



EIE

## Fully Automatic Universal Penetrometer

### **Introduction**

EIE – Fully automatic penetrometer is an intelligently designed device for determining the consistency or hardness of a substance by measuring the depth or rate of penetration of a rod/needle/hollow cone/solid cone/ tapered cone driven into it by a known force. EIE – Fully automatic penetrometer is ideal for testing a wide range of materials to determine their hardness or softness quality (Consistency).

### **Complies with following International Standards**

ASTM D5, ASTM D217, ASTM D937, ASTM D1321, AASTHO T-49, IP 50, IP 49, IP 179

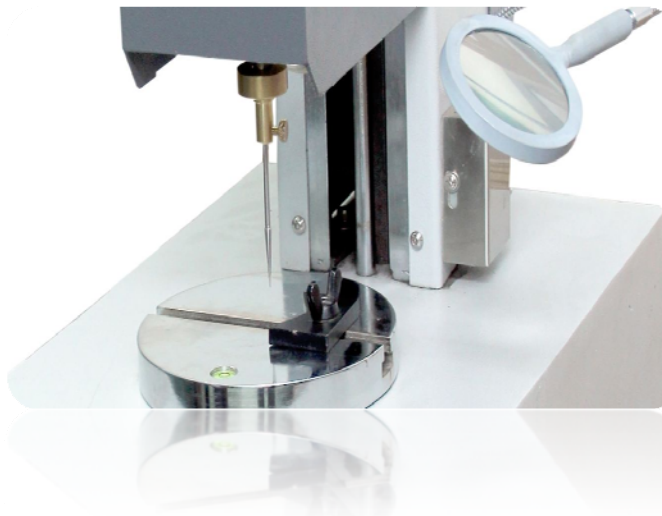


### ***Principle of operation***

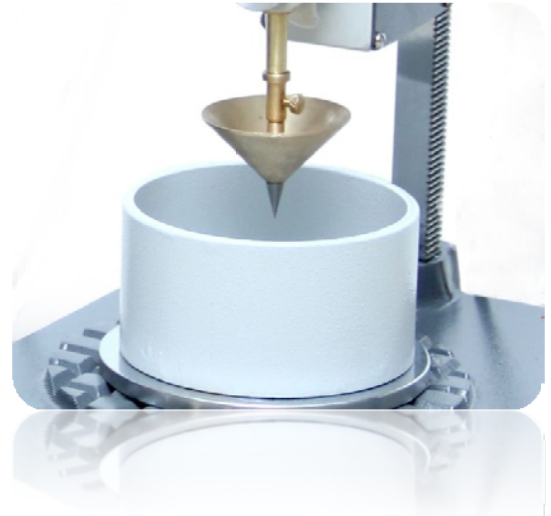
Penetration tests are performed on petroleum products to determine consistency and shear stability (lubricating greases) for design, quality control and identification purposes. A standard cone or needle is released from a penetrometer and allowed to drop freely into the sample for 5 seconds (or a different specified interval) at constant temperature. The depth of penetration of the cone or needle into the sample is measured in tenths of a millimeter by the optoelectronic sensor fitted within the penetrometer.

### ***Applications***

- 1) Needle Penetration of Bituminous Materials **ASTM D5; IP 49; DIN 52010**
- 2) Cone Penetration of Lubricating Grease **ASTM D217; IP 50; ISO 2137; DIN 51804; FTM 791-311, FTM 791-313**
- 3) Cone Penetration of Petrolatum **ASTM D937; IP 179; ISO 2137; DIN 51580**
- 4) Needle Penetration of Petroleum Waxes **ASTM D1321; IP 376; DIN 51579**
- 5) Cone Penetration of Lubricating Grease Using One-Quarter and One-Half Scale Cone Equipment **ASTM D1403; IP 310; ISO 2137; DIN 51804**



***Needle Penetration***



***Cone Penetration***

### ***Salient Features***

- ❖ Fully Automatic operational Design
- ❖ Compact design and rugged construction ensures long service life
- ❖ Compact design also facilitates easy transport for field applications.
- ❖ Sturdy cast iron base provides excellent support
- ❖ Digital Alphanumerical LCD touch screen display with keyboard (LCD Make : **Schneider Electric**)
- ❖ Optoelectronically depth detection & measurement through imported optoelectronic sensor
- ❖ Automatically timed programmable penetration measurements -  
Preset penetration time at factory (Operator can also enter the user defined penetration interval through LCD touch screen)
- ❖ Motorized placement of penetrator on sample surface
- ❖ Penetrometer arm automatically comes back to its home position at the end of 5 seconds penetration test
- ❖ In-built Facility to tare and reset the measurement results
- ❖ Display resolution of penetration depth in tenths of units (0.01mm)
- ❖ Magnifying lens for adjusting needle tip/cone tip exactly on the sample surface
- ❖ Low voltage Illuminator mounted on flexible arms to assist an operator during testing
- ❖ Built-in spirit level and leveling screws to ensure proper alignment
- ❖ Micrometer differential gearing mechanism for fine movement of head
- ❖ Weight of the Needle/Cone and plunger match the criteria of ASTM and IP requirements.
- ❖ The penetration value is measured and indicated on digital LCD display
- ❖ Large, removable base accommodates grease worker cups and other ASTM and non-standard sample containers
- ❖ Complete selection of penetrometer cones, needles and accessories for petroleum products testing and for a wide range of other applications (See optional accessories)
- ❖ Supplied complete with Needle/cone, container and applicable weight



**EIE****Fully Automatic Universal Penetrometer****Technical Specifications of EIE – Universal Penetrometer**

<i>Attributes</i>	<i>Specifications</i>
<b>Instrument Body</b>	Fabricated from Mild Steel Material
<b>Paint</b>	Powder coating in attractive shades
<b>Body Size</b>	22" x 14" x 21" (L x W x H)
<b>Electric motor</b>	Reputed make induction motor for up and down movement of penetrometer arm
<b>Sensor</b>	Imported Optoelectronic Sensor for penetration depth measurement
<b>Controller</b>	Programmable Touch screen LCD Controller
<b>Display</b>	Colour LCD Display
<b>Touch screen Make</b>	Schneider Electric
<b>Penetration measurement accuracy</b>	1/100 <sup>th</sup> mm (0.01 mm)
<b>Data storage</b>	Up to last 10 readings and further expandable (optional)
<b>Power supply</b>	220 Volts, 50 Hz, Single Phase, AC Supply
<b>Ambient Temperature</b>	40 C
<b>Ambient Humidity</b>	40% - 80% Rh
<b>Special Features</b>	<b>Auto-reversal on completion of penetration test cycle</b>
<b>Standard Supply</b>	<ol style="list-style-type: none"><li>1) Penetrometer Unit</li><li>2) Needle/Hollow cone/Solid cone as per test requirement</li><li>3) IQ, OQ Documents in case of Pharmaceutical Industries</li><li>4) Test Report</li><li>5) Calibration Certificate</li></ol>



**EIE**

**Fully Automatic Universal Penetrometer**

*Manufactured By*



*Marketed By*



**EIE INSTRUMENTS PVT. LTD.**  
(An ISO 9001 : 2008 Certified Company)

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