

# ENGINE DYNAMOMETERS

BY SUPERFLOW  
ENGINE DYNO SERIES



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AXILINE • DTS • HICKLIN • SUPERFLOW • TCRS



## SUPERFLOW® - THE INDUSTRY STANDARD

For more than 40 years, SuperFlow® has been designing and manufacturing industry leading flowbenches, engine dynamometers, chassis dynamometers and advanced Windows® based data acquisition systems. Today, with more than 10,000 products in the field, SuperFlow® is far and away the most experienced and well rounded manufacturer in the industry offering the most complete

selection of test equipment. SuperFlow's® four major brands, Axiline®, Hicklin® Engineering, SuperFlow® and TCRS®, test or rebuild every component of the drive train from the engine and transmission to the torque converter, drive shaft and axles. Come see why thousands have already trusted SuperFlow® for all of their testing needs.

## SUPERFLOW'S® MANY INDUSTRY FIRSTS

### WE WERE THE FIRST

To offer up to 139 user configurable channels of data acquisition standard.

### WE WERE THE FIRST

To offer a Windows® based data acquisition system

### WE WERE THE FIRST

To bring you two new dynamometers from the most respected companies in engine testing, SuperFlow® and DTS®

## SUPERFLOW® AND DTS®, NOW BETTER THAN EVER

SuperFlow® and Dynamic Test Systems, the two companies that defined the engine dynamometer industry are now together, under one roof. With more than 2,500 engine dynamometer systems commissioned worldwide, it's hard to match our quality, craftsmanship and service. The new SF-902S and the SF-Powermark represent the culmination of nearly 80 years of combined corporate experience. We leveraged that knowledge with of a team of key development staff to streamline our new product

offering. We can now test everything from single cylinder motorcycle and ATV engines to blown alcohol drag motors with either the SF-902S or the SF-Powermark. Our advanced WinDyn® Data Acquisition Systems offer up to 139 user configurable channels of data acquisition along with unmatched monitoring and data analysis capabilities. Come see why thousands of companies have already chosen SuperFlow® for all of their testing needs.



Colorado Springs, CO Facility



SF - POWERMARK

The SF-Powermark features a rugged and durable power absorption unit with a 2" diameter main shaft machined from solid stock 17-4PH stainless steel and it's the only absorber available with cross vented rotors for smooth and fast water flow. Integrated starters are built into the system so a bell housing, flywheel or engine starter is not required. A torsionally compliant driveshaft connects the engine to the dyno enabling you to run right off the engines crank shaft while 4.5" constant velocity joints ensure smooth power transfer. The included roll around engine docking cart offers great versatility to adapt to various types of engines and its stainless steel runners mean easy adjustment of the engine supports without any rust. The cart is also compatible with the SF-902S to allow maximum

versatility. The tool tray has cutouts for storing spark plugs and lambda probes; it's also a convenient area to mount ignition system components. To keep the test cell organized, the integrated boom houses both the sensor box and cooling tower, plus it has cable stays to route transducer wires cleanly between the sensor box and the engine. The included non-pressurized cooling tower mounts to the boom assembly behind the dyno, out of the way. The new sensor box also mounts to the boom and includes 4 liquid crystal displays (LCDs) to view any channel from the WinDyn® software system. WinDyn's® pre-defined test sequences allow for standard tests at the push of a button so you're up and running immediately and the live trace feature lets you see live data as a trace over a saved reference plot.

STANDARD CONFIGURATION

TEMPERATURE	16-channel thermocouple panel 12 closed tip thermocouples, 1/8" 12 swagelock fittings 12 ten foot extension cables
PRESSURE	10-channel pressure panel 2 transducers (0-300 psi, 0-100 psi)
AIR / FUEL	2 pre-configured analog inputs
FUEL FLOW	2 fuel flow measurement turbines
AIR FLOW	1 air flow measurement turbine

SPECIFICATIONS

ABSORBER TYPE	Water brake, bi-directional
MAXIMUM SPEED	15,000 RPM
HORSEPOWER CAPACITY	2,500 hp (1,864 kW)
TORQUE CAPACITY	1,750 lb.-ft (2,373 N-m)

SF-Powermark





SF - 902S

The SF-902S houses a new absorber designed for high RPM and maximum durability. It's rated for 15,000 RPM, 1,500 HP and 1,200 lb.-ft. of torque. PTFE teflon water seals and high speed ABEC 7 bearings allow the new absorber to run at high RPM for extended testing periods without issue. The new stainless steel trunnion and backing plate provide a 75% increase in resistance to cavitations compared to similar aluminum bronze components. In addition to the new water seals, high speed bearings and stainless steel components the new absorber in the SF-902S includes a hall effect speed sensor for greatly improved low speed RPM measurement. The included roll-around engine docking cart offers great versatility to adapt to various types of engines and its stainless steel runners mean easy adjustment of the engine supports without any rust. It's also compatible with the SF-Powermark

to allow maximum versatility. The space saving dynamometer frame provides a convenient tool tray and two bump starters to make lashing valves easy. Adaptation to the engine is simple with the optional multi-fit bell housing or the adapter of your choice. To keep the test cell organized, the integrated boom assembly houses both the sensor box and cooling tower, plus it has cable stays to route transducer wires cleanly between the sensor box and the engine. The included non-pressurized cooling tower mounts to the boom assembly behind the dyno, out of the way. The sensor box also mounts to the boom and includes 4 liquid crystal displays (LCDs) to view any channel from the WinDyn® software system. WinDyn's® pre-defined test sequences allow for standard tests at the push of a button so you're up and running immediately and the live trace feature lets you see live data as a trace over a saved reference plot.

STANDARD CONFIGURATION

TEMPERATURE	16-channel thermocouple panel
	12 closed tip thermocouples, 1/8"
	12 swagelock fittings
	12 ten foot extension cables
PRESSURE	10-channel pressure panel
	2 transducers (0-300 psi, 0-100 psi)
AIR / FUEL	2 pre-configured analog inputs
FUEL FLOW	2 fuel flow measurement turbines
AIR FLOW	1 air flow measurement turbine

SPECIFICATIONS

ABSORBER TYPE	Water brake
MAXIMUM SPEED	15,000 RPM
HORSEPOWER CAPACITY	1,500 hp (1,119 kW)
TORQUE CAPACITY	1,200 lb.-ft (1,627 N-m)

SF-902S





SF - BLACK WIDOW

The Black Widow from SuperFlow is a breakthrough in versatility and performance among water brake dynamometers. The improved design incorporates the industry leading Powermark base frame and engine cart making engine adaptation simple. With a maximum speed of 11,000 RPM, the Black Widow handles anything from high-torque diesel and marine engines to high-revving drag engines. It is rated for 3,000 HP and 2,500 lb-ft. of torque. Integrated starters mount directly to the dyno so a bell housing, flywheel and engine mounted starter are not required. The torsionally compliant drive shaft connects the engine to the dyno enabling you to run right off the engine's crank shaft while 4.5" constant velocity joints ensure smooth power transfer. The included roll around engine docking cart offers great versatility to adapt to various types of engine's and its stainless steel runner means

easy adjustment of engine supports without any rust. The cart is also compatible with both the SF-Powermark and SF-902S to allow maximum versatility. The tool tray has cutouts for storing spark plugs and lambda probes. To keep the test cell neat, the integrated boom assembly houses both the sensor box and cooling tower, plus it has cable stays to route transducer wires cleanly between the sensor box and the engine. The included non-pressurized cooling tower mounts to the boom assembly behind the dyno, out of the way. The new sensor box also mounts to the boom and includes 4 liquid crystal displays (LCD) to view any channel from the WinDyn® software system. WinDyn's® pre-defined test sequences allow for standard tests at the push of a button so you're up and running immediately and the live trace feature lets you see live data as a trace over a saved reference plot.

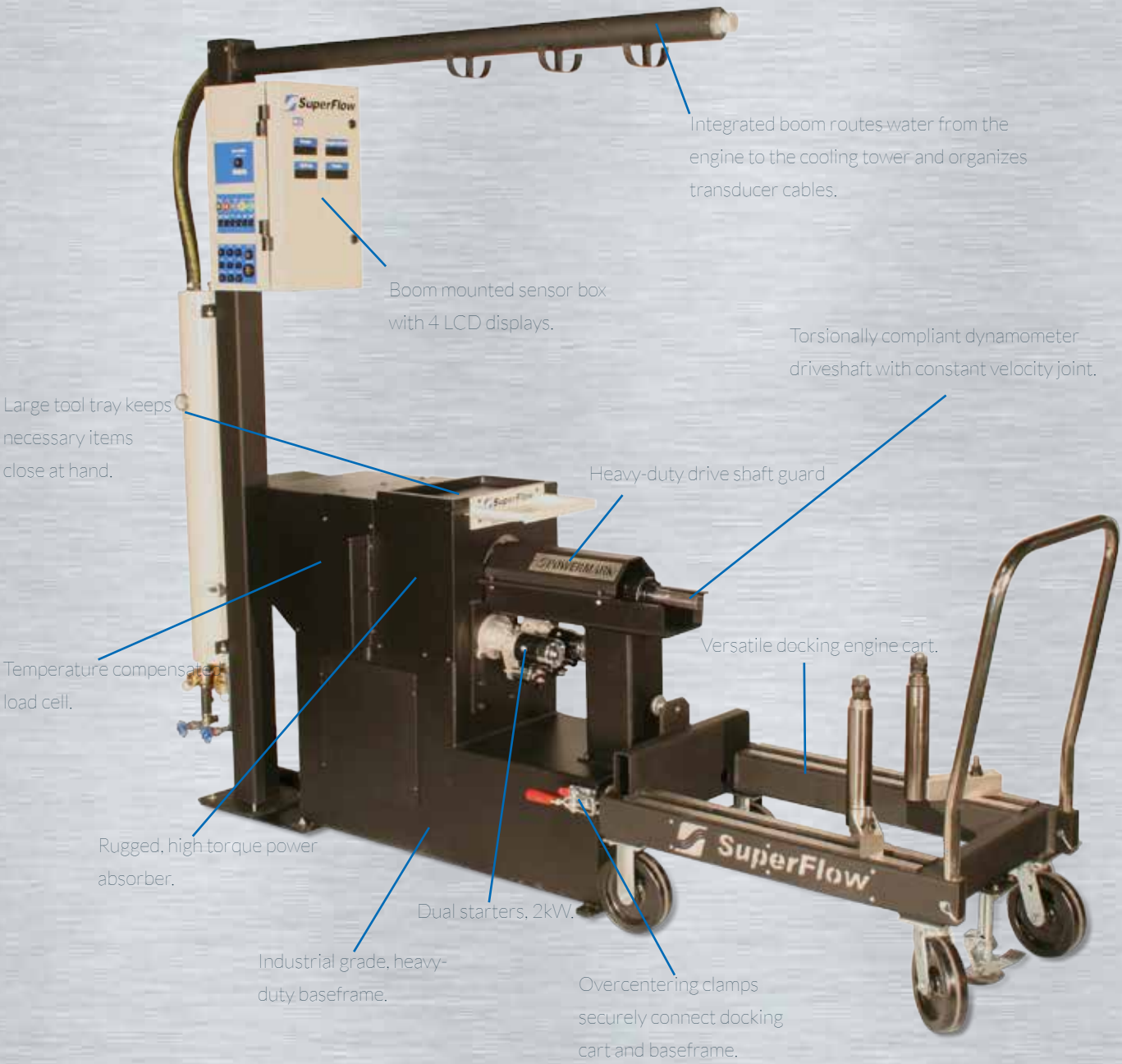
STANDARD CONFIGURATION

TEMPERATURE	16-channel thermocouple panel 12 closed tip thermocouples, 1/8" 12 swagelock fittings 12 ten foot extension cables
PRESSURE	10-channel pressure panel 2 transducers (0-300 psi, 0-100 psi)
AIR / FUEL	2 pre-configured analog inputs
FUEL FLOW	2 fuel flow measurement turbines
AIR FLOW	1 air flow measurement turbine

SPECIFICATIONS

ABSORBER TYPE	Water brake
MAXIMUM SPEED	11,000 RPM
HORSEPOWER CAPACITY	3,000 hp (2,237 kW)
TORQUE CAPACITY	2,500 lb.-ft (3,390 N-m)

SF-BLACK WIDOW







**WinDyn®. Incredibly Powerful. Surprisingly Simple.**



## THE NEW WINDYN SYSTEM

1/4

the size of the original  
WinDyn System

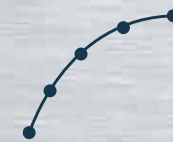
100

times more powerful  
than the original

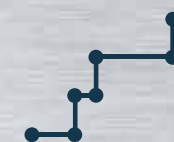
139

customizable channels  
standard

## Pre-Built Tests To Get You Started



Acceleration



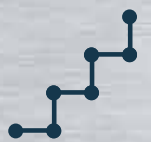
Mapping



Steady State



Break In



Step

## THE ANALYSIS YOU NEED

WinDyn's powerful analysis tools allow you to quickly review your test data to understand how changes affected your engine. View live test data as a trace over a saved reference plot, overlay up to 10 tests, playback runs on any of the live data screens, or plot multiple channels on the same graph.

## WE'RE ALL DIFFERENT

WinDyn comes with 10 easily editable screens that allow you to view your channels, air/fuel ratios, temperatures, pressures, flows and calculations according to your individual tastes.





## THE WHOLE SYSTEM

In addition to the Sensor Box, Servo Valves and the WinDyn Software, the WinDyn system comes with two 22" LCD monitors, a 10" touch screen operator console to control your tests, engine and test cell, a throttle cable, and a operator table that seamlessly integrates each part of the system.

## THE DATA YOU NEED

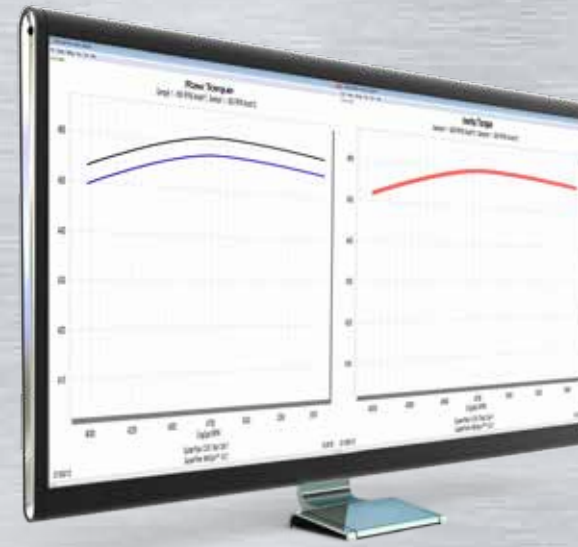
The SuperFlow Sensor Box is the brains of the dyno. It collects data at 1,000 - 2,500 Hz so you'll never miss a single detail. It also accommodates a wide range of sensors to monitor temperatures, pressures, air/fuel, and OBDII, and comes with a weather station built in. The four LCD displays keep you informed at a glance.

## THROTTLE CABLE

The ultra responsive throttle cable provides a positive mechanical connection between you & the engine so that you're always in control. Our innovative handle bracket ensures plenty of leverage for smooth cable operation even in test cells with long cable runs or tight turns.

## PRECISE SERVO VALVE

SuperFlow's spool type servo valves are developed to match the profile of each water brake for unmatched control. Multiple control modes and flexible control strategies give SuperFlow engine dynos the versatility to test a wide range of engines and the power to control the harshest engines precisely.

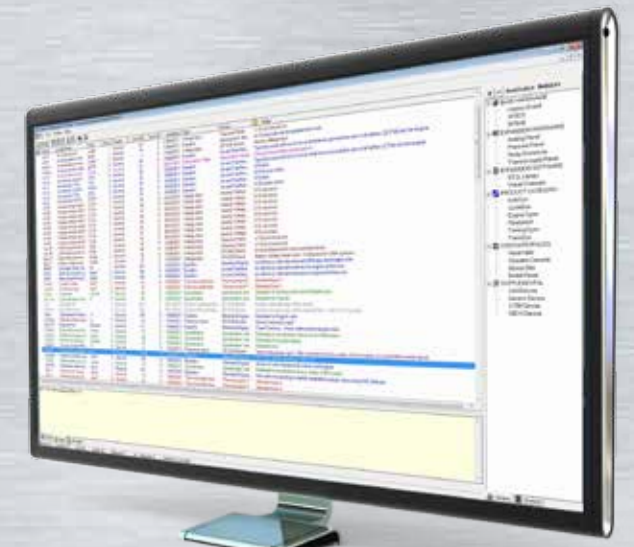


## INERTIA CORRELATION

WinDyn senses the sweep rate and correlates it with the inertia of the engine and dynamometer to obtain the most accurate inertia correction. This allows testing at different sweep rates to detect small changes in torque that would otherwise be masked by uncorrected torque numbers.

## LOAD CONTROL SYSTEM

WinDyn's legendary load control system is both precise and flexible for unmatched closed loop control to almost any WinDyn channel. Three manual control modes are available including Torque, RPM and Percentage of Load which keeps you in control during break in and warm up routines.



## WINDYN EDITORS\*

WinDyn comes fully loaded and ready to run, but if you need more options Advanced editors can be purchased at any time. These editors give you complete control to modify the sensor box configuration, write custom test profiles and set individual limits by channel with custom safety actions.

## EXPORT & REPORT\*

Export allows you to export current and historic WinDyn data to Excel or to your own servers for management review anywhere in the world. Report lets you define custom reports with bar codes to track engines so you know exactly how it performed last time you saw it.

\*Optional



## OPTIONAL EQUIPMENT

### ANALOG PANEL



8 channel analog panel to integrate exhaust gas analyzers, lambda sensors, O<sub>2</sub> sensors, etc. Select 0-1V, 0-5V, 0-10V, 0-20V or 0-30V in any combination.

### AIR FUEL KIT



Air Fuel Meter Kits available in any channel count configuration. Bosch LSU 4.2 and OEM grade NTK type sensors available.

### ADDITIONAL DOCKING CART



Extra docking cart to save time between engine tests. Pre-stage one engine while another is being tested.

### FUEL SYSTEM



High performance fuel pump and two fuel regulators. Rated at 0-800 lb/hr.

### PRESSURE COOLING TOWER



CT-700 Pressurized Cooling tower integrates seamlessly with boom assembly. Standard temperature range from 160° F to 230° F. Rated for continuous duty testing up to 700 HP (522 kW).

### THROTTLE ACTUATOR



Rotary electric throttle control provides automated testing from computer. Morse cable options also available.

## OPTIONAL EQUIPMENT

### SENSOR EXPANSION PANELS



The modular sensor box allows for additional 10-channel pressure panels (shown) and additional 16-channel temperature panels. Extra transducers are sold separately.

### ENGINE ADAPTER



Multi-fit adapter packages for both the SF-902S and SF-Powermark. Multi-fit Bell Housing pictured for SF-902S. Universal Engine Mounting Kit available for SF-Powermark.

### SUPERSTART



Starter option for the SF-902S includes 8" spacer box and 2 high torque starters.

### BLOW-BY SENSOR



Measures the volumetric flow of crankcase blow-by. Two sizes available: 0.4 to 16 ACFM and .25 to 10 ACFM. Select either analog or frequency output.

### FUEL CANISTER



Designed to measure fuel consumption of fuel injected engines. Mid flow unit available in 20 – 720 lb./hr. High flow unit available in 30 -1070 lb./hr. Available for gas and alcohol.

### RELAY BOX



Relay enclosure for up to 32 programmable user-defined relays. Commonly used to control lights, pumps, water systems, emergency stop and fire safety systems.



# SUPERFLOW® DYNAMOMETERS & FLOWBENCHES

ENGINE DYNO SERIES    ENGINE DYNAMOMETERS




SuperFlow® is a global market leader specializing in high-performance automotive testing and rebuilding equipment. Since the early 1970's SuperFlow® products have been used daily by professional engine builders, the military, technical schools, professional race teams, speed shops, transmission rebuilders, universities, and leading automotive manufacturers to produce powerful


and efficient vehicles. Our commitment to providing the best products and service at a great value has given us the opportunity to work with some of the most notable companies in the automotive industry. Come see why thousands of businesses have already chosen SuperFlow® for all of their testing needs.

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 Transmission Testers

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For Europe sales & service please call +32-3-4846511 or email [info@superflow.be](mailto:info@superflow.be)

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