



PERISTALTIC PUMPS VARIABLE FLOW

Model D-21V

INSTRUCTION MANUAL



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CE

DINTER^{sls}

c/ Encarnació, 123 -125. Tel. +34 93 284 69 62. Fax +34 93 210 43 07
e-mail: dinter@dinko.es www.dinko.es 08024-Barcelona

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1-GENERAL INTRODUCCION

Peristaltic pumps pump all kinds of liquid substances without meeting mechanical elements as in other pumps. They are simple in their handling and suppose a minimum maintenance expense.

The pumped substance is impelled inside an elastic tube thanks to the emptiness generated by a set of rotors that oppress and release the surface of the tube successively.

The liquid passes directly from its container to another without any contamination, avoiding back to stop the pump because the tube is oppressed by the rollers.

The nature of some corrosive substances or other characteristics that prevent the use of conventional pumps make peristaltic pumps for the transfer or dispensation of such substances.

Flows are obtained from 0,01 ml/minute up to 2000 ml/minute.

A large number of tubes or hoses of different size are available with materials resistant to various conflicting substances.

2- PACKING LIST

Description	Code	Quantity
Peristaltic Pump D-21V	1. 9730.XX	1
Tube/terminal		3
Cable plug		1
Rechargeable Battery 4,5A		1*
Charger 12V-3Amp		1*
Instruction Manual		1
Warranty		1

* Only code 1.9730.12

3-RECEPTION

To guarantee a correct reception, use of the device, and user security, we recommend reading this manual in detail before the device and subsequent use and especially the following points:

3.1-The manual

This manual must be kept permanently within reach of the user of the equipment.

3.2-Unpacking

Carefully unpack the device, checking that the content coincides with the packaging list.

Immediately notify any eventuality.

3.3-Explosive mixtures

Avoid the use of the device when there is the possibility of generating mixtures of explosive and flammable gases.

The ATEX Directive is not contemplated.

3.4-Responsibility

In accordance with the European use regulations 89/655/EEC, the lack of adequate maintenance and the alteration or change of some component, exempts the manufacturer from any responsibility on the damages that could occur.






3.5-Repearances

The devices to send to Dinko's technical services must be clean and disinfected.

Otherwise, they will be rejected and returned in charge of the owner.

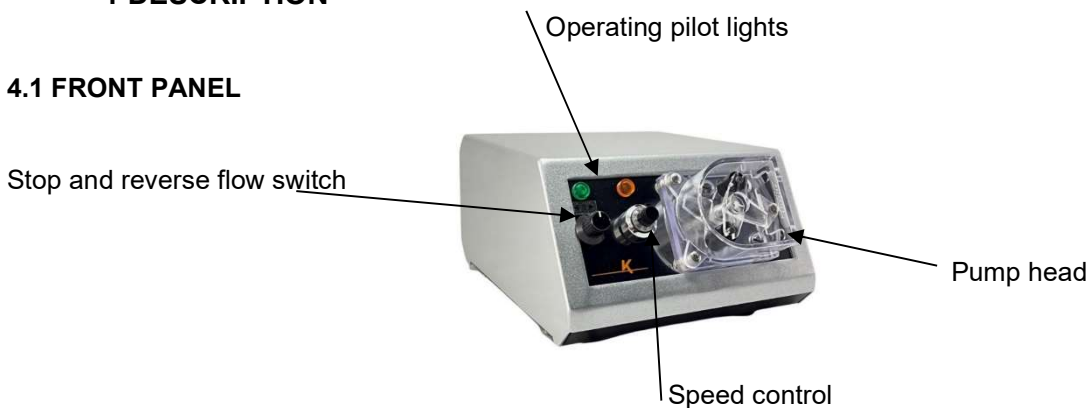
3.6-Signs and symbols

At all times attend the signs and symbols of danger warning that will appear in this manual or on labels attached to the pump body such as those shown below.

SIGNS/ SYMBOLS	INTERPRETATION-MEANING
	Avoid finger contact with moving parts
	Danger-Risk-Caution
Before remove cover PULL-OUT plug 	Before accessing inside of the Pump, disconnect the power cable from the mains.
	Possible overheating - Do not touch
230V AC 50/60Hz	AC power supply voltage
110V AC 60Hz	AC power supply voltage
12V DC or 24V DC	DC power supply voltage
	<p>Disposal of waste electrical and electronic equipment by users within the European Union.</p> <p>It is not disposable as household waste.</p> <p>Deliver to the agency for the recycling of electronic equipment.</p> <p>Contact the local office, the store where you purchased the equipment, or your household waste disposal service.</p> <p>Recycling helps conserve natural resources.</p> <p>Make sure it is recycled protecting human health.</p>

4-DESCRIPTION

4.1 FRONT PANEL



Unitized instruments contain a peristaltic pump, speed control, reverse flow and stop switch, rear on-off switch and remote-control connector, in a single case.

The peristaltic pumps D-21V has a type of pump head that facilitates the extraction of the tube when it should substitute or for sterilisation.

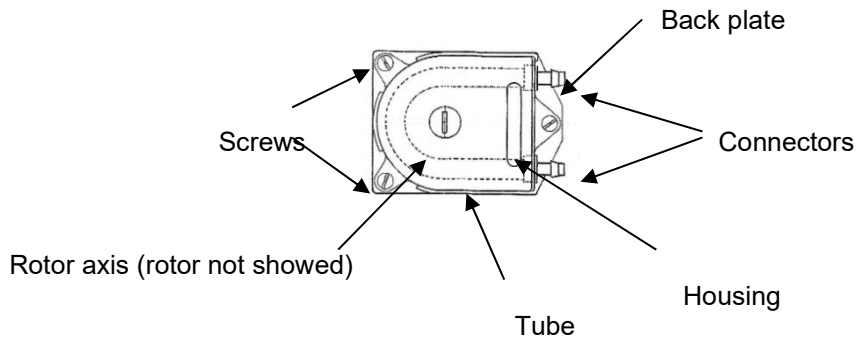
The pump head 50 retires the housing extracting the three screws.

To see head pump opening details below for pump head 50-2r.

Each pump admits four or six tube sizes giving the flows ranges in the table.

Pumps incorporate input connector for foot switch.

4.2 PUMP HEAD 50



5- OPERATING

1. - Select the tube diameter.
2. - Remove the plastic cover of the pump head.
3. - Installing the tube with their terminals of fixation.
4. - When you settle the new tube, should remain centred on the rollers to avoid the rotor to pinch the tube.
5. - Place the cover again.
6. - With each pump the sizes of tube are giving that it could admit except 0,5 and 0,8mm inside diameter.
7. - The feeding and discharge tubes could have any thickness wall, but the tube that settles in the pump head should have 1,6mm for pumps with pump head 50-2r.
10. - Make sure that the voltage is 230V.
11. - Insert feeding and discharge tubes in the terminals of the pump head.
12. - Choose the speed acting on the 0-99% potentiometer speed control. Speed control can be set 0 - 99% in 1% increments with 100% repeat accuracy.
13. - Put ON the pump using the power switch located at the rear panel.

Because the friction of the tubes with the rollers increases with the tube diameter, the adjustable minimum speed increases as much as big is the tube.

It is convenient to lubricate the tubes lightly with silicone grease to use smaller speed and increase the life tube.

It is not convenient to use smaller speed although the motor starts up since in any moment it can stop and to cause an excessive heating of the regulation circuit that could be damaged if it remains in this situation for a lot of time. Select a speed.

Choose an engine speed slightly above the lowest observed speed.

Consult the table of dosages. Install the appropriate tube.

5-1 FLOW TABLE.

Code ▼	Head	rpm	0,5 mm	0,8 mm	1,6 mm	3,2 mm	4,0 mm	4,8 mm	6,4 mm	Tube Ø
1.9730.30	50-2r	30	0,1-0,8	0,3-2,0	1,5-9	4,3-30	6,8-48	10-67	15-100	ml/min
1.9730.03	50-2r	80	0,4-2,5	1,1-6,3	4,2-30	13-94	20-147	25-210	36-300	
1.9730.00	50-2r	240	1,0-5,5	2,6-14	8-70	26-240	41-337	70-556	88-700	
1.9730.12*	50-2r	240							88-700	

Table dates with water fluid and silicone tube at normal conditions. *12V DC with rechargeable battery and charger

5-2 BATTERY MODEL

Proceed to preload the internal battery of the pump according to the following instructions:

- 1 - Move the main switch of the peristaltic pump to OFF
- 2 - Connect the battery charger cable connection on the back of the peristaltic pump.
- 3 - Connect the network cable from the battery charger to 230V AC.
- 4 - Press the charger switch to position I. The red LED indicates proper contact is highlighted. The charging time is 2 hours 30 minutes.
- 5 - Once the charging time to come off in the following order passed: press the power switch to ON, disconnect the network cable and finally the cable from the back of the pump.

If the supplied cables must suffer deterioration should request the manufacturer or check its replacement with the service to avoid possible risks.

The battery charger 12 V incorporates a thermal fuse and resettable internal switch to ensure user protection against short circuit and reverse polarity.

The duration of the charge depends on the diameter of pipe used. Average is estimated at about 10 hours.

ATTENTION

- 1 - The charger is for indoor use. Do not expose to rain.
- 2 - Use it only for charging rechargeable batteries
- 3 - Remove him from explosive gases and sparks

Specifications battery

Input: 230V 50/60 Hz
Output: 12V
Charging current: 3000mA, 36VA maximum

6- MAINTENANCE / SPARES

Before proceeding to any exam or repair it is necessary to disconnect of the mains. All initiative should be made by qualified personnel to avoid bigger wrongs.

Trust their apparatus to a technical service authorized by *DINKO Instruments*.

The motor and block of the dispenser pump don't require lubrication for what they don't have maintenance. It is convenient to lubricate the rollers lightly with silicone grease.
The tubes should be replaced periodically to avoid the break.

Codes for calibrated tube of 1.6mm thickness wall, 1 meter.

Tube ▼ Ø ►	0,5mm	0,8mm	1,6mm	3,2mm	4,0mm	4,8mm	6,4mm
PHARMA			1.8801.16	1.8801.32		1.8801.48	1.8801.64+
TYGON A-60-C			1.8740.16	1.8740.32		1.8740.48	1.8740.64+
TYGON A-60-G			1.8750.16	1.8750.32		1.8750.48	1.8750.64+
SILICONE	1.8760.05	1.8760.08	1.8760.16	1.8760.32	1.8760.40	1.8760.48	1.8760.64+
VITON ®		1.8790.08	1.8790.16	1.8790.32		1.8790.48	1.8790.64+

+ Intermittent use on pump head 50

In case you need tubes with diameters greater than 0,8mm Ø, see the tube table and acquire the white PP connectors that are needed:

White PP connector for Ø tubes between 1,6 and 4,8mm Ø. Code 1.0077.22 in bag of 10 units

White PP connector for Ø tubes between 4,8 and 6,4mm Ø. Code 1.0077.15 in bag of 10 units

White straight PP connector/terminal / splice for Ø tubes between 6,4 and 9,6mm Ø. Code 1.0080.05, 10 units

Pump head 50. Codes for tubes and connectors. Packs of 5 pieces.

Tube ▼ / Diameter ►	0,5mm	0,8mm	1,6mm	3,2mm	4,0mm	4,8mm	6,4mm
Tygon A-60-C			1.8745.16	1.8745.32		1.8745.48	1.8745.64+
Tygon A-60-G			1.8755.16	1.8755.32		1.8755.48	1.8755.64+
Silicona	1.8765.05	1.8765.08	1.8765.16	1.8765.32	1.8765.40	1.8765.48	1.8765.64+
Vitón®		1.8795.16	1.8795.16	1.8795.32		1.8795.48	1.8795.64*

* Packs of 0,5mm. and 0,8mm. 3 pieces + Intermittent use on head 50

6.1 SPARES

Back plate 50-2r. Code 1.0077.04

Battery 12V. Code 1.0066.12

Charger battery 12V-2.5A. Code 1.0066.02

Foot switch. Code 1.9740.01

Motor 50, 24V DC 80rpm. Code 1.0077.10

Motor 50 12V DC 240rpm. Code 1.0077.18

Timer - Cyclic, 230V 50/60Hz. Code 1.8119.00

Motor 50, 24V DC 30rpm. Code 1.0077.24

Button for flow reversing switch. Code 1.0025.01

Flow reversing switch and stop. Code 1.0015.05

Housing 50-2r. Code 1.0077.03

Motor 50, 24V DC 240rpm. Code 1.0077.01

Rotor 50-2r. Code 1.0077.11

Transformer 12+12. Code 1.0095.02

7- CHANGE OF TUBES

Press OF switch. Remove the three screws. To take out the tube together with their terminals of fixation.

The new tube should be centred on the rollers to avoid that the rotor breaks it.

To take advantage of the turn of the rotor to introduce the new tube. It is avoided this way to force the motor-axis when one tries to place the tube with the stopped rotor.

Place again the cover.

The supply and discharge tubes can have any thickness wall, but the tube that settles in the pump head should have a thickness wall of 1,6mm.

All the pumps are supplied with medical /alimentary degree silicone tube according to FDA norms and USP. It can sterilise.

Range of use until 130°C and 80°C for peristaltic medium duration.

IMPORTANT: The tubing's for the pump head should be greased lightly with silicone grease

Figure nr. 1 show from left to right the head cover (housing) 50 with tube installed, a connection / tube representing all tubes from 1,6 to 6,4mm diameter and a connection / tube corresponding to 0,5 and 0,8mm Ø tubes provided of loading / unloading capillaries of stainless steel



Fig.nr. 1

PHARMA	<p>Autoclavable multiple times. ETO and Gamma sterilizable. Medical-food grade, class VI USP, 21CFR 177.2600 and FDA. Not hemolytic. Excellent resistance to chemicals. ISO 10993. Low permeability and good resistance to abrasion. Long duration. Use temperature, -51°C to 132°C. Beige</p>
TYGON A-60-C ®	<p>Autoclavable repeatedly. Long life. Compatible with disinfectants and cleaning products. Resistant to acids, alkalis, oxidizing agents such as Oxygen, Ozone, Peroxides and Hypochlorite's. Food grade Temperature of use -59°C to 135°C. Beige colour</p>
TYGON A-60-G ®	<p>Great resistance to fatigue and abrasion. Compatible with Ozone, UV light and disinfectants. Resistant to acids, alkalis and alcohols Use for vacuum. Temperature to use -59°C to 135°C. Black colour</p>
SILICONE	<p>Autoclavable The most versatile tube. Platinum Cured Silicone. Medium duration. Medical / Food grade. Excellent biocompatibility. Maximum temperature 140°C. Translucent</p>
VITON ®	<p>Appropriate for acids and non-acetonic solvents. Maximum temperature 300 °C. Black colour</p>

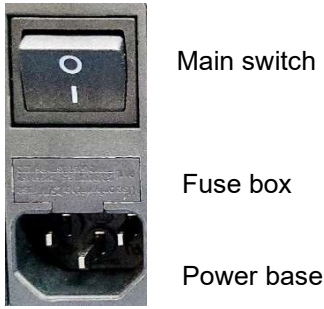
8-ORDERING INFORMATION

Peristaltic pump D-21V, pump head 50-2r. 30rpm. 230V 50/60 Hz. Code 1.9730.30
Peristaltic pump D-21V, pump head 50-2r. 80rpm. 230V 50/60 Hz. Code 1.9730.03
Peristaltic pump D-21V, pump head 50-2r. 240rpm. 230V 50/60 Hz. Code: 1.9730.00
Peristaltic pump D-21V, pump head 50-2r. 240rpm. 12V DC with battery and charger. Code 1.9730.12
Cyclical timer, stop and run times: 0.01 seconds to 99.99 hours. Code 1.8119.00

9. CHANGE FUSES

The fuse box is part of the power base located at the rear of the command unit.

See Figure.



Pry with a screwdriver between fuse holder box and the upper part of the power supply base to remove the fuse holder box.

The box remains attached without being fully extracted.

There are two fuses.

Press the box in to restore its original position.

Remember to replace used fuses.

10-TROUBLESHOOTING

The following table of faults, their causes, and possible solutions, does not pretend to cover all possibilities.

However, user annoyances that have easily avoidable causes can be avoided.

PROBLEM	CAUSE	SOLUTION
It does not start, and the pilot lights do not light	Lack of power Blown fuse Unknown	Check cable and plugs Change fuse Request Technical Service
The rotor of pump head does not turn, but the lamps are lit	Broken tube that prevents it Defective motor	Replace tube Request Technical Service
Rotor rotates, tube is not broken, but does not pump	Exhausted, worn tube Insufficient tube wall Empty feed tank Chemical incompatibility of tube	Replace tube Install suitable tube Load the tank Install suitable tube
Flow below theoretical	High viscosity Excessive pump circuit Internal obstruction in the tube Insufficient tube wall High discharge back pressure Chemical incompatibility of the tube	Use a larger tube Ø Shorten circuit Clean up Install suitable tube Lower back pressure Choose suitable tube
Head tube drifts	Small tube diameter Faulty tube installation	Choose suitable tube Check the bindings

11-WARRANTY

WHAT IS COVERED:

This product is guaranteed to be free of defect in workmanship and materials under normal use for a period of one year from the date of purchase by the consumer.

During the warranty period, the manufacturer will repair or, at their option, replace at no charge a product that proves to be defective, provided you return the product, shipping prepaid, to an authorized service centre.

WHAT IS NOT COVERED:

Instruments subjected to misuse, buse, neglect or unauthorized repair or modifications will be excluded from this warranty.

Also excludes expendables, consumables.

The liability of *DINKO* is limited to repair or replacement and in no event shall *DINKO* be liable for any collateral or consequential damages or loss.

12- "CE" DECLARATION OF CONFORMITY

DINTER S. A / *DINKO Instruments* c/ Encarnació, 123-125 / 08024-Barcelona

Declare that the products mentioned in attached list, to which this declaration relates, comply with the essential safety requirements of the relevant European Directive.

- Low Voltage Directive D2006/95/CEE, of December 12, 2006

-Essential requirements of Annex I of Directive for Machinery 2006/42/CEE, of May 17, 2006

- Electromagnetic compatibility (EC), relative to the Directive for electromagnetic compatibility 2004/108/CEE, of December 15, 2004

-Safety for electrical devices of measurement, control and laboratory use. Requirements concerning to CEM. EN 61326

-Safety rules for the electric devices of measurement, control and laboratory use. Part I. General requirements EN 61010-1

Mounting and connecting instructions defined in catalogues and technical data sheets must be respected by the user

Name:	Joan A. Bravo	Josep X. Sensada
Position:	Technical Manager	Quality Manager

Signature:



Model: Peristaltic Pumps D-21V

OTHER DINKO APPARATUS

- Colorimeters
- Extractor for mince analysis
- Heater Metallic Blocks
- Heater Plates
- Infrared Ovens
- Kits for Water Analysis
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- Peristaltic Pumps
- Photometers
- Respirometers
- Rod Stirrers
- Rotary Stirrers
- Sand Baths
- Spectrophotometers
- Temperature Controllers
- Timers
- Trichinoscope
- Turbidimeters
- Turn Dishes
- Vacuum Pumps



DINKO Instruments

c/ Encarnació, 123-125.

08024- Barcelona. Phone: +34 93 284 69 62 / Fax +34 93 210 43 07

e-mail: dinter@dinko.es

www.dinko.es