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Product Guide
东测产品简介

日电产东测(上海)国际贸易有限公司
NIDEC TOSOK (SHANGHAI) CO., LTD



TOSOK

产品概要 GENERAL

东测公司拥有长年积累的量产制造的精密技术与综合机电部件的系统化技术,充分发挥与汽车场景、设备厂家共同开发的实绩,进行自动变速器(AT)、无极变速器(CVT)的心脏部分:阀板总成及配套电磁阀、阀芯的研发、生产及销售

For years TOSOK has been developing precision technologies for the production of gauges and the technologies supporting the systemization of the mechatronics parts, and we have a wealth of experience in jointly developing products with automobile and unit manufacturers. Based on the experiences of sales and production, we are developing, manufacturing and selling control valve bodies, control solenoid valves and spool valves that are at the heart of automatic transmission(AT) and continuously variable transmission(CVT)

汽车零部件事业以3大产品为主轴展开开放及销售

Automobile Parts Div. is promoting the product lines along the 3 axis

现有商品的新市场/新客户的开拓
Expansion of existing products to new markets and new customers

电磁阀技术的运用与新领域的扩大
Application of solenoid valve technology and expansion to new fields

采用变频控制技术的电动化产品的开发
R&D of new products by control technology and inverter technology

阀板总成 CONTROL VALVE

- ★ 阀板总成及配套零部件的设计、生产成为可能
- ★ 与其配套设计通过电磁阀,使得油压偏差、磁滞、泄漏的现象减至最小
- ★ 从阀体压铸到所有配套零部件,在越南工厂可整体配套生产,可对应客户多样需求
- ★ 7大种类的年产量为165万台(2011年实绩)

- ★ Possible to accept orders of design and manufacturing altogether, for C/V assy and its integral parts
- ★ Minimizes hydraulic pressure variation, hysteresis, leak, through complete set designing together with Solenoid Valve products
- ★ From die casting, up to integrated manufacturing of integral parts and flexible compliances, are possible in Vietnam
- ★ At present, manufacturing 7 models, 1.65 sets per year (Achievement of the year 2010)



轻型汽车/微型车用CVT
CVT for mini / small vehicle



5速A/T
5Speed A/T



轻型汽车用CVT
CVT for mini vehicle



微型车用CVT
CVT for small vehicle

步进马达 STEPPING MOTOR



- ★ 优越的耐油、耐杂质性能,适用于AT/CVT机油中使用
- ★ 通过低惯性达到优越的控制性能
- ★ 通过优化减震构造,提高抗失步性,提供稳定的特性

- ★ Best for application in A/T, CVT oil with superior oil resistance and contamination resistance
- ★ Excellence in controllability by low inertia
- ★ Provides consistent property through materialization of high stepping-out resistance by dumper mechanism optimization

电磁阀 SOLENOID VALVE

On-off Solenoid Valve ON-OFF阀

Low Pressure
低压
KB, KS



Middle Pressure
中压
KG, KH



High Pressure
高压
KW



Duty Solenoid Valve Duty阀

Low Pressure
低压
KR, KA



Linear Solenoid Valve 比例阀

Low Pressure
低压
LG/LH, LZ



Middle Pressure
中压
LE, LF



High Pressure
高压
LU/LV



Flow Control Valve for Diesel 柴油机用流量控制阀



Flow Control Valve for Diesel
柴油机用流量控制阀

- ★ 通过小型、轻量、低泄漏的设计,为改善燃效做出贡献
- ★ 油压偏差、磁滞的最小化,改善控制性
- ★ 通过电磁驱动部的标准化,短期内根据客户需求定制成为可能
- ★ 可提供与阀板总成匹配的改善提案
- ★ 小批量也可低成本提供紧凑、标准化的整体配套生产线

- ★ Contributes to mileage improvement by compact, light weight, low leakage design
- ★ Contributes to controllability improvement by minimizing hydraulic pressure variation, hysteresis
- ★ Possible to customize in a short period of time by standardization of solenoid unit
- ★ Evaluation and improvement proposal for matching with control valve
- ★ Standardizing with compact production lines enabling the small lot production at low price

- ★ 柴油机共轨系统用流量控制阀
- ★ 减少燃油消耗,实现超低泄漏

- ★ Flow Control Valve for Diesel Common Rail System
- ★ Materializing ultra low leakage for fuel consumption reduction

阀芯&线束总成 SPOOL VALVE & HARNESS



- ★ 可柔软的对各种设计变更
- ★ 适用于越南生产的最小设备的投资
- ★ 阀芯生产从成形/表面处理/研磨的整体配套生产,能对铁或铝制阀芯
- ★ Flexible compliance with design changes
- ★ Minimum equipment investment best suited for production in Vietnam
- ★ For spool, integral production from tooling, surface treatment up to lapping is possible, and Iron and Aluminum are applicable

电动产品 电动油泵 MODULE PRODUCTS ELECTRIC OIL PUMP



- ★ 通过日本电产集团的马达技术与东测的车载技术的共同协作,提供高效率、高精度、高信赖性的电动油泵
- ★ 采用无电刷马达,提高耐久性
- ★ 液体输出压力与流量可根据客户需求定制



- ★ Provides with high efficiency, high precision, high reliability Electric Oil Pump through the collaboration with NIDEC motor technology and TOSOK automotive parts technology
- ★ Improved durability of motor by employment of brushless motor
- ★ Possible to customize discharging pressure and flow volume



旋转式空调压缩机上缸盖自动定心机 (世界NO.1) Rotary Compressor Upper Bearing Centering Machine

本装置是轴和旋转柱塞的装配品, 测量上轴承和气缸的装配尺寸, 使它们之间的差值 ($A_{max}-B$) 变为所定的值, 移动轴承进行螺钉紧固的自动组装置。

This is an automatic assembling machine that can control a clearance between rolling piston and upper cylinder to defined value.

- 周期: 12秒/个
- 组装后同轴度: $\pm 3 \mu m$ 以内
- 本体尺寸: 1450 (W) x 850 (D) x 2150 (H) mm
- Cycle Time : 12 sec/pc
- Coaxiality after assembly: $\pm 3 \mu m$ or less
- Dimensions: 1450(W)x850(D)x2150(H)mm



旋转式空调压缩机综合自动定心机 Rotary Compressor Upper Bearing Centering Machine

本装置上轴承定心完成之后, 在剩余部品的组合状态下向X-Y方向移动下轴承, 定心完成之后进行螺钉拧紧的自动组装置。

This is an automatic assembling machine that can control a clearance between rolling piston and upper cylinder to defined value.

- 周期: 16秒/个
- 上轴承和下轴承的同轴度: $\pm 5 \mu m$ 以内
- 本体尺寸: 1100 (W) x 900 (D) x 2150 (H) mm
- Cycle Time : 12 sec/pc
- Coaxiality after assembly: $\pm 3 \mu m$ or less
- Dimensions: 1100(W)x900(D)x2150(H)mm



旋转式空调压缩机气缸, 内径, 高度, 槽宽测量机器 Rotary Compressor Cylinder Measuring Machine

本装置设置在加工线上最终检查工序, 同时测量气缸的内径, 高度, 槽宽尺寸的手动尺寸测量机器。

This is a manual measuring machine that is located on final inspection process in machining line for checking each dimension by high precision & speed.

- 周期: 6秒/个 (根据操作员不同)
- 重复精度: $\pm 1.5 \mu m/20$ 回
- 本体尺寸: 700 (W) x 600 (D) x 1500 (H) mm
- Cycle Time : 6sec/pc (by operators)
- Repeat Accuracy: $\pm 1.5 \mu m/20$ times
- Dimensions : 700(W)x600(D)x1500(H)mm



涡旋式空调压缩机轴外径, 同轴度测量刻印机 Measuring and marking machine for outside diameter and coaxiality of scroll compressor shaft

本装置设在检查工序, 测量轴的各轴5处外径及同轴度的尺寸, 刻印各个等级及机种名的文字和2次元软线的自动测量机。

This is a manual measuring machine that is located on final inspection process in machining line for checking each dimension by high precision & speed.

- 周期: 50秒/个
- 重复精度: $\pm 1.5 \mu m/20$ 回
- 本体尺寸: 700 (W) x 600 (D) x 1500 (H) mm
- Cycle Time: 50sec/pc
- Repeat Accuracy: $\pm 1.5 \mu m/20$ times
- Dimensions : 700(W)x600(D)x1500(H)mm



HITACHI

Panasonic
松下电器MITSUBISHI
ELECTRICDAIKIN
大金空调HIGHLY
海立GREE
格力空调Midea
美的

Chunlan

SAMSUNG

LG

SANYO

Mitsubishi Motors

瑞智精密
RECHI

TECO

NISSAN

HONDA

TOYOTA

Mazda

MITSUBISHI
MOTORS

SUZUKI

Ford

CHERY

BYD



CEG-2000柱形电子量仪 [CEG系列]

Electric Gage [CEG Series]

- 采用3色发光二极管表示测量及判定结果, 明显易读。
- 采用8位英文及数字表示测量数值和测量项目, 操作简便。
- 通过按钮或外部信号, 自动进行校对规调整。
- 机体宽度50mm, 适用于多个连接测量。
- 利用标准装备的系列通讯功能, 可向电脑, 打印机输出数据。用EXCLE等软件, 可进行数据保存, 统计处理, 报表计算。
- 利用程序转换功能, 能保存及转换10种设定和校对值。
- 根据选项输出判定, 等级分配, BCD, 数显信号。
- 与以往商品相比, 实现了体积小, 价格低。
- 2频道, 4频道的电子量仪放在同一尺寸的本体上。
- 可连接2台或4台传感器, 利用单独或演算功能, 进行3个项目的测量和判定。
- 根据按钮可进行5 μm 到1000 μm 的8个范围的切换。



- The 3-color color bar displays makes it easy to read measurement and judgment results.
- The 8-digit alphanumeric display of measurement values and names makes operation easy.
- Push buttons and external signals enable automatic performance of large scale and small scale master coordination.
- Each model has a body width of 50mm, making then suited to multiple link-up.
- Data output to the PC and printer is performed using the standard-equipment serial communication function.
- Data saving, date processing and input to spreadsheet software (EXCEL, etc.) is possible.
- By switching programs, 10 types of settings, and saving and switching of master values can be done.
- Options enable judgments, separation into rankings, BCD, and output of digital matching signals.
- The new model provides much more compactness and lower cost.
- A 2 channel or 4 channel electronic micrometer is installed inside a body of the same size.
- With two or four detectors connected, 3 items can be measured independently or using arithmetic calculation.
- By pressing a switch, you can switch between 8 ranges in the full scale from 5 μm to 1000 μm .

DEG-2000电子量仪

Electric Micrometer[DEG-2000]

- 通过按钮或外部信号, 自动进行校对规调整。
- 具有判定输出信号的标准装备, 最适用于自动测量。
- 连接有2台传感器, 利用单独或演算功能, 进行3个项目的测量和判定。
- Push buttons and external signals enable automatic performance of large scale and small scale master coordination.
- This is the most suitable for automatic measurement by output sign of judgement.
- 2 channel electric micrometer is installed inside a body.



气动测微仪—测量部分

Air Micrometer—Measuring Instruments



内径测头

外径测头

测台

- 可进行多点测量, 操作便利
- 主要测量项目:
 - 内径、外径的测量
 - 真圆度的测量
 - 锥度的测量
 - 垂直度的测量
 - 直线度的测量
 - 芯间距离的测量
 - 平行度的测量
 - 厚度、宽度的测量
 - 同轴度的测量



Inside Head for Air Gage

Outside Head for Air Gage

Gage Head for Air Gage

- Can check some measuring points at the same time
- Main measuring items
 - Internal&external diameter measurement
 - Out of roundness measurement
 - Taper measurement
 - Squareness measurement
 - Straightness measurement
 - Mandril distance measurement
 - Neasurement of parallelism
 - Thickness&width measurement
 - Axiality measurement



电子测微仪—测量部分

Electric Micrometer—Measuring Instruments



内径测头

外径测头

测台

- 测量点采用超钢球, 使用寿命长
- 重量轻, 作业性能好



Inside Head for Electric Gage

Outside Head for Electric Gage

Gage Head for Electric Gage

- A solid carbide ball point is used to provide longer life.
- Low weight, Good performance



气动测微仪——显示部分
Air Micrometer——Control Unit

气动测微仪——显示部分
Air Micrometer——Control Unit



流量型气动量仪FT系列 Flow Type Air Gage FT Series

- 廉价且美观
- 因为放大机构和指示机构磨损的部分少, 所以可以长时间维持高精度。
- 浮标的反应速度迅速, 准确安定
- 喷出的空气压力可清除工件的灰尘及油污, 测量值正确。
- 采用非接触式测量, 对工件无损伤或弯曲。
- 最适合内径的测量, 没有滞后损耗现象。
- Low cost and good appearance.
- The enlarging and indicating mechanisms have no wear parts, enabling high precision to be maintained long.
- The float response is quick and stable.
- The high pressure air blows off dust and oil from the work piece, assuring accurate measurement.
- Because of non-contact measurement, there is no fear of the work piece being damaged or bent. The air micrometer is especially effective in measuring inside diameters.
- The air micrometer is free from hysteresis loss



New Product FT7000 体积更小, 重量减轻约33% Smaller and about 33% weight saving

CAG-2000,3000柱型气动量仪CAG系列 Air Gage CAG Series

- 采用3色发光二极管表示测量及判定结果, 明显易懂。
- 采用8位英文及数字表示测量数值和测量项目, 操作简便。
- 通过按钮或外部信号, 自动进行校对规调整。
- 机体宽度50mm, 适用于多个连接测量。
- 利用标准装备的系列通讯功能, 可向电脑, 打印机输出数据, 用EXCLE等软件, 可进行数据保存, 统计处理, 报表计算。
- 利用程序转换功能, 能保存及转换10种设定和校对值。
- 可连接2台或4台传感器, 利用单独或演算功能, 进行3个项目的测量和判定。
- The 3-color color bar displays makes it easy to read measurement and judgment results.
- The 8-digit alphanumeric display of measurement values and names makes operation easy.
- Push buttons and external signals enable automatic performance of large scale and small scale master coordination.
- The main unit having a width of 50mm contains two built-in A/E converters, and measurement and evaluation of a total of three parameters, consisting of measurement at two locations along with their arithmetic processing result, can be performed with a single unit.
- Data output to the PC and printer is performed using the standard equipment serial communication function.
- Data saving, data processing and input to spreadsheet software (EXCEL, etc.) is possible.
- By switching programs, 10 types of settings, and saving and switching of master values can be done.



MD-14L,24L,14LL刻度盘型气动量仪MD系列 Dial Type Air Gage MD Series

- 具备气动量仪的非接触式测量, 倍率高, 可进行远距离高性能测量等所有长处。
- 因为是高压式可以更大程度地得到间隙, 所以测量范围宽, 测量寿命也长。
- 使用精密稳压器, 放大继电器, 所以高精度指示稳定, 且反应速度非常迅速。
- 倍率调整范围宽, 仅刻度盘交换可以得到任意范围的测量范围。
- 无论单式型或复式型都非常紧密, 所以使用简单。
- 复式型的指针是双针(黑, 红)形, 所以能很容易读出两个尺寸的关联。
- 测头喷嘴可以使用标准以外的喷嘴, 具有通用性。



- The pneumatic micrometer offers all the advantages of non-contact measurement, high magnification, remote measurement, high efficiency, etc.
- The high pressure air type allows for a wide clearance between the measuring probe and object, hence offers a wide measuring range and prolongs the probe life.
- The precision regulator and amplifier relay assures accurate measurement, stable indication, and very quick response.
- Magnification can be adjusted over a wide range, and any desired measuring range can be obtained simply by changing the scale board.
- Not only the simple type but also the duplex type is very compact and easy to use.
- The dual indicator has two pointers (black and red), facilitating the correlation of dimensions of two parts to be seen easily.
- As the probe nozzle, even a nonstandard one can be used.

MG2000,2200气动量仪MG系列 Panel Type Air Gage MG Series

- 模拟与数码相结合表示。
- 是备受期待的MD-24M的升级换代机器。
- 可进行按钮一按, 量规自动对准的操作。
- Displays a combination of Analog and Digital result.
- Desired replacement of MD-24M.
- One touch master coordination.

DAG-2000数码气动量仪 Digital Air Gage DAG2000

- 最小分辨率为0.01 μm (选项)
- 可以用表示色识别判定。主要显示三色(绿, 橙, 红)数字显示有判定灯OK(绿), -OK/+OK(橙), -NG/+NG(红)的5个等级判定表示灯。
- 通过按钮或外部信号(选项), 自动进行校对规调整。
- 利用标准装备的系列通讯功能, 可向电脑, 打印机输出数据(测定值和判定结果)。
- 装有多波段的A/E转换器, 只用面板开关可以对应所有的范围。

DAG-2200数码气动量仪 Digital Air Gage DAG2200

- 行业内首创, 带2频道显示功能的空气测微仪。
- 最适合锥度测量, 2连测量, 平行度测量和孔距测量。
- 一眼看出OK/NG彩色显示。
- 用一个按钮, 可以切换测量结果和演算结果的显示位置。

- Minimum resolution 0.01 μm (option)
- Result identify action can be displayed in different colors:
 - Main display: three color (green, orange and red) digital display
 - Result lamps: 5 lamp result displays: OK (green), -OK, +OK (orange), -NG, +NG (red)
- Master coordination can be performed automatically by push button or an external signal (optional).
- Can output data (measurement data/measurement results) to computers and printers, by means of a serial communication function, provided standard.
- Built-in multi-range A/E converter; can be adjusted to all ranges simply by panel switches.



高速三维扫描仪 RVL6540 High Speed 3D Scanner RVL6540

超越其他公司的高速、高精度、低价格、操作简单……

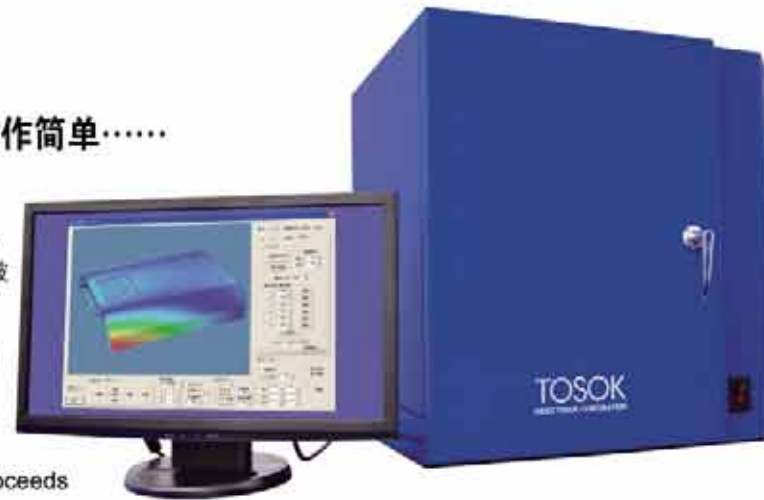
4步骤完备的新一代扫描仪

面向世界发布的用医疗领域培育的光切断方式进行精密测定、数字存档、逆向工程的产品。它的精度基于JISB7441标准，被广泛运用于珠宝、图解等行业。

Because of its preciseness based on JISB7441, it is used in various fields such as jewellery, figure businesses.

Operation can be performed by setting the products on the equipped stage.

It automatically scans the object, finds the right place and proceeds STL data very quickly



两大用途 (Major performance)

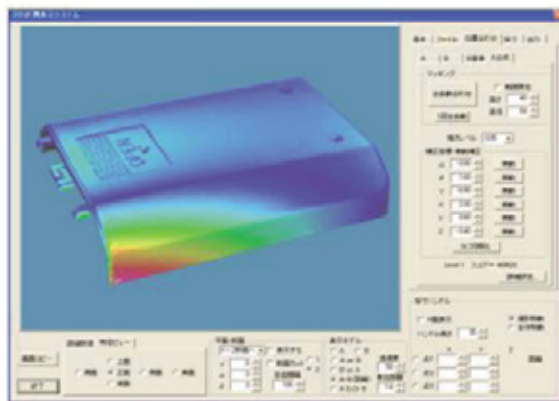
- 保证产品质量 (Secure product quality)

例1) 可对接触式扫描无法测量的工件或部位进行测量

Ex. 1) The work unit which cannot be measured by contact method is fully scanned automatically with no contact.

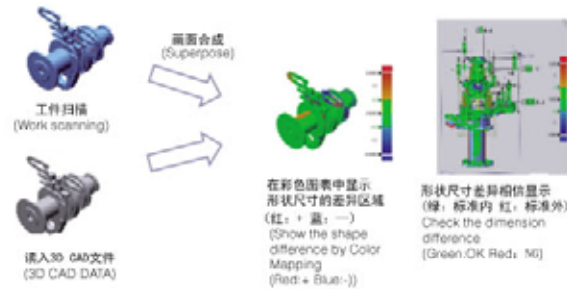
例2) 以图表格式对比显示测量结果和CAD数据

Ex. 2) Graphical illustration can be displayed to check the difference of CAD data



例2) 样品与测试品不同的实例。测试品有1mm程度变形 (红色)

Ex. 2) The measured unit has a variation of 1mm (red color portion)



- 逆向工程 (Reverse engineering)

例1) 通过对竞争产品进行功能评估, 可开展产品研发。 (New development through evaluation)



扫描工件, 生成STL数据 通过三维打印机制作评估品
STL data is processed through Scanned work unit 3D print to produce a material for evaluation

能够扫描黑色的工件
在激光式扫描中能到最高级别的扫描效率

One of the best scanning efficiency among the other laser system scanner



■主要特点 (Major feature)

1. 高速、高精度、低价格于一身的三维扫描仪。 (High Speed, High precision and affordable price)

• 为产品质量检测和逆向工程提供最佳解决方案。
(Offering optimized solution for measuring common resin cast products and revere engineering)

2. 高速全自动360度扫描 (High speed 360° scan)

• 使用本公司生产的传动装置, 性能稳定可靠, 精度高。
(Integrated with TOSOK high precious and reliable Ballscrew)
• 采用全自动专用软件, 可高速完成从三维扫描到生成STL数据的全过程。
(High speed data processing from scanning to STL data completion by automatic software)

3. 标准配备专用解析软件, 提高扫描精度 (Equipped with special analytical software to further improve precision)

• 专用解析软件的数据综合功能可对工件自动进行定位补偿。
(The software automatic integrates data and compensates for any error caused by a slight offset of the camera position with respect to the work unit)

4. 价格低廉 (Affordable price)

• 采用本公司生产的图像处理软件及工作台等, 实现低成本。
(Applying TOSOK imaging processing devices, stage units can offer affordable price)

5. 其他功能 (Other functions)

• 可通过普通三维CAD数据的形式输出三维点群数据和三维表面数据。
(Available to output a standard 3D CAD format, using 3D point data and 3D surface data)
• 以图表格式显示标准数据与测量结果的差异。
(Graphical illustration can be displayed to judge the difference between the reference data and measured unit)

■主要技术规格 (Major Spec)

- [1] 重复精度 (Repeat Accuracy) : 20um (*1)

- [2] 绝对精度 (Scan precision) : 20um (*2)

- [3] 测量范围 : $\phi 170$ 、高50mm或者 $\phi 110$ 、高120mm的圆筒可容纳的范围
(Measurement Range : $\phi 170$, Height : 50mm, or $\phi 110$, Height : 120mm of cylindrical shape range)

- [4] 点群数据最小间隔 (Min.dot data space) : 0.05mm

- [5] 数据生成时间 : 从开始扫描到生成STL数据大约需要30分钟 (*3)

(Data processing time from scanning to STL data output; aprox. 30m)

(*1) 以本公司规定条件下的球面距离为准。条件 : $20^{\circ}\text{C} \pm 1^{\circ}\text{C}$

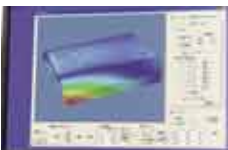
Under the condition of NIDEC TOSOK std (temperature $20^{\circ}\text{C} \pm 1^{\circ}\text{C}$)

(*2) 以JIS B7441为准 (Based on JIS 7441)

(*3) 在本公司规定条件下使用尺寸为 $L40 \times W40 \times H30$ 的工件时测得的数据。
生成数据所需时间因工件规格而有所不同。具体情况, 请向本公司垂询。

In the case of work units size ($L40 \times W40 \times H30$), under the condition of NIDEC TOSOK std.
Data processing time may vary depending on the work unit size and surface characteristic

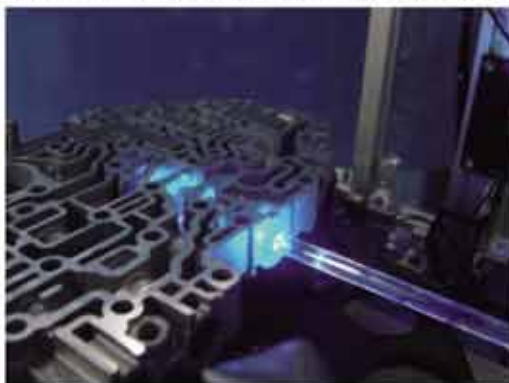
除以上标准规格的产品以外, 可为客户特别订制特殊规格的产品。 (Customized application is available)



圆筒内侧表面缺陷检测装置TPI系列 Cylindrical bore internal surface inspection system

圆筒内侧表面缺陷检查装置是对压铸件研磨加工面的砂眼 划痕 剥离 毛刺 切粉等缺陷进行检查的装置

Inspect porosity, gouge, separation, burr chip and scratch on the fabricated bore surface of die-cast product



非接触式自动检查

Non-contact automatic checking

自动检查可进行目视检查所能达到的最小极限0.2mm
Automatic checking can carry out 0.2mm as least limitation by visual check
不仅是砂眼, 还可检查切削痕 (划伤 剥离)
Not only porosity, but also checking tooth mark (scratch separation)

定量检查砂眼的大小

Quantitative check the size of porosity

由目视判定OK/NG, 改进定量检查砂眼的大小
To determine OK/NG by visual check, improve quantitative checking on size of porosity

注释: 性能检测会受到工件表面不同程度的粗糙性影响, 因此测试工件进行评价后会给出详细情况
Comments: property detection may affected by the various degree roughness of different surface of the work, so we will provide detail informations after testing and evaluation with the work.

可保存缺陷数据

Can save defects data

可保存NG图像画面
Can save NG picture frame

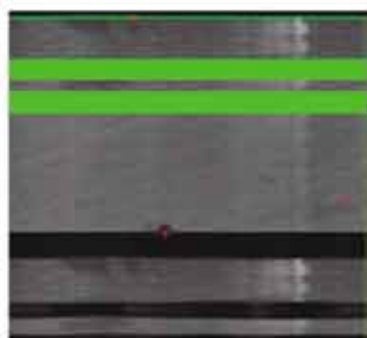
根据数据分析NG原因

Analyze the reason of NG with data

确定砂眼发生原因→改造铸造条件→提高生产率
Determine the causation of porosity→improve the conditions of casting
→increase in productivity

最适合可追溯性操作

Suiting the retroactive operation



砂眼
Porosity



划痕
Gouge



脱离
Seperation



毛刺
Burrchip



切粉
Scratch

特点 (features)

◆圆筒内侧表面全方位自动检测

Auto inspection - Cylindrical bore internal surface all area

→提高检测质量

Improve inspection quality

◆附带记录缺陷产生位置的功能

Defect position recording function equipped

→有助于提高铸造生产的效率

Useful for die-cast productivity improvement

◆非接触检测

Non-contact inspection

→无须担心受伤

No fear of giving scratch

主要技术规格 (Major Spec)

◆工件开孔直径: 直径6mm-60mm (Bore diameter: ϕ 6-60 mm)

◆开孔深度: 150mm以内 (Bore depth: Within 150mm)

◆检测分辨率: 直径0.2mm (Resolution: ϕ 0.2mm)

◆检测时间: 15mm/sec (Scan speed: 15mm/sec)



曲轴测量刻印机

Crank Shaft Automatic Measuring Machine

本装置将从另一台机器上自动搬入的曲轴品种用画像检查装置判别。各部位用电子量仪测量。运行记录及刻印销子外径的全自动测量刻印装置。

This is an automatic measuring machine that can distinguish crank shaft model and can mark journal & pin outside diameter grade.

- 周期: 100秒/个(含机内搬送时间)
- 重复精度: $\pm 1 \mu\text{m}/20$ 回
- 本体尺寸: 4960(W) x 2340(D) x 3120(H) mm
- Cycle Time: 100sec/pc(include conveying time in the machine)
- Repeat Accuracy: $\pm 1 \mu\text{m}/20$ times
- Dimensions: 4960(W) x 2340(D) x 3120(H) mm



凸轮轴形状测量机器

Camshaft Automatic profiling Machine

本装置, 将根据作业者手动操作搬入的凸轮轴的各部位尺寸及凸轮形状。用电子量仪。数字规自动测量。判定OK、NG的半自动测量装置。

This is an automatic measuring machine for judgement whether outside diameter and cam profile of cam shaft is OK or NG.

- 周期: 60秒/个(含工件安装拆卸时间)
- 重复精度: $\pm 1 \mu\text{m}/30$ 回
- 本体尺寸: 2380(W) x 2080(D) x 2160(H) mm
- Cycle Time: 60sec/pc
- Repeat Accuracy: $\pm 1 \mu\text{m}/30$ times
- Dimensions: 2380(W) x 2080(D) x 2160(H) mm



变速箱多点测量机器

Transmission Case Measuring Machine

本装置变速箱上的内径/外径数十个地方用气动量仪测量。进行OK/NG判定表示的手动测量装置。

This is a manual measuring machine for judgement whether dozens of inside / outside diameter on transmission case are OK or NG

- 周期: 2秒/一个内径(根据作业者的熟练程度)
- 重复精度: $\pm 0.5 \sim 5 \mu\text{m}/20$ 回(根据内径尺寸)
- 本体尺寸: 1860(W) x 1450(D) x 1520(H) mm
- Cycle Time: 2sec/point
- Repeat Accuracy: $\pm 0.5 \sim 5 \mu\text{m}/20$ times
- Dimensions: 1860(W) x 1450(D) x 1520(H) mm



连杆内径中心距平行扭矩测量机器

Connecting Rod Measuring Machine

连杆内径孔距平行扭矩测量机用气动/电子量仪同时测量且判定OK/NG的手动测量装置。

This is a manual measuring machine for judgement whether inside diameter, twist and parallelism of connecting rod is OK or NG.

- 周期: 14秒/个(根据作业者的熟练程度)
- 重复精度(内径): $\pm 2 \mu\text{m}/20$ 回重复精度(孔距, 平行, 扭矩): $\pm 4 \mu\text{m}/20$ 回
- 本体尺寸: 1200(W) x 970(D) x 2070(H) mm
- Cycle Time: 14sec/pc(One point of inner diameter which is depend upon operator's skill.)
- Repeat Accuracy: $\pm 2 \mu\text{m}/20$ times
- Repeat Accuracy: $\pm 4 \mu\text{m}/20$ times
- Dimensions: 1200(W) x 970(D) x 2070(H) mm



外观检查设备

Surface Inspection Equipment

概要

对研磨加工面的划痕、毛边、打痕、砂眼进行检查的设备

规格

扫描速度: 100mm/sec

分辨率: $10 \mu\text{m}$

检查项目

划痕、毛边、打痕、砂眼

Summary

Equipment of inspect Gouge, burrchip, streaks, porosity on the lapped surface Specifications

Scan speed: 100mm/sec

Analyze ability: $10 \mu\text{m}$

Inspect items

Gouge, burrchip, streaks, porosity



PEG-2000

- 与以往商品相比, 实现了体积小。
- 采用TFT彩色液晶, 可显示测量/判定结果。
- 使用触摸屏方式, 实现测量和设定操作。
- 根据画面和外部输入数据, 自动进行零度调整和感度调整。
- 装有标准判定输出信号, 可对应自动测量。
- 装有丰富的统计处理功能。
- 根据安装的标准串行通信功能, 可以向电脑输出数据。(可以向数据的保存, 统计处理, 表计算软件中输入数据。)
- 连接有四个电子量仪, 可以进行各种盐酸处理的测量。
- 根据连接气/电转换器, 可作为空气测微仪使用。

- Greatly reduced in size compared to conventional products.
- Displays measurements and results on a compact TFT color liquid crystal display.
- Measurement and setting operations can be made on the touch panel display.
- Automation of zero adjustment and sensitivity adjustment can be done on the touch panel display or through external input. Result output signal function is supplied standard, and corresponds to automatic measurement.
- Numerous statistical processing functions pre-installed.
- Serial communication function supplied standard, enabling data output to computers (for data storage, statistical processing, and input to spreadsheet software)
- Allows connection of four electric micrometers, enabling measurement by various types of processing.
- Can be used as an air micrometer by connection to an A/E converter control diagrams and CP values as standard features which are useful for quality control.



PEG-2100

- 显而易见的大画面表示。
- 采用TFT彩色液晶, 可显示测量/判定结果。
- 使用触摸屏方式, 实现测量和设定操作。
- 根据画面和外部输入数据, 自动进行零度调整和感度调整。
- 装有标准判定输出信号, 可对应自动测量。
- 装有丰富的统计处理功能。
- 可以从局域网向电脑输出数据。
- 连接有32个电子量仪可以进行各种演算处理的测量。
- 使用A/E变换器之后可以作为气动量仪使用
- Easy to read by the big screen.
- Measurement & Judgement result indicate by TFT color LCD.
- The touch panel operation is available.
- Automatically Zero & Sensitivity master setting are available.
- Correspond to automatic measurement by Judgement output signal.
- A wide variety of statistical processing capabilities.
- Data output to PC is performed using LAN connection.
- Variety kinds of statics processing functions by using 32 channel.
- Using possible also as Air micrometer by connect to A/E transducer.

