PAVEFWD FALLING WEIGHT DEFLECTOMETER (FWD)

STANLAY™

The Falling Weight Deflectometer (FWD) is a non destructive testing equipment used in **pavement engineering** for measuring the **vertical deflection response of a pavement surface** to an impulse load to achieve **in situ characterisation of the pavement layer stiffness**. The dynamic load applied to the pavement surface by the FWD simulates the magnitude and duration of a single heavy moving wheel.

The FWD utilises a Load Cell and Geophone deflection sensors for precision measurement of pavement layer stiffness which is used to calculate **pavement properties such as** :

- **Bearing capacity**
- **E Moduli**
- **Expected or remaining surface life**

The PaveFWD is generally configured with 7 or 9 geophone sensors with geophone sensors placed at preset distances with a typical spacing of 200 to 300mm between each sensor to measure the deflection of the surface at high resolution caused by the controlled load pulse wave outward from the load plate axis. At preset heights, a load is dropped to cause a controlled load pulse in to the ground.

The PaveFWD can be configured with 7 to 23 vertical deflection sensors per requirement . Collected information is used to determine surface material strength. The FWD is used on highways, local roads and airport runways. Measurements are recorded at preset distances along the surface when the FWD is stationary. The PaveFWD Complies with ASTM D4694 "Standard Test Method for Deflection with Falling Weight Type Impulse Load Devices".

The PaveFWD is in association with pave testing UK.

Knowledge of the **existing pavement condition** is **vital** to the success of any **pavement rehabilitation project**. The use of Falling weight Deflectometer plays an **indispensable role in evaluating the pavement structural condition.**

The **goal of lower cost, improved pavement quality demands more precise assessment** of the pavement layer qualities, making the in-situ measurement of design parameters like **stiffness and modulus** necessary. By using the FWD to obtain test results for the above, pavement analysis and design are carried out in a more rational and accurate manner than relying on simple assumptions or engineering judgment. **This can lead to crores in construction costs saved, annually on road - pavement projects**.

Utilisation of the FWD is recommended per IRC 115 – 2014.

The PaveFWD is offered in both **trailer mounted FWD** and **vehicle mounted FWD** options.

Trailer Mounted FWD - Features and Benefits :

Double Axle Chassis offered for 150kN FWD system allowing upgrade to HWD 250kN or SHWD 350kN system .

Folding Design

- Conforming to standards to ASTM D 4694 - 96 & D4695-03
- Automatic controlled load adjustment for greater accuracy
- Ambient, Ground & Asphalt temperature sensors
- Standardised data output file
- In trailer mounted FWD, generator provided as standard.

Generator/Invertor Charger

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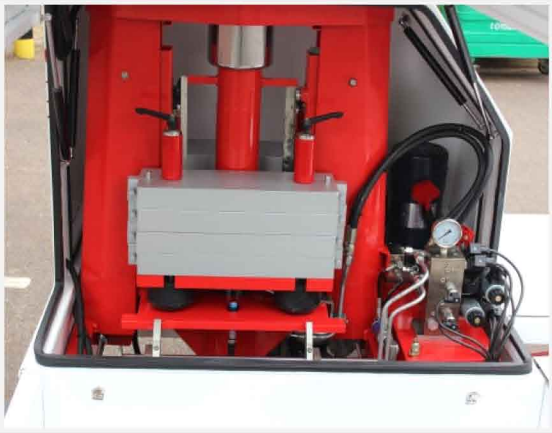
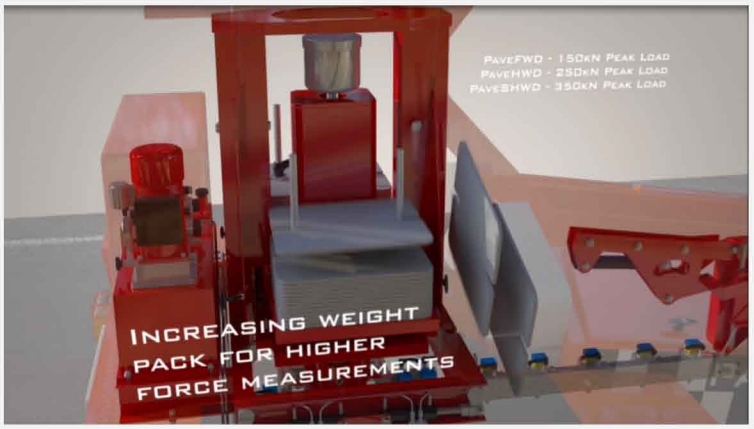
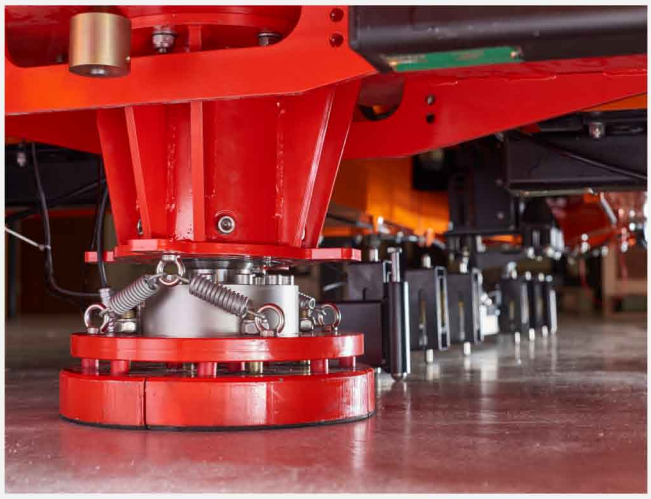
Weights installed in configuration of 10Kg to allow easy mounting – dismounting of load.

(* For Trailer Mounted)

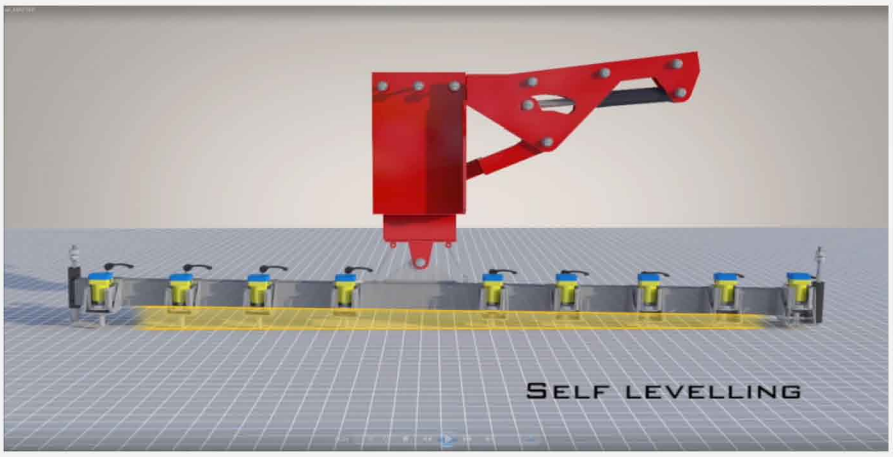






4 way split loading Load cell, 300mm to allow even distribution of load on an uneven surface.

- **Digital Geophone**: PaveFWD is fitted with geophones which have a **programmable circuit board** mounted on each geophone to allow **store calibration data** and serial number of each geophone.
- Digital Geophones eliminate analogue signal degradation.
- Digital geophones allow plug and play of geophones without additional configuration requirement.
- Even in case of accidents for any reason whatsoever, the digital geophone can simply be replaced for immediate equipment usage.
- Self leveling geophones mounted in spring loaded holders installed on a pivoting beam for use on uneven ground conditions.



FWD CONTROLLER

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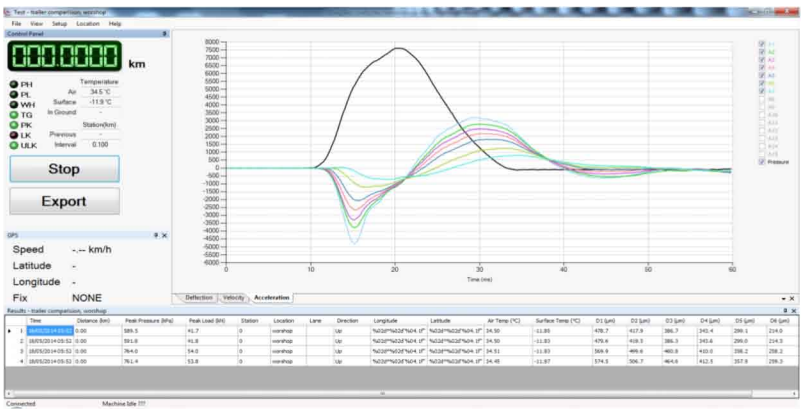
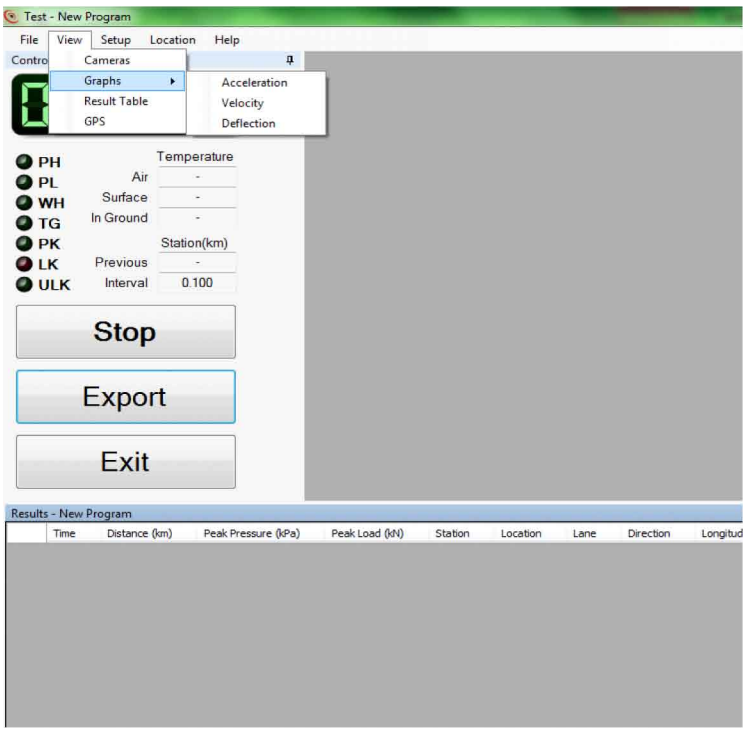
- Easy to Use Software allows data to be viewed, stored and transferred in PaveFWD output F25 and F20 data, along with CSV, Time History and PDDX – allowing use with any FWD software.





Product Range:

Pave®FWD, Trailer Mounted, 7-150kN

A standard Falling Weight Deflectometer (Pave®FWD-TM) is a twin axle trailer mounted non-destructive testing device used to determine the stress/strain parameters of pavements and sub-grades.

Pave®FWD, Vehicle Mounted, 7-150kN

A Falling Weight Deflectometer (Pave®FWD-VM) is a vehicle mounted non destructive testing device used to determine the stress/strain parameters of pavements and sub-grades.

Pave®HWD / Pave®SHWD, Heavy and Super Heavy Trailer Mounted, 7-250 + 7-350kN

A Heavy Falling Weight Deflectometer, Pave®HWD and the Super Heavy, Pave®SHWD are twin axle trailers used for non-destructive testing of stiff bound material as found on Airport Runways and truck car parks.

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Technical Specifications :

Over All	Folded	Un-Folded	
Length	4150mm	2500mm	
Width	1600mm	1600mm	
Height	1400mm	1400mm	
	Pave®FWD150-TM	**Pave®HWD250-TM**	**Pave®SHWD350-TM**
Drop Weight Pack			
Nominal Drop Pack Weight	150kg	150kg	250kg
Additional Ballast Weights (10kg Each)	20	35	45
Total Drop Weight	350kg	500kg	700kg
Drop Height Measuring Sensor	UltraSonic +/-0.5mm Accuracy	UltraSonic +/-0.5mm Accuracy	UltraSonic +/-0.5mm Accuracy
3 Drop Sequence Time	Nominal 45 seconds		
Load Measuring Sensor			
Load Range	7-150kN	12-250kN	15-350kN
Capture Duration	0-120ms		
Load Pulse Duration	20-40ms		
Pulse Rise Duration	15-25ms		
Accuracy	2% F.S.D		
Resolution	0.1kN (1kPa)		
Digital Seismic Velocity Transducers (Geophones)			
Total Number	7 to a max 25		
Resolution	+/-0.1µm		
Measuring Range	+/- 2200µm		
Distance Measuring Sensor			
Sensor Type	Inductive Sensor	Differential Shaft Encoder, measure forward and Reverse Direction	
Pulses Per Tyre Rev	10	2000	
Accuracy	0.10%	0.01%	
Standard Equipment			
	Twin Axle, 1300kg per Axle	Twin Axle, 1500kg per Axle	Twin Axle, 1800kg per Axle
	Load Plate 300mm		
	Ambient Temp. Sensor		
	Ground Temp. Sensor		
	In Ground Temp. Probe		
	Global Positioning Sensor		
	Warning Strobe LED		
	Power Alternator Battery Charging		
Optional Equipment			
	Load Plate 450mm		
	Defection Sensor Mounting		
	Video Camera, Load Plate & Right Of Way		
	High Resolution Global Positioning System - Accuracy sub 1meter Resolution		