

AutoScan Fi

Chassis dynamometer for cars



2WD & 4WD
version



Modular and scalable
Design X2 > X4



Dynamic driving by
Road load Simulation



Motorbikes & ATV
Compatibility



Optimised
Tyre/roller



Full-featured and
powerful software



Speed Synchronization
up to 300km/h



Low inertia
Technology



Vehicle and user
safety

Autoscan, extraordinary versatility

Using Autoscan Fi

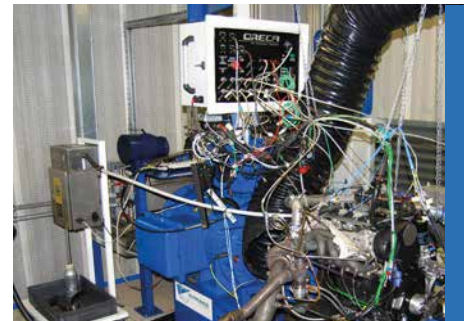
Technology in cars is evolving as fast as their performances. The increasing complexity of engine management and electronic driving aid systems (ADAS) makes it impossible to run an engine in a workshop in the same way as it performs on roads or tracks. Under these conditions, engine performance tuning becomes difficult. The need to exactly recreate driving conditions makes it necessary to use a specialized, up-to-date, accurate and reliable measuring instrument. ROTRONICS offers its solution: AUTOSCAN Fi.



Its new design gives many more users access to the best available state-of-the-art technology. Its versatility and time saving features, together with our effective and credible professional services will allow you to build on you partners' trust: Autoscan Fi will boost your business.

ROTRONICS KNOW-HOW

For over 25 years Rotronics has designed and manufactured engine test bed dynamometers and rolling road dynamometers for engine performance tuning, motorsport, education and Industrial R&D. From the outset the company has always used innovative technology to meet the expectations of its customers, and today it offers effective and unparalleled solutions in many areas of expertise. Rotronics has applied all this know-how towards designing the AutoScan Fi dynamometer, creating a unique and productive solution.



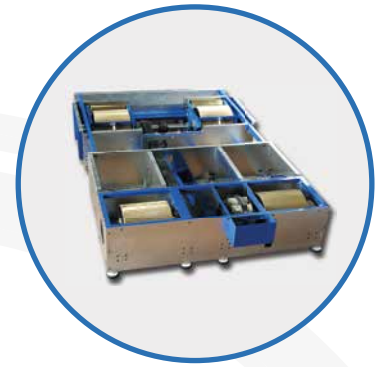
SKILLED TECHNICAL SUPPORT SERVICE

Whether you need information about the operation of the dynamometer, advice on specific measurements or want to contact our After Sales Service, our experienced technicians are at your disposal. All the people you speak to have taken part in the design and production of AutoScan Fi, and they are always available to answer your questions.

AUTOSCAN X4 & X4+

ACCURATE & FAST TRANSIENT CHASSIS DYNOS

The Autoscan X4 and X4+ are chassis dynamometers for 2 or 4 wheel drive road vehicles. Thanks to «Fi Technology» (low inertia) - featuring hollow rollers and fewer rotating parts - the total inertia moment can be reduced while achieving a smaller overall footprint.



This technology, combined with high speed electronic management, ensures very accurate and extremely responsive control of the load applied to the vehicle: adjustments at steady engine setpoint are clear and precise. However, the capabilities of Autoscan Fi are fully revealed in transient cycles (acceleration): thanks to the Fi low inertia technology, the load applied is controlled according to the look-up table without time lags or delays, thus ensuring an accurate correlation with real driving conditions.

Autoscan X4 and X4+ are all equipped with an eddy current brake located at the rear of the bench that applies force to all the rollers thanks to the speed synchronisation system. The X4 and X4+ versions can be distinguished by the ability to adjust wheelbase settings. Autoscan Fi X4+ is compatible with the longest wheelbase vehicles on the market. The design of the X4+ also includes motorcycle and quad compatibility options. It is coming with control cabinet that integrates electronic control units & computer.



Iso Speed Synchronisation



Hybrid & Electrical vehicle compatibility



2 WD & 4WD



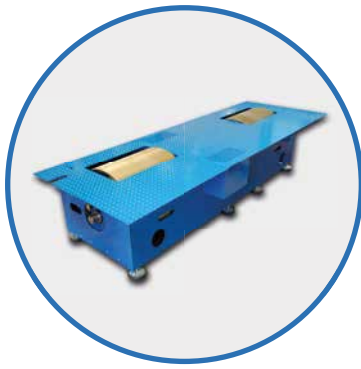
ISO-SPEED SYNCHRONIZATION

Autoscan X4 and X4+ feature a mechanical linking system that connects the rollers together. All the wheels of the test vehicle rotate at the same speed regardless of the vehicle technology: 2WD or 4WD, viscous coupling, proactive differentials (Haldex for example), electronic driving aids (ESP).

The vehicle runs on the chassis dynamometer as it would on the road under normal conditions. It doesn't trigger any safety systems or engage «limp home» operating modes that could distort the readings or even make them impossible in more severe cases! Using a toothed belt is the solution to keep a perfect synchronization between front and rear rollers and maintenance is very easy compare to a hydraulic system. His low inertia design allows a very accurate and repetitive measurement.

Electric synchronization is not capable to follow fast transient and is causing power measurement issues by triggering the more and more sensitive electronics traction system. Our solution is proved since 2000 and faced no issue with the latest hybrid & electric vehicles technologies.

AUTOSCAN X2



Autoscan X2 is the two roller version of the X4 model. This version offers the same technology and the same performance as the Autoscan X4 and is primarily used for testing two-wheel drive vehicles for motorsports or cars not equipped with driver assistance or engine management safety systems.

Autoscan X2 also benefits from the low inertia «Fi technology». It is equipped with one air-cooled eddy current brake as standard, and can be equipped with an optional second eddy current machine.



Motorbike / ATV
compatibility

x2



2nd brake



x4

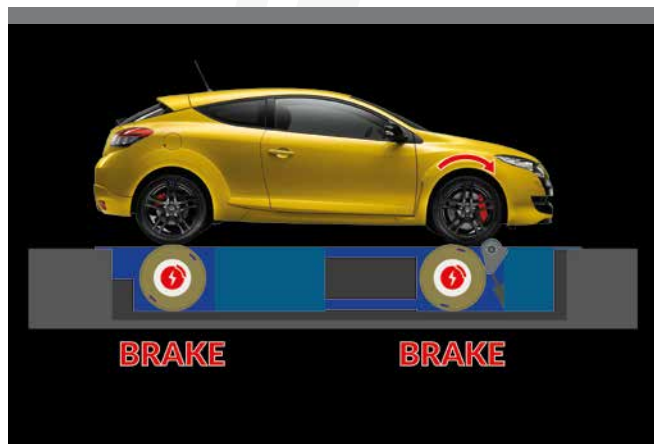
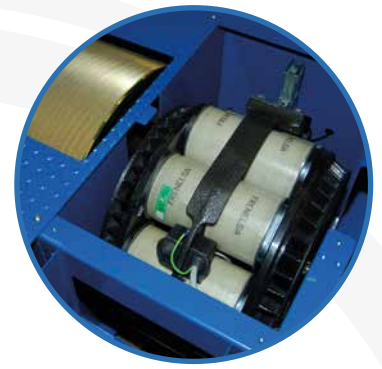
Upgradable to X4



Technical specifications

LOADING MACHINES

Autoscan Fi is a chassis dynamometer equipped with an eddy current brake located on the rear axle between the two rollers which from the outset ensures a high absorption power and the possibility of very precise control. To test very powerful vehicles or for long tests, it is possible to add a second eddy current brake to the Autoscan Fi. This additional brake is fitted to the side of version X2. For version X4, it can be placed either on the side or on the front axle, between the two rollers.



In the latter case (1 front brake and 1 rear brake), the user can adjust the load balance between the front and rear of the vehicle according to the technology tested (traction, driveshaft, all-wheel drive). The braking force can act either at the rear or at the front or it can even be distributed equally between the front and the rear.

This system makes Autoscan X4 particularly versatile and efficient: the capacity of the brakes is 100% available, without the torque limit constraints associated with other mechanical parts of the dynamometer and the braking force is directed where the vehicle delivers its power.



Accurate
RoadLoadSimulation



Asynchronous
Dynamometer



Driver Aid

Another possibility offered by Autoscan Fi is the addition of an asynchronous load unit on the side (rear roller) which is used to drive the vehicle. This additional module opens up new possibilities in the test fields of diagnostics, pollution control and, of course, the study of hybrid vehicle performance. It allows to check regenerative phase of ZEV and HEV vehicles.



MOTORBIKE - ATV COMPATIBILITY

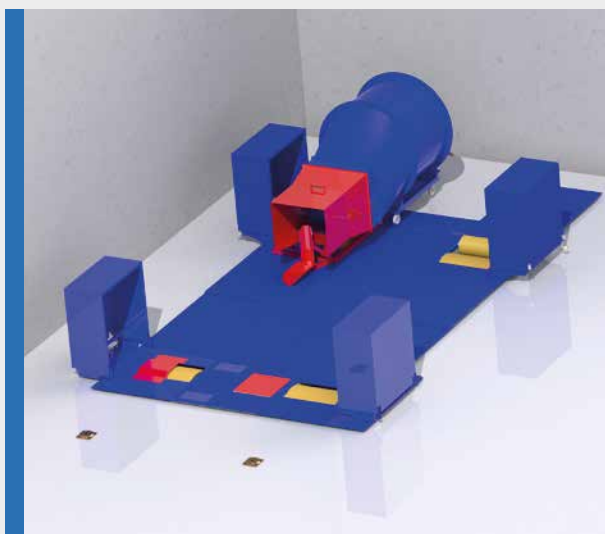


Modular and versatile
Design



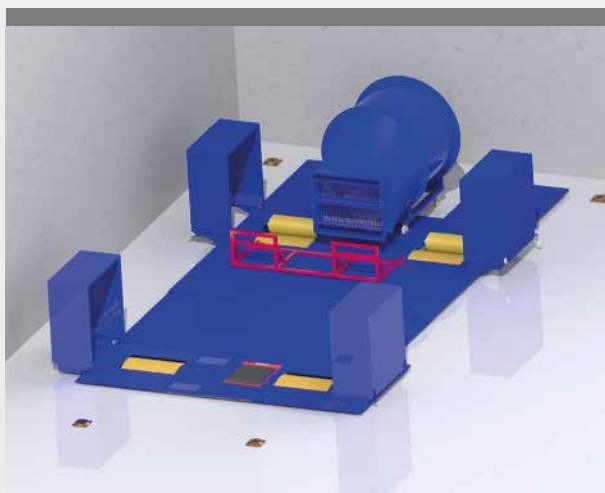
Low inertia
< 200 kg

AUTOSCAN Fi X2 and X4 Plus can accommodate motorcycles and quads (optional). A clutch is used to isolate the roller connected to the brake in order to reduce the inertia driven by the vehicle and to avoid applying too much resistance; which would inevitably cause wear or even permanent damage. A movable front support and rear straps ensure the stability of the motorcycle while an extension of the fan diffuser channels high speed cooling air to the engine. And, of course, protection covers are placed on the unused sections of the rotating roller..



Motorbike compatibility kit (Red parts).

For ATV, an adaptable front stand holds the vehicle while the second wheel is placed on a moving belt. Protective covers complete this system that can be implemented very quickly.



ATV compatibility kit (Red parts).

SIMPLE AND REPRESENTATIVE TESTS

Test procedures for every requirement

Whether it is to manually optimise mapping points, measure the performance of a vehicle under actual conditions, plot value curves for specifications (power, torque, temperatures, air/fuel ratio ...) or to perform a rolling test, Autoscan Fi offers simple procedures tailored to your technical requirements.



Real testing conditions

Why test an engine in transient mode?

On the road or on the track, engines run in transient mode almost constantly. It is therefore essential to reproduce this behaviour with the dynamometer in order to analyse real world engine conditions. This is why Autoscan Fi offers test procedures for acceleration under a load controlled by a look-up table.



Typical engine behaviour

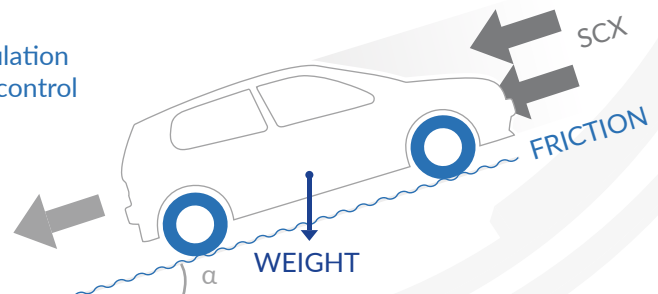
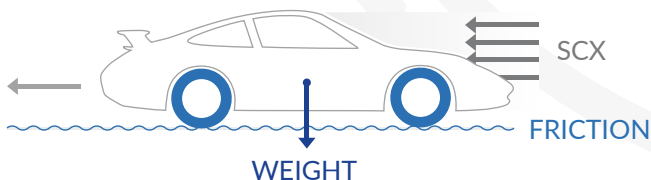
Why apply a load based on a road load simulation?

A running road vehicle exerts apply on its environment to move forward, but it is also subject to resistance. The main sources of resistance are: the total weight of the vehicle to be driven, the resistance applied by the ground on the wheels, the aerodynamic drag generated by the speed and the gradient on which it travels. It is clear that a heavy and bulky vehicle will have more difficulty travelling on rough, sloping ground than a light and streamlined vehicle moving on smooth, flat ground.

To make matters more complicated, these resistive forces are not constant: they change depending on the vehicle speed and in a non-linear manner. Autoscan Fi uses a look-up table to control the brake load and thus create resistance on the dynamometer. These mathematical rules take into account the different parameters and how they change according to vehicle speed. In this way, the engine tested is subjected to the same resistance on the dynamometer as in the real world throughout its speed range.



RoadLoadSimulation
high dynamics control



ACCURATE AND REPEATABLE READINGS

Autoscan Fi uses accurate sensors :

360 measurement points for each turn of the rollers for the speed sensors and a 0.02% error factor for the force sensor that measures braking torque. Combined with fully digital data acquisition and brake control, the unit represent an extremely precise and stable measuring device: less than 0.1% overall error !

This technology ensures optimal measurement quality regardless of the vehicle speed and the accuracy of the results is independent from the level of power measured.



TIRE / ROLLER CONTACT

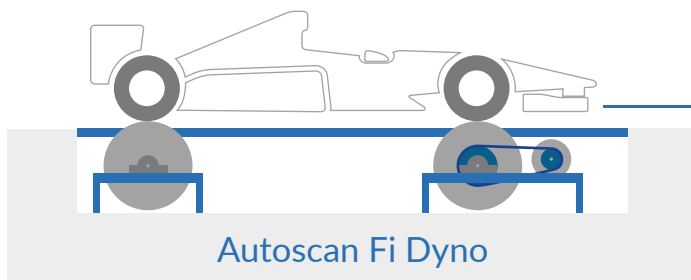
The quality of the tire/roller contact partially influences the accuracy and repeatability of the measurements while vehicle stability depends almost entirely on correct tire performance.

Rotronics has paid particular attention to these issues in the design of AutoScan Fi: knurled, large-diameter rollers for better grip and mono-rollers on each of the wheels to ensure that tire deformation is as natural as possible.

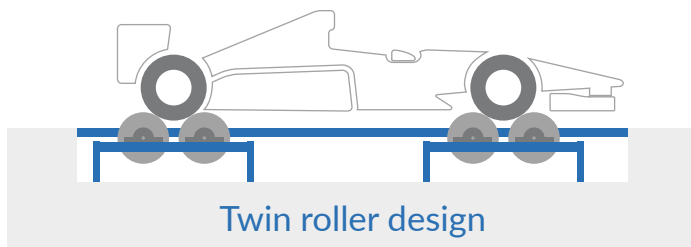


Optimised Tyre/roller

AN UNIVERSAL TEST BENCH



VS



Low ground clearance

AutoScan Fi rollers are located at ground level and offer a single point of support for the tire. Accordingly, it is possible to install vehicles with low ground clearance while maintaining their original attitude. This feature makes AutoScan Fi a dynamometer with uniquely universal applications.

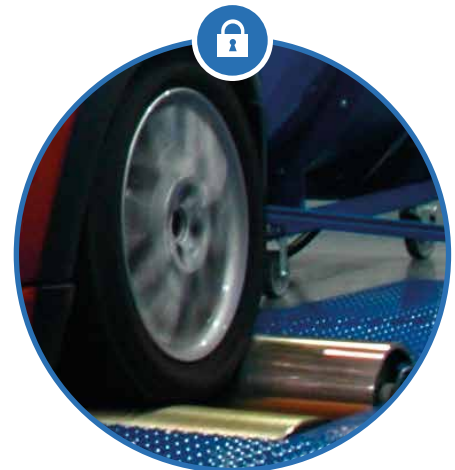
Vehicle & Users Safeties

SAFETY

The safety of property and people should never be compromised : the rotating elements of the bench and the vehicles are inaccessible, automated procedures prevent the tests from starting until the all safety conditions have been met and the emergency braking acts almost instantly thanks to the low inertia technology.


However, these systems are not an obstacle to efficiency and are quick and easy to implement, adapting automatically to every vehicle.

Unique pneumatic front guiding rollers helps to install quickly the vehicle and you can keep it or lift it down during the test.



Full-featured and efficient software

Dynascan Advanced is Autoscan Fi X2 software . We optimise the user experience in the new version with easy and user friendly interface without cutting its features. Customizable charts are now available to tailor made your diagnostics.. A embedded video (that you can export) is also available.


User friendly
powerful software


Remote Assistance
(Teamviewer)

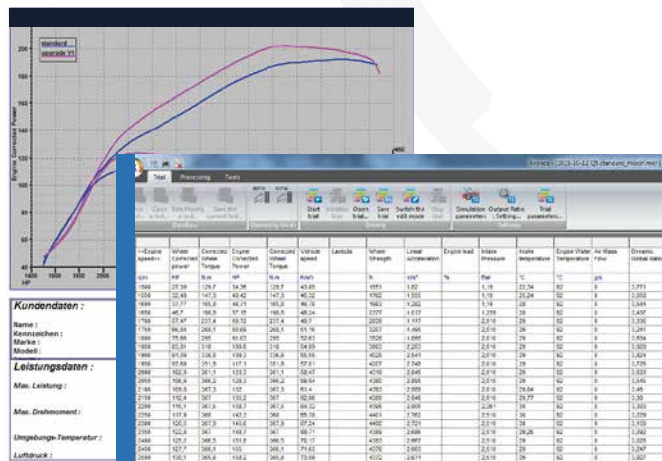
VIDEO

You can monitor the car during the test, moreover you can add the video file to your customer report.

4WD Autoscan Fi versions uses Dynascan Premium with special features as power brake balance between rear and front rollers.



All in one software
including customer report



RESULTS PROCESSING

Once the readings have been memorized, the results can be displayed in the form of curves, tables or statistics.

Several recent or past tests can be superimposed and easily compared. The data can simply be stored or otherwise fed into a valuable customer database.

The results and configurable comments make up the test reports. They can be saved, printed or exported to external systems.

A test video recording can also be generated and export to any storage (Hard disk, USB..)

The AutoScan software package can be used in demo mode (cost free and installable any number of times), allowing anyone to read the results obtained on the test bench. This can be performed with a simple file transfer.

DATABASE

A database stores the identity of each customer, the associated model of vehicle and the technical specifications that are useful for the performance of the test. Its role is to archive the data and all the measurements along with the associated comments.

It is therefore possible to monitor the improvements of a vehicle over time, compare the results of different vehicles or compare the performance of the same model of vehicle used by different customers.



Customer Database
Management tool

The screenshot shows a form for entering customer and vehicle information. It includes fields for name, address, phone number, and vehicle details like make, model, and year. There are also checkboxes for various options and a 'Save' button.


CONTROL CABINET & ACQUISITION SYSTEM

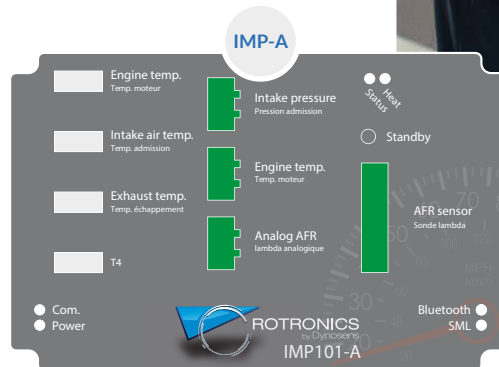
Autoscan Fi is now featuring IMP (Multi Peripherals Interface).

This new component located in the control cabinet is collecting all measurements. Weather station for power correction, Air Intake pressure & temperature, coolant temperature, throttle position, Air intake Flow and two additional temperatures. These acquisitions are coming via OBD (Bluetooth) or Real analog Inputs.

IMP-A is also measuring a critical factor : Air Fuel Ratio or Richness. It comes with large bandwidth probe. A mechanical support to install on exhaust is also provided.




Standard Version



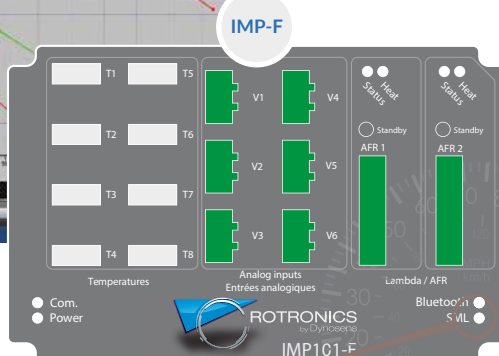
KRONOS LITE & IMP F

It is possible to upgrade IMP-A to IMP-F. This enhanced component is featuring 8 K Type thermocouples, 6 Analog inputs and 2 wide bandwidth Lambda (delivered). Of course it is also including weather station for power correction.

Kronos Lite software compare to standard Autoscan Fi allows tailor made setup. We can modify for you displays, add alarms thresholds, scales your analog inputs or even write some specific test procedures.

Dynosens customer service team is modifying the setup according to your specifications. You take advantage of a dedicated application with the same reliability then a factory setting without the needs of a specific training.


Industrial Options



Accessories & Options

RADIO REMOTE

All the operations necessary for performing tests can be controlled by the user from the driver's seat. A wired remote control provides this function. As an option a radio remote control (wireless), avoid cable for more comfort.



WIRELESS OBD VEHICLE INTERFACE

Wireless OBD is standard feature of AutoScan Fi : You just plug the adapter to car's diagnostic port. the connection with the IMP is ready via bluetooth. AutoScan software is then collecting valuable datas without the needs of installing extra sensors : Engine rpm , throttle position, Air Intake flow, pressure and temperature regime as well as coolant temperature.



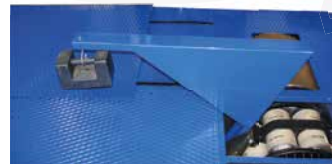
OPTIMAL COOLING

Cooling the vehicle on the test bench is essential for the safety of the equipment. Powerful fans (32,000 m3/h or 45,000 m3/h) perform this function and ensure a stable vehicle temperature, thus guaranteeing consistent readings. The fans are streamlined to perfectly distribute the airflow where it is needed to remove the heat.



CALIBRATION

The unit can be entirely calibrated by the user by means of simple and quick calibration procedures that are integrated into the software, thus allowing the measuring equipment to continue providing accurate and repeatable readings. The operation lasts no longer than 10 minutes.


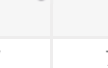






EXHAUST GAS EXTRACTION

Autoscan Fi offers a powerful extractor for exhaust gases, adjustable in height and equipped with a wide collection scoop to ensure that the gas temperature is lowered by dilution. The extractor can thus be placed very close to the exhaust pipe and make efficient use of its airflow of 3,000 m3/h. A 5m special high temperature flexible pipe carries the gas out of your building.



Caractéristiques techniques

	AUTOSCAN Fi X2		AUTOSCAN Fi X4		AUTOSCAN Fi X4 +	
						
Numbers of Brake (up to 3)	1	2	1	2	1	2
Maximum transient power	510 kW (700 HP)	740 kW (1000 HP)	550 kW (750 HP)	880 kW (1200 HP)	550 kW (750 HP)	880 kW (1200 HP)
Constant capability (max 2 min)	250 kW (340 HP)	500 kW (680 HP)	250 kW (340 HP)	500 kW (680 HP)	250 kW (340 HP)	500 kW (680 HP)
Electrical supply 220V single Phase	20 A	40 A	20 A	40 A	20 A	40 A
Equivalent Mass	420 kg	450 kg	840 kg	890 kg	840 kg	890 kg
Wheelbase (mini / maxi)	-		1700 / 2900 mm		2100 / 3300mm	
Motorbike Kit	option		not available		option	
Standard motorcycle equivalent mass	230 kg		-		230 kg	
Low inertia motorcycle equivalent mass	95 kg		-		95 kg	
ATV compatibility (requires motorcycle option)	option		not available		option	
Max speed	300 km/h (option 400 km/h)					
Roller diameter	600 mm					
Track width (min / max)	1 040 / 2 140 mm					
Compressed Air	Dry Air 8 bars					

Standard :



Options : IMP F / Kronos Lite / Wireless remote / Engine speed kit / Cooling Fan / Gas Extractor / Computer / Vehicle Kits



Computer minimal specifications :

Desktop or Mini-Computer running Windows Seven, 8 or 10 - LCD screen - 2 ethernet network boards
Dynosens can deliver the computer as an option.

All our benches are fully mounted & tested with vehicles in our factory. All calibrations are performed before shipping.

Warranty : 1 year parts and manpower : Factory Return

Free Remote assistance during the warranty : Remote control and/or emailing.



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