

PL220

Prior Automated Oiler



Manual Version 1.04

Table of Contents

SECTION 1 IMPORTANT SAFETY INFORMATION	3
1.1 IMPORTANT SAFETY INFORMATION	3
SECTION 2 UNPACKING & INSPECTION	4
SECTION 3 INSTALLATION	
3.1 IDENTIFYING THE PARTS OF THE PL220 CONTROLLER.	5
3.2 IDENTIFYING THE PARTS OF THE DISPENSING TIP ASSEMBLY.	6
3.3 SET UP OF PL220.	7
3.4 POSITIONING OF OIL DISPENSER	9
3.4 INSTALLATION OF COM PORT	11
SECTION 4 SOFTWARE COMMANDS	13
SECTION 5 REPLACEMENT PARTS	15
SECTION 6 MAINTENANCE	15
SECTION 7 SERVICING	16
SECTION 8 TECHNICAL SPECIFICATIONS	16
SECTION 9 TROUBLESHOOTING	16
SECTION 10 RETURNS AND REPAIRS	17
APPENDIX	
Declaration of Conformity	17

SECTION 1

IMPORTANT SAFETY INFORMATION

SAFETY WARNINGS

Always observe the following safety precautions



This symbol, used on the pump and in this manual, means: Caution, refer to accompanying documents

- Use only as specified by these operating instructions or the intrinsic protection provided by the unit may be impaired.
- Before using the stage system, please follow and adhere to all warnings, safety and operating instructions located on the product and in this User Manual.
- **DO NOT** expose the product to water or moisture while energised.
- **DO NOT** expose the product to extreme hot or cold temperatures.
- **DO NOT** expose the product to open flames.
- **DO NOT** allow objects to fall on or liquids to spill on the product.
- Connect the AC power cord only to designated power sources as marked on the product.
- Make sure the electrical cord is located so that it will not be subject to damage.
- Make sure the system is installed so that the front panel power switch is easily accessible.
- Do not position equipment so that it is difficult to disconnect from power supply.
- To reduce the risk of damage, unplug the product from the power source before connecting the components together.
- Use only the desk top power supply provided.
- Use only the proper type of power supply cord set (provided with the system) for this unit.
- This equipment contains no user-serviceable parts. Refer all repairs to qualified service personnel.
- **DO NOT** run the pump dry for excessive periods. Roller and tubing temperatures can exceed normal operating range.
- **DO NOT** run pump against a dead-end condition (closed discharge). This can lead to excessive roller and tubing temperatures and pressures

Rating: The pump is rated as Group II, Category 2 equipment, with a T4 temperature classification, for use in gas based environments.

Save this manual as it contains important safety information and operating instructions

SAFETY SYMBOLS



This symbol used on the pump means. Caution refer to accompanying documents.



This symbol used on the pump means. DO NOT allow fingers to contact moving parts.

Use only as specified by these operating instructions or the intrinsic protection provided by the equipment may be impaired

SECTION 2 UNPACKING AND INSPECTION

- Carefully unpack the unit and retain packaging to return equipment for servicing.
- If the equipment appears damaged in any way, return it to sales outlet in its original packaging. No responsibility for damage arising from the use of non-approved packaging will be accepted.
- Ensure all items and accessories specified are present. If not, contact your sales outlet or us at the address at the back of the manual.
 - Mains adaptor & PSU
 - PL220 Control Box
 - Oil Reservoir Bottle
 - Tubing (1m x 1.6mm bore x 1.6mm wall)
 - USB Cable
 - RS232 comms cable
 - Oil Dispenser Assembly

SECTION 3

INSTALLATION

3.1 Identifying the parts of PL220 Controller.

Fig 1

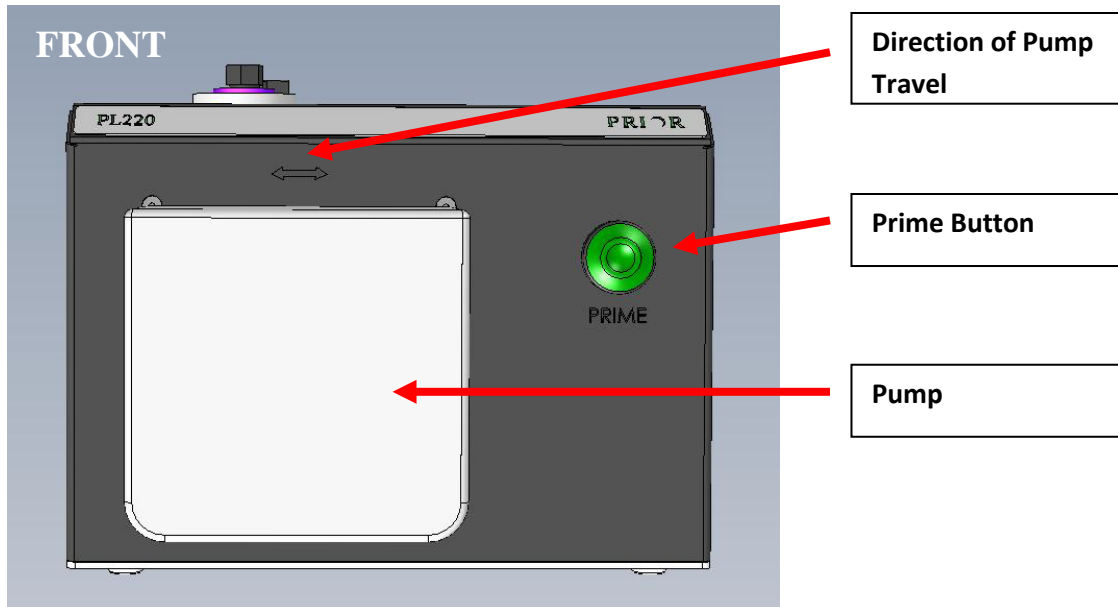
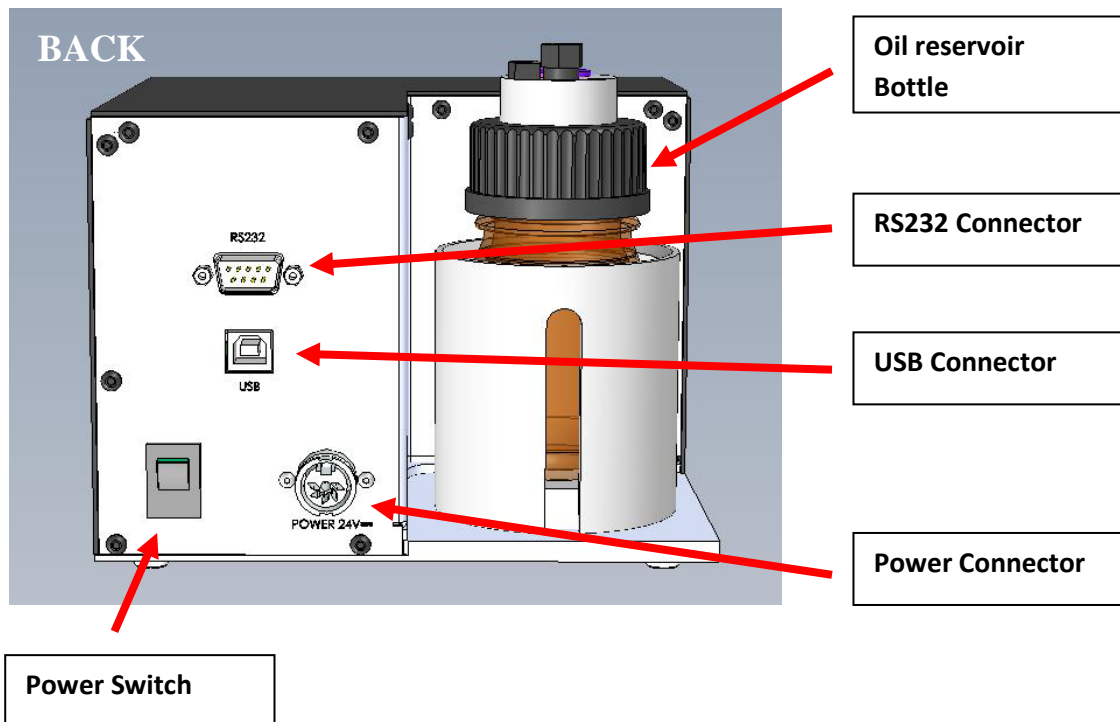


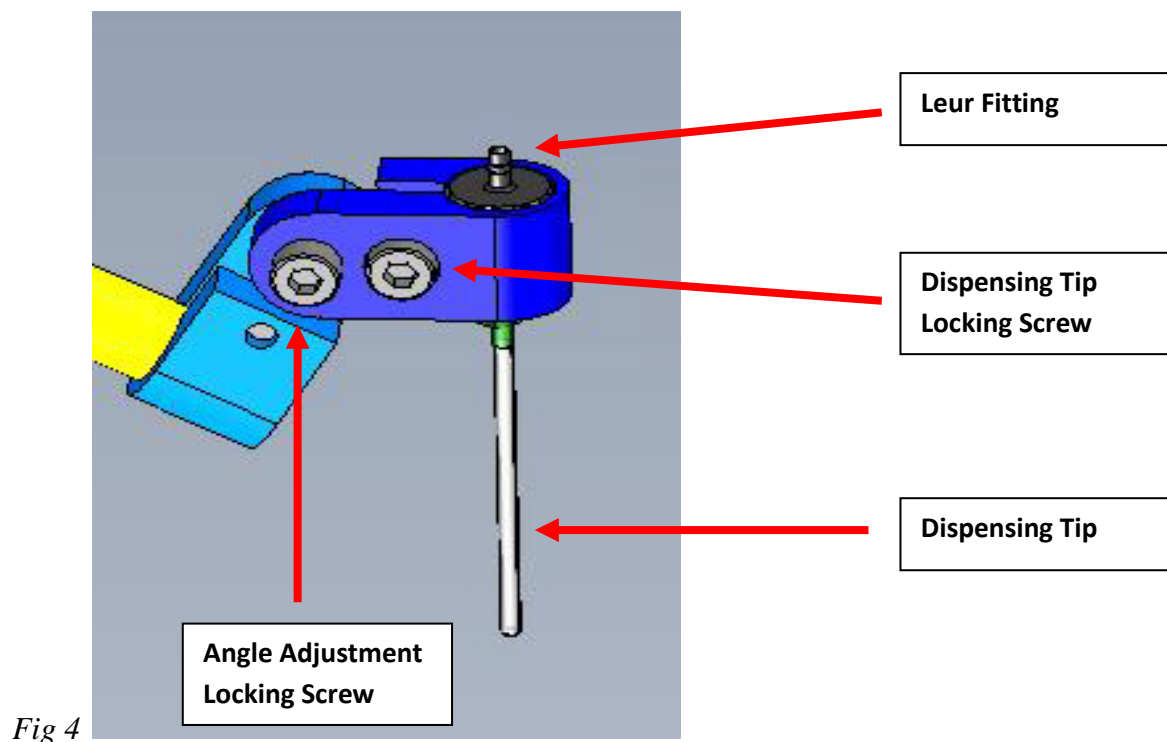
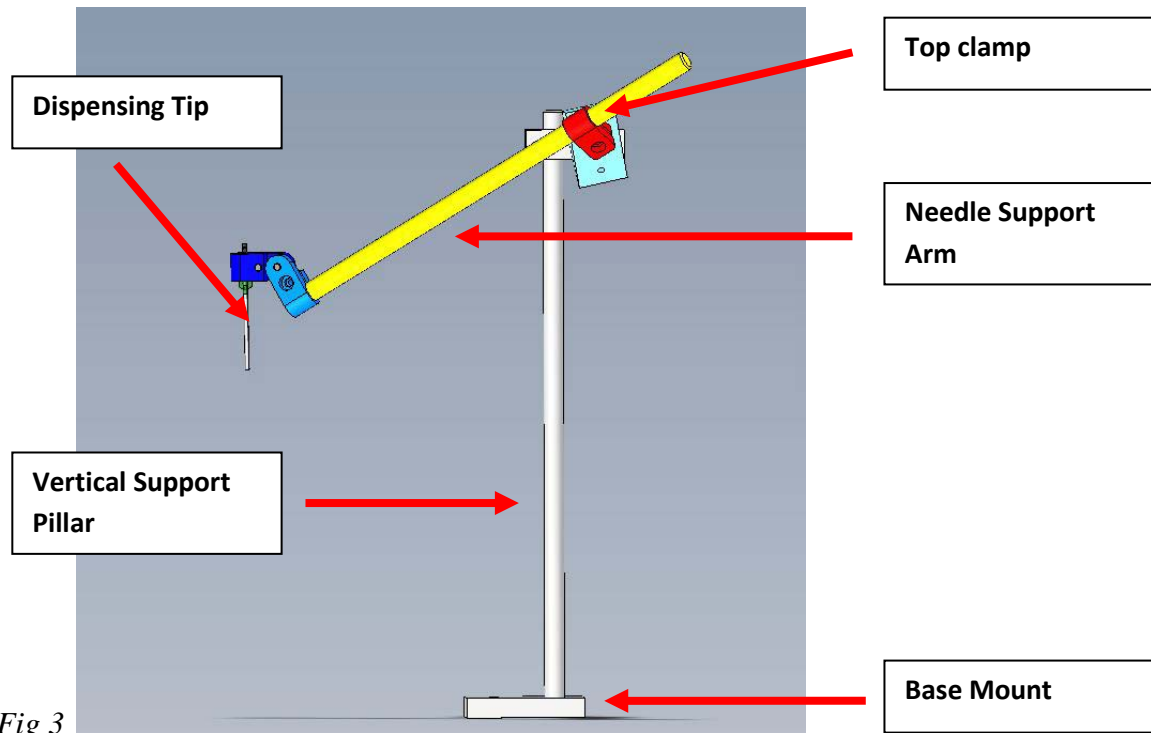
Fig 2



SECTION 3

INSTALLATION

3.2 Identifying the parts of Dispensing Tip Assembly.



SECTION 3

INSTALLATION

3.3 Set up of PL220

1. Place the bottle into the location as shown in *Fig 5*.

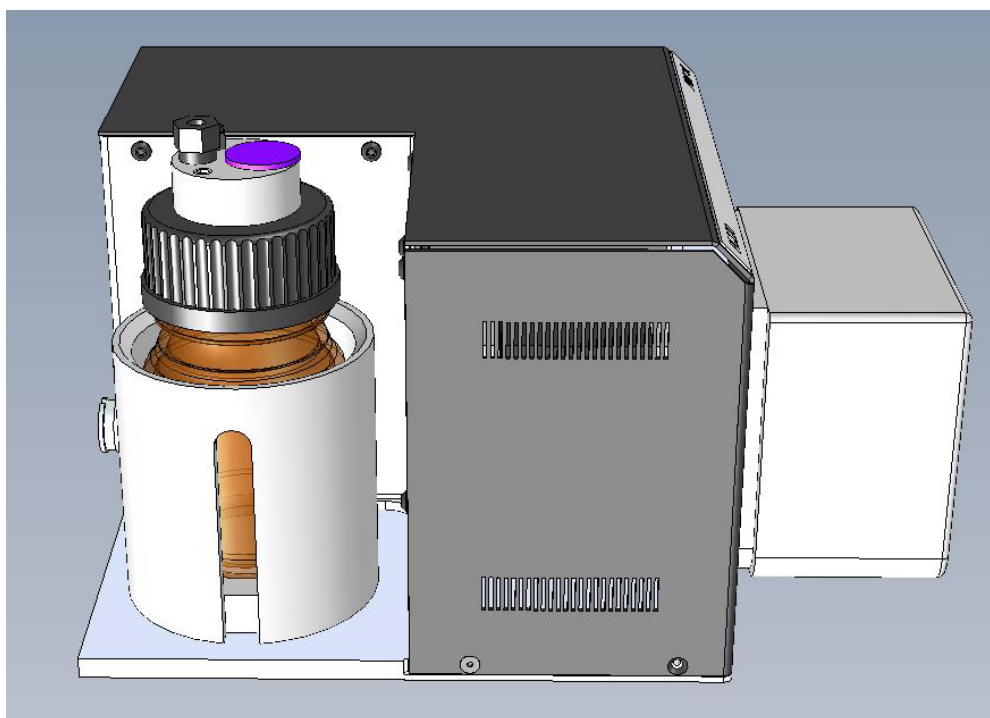


Fig 5

2. Fill the bottle with an appropriate amount of immersion oil. Only use recommended microscope immersion oil. (eg. *Cargille Microscope Immersion Oil - Type A*)
3. Place the open end of the tubing into the bottle and ensure it is situated close to the bottom of the bottle and immersed in the oil.
4. Insert Dispensing Tip into holder and tighten locking screw as shown in *Fig 4*.
5. Inset other end of tubing into the Leur type fitting of the dispensing tip, if not already fitted.
6. Plug the power cable into the power supply and connect the power supply to the appropriate connector on the back of the PL220, see *Fig2*.

SECTION 3

INSTALLATION

3.3 Set up of PL220 (cont.)



Fig 6



Fig 7

NOTE – It is important to minimise the distance between the pump and the dropper.

7. Place the tubing in the pump as shown in Fig 6.
8. Clamp the tubing in the pump as shown in Fig 7.
9. Switch the power to the unit on with the switch at the rear of the unit.
10. Place a receptacle under the dispensing tip, to catch any drops of oil, then press and hold the “PRIME” button.
11. Oil will be pumped from the bottle to the dispensing tip, wait until the tubing is completely full of oil before releasing the “PRIME” button.
12. Unclamp the tubing from the pump and check that there are no air bubbles within the tubing inside the pump. If bubbles are present continue to PRIME the pump until they disappear. Finally reclamp the tubing.
13. Make sure the tubing is securely fitted and no oil has leaked. If you see traces of oil try to reseat the tubing.

The system is now ready to pump oil.

SECTION 3 INSTALLATION

3.4 Positioning of the Oil Dispenser

It is important to position the Oil Dispensing assembly in a location that allows for the dispensing tips to be positioned over the slide at the load position of the stage.

Make sure stage is in loading position, and a slide is correctly mounted onto the stage.

Position the Oil Dispensing assembly close to the stage. **IMPORTANT – MAKE SURE IT DOES NOT OBSTRUCT STAGE MOVEMENT**

Fasten down the Oil Dispenser assembly using the 3 screws provided, see *Fig 8*

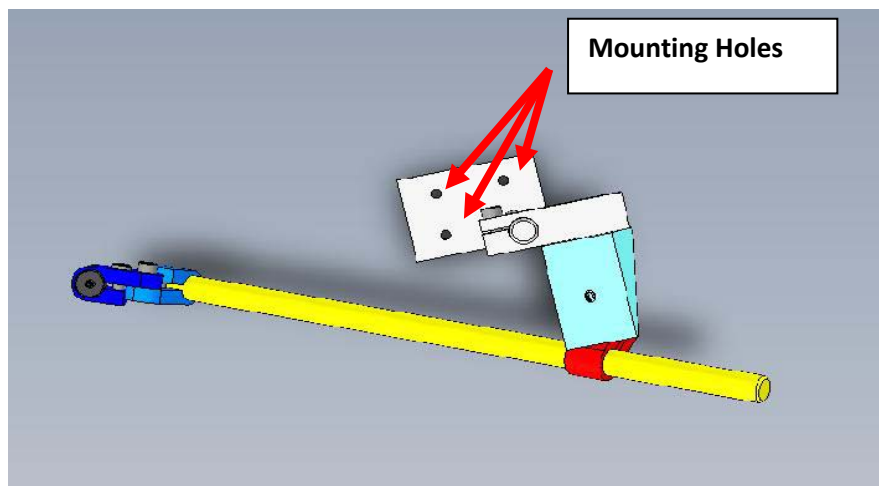
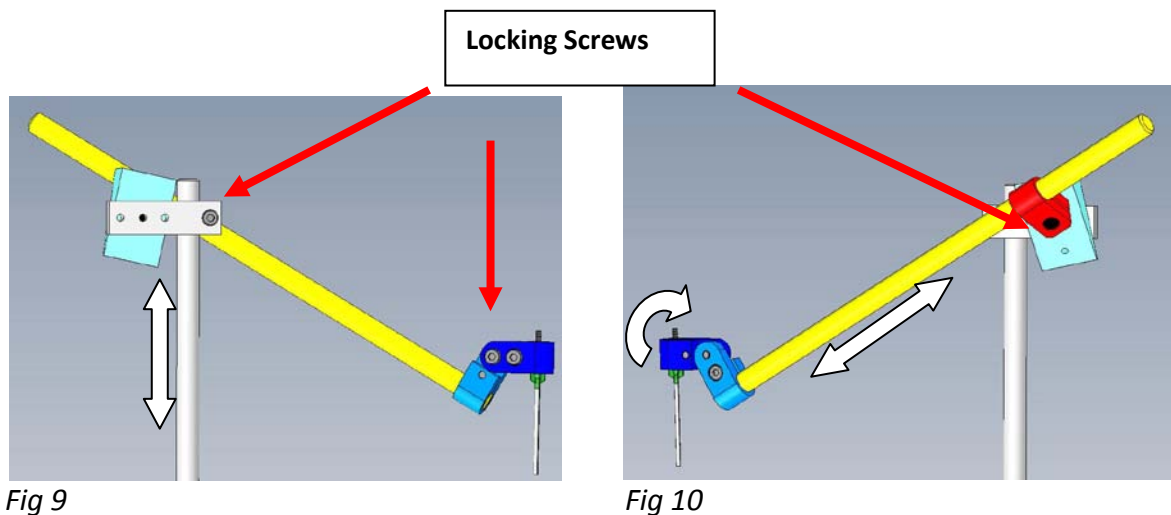


Fig 8

The Dispensing tip should be positioned over the slide. To adjust position loosen the appropriate locking screws, and move tip into desired position. See *Fig 9 & Fig 10* for directions of movement.



Position the Dispensing Tip over the slide approximately 15mm above the microscope slide.

Make sure it sits centrally above the microscope slide to avoid oil dripping over the edge of the sides, see *Fig 11*.



Fig 11

Once position of Dispensing Tip is achieved tighten all Locking screws.

The Oil Dispenser is now ready to use.

SECTION 3 INSTALLATION

3.5 Installation of COM Port

The RSR232 port is ready to use, with standard PRIOR settings:

Bits per second	9600
Data bits	8
Parity	None
Stop bits	1
Flow control	None

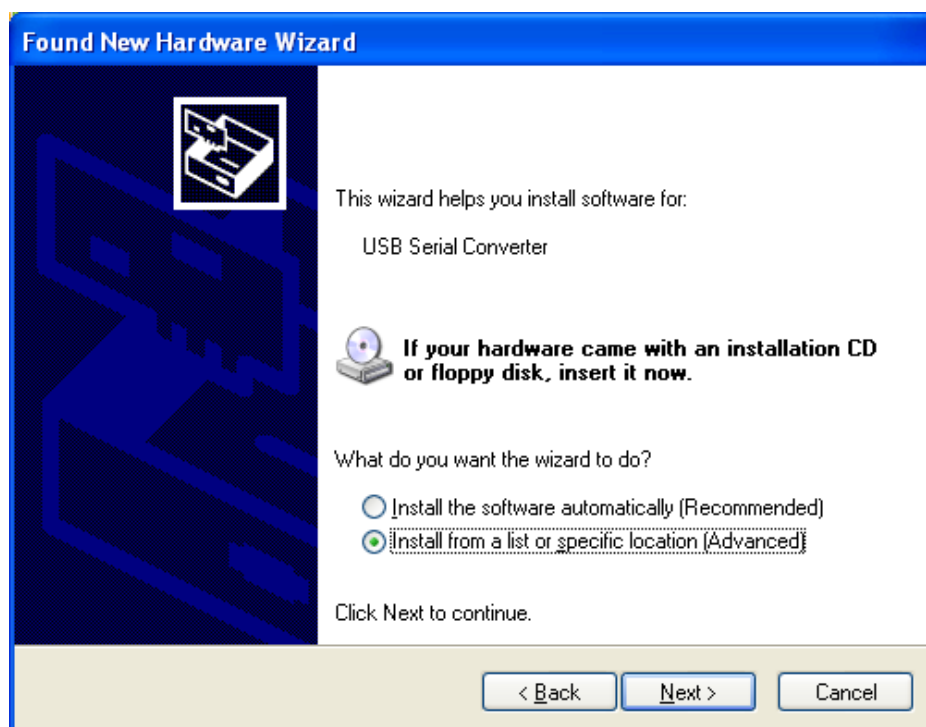
To install the USB port download the appropriate driver from the software download section of the website. PL220 is identified on the download page.

http://www.prioruk.com/downloadcentre/dc_software.html

Unzip the file to a safe location

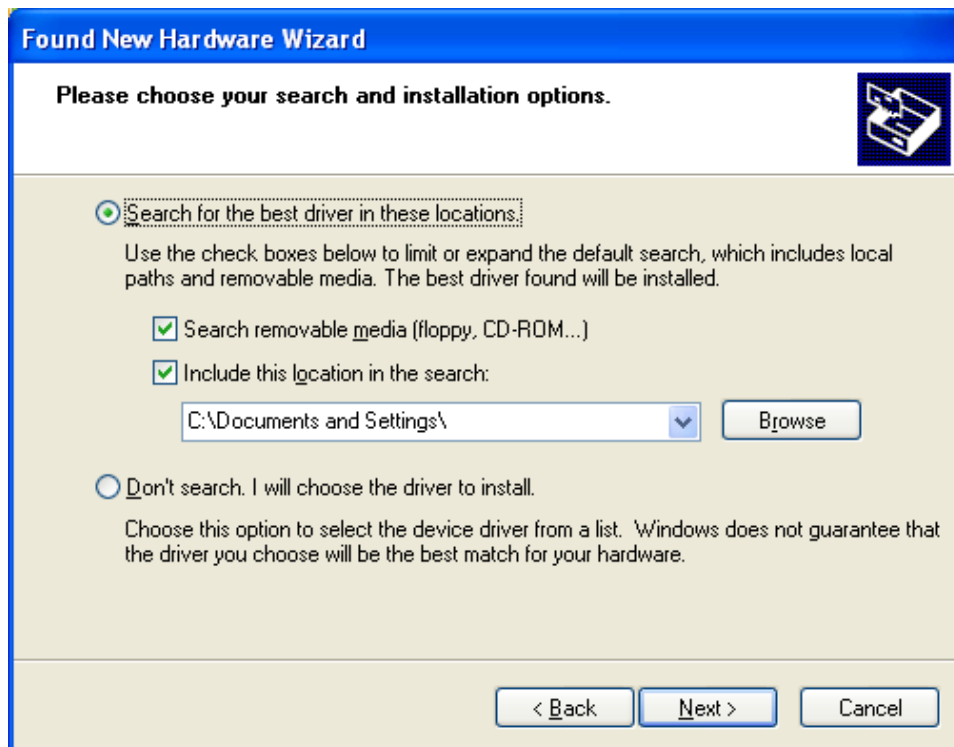
Plug in the USB cable to the PL220 and computer, power on the PL220.

When prompted select “No, not at this time”, then click NEXT.



Select "Install from a list or specific location (advanced)"

Browse to the location of the downloaded file, click NEXT



Click Finish,

SECTION 4 SOFTWARE COMMANDS

The Oiler accepts simple ASCII commands and is not supported by the Prior DLL.

Command	Arguments	Response	Description
?	None	Text string	<p>Reports information about the peripherals currently connected to the controller. The final line of information is always a line saying END. This allows for the addition of extra fields of information without effecting application software. Users should always read lines in until the END is seen.</p> <p>A typical response is shown below;</p> <pre> OPTISCAN INFORMATION DRIVE CHIPS 00000 JOYSTICK IS DIGIPOT ONLY STAGE = NONE FOCUS = NONEL FILTER_1 = NONE FILTER_2 = NONE SHUTTERS = 000 OILER = NORMAL END </pre>
\$		A	<p>Reports status as a decimal number and gives motion status of the PL220 oiler.</p> <p>A = 0 not moving</p> <p>A = 8 moving.</p>
DROP	None	a, b, c	<p>Reports setup parameters of DROP command:</p> <p>a = number of microsteps forward</p> <p>b = number of microsteps backwards</p> <p>c = number of microsteps per second when pumping with the PRIME button pushed.</p> <p>A full revolution of the motor is 50,000 microsteps, it is advised to do at least 1 revolution per dispense.</p>

DROP	a,b,c	0	<p>Set all of the values of the oiler.</p> <p>a = number of microsteps forward</p> <p>b = number of microsteps backwards</p> <p>c = number of microsteps per second when pumping with the PRIME button pushed</p>
DROP	a	0	<p>Delivers a specified “a” number of DROPS. Each DROP entails a forward and backwards motion of the pump. (The back movement is to stop oil dripping from the dispensing tip).</p>

SECTION 5 REPLACEMENT PARTS

<u>Part No.</u>	<u>Description.</u>
W4013	Flexible Dispensing Tip
W4014	Luer Fitting Screw
W4040	Tubing (1m x 1.6 bore x 1.6 wall)
H407	24v Desk top power supply

SECTION 6 MAINTENANCE

Clean only with a damp cloth. Do not wet or allow moisture to penetrate the unit. Do not use solvents

If aggressive liquids are spilled onto the pumphead, the head should be removed and cleaned with a mild detergent. Remove any tubing from the pumphead.

The same cleaning procedure should be used to limit the build-up of dust (which can become electrostatically charged and/or heated by friction).

The moving parts of the rotor should be checked from time to time for freedom of movement. Pivot points and rollers should be lubricated occasionally with Teflon lubricating oil.

The rotor shaft runs on sealed bearings which do not require lubrication

The unit is designed to comply with EN 61010-1. The mains adaptor can be flash tested. It is fitted with radio frequency interference suppressors. Therefore it is recommended that only a D.C. test be performed. The remainder of the kit contains only low voltage DC circuits and should not be flash tested. Ensure that the mains adaptor is disconnected from the encoder before testing.

SECTION 7 **SERVICING (only to be undertaken by a competent person)**

This equipment contains no user-serviceable parts. Refer all repairs to qualified service personnel.

Opening the product voids the warranty.

For approved service outlets contact us at the address at back of manual.

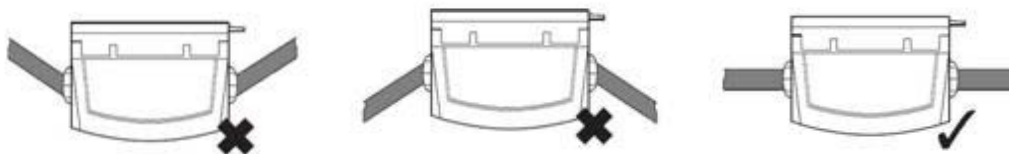
SECTION 8 **TECHNICAL SPECIFICATIONS**

- This equipment is for indoor use and is designed to be safe within an ambient temperature range 5 to 40°C with maximum relative humidity of 80%; relative humidity derated linearly to 50%rh above 31°C
- Dry weight 6.1Kg
- Dimensions (Not including tip support bracket) : 174mm (W) x 130mm (H) x 250mm (D).
- Supply voltage 100v to 240v, 50Hz to 60Hz

SECTION 9 **TROUBLESHOOTING**

Problem - Erratic or no flow of oil from the dispenser;

1. Check that there are no kinks or sharp bend in the tubing.



2. Check for air bubbles in tubing. If found please Prime the pump until air bubbles have been removed.
3. Check that the tubing is located inside the oil reservoir.
4. Check that the tubing is not split or burst.

SECTION 10 RETURNS AND REPAIRS

Should you experience problems with your ProScan System and want to send it back for service, warranty or otherwise, a Return Material Authorisation (RMA) number must be obtained from the appropriate Prior Scientific office before returning any equipment. For North and South America contact Prior Scientific Inc. and for the rest of the world call Prior Scientific Instruments Limited on the telephone numbers shown below.

Prior Scientific Instruments Ltd,
Unit 4,
Wilbraham Road,
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APPENDIX

Declaration of Conformity

Prior Scientific Instruments Limited declares that the following product:

PL220 Automated Oiler

Conforms to the following Directives and Standards

Machinery Directive 2006/42/EC

EN809:1998 + A1:2009

EN 61010-1:2010

Based upon test report no: PD-00159-02

EMC Directive 2004/108/EC

EN61326-1:2006 Class B

Based upon test report no: EMJ825 issue 3