

# operation and instruction manual



## K77000, K77001 Automatic Cloud and Pour Point Analyzer

service | innovation | technology

REV K-A



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Petroleum Testing & Analysis Instrumentation • Custom Design & Manufacturing







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**EC Declaration of conformity**  
Koehler Instrument Company, Inc.  
of 1595 Sycamore Av., Bohemia, New York USA

**We declare that the product listed below meets all basic requirements in accordance with the following Directive(s) by design, type, and version placed upon the market by us.**

2004/108/EC The Electromagnetic Compatibility Directive  
2006/42/EC The Machinery Directive by way of the Low-Voltage directive 2014/35/EU

**And hereby declare that:**

Equipment: *Automatic Cloud and Pour Point Analyzer*

Model Number(s): *K77000, K77001*

**Qualifications:**

**This product may only to be used in a professional laboratory setting by authorized personnel following the instruction handbook.**

**and**

**This product declaration is valid for unmodified equipment when installed and operated by authorized personnel following the instruction handbook.**

**Conforms to the following standards (as applicable):**

|                           |   |
|---------------------------|---|
| Safety<br>EN 61010-1:2010 | Low-Voltage directive 2014/35/EU<br>Safety Requirements for electrical equipment for measurement, control and laboratory use;<br>by engineering design and risk review and by meeting the requirements of<br>Hi-Pot Test (1500 VAC, 60 sec. per table 5)<br>as detailed in the product's technical documentation. |
| EMC<br>EN 55011:2007      | Meets the essential requirements of EMC Directive 2004/108/EC<br>by engineering design review and by meeting the requirements of<br>Conducted Emissions Test for Group 1 Class A<br>as detailed in the product's technical documentation.   |

*Vincent Colantuoni*

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Product Manager

1595 Sycamore Av.  
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*January 18, 2021*

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## WEEE Directive

### Background

The goal of the WEEE Directive is to encourage design of environment-friendly products that increase reuse, recycling and other forms of recovery to reduce waste streams and applies to listed Electronic and Electrical Equipment (EEE) and Koehler's equipment falls broadly into Appendix 1A; Section 9 Monitoring and Control Equipment: Measuring, weighing or adjusting appliances for household or as laboratory equipment.

Any associated non-embedded equipment such as Lighting (Saybolt Color) and PCs/Printers also fall under WEEE. If provided with an order these ancillary items must be WEEE compliant. For these and other reasons (printer cartridges are regionalized) the equipment must be supplied through a third party supplier in Europe.

The WEEE Directive applies to electrical and electronic equipment falling under the categories set out in Annex IA provided that the equipment concerned is not part of another type of equipment that does not fall within the scope of this Directive. Annex IB contains a list of products which fall under the categories set out in Annex IA.

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2003:037:0024:0038:en:PDF>

We do not qualify for any of the 10 exemption categories.  
<http://www.dpa-system.dk/en/WEEE/Products/Exemptions>

### Professional use

For equipment defined for 'professional use' local authorities have no role to play. Producers and importers are basically responsible for collection of WEEE recyclables from the professional user and for subsequent management. A separate statement is given cataloging the items that require separation from the equipment along with basic information on subsequent processing or recycling prior to disposal of the equipment.

<http://www.dpa-system.dk/en/WEEE/Products/Private-or-professional-use>

### Responsibility for Registration and Annual Reporting:

Koehler will not sell directly to end users in the EU and so has no responsibility to register within each EU state and to make annual reports. Koehler declares that this responsibility is born by the importer who is the first level of the distribution chain and is subject to producer responsibility. We will communicate this in writing to our distributor/importers in the EU stating they are responsible to satisfy WEEE registration and reporting requirements in the EU states where they conduct sales activities.

It is illegal to market electrical and electronic equipment covered by producer responsibility without being registered.

<http://www.dpa-system.dk/en/WEEE/Producers/Whoissubjecttoproducerresponsibility>

### Product Design

Koehler's designs allow for complete disassembly to a modular level which usually allows for standard recycling. A qualified refrigeration system technician must be consulted when disassembling and de-commissioning any equipment with refrigeration systems.

Koehler's scientific testing equipment is robustly designed to function over a long service life and are typically repaired many times over the course of years rather than being replaced. We believe that re-use and refurbishment is the very best form of re-cycling.

All batteries must be readily removable not soldered in place.

### Recycling instructions

In the event that replacement becomes necessary, we will include instructions, particularized to each instrument that informs the customer of their recycling responsibilities and giving them guidance in doing this. All Koehler equipment has been placed on the market since 13th August 2005 and so Koehler is defined as a "new WEEE producer". As such we must provide information on refurbishment, treatment, and re-use.

Our instrument manual will include this compliance statement and indicate that any collection of materials will be handled by their authorized distributor. In the event that the distributor is unreachable or is no longer a distributor for Koehler Instrument, Co., other arrangements may be made including accepting the materials directly.

Recycling is free of charge. Shipping is the responsibility of the end users. Whether shipping to a distributor or to Koehler directly, safe, properly declared, and labeled packaging and shipping expenses are the sole responsibility of the end user.

### WEEE Marking



Since Koehler products are subject to the WEEE Directive we must display the WEEE symbol shown above in accordance with European Standard EN 50419 on the equipment. It must be indelible, at least 5mm in height, and clearly legible. If the equipment is too small the mark must be in the product literature, guarantee certificate, or on the packaging. Rules on marking are established in section 49 of the WEEE Order.

Koehler Instrument Company, Inc.  
c/o RECYCLING  
1595 Sycamore, Ave.  
Bohemia, NY 11716

As a minimum the following substances, preparations and components have to be removed from any separately collected WEEE:

- Mercury containing components, such as switches or backlighting lamps (compact fluorescent lamps, CFL),
- Batteries
- Printed circuit boards if the surface of the printed circuit board is greater than 10 square centimeters (about 4 sq in.),
- Toner cartridges, liquid and pasty, as well as color toner,
- Chlorofluorocarbons (CFC), hydrochlorofluorocarbons (HCFC) or hydrofluorocarbons (HFC), hydrocarbons (HC)
- Liquid crystal displays (together with their casing where appropriate) of a surface greater than 100 square centimeters and all those back-lighted with gas discharge lamps,
- External electric cables
- Components containing refractory ceramic fibers as described in Commission Directive 97/69/EC of 5 December 1997 adapting to technical progress Council Directive 67/548/EEC relating to the classification, packaging and labeling of dangerous substances (2),
- Electrolyte capacitors containing substances of concern (height > 25 mm, diameter > 25 mm or proportionately similar volume)

2. The following components of WEEE that is separately collected have to be treated as indicated:

- Equipment containing gases that are ozone depleting or have a global warming potential (GWP) above 15, such as those contained in foams and refrigeration circuits: the gases must be properly extracted and properly treated. Ozone-depleting gases must be treated in accordance with Regulation (EC) No 2037/2000 of the European Parliament and of the Council of 29 June 2000 on substances that deplete the ozone layer (4).

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## 1. Introduction

The Koehler K7700X Automatic Cloud and Pour Point Analyzer is the latest design for performing ASTM D5771 and ASTM D5950 test methods and related test specifications.

The Automatic Cloud and Pour Point Analyzer is a state of the art piece of equipment for measuring cloud point by Optical Detection and pour point with the Automatic Tilt Method. The cloud point is an index of the lowest temperature of a petroleum product or biodiesel fuels utility for certain applications. Wax crystals of sufficient quantity can plug filters used in some fuel systems. The pour point of a petroleum product is an index of the lowest temperature of its utility for certain applications. Flow characteristics, such as pour point, can be critical for the correct operation of lubricating oil systems, fuel systems, and petroleum blending and pipeline operations.

This manual provides important information regarding safety, technical reference, installation requirements, operating condition specifications, user facility resource requirements, and operating instructions for the Automatic Cloud and Pour Point Analyzer. This manual should also be used in conjunction with applicable published laboratory procedures. Information on these procedures is given in section 1.2.

### 1.1. Koehler's Commitment to Our Customers

Providing quality testing instrumentation and technical support services for research and testing laboratories has been our specialty for almost 100 years. At Koehler, the primary focus of our business is providing you with the full support of your laboratory testing needs. Our products are backed by our staff of technically knowledgeable, trained specialists who are experienced in both petroleum products testing and instrument service to better understand your requirements and provide you with the best solutions. You can depend on Koehler for a full range of accurate and reliable instrumentation as well as support for your laboratory testing programs. Please do not hesitate to contact us at any time with your inquiries about equipment, tests, or technical support.

**Toll Free: 1-800-878-9070 (US only)**  
**Tel: +1 631 589 3800**  
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**Email: [info@koehlerinstrument.com](mailto:info@koehlerinstrument.com)**  
**<http://www.koehlerinstrument.com>**

### 1.2. Recommended Resources and Publications

- American Society for Testing and Materials (ASTM)  
100 Barr Harbor Drive  
West Conshohocken, Pennsylvania 19428-2959, USA  
Tel: +1 610 832 9500  
Fax: +1 610 832 9555  
<http://www.astm.org>  
email: [service@astm.org](mailto:service@astm.org)

#### ASTM Publication:

- ASTM D5771: Cloud Point of Petroleum Products and Liquid Fuels (Optical Detection Stepped Cooling Method)
- ASTM D5950: Pour Point of Petroleum Products (Automatic Tilt Method)

### 1.3. Instrument Specifications

**Models:** K77000 Automatic Pour Point Analyzer

K77001 Automatic Cloud Point Analyzer

\* Either model can be made to do both tests with the addition of either the Cloud or Pour Point Head Assembly

**Electrical Requirements:** 115 – 240 V  
50 / 60 Hz

**Temperature Range:** -105°C to +50°C (-157°F to 122°F)

**Connectivity:** 4 – USB  
1 - Ethernet

**Dimensions WxHxD in.(cm):** 12.5 x 15.5 x 26.25 (31.75 x 39.4 x 66.7)

Net Weight: 90 lbs (41kg)

## 2. Safety

## Information and Warnings



**Safety Considerations.** The use of this equipment may involve hazardous materials and operations. This manual does not purport to address all of the safety problems associated with the use of this equipment. It is the responsibility of any user of this equipment to investigate, research, and establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

**Equipment Modifications and Replacement Parts.** Any modification or alteration of this equipment from that of factory specifications is not recommended, voids the manufacturer warranty, product safety, performance specifications, and/or certifications whether specified or implied, and may result in personal injury and/or property loss. Replacement parts must be O.E.M. exact replacement equipment.

**Unit Design.** This equipment is specifically designed for use in accordance with the applicable standard test methods listed in section 1.2 of this manual. The use of this equipment in accordance with any other test procedures, or for any other purpose, is not recommended and may be extremely hazardous.

**Chemical Reagents Information.** Chemicals and reagents used in performing the test may exhibit potential hazards. Any user must be familiarized with the possible dangers before use. We also recommend consulting the Material Data and Safety Sheet (MSDS) on each chemical reagent for additional information. MSDS information can be easily located on the internet at <http://siri.uvm.edu> or <http://www.sigma-aldrich.com>.

## 3. Getting Started

The instructions for preparing the equipment assume that the user is aware of the contents of this document, which lists the warranty conditions and important precautions.

### 3.1. Packing List

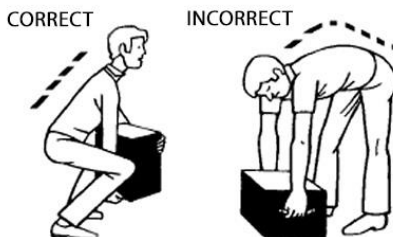
- K77000 or K77001 Automatic Pour or Cloud Point Analyzer
- K77000-1 or K77001-1 Wireless Pour or Cloud Point Head (Model Dependent)
- K77000-2 or K77001-2 Pour Point or Cloud Point Test Vessel (Model Dependent)
- K77000-03163 Cork Ring
- K7700X-Manual Automatic Cloud and Pour Point Instrument Operation and Instruction Manual

### 3.2. Unpacking

1. Before opening the Cardboard Box, check the Shock Watch Label on the Box for indication of rough handling and possible damage.
2. Check labeling for correct orientation of instrument. (e.g. This Side Up)
3. Carefully open top of box with box cutter and remove packing foam.



**WARNING:** Be sure two or more individuals are available for extracting and lifting instrument from box to cart and from cart to bench. Individuals must lift in accordance to proper technique. See Figure below.



4. Ensure that all parts listed on the packing list are present. Inspect the unit and all accessories for damage. If any damage is found, keep all packing materials and immediately report the damage to the carrier. We will assist you with your claim, if requested. When submitting a claim for shipping damage, request that the carrier inspect the shipping container and equipment. Do not return goods to Koehler without written authorization.

### 3.3. Setup

**Equipment Placement:** Make sure the instrument is placed on a firm, level table. The unit may be leveled by making minor turning adjustments to the feet located at the base of the unit. Please note that Koehler does not supply a level with this equipment.

**Environmental Conditions:** The instrument environment must comply with the following conditions for proper setup:

- No / Low Dust
- No Direct Sunlight
- Not near heating or AC ventilation ducts
- No Vibrations
- Clearance from other instruments
- Temperature Range: 5 to 40°C
- Elevation to 2000 meters
- Relative Humidity: < 80%

**Power:** Connect the line cords to properly fused and grounded receptacles with the correct voltage as indicated in section 1.3 or on the back of the unit.



**WARNING:** For safety, disconnect the power when performing any maintenance and/or cleaning. Do **NOT** turn the power on unless the bath is filled with the proper medium; otherwise, damage may occur to the unit and the warranty will be void.

## 4. Descriptions

### 4.1. Instrument Description

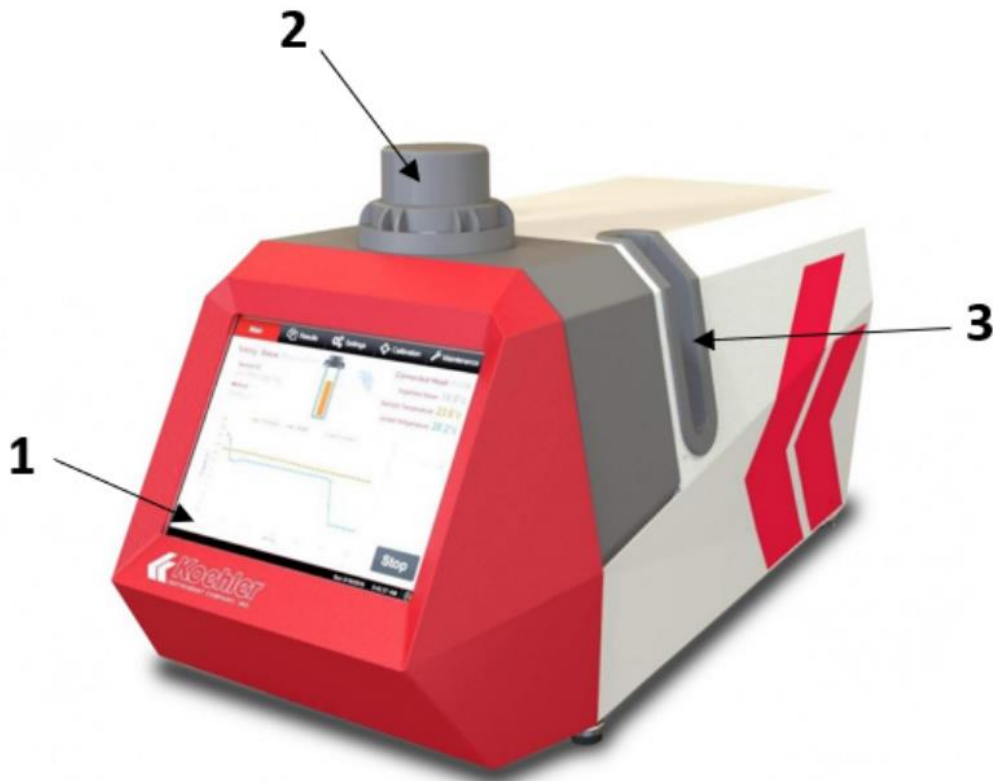


Figure 1. Instrument Descriptions (Front)

1. **Touch Screen Control Panel.** The unit is controlled from this touch screen display.
2. **Wireless Head.** Cloud or Pour Point Head dependent on which model. The unit will automatically detect which head is connected.
3. **Wireless Head Holder.** Resting space for the wireless head when loading and unloading the sample.

## 5. Operation

The Koehler Automatic Cloud and Pour Point Analyzer is designed for acquiring test data in accordance with ASTM D5771, ASTM D5950 and related test procedures. Please be sure to read the safety and hazard warnings, the installation procedure, and the standard test method before operating this software and instrument.

### 5.1. General Software Overview

1. **Main.** Turn on the main power switch to the Automatic Cloud and Pour Point Tester (located on the back of the unit). The Main screen will appear on the touch screen control panel. See Figure 2 below. On this screen the Sample ID, Operator name, Expected Value and the Method can be entered. The main screen also shows which of the wireless heads is connected as well as the Sample and Jacket Temperatures.

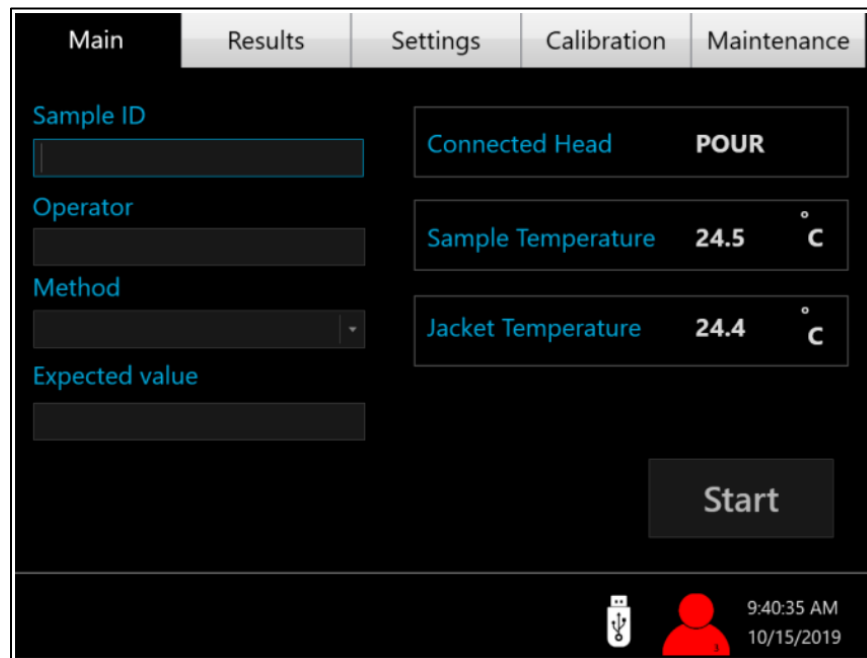


Figure 2. Main Screen

2. **Results.** The results tab is where you can find the stored test results. From here you can select a result to view the graph, print it or export the results via LIMS. See the following Figure 3:

| Main   |          | Results       | Settings          | Calibration | Maintenance |
|--------|----------|---------------|-------------------|-------------|-------------|
| TestNo | Operator | Instrument No | Sample ID         | Test Method |             |
| 1288   |          | 1234          |                   | D5950 3C    |             |
| 1287   |          | 1234          |                   | D5950 3C    |             |
| 1286   |          | 1234          |                   | D5950 1C    |             |
| 1285   | FRANK    | 1234          | PEANUT OIL        | D5950 3C    |             |
| 1284   | FRANK    | 1234          | VHG-P20-914B-1H3  | D5950 3C    |             |
| 1283   | FRANK    | 1234          | PEANUT OIL - H3P1 | D5950 3C    |             |
| 1282   | FRANK    | 1234          | PEANUT OIL        | CLOUD-D5    |             |

Search for Operator [ ] Search

Graph Delete Print LIMS

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Figure 3. Results Tab

- Settings.** The settings can be accessed by clicking the Settings Tab on the top of the Main Screen. In the Settings Tab there are sub-tabs for System Settings, Test Settings, and Custom Test Settings.

The Systems Settings screen gives general information about the unit and software and can be seen in Figure 4. If you select the Next button on the top right of the screen it will bring you to the Printout Format Settings as shown in Figure 5. From here you can select which test parameters to be printed. If you press Next again it will bring you to the LIMS Settings. Here you can set the LIMS Export Method, Communication Method and Folder Path (Figure 6). In the Parameter Export Setting Tab (Figure 7) you can select which test parameters to be exported in the LIMS file.

| Main   |                    | Results           | Settings              | Calibration          | Maintenance |
|--|--------------------|-------------------|-----------------------|----------------------|-------------|
| System Settings  |                    | Test Settings     |                       | Custom Test Settings |             |
| Remote Support   |                    | PC Version 1.0.57 | Firmware Version 4.00 | Head Version 4.18    |             |
| Login Window   | Instrument ID 1234 | Popup Keyboard    |                       | ON                   |             |
| Change Date/Time   | Access Filter      | Exit Application  | Language              | English              |             |
| Contact Us<br>85 Corporate Drive, Holtsville, New York, 11742<br>Phone: +1 631 589 3800 Fax: +1 631 589 3815 |                    |                   |                       |                      |             |

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Figure 4. System Settings

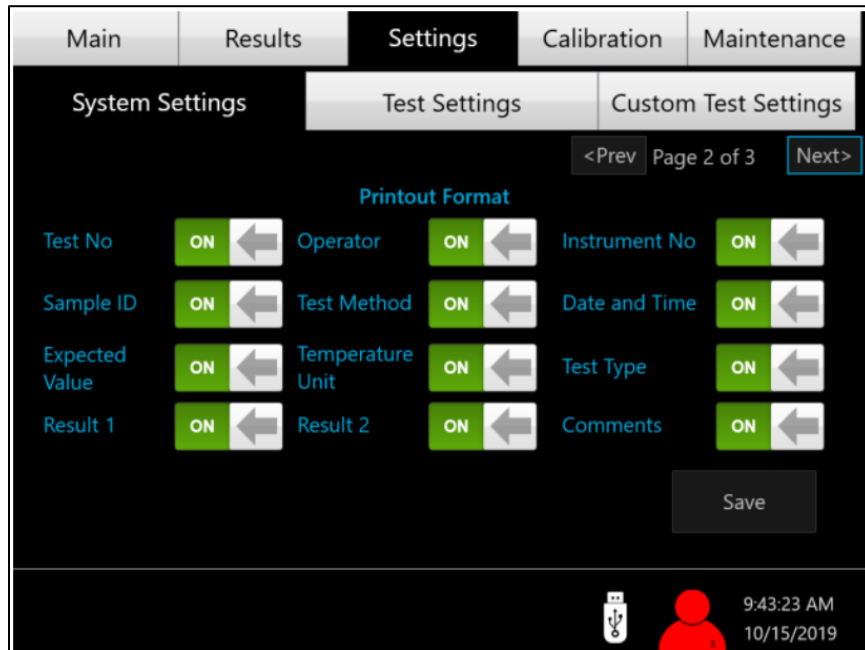


Figure 5. System Settings – Printout Format

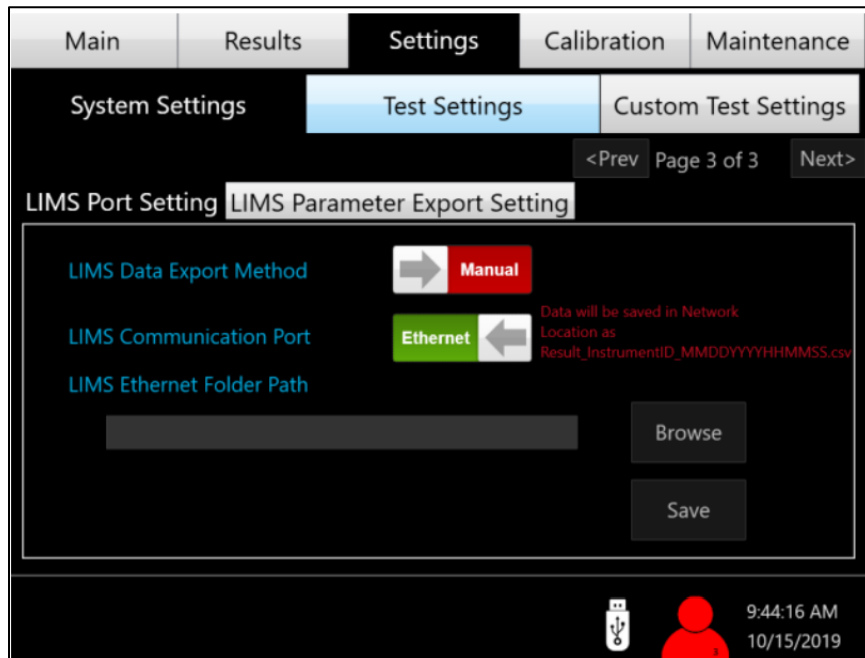


Figure 6. System Settings – LIMS Port

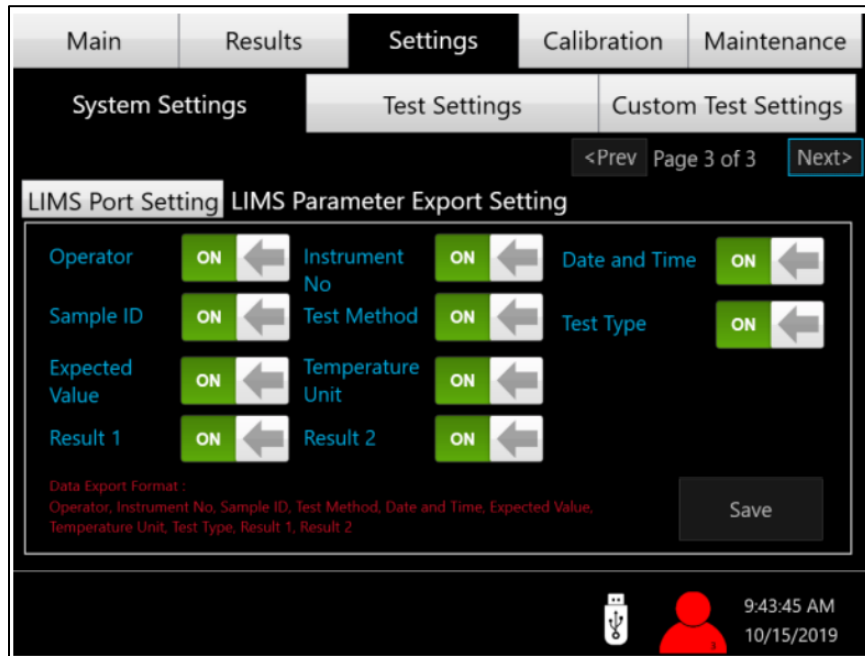


Figure 7. System Settings – LIMS Parameters

The Test Settings screen is where the user can select the Temperature Units, Re-Heat Jacket Temperature, Sensitivity Value, and the Diagnostic Chiller Temperature. This screen is shown in Figure 8.

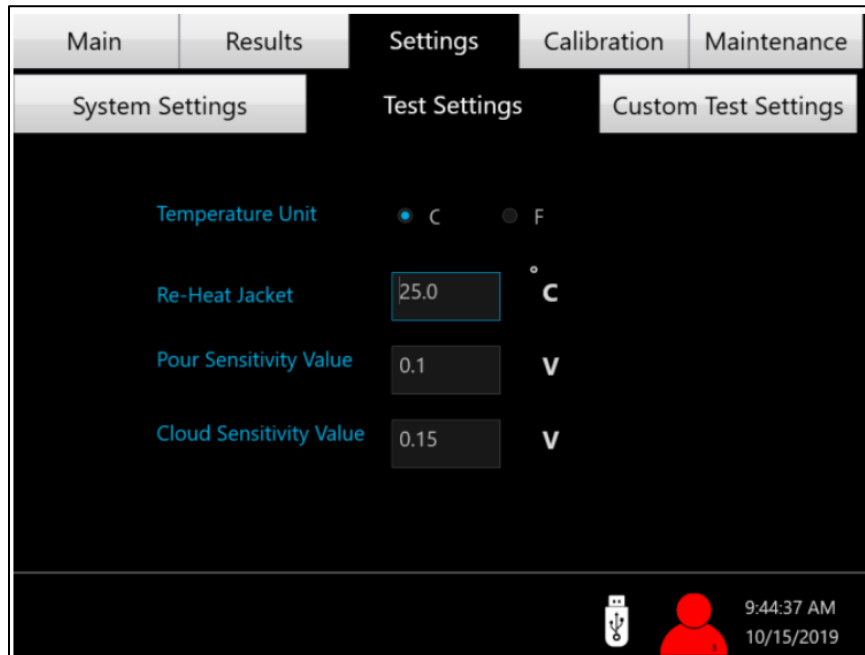


Figure 8. Test Settings

The Custom Test Settings is where the user can create and save custom tests, Figure 9 shows custom tests that have already been created. To create a new custom test press 'Add New' and the screen shown in Figure 10 will appear. Fill out all the blank fields to create a custom test. The text box on the right hand side gives some tips and help for creating your custom test.

| Main            |                         | Results   |               | Settings |      | Calibration          |  | Maintenance |  |
|-----------------|-------------------------|-----------|---------------|----------|------|----------------------|--|-------------|--|
| System Settings |                         |           | Test Settings |          |      | Custom Test Settings |  |             |  |
| Entry Number    | Method Name             | Test Type | Temp Unit     | Tilt     | Inte |                      |  |             |  |
| 28              | POUR_NPH_1C-TILT_1C-RND | POUR      | C             | 1        |      |                      |  |             |  |
| 26              | CLOUD-D5771-48C PH      | CLOUD     | C             | 0        |      |                      |  |             |  |
| 25              | POUR-RAPID TO -18C      | POUR      | C             | 3        |      |                      |  |             |  |
| 24              | POUR-RAPID TO -10C      | POUR      | C             | 3        |      |                      |  |             |  |
| 23              | POUR-RAPID TO 5C        | POUR      | C             | 3        |      |                      |  |             |  |
| 22              | CLOUD_NPH_DELTA_25C     | CLOUD     | C             | 0        |      |                      |  |             |  |
| 21              | POUR_NPH_DELTA_25C      | POUR      | C             | 3        |      |                      |  |             |  |





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Figure 9. Custom Test Settings

Method Name

Test Type

Temp Unit

Pre-Heat Temp  °C

Pre-Heat Time  mins

Tilt Interval  °C

First tilt at  °C

Cooling Method

Cooling Temp  °C

End Test Criteria  °C

Result Rounding

### Custom Test Help

Pre-Heat Temp  
Enter the desired Pre-Heat Temperature.

Enter 0 for both Pre-Heat Temperature and Pre-Heat Time to turn Pre-Heat functionality off.

Figure 10. Custom Test Settings – Add New

- Calibration.** Within the Calibration Tab there is a tab for Ticket Summary, Sample Calibration, Jacket Calibration and Calibration Settings.

The Ticket Summary Tab gives an overall calibration summary that can easily be printed. The calibration summary clearly shows the Sample Calibration Data as well as the Jacket Calibration Data as seen in Figure 11 below.



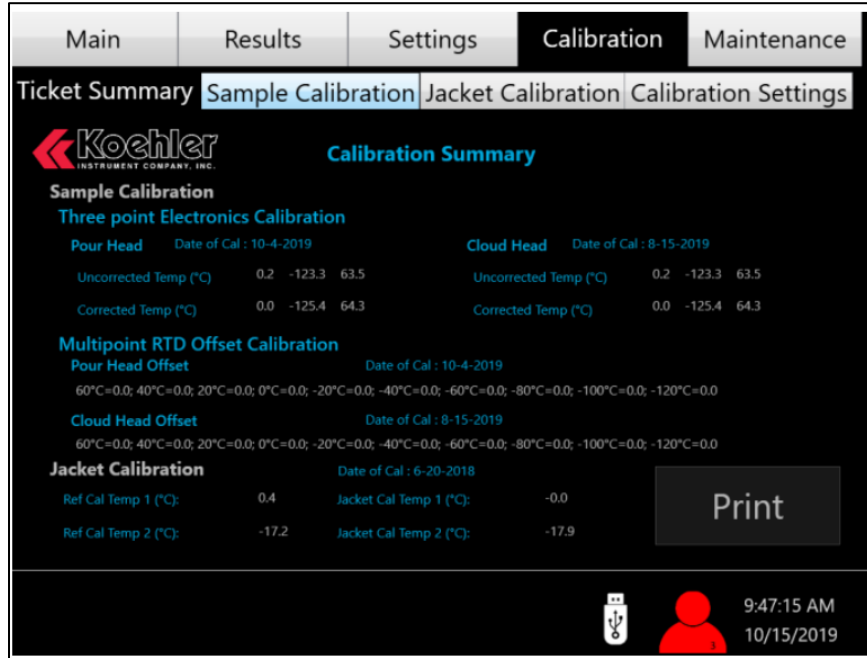


Figure 11. Calibration Ticket Summary

In the Sample Calibration Tab a Three Point Electronics Calibration can be performed as well as a Multipoint RTD Offset Calibration. See Figure 12:

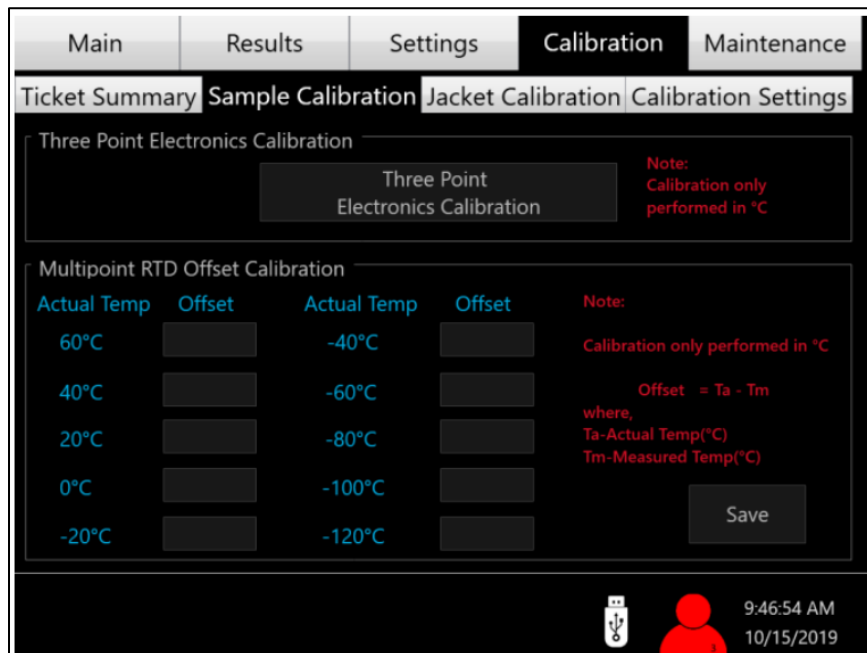


Figure 12. Sample Calibration

The Jacket Calibration can be performed after the Sample Calibration by filling the bath with Methanol, attaching the wireless head unit and then pressing the Start Jacket Calibration button as seen in Figure 13 below.

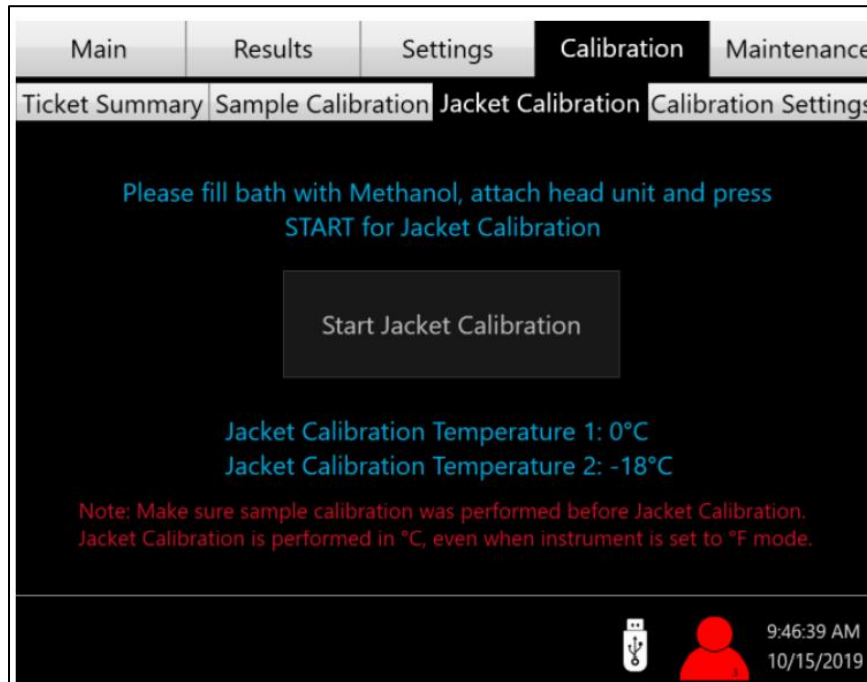


Figure 13. Jacket Calibration

In the Calibration Settings Tab the user can select how often the three point calibration should be run and also tells you the date of the last calibration. Refer to Figure 14.

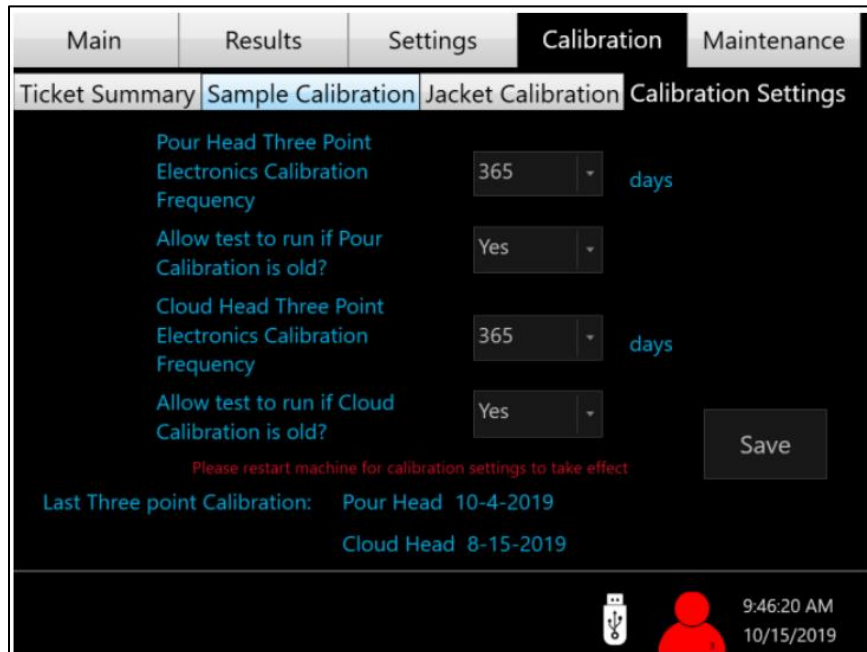


Figure 14. Calibration Settings

- Maintenance.** The maintenance tab shows the overall instrument performance such as: sample and jacket temperature, which head is connected, jacket position, light emitter and light receiver value. From here the light emitter, chiller or heater can be turned on for general maintenance purposes. Figure 15 below shows all the information you can find in the maintenance tab.

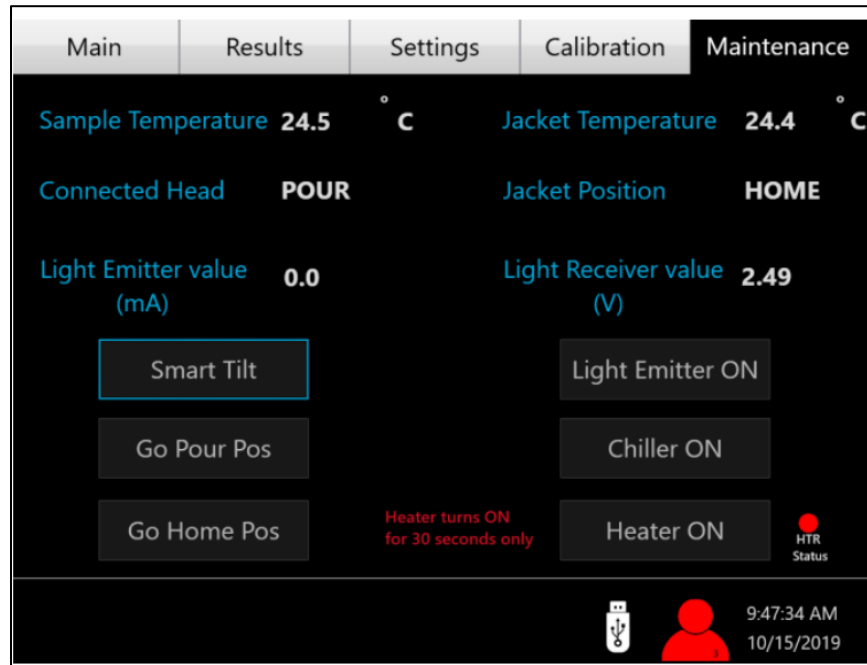


Figure 15. Maintenance Tab

## 5.2. Performing a Test

1. **Starting the Test.** A test can be started from the Main screen Tab that was shown in Figure 2. Enter in the Sample ID, Operator, Expected Value and select the test method from the dropdown menu. When you tap the boxes to enter information a keyboard will appear as shown in Figure 16.

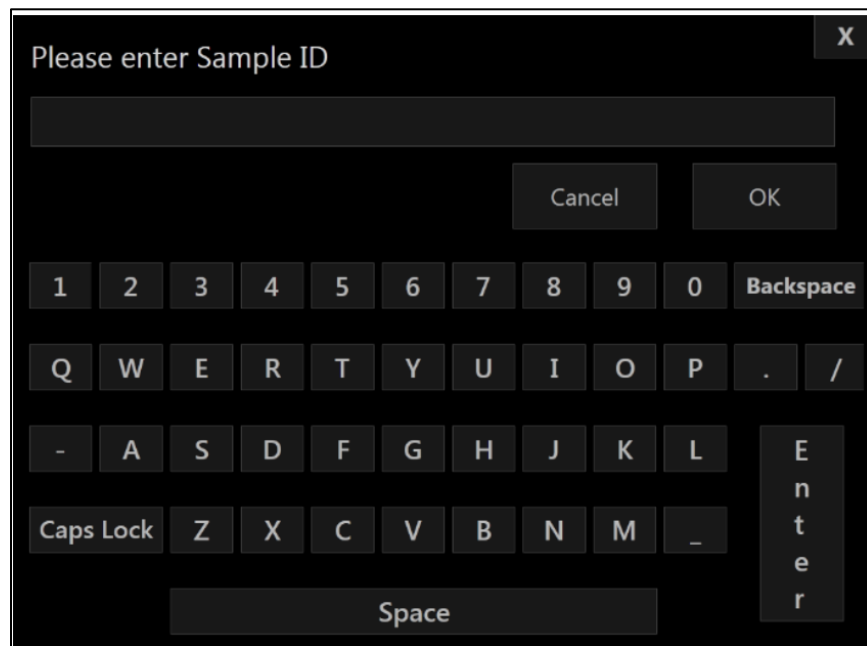


Figure 16. Keyboard

2. Once all the information is entered, press the Start button located in the bottom left corner of the screen. The test will begin and you will see the changes in temperature.
3. Once the test is running there will be a graph of both the sample and bath temperatures vs. time. A sample graph is shown in Figure 17 below.

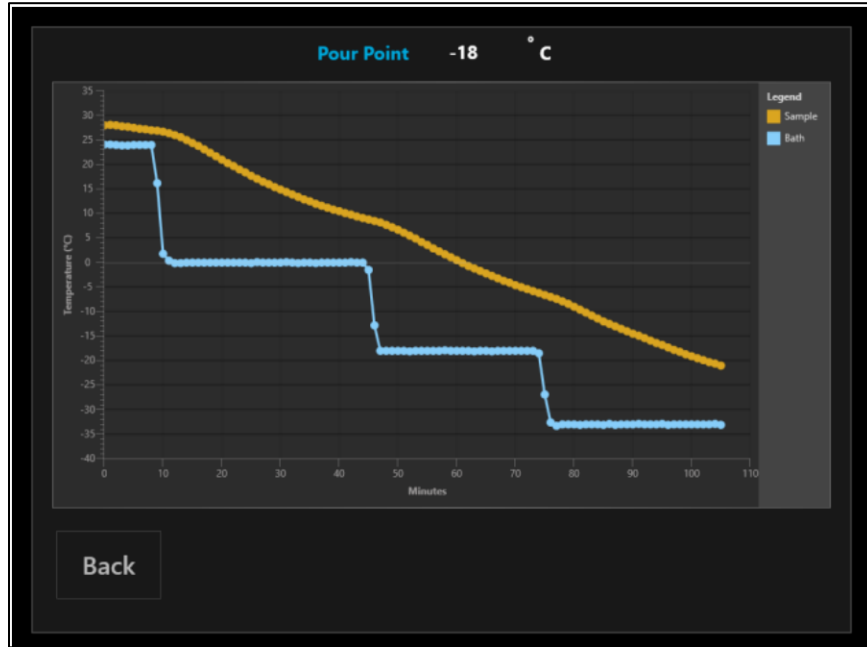


Figure 17. Graph

- When the test is complete you will have the option to print the results. Figure 18 shows a preview of the Print Results Screen.

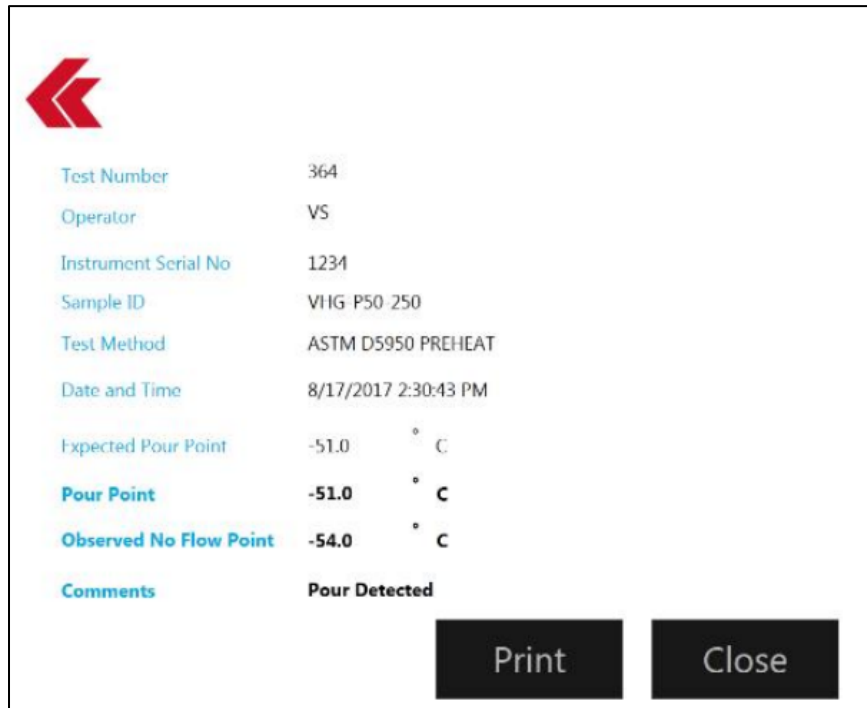


Figure 18. Print Results Screen

## 6. Maintenance



**WARNING:** Disconnect power to the unit before servicing to avoid exposure to high voltages and/or temperatures which may result in personal injury or death. If you have any questions about maintaining your equipment, then please do not hesitate to contact the Koehler technical service department.

## 6.1. Routine Maintenance

The K7700X Automatic Cloud and Pour Point Instrument requires little routine maintenance to provide many years of continuous service. However, over the course of time, some instrument parts may need to be replaced. When ordering replacement part(s), please provide the model number, serial number, and product shipment date of your equipment so that we can ensure you will receive the proper replacement part(s).

## 6.2. Instrument Cleaning


- To clean the instrument's exterior, which includes all painted surfaces, either a solution of soap and water or laboratory grade detergent may be used.
- Apply cleaner to clean wipe or cloth, not to the instrument directly. Wipe surface clean.
- **Do Not** clean bath exterior with organic chemicals such as Acetone, Toluene, Hexane, etc.
- For more difficult cleaning of finished surfaces, a dilute solution of isopropanol in water may be used.
- It is not recommended that more aggressive solvents be used on painted surfaces since paint color will tarnish or be stripped from the instrument.
- The drip pan is removable for easy cleaning and should be emptied as needed.

## 6.3. Replacement Parts

| Part Number  | Replacement Part             |
|--------------|------------------------------|
| K77000-2     | Pour Point Test Vessel       |
| K77001-2     | Cloud Point Test Vessel      |
| K77000-03177 | Cork Disc                    |
| K77000-03163 | Cork Ring                    |
| 278-004-001  | Fuse, 5 x 20 mm, 4A, Slo-Blo |

| Part Number  | Replacement Part |
|--------------|------------------|
| 282-000-002  | Line Cord, 120V  |
| 282-018-027  | Line Cord, 230V  |
| K77000-03178 | K77000-03208     |
| K77000-03208 | K77000-03208     |

## 7. Troubleshooting

 **WARNING:** Troubleshooting procedures involve working with high voltages and/or temperatures which may result in personal injury or death and should only be performed by trained personnel. Please do not hesitate to contact Koehler for assistance.

### 7.1. Unit does not power up

1. Establish that the socket outlet is providing proper and adequate voltage.
2. Check the fuse in the power entry module found on rear of unit.
3. Check if line switch is in the ON position.
4. If problem persists, please call the Koehler technical service department for assistance.

## 8. Service

Under normal operating conditions and with routine maintenance, the K77000, K77001 Automatic Cloud and Pour Point Instruments should not require service. Any service problem can be quickly resolved by contacting Koehler's technical service department either by letter, phone, fax, or email. In order to assure the fastest possible service, please provide us with the following information.

Model Number: \_\_\_\_\_

Serial Number: \_\_\_\_\_

Date of Shipment: \_\_\_\_\_

## 9. Storage

This laboratory test instrument is equipped with electrical components. Storage facilities should be consistent with an indoor laboratory environment. This testing equipment should not be subjected to extremes of temperature and/or moisture.

This equipment was shipped from the factory in a corrugated cardboard container. If long term storage is anticipated, re-packing the instrument in a water-resistant container is recommended to ensure equipment safety and longevity.

## 10. Warranty

We, at Koehler, would like to thank you for your equipment purchase, which is protected by the following warranty. If within one (1) year from the date of receipt, but no longer than fifteen (15) months from the date of shipment, Koehler equipment fails to perform properly because of defects in materials or workmanship, Koehler Instrument Company, Inc. will repair or, at its sole discretion, replace the equipment without charge F.O.B. its plant, provided the equipment has been properly installed, operated, and maintained. Koehler Instrument Company must be advised in writing of the malfunction and authorize the return of the product to the factory. The sole responsibility of Koehler Instrument Company and the purchaser's exclusive remedy for any claim arising out of the purchase of any product is the repair or replacement of the product. In no event shall the cost of the purchaser's remedy exceed the purchase price, nor shall Koehler Instrument Company be liable for any special, indirect, incidental, consequential, or exemplary damages. KOEHLER INSTRUMENT COMPANY, INC. DISCLAIMS ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING ANY IMPLIED WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE. Please save the shipping carton in the event the equipment needs to be returned to the factory for warranty repair. If the carton is discarded, it will be the purchaser's responsibility to provide an appropriate shipping carton.

## 11. Returned Goods Policy

To return products for credit or replacement, please contact Koehler Customer Service with your purchase order number, our packing list/invoice number, the item(s) to be returned and the reason for the return. You will be issued a Returned Authorization (RA) number, which must be prominently displayed on the shipping container when you return the material to our plant. Shipping containers without an RA number prominently displayed with will be returned to the sender. Goods must be returned freight prepaid. Returns will be subject to a restocking charge, the application of which will depend upon the circumstances necessitating the return. Some returns cannot be authorized, including certain products purchased from outside vendors for the convenience of the customer, products manufactured on special order, products shipped from the factory past ninety (90) days, and products which have been used or modified in such a way that they cannot be returned to stock for future sale.



