

# FLOWBENCHES



SF-60 ■ SF-110/120 ■ SF-600S ■ SF-1020 ■ SF-1020-SB ■ SF-1200

## SuperFlow Flowbenches:

# Now measure airflow, tumble, swirl and velocity with precision and reliability.

SuperFlow's proven Flowbench technology has helped engine builders produce faster and more efficient racing vehicles since 1970. SuperFlow's measurement technology allows you to compare flow test numbers taken from different SuperFlow Flowbenches anywhere on earth.

SuperFlow Flowbenches are available with SuperFlow's FlowCom flow computer, Flowbench motor controller, Port Flow Analyzer and WinDyn software to help you measure airflow and airflow qualities in the fastest, most accurate manner possible. So whether you are testing a cylinder head or a catalytic converter, SuperFlow supplies the proper tools to make your job easier.

### FlowCom makes airflow testing quick and easy.

SuperFlow Flowbenches include, or can be outfitted with, FlowCom™ flow computers for rapid, accurate testing\*. This highly accurate, easy-to-use digital airflow measurement system gauges test pressure and temperature measurements to within 0.5° F. It measures and calculates airflow in CFM and also has inputs for optional external devices like swirl meters, tumble meters and velocity probes.

When combined with SuperFlow's motor controller, FlowCom automatically controls test pressure based on keypad input. When used with Port Flow Analyzer software, FlowCom graphically displays flow data (in English or Metric units) in real time. All you do is record the flow reading at each point.\*\* Once the test is complete, you can print and store the test results. You can even overlay and compare test data with previous tests.

\* Standard on SF-60, SF-1020, and SF-1200, optional on SF-110, SF-120 and SF-600S. The SF-1020-SB is equipped with new generation electronics and has many other features.

\*\* To record results on supplied forms, simply freeze the data at each test point with the FlowCom keypad, or with optional hand- or foot-operated push buttons.

### Calibrated and tested.

Every SuperFlow Flowbench is calibrated and tested before it leaves the factory. Each bench comes with its own calibration sheet to ensure you generate the most accurate test data. After years of use the bench can be re-calibrated using optional test orifice plates.

### FlowCom configurations:

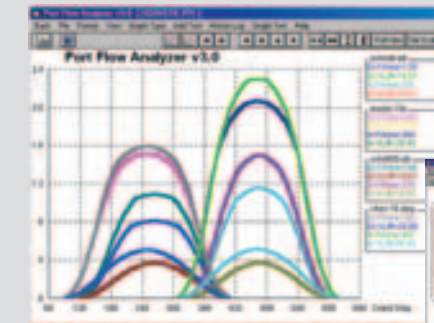
FlowCom and SuperFlow motor controllers are built into most benches. On those where FlowCom is optional, you have your choice of these three packages:

- 1 FlowCom only
- 2 FlowCom with Motor Controller
- 3 FlowCom, with Motor Controller and Port Flow Analyzer Software

(Specify your SuperFlow flowbench model so SuperFlow can calibrate the motor controller and Port Flow Analyzer software to your bench.)

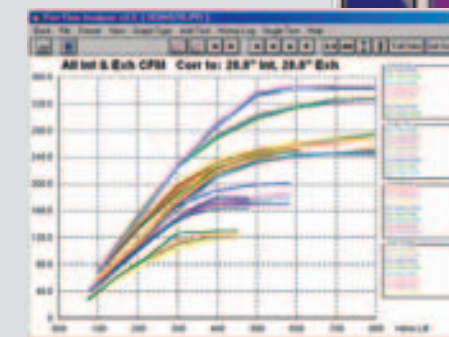
## Port Flow Analyzer™ Accelerates Your Cylinder Head Port Analysis.

Port Flow Analyzer™ is software designed to streamline the recording, calculating, reporting and graphing of cylinder head flowbench data. It makes port flow testing faster, easier, more accurate and prints professional color graphs and reports.



Valve lift and flow area graphs, analyzing total flow potential of two different head and cam combinations. (Pro Version)

Graph of port velocity maps for velocity probe readings. (Pro Version)



Graph comparing intake and exhaust ports for two heads. Other graph options include Average, All Cylinders, or specific cylinders.

Port Flow Analyzer enables engine builders and engineers to compare head, cam and engine combinations. These comparisons give you the information you need to improve cylinder head flow, port velocity, swirl and tumble motion. Port Flow Analyzer saves valuable time by reducing repetitive data entry and making it easier for you to choose lift, flow range and test pressure settings. The Pro Version has options for port velocity mapping with a pitot tube, swirl and tumble measurement, port stability, and more.

The Port Flow Analyzer groups from one to eight cylinders together as a head so you can record and store details about head components (springs, valves, locks, etc.), adapters (bore/intake/exhaust), customer name, and more. When you're finished testing, you can display and print detailed, professional reports and color graphs. You can even save them to CD, with just a few simple keystroke commands.

Reports show raw or calculated results, for one or all cylinders, or averaged data across the entire head. Show CFM corrected to virtually any test pressure, Valve Area, CFM per Square Inch, Flow Coefficient, Valve Velocity, Port Velocity, Swirl, Port Mapping, Stability, and percent of Exhaust/Intake.

With high-resolution CFM graphing, you can double check outlying points and minimize math and data recording errors.

The Pro version can combine cylinder head flow data with basic engine and cam specifications to produce Performance Estimates. These Estimates include reports on Intake and Exhaust Flow Areas (combining flow curves with valve lift curves), Lobe Area, Total Percent Exhaust/Intake, Idle Vacuum, Potential Peak Torque and Power Levels and RPMs, Air Flow Requirements and Volumetric Efficiency, Recommended Intake Runner Lengths, Diameters, Port Volumes, and much more. It also stores your cylinder head data for rapid retrieval and comparison.

### FlowCom Features:

- Compact, lightweight microprocessor design.
- Rugged construction to withstand harsh shop environments.
- Automatically calculates, corrects and displays airflow readings.
- Automatically regulates test pressure with optional motor controller.
- External frequency and load inputs for velocity probe, swirl meter, tumble meter and other devices.
- Communicates with PC; equipped with optional Port Flow Analyzer™ airflow analysis software.
- Available installed on SuperFlow flowbenches or as retrofit kits.



# SF-60

## Computerized Flowbench



**Tests engines up to 50 hp (35 kW) per cylinder. The SF-60 is SuperFlow's most economical flowbench for testing Go-Kart and small two-stroke engines.**

Easy to use. Easy-to-read. And, at just 33 lbs, it's extremely portable. Just put it on the tabletop, plug it in and start testing with digital-computer accuracy! Connect it to a computer and use Port Flow Analyzer software to speed up your port flow testing. The SF-60 is a great learning tool for schools, allowing you to teach the principles of flowbench testing on an affordable bench, with the time-saving benefits of a flow computer. The SF-60 tests up to 90 cfm (42 l/s) at 20" (51 cm) of water and runs up to 27" (68 cm) of test pressure on smaller valves. A built-in jack for a velocity probe lets you read out percent velocity, inches-of-water (cm-of-water) velocity pressure, or feet-per-second (meters-per-second) velocity.

**FLOW:**  
90 cfm @ 15" of water (42 l/s @ 38 cm). Provides fast, accurate, repeatable results at any test pressure between 5" (13 cm) and 30" (76 cm) of water. Testing typically performed at 15" of water test pressure; for smaller valves, test pressure can be increased to 30" (76 cm).

**FLOW DIRECTION:**  
Intake or exhaust flow direction. The SF-60 is set up at the factory for intake. To change flow direction to test two-cycle engines, simply remove top plate and invert the motor. Air is then blown up through transfer ports, into cylinder and exits via exhaust port.

**FLOW MEASUREMENT:**  
Five flow ranges to fit the valve size or valve lift. Run all tests within a single range or change ranges to obtain extended accuracy at low lifts, with readings all within 0.5%. Five flow ranges increase resolution of flow measurement vs. single-range systems. Changes of 1% are easily detectable.



**Tests engines up to 100 hp (75 kW) per cylinder. Used by professional racing motorcycle and automotive engine rebuilders.**

The SuperFlow original, industry standard SF-110 comes with complete instructions on how to measure flow changes as small as 1%. All necessary air-blowers, controls and airflow measuring equipment are built in. Just plug it in, turn it on and test.

The SF-120 model gets a high-pressure motor on the intake side of the SF-110, which produces roughly 30% more intake flow capacity. For example, heads tested at 10" with an SF-110, can be tested at 15" with an SF-120. Talk to your SuperFlow sales/engineering consultant for the one that best fits your operation.

**FLOW:**  
Maximum 185 cfm @ 15" of water (86 l/s @ 38 cm). Fast, accurate, repeatable results at any test pressure between 5" (13 cm) and 15" (38 cm) of water. Testing typically performed at 10" of water test pressure; for smaller valves, test pressure can be increased to 15" (76 cm). With optional FlowCom unit, you can go up to approximately 25" (63.5 cm) of water.

**FLOW DIRECTION:**  
Intake or exhaust flow direction. Switch from one to the other by simply turning two knobs. To change flow direction to test two-cycle engines, set the direction of the flowbench to exhaust. Air is then blown up through transfer ports, into cylinder and exits via exhaust port.

**FLOW MEASUREMENT:**  
Five flow orifices at the top of the machine and an inclined flow meter. By selecting proper orifice combinations, flow meter can be used in nine ranges from 10 cfm (4.7 l/s) up to 185 cfm (87 l/s), with readings all within 0.5%. Nine ranges increase the resolution of flow measurement as compared to a single-range system. Changes of 1% are easily detectable.



SF-110 shown with optional FlowCom flow computer.

# SF-110/120

## The Industry's Most Popular Flowbench

# SF-600S

The Professional's Workhorse

#### FLOW:

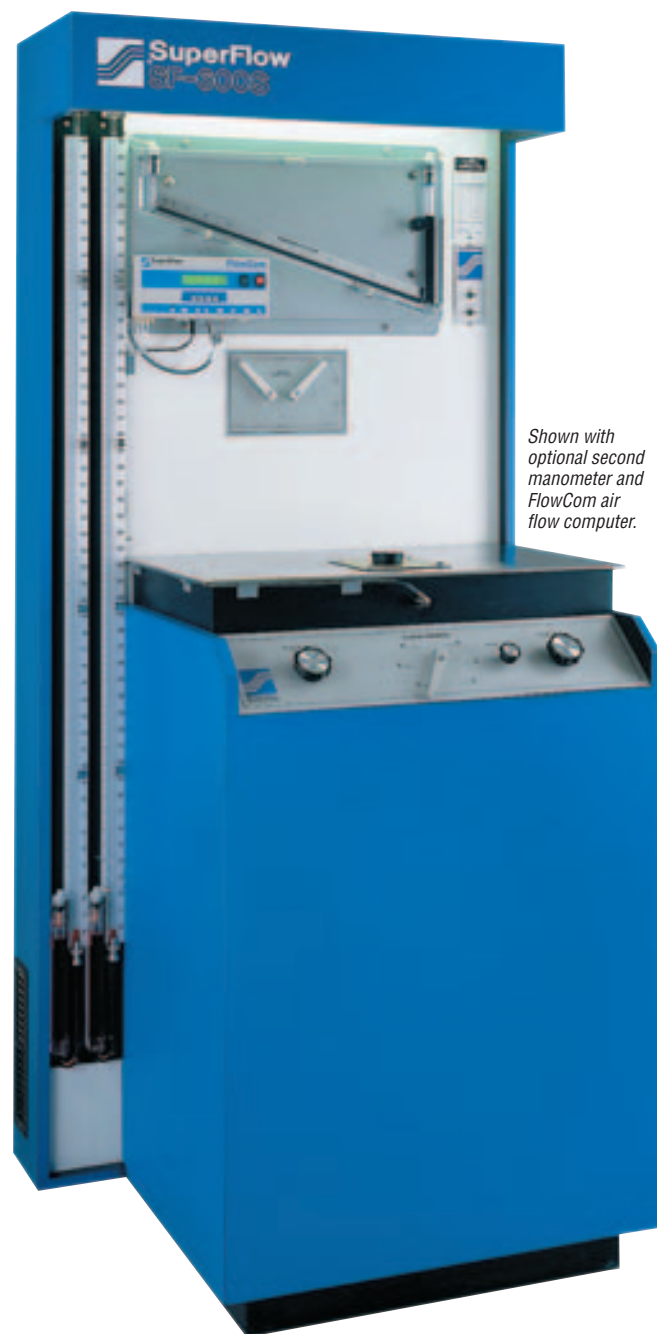
Maximum 600 cfm @ 20" of water (280 l/s @ 38 cm). Maximum 500 cfm (233 l/s) @ 36" (91 cm) of water. Fast, accurate, repeatable results at any test pressure between 5" (13 cm) and 48" (120 cm) of water. Testing typically performed at 25" of water test pressure; for smaller valves, test pressure can be increased to 48" (122 cm). Add optional FlowCom unit, and go up to approximately 25" (63.5 cm) of water. Optional second 48" (122 cm) manometer allows you to perform carburetor-signal or velocity-probe tests

#### FLOW DIRECTION:

Intake or exhaust flow direction. Use simple levers to select intake or exhaust flow direction at test pressures from 0 to 48" (0–120 cm) of water and airflow rates from 0 to 600 cfm (0–280 l/s).

#### FLOW MEASUREMENT:

Six flow ranges to fit the valve size or valve lift. Run tests in a single range or change ranges to obtain extended accuracy at low lifts, with readings all within 0.1%. Six flow ranges increase resolution of flow measurement vs. single-range systems; 0.5% changes are easily detectable.



Shown with optional second manometer and FlowCom air flow computer.



Test engines up to 180 hp (135 kW) per cylinder. The SF-600 is used by more professionals than all other flowbenches combined.

The SF-600 is used by professional engine builders to test any cylinder head, intake manifold, throttle body, air cleaner, or muffler as assemblies or separate units. The SF-600 is popular among professional engine builders,

because it has the extra capacity they demand. FlowCom air flow computer and SuperFlow Motor Controller are available as options or retrofit kits to accelerate airflow testing on this industry standard bench.



The SF-1020 ProBench is prepped to test a cylinder head with a special radiused inlet guide and cylinder head adapter.

Tests engines from 3 to 240 hp (2.5 to 180 kW) per cylinder. The SF-1200 is designed for the engineer who develops high-performance two-cycle and four-cycle engines for OEM or racing applications.

The SF-1020 can measure and record air flow at OEM engineering accuracy, faster than any other flowbench on the market. It has the ability to test up to 240 horsepower per cylinder and at pressures up to 65 inches (165 cm) of water.

The SF-1020 ProBench has an extended work surface and a built-in storage cabinet below the FlowCom. Casters permit easy maneuverability within the lab.

SuperFlow's new SF-1020 SuperBench model uses NGE electronics and WinDyn software (instead of FlowCom and Port Flow Analyzer software) and is designed to analyze flow in industrial and scientific applications as opposed to performance engine analysis. The SF-1020 is also well suited for testing catalytic converter ceramic elements used in for fitting various sizes of flow elements.



**FLOW:**  
Maximum 1,000 cfm @ 65" of water (470 l/s @ 165 cm). Fast, accurate, repeatable results at any test pressure between 5" (13 cm) and 70" (178 cm) of water. Testing typically performed at 50-65" of water test pressure.

**FLOW DIRECTION:**  
Intake or exhaust flow direction. Using simple electric switches, you can select intake or exhaust flow direction.

**FLOW MEASUREMENT:**  
Unique variable flow orifice adjusts flow range between 25 cfm and 1,000 cfm (12–470 l/s), based on FlowCom input, to fit the valve size or valve lift. Run tests in a single setting or change settings to obtain extended accuracy at low lifts, with readings all within 0.25%. The variable flow range increases resolution of flow measurement vs. single-range systems; 0.5% changes are easily detectable.

# SF-1020 PROBENCH

The Professional Engineer's Flowbench

# SF-1200

The Carburetor-Developer's Bench

## FLOW:

Maximum 1,200 cfm @ 28" of water (566 l/s @ 71 cm). Fast, accurate, repeatable results at any test pressure between 5" (13 cm) and 48" (120 cm) of water. Most carburetor testing is performed at 20.4" (52 cm) of water test pressure; for valves, test pressure can be increased to 48" (120 cm).

## FLOW DIRECTION:

Intake only.

## FLOW MEASUREMENT:

Six flow ranges to fit size of valve, carburetor or air cleaner. Run tests in single range or change ranges to obtain extended accuracy at low flows, with readings all within 0.2%. Portal on front of SF-1200 facilitates orifice flow range changes. Six flow ranges increase resolution of flow measurement vs. single-range systems; 0.5% changes are easily detectable.



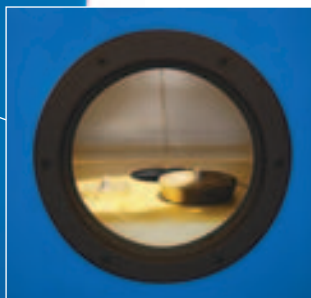
Tests high-flow air cleaners, modified carburetors, heads, manifolds, exhaust systems and other high-flow pieces.

- Flows 1200 cfm (560 l/s) at 28" (71 cm) of water in intake direction only.
- Eight-position selector switch for jet signal measurements on four-barrel carburetors.



SF-1200 can run the carburetor up to its maximum flow capacity while simultaneously measuring the pressure signal in each of the four barrels.

SF-1200 testing a Holley carburetor using an optional Holley adapter kit.



Flow-range portal  
A flow-range portal provides easy access to the flow range stoppers. You can change the flow range without removing your test piece from the base plate.

## SF-60

**Flow Measurement Accuracy:**  
From 10-90 cfm (5-43 l/s) ± 1% of reading

**Repeatability:**  
± 0.5% of reading

**Range:**  
0-90 cfm (0-43 l/s) @ 15" (38 cm) of water

**Test Pressure Accuracy:**  
± 0.05" (± 0.13 cm) of water

**Range:**  
0-30" (0-76 cm) of water

**Temp. Measurement Accuracy:**  
± 0.5° F (± 0.3° C)

**Weight:**  
33 lbs (15.0 Kg)

**Dimensions:**  
14" L x 17" W x 12" H (35 x 43 x 30 cm)

**Shipping Weight:**  
38 lbs (17.3 Kg)

**Shipping Dimensions:**  
Single-wall cardboard carton  
17" L x 21" W x 16.6" H (43 x 54 x 43 cm)

**Power Requirements:**  
120 VAC, 8A, 50/60 Hz

## SF-110/120

**Flow Instrumentation:**  
Inclined flow manometer 0-100% of 9 ranges  
0-10 cfm (0-4.7 l/s) 0-84 cfm (0-40 l/s)  
0-18 cfm (0-8.5 l/s) 0-105 cfm (0-50 l/s)  
0-29 cfm (0-14 l/s) 0-140 cfm (0-70 l/s)  
0-40 cfm (0-19 l/s) 0-185 cfm (0-87 l/s)  
0-59 cfm (0-28 l/s)

**Accuracy:**  
± 1% full scale

**Repeatability:**  
± 0.5% full scale

**Test Pressure Instrumentation:**  
Vertical manometer  
0-16" x 0.1" (0-40 x 0.1 cm)

**Temperature Instrumentation:**  
Two bimetallic dial thermometers  
40-140° x 2° F (5-60° x 1° C)

**Controls:**  
Intake/exhaust flow direction  
Intake flow rate  
Exhaust flow rate  
Air supply on-off

**Capacity:**  
SF-110  
160 cfm (76 l/s) @ 10" (25 cm) of water  
SF-120 intake\*  
185 cfm (87 l/s) @ 10" (25 cm) of water

**Weight:**  
100 lbs (46 Kg)

**Dimensions:**  
27" L x 20" W x 36" H (69 x 51 x 91 cm)

**Shipping Weight:**  
115 lbs (53 Kg)

**Shipping Dimensions:**  
Double-wall cardboard carton  
33" L x 23" W x 38" H (84 x 59 x 97 cm)

**Power Requirements:**  
SF-110  
120V, AC or DC\*\*, 15A,  
(240 VAC, 8A optional)

SF-120  
240 VAC, 11A

\*SF-120 exhaust capacity is 160 cfm (75 l/s).

\*\*FlowCom and motor controller will not run on 120V DC.

## SF-600S

**Flow instrumentation:**  
Inclined flow manometer, 0-100% of 6 ranges:  
0-38 cfm (0-18 l/s) 0-300 cfm (0-142 l/s)  
0-75 cfm (0-35 l/s) 0-450 cfm (0-210 l/s)  
0-150 cfm (0-70 l/s) 0-600 cfm (0-280 l/s)

**Accuracy:**  
± 0.5% full scale

**Repeatability:**  
± 0.1% full scale

**Test Pressure Instrumentation:**  
One vertical monometer  
0-48" x 0.1" (0-120 cm x 0.1 cm)

**Temperature Instrumentation:**  
Bimetallic dial thermometer  
40-140° x 2° F (5-60° x 1° C)

**Controls:**  
Intake/exhaust flow direction  
Intake flow rate  
Exhaust flow rate  
Flow meter range  
Work-light on-off  
Air supply on-off  
High-temperature cutoff 150-220° F (52-91° C)

**Capacity:**  
600 cfm (280 l/s) @ 20" (50 cm) of water  
500 cfm (235 l/s) @ 36" (90 cm) of water

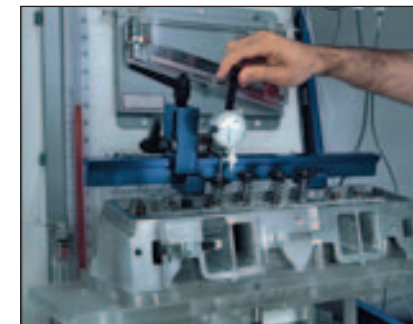
**Weight:**  
400 lbs (182 Kg)

**Dimensions:**  
35" L x 27" W x 84" H (89 x 69 x 214 cm)

**Shipping Weight:**  
580 lbs (263 Kg)

**Shipping Dimensions:**  
40" L x 32" W x 84" H (102 x 82 x 214 cm)

**Power Requirement:**  
240 VAC, 37A, single phase,  
208 VAC with lower capacity



Flow test heads at different valve lifts for a more complete understanding of a port's airflow characteristics.



Test individual runners on V-8 intake manifolds to evaluate the balance the airflow across all eight cylinders.

## SF-1020

**Flow Measurement Accuracy:**  
± 0.5% of reading in normal operating ranges

**Repeatability:**  
± 0.25% of reading

**Range:**  
0-1000 cfm (0-470 l/s)

**Test Pressure Accuracy:**  
± 0.05" (± 0.13 cm) of water

**Range:**  
0-65" (0-165 cm) of water

**Temp. Measurement Accuracy:**  
± 0.5° F (± 0.3° C)

**Weight:**  
480 lbs (218 Kg)

**Dimensions:**  
48" L x 33" W x 43" H (122 x 84 x 110 cm)

**Shipping Weight:**  
730 lbs (332 Kg)

**Shipping Dimensions:**  
Wooden crate  
50" L x 40" W x 59" H (127 x 102 x 150 cm)

**Power Requirements:**  
240 VAC, 75A, single phase 50/60 Hz

## SF-1200

**Flow Instrumentation:**  
0-100% of 6 ranges  
0-200 cfm (94 l/s) 0-800 cfm (378 l/s)  
0-400 cfm (190 l/s) 0-1000 cfm (470 l/s)  
0-600 cfm (280 l/s) 0-1200 cfm (566 l/s)

**Accuracy:**  
± 0.5% full scale

**Repeatability:**  
± 0.2% full scale

**Test Pressure Instrumentation:**  
Two vertical manometers  
0-24" x 0.1" (0-60 x 0.1 cm)  
0-48" x 0.1" (0-120 x 0.1 cm)

**Test Pressure Accuracy:**  
± 0.05" (0.13 cm) of water

**Temperature Instrumentation:**  
Bimetallic dial thermometer  
40-140° x 2° F (5-60° x 1° C)

**Controls:**  
Test pressure  
Work-light on-off  
Motor on-off  
Manometer input selector

**Capacity:**  
1200 cfm (566 l/s) @ 28" (71 cm)  
test pressure

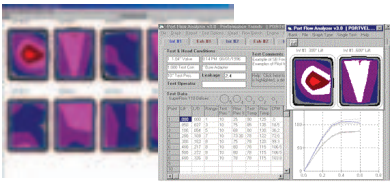
**Weight:**  
400 lbs (182 Kg)

**Dimensions:**  
35" L x 27" W x 79" H (89 x 69 x 201 cm)

**Shipping Weight:**  
580 lbs (264 Kg)

**Shipping Dimensions:**  
Wooden crate  
40" L x 32" W x 84" H (102 x 82 x 214 cm)

**Power requirement:**  
240 VAC, 80 amps, single phase, 50/60 Hz



**Port Flow Analyzer**

Windows™-based flowbench software lets you analyze, graph and print airflow data from your PC.



**Motor Controller**

Regulates test pressure based on input from FlowCom. (SF-110/120 and SF-600 controllers shown)



**Velocity probes**

The velocity probe measures intake and exhaust air velocity. The right angle (90°) probe is typically used on exhaust ports; the 180° probe is used to reach down inside an intake port. SuperFlow's velocity probes let you measure intake and exhaust air velocity.



**Head Adapters**

SuperFlow offers a V-8 adapter for 4" to 4.25" (101-108 cm) I.D. and a VW adapter for 1200 to 1600 cc.



**Holley Adapter Kits**

"Dry-flow" your carburetor one bore at a time with a Holley Adapter Kit.

**Updated manuals**

With FlowCom, you will receive an updated flowbench manual that covers installation and usage.



**FlowCom**

FlowCom™ flow computers for rapid, accurate testing. This highly accurate, easy-to-use digital airflow measurement system gauges test pressure and temperature measurements to within 0.5° F. FlowCom measures and calculates airflow in CFM. It has inputs for optional external devices like swirl meters, tumble meters and velocity probes.

**SuperFlow WFB-1500 WetFlow Attachment**

is ideal for the design and development of ports and valve-angle packages used primarily on race engines. Quick and easy to set up on any SF Flowbench with a high-output exhaust mode (i.e., SF-600 and the SF-1020 ProBench). Shows when and where you have low velocity, poor swirl, no tumble, etc.; also where fuel is pooling and when it falls from suspension.

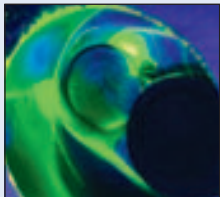


Photo shows wet stream, clockwise around exhaust valve, wet plug, and puddling under intake valve.



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For information on TRANSMISSION OR BRAKE DYNAMOMETERS, TRANSMISSION TEST SYSTEMS AND TORQUE CONVERTER OR DRIVELINE REBUILDING SYSTEMS, contact:

4060 Dixon Street | Des Moines IA 50313  
ph: 515.254.1654 or 888.442.5546 | fax: 515.254.1656

For information on ENGINE DYNAMOMETERS, CHASSIS DYNAMOMETERS AND FLOWBENCHES, contact:

3512 North Tejon | Colorado Springs CO 80907  
ph: 719.417.1746 800.471.7701 | fax: 719.471.1490

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