SuperFlow®

SF-901

Series of Engine Dynamometer Systems

The professional engine-builders' choice for testing OEM and high-performance automotive, motorcycle and snowmobile engines

SuperFlow's SF-901 is a complete, integrated, engine-testing *system.* It includes a fully-equipped engine stand, power absorber, fuel system, operator console with load control, manual throttle control, data acquisition, and WinDyn™ software. *Everything you need to start testing.*

The SF-901 is the most accurate, cost effective dynamometer package available today. You get the most data per dollar spent. Fuel flow, air flow and torque measurement systems are all carefully calibrated to provide the most accurate readings. The SF-901 is available in three different packages to fit your needs: Sport, Expert and Pro. It's modular design allows you to add features at any time. See back cover for details.

SF-901 engine stand shown with optional equipment. Engine not included.

Toll Free Sales **800 471-7701**
Corporate **719 471-1746**
Detroit **313 464-4333**
Europe **32-15-216300**

SuperFlow's SF-901 is the most accurate, co

*1,000 lb-ft torque, temperature-compensated **load cell** for improved repeatability. (2,000 lb-ft optional)*

A special adjustment on the power absorption unit makes it easy to reduce the maximum capacity to as little as 2% of full capacity for excellent sensitivity on small engines.

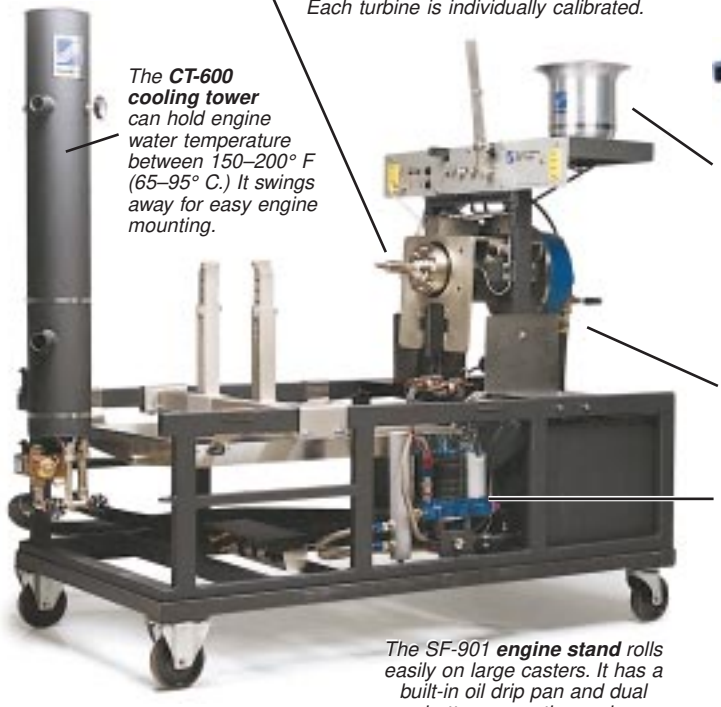
SF-871 *(Pro)*

SF-833 *(Sport and Expert)*

*SuperFlow's exclusive, **low-inertia absorber** is made of a cavitation-resistant aluminum/bronze alloy, which has over 20 times the life expectancy of an all-aluminum absorber. It uses an outlet-control servo valve for the quickest response times.*

*SF-901 systems include your choice of **input shafts***

***Fuel-flow measurement turbine.** By automatically combining air and fuel flow data, the SF-901 gives you an instant reading of air-fuel ratio, BSFC and Volumetric Efficiency. Each turbine is individually calibrated.*



*The **CT-600 cooling tower** can hold engine water temperature between 150–200° F (65–95° C.) It swings away for easy engine mounting.*

*The SF-901 **engine stand** rolls easily on large casters. It has a built-in oil drip pan and dual battery mounting rack.*

SuperFlow's SF-901 series of engine dynamometers provides the most data per dollar spent. The SF-901 is a complete, integrated system that provides accurate, reliable data to evaluate your engines. It's easy to set up and use, and performs many of its functions automatically.

Use an engine dyno as an evaluation tool

Use an engine dyno to measure power characteristics of your engines. It will tell you not only how much power, but where the power is in the speed range.

For performing research and development, you can evaluate modifications one-at-a-time, or as a complete system. For race engines, you can ensure that the engine is right *before* it runs on race day. Develop on the dyno, race at the track.

Whatever the engine's purpose, you can use the dyno to perform a *quality audit.* You ensure that the engine does what it's intended to do, *before* it's too late. Quantify the results of your modifications. Prove that you've built the engine you meant to build.

You can rely on a SuperFlow dyno

The SF-901's heavy-duty construction and industrial grade components ensure that it will last a long time. SuperFlow has over 1,000 engine dynamometers in the field today, and over 20 years experience manufacturing airflow and engine-testing equipment. SuperFlow makes complete systems. You buy everything from one supplier, so there's no finger-pointing. And, SuperFlow's dedicated customer service department will help keep your dyno running, even after the standard one year warranty period.

*SuperFlow's built-in **barometric pressure transducer** automatically provides barometric information used to correct power readings to accepted standards.*

*Choose an **airflow-measurement turbine** that fits your test requirements. Precise airflow data allows you to determine engine volumetric efficiency, air/fuel ratio and BSAC. The effects of cam and carburetor changes can be quickly evaluated. Inside each airflow sensor's aluminum velocity stack is a free-spinning fan which drives a slotted disc. Light coming through the slots in the disc is sensed by a photo cell, counted and converted to airflow at the console. Two airflow channels are available for measurements of two air inlets. Each turbine is individually calibrated.*

*Heavy-duty, vibration-isolated **SF-871 power absorber.***

***Fuel system** consists of filter, pump, accumulator, flow sensor(s)*, pressure gauges and regulators to provide two measured*, pumped and regulated fuel outlets. Two channels of fuel flow measurement are available on the SF-901 so you can check flow through two carburetors, two halves of a four barrel carb or fuel injection systems with bypass pumps.*

**Sport package includes one turbine.*

High-performance fuel pump is standard on the SF-901 Expert and Pro

SuperFlow
Computerized Engine and Vehicle Test Systems

ost-effective engine dyno package available.

The SF-901 is simple to set up and use

It's easy to get good, reliable data with the SF-901. All the controls are at your fingertips. Once the engine is mounted, even a beginner can be testing in a matter of minutes.

After warming the engine, dial in the starting and ending test RPM, the type of test, go to full throttle and push the auto-test button to start the run.

As the test proceeds, WinDyn* displays live data with panel meters, bar graphs, X-Y plots and digital displays. The engine automatically accelerates to the end test RPM and returns to the initial test RPM. When the test is done, use WinDyn to print graphs and reports with over 100 measured and calculated items at each test point.

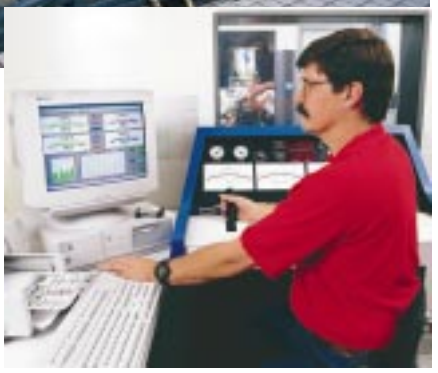
Comes with automatic test cycles

The SF-901's power absorber allows you to run tests with the engine running at a constant speed, constant torque, or accelerating or decelerating at controlled rates up to 2,000 RPM per second. Automated tests step the engine speed in increments of 250 or 500 RPM. Acceleration tests record data on the fly as your engine accelerates exactly as it would in the vehicle. Break-in and life-cycle tests proceed automatically under computer command. WinDyn comes with many pre-configured tests and screen layouts, along with the flexibility for you to design and manage your own tests.

Collects and corrects data automatically

Power and torque are continuously corrected to any standard you choose. Corrections are based on measured inlet air temperature, barometric pressure and user-entered vapor pressure data. Friction power is automatically estimated from piston speed and displacement to provide more accurate power-correction calculations.

Users report race engine tests up to 2,100 HP (1570 kW) and 1,700 lb-ft. (2300 Nm) of torque with 2,000 lb-ft (2700 Nm) torque link, and SF-871 absorber. Actual maximum power absorption may vary with water temperature and test duration.



*Use SuperFlow's powerful **WinDyn**™ software for real-time graphs of power and torque as you run your tests.*

*Experienced dyno operators watch **exhaust temperatures** for a number of telltale signs. If one cylinder is running hotter than the others it could mean it's not getting enough fuel. Catching it in time could save a melted piston. The temperature of a cylinder that's beginning to miss will start to drop at about 150 degrees a second. If ring flutter or valve float develop in a cylinder under acceleration, its temperature will fall while the other cylinders rise.*

All SF-901 systems come with complete instructions and an operator's manual that covers setup and test procedures in detail.

** Please see SuperFlow's WinDyn brochure for more information.*

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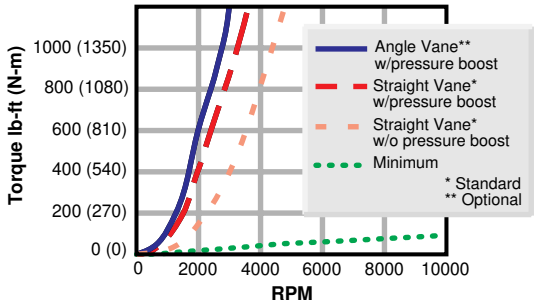
SF-901 Engine Dynamometer Systems

Torque capacity



Maximum absorber speed ..... 10,000 RPM

Specifications

Tachometer *Magnetic pickup on 60-tooth gear*
Range ..... 0–22,000 RPM (1/min) x 1

Torque *Temperature-compensated strain gauge bridge*
Range ..... 0–1,000 lb-ft (0–1350 Nm) x 0.1 ± 0.2% fs
Calibration arm included. Other ranges available as options
Compensated temp. range ..... 0–150 F° (-15° to 65° C)

Fuel flow *Filter, pump, accumulator, pressure regulator, gauge and vibration-isolated radial-flow turbine meter.*
Range ..... 0–800 lb/hr (100 g/s) x 0.1 ± 0.5% fs
Pressure drop ..... 3 psi Δ P @ 600 lb/hr max.
Specific gravity range 0.40–1.40

Air flow *Choose one of the following turbines:*
4" (10 cm) diameter turbine
..... 4–150 cfm (2–70 l/s), 3–100 HP (2–75 kW)
6.5" (16.5 cm) diameter turbine
..... 10–800 cfm (5–380 l/s), 5–600 HP (3.75–450 kW)
9" (23 cm) diameter turbine
... 20–1,200 cfm (10–566 l/s), 30–1,000 HP (22–750 kW)
Accuracy ..... ± 0.5% fs

Exhaust temperatures *Type K thermocouples, 8 input channels expandable to 16*
Range ..... 0–2,000°F (-18° to 1100°C) x 1, linearized

Pressures *Six additional channels may be added*
Oil... 0–200 psi (0–1300 kPa) x 0.1, ± .01" (.3 mm) of water
Manifold vacuum .....
..... -10 to 40 psi (-69 to 275 kPa) x 0.1, ± 0.5% fs
Barometric ..... 0–32" Hg (0–110 kPa) x 0.01, ± 0.01% fs

Power requirement
..... 80 VA, 105–130 VAC or 207–260 VAC, 47–63 Hz

Dimensions and Weights
Control console .... 43"H x 39"W x 25"D (109 x 99 x 64 cm)
..... 70 lbs. (31.8 kg)
Engine stand ..... 47"H x 32"W x 60"L (120 x 81 x 153 cm)
..... 420 lbs. (191 kg)

Shipping Dimensions and Weights
Two cardboard containers mounted on wooden skids
42"L x 34"W x 55"H (107 x 86 x 140 cm), 250 lbs (113 kg)
63"L x 33"W x 50"H (160 x 84 x 128 cm), 500 lbs (227 kg)

Room plans

Call SuperFlow for room plan drawings and documents on how to extract the most from your test facility.

Engine Dynamometer Packages

SF-901 Sport

Operator console and cover, engine stand with casters, SuperFlow's SF-833 water-brake power absorber, 1,000+ HP (745 kW), Interface™ load cell, 1,000 lb-ft (1350 Nm), input shaft (choice of 1⅛", 1⅜" dia. or Spicer), Holley™ "Blue" fuel pump and regulator, hydraulic throttle-actuator system, fuel-flow measurement turbine (330-lbs/hr), airflow measurement turbine (choice of 4", 6½" or 9" dia.), five fluid/air temperature sensors, eight exhaust-gas thermocouple channels, (four type-K thermocouples included), WinDyn™ software*, two days training (labor only)
Optional Hewlett Packard Computer system.

SF-901 Expert

Upgrade includes Sport equipment plus:
High-performance fuel pump (1,200 lbs/hour), additional fuel-flow turbine and regulator, four more type-K thermocouples, CT-600 engine-cooling system

SF-901 Pro

Upgrade includes Sport and Expert equipment plus:
SF-871 heavy-duty water-brake power absorber upgrade, 1000+HP (745 kW). For very high power and endurance testing.

** Please see WinDyn brochure for details.*

The SF-901 can measure:

engine speed, torque, two fuel flows, two air flows, air temperature, exhaust gas temperatures, five liquid temperatures, oil pressure, manifold pressure, barometric pressure

...and calculate:

power, air-fuel ratio, brake specific fuel consumption, brake specific air consumption, volumetric efficiency, mechanical efficiency, and more.

Limited Warranty

SuperFlow warrants that this SuperFlow product will perform as described in this brochure for a period of one year from the date of purchase. To request a copy of the limited warranty statement call SuperFlow, 8am–5pm (Mountain Time) at 719 471-1746.

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