

ATP

Auto-Tonometer/Pachymeter

User's Guide

Reichert

Federal Law restricts this device to sale by or on the order of a physician.

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Cautions and Warnings

Reichert, Inc. (Reichert) is not responsible for the safety and reliability of this instrument when:
- Assembly, disassembly, repair, or modification is made by unauthorized dealers or persons
- Instrument is not used in accordance with this User's Guide

WARNING: AN INSTRUCTION THAT DRAWS ATTENTION TO RISK OF INJURY OR DEATH.

WARNING: THE ATP SHOULD BE USED IN STRICT ACCORDANCE WITH THE INSTRUCTIONS OUTLINED IN THIS USER'S GUIDE. THE SAFETY OF THE OPERATOR AND THE PERFORMANCE OF THE INSTRUMENT CANNOT BE GUARANTEED IF USED IN A MANNER NOT SPECIFIED BY REICHERT, INC.

WARNING: IN ORDER TO ENSURE THAT CORRECT OPERATION OF THE ATP IS MAINTAINED, AND TO GUARANTEE THE SAFETY AND RELIABILITY OF THE INSTRUMENT, ANY REPAIR OR SERVICE MUST BE PERFORMED BY REICHERT, INC. OR AN AUTHORIZED SERVICE AGENT OF REICHERT, INC.

WARNING: THE ATP MUST BE PLUGGED INTO AN OUTLET WITH AN EARTH GROUND. DO NOT REMOVE OR DEFEAT THE EARTH GROUND CONNECTION ON THE ATP POWER INPUT CONNECTOR OR THE UNIT'S POWER CORD OR DAMAGE TO THE PACHYMETER NCT AND/OR INJURY TO THE OPERATOR OR PATIENT MAY OCCUR.

WARNING: THE AREA SURROUNDING THE ATP NOSEPIECE MAY CREATE A "PINCH HAZARD". DO NOT PLACE FINGERS INTO THE OPENING SURROUNDING THE NOSEPIECE.

WARNING: USE EXTREME CARE TO ENSURE THAT YOU DO NOT SCRATCH OR NICK THE PLASTIC PACHYMETER PROBE TIP, THIS PART IS NOT REPLACEABLE. ALWAYS COVER THE PROBE TIP WITH COVER PROVIDED. WHEN NOT IN USE STORE THE PROBE IN THE BLACK POUCH PROVIDED OR CLIP INTO THE HOLDER ON THE SIDE OF THE ATP. DROPPING THE PROBE MAY CAUSE IRREPARABLE DAMAGE.

CAUTION: AN INSTRUCTION THAT DRAWS ATTENTION TO RISK OF DAMAGE TO THE PRODUCT.

CAUTION: THE INTERNAL CIRCUITRY OF THE ATP CONTAINS ELECTROSTATIC DISCHARGE SENSITIVE DEVICES (ESDS) THAT MAY BE SENSITIVE TO STATIC CHARGES PRODUCED BY THE HUMAN BODY. DO NOT REMOVE THE COVER OF THE PACHYMETER NCT. WITHOUT TAKING PROPER PRECAUTIONS OR DAMAGE TO THE INSTRUMENT MAY OCCUR.

CAUTION: DO NOT USE SOLVENTS OR STRONG CLEANING SOLUTIONS ON ANY PART OF THE ATP OR DAMAGE TO THE UNIT MAY OCCUR. REFER TO THE MAINTENANCE SECTION FOR DETAILED CLEANING INSTRUCTIONS.

CAUTION: THIS INSTRUMENT IS NOT SUITABLE FOR USE IN THE PRESENCE OF FLAMMABLE ANESTHETIC MIXTURES, SUCH AS OXYGEN OR NITROUS OXIDE.

Contraindications:

Use of the ATP is contraindicated in instances of:

- Ulcerated corneas
- Following keratoplasty
- Following penetrating trauma

Symbol Information

The following symbols appear on the instrument:



CAUTION - Indicates that important operating and maintenance instructions are included in this guide.



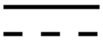
Type B Product Classification
Class 1 Equipment,
Continuous Operation



Alternating Current



Protective Earth



Direct Current



On / Off



Date of Manufacture

[REF]

Catalog Number



Waste of Electrical and Electronic Equipment

CE
0120

Compliance to Medical Device Directive 93/42/EEC



9800131

Authorized to mark given by Intertek ETL Semko for conformance with electrical standards

Introduction

Congratulations on the purchase of your new Auto Non-Contact Tonometer/Pachymeter (ATP).

The ATP is designed to measure both the intra-ocular pressure of the eye and also the thickness of the cornea. Combining these two features into one instrument will allow the user to obtain measurement data more efficiently from the patient. The instrument has an innovative automatic alignment system that reduces operator subjectivity and provides precise, repeatable IOP measurements.

This User's Guide is designed as a training and reference manual for operation, maintenance, and troubleshooting. We recommend that you read it carefully prior to use and follow the instructions in the guide to ensure optimum performance of your new instrument. If used properly, the ATP will provide you with fast, accurate and reliable measurements for many years.

Please retain this manual for future reference and to share with other users. Additional copies can be obtained from your authorized Reichert dealer or from the Reichert Customer Service department. Contact information is provided at the end of this guide.



Installation and Setup

Unpacking and Contents

Great care has been taken to deliver your ATP to you. The packaging was specially designed to transport this instrument. Please retain the packaging for future use in case transportation is required.
To remove the ATP:

1. Remove the top foam piece from the shipping container.
2. Remove the accessories.
3. Remove the upper foam piece from the ATP.
4. Lift the ATP out of the box using the handle-slots in the cardboard cradle.
5. Unfold the cradle, remove the plastic bag from the ATP and set the unit in a safe location.

The items listed below should be included in the ATP packaging container. If any of these items are missing, please contact the Reichert Customer Service Department. Contact information can be found on the back cover of this manual.

- ATP
- Dust cover
- Spare printer paper (2 rolls)
- Phillips-head screw driver
- Power cord
- User's guide
- Pachymeter probe
- Pachymeter probe storage pouch

Place the ATP on an adjustable height power-table in an environment that is clean, dry, temperature controlled (50 - 110° F / 10 - 43° C), and away from direct sunlight, sources of bright light, and Infrared light-generating (IR) devices.

Disengage Travel-Lock

The ATP's fully-automatic alignment system utilizes sophisticated electronic motors. To ensure that the motors are not damaged during shipment, the instrument features a travel-lock to hold the components securely in place.

1. Open the printer door by pushing on the door above the printer paper slot (Refer to # 4, page 8).
2. Remove the foam insert that secures the printer paper during shipment and store it with the packaging materials.
3. Insert the phillips head screwdriver into the travel-lock hole and locate the travel lock screw (Refer to # 12 page 8).
4. Turn the screw at least six full turns counterclockwise (the screw remains inside the travel lock hole).

Note: It is very important to disengage the travel-lock before applying power to the ATP.

Application of Input Power

1. Using the provided power cord, insert the female end into the power input receptacle located near the bottom of the instrument's side (Refer to # 9, page 8).
2. Plug the male end of the power cord into a wall outlet of the appropriate voltage. Input voltage must not exceed the range specified on the ATP data plate. You or your Authorized Reichert dealer may have to modify or adapt the male end of the power cord depending on your wall-outlet style.

Installation of Pachymeter Probe

1. Attach the Pachymeter Probe to the unit by aligning the red dots and then pushing the probe connector into its mating connector (refer to Page 8 for the location of the mating connector).

Note: Refer to Probe Removal Instructions located on page 28 when disconnecting the probe.

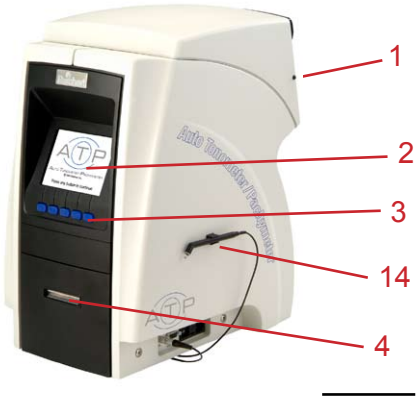
Installation and Setup

Sleep Mode

The ATP features a sleep mode to preserve the LCD screen life and conserve power. The instrument can be set to “fall asleep” after 5, 10, 20, or 90 minutes of non-usage. Press any button to bring the ATP out of sleep mode. Refer to page 13 for instructions on changing the sleep mode delay time.

Parts Identification

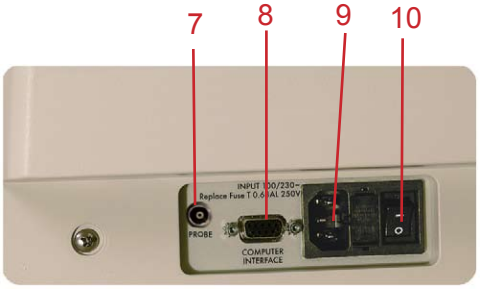
1. Canthus Marks: Alignment marks that serve as a reference for proper instrument-to-patient-eye height.
2. LCD Display: Color display providing alignment and measurement data.
3. Control Buttons: Buttons used to navigate menus and select functions.
4. Printer Door: Printer door - provides access to travel-lock and printer paper (push to open).
5. Forehead Rest: Comfortable left/right sliding headrest used for patient positioning and stabilization.
6. Nosepiece: Airtube where “air puff” originates. Green patient fixation target is located inside this tube.
7. Pachymeter Probe Connector: Plug pachymeter probe into connector.
8. RS-232C Port: Communication port that enables export of ATP data to external devices.
9. Power Input Receptacle and Fuse Holder: Input for AC power cord and location of fuses.
10. On / Off Switch: Rocker-switch used to turn the instrument on and off. The “up” position is on.
11. Printer Paper Advance Button: Push quickly to set printer online / offline. Hold to advance the paper.
12. Travel Lock: Locking mechanism that protects internal components during shipment.
13. Printer: Internal thermal printer for hard-copy output of measurement results.
14. Pachymeter Probe - Probe used to acquire pachymetry measurements.



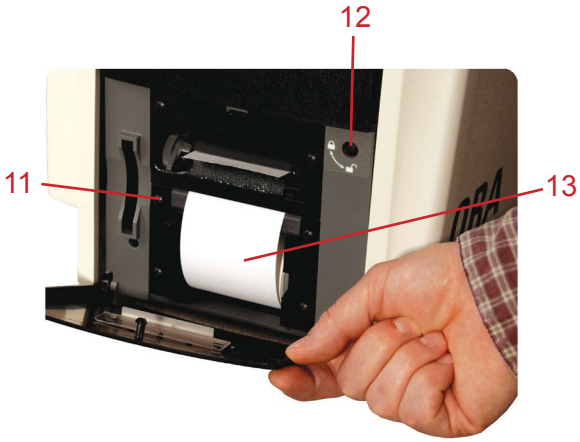
Operator Interface



Patient Interface



Connections & Power



Travel-lock & Printer

Installation and Setup

The ATP features icons that represent the functions of the buttons below them. Some buttons perform different functions on different screens. Icon names are shown in **bold red text** throughout this guide.

Setup / Navigation Icons:

The following icons are used on the ATP setup screens to navigate the menus, select options, modify settings, and return to a previous screen.



Mode Icons:



Mode - Press to view and navigate the various modes of the ATP



Service - Press to view and navigate ATP service options



Setup - Press to view and navigate ATP setup options



Lock - Press to “park” the alignment system to enable engaging travel-lock prior to shipping.



Help - Press to view and navigate the ATP help screens

Measurement and Data Review Icons:



Demo - Press to initiate a demo “puff”, if desired, during patient preparation



IOP - Press to initiate the Tonometry (IOP) measurement process



µM - Press to initiate the Pachymeter (µM) measurement process



Measure - Press to initiate the auto alignment and IOP measurement process



Erase - Press to clear measurement data from the screen



Print - Press to print measurement results



Review - Press to review current numeric measurement data



Select Eye - Press to select which eye to measure in pachymeter mode

Getting Started

Start-up Screen



Once the ATP is placed on a secure instrument table, the travel-lock has been disengaged, and the power cord has been connected; the instrument can be turned on using the on/off switch located on the side near the bottom of the instrument (#10, page 8). The instrument is turned on by rocking the switch to the “up” position. After a few seconds, the start-up screen will be displayed on the LCD. Press any button to enter the measure screen.

Sliding Forehead Rest

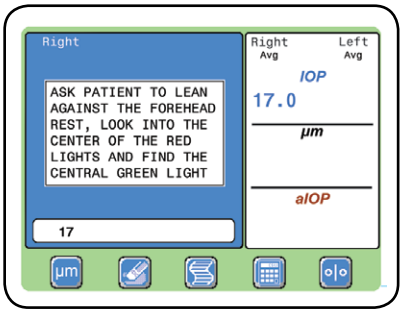


The screen may display a message instructing the operator to move the forehead rest fully to the left or right position. Operators should make sure to slide the headrest completely to one side or the other, until the mechanism “clicks” into place. The position of the forehead rest helps the ATP to determine which eye is to be measured in Tonometry measurement mode.

Entering the Mode Screen



Mode Icon



Once the forehead rest is properly positioned, the **measure screen** automatically appears. Press the button below the **mode icon** to access the ATP Lock, Service, Setup, and Help functions.

If there is no need to enter these modes, the operator may begin taking measurements as described on page 14.

Mode Screen





Lock Icon



Service Icon



Setup Icon



Help Icon

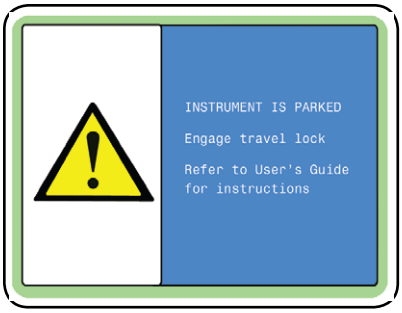


Return Icon

From the **mode screen** operators can press; the button below the **lock icon** to prepare the instrument for shipment, the button below the **service icon** to obtain service information, the button below the **setup icon** to customize instrument settings, or the button below the **help icon** for additional information on using the ATP. The button below the **return icon** at the far right of the screen will return the operator to the **measure screen**.

Getting Started

Lock Mode



To prepare the instrument for shipping from the **mode screen**, press the button below the ***lock icon*** (refer to page 10). The screen will display a message stating that the instrument is parked. After the unit is parked, engage the screw behind the printer door clockwise

NOTE: ***Before shipping, the travel lock must be engaged. Refer to page 28 of this guide for additional instructions.***

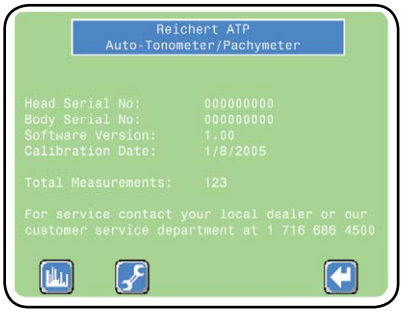
Service



Return Icon



Stats Icon



To access the **service mode** from the **mode screen**, press the button below the ***service icon*** (Refer to page 10). The ATP is not a user-serviceable instrument. All service must be performed by Reichert or a Reichert authorized dealer. However, the initial service screen displays information that may be useful when contacting service personnel. In addition, the ***stats icon*** (in the lower left of the screen) displays a histogram of the last 400 printed IOP measurements. Press the button below the ***return icon*** to go back to the **mode screen.**

Changing Settings Using the Setup

Throughout the various menu screens that are accessible from the **main setup** menu, the buttons below the ***up, down, left, and right arrow icons*** are used to navigate the menu options. The button below the ***select icon*** is used to enter menu screens or select / activate menu options. In addition, on some screens, the buttons below the ***plus and minus icons*** are used to increase or decrease characters (to set the time, for example). The button below the ***return icon*** takes operators back to the previous screen or menu.



Up **Down** **Left** **Right** **Select** **Return** **Plus** **Minus**

Selected menus or options are denoted by a white frame surrounding the option name in black text. Current instrument settings are denoted by black text highlighted in solid-white.

Main Setup



Up Icon



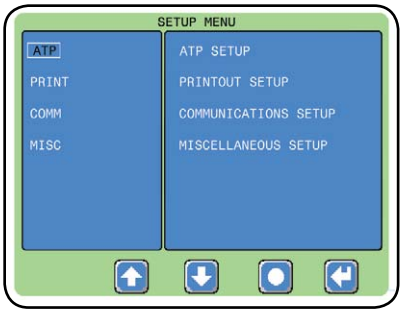
Down Icon



Select Icon



Return Icon



To enter the **main setup** menu, from the **mode screen**, press the button below the ***setup icon*** (Refer to page 10).

Use the buttons below the ***up and down arrow icons*** to navigate the menu. Use the button below the ***select icon*** to enter menu option screens. Use the button below the ***return icon*** to return to the **mode screen**.

Getting Started

ATP Setup



Arrow Icons



Select Icon



Return Icon



Print



Arrow Icons



Select Icon



Return Icon



Plus Icon



Minus Icon



Comm



Arrow Icons

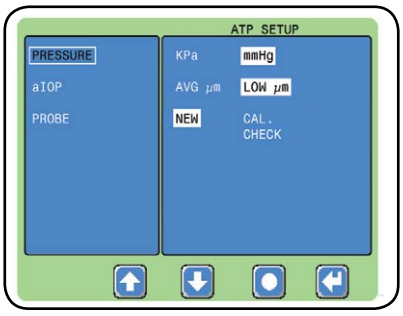


Select Icon

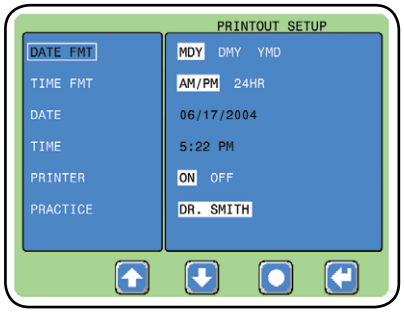


Return Icon

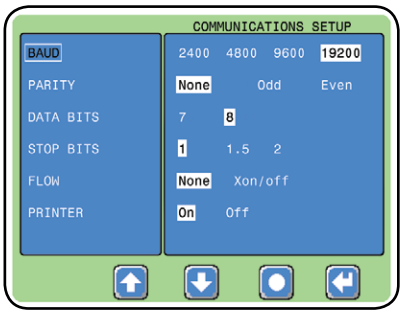




The **ATP setup menu** allows users to select the measurement units of pressure, select the measurement style, verify the probe calibration state, or synchronize a new probe.
Use the buttons below the ***arrow icons*** and ***select icon*** to navigate and activate menu options. Use the button below the ***return icon*** to return to the **setup menu**.



The **print menu** enables configuration of the date format (Month/Day/Year, Day/ Month/Year, Year/Month/Day), time format (AM/PM, 24 HR), date, time, printer status (on/off), and practice name. Use the buttons below the ***arrow icons*** and ***select icon*** to navigate and activate menu options. To set the date, time, and practice name, use the buttons below the ***plus*** and ***minus*** icons to increase / decrease the characters. Use the button below the ***return icon*** to return to the **setup menu.**



The **comm menu** enables configuration of the RS232C serial port communication settings for export of data to an external device. Operators can set the baud rate, parity, data bits, stop bits, and flow. In addition the printer status can be turned on or off from this menu as well.
Use the buttons below the ***arrow icons*** and ***select icon*** to navigate and activate menu options. Use the button below the ***return icon*** to return to the **setup menu**.

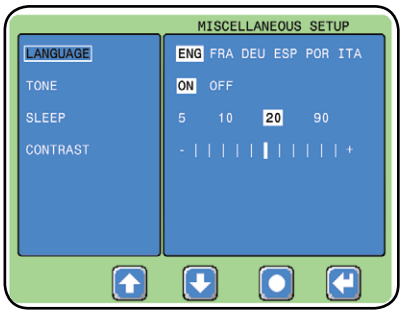
Misc


Up Icon


Down Icon


Select Icon


Return Icon



The **miscellaneous menu** enables; configuration of the display language, tone function (the “click” sound when buttons are pressed - can be turned on or off), sleep-mode delay time, and screen contrast.
Use the buttons below the ***arrow icons*** and ***select icon*** to navigate and activate menu options. Use the button below the ***return icon*** to return to the previous screen.

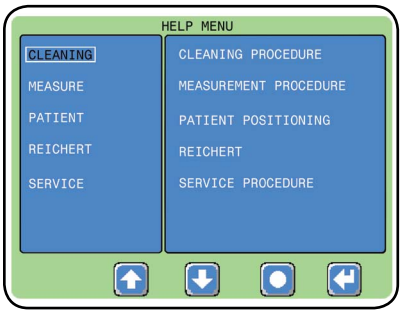
Help Mode


Up Icon


Down Icon


Select Icon


Return Icon



The **help mode** provides brief on-screen information on cleaning, measuring, patient positioning, and contacting Reichert. To access the help mode, from the mode screen, press the button under the ***help icon*** (Refer to page 10).
Use the buttons below the ***arrow icons*** and ***select icon*** to navigate and activate menu options. Use the button below the ***return icon*** to return to the **mode screen**.

Tonometry Measurements

Sliding Forehead Rest

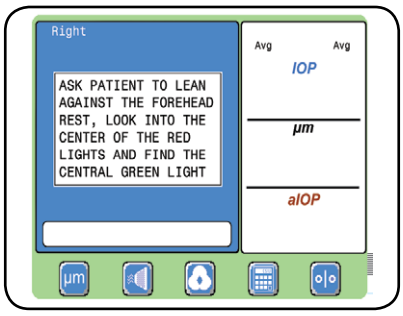


The ATP features a left / right sliding forehead rest that must be positioned completely to one side or the other in order to take measurements. The position of the forehead rest helps the ATP to determine which eye (left or right) is being measured. The **measure screen** will appear after the forehead rest is positioned fully to the left or right. The eye to be measured, based on the position of the forehead rest, is displayed on the upper right of the **measure screen**.

Patient Preparation



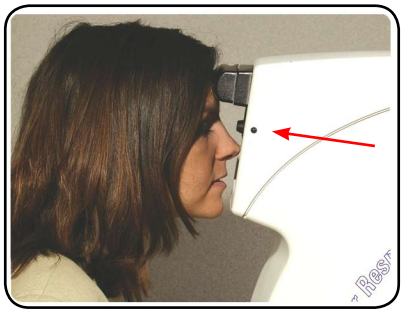
Demo Icon



Patients should remove contact lenses, loosen tight collars and ties, and be relaxed. Operators should inform patients that nothing will touch their eye and that they will only feel a very gentle puff of air.

Operators may invite the patient to hold a hand in front of the air tube to feel a “demonstration puff”. To initiate the puff, press the button below the ***demo icon***.

***Correct Patient* Positioning**



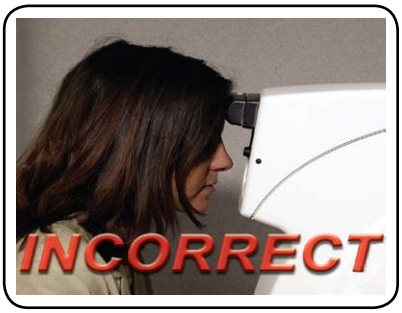
Correctly-positioned patient

Proper patient positioning will promote fast and accurate measurements. Set the height of the instrument table so the canthus marks on the sides of the ATP (Refer to #1, page 8) are approximately level with the patient’s eyes.

Patients should lean straight forward so the center of their forehead rests directly in the middle of the rubber forehead pad. The patient’s head should be perpendicular to the front of the ATP (not turned to the side). In addition, the patient’s chin should be inward toward the front surface of the ATP.

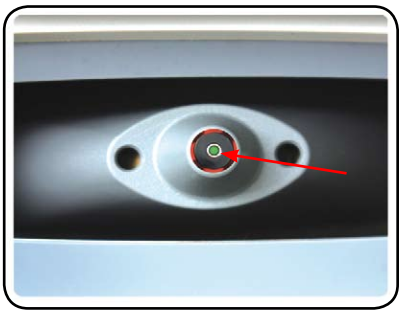
Tonometry Measurements

***Incorrect Patient* Positioning**



Observe the photo on the left. Notice the distance between the patient's chin and the front of the ATP. The instrument is too low, causing the patient to rest her head in a downward-facing manner. In this instance, the patient may not be able to see the fixation target, and the alignment system may not be able to find the patient's eye.

Fixation Target

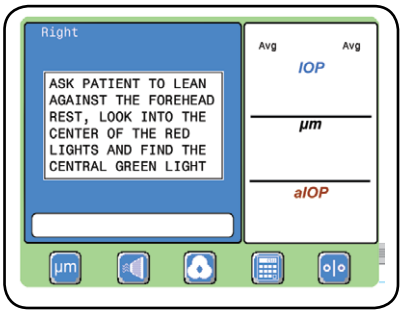


The fixation target is a green light, located inside the airtube and surrounded by a ring of red lights. Some patients may not be able to immediately find the green light. When this happens, the operator should verify that the patient can at least see some of the red lights. Have the patient find the red lights and then fixate on the green light. Once the patient fixates on the green light, the automatic alignment system will "find" the patients eye.

Measure Screen

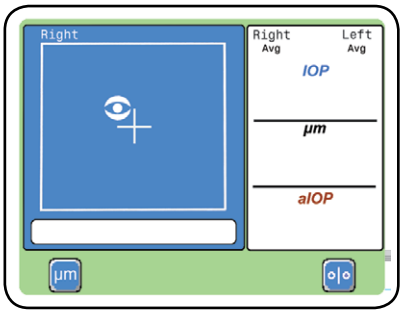


Measure Icon



Once the forehead rest is fully to the left or right and the patient is properly positioned, the operator can take a measurement. To take a measurement simply press the button below the ***measure icon***. To promote fast and accurate results, immediately before pressing the measure button operators should instruct the patient to blink a few times, then hold both eyes open and look directly at the green light.

Alignment Screen



After pressing the measure button, the alignment system will automatically align to the apex of the cornea. Operators can observe the process by watching the "eye icon" on the **alignment screen**. Proper alignment is achieved when the eye icon is directly over the centering target (cross). Once aligned, the ATP will automatically take a measurement.
If the eye icon is not visible or is unable to reach the centering target, the patient may not be positioned properly. An error message may appear on the screen informing the operator of improper patient positioning. Refer to page 14-15 for patient positioning information

Tonometry Measurements

Measurement Results

The ATP presents 3 measurements: IOP, µm, and aIOP. IOP is the Intra-Ocular Pressure value, µm is Central Corneal Thickness, and aIOP is adjusted Intra-Ocular Pressure determined by the corneal thickness measurement*. The µm and aIOP data will only appear once a corneal thickness measurement has been taken, refer to pg. 18 for the pachymetry measurement process and pg. 20 for an explanation of adjusted IOP.

Measure screen



Pachymeter Icon



Review Icon



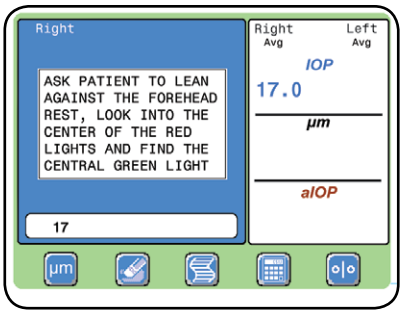
Print Icon



Erase Icon

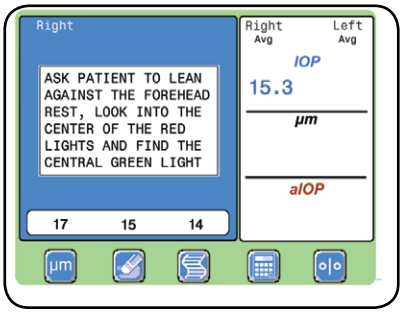


Measure Icon



The **measure screen** will now display the current IOP measurement data. The individual IOP reading is displayed in the white bar toward the bottom of the screen and the average IOP reading is displayed under the IOP section on the right side of the screen.
The button below the ***review icon*** will bring up the **review screen**. The button below the ***print icon*** will print the measurement results. The button below the ***erase icon*** clears **all** measurement results. The button below the ***measure icon*** begins the auto alignment and IOP measurement process again. The button below the ***pachymeter icon*** takes the user to the corneal thickness measurement mode, Refer to pg. 18 for details.

After taking the first IOP measurement operators may wish to take additional IOP measurements on the same eye. Operators should repeat the process described in the preceding pages.



If the operator takes successive measurements on the same eye, the data for each consecutive measurement is displayed in the lower white bar and the average is updated under the IOP section. Up to three measurement results per eye are displayed. The operator can continue to take additional measurements on the same eye, or slide the forehead rest to the opposite side to measure the other eye.

*The aIOP data is adjusted according to data of Ehlers et al (1975), Modified from Stodmeister (1998). Mean of cornral thickness in healthy subjects; 545um (Doughty and Zaman 2000) refer to page 20 for adjustment chart.

Tonometry Measurements

Measuring the Next Eye



Once measurements for the first eye of a patient (either right or left) are complete, the operator should simply slide the forehead rest to the opposite side and begin the patient positioning / IOP measurement process again.

Finishing With a Patient



Review Icon



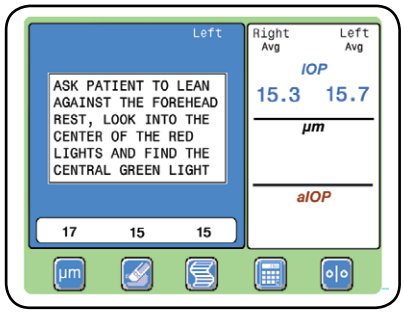
Print Icon



Erase Icon



Pachyme-ter Icon



When all required measurements for a patient have been obtained, the operator can take corneal thickness measurements by pressing the button below the ***pachymeter icon***, review the IOP data by pressing the button below the ***review icon***, print the results by pressing the button below the ***print icon*** or clear the data by pressing the button below the **erase icon**.

Note: It is important to always print or clear the data after each patient. This will ensure that the average measurement results for the next patient are not contaminated by “mixing” data from previous measurements.

Pachymetry Measurements

Pachymeter Screen



Pachyme-ter Icon



Select Eye Icon



Print Icon



Erase Icon

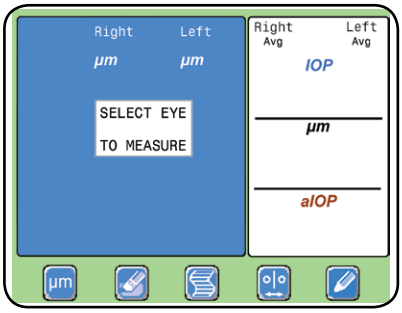


Tonometer Icon

Measure Screen

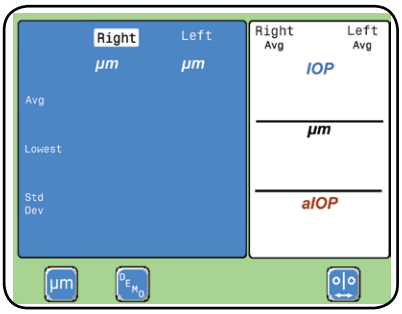


Select Eye Icon

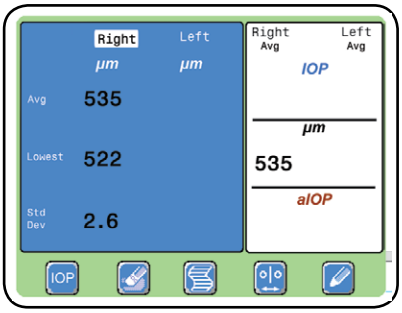


To take a pachymetry (corneal thickness) measurement press the button below the ***pachymeter icon.***

The button below the ***review icon*** will bring up the **review screen**. The button below the ***print icon*** will print the measurement results. The button below the ***erase icon*** clears all measurement results. The button below the ***select eye icon*** begins the measurement process.



To start the measurement process select which eye you wish to measure using the ***select eye icon.*** You will see the selected eye is highlighted in white on the display. Remove the pachymeter probe from its holding clip and ask the patient to fixate on an object on the ceiling or on the wall. Position the tip of the probe on the cornea, once positioned correctly the ATP will begin to take measurements automatically. Once the measurement process is complete you will hear a “beep” to indicate that the measurement process has been completed.



The pachymeter measurement data will be displayed on the screen. Data displayed includes; the **average corneal thickness** measurement, the **lowest corneal thickness** measurement and the **standard deviation** of the measurements. If you had previously taken an IOP measurement you will also see the adjusted IOP (aIOP) data update based on the corneal thickness measurement. Refer to pg. 20 for more information on adjusted IOP measurements.

WARNING: *USE EXTREME CARE TO ENSURE THAT YOU DO NOT SCRATCH OR NICK THE PLASTIC PROBE TIP, THIS TIP IS NOT REPLACEABLE. ALWAYS COVER THE PROBE TIP WITH THE COVER PROVIDED. WHEN NOT IN USE STORE THE PROBE IN THE BLACK POUCH PROVIDED OR CLIP INTO THE HOLDER ON THE SIDE OF THE ATP.* ***DROPPING THE PROBE MAY CAUSE IRREPARABLE DAMAGE.***

Pachymetry Measurements

Measuring the Next Eye


Select Eye Icon

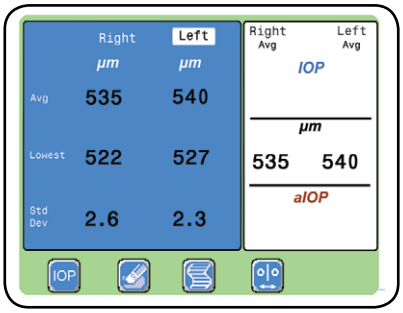

Review Icon


Print Icon


Erase Icon



Tonometer Icon



You can now take a measurement on the opposite eye or repeat the measurement on the same eye. To measure the opposite eye, press the ***select eye icon.*** The screen will highlight the opposite eye to be measured, now simply repeat the measurement process described on the preceding pages.

When you have completed the corneal thickness measurements make sure you clip the probe back onto its holder or put it into the storage pouch.

When all required measurements for a patient have been obtained, the operator can take intra-ocular pressure measurements by pressing the button below the ***tonometer icon***, review the data by pressing the button below the ***review icon***, print the results by pressing the button below the ***print icon*** or clear the data by pressing the button below the **erase icon**. (both actions will cause the current data to be cleared from the screen).

Note
It is important to always print or clear the data after each patient. This will ensure that the average measurement results for the next patient are not contaminated by “mixing” data from previous measurements.

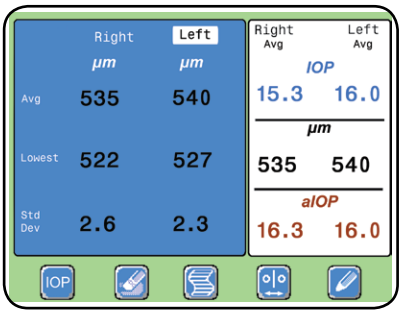
Adjusted IOP Measurement Data

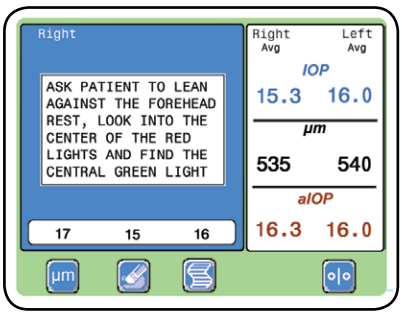
Adjusted IOP Measurement Results Screen


Print Icon


Erase Icon


Review Icon





Corneal Thickness (um)	Correction Value (mmHg)
445	+7
455	+6
465	+6
475	+5
485	+4
495	+4
505	+3
515	+2
525	+1
535	+1
545	0
555	-1
565	-1
575	-2
585	-3
595	-4
605	-4
615	-5
625	-6
635	-6
645	-7

Once you have taken both intra-ocular pressure (IOP) measurements and corneal thickness (µm measurements) the ATP will automatically update and display the adjusted intra-ocular (aIOP) pressure measurement. The aIOP data is based on the table below, which is a commonly used nomogram to adjust IOP measurements based on corneal thickness. The aIOP is computed from the average IOP measurement and from either the average or lowest corneal thickness measurement.

The screens opposite represent the ways that aIOP data can be displayed from the tonometer mode or the pachymeter mode.

The button below the ***review icon*** will bring up the **review screen**. The button below the ***print icon*** will print the measurement results. The button below the ***erase icon*** clears all measurement results. To start with a new patient either press the button below the clear or print data icons.

The aIOP data is adjusted according to data of Ehlers et al (1975), modified from Stodmeister (1998). Mean of corneal thickness in healthy subjects; 545µm (Doughty and Zaman 2000) refer to adjustment chart to the left for more information.

Printing Measurement Data

Printing Results



Print Icon



Name:_____

07/07/04 2.25
pm

(R)
Avg
IOP 15 15 15
[15]
aIOP 16 16 16
[16]
µm Avg 535
µm Low 522
Sdev 2.6

(L)
Avg
IOP 15 15 15
[15]
aIOP 16 16 16
[16]
µm Avg 535
µm Low 522
Sdev 2.6

Reichert ATP

When all required measurements for a patient have been obtained and analyzed, the operator can print the results by pressing the button below the ***print icon***. Printing results will cause current data to be cleared from the screen.

The results print on the ATP's internal printer. The paper will protrude through the printer door under the screen on the front of the instrument. When the printout is complete, operators should take hold of the paper and firmly pull it diagonally towards the upper left or upper right corner of the instrument.

The top of the printout provides a blank line for the operator to write in the patient's name.

The date and time are displayed in the format specified on the print setup menu.

Individual IOP, and aIOP values and an average for each, are displayed for the last three measurements taken. As well as the average, lowest and standard deviation of the µm measurements.

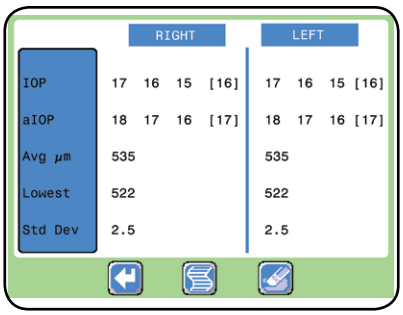
Reviewing Measurement Data

Review Screen


Print Icon


Erase Icon


Return Icon

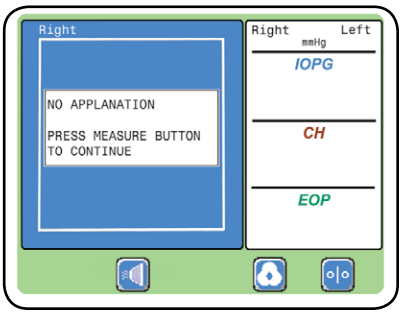


The review screen shows measurement data for each eye.

The button below the ***print icon*** will print the measurement results. The button below the ***erase icon*** clears all measurement results. The button below the ***return icon*** takes the user back to the previous screen so they can continue what they were doing.

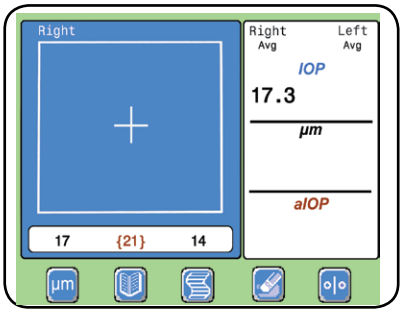
Error Messages

No Applanation Error Message



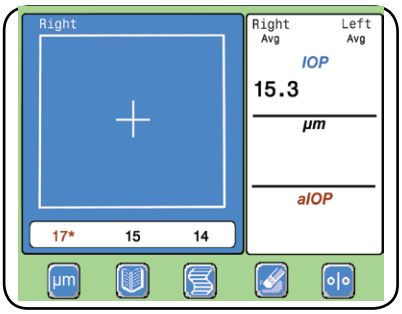
If a “bad signal” occurs, such as a blink, the “**NO APPLANATION**” error message will appear and the operator will need to take an additional measurement. Additionally, if “No Applanation” message is persistent then refer to the Cleaning section on the next page and clean the position windows or the airtube.

Bracketed IOP measurement



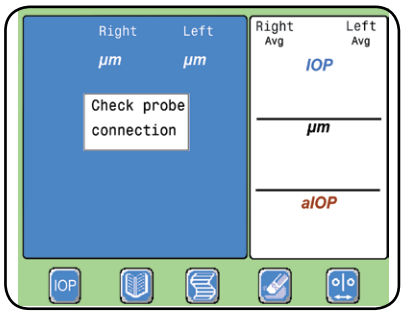
If an IOP measurement is more than 4mmHg different from the other two measurements the ATP will flag this measurement with brackets because it is a “flyer”. We recommend that you take a fourth measurement, the ATP will automatically replace this measurement once a new one is taken.
Note: this measurement is used in the computation of the average IOP reading.

Asterisk IOP measurement

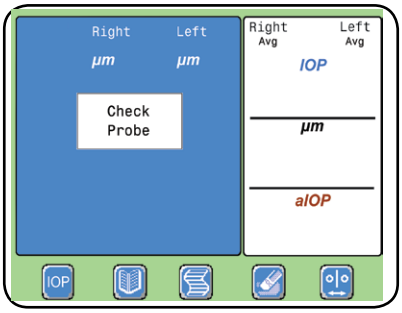


If an IOP measurement is considered to be poor quality, because the patient blinks or move during the measurement process the ATP will flag this measurement with an asterisk. We recommend that you take a fourth measurement, the ATP will automatically replace this measurement once a new one is taken.

Pachymeter probe errors



If the pachymeter probe is not plugged in correctly the instrument will show the error message to the left. Simply plug the probe into the socket on the side of the ATP. Refer to page 8 for its location.



If the probe has degraded to the point where it requires replacement this message will appear. Contact your authorized Reichert Distributor to obtain a new probe.

Care and Maintenance

WARNING: **ALWAYS WEAR EYE PROTECTION WHEN PERFORMING CLEANING AND MAINTENANCE.**

WARNING: **ALCOHOL IS FLAMMABLE. KEEP AWAY FROM HEAT AND FLAMES.**

CAUTION: **DO NOT USE STRONG CLEANING SOLUTIONS OR SOLVENTS ON ANY PART OF THE ATP OR DAMAGE TO THE INSTRUMENT MAY OCCUR.**

Fuse Replacement

Fuses are located in a holder near the bottom, next to the power input on the side of the instrument. If fuse replacement is required, only replace with equivalent fuses (Refer to the specifications on pg. 27).

External Cleaning Including LCD, Housing, and Buttons

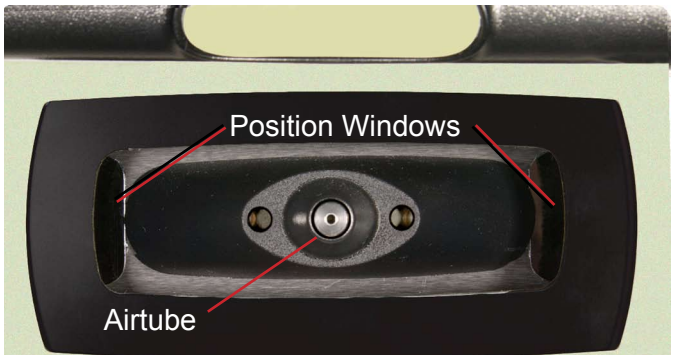
Gently clean any dirt or contaminants off of the LCD screen using a lint-free cotton cloth lightly dampened with a mild cleaning solution that is safe for plastic. Be sure to wipe off any residual solution using a lint-free cotton cloth.

Forehead Rest Cleaning and Patient Contact Area Cleaning

For hygienic reasons the forehead rest should be cleaned with a sterile alcohol wipe after each patient. In addition, operators should wipe the front of the housing with alcohol wipes, as required, based on patient contact.

Positioning Window Cleaning

CAUTION: **DO NOT USE ALCOHOL OR STRONG SOLVENTS ON THE POSITIONING WINDOWS OR DAMAGE TO THE ATP MAY OCCUR.**



Contaminants on the positioning windows of the ATP, such as dust or tear-splatter, may interfere the ATP's ability to take a measurement. It may also cause the ATP to measure "off-center", resulting in questionable signals and asterisk readings.

To clean, locate the positioning windows and wipe the visible surfaces with a clean, long-handle cotton swab moistened with a mild cleaning solution that is safe for plastic.

Note: Dust and other contaminants can be removed using clean, dry, compressed air ("canned air").

Airtube Cleaning

WARNING: **AFTER CLEANING THE INSIDE OF THE AIRTUBE, PRESS THE BUTTON BELOW THE DEMO ICON SO THAT ANY CONTAMINANTS ARE SAFELY REMOVED FROM THE AIRTUBE.**

If the inside of the airtube has contaminants, use a pipe cleaner to remove the contaminants. Push the pipe cleaner in and out of the Airtube until it is clean. After cleaning the inside of the airtube, reset power to the unit and then press the button below the DEMO icon (located on the operator's screen) several times to ensure that any contaminants dislodged within the airtube by the cleaning process are expelled from the airtube before performing a measurement.



Care and Maintenance

Pachymeter Probe Cleaning

It is very important to keep the probe tip clean to prevent patient to patient infection. After each patient wipe the probe tip with a solution of 70% isopropyl alcohol and then immerse the tip for 10 minutes in 70% isopropyl alcohol. Rinse the tip in sterile distilled water before using. Before cleaning make sure the probe is disconnected for the ATP.

CAUTION: DO NOT AUTOCLAVE OR SUBJECT THE PROBE TO HEAT OR SERIOUS DAMAGE MAY OCCUR, MAKE SURE THE PROBE TIP IS COVERED WHEN NOT IN USE.

Verifying ATP probe calibration

The ATP has built-in calibration verification software for the transducer probe. The system will generate a series of thickness data that span the measurement range. This data is measured by the pachymeter to verify calibration.

If you want to verify the calibration of the probe, go to the setup menu, select pachymeter setup, select the verify option and follow the on screen instructions.

Note: This does not calibrate the pachymeter system, it verifies the system is operating within its pre-determined calibration parameters.

Loading Printer Paper

Instructions for installing printer paper can be found on the backside of the printer door. To order replacement thermal paper, call Reichert, Inc. or your local Reichert Distributor (catalog number 12441).



Troubleshooting

CAUTION: IF IT BECOMES NECESSARY TO SHIP THE ATP FOR SERVICE THE TRAVEL-LOCK MUST BE ENGAGED. REFER TO PAGE 28 FOR INSTRUCTIONS.

Screen blank, instrument will not turn on, or will not respond	• Instrument may be in sleep mode - push any button. • Ensure power cord is properly seated in the power input receptacle on the side of the ATP and the on/off switch is in the “up” position. • Check the fuses located in the fuse holder near the power input of the ATP. Replace fuses if required. Refer to page 27 for Fuse specifications. • If the ATP is “locked up” restart the unit using the power switch.
Will not find eye (moves straight out, then moves straight back)	• There may be dust or tear-splatter on the positioning windows. Refer to the Maintenance section of this guide for cleaning instructions. • External infrared light may be interfering with the positioning system. Identify sources of this light and isolate the offending source.
ATP able to measure one eye, but not the other	• External infrared light may be interfering with the positioning system. Identify sources of this light and isolate the offending source.
ATP attempts to align, but will not take a measurement	• Typically a patient positioning problem. The patient may not be holding still, not fixating on the green target, or may be too far from nosepiece. Reposition the patient and try again (Refer to page 14 for instructions).
Frequent asterisk readings	• There may be dust or tear-splatter on the positioning windows. Refer to the maintenance section of this guide for cleaning instructions.
Disengage travel-lock - error message shown	• Travel-lock is engaged. Turn off the ATP, refer to page 28 (Disengage Travel Lock) and then re-apply power to the instrument.
Printer problems and Printer Error Screens	• Printer errors, such as the printer being out of paper, will cause error messages to be displayed on the screen. Follow the on-screen instructions to resolve these problems

Important Information

Measurement

Measurement Range (Tonometer).....0-60 mmHg
Measurement Range (Pachymeter) 200-1000µm
Accuracy .....+/- 5µm
Display Resolution .....+/- 1µm

Electrical:
Voltage.....100-240 volts AC 50/60 Hz
Watts .....62 - 87 VA
Fuses.....Slo-Blo, 1Amp, 250V, glass type, 5x20mm

Physical Dimensions:
Height .....17.0 inches (43.0 cm)
Width .....9.5 inches (24.0 cm)
Length.....13.5 inches (34.0 cm)
Weight, unpacked.....30 lbs. (13.6Kg)

The Ultra sound energy emitted by the ATP is low intensity and will have no adverse effects on the patient or user. We still caution the user to perform measurements using the ALARA principle (AS low as reasonably achievable). All measurements should be done to minimize the amount of ultrasound radiation the patient receives. Do not hold the probe against any tissue unless performing a measurement.

The ATP has one mode of operation and ultrasound intensity settings are not under the control of the operator. The acoustic output values of the transducer tested are below the FDA 1976 pre-amendment levels.

Transportation & Storage Conditions

This instrument can withstand the following conditions while packed for transportation or storage:

- an ambient temperature range of -20°C (-4°F) to +70°C (158°F)
- a relative humidity range of 10% to 90%
- an atmospheric pressure range of 55 kPa to 106 kPa

Exposure to extreme temperature conditions indicated above must not exceed 15 weeks. Daily-use temperatures should not exceed 10°C (50°F) to 43°C (110°F).

Important Information

Classifications

The ATP is classified as class 1 equipment. Class 1 equipment is equipment in which protection against electrical shock does not rely on basic insulation only, but which includes an additional safety precaution in that means are provided for the connection of the equipment to a protective earth conductor in the fixed wiring of the installation in such a way which accessible metal parts cannot become live in the event of a failure of the basic insulation.

The ATP is classified as Type B Equipment. Type B equipment provides an adequate degree of protection against electrical shock, particularly regarding allowable leakage currents and reliability of the protective earth connection.

The ATP is classified as IPXO Equipment. IPXO equipment is ordinary equipment enclosed without protection against ingress of water.

According to the mode of operation, the ATP is a continuous operation instrument.

Engaging the Travel-Lock (to be performed prior to shipment of the ATP)

Before Transporting the ATP, the instrument must be parked and the travel-lock must be engaged.

1. Refer to the instructions on page 11 to lock the instrument before shipment.
2. Open the printer door by pushing on the door above the printer paper slot (Refer to # 4, page 8).
3. Insert the phillips head screwdriver into the travel-lock hole and locate the travel lock screw (Refer to # 12, page8)
4. Push the screw in and turn the screw clockwise until tight.
5. Close the printer door.

Probe Removal Instructions

CAUTION: DO NOT PULL ON THE CABLE OF THE PROBE TO DETACH IT FROM THE INSTRUMENT OR DAMAGE TO THE PROBE MAY OCCUR.

1. To remove the probe from the instrument, pull back on the connector that has the red dot on it.

Note: The connector has a locking mechanism in it that requires pulling on the silver collar next to the instrument.



Warranty Information

This product is warranted by Reichert, Inc. against defective material and workmanship under normal use for a period of one year from the date of invoice to the original purchaser. (An authorized dealer shall not be considered an original purchaser.) Under this warranty, Reichert's sole obligation is to repair or replace the defective part or product at Reichert's discretion.

This warranty applies to new products and does not apply to a product that has been tampered with, altered in any way, misused, damaged by accident or negligence, or which has had the serial number removed, altered or effaced. Nor shall this warranty be extended to a product installed or operated in a manner not in accordance with the applicable Reichert instruction manual, nor to a product which has been sold, serviced, installed or repaired other than by a Reichert factory, Technical Service Center, or authorized Reichert Dealer.

Lamps, bulbs, charts, cards and other expendable items are not covered by this warranty.

All claims under this warranty must be in writing and directed to the Reichert factory, Technical Service Center, or authorized instrument dealer making the original sale and must be accompanied by a copy of the purchaser's invoice.

This warranty is in lieu of all other warranties implied or expressed. All implied warranties of merchantability or fitness for a particular use are hereby disclaimed. No representative or other person is authorized to make any other obligations for Reichert. Reichert shall not be liable for any special, incidental, or consequent damages for any negligence, breach of warranty, strict liability or any other damages resulting from or relating to design, manufacture, sale, use or handling of the product.

PATENT WARRANTY

If notified promptly in writing of any action brought against the purchaser based on a claim that the instrument infringes a U.S. Patent, Reichert will defend such action at its expense and will pay costs and damages awarded in any such action, provided that Reichert shall have sole control of the defense of any such action with information and assistance (at Reichert's expense) for such defense, and of all negotiation for the settlement and compromise thereof.

PRODUCT CHANGES

Reichert reserves the right to make changes in design or to make additions to or improvements in its products without obligation to add such to products previously manufactured.

CLAIMS FOR SHORTAGES

We use extreme care in selection, checking, rechecking and packing to eliminate the possibility of error. If any shipping errors are discovered:

1. Carefully go through the packing materials to be sure nothing was inadvertently overlooked when the unit was unpacked.
2. Call the dealer you purchased the product from and report the shortage. The materials are packed at the factory and none should be missing if the box has never been opened.
3. Claims must be filed within 30 days of purchase.

CLAIMS FOR DAMAGES IN TRANSIT

Our shipping responsibility ceases with the safe delivery in good condition to the transportation company. Claims for loss or damage in transit should be made promptly and directly to the transportation company.

If, upon delivery, the outside of the packing case shows evidence of rough handling or damage, the transportation company's agent should be requested to make a "Received in Bad Order" notation on the delivery receipt. If within 48 hours of delivery, concealed damage is noted upon unpacking the shipment and no exterior evidence of rough handling is apparent, the transportation company should be requested to make out a "Bad Order" report. This procedure is necessary in order for the dealer to maintain the right of recovery from the carrier.

Reichert Ophthalmic Instruments
Reichert, Inc.
3362 Walden Ave
Depew, NY 14043
USA
Toll Free: 888-849-8955
Phone: 716-686-4500
Fax 716-686-4545
email: info@reichert.com
www.reichertoi.com

Reichert GmbH
Hubertusstrasse 2
D-82229 Seefeld
Germany
Phone: +49-8152-993530
Fax: +49-8152-993535

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