

# AUTOMATIC DISTILLATION OF PETROLEUM PRODUCTS



**K45603 Automatic Distillation Analyzer with Optional External PC**

## Specifications

Conforms to the specifications of:

ASTM D86, D285, D850, D1078, D4737; D189 Section 10; DIN 51751; ISO 3405; IP 123; IP 195; JIS K0066; JIS K2254; NF M 07-002

Electrical Requirements: **CE**

120V 60Hz 20A

230V 50/60Hz 10A

Temperature

Distillation Range: 0 to 450°C ( $\pm 0.1^\circ\text{C}$  accuracy)

Condenser:  $-5$  to  $60^\circ\text{C}$  ( $\pm 0.1^\circ\text{C}$  accuracy); closed loop system

Receiver Chamber: 0 to  $60^\circ\text{C}$  ( $\pm 0.1^\circ\text{C}$  accuracy)

Distillation Parameters:

Distillation Rate: 2 to 15mL/min in 0.1mL increments, user selectable

Receiver Volume: 0 to 100mL ( $\pm 0.01\text{mL}$  accuracy) by photoelectric infrared detection of meniscus by level following system utilizing a precision stepper motor and a special calibrated glass receiver; automatic calibration of evaporated loss volume and automatic volume calibration system ensures highest accuracy

Barometric Pressure: Automatic barometric correction utility with automatic sensor, range 550 to 900 mm Hg ( $\pm 1$  mm Hg accuracy)

Dry Point Detection: Automatic dry point detection board is included with standard equipment and only requires a dry point sensor, 200mL flask and PTFE plug for ASTM D850 and D1078 tests.

Environment: Operates at 0 to  $25^\circ\text{C}$  ( $113^\circ\text{F}$ )

**Dimensions** lwxh,in.(cm)

21x21.5x27.75 (53.3x54.6x70.5)

Net Weight: 230 lbs (91kg)

**Shipping Information**

Shipping Weight: 260 lbs (95 kg)

Dimensions: 28 Cu. ft.

## Test Method

The sample is evaporated and condensed under controlled conditions, and observations are made of the temperatures at which various percentages are recovered and/or the percentages recovered at specific temperatures.

## Automatic Distillation Analyzer 5000 Series

- Conforms to ASTM D86, D285, D4737 and related international specifications
- Pt-100 RTD probe with **automatic temperature calibration system** ( $^\circ\text{C}$  or  $^\circ\text{F}$ )
- Windows<sup>®</sup>-based software package for PC control with LIMS export capabilities
- Automatic determination of initial boiling point (IBP), final boiling point (FPB), dry point and barometric and residue corrections
- Diagnostic system continuously ensures proper unit performance and user safety
- Automatic temperature and volume calibration
- Programmable distillation rate (2-15mL/min)
- Ready for distillation groups 1 - 4
- Networking for up to 32 units
- Powerful CFC-free cooling and heating system
- Receiver chamber heating system up to  $60^\circ\text{C}$
- Precision level follower system with optical meniscus detector
- Integrated automatic fire extinguishing system with manual operation override

The Koehler Automatic Distillation Analyzer is designed to perform optimal distillation analyses of gasolines, fuels, oils, solvents, aromatics, naphthas, kerosenes, hydrocarbons, and other volatile products to ensure conformity to rigid quality control standards. The analyzer automatically performs tests, processes results, and produces standard reports according to ASTM, ISO, and related specifications.

**Two Models are Available**-The Automatic Distillation Analyzer 5000 Series may be ordered for operation with an external PC (purchased separately) or may be ordered with a built-in PC, internal touch screen monitor, virtual keyboard and mouse. An easy-to-use Windows<sup>®</sup>-based PC communication software expands user capabilities for data analysis and unit control. Distillation methods and parameters can be easily created or modified. Software calculates repeatability and reproducibility as per ASTM D86 as well as standard and deviation against reference materials. Test results are displayed in real-time and can include distillation curve and temperature with or without barometric compensation and/or evaporation correction, distillation rate, heating power curve, master curve comparison, and zoom function for high resolution of heating and temperature curves. The heater compartment is rapidly cooled at the completion of a distillation run to reduce operator downtime. The analyzers are of rugged construction for instrument longevity with a modular design for easy routine maintenance.

**Receiver Chamber Heating System**-The receiver chamber heating system is ideal for samples that form waxes or other solids during distillation.

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**Dry Point Detection as Standard Feature-** Dry point can be detected visually or by automatic detection for ASTM D850 and D1078 test methods. The unit is delivered ready with the PC board components already included as standard to perform the dry point analysis. Simply order the Automatic Dry Point Detection Kit for Solvents (see Ordering Information at right) which includes dry point thermocouple, 200mL flask and PTFE plug to perform dry point detection analysis automatically.

**Ready for Groups 1 - 4 and more-**Each Koehler Automatic Distillation Analyzer 5000 Series comes ready with the equipment, accessories and features as standard to properly run distillation groups 1 to 4 per ASTM D86 and related test specifications. No additional accessories are required. The Windows®-based software package allows simple operator selection of the programmed settings for each distillation protocol. No complicated routines are needed to set up the unit. User defined programs are easily created for customization of the analyzer.

**Calculated Cetane Index-**Calculated cetane index is a useful tool for estimating ASTM D4737 cetane number where a test engine is not available for determining this properly. It may be conveniently employed for approximating cetane number where the quantity of sample is too small for an engine rating. In cases where the cetane number of a fuel has been initially established, the index is useful as a cetane number check on subsequent samples of that fuel, provided its source and mode of manufacture remain unchanged. The Cetane index is automatically calculated at the end of the test if all the necessary variables are entered and is a component of the Windows®-based software which comes standard with the unit.

**Carbon Residue on 10% Distillation Residue-**As per section 10, ASTM D189 the procedure for carbon residue of light distillate oils can be performed.

### Included Accessories

Distillation Flask, 125mL with Markings  
Ceran Plate, 25mm dia. hole  
Ceran Plate, 38mm dia. hole  
Ceran Plate, 50mm dia. hole  
3 Point Calibrated PT100 Thermometer with Cable and Plug  
Special Graduated Receiver Cylinder with Base  
Wiper for Condenser Tube  
Dropping Plate  
Teflon Plug for 125mL Flask  
Silicone Plug for Flask Side Arm  
Dry Point Detection Board  
Windows®-based Automatic Distillation Software



**K45703-TS Automatic Distillation Analyzer with Touch Screen Display and Integrated PC**

### Ordering Information

#### Automatic Distillation Analyzer 5000 Series

##### Catalog No.

<b>K45603</b>	Automatic Distillation Analyzer, 120V 60Hz
<b>K45604</b>	Automatic Distillation Analyzer, 230V 50/60Hz
<b>K45703-TS</b>	Automatic Distillation Analyzer with Touch Screen Display and Integrated PC, 120V 60Hz
<b>K45704-TS</b>	Automatic Distillation Analyzer with Touch Screen Display and Integrated PC, 230V 50/60Hz

#### Accessories

<b>K45634</b>	Distillation Flask, 125mL with Markings
<b>K45635</b>	PTFE Centering Stopper for 125mL Flask
<b>K45655</b>	Ceran Plate, 32mm dia. hole
<b>K45656</b>	Ceran Plate, 38mm dia. hole
<b>K45657</b>	Ceran Plate, 50mm dia. hole
<b>K45656-A</b>	Ceran Plate, 25mm dia. hole
<b>K45650</b>	PT100 Thermometer with Cable and Plug
<b>K45651-E</b>	Special Graduated Receiver Cylinder (with base)
<b>K45651-B</b>	Special Graduated Receiver Cylinder (without base)
<b>K45601-03014</b>	Condenser Tube Cleaning Assembly
<b>K45668</b>	Dropping Plate
<b>K45654-A</b>	Flask 200mL with Silicon Plug
<b>K45652-C</b>	Silicone Plug
<b>K45654</b>	Automatic Dry Point Detection Kit for D850 and D1078