SF-880E AWD CHASSIS DYNO

THE TUNERS CHOICE

The SF-880E AWD chassis dyno was built for serious automotive performance tuners who want unmatched quality, capacity and data acquisition.

Overview

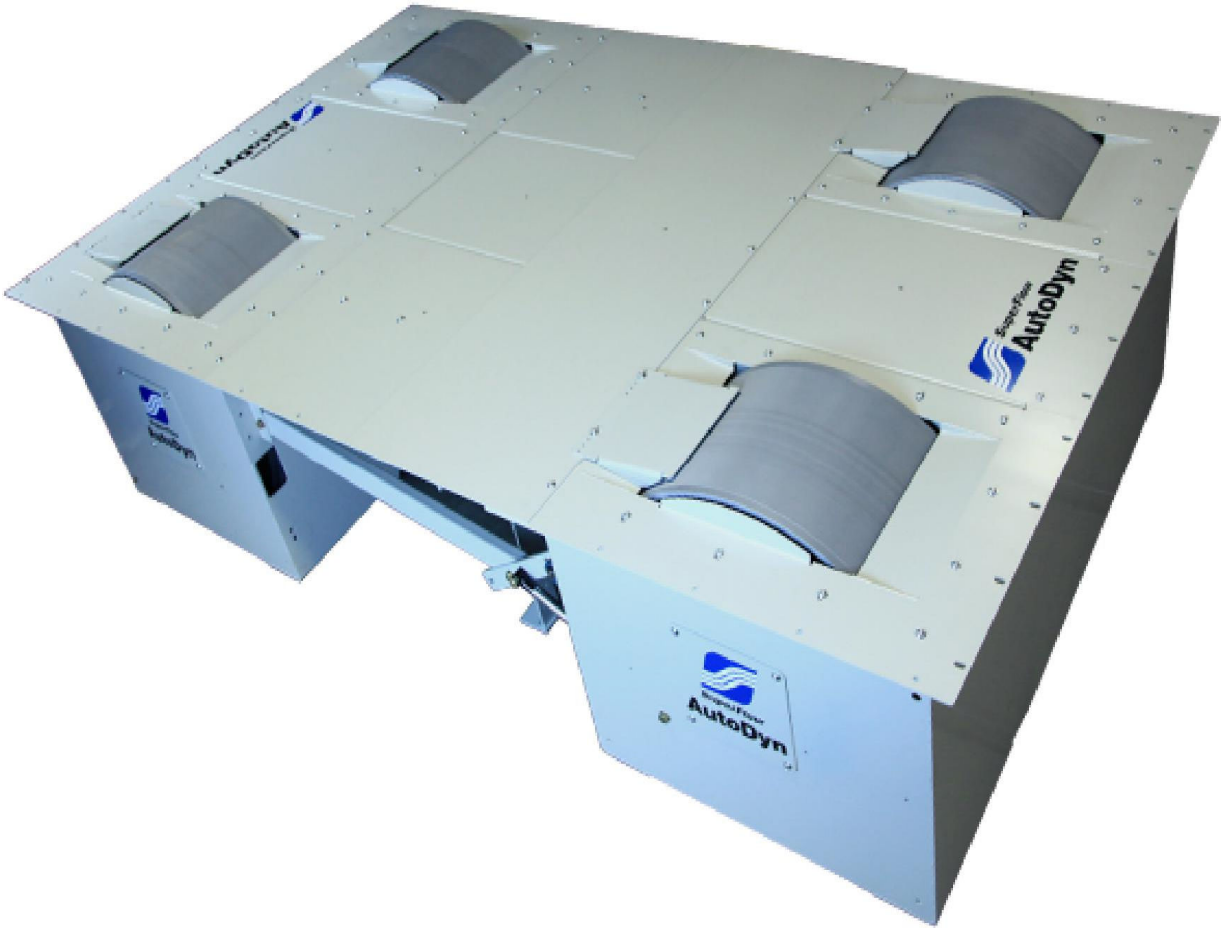
Electric Wheelbase Adjustment

The SF-880E dyno has electric push-button wheel base adjustment to accommodate wheelbases from 88 to 134 inches. This allows vehicles to be placed in the proper location on the rolls for maximum traction every time. The SF-880E accommodates track widths from 40 to 84 inches and has an equivalent vehicle inertia of 3,467 lbs. Other models in the SF-800 series offer longer wheel bases, wider track widths and different inertias.

200 MPH Mechanical Roll Synchronization

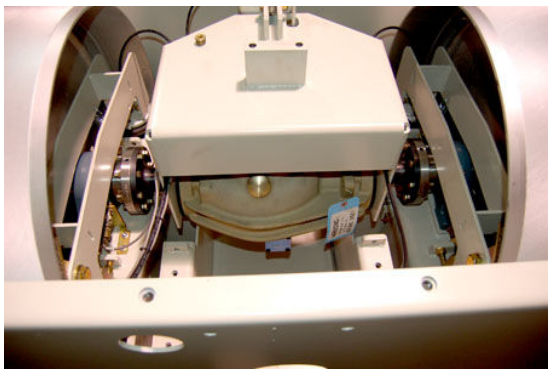
The SF-880E chassis dyno includes all-wheel drive speed synchronization with a simple and reliable driveshaft connection between the front and rear rolls. This eliminates the chance of damaging center differentials and activating traction or stability control systems on the dyno. This driveshaft speed synchronization system is unique to SuperFlow and the only one available

that doesn't have to be disconnected to test above 175 mph. SuperFlow speed synchronization is always engaged and available all the way up to 200 mph.



Unmatched Accuracy Through Engineering

Trunnion mounted differentials are equipped with individual torque cells to measure torque produced at each axle. This system also makes SuperFlow AWD chassis dynos extremely accurate because any variance in dyno components like bearings and differentials are compensated for as the measurement is made.



Superior Eddy Current Load Capacity

Two eddy-current power absorbers are mounted to the differential between the rolls to provide more load capacity across the entire operating range. Mounting the power absorbers to the differential provides two major advantages over other systems.

- The power absorbers spin at 2.5 times roll speed meaning the SF-880E will provide significantly more load capacity starting at 0 mph than other dynos which gives you more load to tune at the speeds vehicles are actually operated. We're so confident in this design we publish our load curves across the entire operating range rather than only publishing peak load which is only available at the top speed of the dyno.
- It keeps the power absorbers cooler by increasing their airflow giving you more load for longer durations

Standard and Custom Test Profiles

- Inertia tests: fast, accurate and extremely repeatable
- Controlled acceleration tests: sweep test at user defined acceleration rate provides consistent load to simulate actual acceleration rates a vehicle will see in operation
- Step testing: step through set RPM or MPH points at either wide open or partial throttle for quick and easy fuel mapping
- Steady state: manually control the RPM or MPH for fuel and ignition timing mapping
- Track simulation: input track laps from your data logger directly into WinDyn and run the laps again on the dyno – great for durability testing
- Engine power test: coast down to quantify drivetrain losses and derive engine power
- Drive cycle – user defined drive cycles like US06, FTP75, etc. The SF-880E dyno can be fitted with an optional AC motor for full inertia simulation

More Traction and More Accurate

42 inch diameter, precision knurled rolls provide a massive contact patch for superior traction and minimal tire deflection and distortion. Systems with very small rolls or worse, cradle rolls, cause excessive tire deflection creating dangerous amounts of heat in the tire and increasing the risk of tire failure. Any heat in the tire is also power that was not measured by the dyno adding to the inaccuracies of small roll dynos. Additionally, small rolls have such small tire to roll contact they require strapping the vehicle in a downward fashion to make traction which increases tire deflection and eliminates the suspension, thereby greatly increasing the shock load to the drivetrain while testing. The large rolls in the SF-880E allow for straps to be

positioned more horizontally with the goal of securing the car on the dyno, not creating unnatural amounts of downforce increasing stress to the driveline and heat in the tires.

WinDyn – Software and Data Acquisition System

The WinDyn Software and Data Acquisition system is included and offers features, expandability and configurability not seen anywhere else. The sensor box has 139 channels available for data acquisition of items like boost, oil pressure, throttle position, etc. and can be outfitted to read directly from the vehicle's OBDII port. Data collection happens at 1,000 to 2,500 Hz depending on the channel so no details are missed. Ten software screens are completely user configurable so live data can be viewed in a manner that makes sense to you. The handheld controller is rugged, dependable and easy to use. Simply select the test menu, then the type of test you want to run and follow the prompts to start testing. Our test scripts guide you through the process and only require a few clicks to start testing.

Multiple Models for the Perfect Fit

SuperFlow's SF-800 series all-wheel-drive chassis dynamometers are the most complete and feature-rich AWD chassis dynos on the market. Various models in the
800 series let you select the model with the proper wheel base, track width and equivalent vehicle inertia for your application. Like any SuperFlow dynamometer, they are designed to be more accurate, more repeatable and more durable than anything else available.

Data Acquisition

WinDyn Control and Data Acquisition System

SuperFlow's WinDyn® Software is the most feature rich system available for dynamometers today. We've included all the tools you need to make a SuperFlow® dynamometer a successful piece of your business. WinDyn® is preconfigured with industry standard tests to get you up and running quickly. But, we didn't stop there. We've also developed powerful configuration

and test editors that offer you complete, customized control of the dynamometer, the test cell and the tests you're running.

WinDyn's® available 76 measured channels and 35 calculated channels let you measure and analyze data to make your products better. Our advanced electronics sample data at rates between 1,000 and 2,500 Hz depending on the channel and display it at 100 lines per second so you're sure to see the entire picture. The built in data analysis tools let you see data in a way that makes sense, and like the rest of WinDyn®, data analysis is completely user-configurable should you choose. Start Testing Quickly WinDyn® comes preconfigured with standard tests to get you testing quickly. Pre-defined test groups automatically configure the dynamometer for standard testing. Simply select the one that matches your current needs and you're ready to run.

Test Groups

A test group is a WinDyn® file that completely configures the dynamometer for testing. By using test groups you ensure that all tests are run in the same way, regardless of the operator. Test groups configure the following:

- All channels being monitored (measured, calculations, constants and interpolations)
- Screen group of up to ten real-time data monitoring screens
- Safety limits (if desired) to protect your engine
- Test profiles (acceleration, step, steady state, break-in, life cycle, track simulation, custom, etc.)
- Sensor calibrations
- Relay controls for test cell functions (lights, pumps, fans, ignition, etc.)
- PID control parameters
- Test specifications (starting and ending speeds, engine specs, test notes, etc.)

Completely Customizable

In addition to the standard ready to run configuration supplied from the factory, you can customize WinDyn® in any manner you'd like. Write custom test profiles, design custom screen groups, add a company logo to data plots, setup print preferences for graphs and tabular data, add additional sensors or integrate emissions equipment quickly and easily. The best part about WinDyn® is its versatility: it comes fully loaded and ready to run all the standard tests you need, plus gives you the power to configure tests any way you prefer. Learn more about our advanced editors.

Test Profiles

Test profiles are a series of commands that automatically perform a test. WinDyn comes loaded with standard test profiles including acceleration, step, steady state and break-in, but the Test Profile Editor gives you the ability to write any custom test you can imagine.

Here are some examples of what WinDyn users are already doing-

- Automated one-touch tests that control every detail like-
  - powering on pumps and fans
  - powering ignition
  - turning on fuel
  - checking critical parameters like oil pressure and water temperature before
  - beginning a test sequence
  - ending the test
  - stopping the engine
- Cyclic durability tests to check engine belt life
- Reverse acceleration to simulate tractor pulling
- Transmission durability tests on chassis dynamometers
- Slope simulation
- Track lap simulation for the Pikes Peak Hill Climb, Charlotte Motor Speedway and others
- Pass/Fail tests for air filters and catalytic converters on the SF-1020SB
- Automated chassis dynamometer tests with throttle actuators
- 300 hour diesel engine durability tests
- Urban drive cycle tests
- Emissions tests

Configuration Editor

The configuration editor gives you the power to create the custom test environment you desire.

This powerful Windows® based editor allows you to define-

- Channel Definition (name, units, format, filtering, formulas, etc.)
- Control Channels (close-loop controllers for load, throttle, flow, etc.)
- Display Channels (in any language)

Once you're happy with your custom configuration, it's saved so the dynamometer can quickly be configured to your specifications before every test.

Safety Limits Editor

Safety limits prevent problematic situations like low oil pressure or overheating from damaging your engine or vehicle. They are completely user-configurable by channel (exhaust temp, oil pressure, water temp, etc.), by critical value and by resulting action. You can even setup a multi stage rev limiter. Limits are constantly monitored and if triggered the post mortem feature kicks in to provide a snap shot of data before and after the limit was triggered to assist you in deter-mining what happened to the engine.

Test Data Perfected

WinDyn® is packed with data analysis tools that make analyzing your engine or vehicles performance easy. For each test you can view up to 10 user-defined pages in tabular format, graphical format or side-by-side. Additionally, up to 10 saved tests can be overlaid on a graph enabling you to make informed decisions quickly. Like all other WinDyn® features, all the data viewing capabilities are customizable. The test group defines which data is on each of the ten pages and on each page's graphs. You can change this at any time, even after the test is completed.

Want to see an area of a graph in more detail? Drag a box around the area you want to see and WinDyn® immediately zooms and re-scales that portion of the graph for easy comparison. Plots are easily enhanced with your company logo before printing. They can also be exported as a bitmap or JPG for emailing to customers or posting to your website. If WinDyn's® data analysis tools aren't enough for you, export your test data to Microsoft Excel® for custom post-test analysis.

Customer Data Packs

Your customers are why you're in business. With WinDyn's® Customer Data Pack feature you can instantly create a file with their test data and the WinDyn® data viewer so they can take their results home. This data viewer includes all the same analysis tools as WinDyn® so your customers will be assured of their results.

SuperFlow Explorer

Managing data files is crucial to finding your data efficiently. The SuperFlow® Explorer, located under the tools menu, allows you to quickly navigate to the correct data, view it, plot it or print it with the click of the mouse. It can browse all folders, networks and the desktop and also create, rename, copy, move delete and manage all system folders.

Test Playback

WinDyn® allows you to replay stored tests with all meters and screens active just as they were during the original test. You can print any or all WinDyn® screens and data to most Windows® supported printers.

Sensor Box

The SuperFlow sensor box is the brain of the 139 channel WinDyn data acquisition system. Its advanced electronics measures high-resolution data at up to 2,500 Hz depending on the channel and sends the data to the operator station via a simple Ethernet connection for live monitoring.

The SuperFlow sensor box houses the data acquisition and control boards that makeup the 139 channel WinDyn data acquisition system. Its advanced electronics measures high-resolution data at up to 2,500 Hz depending on the channel and sends the data to the operator station via a simple Ethernet connection for live monitoring. The only connections between the test cell and operator control room are three Ethernet cables making installation simple. The sensor box is modular and is expandable at any time. Eight expansion bays are ready to accept expansion panels for additional temperature, pressure, analog voltage or frequency inputs. Most SuperFlow engine dyno packages includes a ten-channel pressure panel and a sixteen

channel temperature panel and sensors as a starting point. The included weather station uses a barometric pressure transducer, air temperature sensor and humidity sensor to measure atmospheric conditions continuously throughout the test and calculate the proper weather

correction factor. Standards like STP, SAE, ECE and DIN are built in and user selectable, the configuration editor can also be used to write custom correction factors.

The sensor box also house the controllers that provide SuperFlow's legendary closed loop PID control. Its flexible dual-mode control scheme allows either the dyno or the throttle to control to speed, torque, power, manifold pressure or any other channel of your choosing. Sophisticated logic lets each controller use up to four different control modes and parameter settings.

The sensor box can either be mounted to our test cell boom system or to the wall using the wall mount bracket.

Handheld Controller

The handheld controller gives the operator full control of the dynamometer and the test sequence from the driver's seat. The controller is housed in a molded, impact resistant enclosure capable of withstanding years of abuse in harsh test cell environments.

Vibration dampening mounts hold the controller to the steering wheel freeing up the operators' hands to run the dyno, the vehicle and operate their tuning suite. The numerical keypad and shortcut keys make setup quick and navigation through the suite of testing options easy.

An LCD display screen will show any of a hundred data channels in real time so the operator can continuously monitor vehicle data like rpm, mph, power, torque, inlet air temperature and other measured data.

The screen also provides menus to control every aspect of the dynamometer setup including -

- Adjust the wheelbase with the push of a button
- Lock or unlock the rolls for vehicle loading
- Autozero or calibrate data channels
- Select and run any of the pre-programmed test profiles
- Manually adjust the load to mph or rpm set points
- Activate safety limits

Product Specifications

Roll Speed Synchronization	Mechanically linked via drive shafts
Roll Diameter	42" (107 cm)
Peak Power	2,500 HP (1,864 kW)
Peak Absorbed Power	1,600 HP (1,193 kW)
Max Speed	200 MPH (322 km /h)
Track Width	40" inside - 84" outside (101 cm - 213 cm) *
Dimensions	102" x 47" x 173"(extended) - 158" (retracted) (256 x 119 x 439 - 401 cm)
Wheelbase	88" - 134" (224 - 340 cm)
Base System Inertia	3467 lbs. (1,572 kg) *
Axle Weight	14,000 lbs. (6,350 kg)
Air Requirements	50-100 psi (345-690 kPa)
Power Requirements	110-250 VAC / 15-8 A 208-250 VAC / 20A (SEC) 208-250 V AC / 40A (DEC)

Product Options

4-Post Hoist

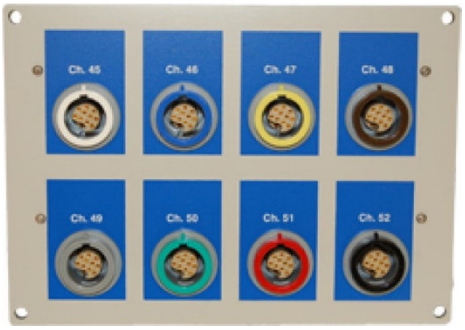
SuperFlow® offers several different 4-post hoists to fit any needs and budget. Models are available with a walking platform, safety rails and access ladders to make working on vehicles easy and safe.

Air Fuel Kit

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

Analog Panel

8 channel analog panel to integrate exhaust gas analyzers lambda sensors, O2 sensors, etc. Select 0-1V, 0-5V, 0-10V, 0-20V or 0-30V in any combination.



Pressure Sensor Expansion Panels

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

Temperature Sensor Expansion Kits

Expand your sensor box with a 16-channel thermocouple panel for Type K, Type J or Type T thermocouples. Monitor oil and water temperatures live in our WinDyn software then save the data for easy post test graphing and analysis.

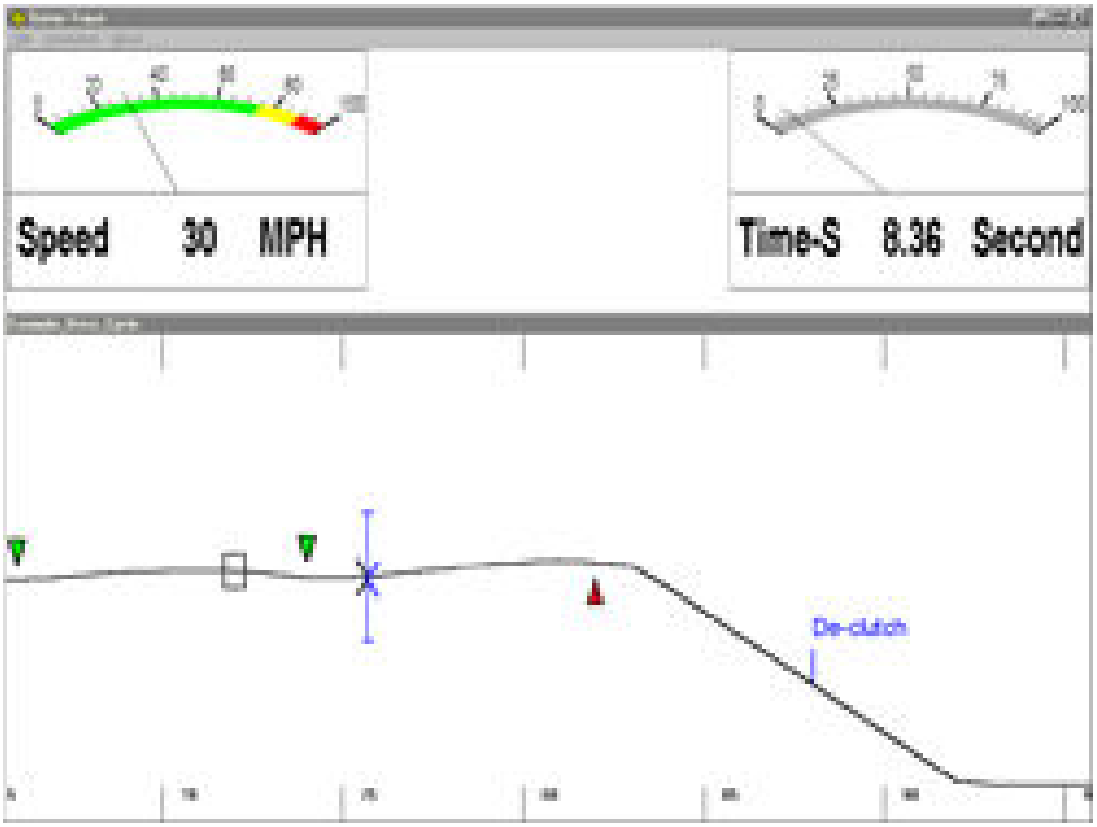
Diesel Exhaust Opacity Meter

SuperFlow's® Diesel Exhaust Opacity Meter measures the opacity of visible smoke coming from the exhaust. It's rugged and portable design provides years of easy use.

For more information email sales@promand.com

Driver's trace Software

SuperFlow's® Driver's Trace Software integrates seamlessly with your SuperFlow® chassis dynamometer and allows drivers to follow a real-time moving driver's trace on its easy-to-read display.



Inductive Spark Pick-up Assembly

SuperFlow's® Inductive Spark Pick-Up Assembly features a rugged housing that protects the device from tough shop environments and allows it to provide years of service.

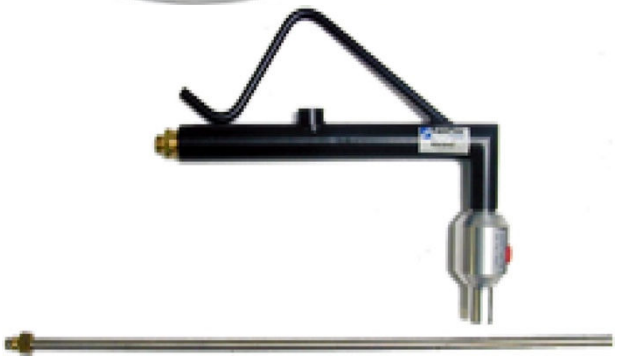
For more information email sales@promand.com

Optical Wheel Tachometer

SuperFlow's® optical wheel tachometer reads wheel speed using an infrared beam and reflective tape. It features a magnetic base for secure mounting to any AutoDynTM frame.

Tailpipe Air Fuel Probe

SuperFlow tailpipe exhaust probes measure the air/fuel ratio directly from tailpipe. Tailpipe probes integrate with WinDyn for live monitoring and easy posttest graphing and analysis.



Call or email Promand today to discuss your application and dyno test requirements in detail.

Email: sales@promand.com Call: +614 3011 8253