

# Datasheet

## Falling Weight Deflectometer (FWD)

### Key Features

- Excellent repeatability
- Wide loading range (7–120 kN)
- Quiet operation
- Accommodating up to 15 deflection sensors
- Less impact due to reduced survey time
- Distance Measuring Instrument (DMI)
- Optional geophone at 100 mm offset
- Electro-hydraulic system

### Key Benefits

- Wide range of loading combination
- Provide accurate, reproducible and repeatable data
- Single operator request for driving and testing
- Real time deflection analysis
- Load & Deflection time histories acquisition
- Data import to ELMOD software for backcalculation
- Result exported in georeferenced format
- Test rigid pavement including joints
- Integrated camera for joint survey

### Introduction to the falling weight deflectometer

The Falling Weight Deflectometer (FWD) is used by pavement engineers to evaluate pavement conditions and performance, to determine the need for rehabilitation or reconstruction. The FWD is a non-destructive and fast method to evaluate the structural capacity of pavements for research, design, and rehabilitation of the road and for pavement management purposes. It applies a dynamic load that simulates the loading of a moving wheel, rather than a static, semi-static, or vibratory load. By using the FWD you can identify your weak pavement section and plan the best maintenance solution. Ensuring the quality of your road and detecting early pavement failures, so that your road maintenance runs as planned and at a lower cost.

### Specifications

Load cell	Resolution 0.1 kN / Precision $\pm 1\%$ / Accuracy $\pm 2\% \pm 1,14$ kN
Deflection sensor	Max 15 / Precision $1 \mu\text{m}$ / Absolute accuracy $\pm 2\% \pm 2 \mu\text{m}$ / Relative accuracy $\pm 1\% \pm 1 \mu\text{m}$
Temperature sensors	Up to 3 (air, surface and asphalt) Precision $\pm 0.1^\circ\text{C}$ / Accuracy $\pm 0.4^\circ\text{C}$
DMI	Accuracy $\pm 0.4\%$
Cameras	Color camera for inspecting the location and ROW Camera 2.3MP
GPS	Option 1: GPS with 5m cable (SBAS) / Option 2: DGPS (worldwide)
Drop Sequence	15 seconds (placing 3 drops)
Volume weight	1637 kg
Dimensions	280L x 185W x 158H cm

### ELMOD - Evaluation of Layer Moduli and Overlay Design

Dynatest's ELMOD software is a versatile tool for analyzing and designing flexible, rigid, and composite pavements. It swiftly processes FastFWD load and deflection data, enabling quick back calculation of layer moduli and assessment of pavement performance. The software efficiently calculates seasonally adjusted moduli, residual pavement life, and overlay thickness for a specified service life. With a Life Cycle Cost Analysis (LCCA) module, users can optimize maintenance and rehabilitation strategies based on cost/benefit ratios. Additionally, The FEM (Finite Element Module) makes use of an axial symmetric finite element program. The LET (Linear Elastic Theory) option makes use of the Waterways Experiment Station's program (WESLEA), and MET is similar to the method used in ELMOD with improved adjustment factors.

## Compliance

- ASTM D4694-09, D4695-03 and equivalent standards
- TRL (UK) and CROW (NL) correlation trials approved
- AASHTO R32-11 calibration protocol compliant

## ADDITIONAL INFORMATION

More information can be found at:

[www.dynatest.com](http://www.dynatest.com)



## FWD Trailer Specifications

	8002 FWD Trailer
Max. permissible weight	1350 kg
Tire size	165-13"
Tire pressure	2.8 bar (40 psi) cold
Max. recommended driving speed	90 km/h (55 mph)
Total length (max.)	4.35 m (171")
Total width (max.)	1.65 m (65") (single axle)
Total height (max. during driving)	1.55 m (61")
Towing ball diameter (of towing vehicle hitch)	50 mm OR 50.8 mm (1-31/32" OR 2")
Optimum height of tow ball (ground to ball centre), loaded with 100 kg (220 lb)	480 mm - 500 mm (19 - 20")
Approx. falling height range of the drop weight	50-390 mm (2-15.3")
Loading plate diameter(s)	300 & 450 mm (11.8 & 17.7")
Range of distances of movable raise/lower bar deflector holders (from loading centre)	185-2450 mm
Max. tilt of loading plate	6 degrees
Storage temperature range	-30 to 70°C
Operating temperature range	5 to 50°C

## Included

- 300 mm 4 segmented split plate
- Calibration for max 10 geophones
- Standard RAL Color; Blue
- DDC software FWDwin 1 free license
- Additional 2 deflectors with holders
- Laptop with case
- Infrared surface Temp Kit
- Automated Air Temp Kit
- Automated DMI

## Additional options

- Geophones – 80mils and 100mils version
- Generator Kit w. inverter
- 150 kN upgrade Kit
- GPS /DGPS
- Video monitor and color camera
- ROW Camera
- Additional geophones
- Geophone holder
- Side and rear extension bar set
- Calibration tower for up to 16 geophones
- Rear warning sign 12 Volt
- Spray marker
- Load plate 450 mm with rubber
- Data processing software - ELMOD

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