KURODA

CHALLENGE & CREATE

# 最新
# GS-126/86CV(s)


PRECISION SURFACE GRINDING MACHINE 精密平面磨床

# 被继承的“精密”的DNA

## 最新 GS-126/86CV(s)

### 特　点

**操作性**

**实现任何人都可以「简单加工」**

具备高通用性的同时，还可以进行全自动加工的磨床
通过方便的把手和开关，用可视性好的触摸面板实现了出众的操作性。

**环保性**

**省能源·省空间**

采用独立常温润滑供油，可对各滑动部长时间保持良好状态。
润滑油 · 油压油的使用量极少，机床油的使用量与同类机种的一半以下，
可为环保负荷的降低献出贡献。

**扩张性**

**丰富的品种与定制服务**

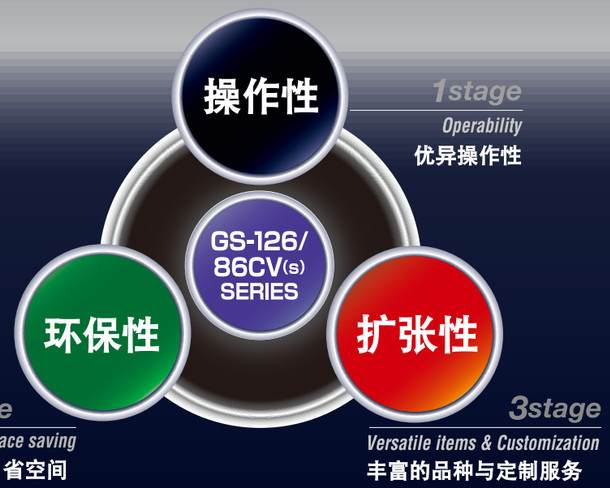
谁都可以简单地对多样化形状加工（槽 ·L 字 · 段 ·R· 斜角）、
砂轮成形（平面 · 定宽 ·R· 斜角）进行操作。
机上计测系统 · 微细气泡发生装置等选配可支持高效率加工及省人化。

### Features

**Easy operation for everybody**
Not only high spec manual operation but also full automatic operation are available.
The handle・switch layout enhances easy grinding.
Preeminent operability is achieved by easy-to-view operation touch panel.

**Energy saving・Space saving**
Long term stable precision is obtained by a sole collective lubricate oil device.
Lesser consumption of oil for the collective lubricate oil device comparing with the oil consumption of equivalent surface grinder. It contributes to lesser burden on the environment.

**Vertile items and Customization**
Various kinds of grinding (Groove・L-shaped・Step・R・Taper) and
forming dress for grinding wheel (Flatness・Width・R・Taper) are available by grinding software.
Optional function "on machine measurement system・Ultra fine bubble" etc can support high efficiency and manpower saving.




*1stage*
*Operability*
优异操作性

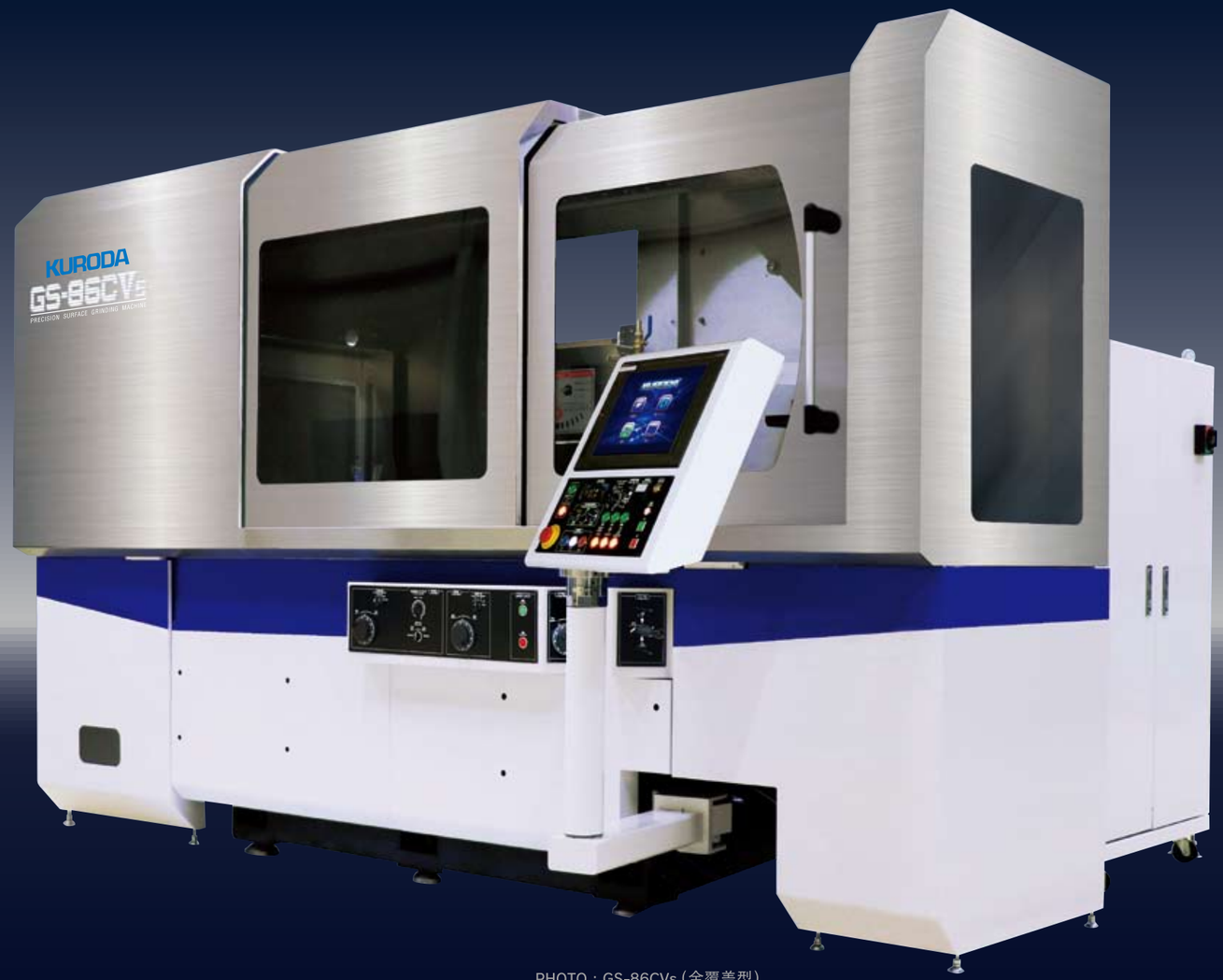
*2stage*
*Energy/Space saving*
省能源・省空间

*3stage*
*Versatile items & Customization*
丰富的品种与定制服务

黑田精工于 1925 年作为日本第一家专业量规制造商诞生。可以说是为了制造原点的计量器的国产化，在尚处于黎明前的日本工业，为了之后面向近代化奠定了基础。本公司以优秀的精密加工、测量技术为基础，制造了下平面磨床。现在，为了在 KURODA 的历史上刻上新的一页，这里诞生了全新的平面磨床。

**Inherited DNA of “Precision” NEW GS-126/86CV(s)**

Kuroda Precision Industries, Ltd. began business as the first manufacturer in Japan specialized in gauges in 1925. Producing gauges domestically, which is the starting point of manufacturing, was what would become a cornerstone in the modernization of Japan's industrial world at the time when it was still emerging. Since that time, we have developed precision surface grinding machines, based on the excellent precision processing and measurement technology. Now, we release a wholly new precision surface grinding machine which marks a new chapter in the history of KURODA.




PHOTO：GS-86CVs（全覆盖型）
根据不同的选配而改变规格。
GS-86CVs (Fullcover type) the specification will be changed according to option.

操作性

# Operability

## 注重可操作性。

Focus on operability

## 易安装、易感观、易操作。

基于人体工程学的最适合的布局，采取容易磨削工作姿势的方向盘，使用了工件轻松装卸和中途观察工件的宽口部位，使用了加工时方便使用的把手 · 开关 · 画面。

Easy set up, Easy view, Easy operation The handle layout enhances easy grinding.
The best handle and switch layout based on ergonomics support easy to desorb and easy to look into workpiece for grinding.

采用耐蚀性，防锈性优异的优质不锈钢湿式护罩

Corrosion-proof stainless steel splash guard cover

加大了工作台前部的开口，从而达到轻松装卸工件

Wide cover realized easy workpiece detaching.

可安全操作 · 确认的透明罩

Safety machining can be available by a stainless steel cover.

吸尘给水装置：易保养的单元型装置 * 选配

Dust collector/Coolant device : Unit type device is easy to maintenance ※Option


PHOTO：GS-86CVs（标准敞开式护罩）

操作手柄的位置设计实现优越的操作性

Easy operability of handles and switches based on ergonomics.

**KURODA 的精密滚珠丝杆**

黑田精工的精密滚珠丝杆与高刚性直线导轨实现高刚性及高度随动性。

Our precision ball screw combined with high rigidity linear guide realized high machining accuracy.


15 英寸对话式触摸屏画面可进行直觉的操作

Interactive touch panel realized intuition operation

视觉性好的触摸屏画面可进行准确操作

Easy operation and clear display panel.

# 操作性 Operability

## 优越的操作性与匠人工艺

Preeminent Operability and Great master skill

### 操作性 Operability

#### 操作手柄位置

基于人体工程学的方向盘布局使得手动操作变得容易
也可以处理大型工件的加工。
机床接触感设计优越，可实现轻松的操作姿势。

**Handle layout**

The best handle and switch layout based on ergonomics supportmanual operation and grinding for bigger size workpiece.
Since the machine closes to operator, it can be operated without work-load.

### 高刚性 High rigid structure

#### 本体构造采用 FFT 分析的结构设计

各铸件的筋厚度是以往机的 1.3 倍。
立柱铸件的筋是以往机的两倍，实现高刚性的本体构造。
T 型一体型铸件对称机构最大限度地控制了变形。

**High rigidity of machine body is realized by FFT analytic design**

Thickness of each rib is 1.3 times as much as in our previous model.
High rigidity of column rib is two times as much as in our previous model.
The symmetrical T-shaped mono-block structure reduce SORI and deflection.

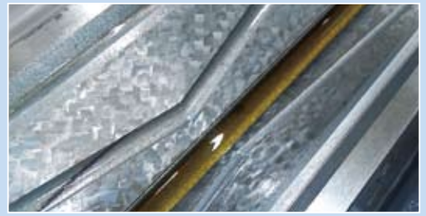
### 左右进给机构 Table longitudinal feed

#### 匠人工艺是高精度、高品质的证明

匠人工艺的高精度铲花加工 V-V 滑动面，
提高了高精度直线度和耐久性。

**High precision longitudinal feed created by the "Artisan Skill "**

The scrape-finish surface of V-V slideway enhances durable and high precision straightness.



### 上下进给机构 · 前后进给机构 Wheel spindle Vertical feed Saddle cross feed

#### “纳米世界”中的上下前后方向定位

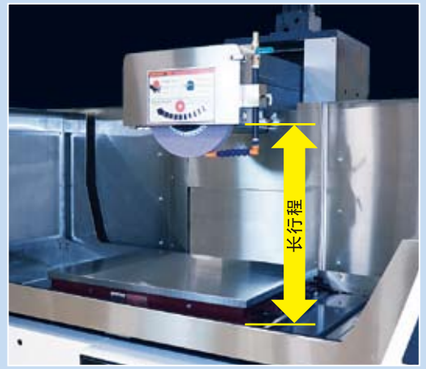
- 采用 AC 伺服马达实现 0.1μm 的进给
- 黑田公司的精密滚珠丝杆与精密直线导轨实现高度随动性，可以随意进行 0.1μm 的进给。
- GS-SmartTouch™ 可以标准配备光栅尺反馈装置系统。

砂轮轴中心至工作台（含磁台高度）的最大高度为 700mm
在广泛的加工范围内支持客户的加工
※关于加工范围，请参照第 10 页。

**Positioning accuracy in “Nano world”**

- 0.1μm is available by AC servo motor.
- Our precision ball screw combined with precision linear guide realized high machining accuracy. Easy operation for 0.1μm infeed.
- Scale feedback is adopted for all GS-SmartTouch™ model as standard function.

"700mm" distance from table top surface to center of wheel is adopted for vertical.
Wide grinding range supports customer's grinding.
※Please refer to page 10 for grinding range.






# 环保性 Ecology

## 采用最新革新技术，实现省能源及长寿命。

### 客户采用磨床后，可以减轻客户的负担及环境负荷。

Ecology & Longer life-time is realized with a competitive edge and revolutionary technology.
It can reduce work-load and environmental load.

### 新技术 New technology

#### 消耗电力量 DOWN

左右驱动采用 AC 伺服马达与我公司自制的精密滚珠丝杆直驱方式，实现低磨损损失的高效率驱动。

#### 发热量大幅 DOWN

液压所产生的热量变没，实现将本体温度变化影响降至最小。提高了加工精度的同时成功将周围环境温度影响降至最小。

#### 使用油量 DOWN

采用无液压化，实现了环境低负荷、低运行成本。提高了保养性。

AC servo motor is used for longitudinal feed. Servo motor direct-connected system by using KURODA high precision ball screw reduced friction-loss and realized high efficiency drive. Energy consumption reduced compared to our previous oil drive model.

Greatly reduced heat generation for machine body with no hydraulic oil system. It improved grinding accuracy. No hydraulic oil system contributes to lesser burden on the environment.

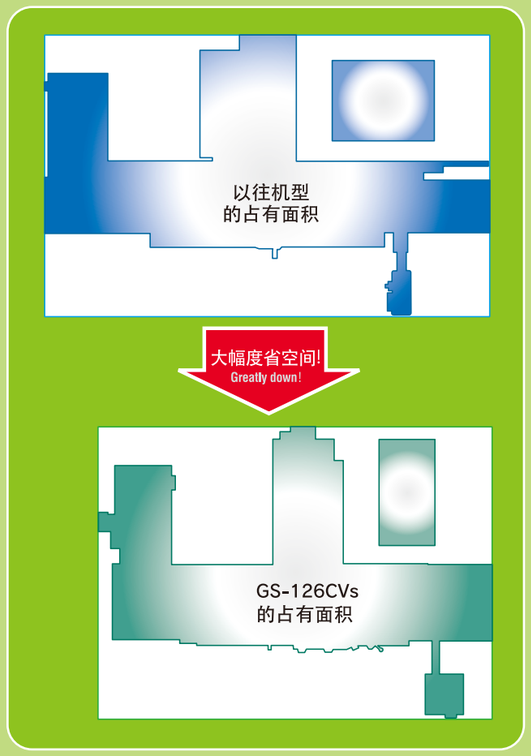
No hydraulic oil system realized cost reduction. It reduced environmental load. It's very easy to maintenance of the machine.

液压所产生的热量变没，可以省空间。
No hydraulic oil system contributes to disperse heat generating sources.

### 省空间 Space saving

#### 确保高刚性及高精度的机构下，实现了省空间化

Not only high rigid structure and high accuracy, but also realized space saving.



扩张性

# Smart 引导直觉的先进 系统

Advanced system stimulates your intuition.

**“任何人都易感观、易操作”** 采用视觉性好的语言表示实现简单操作。 Easy to view operation with language display.

## Basic 10.4 英寸


基本加工
平面加工用画面
**Basic in-feeding setting screen**
The screen is applied for surface grinding

### 自动修砂条件设定画面

自动修砂条件 粗 / 精加工可分别进行设定。

**Setting the dressing conditions for Rough and Finish**
Rough and Finish dressing can be set separately.

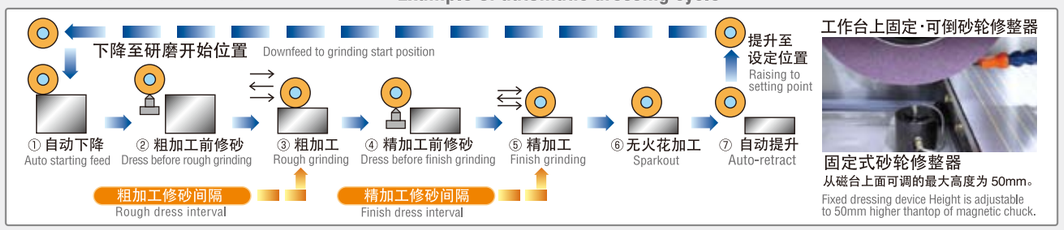

### 报警画面

错误信息和报警内容显示于画面。

**Message alarm**
Displaying the contents of any error and alarm


## ■ 自动修砂循环例

**Example of automatic dressing cycle**




工作台上固定·可倒砂轮修整器



固定式砂轮修整器
从磁台上面可调的最大高度为 50mm。
Fixed dressing device Height is adjustable to 50mm higher thantop of magnetic chuck.

## GS-SmartTouch™ 15 英寸

成形砂轮修整菜单
**Forming dressing menu**


成形砂轮修整条件设定
**Dressing condition setting**


加工菜单
**Grinding menu**


加工条件设定
**Grinding condition setting**


加工条件设定
**Grinding condition setting**
前后凸 R
Front-back convex


档案功能
**Recipe**
保存 · 读取加工和砂轮修整条件
Grinding data and dressing data can be saved screen.


**※可对应日本 · 英文 · 中文 · 泰语 · 越南语。**

※Touch pannel in Japanese ·English ·Chinese ·Thai ·Vietnamese is available.

扩张性

# Customization

## 丰富的选项可提供最佳提案。

Variouse applications support best grinding plan for customer.

## 微细气泡发生装置 Ultra fine bubble

纳米级气泡对精密加工发挥效果！
采用整体型（与冷却水箱一体型），实现 Smart 的操作。

气泡生成 → 加工 → 气泡生成

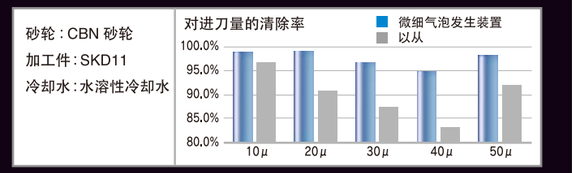
从机床（装置）给出指令、自动生成 / 气泡加工 / 夜间自动生成

### ① 大幅缩短加工时间

加工效率达到 7.5 倍的实例


### ② 提高尺寸精度·砂轮使用寿命延长

高浓高度微细气泡内逐个内压非常高、
破裂之时的冲击波有效的清除砂轮表面残留的
磨削杂质、可提高切削能力及尺寸精度。
砂轮使用寿命可以延长。实现了低运行成本。




### ③ 冷却水腐蚀预防

含有多分子的溶解氧微细气泡，通过自然生存时间较长（数周 - 数月）、
促进氧细菌的活性化，有效的预防了冷却水质的腐蚀现象。

Nano size bubble exerts an extraordinary effects on grinding. Mono-block unit coolant tank realized Smart operation.

①Significantly shorten grinding process time. Grinding efficiency 7.5 times !
②Improve the grinding accuracy and extend the life time of grinding wheel
The ruptured bubble of high inner pressure can remove grinding chipes of grinding wheel and prevent from clogging.
③Prevent putrefaction of coolant
Many dissolved oxygen is found in Ultra Fine Bubble. Putrefaction is prevented by it which is remain submerged long time in the coolant tank with promote of activation of aerobic vacteria.

## 机上计测系统 On machine measurement system

加工～计测 自动化。
任何人都可以实现简单、稳定的加工精度。
自动化降低工时，提高场内加工效率。

Basic：平面 Flatness
GS-SmartTouch™：平面＋段差 Flatness+step

Automation from manufacturing process to measurement.
It can easily provide stable grinding accuracy to anyone.
Greatly reduce tact time.

## 瓦式主轴 Metal-bearing spindle

对工件表面粗糙度及加工效率
有影响的油压动压式主轴构造

新开发的主轴冷却箱系统能够控制主轴的拉伸现象
实现更高精度・高品位的加工

Enhanced surface roughness and high efficient grinding is realized by the structure of Metal-bearing spindle.
New developed spindle coolant tank system can reduce the expansion of spindle.
It realized more high precision and high precision grinding.



## 特殊附件 OPTIONAL PARTS

| No. | 品名 | Name | No. | 品名 | Name |
|---|---|---|---|---|---|
| 1 | 吸尘装置 | Dust collector | 15 | 砂轮上部修整器 | Over-the-wheel dressing attachment |
| 2 | 冷却给水装置（40L/min 磁石分离器） | Coolant device with 40L/min magnetic separator | 16 | LED 照明灯 | Work light LED |
| | | | 17 | 微细目电磁磁台 | Micropitch magnetic chuck |
| 3 | 冷却给水装置（手动过滤纸） | Coolant device with manual paper filter winder | 18 | 永电磁磁台 | Permanent electromagnetic chuck |
| | | | 19 | 主轴马达马力 UP | Power up of spindle motor |
| 4 | 冷却给水装置（40L/min 磁石分离器＋手动过滤纸） | Coolant device with 40L/min magnetic separator and manual paper filter winder | 20 | 瓦式主轴仕样 | Metal bearing spec. for spindle |
| | | | 21 | 上下・前后光栅尺精度反馈装置 | Scale feedback for Vertical & cross |
| | | | 22 | 不锈钢全闭式护罩 | Totally enclose splash guard SUS |
| 5 | 吸尘给水装置（40L/min 磁石分离器） | Dust collector / Coolant device with 40L/min magnetic separator | 23 | 机上计测系统 Basic | On-machine measuring system for Basic |
| | | | 24 | 机上计测系统 GS-SmartTouch™ | On-machine measuring system for GS-SmartTouch™ |
| 6 | 吸尘给水装置（手动过滤纸） | Dust collector / Coolant device with manual paper filter winder | 25 | 微细气泡发生装置 | Ultra fine bubble |
| | | | 26 | 气泡发生装置 | Micro fine bubble |
| 7 | 吸尘给水装置（40L/min 磁石分离器＋手动过滤纸） | Dust collector / Coolant device with 40L/min magnetic separator and manual paper filter winder | 27 | 加工条件数据保存 Basic | Save processing conditions for Basic |
| | | | 28 | 磁台安全锁 | Magnetic chuck interlock |
| | | | 29 | 夜间全停止（加工完了时电源关闭） | Power OFF after machining |
| 8 | 砂轮法兰（预备） | Wheel flange (spare) | 30 | 段加工（3 段）Basic | Step machining (three steps) for Basic |
| 9 | 砂轮法兰（带刻度） | Wheel flange with scale | 31 | 不等间槽加工（同深度 10 槽）Basic | Different interval machining (equal 10 depth) for Basic |
| 10 | 砂轮轴芯 | Wheel mandrel | 32 | 累积计数器（循环时间、电源投入时间等）Basic | Integrator (cycle time , power activation…) for Basic |
| 11 | 砂轮平衡台 | Wheel balancer | | | |
| 12 | 精密研削用砂轮平衡器（自动） | Auto balancer | 33 | 3 色信号灯 | SignalLight tower (a tier / two tiers / three tiers) |
| 13 | 工作台上砂轮修整器 Basic | Automatic dressing on the table for Basic | 34 | 磨床指定颜色 | Specific color |
| 14 | 工作台上 3 点砂轮修整器 GS-SmartTouch™ | Automatic 3 points dressing on the table for GS-SmartTouch™ | 35 | 英文・中文标记 | In English or chinise display mode |
| | | | 36 | 各种 GS 工具 | GS tooling |

### 最新 吸尘给水装置

更新吸尘给水装置，采用不锈钢水箱！
耐腐蚀性，可长时间清洁使用。通过将吸尘装置和供水装置分成单元来便于维护。

**吸尘装置**
宽 X 进深 X 高 (450×450×650)
使用马达 0.4kW
风量 50Hz 150L/sec、60Hz 180L/sec
静压 50Hz 170mmAg、60Hz 250mmAg

Dust collector

**冷却给水装置**
（磁石分离器＋手动过滤纸）
宽 X 进深 X 高 （860×1290×760）
使用马达 0.1kW（给水用） 25W （磁石分离用）
最大流量 30L/min
磁石分离能力 40L / min
过滤纸 40μm×50m
水箱容量 100L

Dust collector/Coolant device with magnetic separator

**吸尘给水装置**
（磁石分离器＋过滤纸）
宽 X 进深 X 高 (860×1290×1160)
使用马达 0.375kW(吸尘用)0.1kW(给水用) 25W（磁石分离用）
最大风量 10m³/min 最大流量 30L/min
磁石分离能力 40L / min
过滤纸 40μm×50m
水箱容量 100L

Dust collector/Coolant device with manual paper filter winder

**砂轮法兰**
砂轮固定用零件
Flange

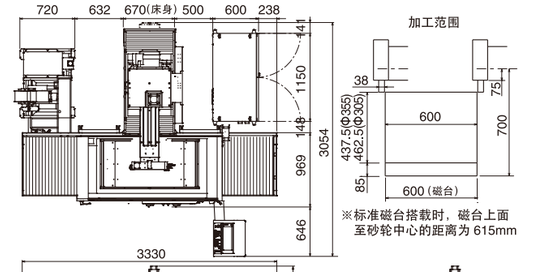
**工作台上砂轮修整器**
工作台上面的砂轮修整器
Over-the-wheel dressing attachment

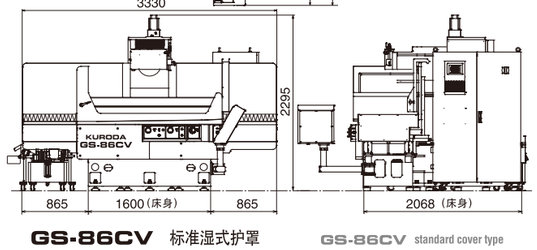
**砂轮轴芯**
砂轮平衡用轴芯
Wheel mandrel

**砂轮平衡台**
宽 X 进深 X 高（300×250×330）
最大砂轮直径φ500、间距 150
Wheel balancer

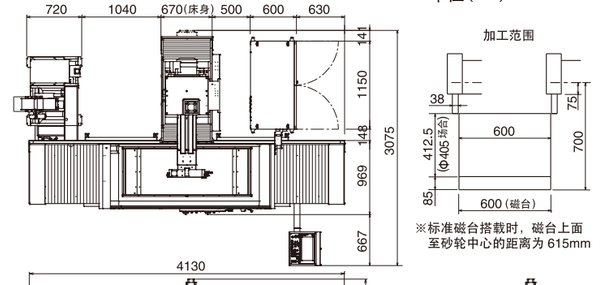
※我们还备有其他类可选件，详细请向我公司联系人咨询。 ※According to customer's request, other special option will be available.

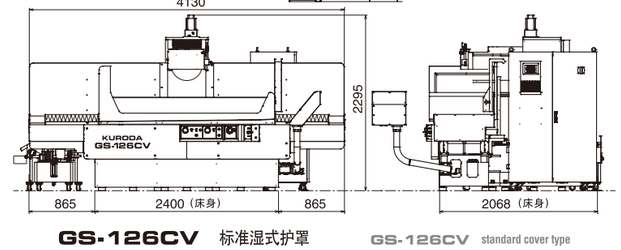
外观尺寸图 EXTERNAL DIMENSION 单位 (mm) Unit : mm




GS-86CV 标准湿式护罩 GS-86CV standard cover type




GS-126CV 标准湿式护罩 GS-126CV standard cover type

# 本体仕样 Specifications

| 项目 ITEM | | | | 单位 UNIT | GS-86CV | GS-86CVs | GS-126CV | GS-126CVs |
|---|---|---|---|---|---|---|---|---|
| 容积 Capacity | 工作台作业面积（长 X 宽） | Working surface of the table (LxW) | | mm | 800×600 | | 1200×600 | |
| | 工作台最大移动量（左右 X 前后） | Max traverse of the table | | mm | 1000×640 | | 1400×640 | |
| | 工作台上面至砂轮轴中心的距离 | Distance from table top surface to center of wheel | | mm | 700 | | | |
| | 标准磁台尺寸（长 X 宽 X 高） | Standard magnetic chuck size (LxWxH) | | mm | 800×600×85 | | 1200×600×85 | |
| | 加工件许容重量（含磁台） | Max.mass of workpiece(inclusive of electro-magnetic chuck) | | kg | 700 | | 1500 | |
| 工作台 Table | 左右进给速度 | Longitudinal feed rate | | m/min | 1～40 | | | |
| | 左右手柄一圈的移动量 | Longitudinal feed per revolution of handwheel | | mm | 1～100（任意设定） | | | |
| | 快速进给速度 | Rapid feed rate | | mm/min | 0.1～40 | | | |
| 立柱前后进给 Column cross feed | 前后手动进给 Saddle cross feed | 手柄一圈 | Feed per revolution of handwheel | mm | 0.01 / 0.1 / 1 / 5.0 | | | |
| | | 脉冲一格 | Feed per graduation of dial | mm | 0.0001 / 0.001 / 0.01 / 0.05 | | | |
| | 自动进给 Cross auto infeed | 步进进给量 | Step feed | mm | 0.1 ～ 50 | | | |
| | | 连续进给速度 | Continuous feed rate | mm/min | 1000 | | | |
| | 快速进给速度 Rapid feed rate | | | mm/min | 100～2000 | | | |
| 砂轮轴上下进给 Wheel spindle Vertical feed | 手动进刀量 Manual infeed | 手柄一圈 | Feed per revolution of handwheel | mm | 0.01 / 0.1 / 1.0 | | | |
| | | 冲脉一格 | Feed per graduation of dial | mm | 0.0001 / 0.001 / 0.01 | | | |
| | 自动进刀 Auto infeed | 粗进刀量 | Rough grinding infeed | mm | 0.0001 ～0.05 | | | |
| | | 精进刀量 | Finish grinding infeed | mm | 0.0001 ～0.05 | | | |
| | 无火花研磨次数 | Sparkout times | | 次 | 0 ～ 10 | | | |
| | 快速进给速度 | Vertical rapid feed rate | | mm/min | 50 ～ 1000 | | | |
| 操作触摸屏画面 | | Panel display | | - | Basic | GS-SmartTouch™ | Basic | GS-SmartTouch™ |
| 砂轮 Wheel | 标准砂轮尺寸（外径 X 宽 X 内径） | Wheel dimension(DxWxB) | | mm | Φ305(Φ355) ×38 ×Φ127 | | Φ405 ×38 ×Φ127 | |
| | 砂轮回转数（变频器控制） | Wheel speed(Inverter control) | | rpm | 500 ～ 2300 | | | |
| | 回转速度设定 | Speed setting | | - | 研磨 / 修砂的两种 | | | |
| 马达 Motor | 主轴 | Spindle | | kW | 5.5 | | | |
| | 左右进给 AC 伺服马达 | Longitudinal feed AC servo motor | | kW | 3.0 | | 4.5 | |
| | 上下进给 AC 伺服马达 | Vertical feed AC servo motor | | kW | 1.4 | | | |
| | 前后进给 AC 伺服马达 | Cross feed AC servo motor | | kW | 2.2 | | | |
| 本体尺寸（横 X 纵 X 高） | | Dimension of the machine (WxLxH) | | mm | 3330×3054×2295 | | 4130×3075×2295 | |
| 占有地面积（横 X 纵） | | Floor space required (WxL) | | mm | 3630×3030 | | 4300×3180 | |
| 本体重量 | | Machine net weight | | kg | 5500 | | 7600 | |
| 所需电力（不含附属品） | | Power supply required (accessories not included) | | kVA | 21.8 | | 24.4 | |

床身颜色 Paint color　本体：Munsel N-9　湿式护罩：不锈钢　Machine…Munsel No,N-9　Splash guard…Stainless steel

## ⚠ WARNING

FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS AND SYSTEMS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.

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⚠ 使用前，请务必仔细阅读本机的使用说明书。 Before operating this machine, you should first thoroughly read the operation manual.

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