

# AUTOMATIC CONE PENETRATION TESTER



# **Automatic Cone Penetration Tester TT-217Z**

Automatic Cone Penetration Tester TT-217Z is utilized to evaluate the consistency of lubricating greases and wax, as well as to assess the needle penetration for bitumen products.

## **APPLICATIONS**

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The primary application of the Automatic Penetration Tester TT-217Z is to determine the hardness or consistency of various semi-solid materials. It does this by measuring the depth (in tenths of a millimeter) that a standardized cone or needle penetrates a sample under controlled conditions.

It is used for several key tests, including:

- **Cone Penetration of Lubricating Greases** (ASTM D217, ASTM D1403)
- **Needle Penetration of Bituminous Materials / Asphalt** (ASTM D5)
- **Needle Penetration of Petroleum Waxes** (ASTM D1321)

## Key Industries

- **Lubricant Manufacturing:** This is a fundamental test for quality control in grease production. The penetration value defines the NLGI (National Lubricating Grease Institute) consistency grade of the grease, which is a critical performance property.
- **Road Construction & Paving:** The penetration test is used to grade asphalt binders (bitumen). The "pen grade" is a direct measure of the asphalt's hardness, which is essential for ensuring it will perform correctly in a specific climate and under certain traffic loads.
- **Petroleum Refining:** Refineries produce the primary feedstocks for all these products. They use penetration testing for quality control of petroleum waxes and asphalt binders before they are sold or further processed.

## FEATURES

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## Applicable standard

- ASTM D217
  - ASTM D1321
  - ASTM D5
  - ASTM D1403
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- The instrument automatically detects cone penetration and utilizes laser transmission for non-contact detection, significantly reducing human interference.
  - Features a 6-inch color LCD touch screen for automatic detection and storage of test results.
  - Equipped with an electric lifting system that allows for electronic adjustment of lifting speed.
  - Base adjustment mechanism includes fine-adjusting anchor screws and leveling round blisters embedded in the surface. This enables easy adjustment of the base table's level by adjusting the anchor screws.
  - Utilizes a DC low voltage locking device for safety and reliability.
  - The instrument offers a wide measuring range, capable of measuring full-size, 1/2, and 1/4 penetrations, as well as the penetration of asphalt and paraffin wax (ASTM D5, ASTM D1321).

## TECHNICAL SPECIFICATIONS

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Measuring range: 0 to 500 cone penetration units.

Vertebral body release stroke: Over 62mm.

Laser sensor: Utilizes a Japanese Panasonic laser component system.

Minimum reading: 1 cone penetration unit.

Timing range: Adjustable from 5 seconds to 90 seconds.

Timing error:  $\leq 0.02$  seconds.

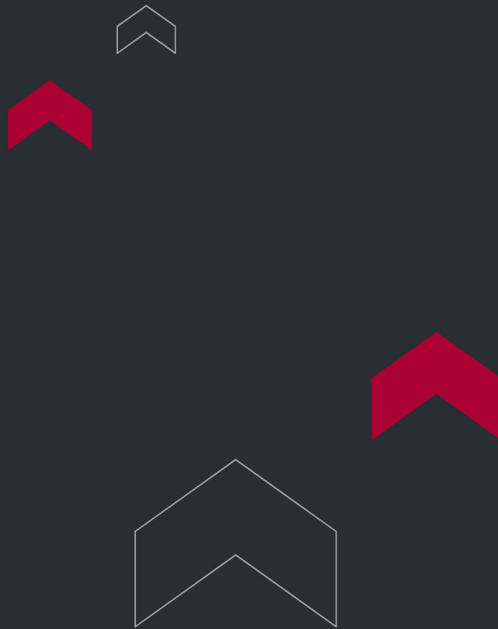
Repeatability:  $<2+0.03P$ , where P is the arithmetic mean of the two measurement results.

Stability:  $\Delta u \leq 0.2$ .

Temperature control range: 23 degrees Celsius to 60 degrees Celsius.

Power supply: AC220V $\pm$ 10%, 50Hz $\pm$ 2%. (110V also available)

| Packing List |                                                     |       |      |                   |
|--------------|-----------------------------------------------------|-------|------|-------------------|
| No.          | Item                                                | Unit  | Qty. | Remark            |
| 1            | Main Unit                                           | Set   | 1    | Standard equipped |
| 2            | Full size worker                                    | Set   | 1    | Standard equipped |
| 3            | Full cone                                           | Piece | 1    | Standard equipped |
| 4            | Cone rod                                            | Piece | 1    | Standard equipped |
| 5            | Scraper                                             | Piece | 1    | Standard equipped |
| 6            | 1/2 worker                                          | Piece | 1    | Optional          |
| 7            | 1/2 Cone                                            | Piece | 1    |                   |
| 8            | 1/4 worker                                          | Piece | 1    |                   |
| 9            | 1/4 Cone                                            | Piece | 1    |                   |
| 10           | Dedicated constant temperature bath□ 25℃ $\pm$ 0.1℃ | Set   | 1    |                   |



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