

Precision Machine & Welding

WheelTracker

The WheelTracker is a piece of lab testing equipment for the asphalt industry. Constructed of about 93% stainless steel, this Hamburg-style wheel tracking machine measures the effects of rutting and moisture damage on asphalt paving mixtures by simulating roadway conditions (such as heavy rain and heavy use) in a controlled environment.

Two stainless steel wheels (203mm diameter x 47mm wide) simulate road wear by pressing against each test specimen with 158 pounds of pressure at the point of contact. Stainless steel wheels can be replaced with rubber wheels of approximately the same dimensions. Wheel weight can be adjusted by purchasing the optional Wheel Weight Adjustment Kit.

Each wheel is connected to a separate Linear Value Displacement Transducer (LVDT) to measure the deformation of two separate samples, at eleven equally-spaced points (including specimen center-point) across each sample. The LVDTs have a range of deformation from 0 to 30mm (± 0.10 mm). Both wheels move simultaneously. Should either one of the test specimens reach the maximum deformation defined for a test before the test is complete, the WheelTracker will lift the wheel from the failed specimen and continued testing the other specimen.

Both wheels are moved back and forth by means of a motor gearbox & crankshaft connecting rod assembly. Each wheel is mounted on a slider frame, which in turn is mounted on four linear bearings. Using its frequency drive, the WheelTracker is capable of running between 36 and 70 passes per minute (PPM), user adjustable in 1 PPM increments.

Temperature is maintained constant with a water bath. The heaters are controlled with an SSR controller that is in turn driven by a PID loop in the PLC. The temperature is controlled from room temperature (or a minimum of 15°C) to 70°C. Water is circulated over a weir plate and back into the heating reservoir and from there pumped through a particulate filter system and returned to the water bath. A water level of about 1 inch above the sample is maintained. The machine is partially self-cleaning as well as having auto-fill and auto-drain functionality. Using the optional Air Heat environment, the WheelTracker can warm samples to 76°C for testing high heat environmental conditions.

Tests can be run for any number of passes (up to 400,000) in a combination of five phases, with data read at a user specified regular interval during each phase. The test information is compiled during the test. At the end of the test, the data is compiled into a database and can be opened by the included WTGraph program and several pre-designed analysis can be applied, such as regression analysis. Test data can also be exported to an Excel spreadsheet.

Necessary safety features are provided. The frame itself has been designed to keep the operator at a safe distance from all moving parts to protect from injury. Lock-outs are provided when wheels are in the raised position and a guard is provided around the linear bearings.

The machine is also designed to minimize down-time. All movements are as smooth as possible. One set of six spacer plates support each testing tray and are removable to adjust the specimen height in water. The testing bath is deep enough to allow specimen thicknesses between 40mm and 120mm (in 20mm increments). One set of two trays (either 2-40mm trays or 2-60mm trays) are supplied with the machine. Additional 40mm and 60mm trays, as well as 80mm, 100mm and 120mm trays are also available. Please see our website for prices.

The entire system is controlled by a PC & PLC system. The PC software is of original design, based on Microsoft Windows platforms, and easy to operate. The user can set testing conditions before the test and control conditions during the test. The programmable test will not start until the water has reached testing temperature, and then waits a user-defined time, soaking the test specimen and bringing it to the same temperature.

The testing apparatus meets or exceeds the following requirements:

- The frame, water bath, and all parts in contact with water shall be manufactured with stainless steel, brass, copper, or plastic.
- Gear electric motor, 3 phase 208/240 volt, with variable frequency drive for testing at variable speeds.
- The machine can be configured to run on 480 Volts (additional charge applies)
- Automatic circulation pump with in-line filter.
- Two heating elements with a minimum capacity of 4500 Watts each.
- Automatic drain and automatic fill of the water bath.
- Able to perform test with or without water in the water bath container.
- The testing apparatus automatically continues testing until both test specimens reach the established failure criteria selected by the user.
- The testing apparatus comes with two stainless steel mounting trays to hold test specimens with a height of 40mm, 60mm, 80mm, 100mm, or 120mm
- The testing apparatus shall automatically adjust the water level such that the heating elements are always covered with water.
- The vender will provide a complete testing apparatus with a fully automated data acquisition and test control system (computer included) as well as accessories required to operate and control the testing apparatus, analyze and report test results. Costs of such control and data acquisition devices are included in the unit price bid.
- All software accessories, when required, are Microsoft Windows based programs, compatible with Microsoft Windows XP, Vista, and Windows 7. The data acquisition and control programs include the following as a minimum:
 - Setting the test configuration. The test configuration shall allow the user to adjust the number of passes, temperature and select the passes at which to collect data.
 - Monitor and adjust the water temperature within 0.3°C of the set point.
 - Display the number of passes, frequency of measurements, temperature, and deformation (to the nearest 0.10mm) for each test specimen during testing.
 - Upon completion of the test, the data can be displayed as a graph of the output, showing deformation vs. passes, creep slope, stripping slope, and stripping inflection point for both test specimens.
 - Provides fields for documentation of material information, such as aggregate type, asphalt binder, and density of each test specimen.
 - The unit will be provided with one spare, pre-wired Linear Value Differential Transducer (LVDT).
 - All standard accessories normally furnished will be provided with the unit.

PMW shall deliver, install, and set-up the equipment, as well as conduct a brief training session with employees. The price of delivery, installation, set-up, start-up, and training within an 800 mile radius is included in the bid price. Deliveries outside of 800 mile radius will incur additional charges.

International deliveries will incur additional charges

Domestic & International Warranty:

The PMW WheelTracking Machine and Compactor are warranted against manufacturing defects in material and workmanship under normal use for one year (parts and technical assistance via phone and e-mail, and distributor assistance) from date of delivery. This warranty does not cover:

- Damage due to acts of God, misuse, abuse, accident, lack of maintenance, improper or abnormal usage, lightning or other incidence of excess voltage or current, unauthorized modifications, or negligence;
- Any repairs other than those provided by or authorized by Precision Machine & Welding (PMW);
- Consumables such as fuses;
- Cosmetic damage;
- Transportation, shipping, or insurance costs;
- Costs of product removal, installation, set up service adjustment, or reinstallation; or
- Problems caused by interaction of a product with other equipment or software not supplied by Precision Machine & Welding (PMW)

DISCLAIMER:

Relocation or modification to the machine not performed by or authorized by PMW will void the warranty. PMW has no liability or responsibility to customer or any other person or entity with respect to any liability, loss or damage caused directly or indirectly, by use or performance of the product or arising out of any breach of the warranty, including but not limited to any damages resulting from inconvenience, loss of time, data, property, revenue, or profit or any indirect, special, incidental, or consequential damages.

If you have any questions, please do not hesitate to contact me at the number below.

Jeffery A. Harris
Precision Machine & Welding
2231-D #1 Centennial Rd.
Salina, KS 67401
Phone: (785) 823-8760
Fax: (785) 823-5022