



## K1019X THIN FILM ANILINE POINT APPARATUS

### *OPERATION AND INSTRUCTION MANUAL*

REV B

**Koehler Instrument Company, Inc.**

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Petroleum Testing & Analysis Instrumentation • Custom Design & Manufacturing



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# CERTIFICATE OF CONFORMANCE

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## Thin Film Aniline Point Apparatus K1019X

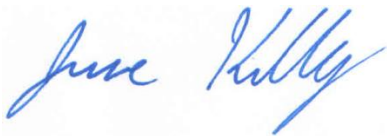
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This certificate verifies that part number K101XX, Thin Film Aniline Point Apparatus, was manufactured in conformance with the applicable standards set forth in this certification.

**Specifications:**

ASTM D611  
IP 2  
ISO 2977  
DIN 51775  
FTM 791-3601  
NF M 07-021

This unit is tested before it leaves the factory, to ensure total functionality and compliance to the above specifications and ASTM standards. Test and inspection records are on file for verification.



**Jesse Kelly**  
Application Engineer  
Koehler Instrument Company



## Table of Contents

<b>1</b>	<b>Introduction .....</b>	<b>2</b>
1.1	<i>Koehler's Commitment to Our Customers .....</i>	2
1.2	<i>Recommended Resources and Publications .....</i>	2
1.3	<i>Instrument Specifications .....</i>	3
<b>2</b>	<b>Safety Information and Warnings.....</b>	<b>3</b>
<b>3</b>	<b>Getting Started .....</b>	<b>3</b>
3.1	<i>Packing List.....</i>	3
3.2	<i>Unpacking .....</i>	3
3.3	<i>Setup.....</i>	3
3.4	<i>Accessories for Running Tests .....</i>	4
<b>4</b>	<b>Operation .....</b>	<b>4</b>
<b>5</b>	<b>Replacement Parts .....</b>	<b>5</b>
<b>6</b>	<b>Wiring Diagrams .....</b>	<b>6</b>
6.1	<i>K10020 Powertrol Heater (115 V Model) .....</i>	6
6.2	<i>K10029 Powertrol Heater (230 V Model) .....</i>	7
<b>7</b>	<b>Assembly Diagram .....</b>	<b>8</b>
<b>8</b>	<b>Troubleshooting .....</b>	<b>9</b>
8.1	<i>Stirrer Shaft Chatters .....</i>	9
8.2	<i>Light Bulb does not Operate .....</i>	9
8.3	<i>Pump body breakage .....</i>	9
8.4	<i>Cover Chatters during Operation .....</i>	9
<b>9</b>	<b>Service .....</b>	<b>9</b>
<b>10</b>	<b>Storage.....</b>	<b>9</b>
<b>11</b>	<b>Warranty.....</b>	<b>9</b>
<b>12</b>	<b>Returned Goods Policy .....</b>	<b>10</b>
	<b>Notes .....</b>	<b>11</b>

## 1 Introduction

The Koehler K1019X Thin Film Aniline Point Apparatus is the latest design for determining the aniline point of petroleum products and hydrocarbon solvents according to ASTM D611 and related test specifications.

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

**Read all instructions pertaining to safety, set-up and operation. Proper operation is the user's responsibility.**

### 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 more than 50 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)**  
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**Email: [info@koehlerinstrument.com](mailto:info@koehlerinstrument.com)**  
**<http://www.koehlerinstrument.com>**

### 1.2 Recommended Resources and Publications

1. 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:

- D611: Standard Test Methods for Aniline Point and Mixed Aniline Point of Petroleum Products and Hydrocarbon Solvents

2. International Organization for Standardization (ISO)  
1, rue de Varembe  
Case postale 56  
CH-1211 Geneva 20, Switzerland  
Tel: 41 22 749 01 11  
Fax: 41 22 733 34 30  
<http://www.iso.org>

#### ISO Publication:

- ISO 2977

3. Energy Institute (IP)  
61 New Cavendish Street  
London, WIM 8AR, United Kingdom  
Tel: 44 (0)20 7467 7100  
Fax: 44 (0)20 7255 1472  
<http://www.energyinstpubs.org.uk/>

#### IP Publication:

- IP 2

4. Deutsche International Norm (DIN)  
<http://www.din.de>

#### DIN Publication:

- DIN 51775:

5. Federal Test Method (FTM)

#### FTM Publication:

- FTM 791-3601

6. Association Française de Normalisation (AFNOR)  
<http://www.afnor.fr>

**AFNOR Publication:**

- NF M 07-021

### 1.3 Instrument Specifications

Models:	K10190 K10191
Electrical Requirements:	115V 60Hz 220-240V 50/60Hz
Bath Medium:	Technical Oil, Suitable Heat Transfer Fluid
Bath Medium Capacity:	400 mL
Dimensions (lwxhxh):	14 ½ x 18 ½ x 20 ¾ in (37x22x53 cm)
Net Weight:	24 lbs (10.9 kg)

## 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

- K1019X Thin Film Aniline Point Apparatus
- Thermometer Ferrule (2)
- K162-2-0-1 Motor Support Rod
- K100-1-11 Clamp
- K1019X Operation and Instruction Manual

### 3.2 Unpacking

Carefully unpack and place the instrument and accessories in a secure location. Unwrap and remove the corrugated cardboard and microfoam from around the cover assembly. Carefully remove the cardboard from between the cooling tube and the glass bottle by pulling the cardboard wrap downward. Unwrap all other components and assemble per the assembly drawing in section 7 of this manual. 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.** Place the instrument on a firm, level table in an area with adequate ventilation or in a hood.

**Ventilation.** A fume hood or exhaust system is required when operating the unit. Flammable vapors and/or steam are generated during operation and must not be permitted to accumulate. A canopy-style hood may be used if the height from the top of the unit to the canopy is 5 feet or less. The exhaust blower should have a rating of 1000 C.F.M. or greater.

**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.

### 3.4 Accessories for Running Tests

Koehler offers a full selection of ASTM standard thermometers which can be ordered separately from the K1019X instrument. The Thin Film Aniline Point Apparatus also requires the use of a Heating Apparatus for testing. All accessories with part numbers are listed below.

Part Number	Description
K10020	Powertrol Heater, 115V 60Hz
K10029	Powertrol Heater, 220-240V 50/60Hz
250-000-33F	ASTM 33F Thermometer, Range: -36.5 to 107.5°F
250-000-33C	ASTM 33C Thermometer, Range: -38 to 42°C
250-000-34F	ASTM 34F Thermometer, Range: 77 to 221°F
250-000-34C	ASTM 34C Thermometer, Range: 25 to 105°C
250-000-35F	ASTM 35F Thermometer, Range: 194 to 338°F
250-000-35C	ASTM 35C Thermometer, Range: 90 to 170°C

## 4 Operation

**NOTE:** Please refer to ASTM test method D611 for detailed operation procedure.

1. Fill jar with light mineral oil, and place sample to be tested in Thin Film Tube.
2. Fasten thin film tube to underside of cover and place cover on jar.
3. Connect both the bath stirrer and pump rotor to the motor by means of the toothed drive

belt. Align the height of the pulleys up or down on the shaft and tightening the set screws.

4. Connect the 6 volt to the 6 volt tap on the powerstat and observe that the light is on and functioning.
5. With all components assembled, proceed with the test according to D611.
6. Allow bath to heat at proper rate and observe aniline point as sample spills over lighted section of the tube, record the temperature when aniline point is reached.
7. Clean thin film tube and prepare for the next test

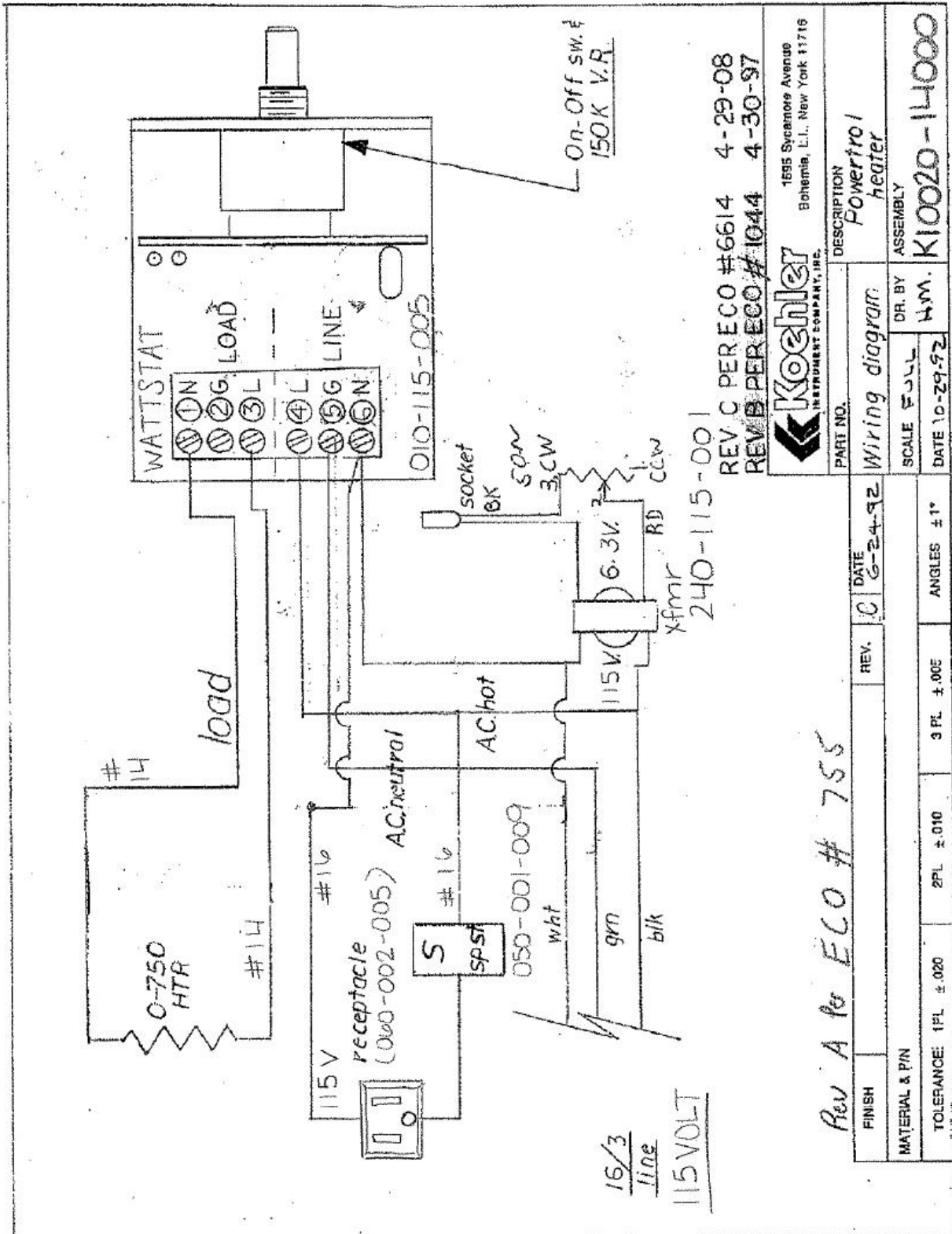


## 5 Replacement Parts

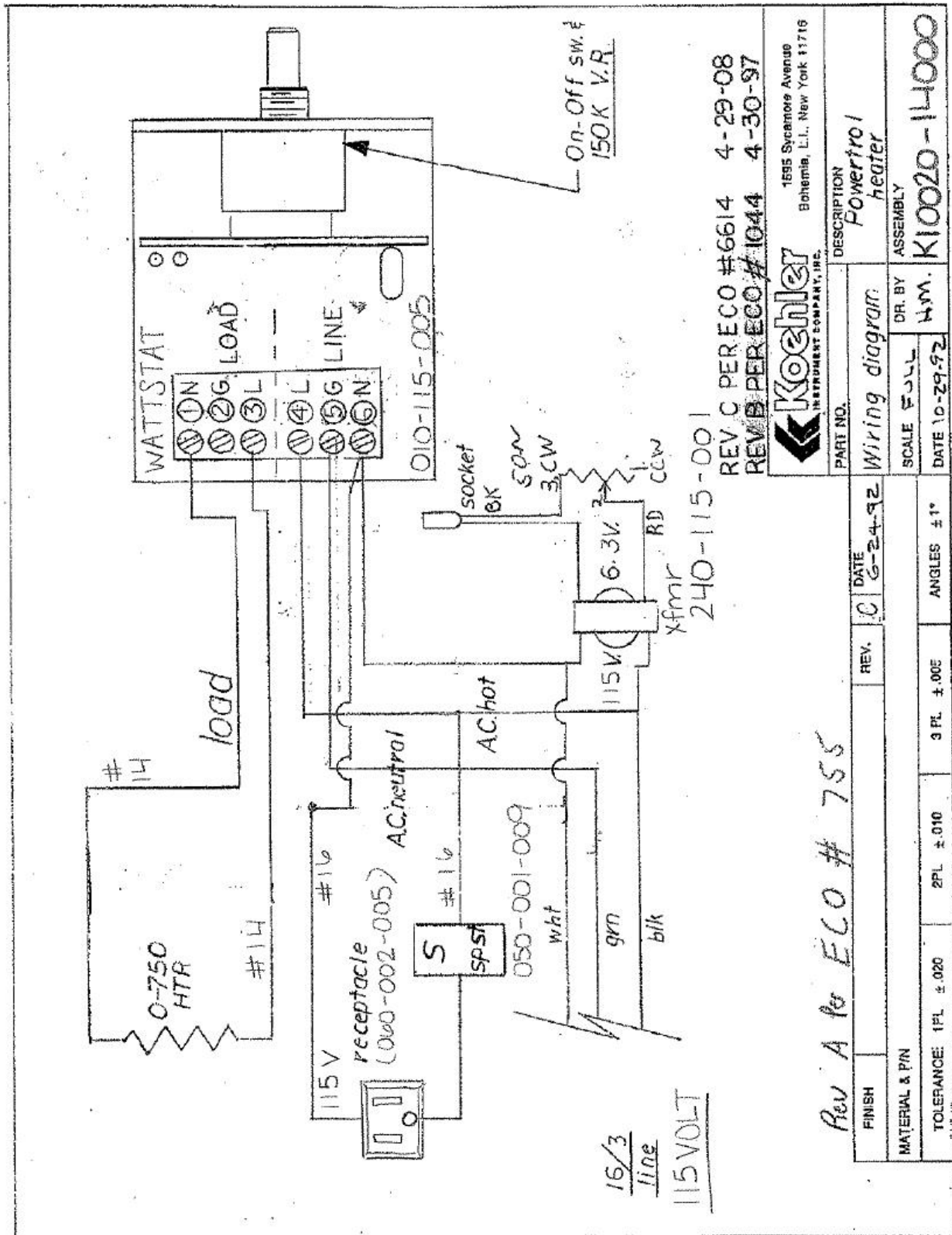
Part No	Description
K10120	Pump Body
K10130	Thin Film Tube
K101-0-10S	Pump Pulley
K10110	S/S Pump Rotor
K100-1-3	Light Assembly
K100-0-11	Support Rod
K100-1-17	Collar
K100-0-18S	Stirrer Pulley
K100-1-1	Cooling Tube Assembly
K10000-01000	Bath Stirrer Assembly
K101-0-12	Pump Collar
K100-0-19	Stirrer
K101-0-13	Washer
K100-0-24	Washer
288-115-001	Dayton Motor
K100A-0-2	Motor Bracket
K101A-0-3S	Pulley
K10010	Borosilicate Beaker
K10050	Belt
K162-2-0-1	Support Rod
225-115-001	Heater, 750W, 115V
225-230-001	Heater, 750W, 230V
010-115-005	Wattstat, 115V
010-230-004	Wattstat, 230V

## 6 Wiring Diagrams

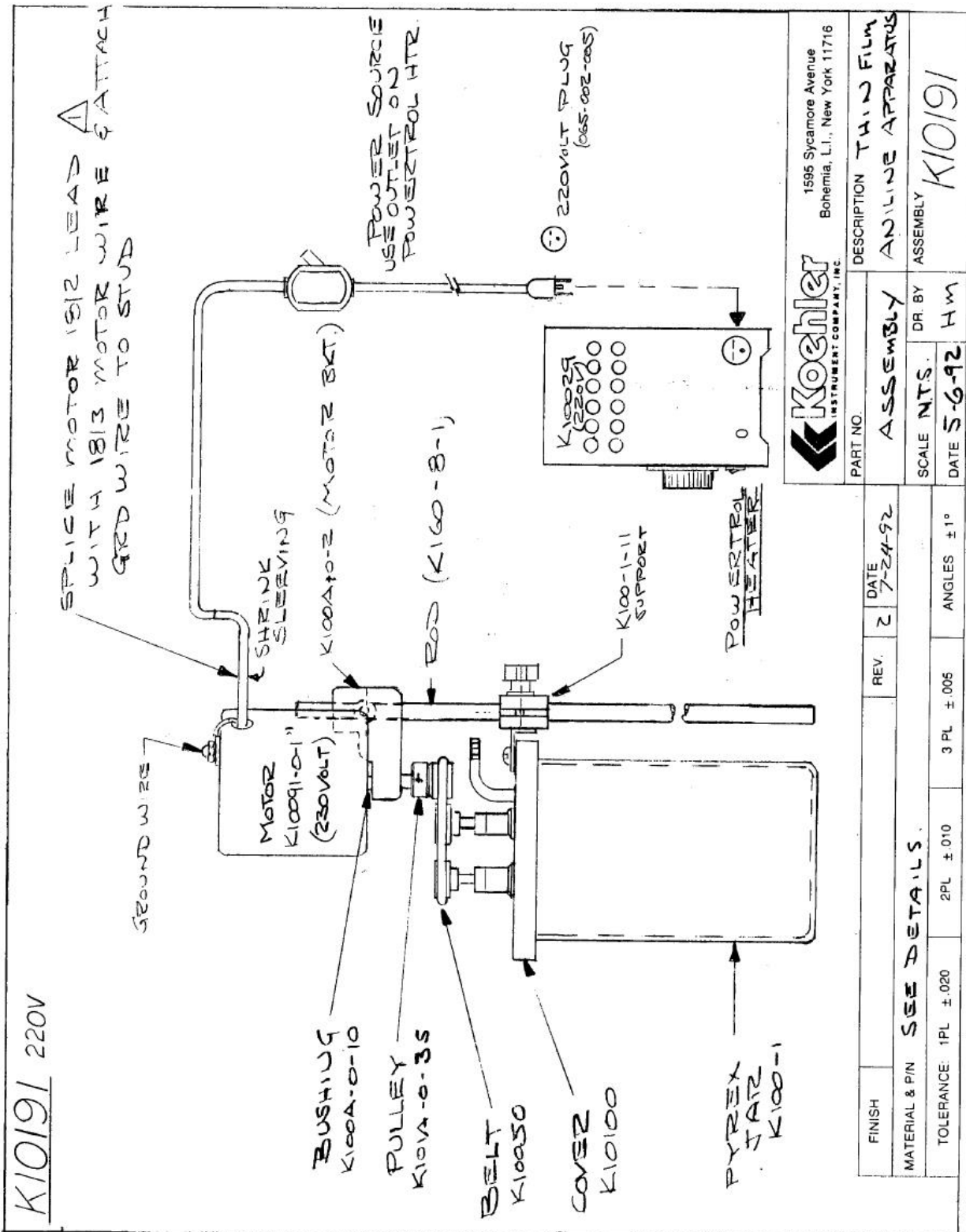
### 6.1 K10020 Powerrol Heater (115 V Model)



**6.2 K10029 Powertrol Heater (230 V Model)**



## 7 Assembly Diagram





## 8 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.

### 8.1 *Stirrer Shaft Chatters (Doesn't Operate Smoothly)*

- Shaft bearings need replacement. This must be done by Koehler Technical Service or an authorized Koehler factory representative

### 8.2 *Light Bulb does not Operate*

- Replace Bulb – P/N 279-063-002

### 8.3 *Pump body breakage*

- To prevent breakage of the pump body, ensure that the stainless steel rotor rotates freely inside the pump body.
- If polishing the rotor does not correct the problem, return the pump body and rotor to Koehler for replacement

### 8.4 *Cover Chatters during Operation*

- Ensure that the top assembly is firmly secured to the jar. Adjust the support clamps on the upright support bar as needed.

## 9 Service

Under normal operating conditions and with routine maintenance, the K1019X Thin Film Aniline Point Apparatus should not require service, but occasionally place a drop of oil on the pump and stirrer rods. 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: \_\_\_\_\_

## 10 Storage

This laboratory test instrument is equipped with electrical and mechanical 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.

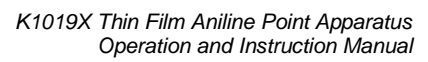
## 11 Warranty

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.

## **12 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.

[illegible]

[illegible]