

ADCOLE

Adcole Model 1100

**THE WORLD
STANDARD**





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The world standard

The Adcole Model 1100

Accurate camshaft, piston and crankshaft measuring

The Adcole 1100 cylindrical gaging system will help you meet quality objectives and improve product integrity. Suitable for use in the gage room or out on the shop floor, this tool will prove invaluable for the manufacture and quality control of critical rotating components.



- Sub-micron accuracy
- Easy loading / unloading of parts
- Straightforward special purpose software
- Fast unattended cycle time
- Simple part changeover
- Windows-based for ease of use
- Touch screen operation
- High data density

The accuracy of this gage is specifically intended for tight toleranced parts such as camshafts, pistons and crankshafts. Accuracy is built in and designed to stay in over time with continual use. All bearings and scales are well shielded from contact and the environment requiring virtually no maintenance or loss of accuracy. Using the latest technology in motion controls, signal processing and glass scale technology, the Model 1100 is designed rugged, fast, versatile and accurate.



What can it do for you?

- Verify grinders, milling machines and polishers
- Control your manufacturing process with closed loop communications
- Check parts as final inspection or rough parts for material distribution
- Make fast and accurate measurements after grinding wheel change or part changeovers
- Minimize scrap and rework and maximize good part production
- Control early part failure and warranties

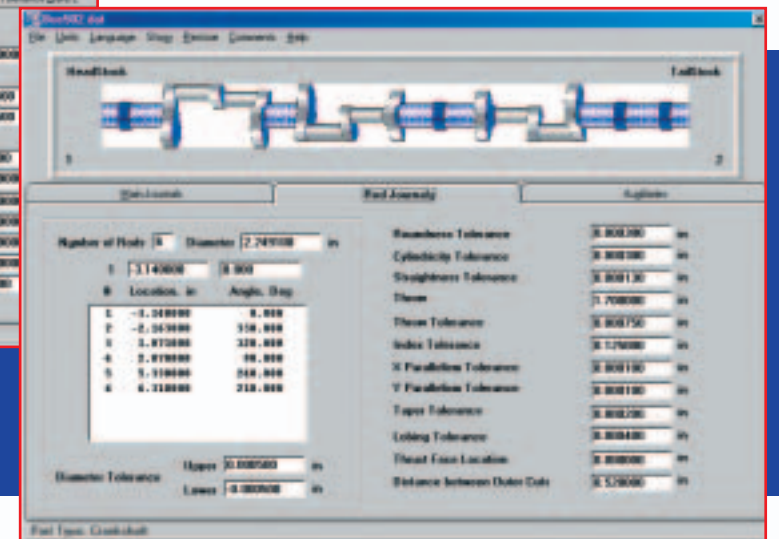
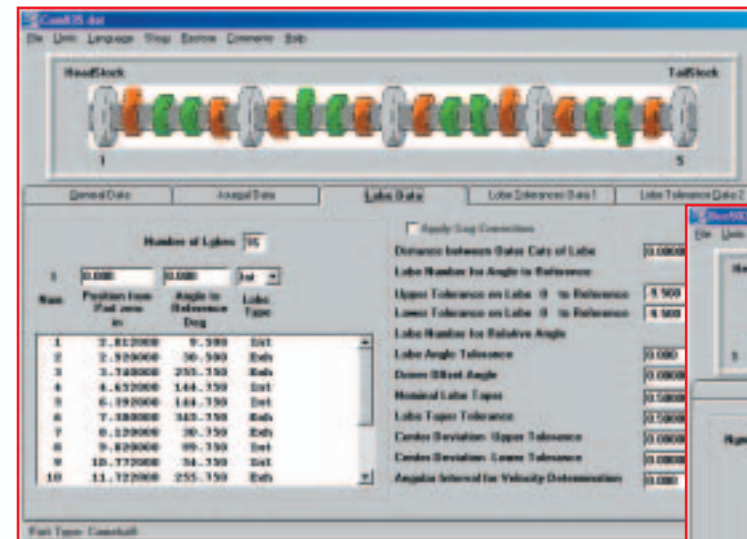
Gage Characteristics

The Model 1100 is a complete gaging system including the base gage with standard peripheral cabinet or sealed and climate controlled operators cabinet, 19" color touch screen monitor, color printer and printer stand, keyboard, mouse, full electronics and software. The gage operates on a Windows platform making it compatible with other Windows-based hardware (printers, etc.) and software (SPC packages, etc.). Gages are equipped with an Ethernet card for communication and networking capabilities.

Each gage is equipped with pneumatic isolators to protect from vibration. Special footings or isolation pads are not necessary. The gage is suitable for placement out on the shop floor or in a climate controlled environment.



Adcole employs dual glass scales for radial measurement to calculate and compensate for error due to yaw as a result of friction between the part and straight follower. An angle encoder provides precise readings of rotational position. For maximum resolution and accuracy, Adcole uses a contacting follower applied with a very light force. Low follower mass prevents distortion on delicate parts and maximizes follower life. The follower arm is equipped with a strain gage for taking Z-axis measurements. This feature is also used for error proofing the gage should the wrong part be loaded into the machine.



Software

The camshaft, piston and crankshaft software was developed and is supported by Adcole. This proven method of measuring components using powerful algorithms has set Adcole apart from all other gages. Although Adcole pioneered this measuring software over forty years ago, the measuring capabilities continue to improve and expand to meet customer demands.

There are numerous optional software packages available for special needs or requirements.

Hardware

Parts are loaded vertically between centers and rotated on a unique headstock bearing spindle. This special spindle assembly is manufactured by Adcole to meet the extraordinary precision required for accuracy and to eliminate the need to center and level the work piece.

Contacting followers and centers are precision made of solid carbide for wear resistance and thermal stability or other long wearing materials.

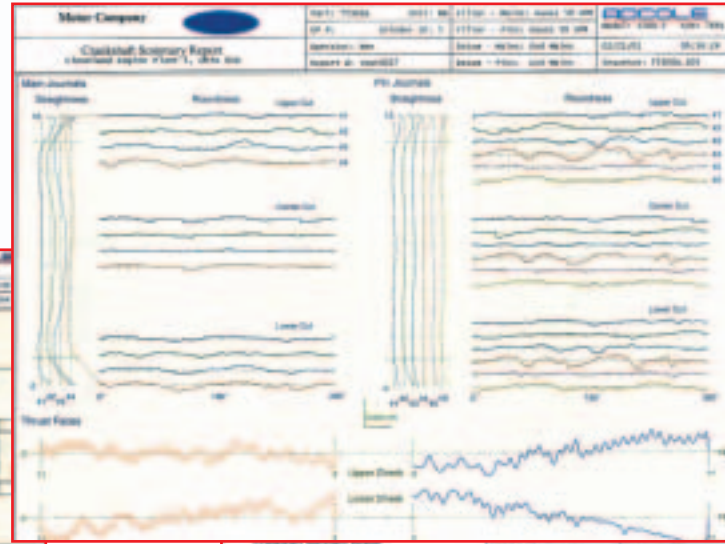
Electronics

Modern, state of the art electronics provides precision motion control, overlapping functions and variable rate acceleration. These components are modular which simplify diagnostics and board replacement, if necessary, to maintain very high machine availability.

Crankshaft Measurement

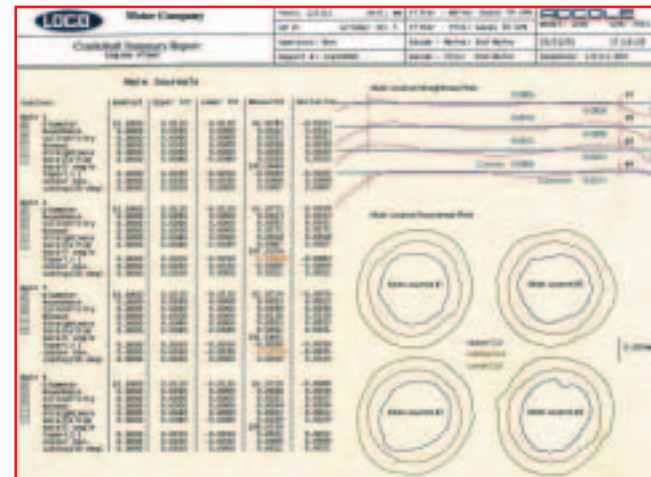
The Model 1100 uses the same software as the Model 1200 crankshaft gage – the world standard in the engine industry. Adcole is the best way to measure pin journal roundness, straightness and other geometries. By maintaining contact with each feature for 360 degrees, 3600 data points, you get the best and most accurate results.

Straightness, Roundness, and Perpendicularity Plots



Pin Journal True Position

- Pin journal parallelism, straightness, diameter, roundness, stroke and index
- Main journal diameter, parallelism, concentricity, cylindricity, straightness, taper, runout and center deviation
- Thrust face perpendicularity, flatness, parallelism and width
- Auxiliary length, diameter and taper



Combinations of numerical reporting and plotting

Piston Measurement

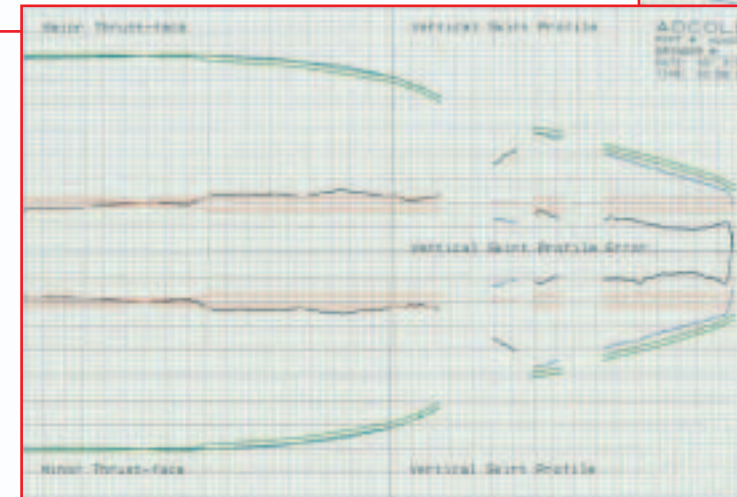
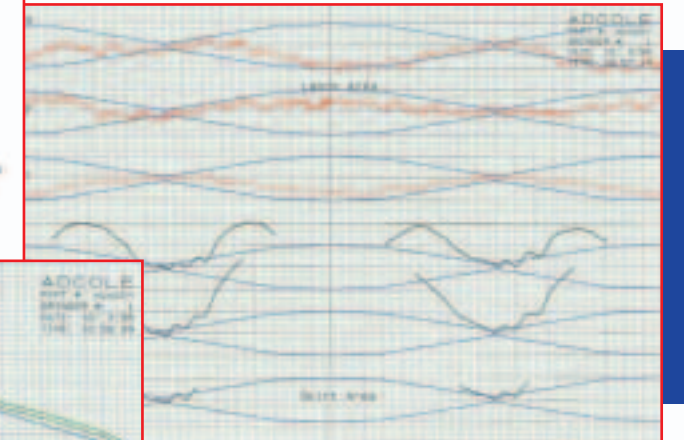
Adcole's piston software takes accurate and repeatable measurements with virtually no set-up time. Pistons do not have to be centered or leveled. Simply place the article on the pedestal, close the tailstock and initiate the measurement sequence.

The gage rotates the piston to determine the total drop at any desired height location. Vertical scans measure skirt profiles and ring land locations.

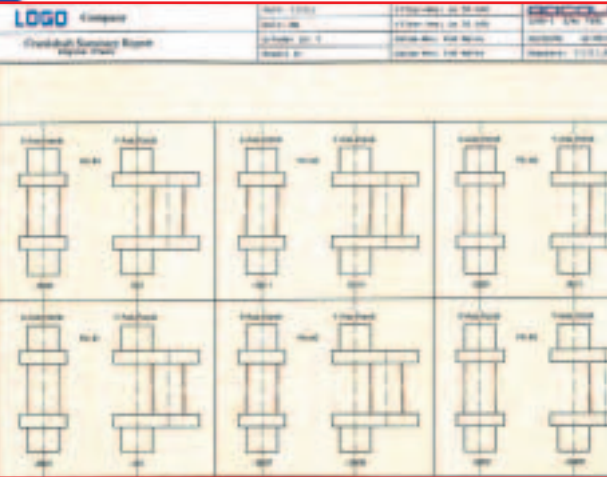
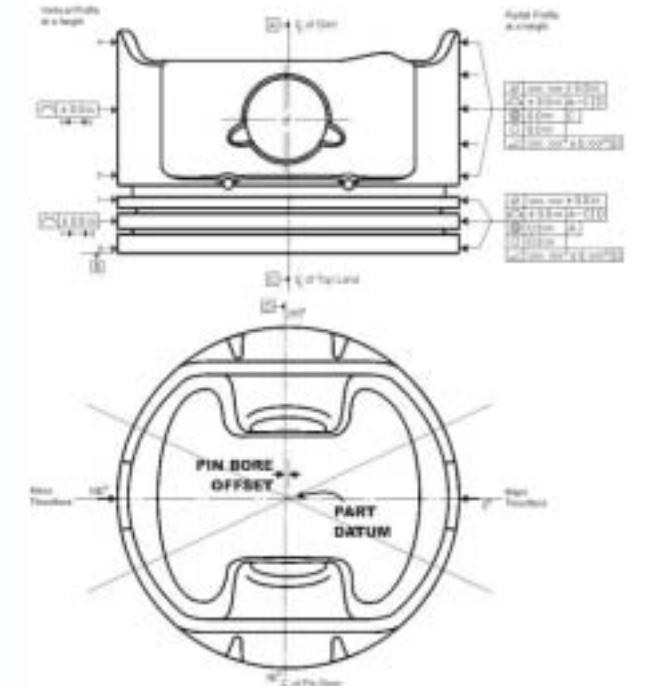
Numerical Output Report

- Skirt and land vertical profiles
- Skirt ovality
- Piston drop
- Pin bore offset

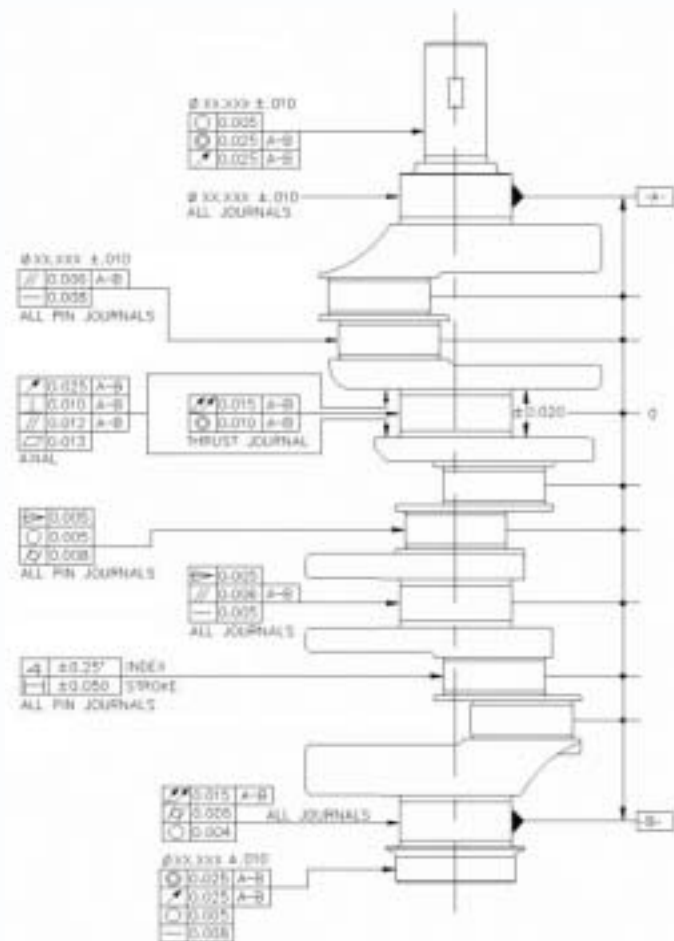
Skirt Ovality Traces



Vertical Profile of Skirt



Pin Journal Parallelism

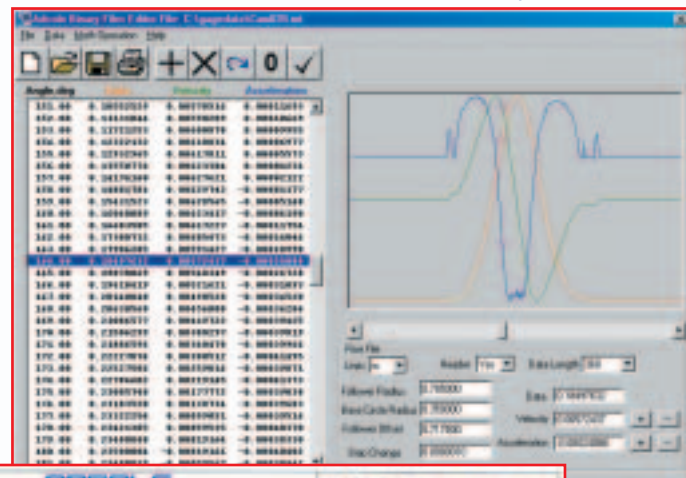


Camshaft Measurement

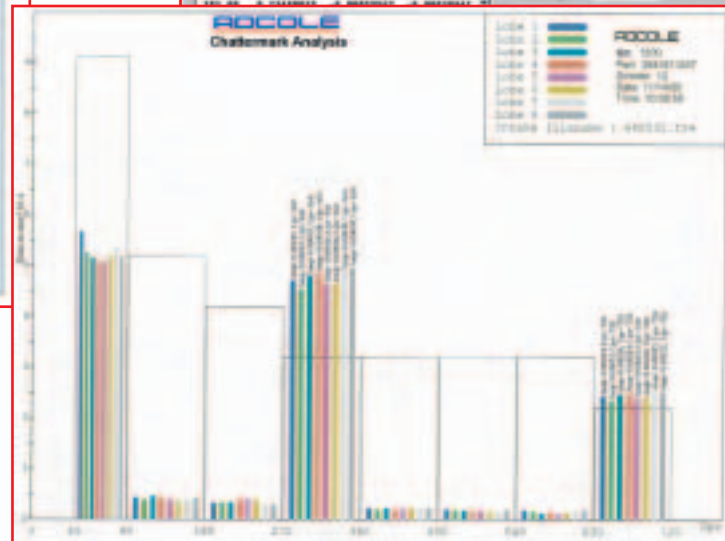
The Model 1100 keeps to proven Adcole methods for camshaft measurements. With the part between centers, the gage rotates the part for a complete form measurement of each feature. Flexible choice of datum references are available for reporting results as called for on customers' part prints.

High data density (3600 data points / revolution) and proper filtering reveals subtle yet troublesome harmonics and surface chatter.

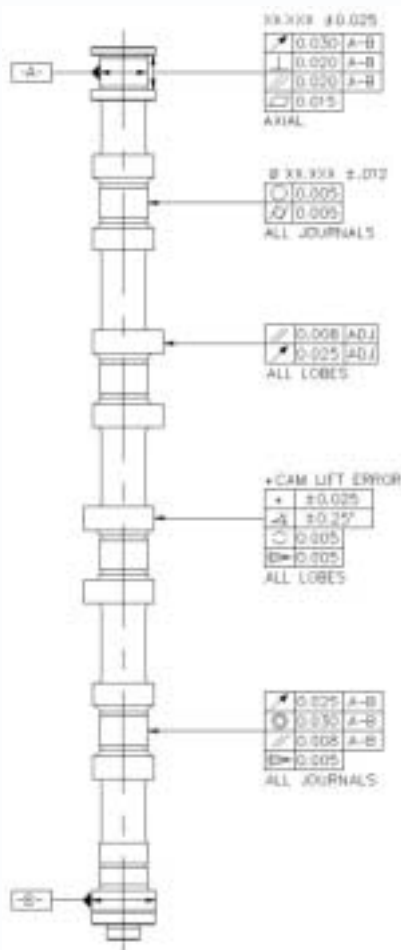
Easy to use data tables.



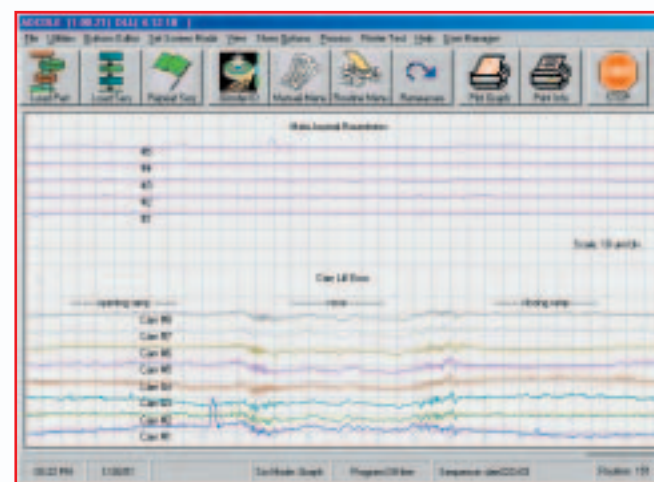
Numerical output with polar plots and tolerance bands.



Chatter Analysis can isolate machine generated frequencies and amplitudes.



- Full form measurements
- Consistent, reliable and precise
- Useful and informative reporting
- Full screen preview of data



On Screen or printed linear plots of Profile Error

Model 1100 Gage Specifications

Gage Specifications

Follower Stroke:	170 mm
Swing Diameter:	254 mm
Part Length:	915 mm and 1220 mm
Part Weight:	200 kg
Follower Speed:	0-127 mm/s
Carriage Speed:	0-76 mm/s
Spindle Speed:	1-40 rpm
Parts per Hour:	15

Utility Requirements

Electricity: 220 volt, 1 ph, 50/60 hz, 20 amp

Technical Data

Measuring Principle:	Optical Scales
Data Density:	3600 Points
Radial Accuracy:	± 0.5 µm
Angular Accuracy:	± 0.001°
Linear Scan Accuracy:	0.5 µm / 50 mm
Axial Accuracy:	± 5 µm / 915 mm

Control System

- Dual PC CPUs linked via DCOM technology
- CPU Embedded industrial PC module
- Current industrial PC configuration and printer
- 3.5" FD, CD-RW and Ethernet card
- Windows-based software
- 19" Color Touch Screen monitor
- Industrial keyboard and mouse

Measured Parameters, examples include:

Crankshaft – Diameter, Roundness, Cylindricity, Straightness, Parallelism, Taper, Radial Runout, Concentricity, Axial Runout, Index Angle, Throw, True Position, Lobing, Center Deviation, Lengths/Widths

Camshaft – Diameter, Roundness, Cylindricity, Straightness, Parallelism, Radius, Taper, Radial Runout, Eccentricity, Concentricity, Center Deviation, Lobing, Lobe Index Angle, Lift, Velocity, Chatter Mark

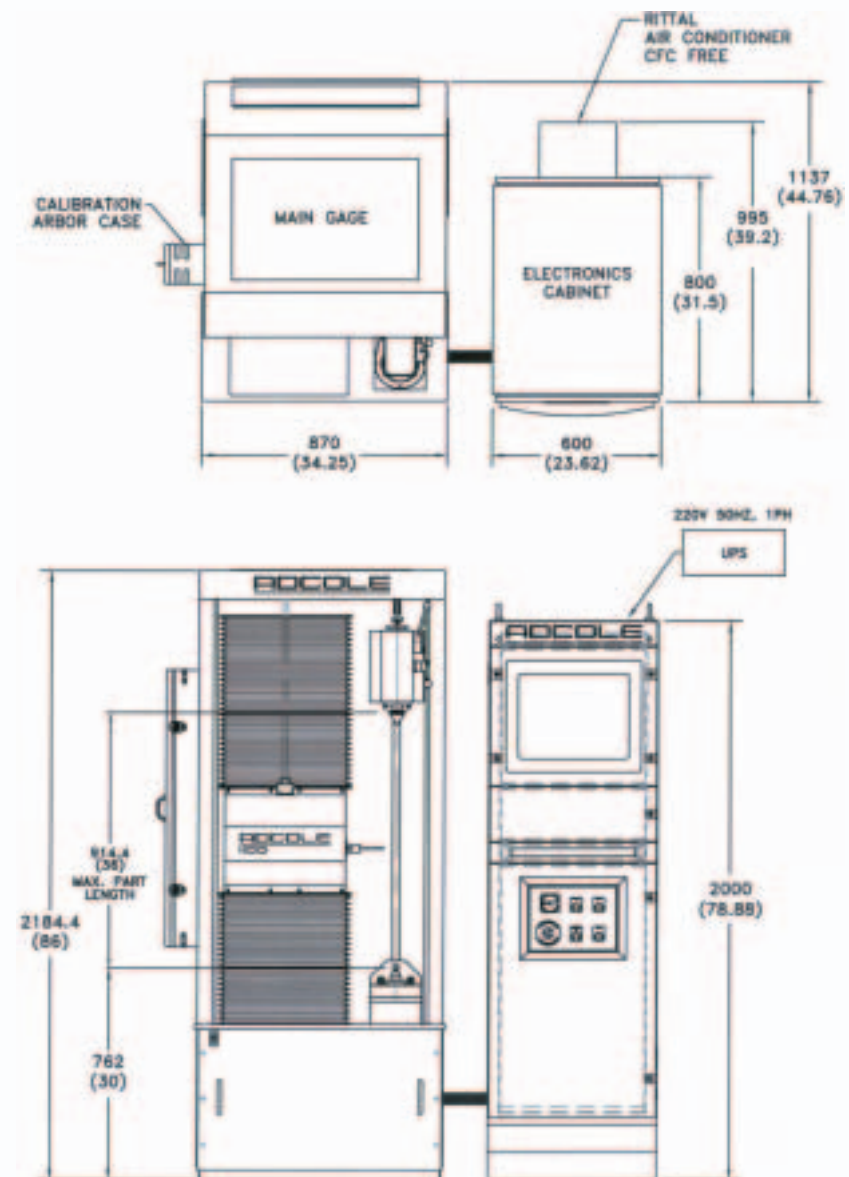
Piston – Land Diameters, Vertical Profile, Piston Drop, Pin Bore Offset

User Languages

Gage operating system will be provided in the language native to the country of destination.

Optional Software, partial list:

- | | |
|--------------------------------|----------------------------|
| Roller Follower Conversion | Grind Stock Analysis |
| Chatter Analysis | Asperity Removal |
| Noise Prediction | Harmonic Analysis |
| Programmable Summary Reporting | Fillet to Fillet Detection |





Adcole Corporation

Headquartered in Marlborough, Massachusetts, USA, Adcole Corporation has maintained a leadership role in special purpose optical-mechanical measuring technology. Adcole's extensive product offerings extend to include:

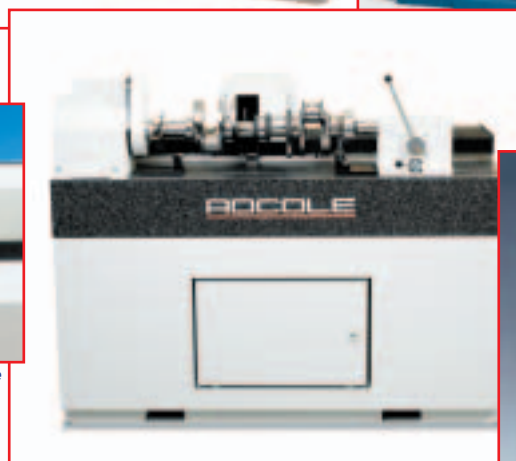
Model 1200 crankshaft/camshaft gage



Model 1310 for 100% inspection in-line gaging



Model 1304 multi-headed gage



Model 1000 automated surface finish gage



Model 911 camshaft/piston gage

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