Do not allow any heavy objects to rest on the power cord. Never lay the power cord on the floor.
- 6) Do not obstruct any ventilation holes. Do not attempt to insert anything into these openings. Provide adequate ventilation of at least 75mm all around the equipment.
- 7) Do not expose the equipment to water. If for any reason it gets wet then remove the power cord from the mains outlet and contact Linkam Scientific Technical Support. The equipment is not intended to be used outdoors.
- 8) Each product is equipped with a 3-wire grounded (earth) power plug or a free-end 3 wire power cord. The plug only fits into a grounded-type outlet. The free-end power cord should be connected to a correctly grounded 3-wire power outlet. Do not defeat the purpose of the grounded (earth) type plug.
Free - end power cords are colour coded as follows :

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

- 9) The power cord must be an appropriately rated and approved cord-set for the country it is being used in.
- 10) If any problems occur then remove the power cord from the mains outlet and contact Linkam Scientific Technical Support.
- 11) No attempt should be made to repair or modify the equipment in any way, as there are **no user replaceable parts**. Any servicing should be carried out by qualified service personnel. Do not remove the cover from the equipment unless the power cord has been removed from the mains outlet.

Symbol Reference



This safety symbol is seen on the back panel of the equipment and warns the user:
Not to make or remove any connections while the unit is powered on.
Not to remove the cover.
Servicing should only be done by qualified service personnel.

It can also be seen on the Dewar for liquid nitrogen and warns the user:
Of the potential dangers in handling liquid nitrogen, especially the exposure to skin and of asphyxiation in an enclosed space.
Please refer to your safety supervisor for special handling instructions.



This safety symbol is seen on the back panel of the equipment and warns the user:
That to avoid electric shock the power cord protective grounding conductor must be connected to ground.

Equipment Ratings

A.C. Mains Supply:	100-240~
A.C. Frequency:	47-63Hz
Max current:	1.7A
Fuse:	Current rating 2A
	Characteristic T
	Voltage rating 250V~
	Breaking capacity H

Technical Specification

Dimensions:	376Lx 243W x 87H (mm)
Weight:	3.6Kg (excluding cables)
Operating environment:	5~ 40°C, 80% relative humidity at 31°C decreasing linearly to 50% at 40°C (without condensation)
Tubing:	Silicon rubber

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 LNP95 does not require any regular maintenance. Contact Linkam should you require any maintenance.

Before cleaning the case or front panel of the LNP95, remove the mains cord from the mains outlet. Use a small quantity of isopropyl alcohol on a soft cloth and gently wipe the surface.

Product Registration

Register your Linkam instrument and software; please go to www.linkam.co.uk to fill in the Product / software Registration form. After registration, you can login to our website to download manuals and access 'How To Videos'.

Feedback

Your feedback will be greatly appreciated, please go to www.linkam.co.uk to fill in the Feedback form.

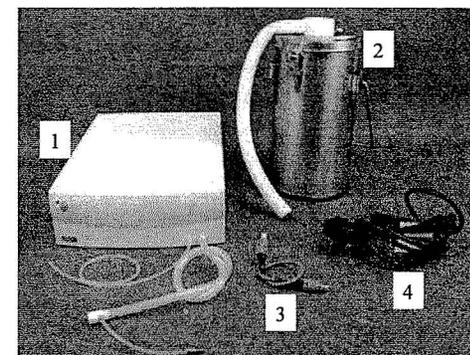
Introduction

Thank you for purchasing a Linkam instrument. Please take the time to read through the manual as it will help you to make the most out of the equipment.

LNP95 Liquid Nitrogen Pump Cooling System

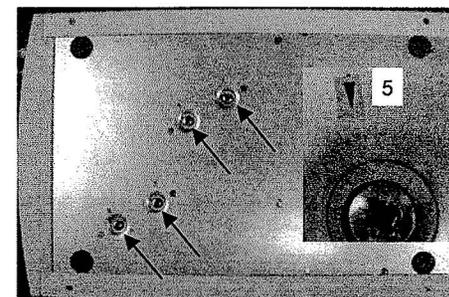
Please check that all of the following parts have been supplied with the LNP95 System.

1. LNP95
2. 2L Dewar with siphon assembly (7L and 25L is available)
3. Instrument bus cable
4. Power cord



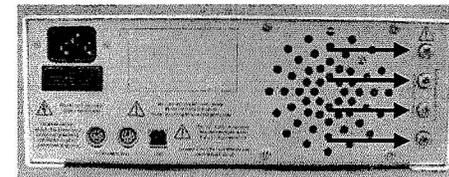
Remove Transit Screws

Before using the LNP95 Liquid Nitrogen Pump System, remove the 4 transit screws marked by small yellow labels (5), from the base of the LNP95. Transit screws shown by arrows in the adjacent image. These screws hold the pumps in place for shipping.



Keep the screws safe by screwing them into the holes on the back panel as shown by the arrows.

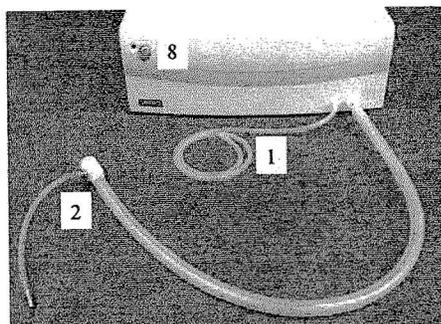
The screws must be replaced back into the transit holes on the base, when shipping back to Linkam for service or repair.



Front Panel Tubing Connections

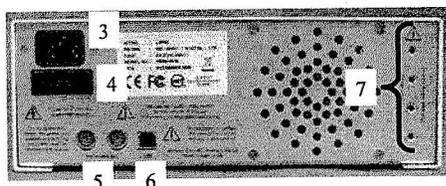
Refer to your hotstage manual for the connection of tubing.

1. Window purge tube
2. Stage purge tube and connector



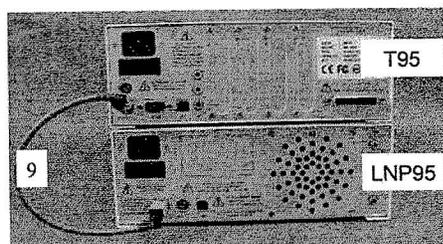
Back Panel Cable Connections

3. Main power socket
4. Fuse box housing
5. Instrument bus (CAN) Sockets
6. USB socket. Do not use
7. Transit screws storage



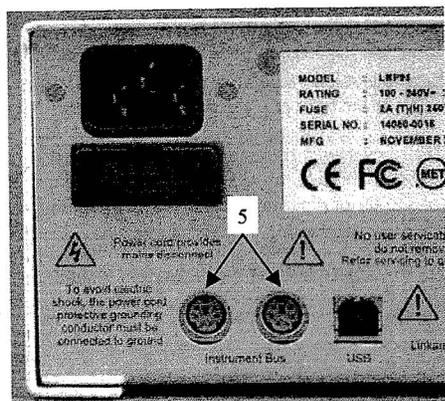
Connect the Instrument Bus Cable (9) between the LNP95 and T95 as shown.

Note: either of the purple coloured Instrument Bus Sockets (5) on the LNP95 can be used.



Plug the power cord into the power socket and push power switch (8) on the front of the LNP95 to turn it on or off.

LNP95 MUST BE SWITCHED ON BEFORE T95 SYSTEM CONTROLLER.



Filling the Dewar with liquid nitrogen

Please follow your health and safety manual for directions on how to handle liquid nitrogen and ensure that you have the correct safety equipment including gloves and safety goggles.

Fill the Dewar approximately 2/3 full and replace the lid with siphon attached.

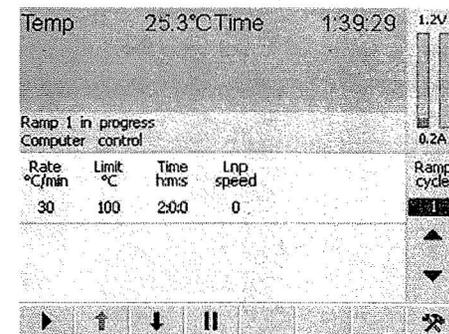
DO NOT FASTEN THE CATCHES

Wait for the nitrogen to stop bubbling before fastening the catches.

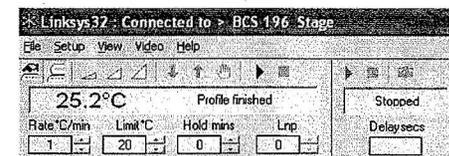
Take care when placing lid on a table to always have the black capillary pointing upwards. It is easily damaged which will impair N₂ flow.

Operation

The LNP95 is controlled by the T95 temperature System Controller that it is connected with. The T95 temperature programmer is either controlled by LinkPad touch screen display, or by the Linksys32 computer software, details of how to control the LNP95 can be found in the manuals for these products.



LinkPad touch screen display



Linksys32 computer software

Appendix

Spares and Accessories

0994	DF	Standard 2L Dewar
9588	DF2	Standard 2L Dewar (incl. Lid and Siphon Assembly) Specify Stage Model
9590	SSDF2	2L Stainless Steel Dewar (Incl. Lid and Siphon Assembly) Specify Stage Model
9592	D2L	Dewar Siphon Assembly 39cm (no Dewar lid and need to specify Stage Model) - achieves a stage temperature of -196°C on THMS600/FTIR600/LTS350
9524	D2L	Dewar Siphon Assembly 80cm (no Dewar lid and need to specify Stage Model) - achieves a stage temperature of -120°C on THMS600/FTIR600
9808	D2L	Dewar Siphon Assembly 100cm (no Dewar lid and need to specify Stage Model) - achieves a stage temperature of -50°C on THMS600/FTIR600
9598	DS2	Extra Long Dewar Siphon Assembly for 25L Taylor Wharton "Classic" Dewar
5647	TWC25	25L Dewar Flask - Taylor Wharton Classic (without siphon)
9599	LNPTU	Silicon Tubing & Connectors between LNP & Stage
7018	SILTU1	Silicon Purge Tube LNP to Stage (2mm ID x 4mm OD)
19075	CANC	Instrument Bus (CAN) Cable to connect LNP95 and T95
9850	DF7	Standard 7L Dewar (incl. Lid and Siphon Assembly) Specify Stage Model
9851	DF7	7L Dewar (incl. Lid but no Siphon Assembly)
9852	D7L	Siphon Assembly for 7L Dewar need to specify Stage Model

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