SIGMA 515 & 680 Dynamometers
Technical Data

Froment Sigma Dynamometers test tractors, combine and forager harvesters ensuring efficiency and peak performance are maintained at all times.

Construction

The frame of the dynamometer is constructed from 2mm, folded and welded 'Zintec' steel.

Recessed doors and panels allow easy access to the separate enclosures for control, power connections and maintenance. A lockable roller door provides access to the PTO input and shaft storage at the rear of dynamometer.

A 4 pole 2-bearing brushless alternator complete with fan assisted forced air cooling enables high-torque operation over a wide speed range.

The gearbox is custom made to Froment specification from aluminium and has hardened steel helical gears. The gearbox is easily removed with the optional removal tool to enable engine speed testing.

Stainless steel strip load elements are force cooled by a cooling fan, exhausting vertically out of the top of the dynamometer. The air outlet is covered by a sliding door with an interlocking feature inhibiting load application and warning the operator if not fully open.

A stainless steel mesh screen on the outlet provides protection against access to hazardous parts to IP1X.

All electrical enclosures are to IP55.

Anti-condensation heaters are fitted to remove moisture and preserve the electronics from the dynamometer when not in use.

Mobile versions are supplied with a twin axle braked four wheel trailer with 4 stud 4.5J x 13 pressed wheels and tubeless 165R13C radial ply tyres with rubber trailing link independent suspension that can be towed behind a car or commercial vehicle.

The main chassis is constructed from formed 3mm and 5mm steel and the floor from 1.6mm steel. The whole chassis is hot dipped galvanised after fabrication.

Two prop stand jacks are provided at the rear of the trailer and a jockey wheel on the a-frame where an ISO 50mm ball coupling with hydraulic dampened overrun brake actuator is located and a manual hand brake which has an energy store to operate the auto reversing brakes.

Trailer lighting includes brake, tail, side marker, direction flashing, reversing and fog lights. Reflective triangles incorporated in the rear light combination units.

Static models are fitted with a heavy duty fork pocket constructed with a hot dipped galvanised base made from 3mm and 5mm steel.

Finish

High quality two-pack industrial acrylic paint system applied to an electro-plated zinc base and low-bake finish.

Standard colour is Basalt Grey (RAL7012). Other colours are available on request.

Auxiliary Supply

The fans and control circuit are powered from an external 13 or 16 amp single phase 220-240 Volt 50/60Hz supply.

An IEC 60309-2 plug is mounted in the control enclosure with a 10m lead.

Protection

A 220-240 Volt AC control circuit transformer provides isolation and operator safety.

The start and latching emergency stop buttons ensure the dynamometer will not automatically restart after shut down.

The fan motors are fully protected with fuses and overloads. Thermal detectors are fitted to the alternator and load bank to protect against over heating.

On initial start-up the dynamometer performs a self-test to check all systems. If a fault is found this is displayed on the Hand-held.

Optional Accessories

DynaTest PC software • Direct drive coupling • Bluetooth Connectivity

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Hand-held

Load control is provided by a robust Hand-held. The 10m lead allows tests to be carried out in the tractor cab if required and the display provides a constant live data readout of power, torque and speed.

Five test modes are available, constant speed, constant power, direct load, memory and AutoTest which provides reliable and repeatable testing.

DynaTest PC Software

Addition of DynaTest PC software adds an engine warm up facility and two cyclic testing modes of power and engine speed. PTO and or Engine power can be displayed. Test results can also be saved to build a comprehensive test library which includes test criteria, tractor models and customer details. Test results can be compared and contrasted from previous tests in graphical and tabular format. These results can then be printed or exported for further analysis.

Optional PTO Shafts

1 x 3/8" 6 spline.

1 x 3/8" 21 spline.

1 x 3/4" 20 spline.

2 x 1/4" 22 spline (SIGMA 680 only)

1 x 3/4" 6 spline

Speed Range and Capacities

Sigma 515 will test up to 515PS (380kW) and fully torque test a typical modern tractor up to 350PS (260kW). Sigma 680 will test up to 680PS (500kW) and fully torque test a typical modern tractor up to 500PS (370kW).

Mode	Maximum Power (Sigma 515)	Maximum Power (Sigma 680)	Torque (Sigma 515)	Torque (Sigma 680)
PTO(270-1250rpm)	515PS(380kW) at 1000rpm	680PS(500kW) at 1000rpm	3170Nm at 800rpm	4150Nm at 800rpm
Direct (480-2200rpm)	515PS(380kW) at 1800rpm	680PS(500kW) at 1800rpm	1790Nm at 1400 rpm	2340Nm at 1400 rpm

Testing, Standards and Warranty

Functional operation and load tests are completed on all Sigma Dynamometers, before despatch, in line with our ISO 9001:2015 procedures.

Froment Sigma Dynamometers comply with international standards and are CE marked to confirm compliance with both the EMC and Low Voltage Directives.

The equipment is covered by a 12-month warranty as detailed in our Conditions of Trade.

Documentation - Operator Handbook

A comprehensive illustrated operator's manual is supplied. Sections cover safety, installation, commissioning, operation, calibration, maintenance and fault finding.

Dimensions and Weights

	Mobile 515	Mobile 680	Static 515	Static 680
Weight	Approx 1960 kg	Approx 2160 kg	Approx 1640 kg	Approx 1840 kg
Height 515 & 680	1826mm	1826mm	1804mm	1804mm
Width 515 & 680	1828mm	1828mm	1320mm	1320mm
Length 515 & 680	3876mm	3876mm	2632mm	2632mm

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