

Model 88
 EFA Scientific Comparator Test Stand
 Dimensions: 68" H x 50" W x 75" D
 1727mm H x 1270mm W x 1905mm D

GAS TURBINE AND JET ENGINE COMPONENTS

Effective Flow Area Measurement

PRODUCT REQUIREMENTS

Accurately analyzing airflow through jet engine and gas turbine components has been critical in the success of the aerospace industry. CCDI has satisfied manufacturers for over 30 years by offering quality airflow test equipment and part testing to GE, Garrett, Pratt and Whitney, Solar Turbine, and others.

SOLUTION: TIME PROVEN DESIGN

The Model 88 takes measurements of Barometric Pressure, Air Temperature, and Humidity to reliably measure Effective Flow Area (EFA). Continuous improvement has been made on the technology for over 15 years as the design was refined to optimize performance, making the Model 88 an accurate and stable EFA instrument ideal for area airflow measurements of vane rings and segments.

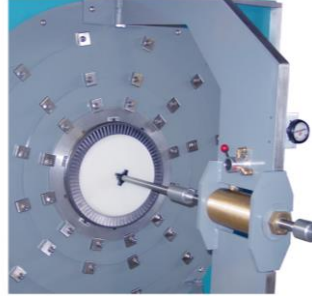
FEATURES

- Repeatability: +/- 0.1%*
- Step-by-Step Operator Software option
- Various configurations such as 88S-20, 88D-30, 88D-40 and others
- Uses Orifice Plates, ASME Nozzles, ASME Arrays
- Choice of NIST Traceable or dimensionally calibrated Orifices

* Conditions: Orifice plate at conditions of 70 Deg +/- 2 Deg F, 5"WC, less than 15 Sq. In. typical, depends on Model configuration. Call for additional repeatability details.



ASME Calibration Nozzles



Front View of Clamp

SYSTEM SPECIFICATIONS

- NIST Traceable EFA
- All air density parameters are measured
 - Room and Plenum Temperatures
 - Barometric and Plenum Pressures
 - Dew Point (Humidity)
- 30 H.P. AC Blower Motor - Optional Blower Range Configurations
- No reference blower needed
- AC Motor - No brushes to wear out
- Vector Motor Controller with 1.0 to 4,999.9 RPM
- Automatic Software Controlled Clutch Mechanism for choosing single or dual blower operation
- Large blower can be disengaged by clutch (software controlled for small part measurement)
- Less Than One Minute per EFA Measurement
- Takes Pressure or Vacuum Measurements and Displays in Square Inches or Square Millimeters
- NIST Traceable Calibration Orifice Plates and ASME Subsonic Area Masters
- Customer Correlation Table for Each Part
- Four QC Reports and Data Acquisition File
- Windows based report generation
- Automatic Data Acquisition, can be transferred over network
- Multiple Manufacturers Test Specs and Formulas
- GE, Garrett, P&W, and Solar Turbine Part Testing
- Free Operator Training, Testing and Certification
- One-Year Warranty on Parts and Labor
 - Pressure from 0.5 to 20 H₂O, not limited to 0.5, 1 and 5" like other units

Flow Capabilities

0.5 to 30 sq. in. Measurements (3.23 to 193.55 cm²) at 5" H₂O (Water Column) , 1.012 pressure ratio
 40 in² available with 40HP Motor Option
 Pressure Range: 0 to 20" H₂O (Water Column), 1 to 1.049 pressure ratio, 0-20" H₂O Vacuum optional

FACILITY REQUIREMENTS

Electrical Power	380 - 460 VAC 3-phase 30 to 100 Amps, depending on power requirements for testing
Inlet Air Connection Pressure Range	30 to 100 PSIG (207 to 690 kPa) Pressurized Air Supply (filtered, compressed air at ambient temperature)
Temperature Range	50 - 100°F (10 - 38°C)

SOFTWARE

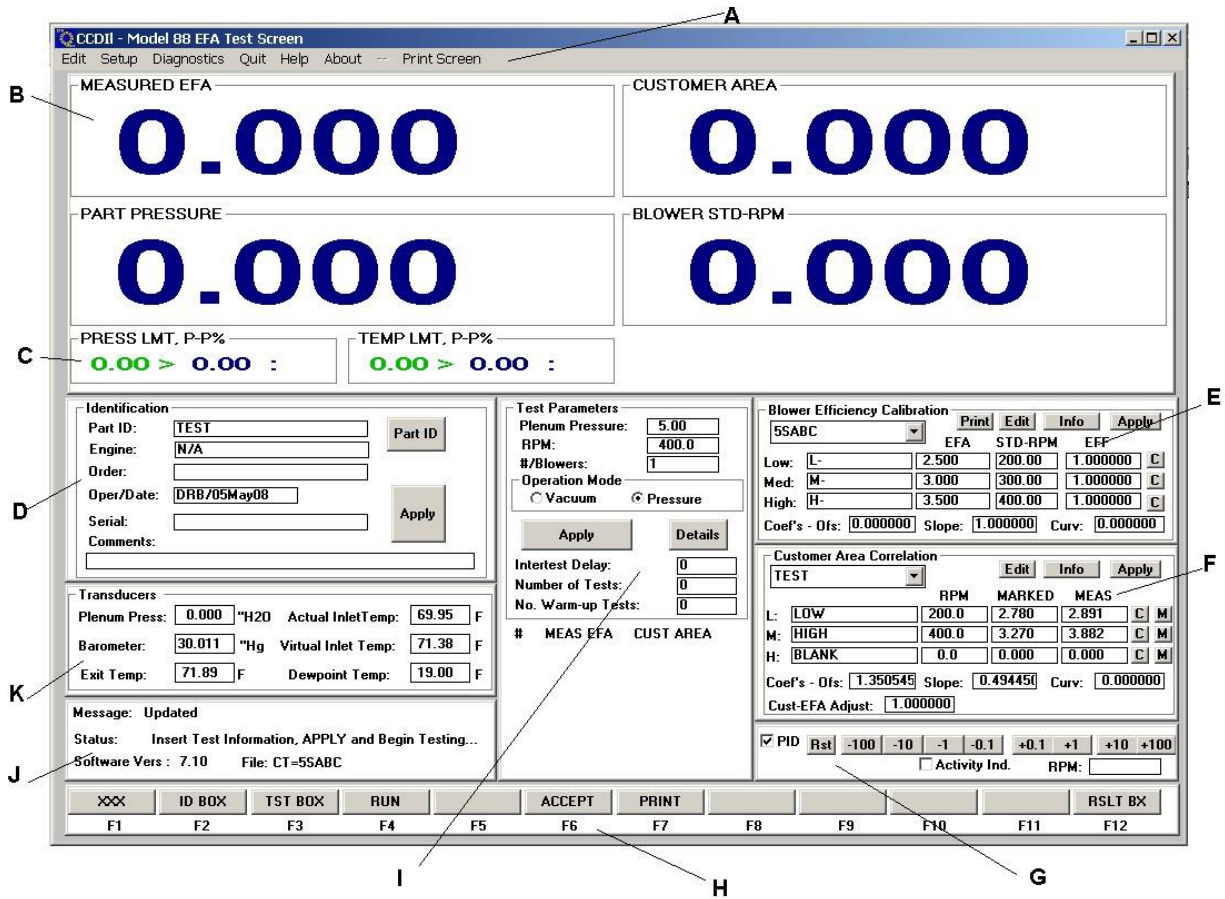
The Model 88 EFA Test Stand has one main operation screen, a calibration screen, and two sub screens used for diagnostics and hardware detail.

Test Screen - Users operate machine and test parts on this screen.

Setup Screen - Carries the machine's configuration and calibration data.

Test Detail Screen - Measurement stability indicators regarding temperature and pressure as well as PID parameters and other testing details are selected on this screen.

Hardware Information Screen - Displays the current detailed information for the blowers and other necessary hardware.

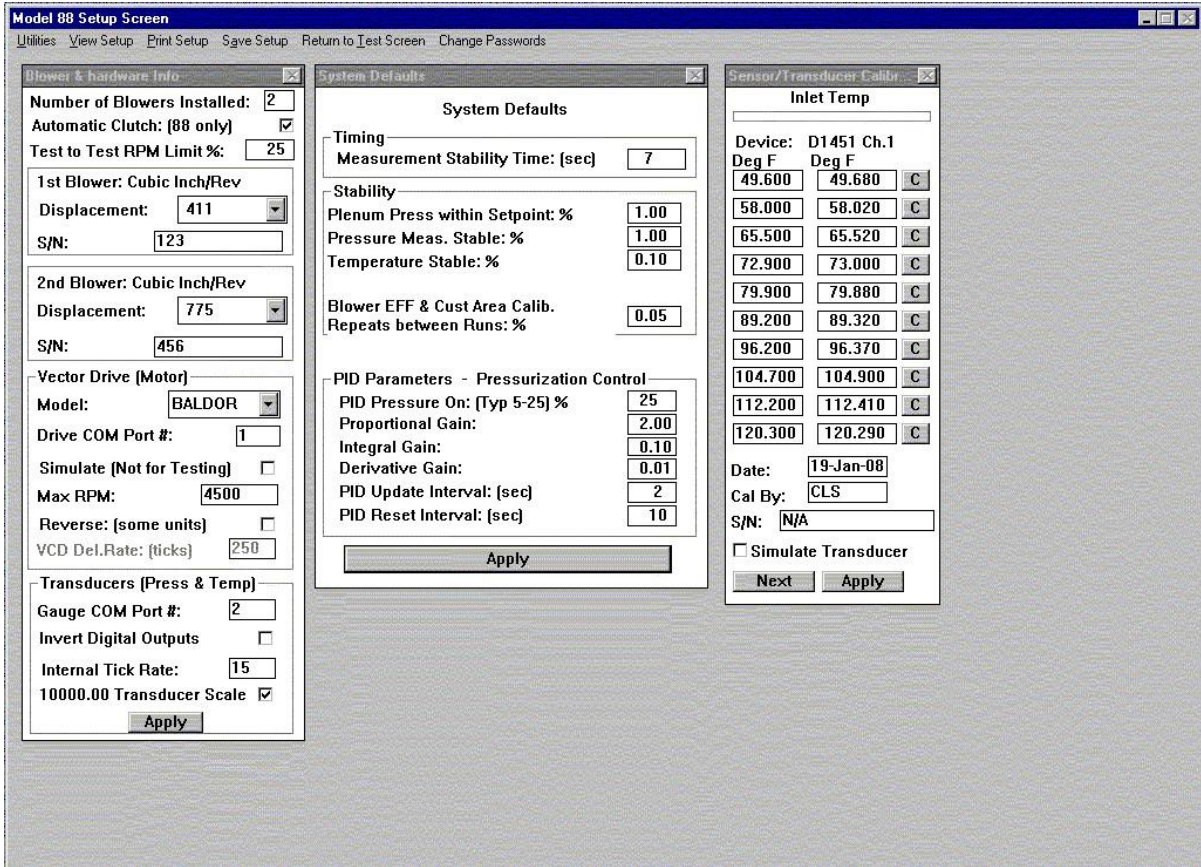


Test Screen

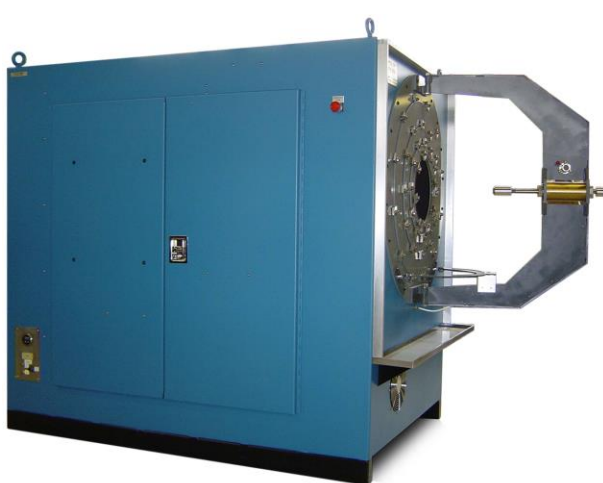
- A. **Menu Bar** - Screen changes, help, and exit functions.
- B. **Gauge Display** - Show the results during a test.
- C. **Peak-to-Peak Mini Gauges** - Shown during a test to indicate stability of measurements.
- D. **Identification Section**
- E. **Blower Efficiency Calibration Table** - Holds the orifice plate baseline calibration data.
- F. **Customer Area Correlation Table** - Contains information about your master parts.
- G. **PID Speed Control bar** - Allows user to adjust RPM during a test.

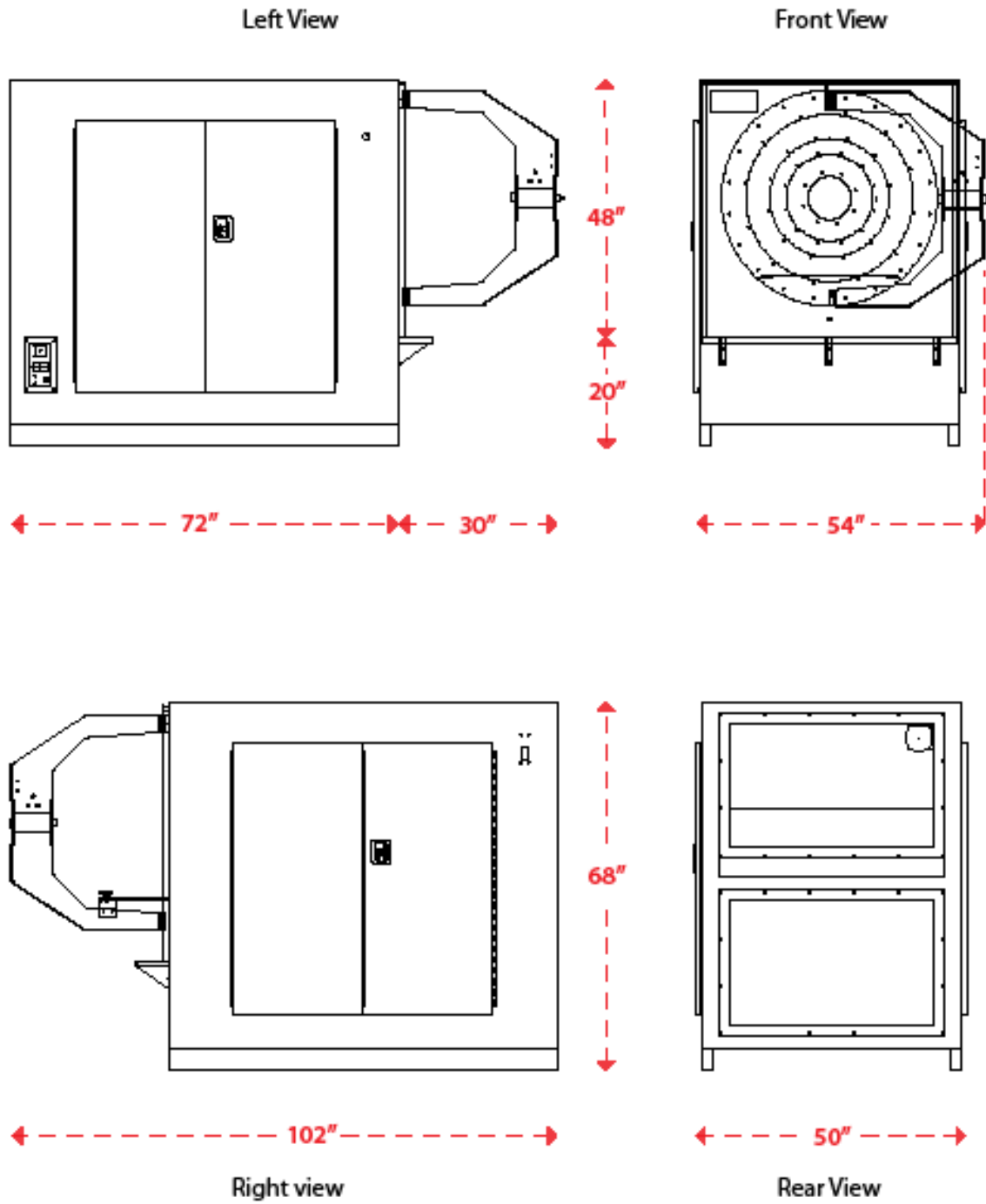
H. Function Key Bar

- I. **Test Parameters** - Indicates what pressure to use, number of blowers, mode of operation, and number of tests.
- J. **Status Box** - Program Version, Alerts, storage file names.
- K. **Straight Transducer Measurements Table**



Setup Screen





Space Requirement		
	Ideal	Minimum(longer Stabilization Time)
Front(ft.)	40	20
Rear(ft.)	15	10
Sides(ft.)	8 on either side	5 on either side
Top(ft.)	3	3