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Application Brief

TROXLER MODEL 5850

Superpave™ Gyratory Compactor

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Introduction

The Troxler Model 5850 Superpave™ Gyratory Compactor provides compaction of asphalt specimens at a given consolidation pressure, angle, and number of gyrations for mix design and QA / QC purposes. The Model 5850 meets or exceeds all Federal Highway Administration (FHWA) Superpave specifications. This application brief will describe the improvements in operation, maintenance, and durability over previous models and highlight the features of the Model 5850 Gyratory Compactor.

Background

The Model 5850 Gyratory Compactor's innovative design eliminates electric motors, cam followers, chains and couplers to provide a durable, low maintenance, and quiet gyratory compactor that will stand up to the demands of any asphalt lab. The Model 5850 provides significant improvements in frame rigidity, ease of operation, maintenance requirements, noise emissions and angle adjustment over previous gyratory compactors. Ease of transportation, ensured by reduced weight and a compact design, makes the Model 5850 compactor ideal for field laboratories and construction trailers.

Troxler Technology

The Troxler Model 5850 Gyratory Compactor offers numerous advantages over previous gyratory compactors. The Model 5850 uses an innovative method of gyration and angle induction. Previous compactors induced the angle by using cam-followers to hold a heavy ring attached to the mold. By offsetting the cam-followers and then rotating all the cam followers about the mold, the angle was induced and gyration accomplished. This design caused wear due to the friction induced during the gyration process.

The efficient design of the Model 5850 eliminates the friction points that cause wear and reduces the noises produced during the compaction process. Also, with no horizontal surfaces involved in angle inducement, the Troxler method is less prone to angle error due to asphalt or debris build-up. The result is a quiet gyratory that produces samples with a high degree of repeatability and low incidence of failure due to worn parts.

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Operation

The Model 5850 compactor offers two modes of operation: gyration to a specific height, and gyration to a set number of gyrations. After choosing a mode the compaction process is started by a single key press. The compactor is shipped from the Troxler factory calibrated to the SHRP/Superpave specifications. All calibrations can be quickly verified using processes that are largely automatic. Height verification is performed by placing a single standard in the sample chamber and entering the actual standard height.

Pressure verification is performed by placing a load cell in the sample chamber and connecting the output to the compactor through the serial port. The system then automatically performs pressure verification and displays the results. Angle calibration can be verified using a DAV II or RAM internal angle device. Any angle adjustment can be made quickly via the keypad. Angle and pressure are both adjustable features.

Data Storage and Output

This equipment is capable of storing the last 20 sets of sample data, marking each data set with a time and date stamp. Results from the tests may be viewed on-screen, sent to a printer, or uploaded to a computer. The data stored in memory for later viewing or printing includes the sample height, angle of gyration, gyration number and shear data (if equipped with this option).

Main Features

The Model 5850 features a lightweight and compact design which allows for ease of transportation and deployment in field laboratories and construction trailers. A rigid frame and electronically controlled angle induction ensures consistent specimen conformance and repeatability. Illuminated display and sample chamber (optional feature) improve visibility in low light conditions.

The use of hydraulics eliminates electric motors, chains, belts, and couplers. Cam-followers are not used, which means fewer moving parts and less maintenance. The tall molds allow preparation of samples up to 185 mm in height. These are used in the Simple Performance Test.

The Model 5850 compactor is designed to produce 150-mm, 100-mm and 4-inch diameter specimens. Shear measurement is an optional feature which can be installed at the time of purchase or later in the field. This system includes transducers which measure the shear forces on the sample, giving a true indication of the shear value.

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Keypad

The Model 5850 keypad consists of 19 keys. Above the keypad is a backlit 4-line by 20-character Liquid Crystal Display (LCD) screen. Up and Down arrow keys allow for ease of navigation through menu information displayed on the LCD screen. The display is equipped with a beeper function to verify keypad input and an audible beep to indicate the completion of an asphalt sample preparation.

Power Consumption

This compactor operates on 115 VAC, 60 HZ, 10 amps.

Summary

The Troxler Model 5850 is used for Superpave mix design and QC/QA sampling. Two test modes are available for use**:** gyration to height or number of gyrations. The compactor offers one-button operation after the test mode is selected. Smaller and lighter in design, the compactor is more portable, making it ideal for construction trailers and field labs. A rigid frame and software-controlled angle ensures repeatable results every time.

This third generation gyratory compactor provides significant improvements over all other compactors in ease of operation, low maintenance, durability and reliability. With all these valuable features and competitive pricing, the Model 5850 Gyratory Compactor is a necessity for any asphalt lab.