

**KURODA**

CHALLENGE  
&  
CREATE

# GS-30/45 SERIES



PRECISION FORMING SURFACE GRINDING MACHINE

精密成形平面磨床

# 那种感觉、切身体验！ 终极操作性将掌握在您的手中。

Operation efficiency is enhanced by high functions and the structurally simple and refined layout.



PHOTO : GS-45Vs

手动加工是的操作性高又灵活、全自动加工设定也非常简单。  
操作部的最佳格局及触摸屏有着优越的视觉性和操作性。

It's not only easy to set condition for automatic grinding, but also easy to operate for manual grinding. Switch layout and touch panel are very easy-to-view.



## 特 点



### 实现了任何人都能简单加工

具备高通用性的同时，还可以进行全自动加工的磨床。

实现了使用方便的手把，开关的布局，可视性优良的触摸屏和卓越的操作性。



### 省能源・省空间

采用独立常温润滑供油，可对各滑动部保持良好状态。

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，可为环境负荷的降低献出贡献。



### 丰富的品种与定制服务

采用对话式软件，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 and the hydraulic device, comparing with the oil consumption of equivalent surface grinder. It contributes to lesser burden on the environment.

##### Versatile 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.



PHOTO : GS-45Vs

规格因选项而异

GS-45Vs the specification will be changed according to option.

## 操作性

# 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 wet cover



Photo : GS-45Vs



视觉性高、可安全操作·确认的透明护罩  
Easy-to view and safety machining can be available by a transparent cover.



采用独立常温集中润滑泵，可对各滑动部常时常温供给新油  
Normal temperature new oil is constantly supplied. Sole collective lubricate oil device for each slides.



Basic (10.4 英寸)



GS-SmartTouch™ (15 英寸)

对话式触摸屏画面可实现直感式地操作  
Interactive touch panel realized intuition operation



操作手柄位置设计实现优越的操作性  
Easy operability of handles and switches based on ergonomics



优越的手柄位置提高作业效率  
The refined layout enhances operability.



**操作性**

## 独具工匠的高精度刮研技术来对加工生产现场 进行标准化管理

### Great master skill and Feed

Soulful support by Kuroda's long-standing skill and its artisan spirit  
for high precision to ensure high precision processing at production site.

#### 左右进给机构

#### Table longitudinal feed

### 「技工工艺」创造的高精度左右进给

匠人工艺是高精度、高品位的证明。

- 铲花加工的V-V滑动面，提高了耐久性和高精度直线度。
- 30/45H系列的手动与自动切换，采用了电磁离合器，45M系列采用了根据机械离合器，从而实现在方便的手把位置操作。
- 采用了维持精度必不可缺的防尘措施。设备的滑动面高于鞍座面，并在前面加上了防尘盖。



#### 左右滚珠丝杆驱动（V系列）

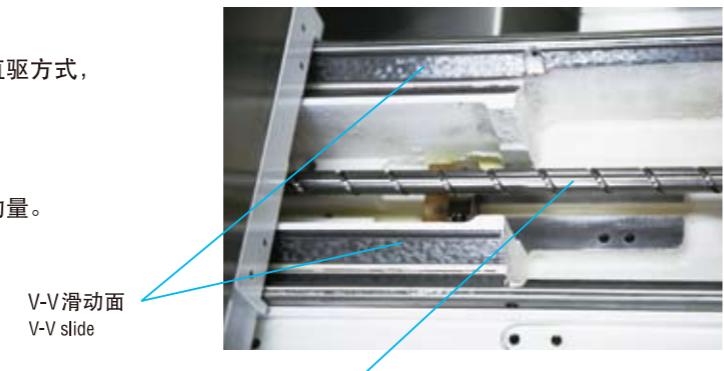
#### Ball screw drive for longitudinal feed(V series)

### 高速度·高精度驱动

- 左右驱动采用AC伺服马达+我公司自制高精度滚珠丝杆直驱方式，实现低摩擦损失。
- 左右进给实现了精密高速度驱动（Max40m/min），轻触可视化速度·可以减轻作业者的负担。
- 配合作业者的操作和加工内容，可自由设定每转一圈的移动量。

### High speed·High precision drive

- AC servo motor is used for longitudinal feed. Servo motor direct-connected system by using KURODA's high precision ball screw reduced friction-loss.
- High speed drive (Max40m/min) and high accuracy positioning are available for longitudinal feed. Handle speed is indicated in touch panel. Light handle operation can reduce work-load.
- According to operation or grinding condition, feed per revolution of handwheel can be freely setting by customer.



V-V滑动面  
V-V slide

我公司自制滚珠丝杆  
KURODA's ball screw

#### 前后进给机构

#### Cross feed

### 「纳米世界」中的前后方向定位

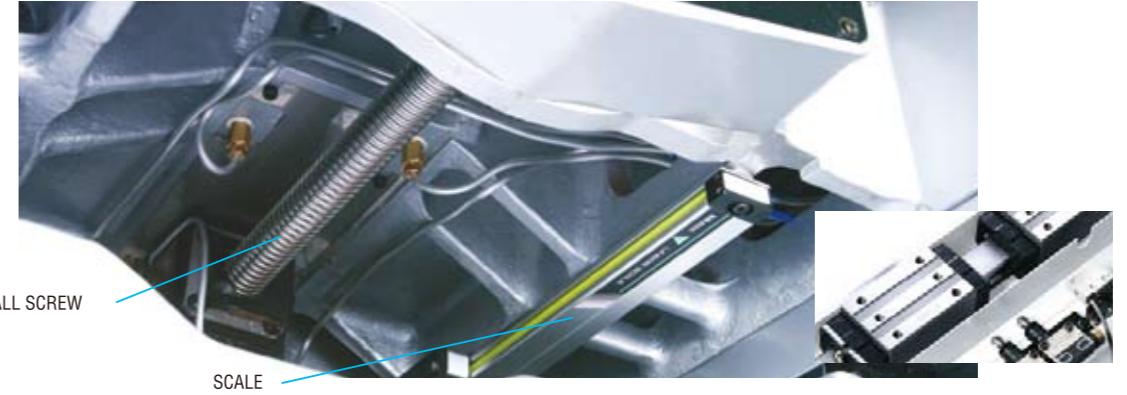
黑田公司的滚珠丝杆确保精确至 $0.1\mu m$ 的进给。

- 精密的滚珠丝杆与精密的直线导轨组合。采用刚性与随动性优越的机构。能够执行滑动面难以进给的 $0.1\mu m$ 进给。使用我公司生产的精度为JIS C1级的精密滚珠丝杆,全自动机型采用无齿隙的伺服马达直接方式。  
(仅全自动型配备脉冲手动进给, 手动机型的微调进给为选配)
- 标准配备有前后光栅尺 ( $0.1\mu m$ ) (MR,ML,HR,HL)
- 30Vs/45Vs标配光栅尺反馈装置系统。

### Cross positioning accuracy in "Nano world"

Kuroda's precision ball screw ensures  $0.1\mu m$ -rate feed accurately.

- Precision ball screw combined with Precision linear guide Perfect rigidity and machining accuracy. The difficult  $0.1\mu m$  feed in slideway surface can be performed. Kuroda's C1grade (JIS) precision ball screw is used, and servo motor direct-connected system, with no backlash is adopted for full auto machine.  
[Pulse handle feed for full auto machine only. • Micro-feed is option in manual mode.]
- Cross digital scale( $0.1\mu m$ ) is equipped as standard. (manual machine / longitudinal auto machine)
- Scale feedback is adopted for 30Vs/45Vs as standard option.



#### 高刚性机构

#### High Rigid Structure

### FFT分析的结构设计，实现了高刚性。

- 为了维持高精度，更加重视立柱和床身的刚性。铸件重量为1500kg,是以前的1.5倍。
- 采用适当的加强筋配置和高刚性的蜂窝结构。采用重心低、稳定性好的机构。立柱与床身的接触面积扩大至以前的两倍，刚性提高。考虑到空气由床身流到立柱，增加了逐渐结构，其对称机构最大限度地控制了热变位。

HONEY COMB  
RIBBED STRUCTURE



### High rigidity is achieved by FFT-analysis structural design.

- Attach greater importance to rigidity of column and bed.  
Weight of the casting iron : 1500 kgs, which is 1.5 times as much as in our previous model
- Adopt proper rib allocation and optimized honeycomb-ribbed structure.  
Excellent body structure stabilized by shifting its balance weight downward. Contact space of column and bed are enlarged double as large as in our previous model for higher rigidity.
- Optimized releasing points are arranged for casting iron in consideration of air flow from bed to column surface to ensure no heat influence on formation.Symmetrical design applied to all casting structures minimizes the heat change influence.

#### 上下进给机构

#### Wheel downfeed

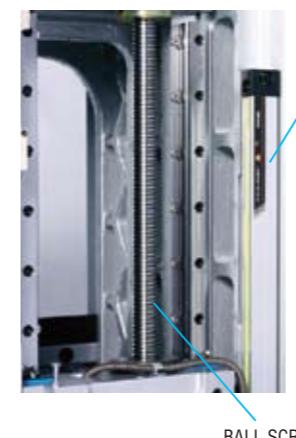
### 「纳米世界」中的砂轮进给

黑田精工的滚珠丝杆实现了质量的稳定性和高度随动性。可执行 $0.1\mu m$ 的进给。

- 所有机型采用脉冲手动进给。
- 精密滚珠丝杆与精密直线导轨的组合。实现了高品质的稳定性和高度的定位性，可随意进行 $0.1\mu m$ 的进给。使用我公司生产的精度为JIS C1级的精密滚珠丝杆,全自动机型采用无齿隙的伺服马达直达方式。
- 标准配备有上下光栅尺 ( $0.1\mu m$ )。(MR,ML,HR,HL)
- 30Vs/45Vs标配光栅尺反馈装置系统。

### Wheel downfeed in "Nano world"

Kuroda's precision ball screw ensures quality stability and higher machining accuracy.  
 $0.1\mu m$  feed can be performed as per your wishes.



- Pulse handle feed is adopted for all models.
- Precision ball screw combined with Precision linear guide Quality stability and high machining accuracy are achieved, performing  $0.1\mu m$  feed at your will. Kuroda's C1grade (JIS) precision ball screw is used, and servo motor direct-connected system with no backlash is adopted for full auto machine.
- $0.1\mu m$  digital scale is equipped for manual machine and longitudinal auto machine as standard.
- Scale feedback is adopted for 30Vs/45Vs as standard option.

环保性

## 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同时减轻环境负荷。

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

技术力&省能源

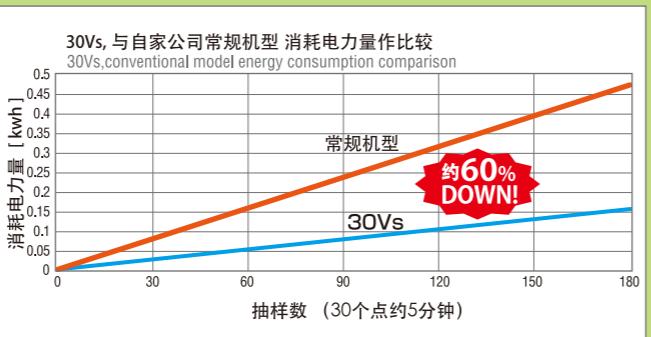
Technology & Ecology

省能源

Energy saving

电力消耗约 60%DOWN。 左右进给采用AC伺服马达，配合与自家公司生产的精密滚珠丝杆直驱方式，大幅度提高左右定位精度，可实现安静且平滑的快速往复。

Power consumption reduced by 60%. AC servo motor direct-connected system by KURODA high precision ball screw realized high accuracy positioning for longitudinal. Silently and smoothly quick turn are available.



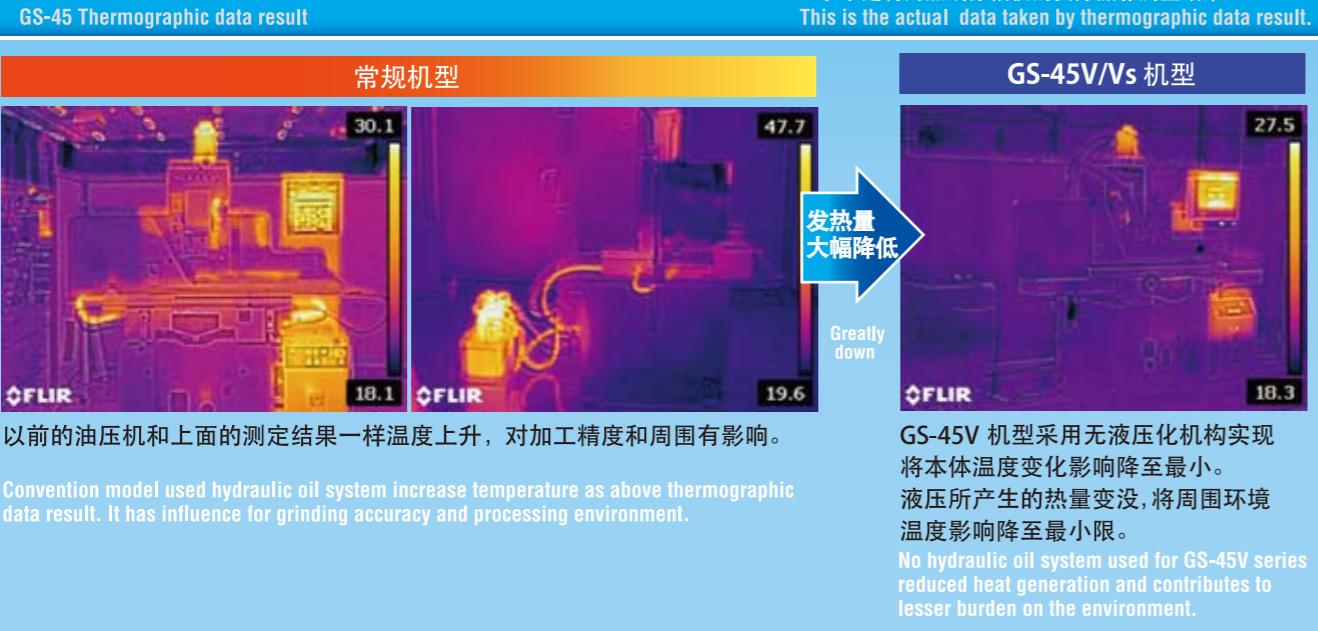
降低  
温度影响

Reduction of  
heat generation

液压所产生的热变量变没，将机械本体温度影响降至最小。实现了提高加工精度及将周围环境温度影响大幅度降低。

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.

## GS-45 热成像测量结果



省能源&长寿命

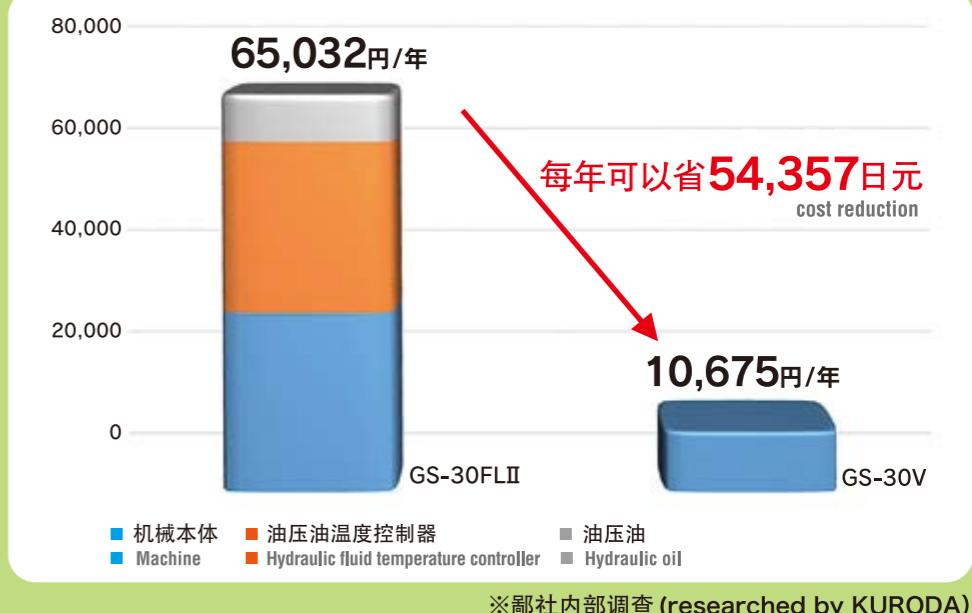
Eco & Longlife

降低油压  
油成本

Reduction of  
hydraulic oil cost

采用无液压化，可降低油压油成本，实现了低运行成本。

No hydraulic oil system realized cost reduction for running cost.



省空间

Space saving

可更有效地利用现场空间。  
确保操作方便的空间可提高作业效率。

It contributes to the effective use of the factory space.  
Work efficiency is improved by comfortable operation space.

无液压化与旧款机相比实现了大幅度省空间。  
No hydraulic oil system has realized great space reduction compared to the conventional model.

45V/Vs



30V/Vs





# Smart 引导直觉的尖端系统

扩张性

“任何人都易感观、易操作”

Advanced system stimulates your intuition.

采用视觉性好的语言表示实现简单操作。 Easy to view operation with language display.

**GS-SmartTouch™** 15 英寸

采用15英寸TFT彩色对话式触摸屏画面。  
15inch TFT color LCD with a touch panel model Varied

GS-SmartTouch™ 对应机型

GS-30Vs

GS-45Vs

加工条件  
Menu

加工·砂轮修整·设定·Basic的选项画面  
Grinding · dressing · Setting · Basic are available.



成形砂轮修整菜单

Forming dressing menu

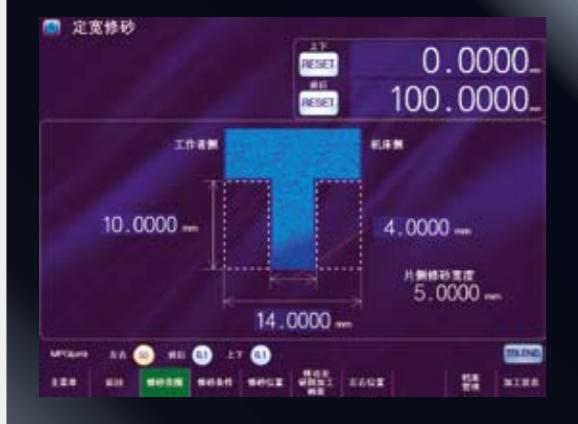


成形砂轮修整条件设定

Dressing condition setting

定宽修砂

Width dress



档案功能  
Recipe

可对加工和砂轮修整条件任意保存·读取。  
Grinding data and dressing data can be saved screen.

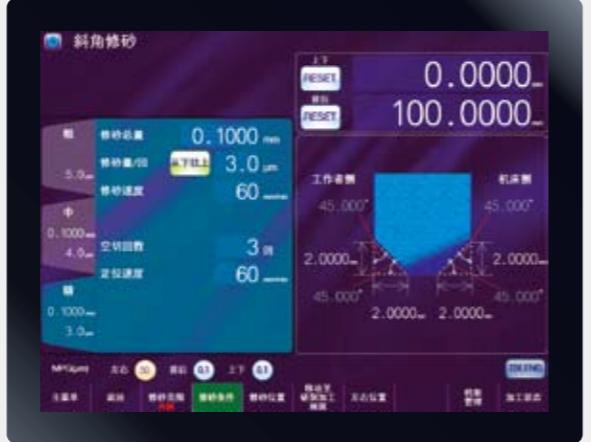


成形砂轮修整条件设定

Dressing condition setting

斜角修砂

Taper dress

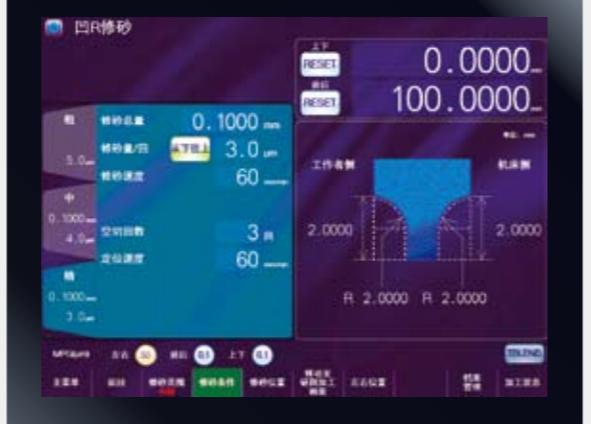


成形砂轮修整条件设定

Dressing condition setting

凹R修砂

Round-concave dress



加工菜单  
Grinding menu



加工条件设定

Grinding condition setting

前后斜角

Z Taper grinding



加工条件设定

Grinding condition setting

前后凸R

Z Convex grinding



加工条件设定  
Grinding condition setting



加工条件设定

Grinding condition setting

前后凹R

Z Concave grinding



加工条件设定

Grinding condition setting

不等间·不等深槽

Unequal groove grinding



※可对应日文·英文·中文·泰语·越南语。

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



**Basic** 10.4 英寸

10.4 英寸 TFT 彩色对话式触摸屏画面。  
简单的操作提高作业效率。

10.4inch TFT color LCD touch panel. Simple operation enhances the efficiency of the operation.



Basic 对应机型  
GS-30V GS-45V



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



报警画面  
设定错误信息和报警内容显示于画面。  
Message alarm  
Displaying the contents of any error and alarm

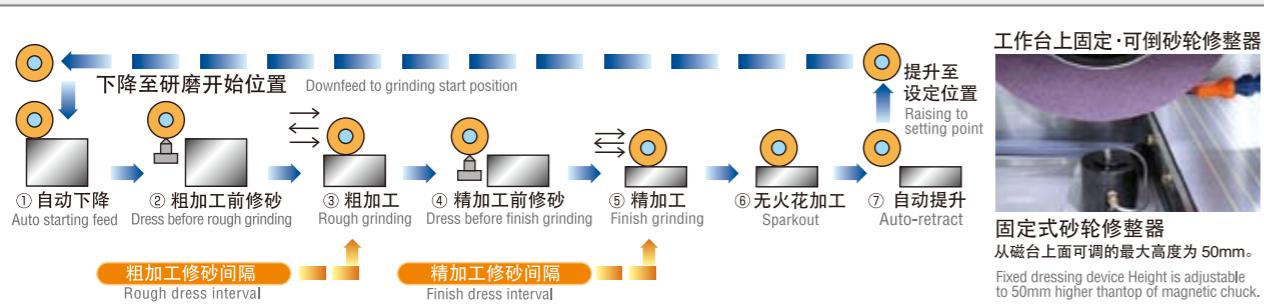


※可对应日文·英文·中文·泰语·越南语。

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

## ■ 自动修砂循环例

Example of automatic dressing cycle



# 实现高效率、省人化的选配！

## 丰富的选项可提供最佳提案。

"Option for high efficiency and energy saving ! We propose the best plan for our customer with variouse applications."

### 微细气泡发生装置

Ultra fine bubble

#### 颠覆常识性的冷却水革新。

采用整体型(与冷却水箱一体型)，实现 Smart 的操作。



#### 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-sized bubble overturns common sense of grinding process. Mono-block unit coolant tank realized Smart operation.

① Significantly shorten grinding process time. Grinding efficiency 7.5 times !

② Improve 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.

③ Prevent 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 bacteria.

### 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



### 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

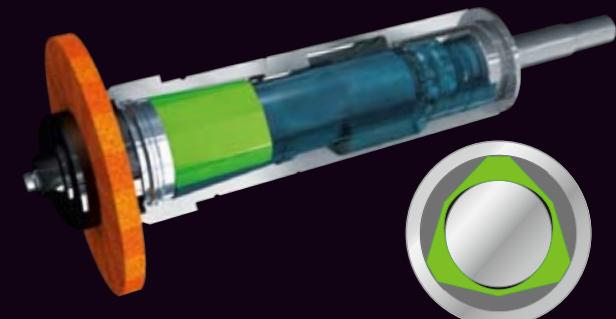
Enhanced surface roughness and high efficient grinding is

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	对应机型	No.	品名	Name	对应机型
1	吸尘装置	Dust collector	全机型	25	正弦电磁磁台	Magnetick chuck with sin bar	45M,H,45V,Vs
2	油雾回收机	Mist collector	全机型	26	主轴马达马力 UP	Power up of spindle motor	全机型
3	冷却给水装置 (40L/min磁石分离器)	Coolant device with 40L/min magnetic separator	全机型	27	油压油温度控制器	Hidraulic fluid temperature controller	H
4	冷却给水装置 (手动过滤纸)	Coolant device with manual paper filter winder	全机型	28	切削液温度控制器	Coolant temperature controller	全机型
5	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	全机型	29	瓦式主轴仕样	Metal bearing spec. for spindle	全机型
6	省空间型冷却给水装置 (手动过滤纸)	Slim-type Coolant device with manual paper filter winder	全机型	30	主轴排尘系统	Spindle air purge	全机型
7	吸尘给水装置 (40L磁石分离器)	Dust collector / Coolant device with 40L/min magnetic separator	全机型	31	上下·前后光栅尺精度反馈装置	Scale feedback for Vertical & cross	V
8	吸尘给水装置 (手动过滤纸)	Dust collector / Coolant device with manual paper filter winder	全机型	32	蠕动研削仕样	Creep feed specification	V, Vs
9	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	全机型	33	全闭式湿式护罩	Totally enclose splash guard	30V,Vs,45M, 45H,45V,Vs
10	砂轮法兰(预备)	Wheel flange (spare)	全机型	34	高立柱80mm	High column	全机型
11	刻度砂轮法兰	Wheel flange with scale	全机型	35	机上计测系统	On-machine measuring system	V,Vs
12	砂轮轴芯	Wheel mandrel	全机型	36	超微细气泡发生装置	Ultra fine bubble	全机型
13	砂轮平衡台	Wheel balancer	全机型	37	气泡发生装置	Macro fine bubble	全机型
14	精密研削用砂轮平衡器 (自动)	Auto balancer	全机型	38	加工条件数据保存	Save processing conditions	V
15	工作台上砂轮修整器 Basic	Automatic dressing on the table for Basic	V,Vs	39	磁台安全锁	Magnetic chuck interlock	V,Vs
16	工作台上砂轮修整器 GS-SmartTouch™	Automatic 3 points dressing on the table for GS-SmartTouch™	Vs	40	夜间全停止 (加工完了时电源关闭)	Power OFF after machining	V
17	砂轮上部修整器	Over-the-wheel dressing attachment	全机型	41	前后进给单独自动进刀	Individual auto cross feed function	V
18	LED照明灯	Work light LED	全机型	42	段加工(3段)	Step machining ( three steps )	V
19	工作台间隙灯	Back light for work & wheel contact	全机型	43	不等间隔加工 (同深度10槽)	Different interval machining ( equal 10 depth )	V,Vs
20	微细目电磁磁台	Micropitch magnetic chuck	全机型	44	积算计 (加工时间·电源投入时间等)	Integrator (cycle time,power activation...)	V
21	永电磁磁台	Permanent electromagnetic chuck	全机型	45	3色信号灯	Signal Light tower (a tier / two / tiers / three tiers)	V,Vs
22	永磁磁台	Permanent chuck	全机型	46	油压长软管	Long size oil hose	H
23	微细永电磁磁台	Micropitch permanent chuck	全机型	47	左右进给圆形手柄	Longitudinal feed handle	M,H
24	油冷·水冷式电磁磁台	Oil / water-cooling magnetic chuck	全机型	48	前后进给手柄	Cross mechanical type pluse handwheel	V,Vs
				49	高精度接触感知器	Contact point detector	全机型
			30H标配	50	机床本体颜色	Specific color	全机型
				51	英文·中文标记	In English or chinese display mode	全机型
				52	各种GS工具	GS tooling	全机型

### 最新 吸尘给水装置

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 (860×1290×1160)  
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 40 μm×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 40 μm×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



砂轮轴芯  
砂轮平衡用轴芯



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.

## GS-45 SERIES LINE UP

### GS-45Vs/VRs

多彩选项  
左右进给速度 Max 40m/min

Variated menu  
Longitudinal feed speed Max 40m/min



### GS-45V/VR

操作简单、高效率  
左右进给速度 Max 40m/min  
Variated menu  
Longitudinal feed speed Max 40m/min

全自动 Full Auto		
上下 Vertical	AC 伺服马达	AC servo motor
前后 Cross	AC 伺服马达	AC servo motor
左右 Longitudinal	AC 伺服马达	AC servo motor
控制 Controller	Basic	

### GS-45HL/HR

凹槽加工的上下  
左右自动切入功能  
Vertical·Longitudinal auto feed  
is useful for groove machining



### GS-45ML/MR

上下·前后光栅尺装置  
0.1 μm 标准配备  
Vertical·cross 0.1μm digital scale  
counter as standard accessories



### GS-30V/VR

操作简单、高效率  
左右进给速度 Max 40m/min  
Simple and high efficiency operation.  
Longitudinal feed speed Max 40m/min

## GS-30 SERIES LINE UP

### GS-30Vs/VRs

多彩选项  
左右进给速度 Max 40m/min

Variated menu  
Longitudinal feed speed Max 40m/min



### GS-30HL/HR

凹槽加工的上下左右  
自动切入功能  
Vertical·Longitudinal auto feed is  
useful for groove machining



全自动 Full Auto		
上下 Vertical	AC 伺服马达	AC servo motor
前后 Cross	AC 伺服马达	AC servo motor
左右 Longitudinal	AC 伺服马达	AC servo motor
控制 Controller	Basic	

# 本体仕様

## Specifications

机型末尾 R表示右手操作仕様、L表示左手操作仕様  
The end of model name : R means right-handed spec. and L means left-handed spec. for longi. Feed handle.

项目 ITEM	单位 UNIT	30 系列 30 Series			45 系列 45 Series				标准附属品・标准仕様 Standard accessories / Standard specifications				
		GS-30 HL / HR	GS-30 V/VR	GS-30 Vs/VRs	GS-45 ML / MR	GS-45 HL / HR	GS-45 V/VR	GS-45 Vs/VRs					
容积 Capacity	工作台作业面积(长X宽) Working surface of the table	mm	350×150			500×150							
	工作台最大移动量 (左右X前后) Max. traverse of the table (Long×Cross)	mm	430×200			580×200							
	工作台上面至砂轮下面的距离 (atΦ180) Distance from table top surface to bottom surface of wheel	mm	40~350			40~390							
	标准磁台尺寸(长X宽X高) Standard magnetic chuck size (L×W×H)	平型 Flat type	mm	永磁 300×150×50	电磁 300×150×70	电磁 450×150×70							
	加工件许容重量 (含磁台) Max.mass of workpiece (Inclusive of electro-magnetic chuck)	可倾 Tilting type	mm	永磁 250×100×136(※OP)			电磁 380×110×125						
工作台 Table	加工件许容重量 (含磁台) Max.mass of workpiece (Inclusive of electro-magnetic chuck)	kg	50			70							
	T型槽 (宽X条数) T-Slot (W×Number)	mm×n	—	13×1		13×1							
	左右进给速度 Longitudinal feed rate (Hydraulic)	m/min	1~25	1~40		—	1~25	1~40					
鞍座前后进给 Saddle cross feed	左右手柄一圈的移动量 Longitudinal feed per revolution of handwheel	mm	90	1~100 任意设定 Optional setting		90	1~100 任意设定 Optional setting						
	手柄一圈 Feed per revolution of handwheel	mm	5.0	0.01 / 0.1 / 1.0 / 5.0			5.0	0.01 / 0.1 / 1.0 / 5.0					
	脉冲一格 Feed per graduation of dial	mm	0.02	0.0001 / 0.001 / 0.01 / 0.05			0.02	0.0001 / 0.001 / 0.01 / 0.05					
	微动一圈 Feed per revolution of micro feed	mm	1.0 (op)	0.01			1.0 (※OP)	0.01					
	微动一格 Feed per graduation of micro feed	mm	0.005 (op)	0.0001			0.005 (※OP)	0.0001					
	自动进给量 Cross auto infeed	步进进给量 Step feed	mm	—	0.1~50 任意设定 Optional setting		—	0.1~50 任意设定 Optional setting					
	连续进给量 Continuous feed rate	mm/min	—	1~1000			—	1~1000					
	快速进给速度 Rapid feed rate	mm/min	—	50~1000			—	50~1000					
	位置表示 Position display	—	光栅尺装置	显示	上下前后光栅尺 精度反馈装置	光栅尺装置	显示	上下前后光栅尺 精度反馈装置					
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			0.01 / 0.1 / 1.0						
	冲脉一格 Feed per graduation of dial	mm	0.0001 / 0.001 / 0.01			0.0001 / 0.001 / 0.01							
	自动进刀量 Auto infeed	粗进给量 Rough grinding infeed	mm	0.0001~0.03		0.0001~任意设定 Optional setting	—	0.0001~0.03		0.0001~任意设定			
	精进给量 Finish grinding infeed	mm	0.0001~0.03		0.0001~任意设定 Optional setting	—	0.0001~0.03	0.0001~0.03	0.0001~任意设定				
	无火花研磨次数 Sparkout times	次	0~10		0~50	—	0~10		0~50				
	快速进给速度 Vertical rapid feed rate	mm/min	500			500							
	位置表示 Position display	—	显示		上下前后光栅尺 精度反馈装置	光栅尺装置	显示		上下前后光栅尺 精度反馈装置				
操作面板 Panel display	—	黑白	Basic	GS-SmartTouch™		—	黑白	Basic	GS-SmartTouch™				
砂轮 Wheel	砂轮尺寸 (外径X宽X内径) Wheel Dimension (D×W×B)	mm	Φ180 (MAX205) ×6~25×31.75			Φ180 (MAX205) ×6~25×31.75							
	砂轮回转数 (变频器控制) Wheel speed (inverter control)	rpm	轴承轴:0~3600 瓦式轴:1000~3600			轴承轴:0~3600 瓦式轴:1000~3600							
	回转速度设定 Speed setting	—	研磨设定、修砂的两种 Setting for grinding, dress2			研磨设定、修砂的两种 Setting for grinding, dress2							
马达 Motor	主轴 Spindle	kW	2.2-4P			2.2-4P							
	左右进给 Longitudinal feed	kW	0.75-4P 油压	2.2 AC 伺服马达		—	0.75-4P 油压	2.2 AC 伺服马达					
	上下进给 Vertical feed	kW	0.75	1.0			0.75	1.0					
	前后进给 Cross feed	kW	—	0.4			—	0.4					
本体尺寸 (横X纵X高) Dimension of the machine (W×L×H)	mm	1400×1380×1950	1660×1280×1950			1690×1380×1950							
占有地面积 (横X纵) Floor space required (W×L)	mm	1720×1840	1660×1480			2250×1840							
本体重量 Machine net weight	kg	1300	1350			1500							
所需电力 (不含附属品) Power supply required (not including accessories)	kVA	7.0	10.6			5.5	7.0	10.6					
床身颜色 Paint color	—	本体: N-9(白) Machine body:N-9 (White)				湿式护罩:不锈钢 Splash guard:Stainless steel							

※除此之外，还可以定制各种项目和软件等。

"Depends on customer's request, other special option and software can be available."

标准附属品・标准仕様  
Standard accessories / Standard specifications

- 电磁磁台
- 砂轮法兰 1个
- 标准砂轮 1个
- 标准工具
- 1/2金刚笔 1个
- 金刚笔台座 1个
- 主轴变频器
- 磁力调整器控制器
- 上下前后数据位置表示
- 垫块
- 使用说明书
- 电源线 5m
- 等间槽加工软件
- 步进加工软件

Magnetic chuck	
Hydraulic oil	for initial use
Slide surface lubricating oil	for initial use
Wheel flange	1
Wheel	1
Standard tools	
1/2 ct. diamond dresser	1
Diamond dressing holder	1
Spindle inverter	
Chuck controller with magnetic control	
Vertical and cross digital display	
Leveling block	
Instruction manual	
Power supply cable (5m)	
Software for equal interval pitch grinding	
Software for plunge / step grinding	



标准工具  
法兰把手工具、法兰用扳手  
Standard Machine Tool

根据规格有变更的情况。  
It depends on specification,  
accessories will be changed.

# KURODA

## ⚠ WARNING

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使用前, 请务必仔细阅读本机的使用说明书。

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● All dimensions subject to alteration without notice.

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