



## CAM DATA MONITOR • CDM

The Piper CDM cam data monitor was conceived to meet the high standard and quality required for our own camshaft design and manufacturing procedures. Years of camshaft design and valve train analysis for major manufacturers and International racing teams has resulted in a user-friendly test system capable of achieving a degree of accuracy and repeatability only associated with larger and considerable more expensive systems. The software which controls the equipment is written in-house allowing total flexibility.

### SYSTEM FEATURES

Camshaft lobe displacement and angular position monitored.

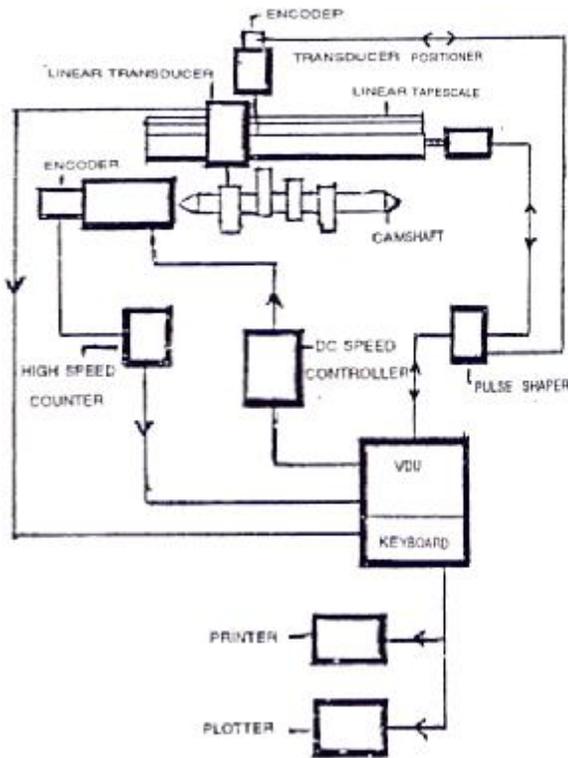
Camshaft lobe velocity, and acceleration calculated, and digitally or graphically presented.

Comparison between lobe displacements may be printed and plotted.

Deviations between theoretical or designed and observed data can be printed and plotted.

Compatible. 20MB hard disk + 5½ Floppy Drive computer. Menu screens are arranged to enable digital or graphical presentation of data.

Automatic indexing of lift transducer on X and Y axis. Easy storage of recorded data for quick retrieval from files.



### TECHNICAL SPECIFICATIONS

#### LIFT TRANSDUCER

Travel	60mm
Accuracy	+ 1mm
Plunger movement force	0.1N
i) Horizontal	0.6N
ii) Vertical UP	0.5N
iii) Vertical down	

#### ROTARY ENCODER

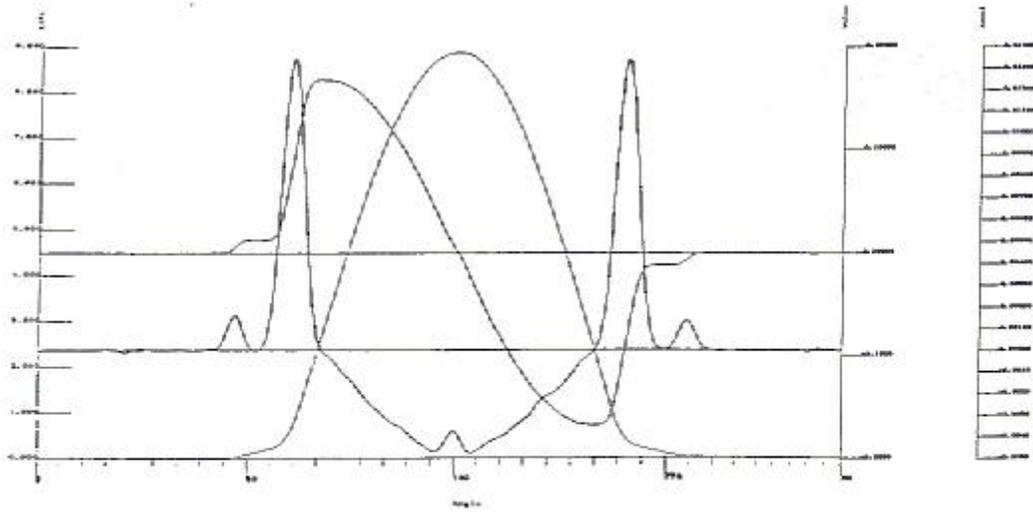
Photographically graduated optoplastic disc with an optic LED GA sensing unit	
Transmitter with SI Photo and transistor runner	
Operating temperature	-20 to 60° C
Wave form triggered square wave	1:1
Frequency response	0-10 KHz
Pulses/revolution Max	5000

#### LINEAR TRANSDUCER

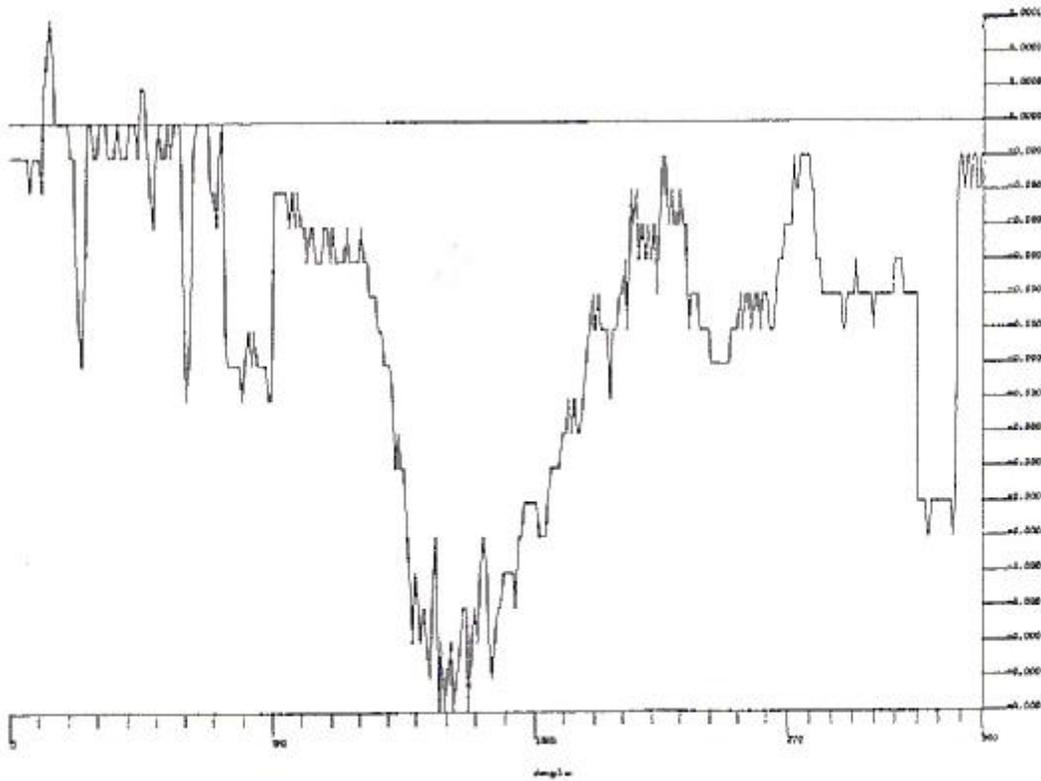
Monitors position of lift transducer parallel to camshaft	
Location accuracy	0.025mm ± 0.0125mm

Measuring speed	0.25 m/sec
Operating temperature	10-50° C
Reference Temperature	20° C
Acceleration impact Max	1000 m/sec <sup>2</sup>

# PIPER CDM Cam Checker



**LIFT - VELOCITY - ACCELERATION CURVES**



**ERROR - DEVIATION FROM THEORETICAL**

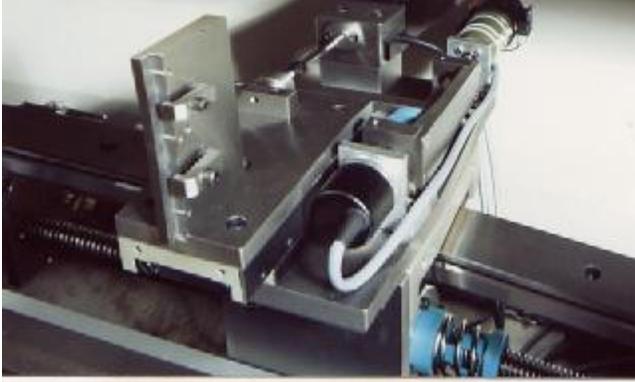
**CAMSHAFT MEASUREMENT SYSTEM V2.03**

Peaks alignment at 180 degrees

Metric units – list measurements in inches, velocity in inches/degrees, acceleration in inches/degree ^2

Angle	Lift	Veloc	Accel
0	.2230	.0000	-0.000135
1	.2229	.0001	-0.000153
2	.2227	.0002	-0.000153
3	.2223	.0004	-0.000153
4	.2218	.0005	-0.000152
5	.2211	.0007	-0.000152
6	.2203	.0008	-0.000151

## SYSTEM FEATURES



High precision frictionless slide arrangement for play free linear motion. The lift transducer is mounted on a platform allowing the follower blade to traverse towards and away from the lobe. Optical sensing of the platform positioning insures repeatable follower/lobe contact



The adaptation of high quality tool room products has enabled a cost effective package to be created. Cam shaft up to 915mm between centres and with a swing diameter of 305mm can be accommodated.



The requirement to measure with flat and radius followers has dictated a universal adaptor arrangement to suit various diameter roller inserts are available.



Piper has developed a user friendly software combination utilising their cam shaft design and manufacturing expertise to give a comprehensive monitoring and recording package. 'X' coordinates which are required for repeatable follower/lobe position are stored in files and are easy to retrieve.