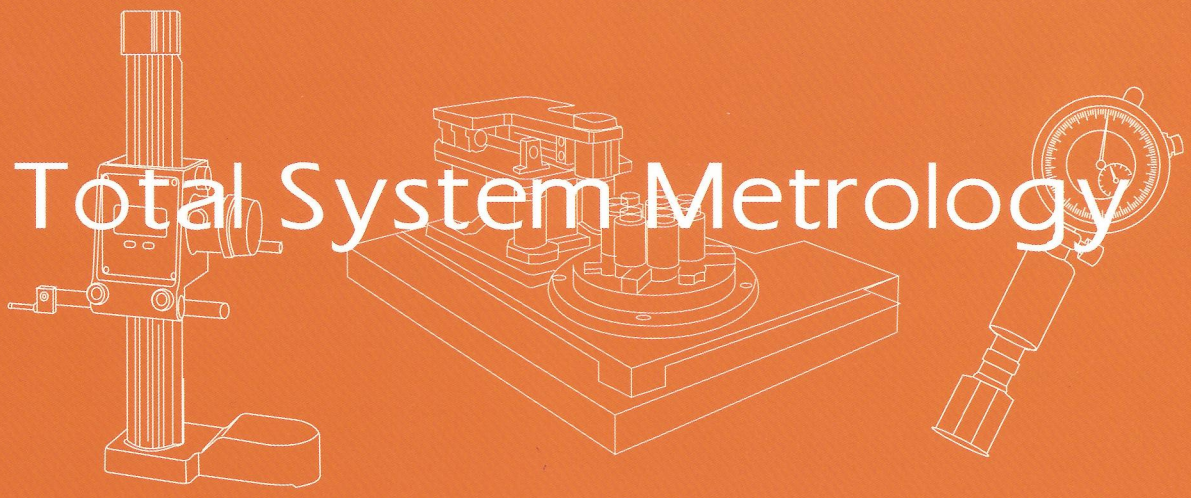
TSM Total System Metrology

Total System Metrology



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TSM Total system metrology



TSM Corp. is providing the total solution in measuring.

TSM Corp. is providing the total solution in measuring.
We aim to support the total enterprenual management about
the manufacturing and quality control
"throughout the simple gage, automatic measuring facilities
in line and various display unit for gages" to SPC program
for factory integrated management.
"And we continuously have done R&D investment
and developed ""multi functional electric column""
and got it CE approved in 2002. " "We have supplied it to
Bowers(UK), Sylvac(Switzerland), Diatest(Ger) and
Flower(USA) in OEM base and other countries under our brand."
And we got ISO 9001 approval and with the world renowned
technology we are supplying automatic measuring instrument
and gage to Visteon Corp.(USA) and other big companies.



KMA R

Certificate No : RQM2038

Quality Management System Certificate

This is to certify that
the quality management system of

TSM CORPORATION

at
- Head office : #482-10, Taejeon-dong, Gwangju-si, Gyeonggi, Korea
- Factory : 810Ho, Industpia5, #138-6 Sangdaewon-dong, Jungwon-gu, Seongnam-si, Gyeonggi, Korea

Has been found to conform to the Quality Management System Standards

KS A 9001:2001 / ISO 9001:2000

This Certificate is valid for the following product or service ranges.

Design, Development, Manufacturing & Servicing of Gauge and Control System

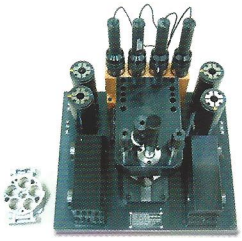
Issue Date
Aug. 28. 2006
Certification Date : Aug. 28. 2006 Valid Date : Aug. 27. 2009

Authorized By : K H Park
Ki Ho Park, President

KMA Registrations & Assessments Inc.

KAB

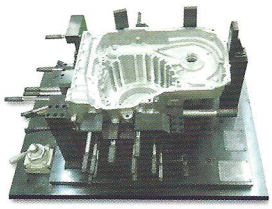
Gage Division



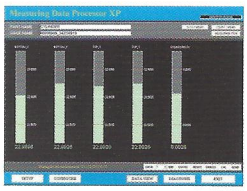
■ LINE QC GAGE



■ IN LINE SYSTEM GAGE



■ FUNCTIONAL GAGE



■ MEASURING DATA PROCESSOR



■ COLUMN DSPLAY

We aim to support the total enterprenual management about the manufacturing and quality control "throughout the simple gage, automatic measuring facilities in line and various display unit for gages" to SPC program or factory integrated management.

Mass Production Divsion



■ QC Gages



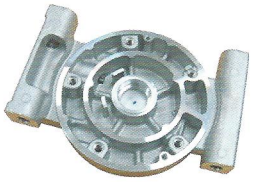
■ Machining Center



■ CNC Lathe



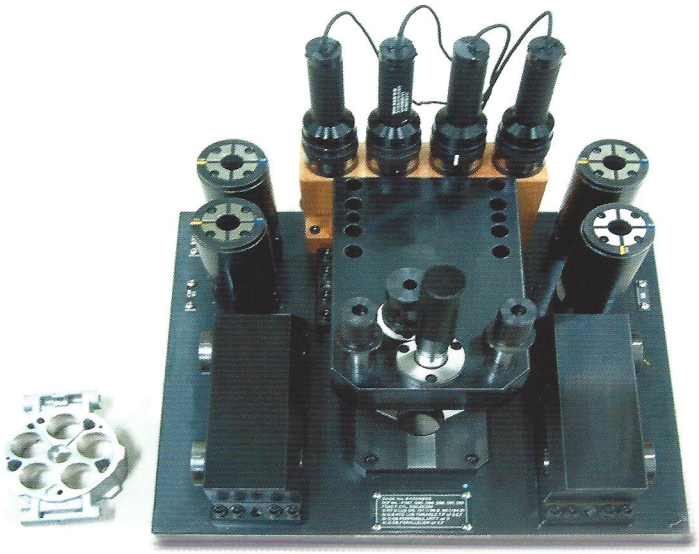
■ Front Head

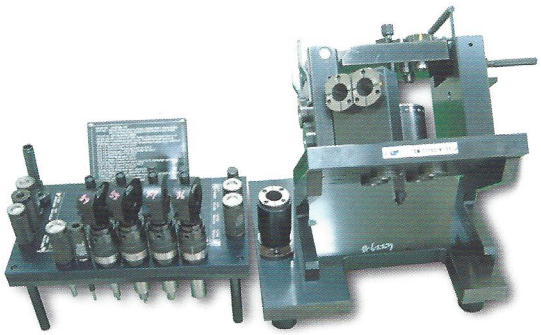


■ Rear Head

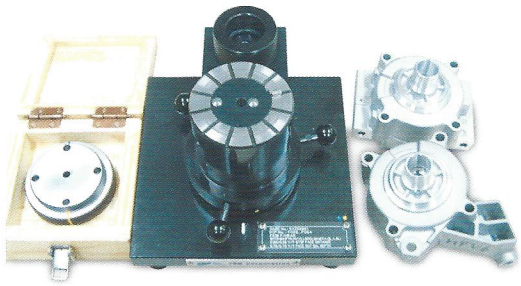
"Based on the technology accumulated through the last 10 years experience, we have been supplying part for automobile air compressor "
"approximately 500,000 sets per year to Halla Climate control Corp from 2003.
Still we have kept the surprising record defect rate ""0"".
With such technolgy and quality control ability we are expanding the production capacity.

Measuring the location, Parallelism and perpendicularity of Cylinder.

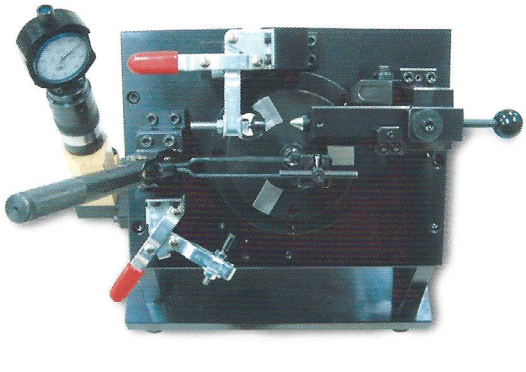




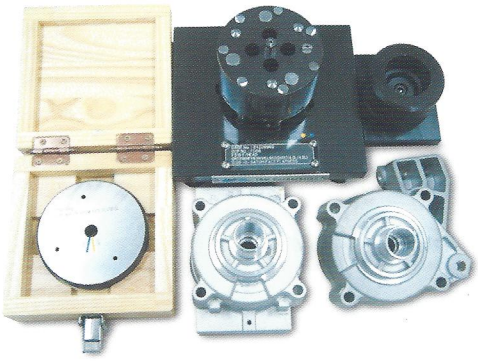
■ Location gage



■ Distance gage

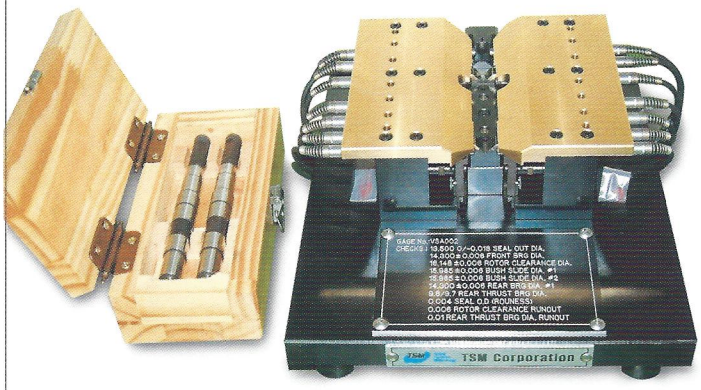


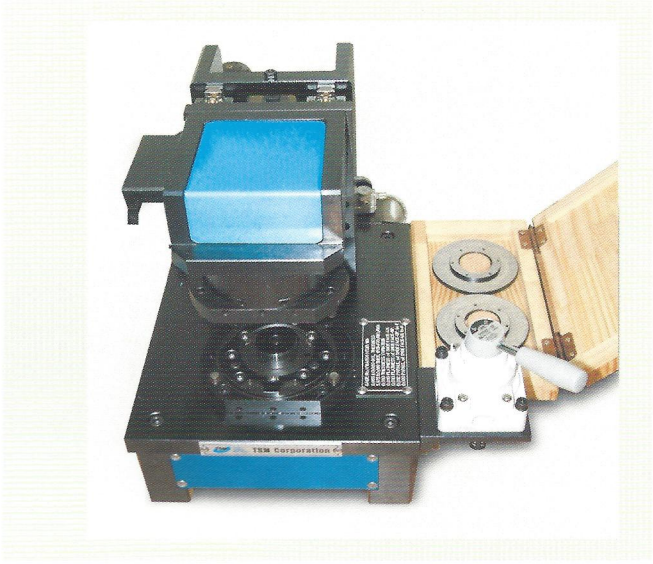
■ S.Q gage



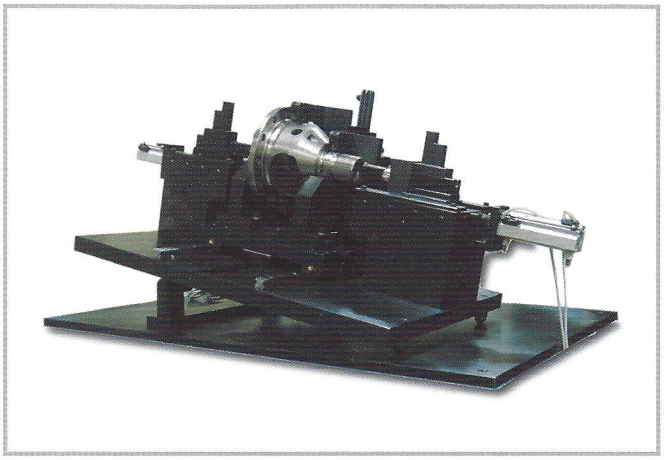
■ Flatness gage

Using LVDT probe, measure the outer diameter, runout and roundness of Shaft.

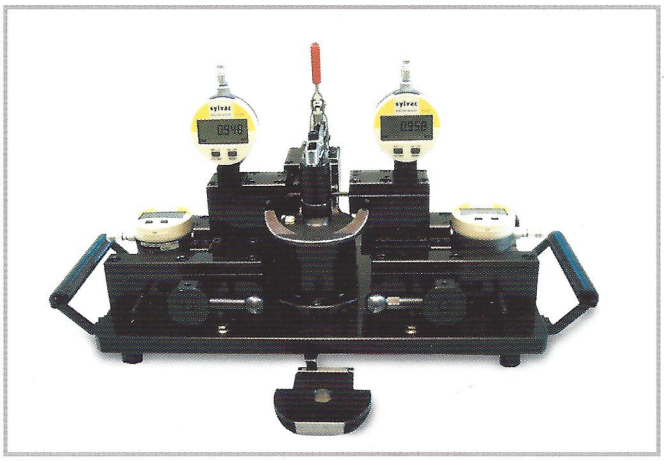




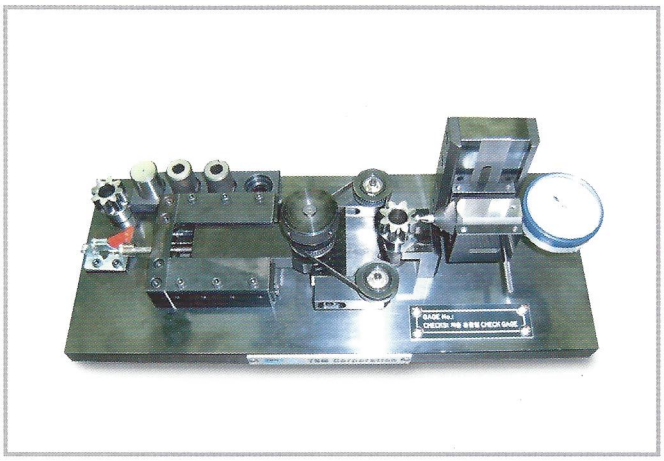
Execute the on/off of the gage head by air cylinder,
and measure the thickness
the variation of the thickness, the flatness
and the parallelism using LVDT probe.



■ LSD outer/internal diameter, runout gage

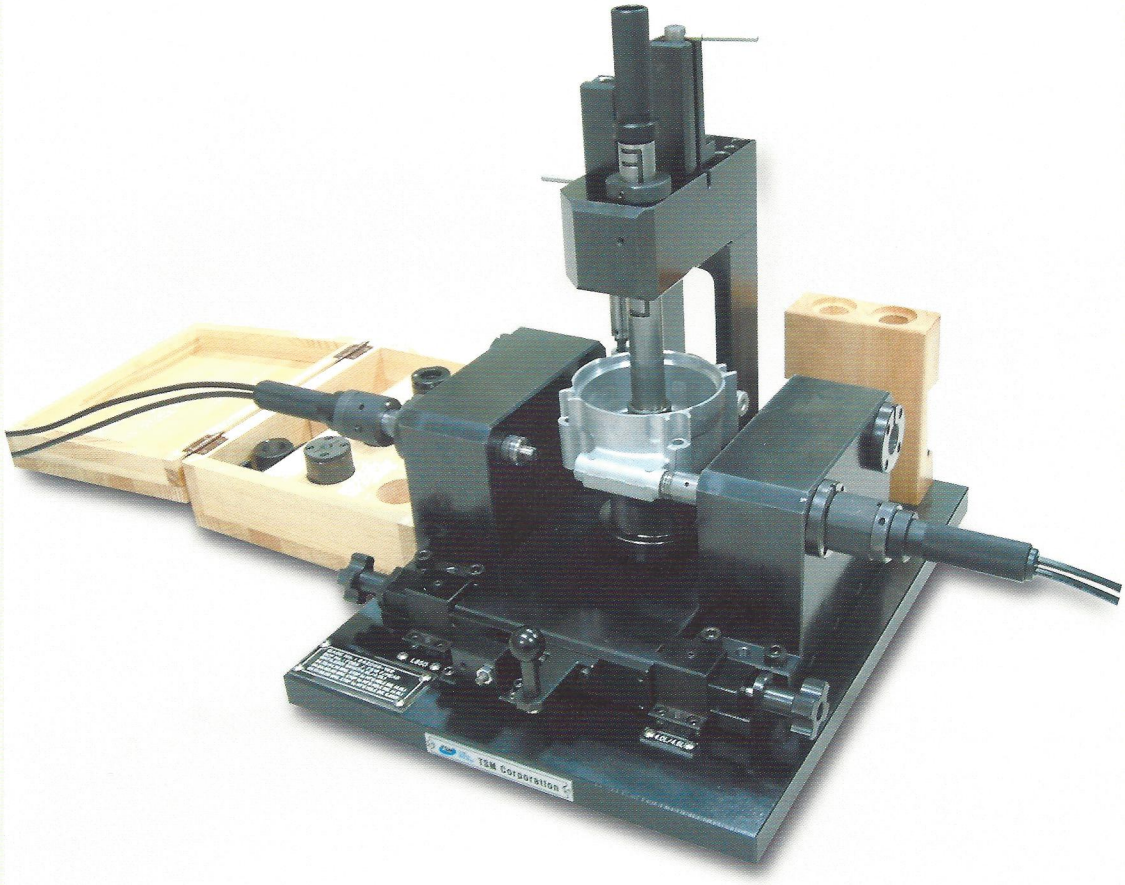


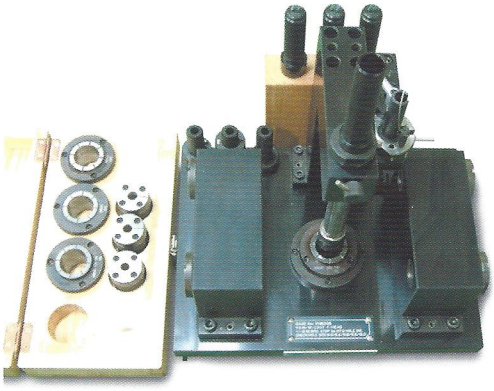
■ Hub distance gage



■ Gear runout gage

Measuring the distance for A/C compressor with air system.





Measuring the location, distance, parallelism and perpendicularity of the head lug of A/Con compressor, and measuring 4 items by exchanging the datum.

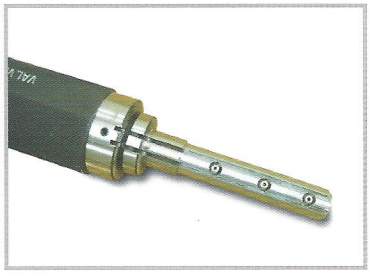


■ Application of air gage.





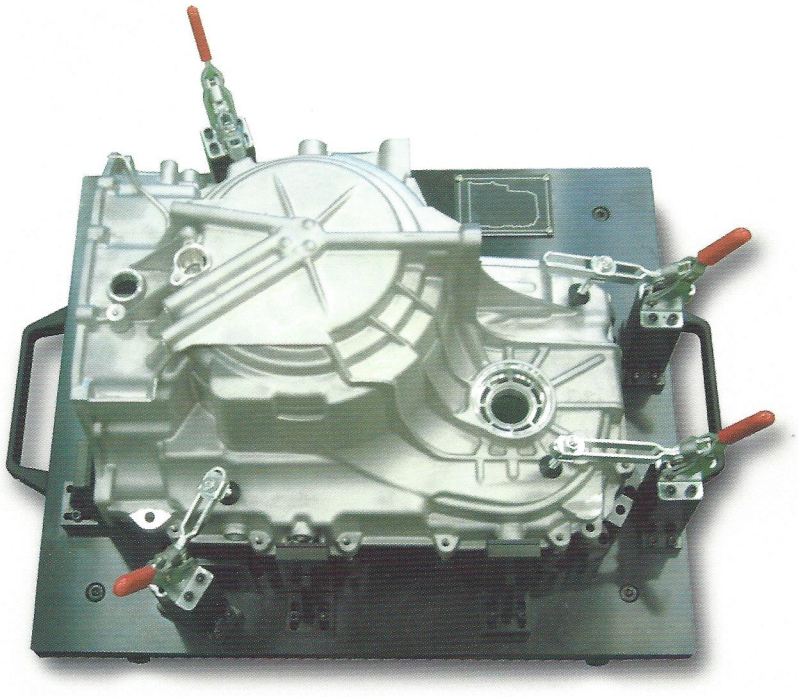
■ Standtype air gage cylinder, perpendicularity, and internal radius.



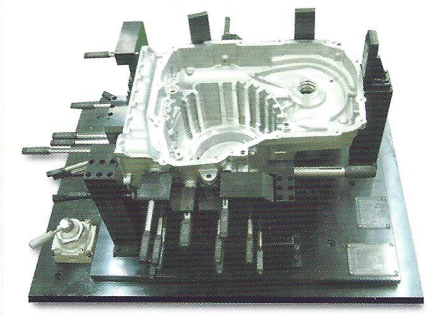
■ Air plug gage head.

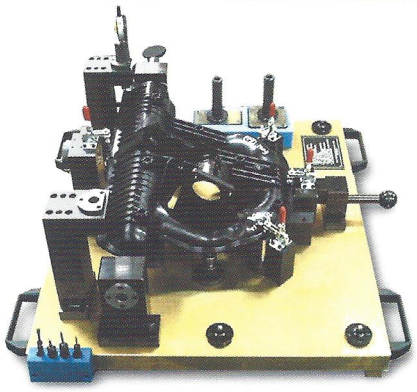
Simple functional gage & Standardized inspecion gage.

-Limit gage(go/No go)
-Master gage(Plug, ring, snap)
-Function gage
-Location gage



■ Hole location gage



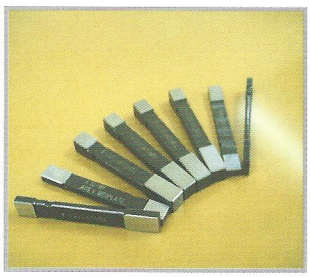




■ Step master



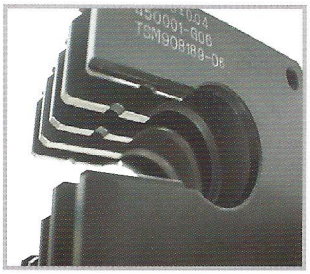
■ Ring master



■ Width gage



■ Plug gage



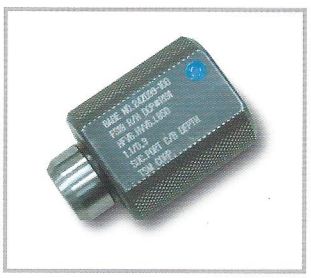
■ Snap gage



■ R gage



■ TP gage



■ Flush pin gage

Cylinder Ass'y precision measuring apparatus.



This instrument is not only able to measure the internal diameter, location of each diameter, perpendicularity and cylindricity and process them by SPC, later it will be statistically processed, but also it can do M/C calibration using the calculate X-Y coordinate like as 3-Dimension measuring device.
And the acquired data is compatible with Excel program, so it can be utilized for other jobs.



■ Measuring picture (gage being used in the work place)



■ Status of cylinder installed



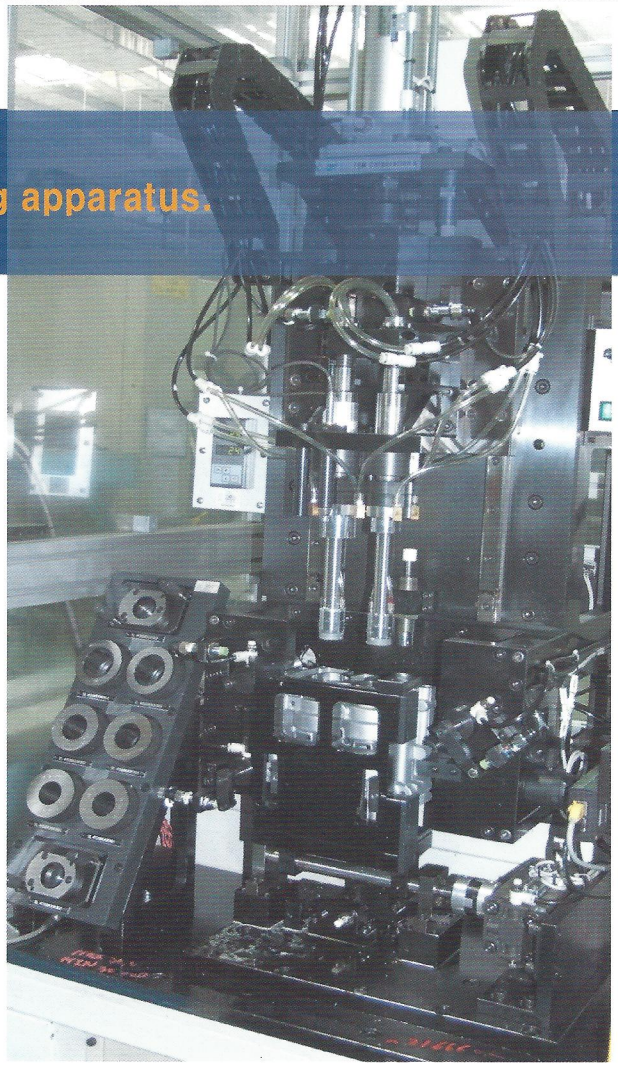
■ Measuring head

* Measuring items: internal diameter, true position perpendicularity, cylindricity, parallelism of Cylinder.
* Resolution: 0.1㎛
* R&R: within 10%
* Accuracy: ≤1.5㎛
* Repeatability: ≤1㎛



■ Measuring picture

Oil Pump Housing automatic measuring apparatus.





■ Input Shaft automatic measuring apparatus

This instrument measure roughness,location, group width, length, runout at the same time, and in addition it can automatically measure illuminance and contour in sequence.

* Measuring items: roughness internal diameter, runout, true position, distance
* Resolution: 0.1㎛
* R&R: within 10%
* Accuracy: ≤1.5㎛
* Repeatability: ≤1㎛



■ Instrument for Valve body

In this machine, loading & unloading process is being executed by robot, and the measuring jobs is done automatically.
This instrument measure the internal diameter and roundness and cylindricity of Valve body, and classify the grade, send the measured value to SPC so statistical process is possible and the data can be utilized in Excel.

* Measuring items: internal diameter, roundness, cylindricityr of Valve body
* Resolution: 0.1㎛
* R&R: within 10%
* Accuracy: ≤0.5㎛
* Repeatability: ≤0.3㎛
* Common for 4 types, grade classification.



This equipment measures the internal radius & gap of Oil pump housing, and send the result to SPC for further processing.
This processed data is compatible with Excel.

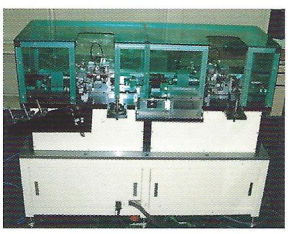
* Measuring items: internal diameter & distance
* Resolution: 0.1㎛
* R&R: within 10%
* Accuracy: ≤0.5㎛
* Repeatability: ≤0.3㎛

■ Disc Plate DTV measuring instrument

This brake disc measuring device measures the runout and thickness and is operated by the program semi-automatically.

* Measuring items: thickness of disc brake, variation of thickness"
* Resolution: 0.1㎛ * R&R: within 10% * Accuracy: ≤0.5㎛ * Repeatability: ≤0.3㎛

■ Instrument for in line only

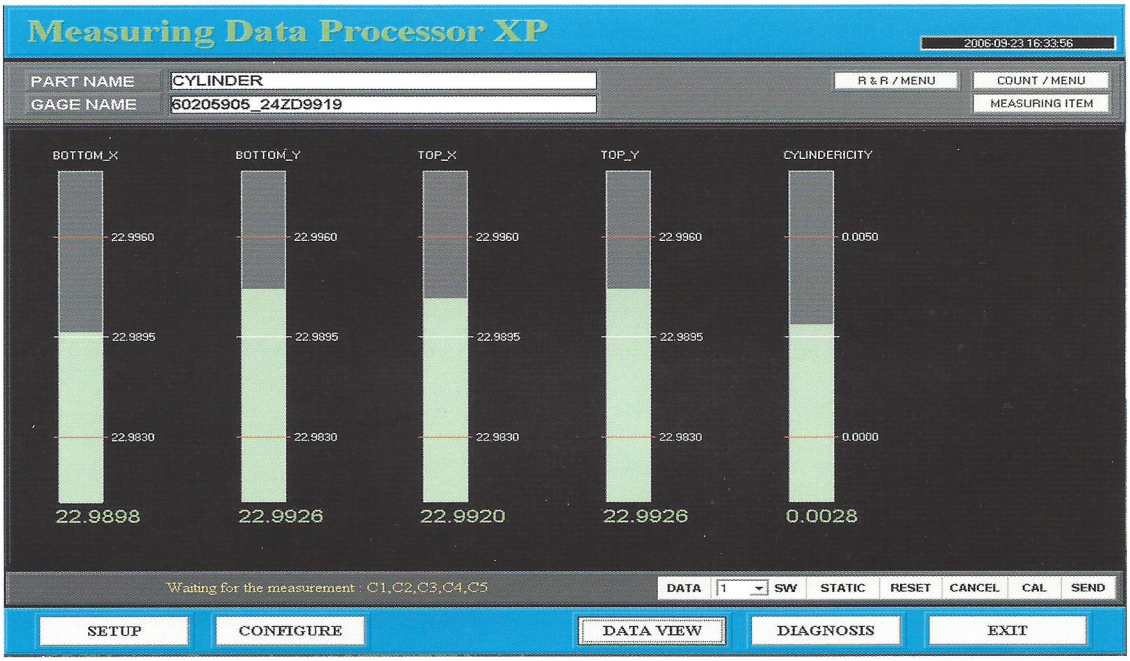








Measuement and statistical processing Program (MDP: Measuring Data Processor)



■ Measuement and statistical processing Program (MDP: Measuring Data Processor)

With MDP which was invented as a Measuement and statistical processing Program, TSM are able to easily program. The measurement items according to the request of the customers and obtained data can be treated to output as graph & chart and the customer easily determine whether the product is O.K. or not.
With the statistically processed result (as a form of graph & chart), the customer can see the quality control status and the data can be used in Excel program so it can be utilized into the additional task.

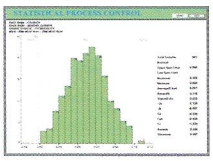
■ Specification of computer

CPU : Pentium III 1Ghz CPU
OS : Windows XP

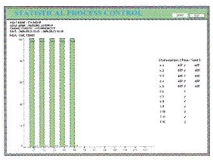
Data View



Histogram



R-bar Graph



Pass/Fail Graph

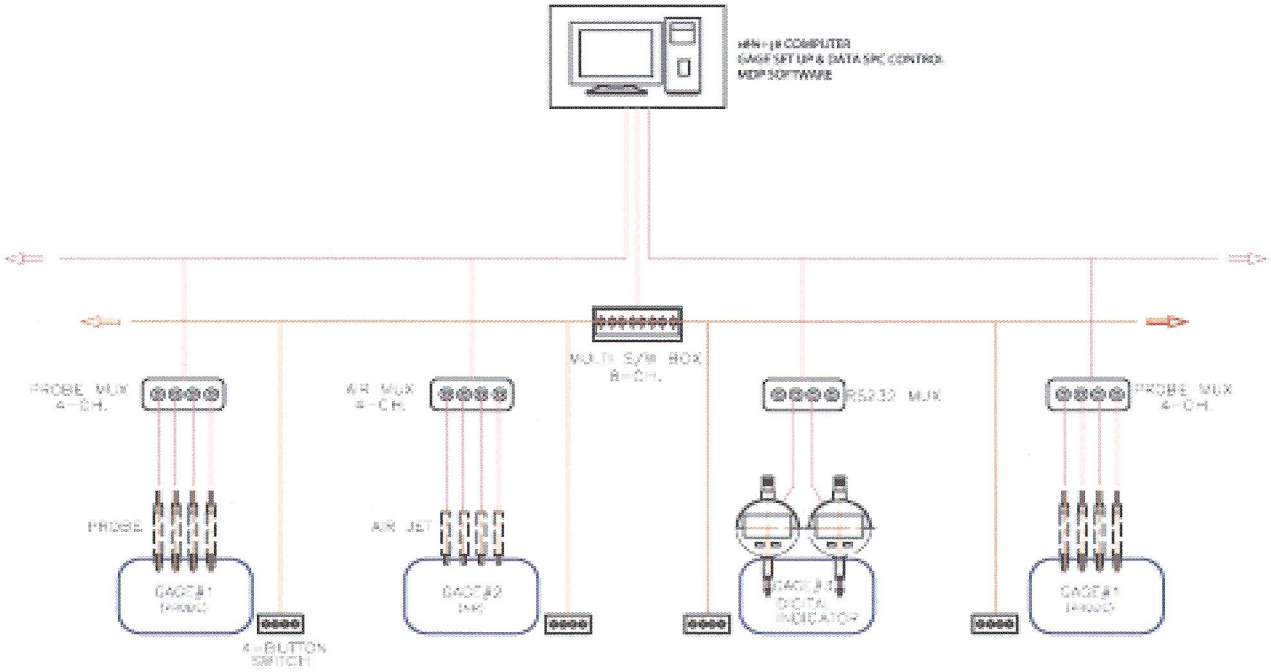


"Max 12 items can be processed in one program, there is no limit in the number of used program, 32 input port is connectable(Probe & Air, Max 96)"





Application for MDP (Measuring Data Processor)



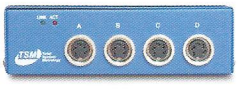
Description	Probe MUX	Air MUX
Number of Input Channels	4	
Type of Input Channels	LVDT, HBT, Capacitive	A/E Converter(TSM)
Selectable Measuring Ranges	± 200㎛ / ± 1000㎛	
Selectable Resolutions	0.1 ~ 0.0001 mm	
Output Type	1 x USB port	
Output Transmission Speed	12 Mbit/sec.	
Sampling Rate(USB speed)	4 x 40 samples/sec	
Operating Modes	Static or Continue Quisition	
Accuracy at 20 ° C	± 0.5% of the measuring value ± resolution	
Power Supply Source	from USB port	
Number of MUX Connectable to PC	Standard 8 MUX(maximum : depending on capacity of PC)	
Data Triggering Modes	Host command	

* MDP program is compatible with prodigital gages of Sylvac, Mitutoyo and Federal.



■ AIR MUX

Temporarily store the data received from the air gage through A/E converter, and transfer it to main computer according to instruction of MDP PGM.



■ PROBE MUX

Temporarily store the data received from the probe gage and transfer it to main computer according to instruction of MDP PGM.



■ 8-CHANNEL INTERFACE

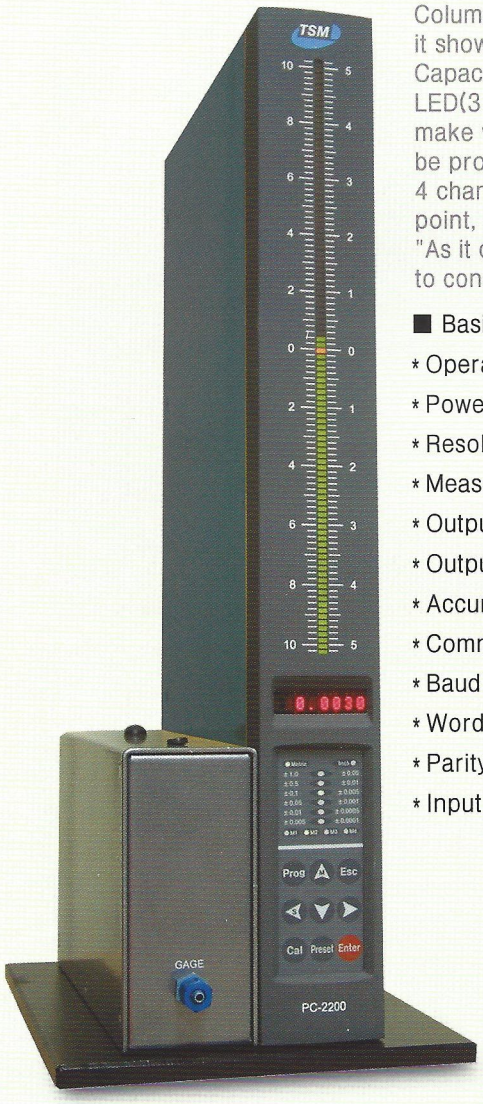
Interface to send the signal to computer so that 4-BUTTON S/W instruction can be executed.



■ 4-BUTTON S/W

Switch for gage program call, mastering, Reset and data transfer.

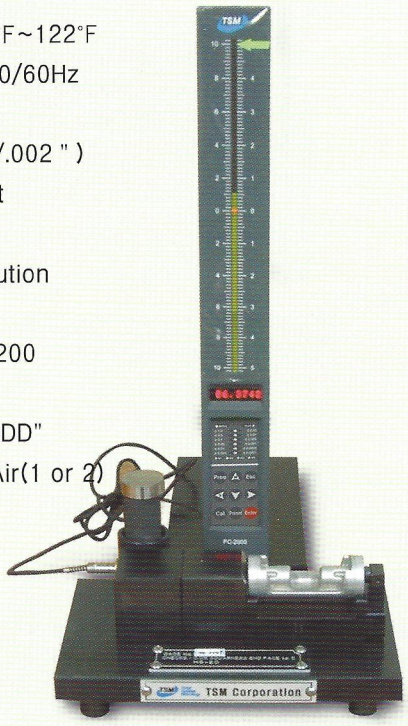
LED COLUMN, PC-2200



Column(PC-2200) is a form of measurement display, and it shows the measurement value of probe (LVDT, HBT, Capacitive) and air gage.
LED(3 colors) window which displays the vaule in digit make workers' determination easy. Upto 4 programs can be programmed, inter-channel calculation function upto 4 channels, search function of the highest point & lowest point, resolution mode switchable (static/dynamic mode)
"As it can support various external interface, it is possible to connect to other columns, computers and PNC machines."

■ Basic specificaiton

* Operating temparature: 0℃~ 50℃ / 32°F~122°F
* Power : 110/230V AC 50/60Hz
* Resolution : 0.1㎛/.00001 "
* Measuring range(Air) : ±1.0㎜ (±50㎛/.002 ")
* Output type : Analogue output
* Output range : ±5.0V F.S.
* Accuracy at 20℃ : ±0.5% + Resolution
* Communication : RS232C
* Baud rate : 4800, 9600, 19200
* Word length : 7, 8
* Parity control : NONE, EVEN, ODD"
* Input Channel : Probe(2 or 4), Air(1 or 2)



■ Probe Column



■ Air Column

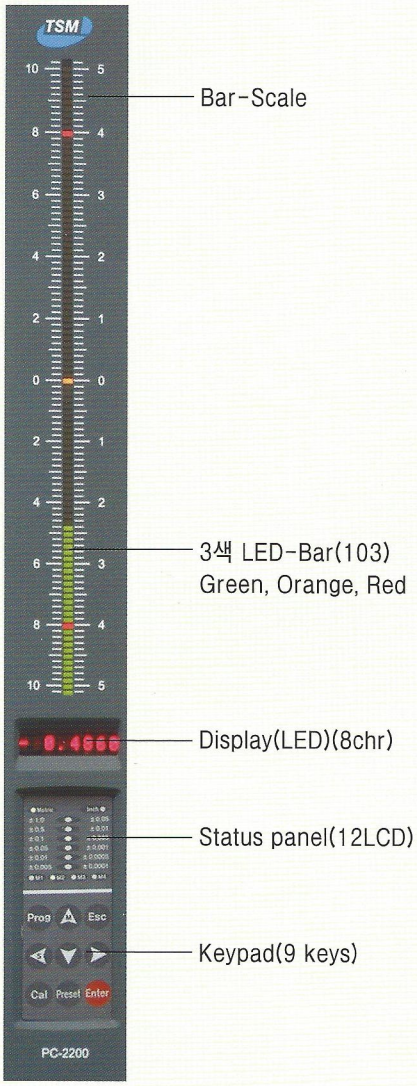


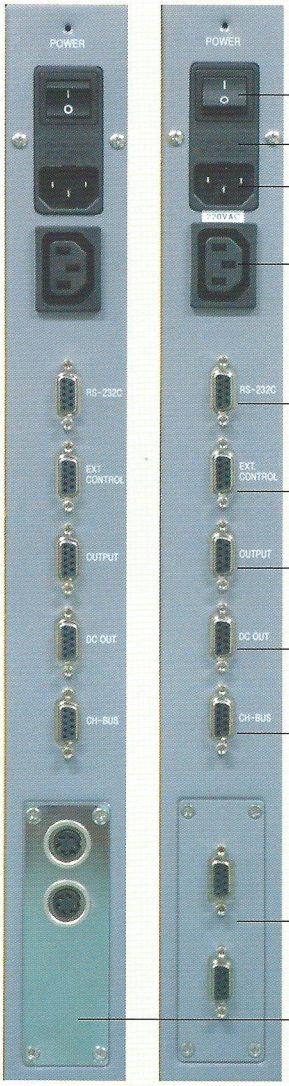
■ America

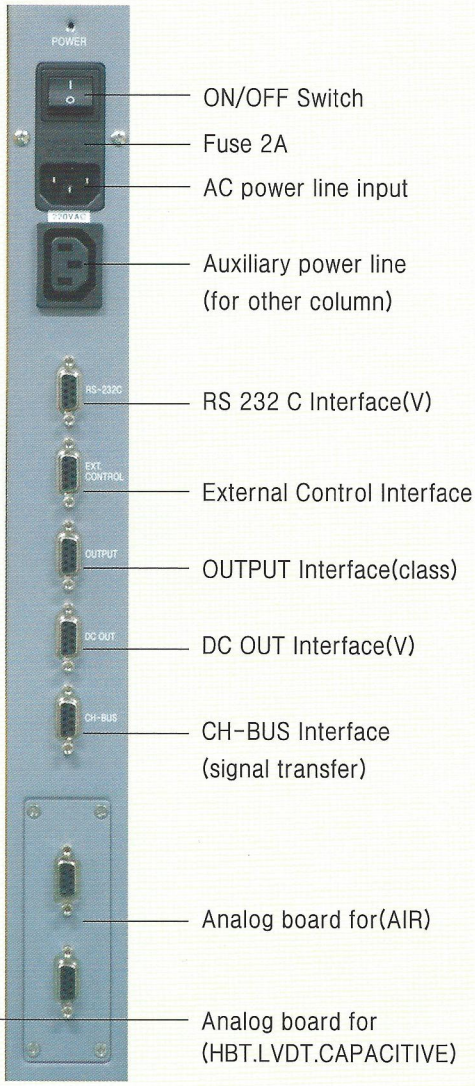


■ Germany

Column



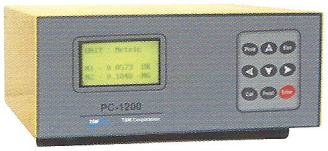




■ Digital Display Unit(DDU)

This has similar function with Column, the simplified unit made the price competitive.
Especially when using air gage, the integrated air converter and DDU give the user roomy work place.

■ Digital Display



■ Probe gage



■ Air gage



MEMO

Total System Metrology

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E-mail : info@tsmcorp.co.kr