

# PARALLEL-SURFACE GRINDING MACHINE

平行平面ホーニング研削盤



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富士産機株式会社

MANUFACTURE

MACHINING

GRINDING

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# FS-35-45AN



It is in state which removed the cover of half cover type.  
There are some different parts by optional parts and other specifications.

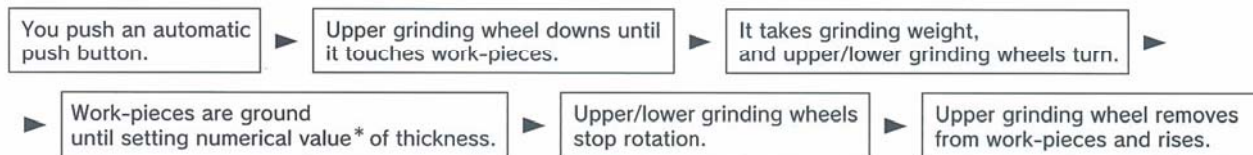
# FS-75A



It is in state which opened the front door of half cover type.  
There are some different parts by optional parts and other specifications.



# Parallel surface grinding by an automatic push button



\*Timer setting of numerical value is possible, too.

The time until grinding wheels reaching the eccentric abrasion is long, and high grinding precision (parallelism, flatness) can be kept for a long time, because grinding wheels are given the compound movement of rotation and reciprocation and grind work-pieces.

## Planetary gear system

Carrier gears do rotation and reciprocation (planetary) by drive gear (internal gear) and rotary gear (sun gear). It is possible to get high grinding precision (parallelism, flatness), because work-pieces move between upper and lower grinding wheels thoroughly. It is also possible to grind only one side of work-pieces by changing lower grinding wheel to plate.

## No need of a Magnet chuck

It is easy to grind non-magnetic substance work-pieces (aluminum, glass, ceramics, etc.), because work-pieces are ground in a state maintained by carrier gears and upper/lower grinding wheels. There are not spring back (warp) of works due to no using magnet.

## Fixed Pressure Grinding

Grinding weight is set arbitrary pressure in constant range by pressure control of air cylinder. Fixed pressure grinding is possible to reduce cracked or broken of work-pieces, because work-pieces do not get uselessness powers.

## Dressing, Truing

Normal grinding wheels are amended to flatness by diamond dressing bar (truing bar, Optional accessories). Diamond, CBN wheels are amended to flatness by dressing gears (truing gear, Optional accessories).

This dressing method is effective in dressing and Truing of grinding wheels, because it is done by the co-Grinding of rotation and reciprocation and emery powder.

## Grinding control

### (Indirect automatic work-pieces sizing)

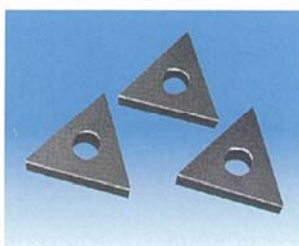
Optical Scale is installed on upper main spindle. Optical Scale recognizes the point that value set in indication unit (The counter can analyze  $1\mu\text{m}$ .) accorded with quantity of movement of scale, and it controls such as "Slow speed", "Down Temporary stop", "Normal sizing", "Up Temporary stop".

Number of work-pieces thickness is indicated in indication unit (Counter) by "x.xxx mm" unit. Grinding finishes when number of counter reaches to 0.000mm, and upper grinding wheel rises.

## Processing case



Parts name : Valve plate  
Material : SPCC  
Size :  $\phi 110 \times t3$   
Grinding wheel : WA800  
Grinding : 0.05mm  
Flatness :  $15\mu\text{m}$   
Parallelism :  $8\mu\text{m}$   
Surface finish :  $0.8\mu\text{m(Ry)}$



Parts name : Slow away tip  
Material : Tungsten Carbide  
Size : 22 (Inscribed circle)  $\times t5$   
Grinding wheel : Diamond#220  
Grinding : 0.2mm  
Flatness :  $1\mu\text{m}$   
Parallelism :  $1\mu\text{m}$   
Surface finish :  $0.8\mu\text{m(Ry)}$





# MACHINE SPECIFICATION

Type			FS-35AN	FS-45AN	FS-75A
• Grinding wheel	Standard diameter of grinding wheel (Inside-Outside)	mm	φ 350 - φ 150	φ 430 - φ 170	φ 750 - φ 330
• Grinding range (Work size)	Thickness *1	mm	0.8~40	0.8~50	2~100
	Work-pieces Round	mm	φ 5~100	φ 5~130	φ 100~260(345 *2)
	Diagonal	mm	5~150	5~180	140~330(420 *2)
• Grinding weight	Max grinding weight	kN	4.8	4.8	12.0
			Heavy grinding : 6.8	Heavy grinding : 6.8	
			Super heavy grinding : 20.2		
• Planetary gear system	Carrier gear diameter	mm	φ 170	φ 205	φ 366
	rotation	min <sup>-1</sup>	7.7~15.4	7.5~15	5~25
	revolution	min <sup>-1</sup>	5~10		3.3~16.6 *3
• Main spindle	Number of upper/lower main spindles rotation	min <sup>-1</sup>	30~60		20~55
	Time of upper main spindle up/down *4	sec	11		11
• Eccentric system	Number of eccentric spindle rotation	min <sup>-1</sup>	70~140		20~60
	Length of eccentric	mm	0~30		0~20
• Electric motors	Main spindle	kW	2.2×2 [Super heavy grinding : 3.7×2 (FS-35AN only)]		7.5×2
	Eccentric spindle	kW	—		0.75×2
	upper main spindle up/down	kW	1.5		3.7
	Drive gear (Internal gear)	kW	0.4 [Super heavy grinding : 0.75 (FS-35AN only)]		0.75
	Rotary gear spindle (Sun gear spindle)	kW	—		3.7
	Drive gear up/down	kW	—		0.2
• Main power source	Electric Supply voltage		AC200/220V±10%, 50/60Hz±2%		
	power supply capacity	kVA	10		20
	Air Pressure	MPa	0.5~0.8		
	Flow	L/min(ANR)	100		120
• Machine size	D×W×H *5	mm	1815×1050×2525		2125×2000×2770
	Machine weight	kg	about 3,200		about 9,000

\*1 : Please contact us regarding the work-pieces which are thinner than the smallest thickness.

\*2 : 2 carrier gears type can grind max:round 345mm, diagonal 420mm. Please contact us regarding thickness of work-pieces.

\*3 : Number of carrier gears revolution is 16.6min<sup>-1</sup> in the case of rotary shaft 100min<sup>-1</sup>.

\*4 : Time of up/down change by thickness.

\*5 : Operation box is pendant type (movable), and the size of operation board is not included in D×W×H.

## Standard accessories

### • Operation box :

Touch panel type

(You can choose push button type.)

### • Planetary gear system :

Drive gear (Internal gear) t14 1pce

Rotary gear (Sun gear) 1set

### • Inverter for upper/lower main spindle :

1 set each / Total 2sets

### • Air drier

### • Standard tools : 1set

## Optional accessories

### • Automatic Work Sizing :

Liner Scale (Analysis capacity 0.001mm) + Counter (4signal)

Liner Scale (Analysis capacity 0.001mm) + Touch panel operation box

Torimetron (Dial gage / Analysis capacity 0.01mm) +Light box

### • Inverter for upper grinding wheel up/down : Inverter

### • Grinding fluids : Water (Diamond wheel), Oily (Normal grinding wheel, CBN wheel)

### • Grinding fluids (coolant) tank :

• Precipitation type • Magnet separator • Paper filter • Centrifugal separator

• Spicon (Centrifugal separator) • Cooler (For grinding fluids cooling)

### • Carrier gear for work-pieces grinding

### • Grinding wheel : Normal grinding wheel (Need support plate), Diamond wheel, CBN wheel

### • Diamond dressing bar : For normal grinding wheels

### • Dressing gears : For diamond, CBN wheels

### • Emery powder : For normal grinding wheels, diamond, CBN wheels, setting saw (dressing)

### • Heavy grinding system (Reverse pressure) : Max grinding weight 6.8kN

### • Super heavy grinding system (Reverse pressure) : Max grinding weight 20.2kN

### • Height adjustment system for drive gear (Internal gear) : Using handle

### • Grinding fluids (Coolant) Central jet : Jet from center of upper grinding wheel

### • Full cover : Standard is half cover.

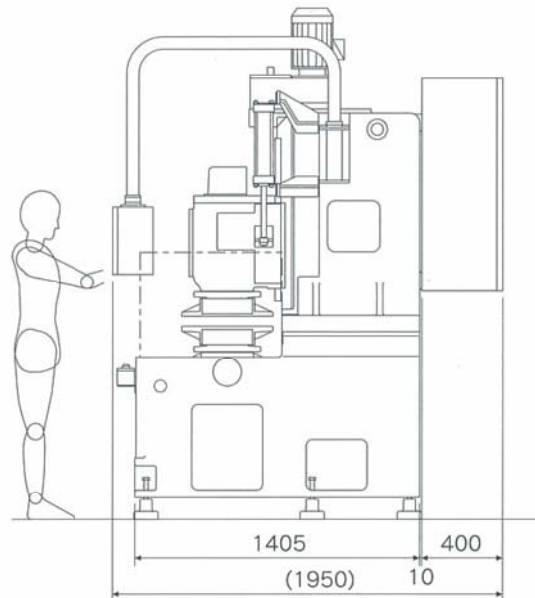
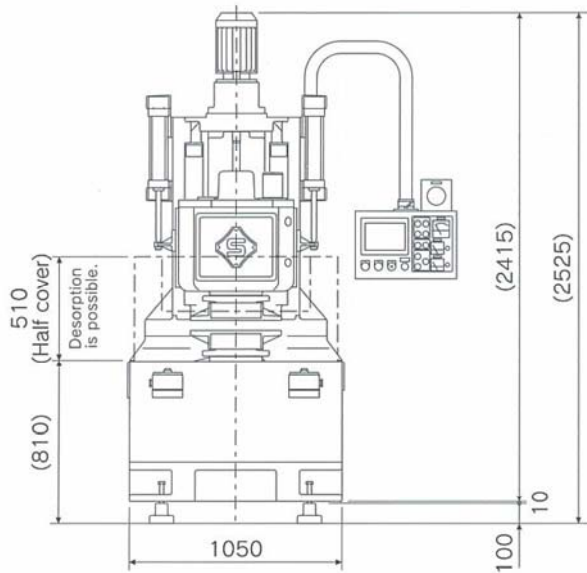
## Drawing of reference dimensions

(Unit : mm)

Coolant separator, etc. are necessary other than the main body.  
In case that dimensions are different by constitution of optional parts.  
Please contact us regarding details.

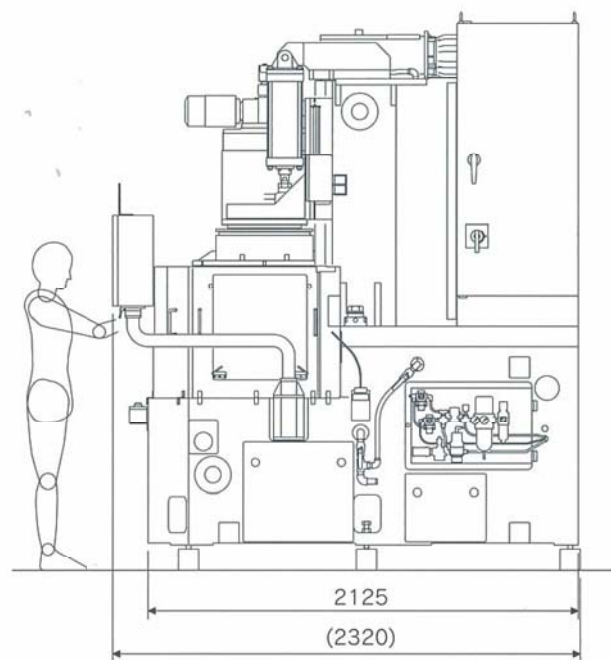
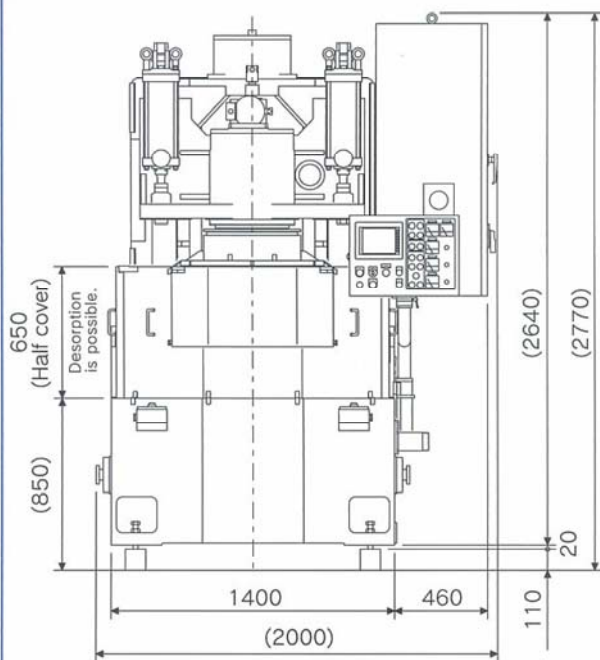
### FS-35·45AN

\* Half cover



### FS-75A

\* Half cover



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## CORPORATE OVERVIEW

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### Main Delivery

- Automobile parts
- Tungsten carbide tools
- Ceramic and Glass parts



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