

# Characteristics of Marubun Soil Steamers

## Compact and Lightweight Design

Our high-efficiency burners produce great steam flow and steam temperature can easily be controlled.

## Can use any water source

Water softener is not required and any scale buildup can be easily removed.

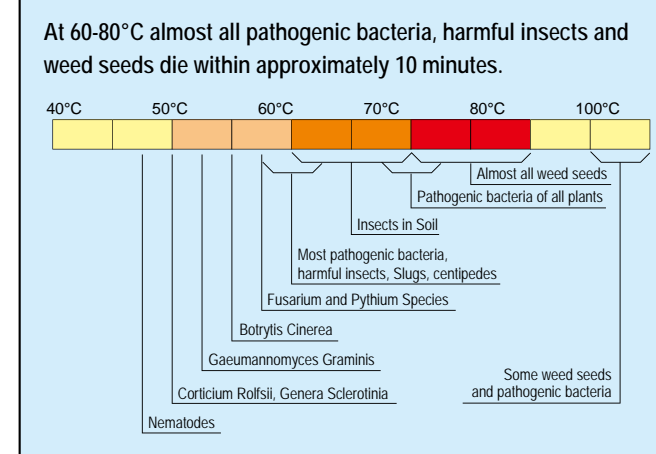
## Safe and Easy to use

Built in safety features, and fully automatic operation mean that no license is needed to operate the boiler.

## Corrosion resistant

Our aluminized boiler has superior corrosion resistance.

## References



## Thermal Death Point of Pathogenic Bacteria

Name of pathogenic bacteria	Thermal death point	Name of pathogenic bacteria	Thermal death point
Mycosphaerella melonis	55°C 10min.	Aucuba mosaic virus (TMV)	90°C 10min.
Colletotrichum lagenarium	45°C 10min.	Corlicium rolfsii	49°C 10min.
Fusarium oxysporum	Humid 55°C 40min.	Xanthomonas campestris	53°C 10min.
Pseudomonas lacrymans	50°C 10min.	Genera sclerotinia	50°C 5min.
Cucumber green mottle	90°C 10min.	Pseudomonas pisi	50°C 10min.
Botrytis cinerea	55°C 10min.	Colletotrichum lindemuthianum	45°C 10min.
Rhizoctonia solani	52°C 10min.	Pseudomonas phaseoli	50°C 10min.
Pseudomonas tomato	48°C 10min.	Xanthomonas zingiberi	52°C 10min.
Cercospora fuligena	50°C 10min.	Septoria apii	43°C 10min.
Frivilia carotovora	50°C 10min.	Meloidogyne spp.	48~60°C 5min.
Pseudomonas solanacearum	52°C 10min.	Pseudomonas woodsii	50°C 10min.
Septoria lycopersici	37°C 10min.	Erwinia ardoidea	51~55°C 10min.
Corynebacterium michiganense	53°C 10min.	Agrobacterium tumefaciens	51°C 10min.
Tobacco mosaic virus	90~93°C 10min.	Xanthomonas antirrhini	51°C 10min.

from Shizuoka prefecture "Report related to steam disinfection 1967"

# Disinfection without chemicals Styrene Panel Steamer

## High capacity while being space efficient.

Treatment chamber comes in two designs for a 160pcs or 240pcs capacity. The 240 panel chamber can treat an area of approximately 7.3m<sup>2</sup>.

## Panel carts can also be used as a stocker.

If needed you can use a convenient spare cart to increase productivity. You can use your existing dollies (depending on material.)

## Temperature control with automatic cut-off.

Can keep the treatment area at a constant 60°C or higher.

## Can also be used for plant factories.

Electric or LPG specifications are also available.

## We can also provide custom treatment chambers to suit the needs of your existing panels.

## A Quick and Efficient Steaming System



## Capacity and Treatment Time

Model	Number of panels	Cart	Size of treatment chamber (mm)	Steamer	Treatment time
160A	160 pcs	40 pcs x 2 shelves x 2 units	2,200 x 2,300 x (H) 1,650	SB-150	Approx. 3 hours
160B	160 pcs	40 pcs x 2 shelves x 2 units	2,200 x 2,300 x (H) 1,650	SB-150	Approx. 3 hours
240A	240 pcs	40 pcs x 2 shelves x 3 units	3,200 x 2,300 x (H) 1,650	SB-200	Approx. 3 hours

● Assuming a 600mm x 900mm x 30mm panel size.  
 ● Model "B" is for LPG gas.  
 ※ "Treatment time" refers to the time spent at a controlled temperature, not the machines total run time.  
 ※ Treatment time will differ depending on panel condition.

## Standard attachments



## Steaming Tank

Allows for efficient even temperature steaming

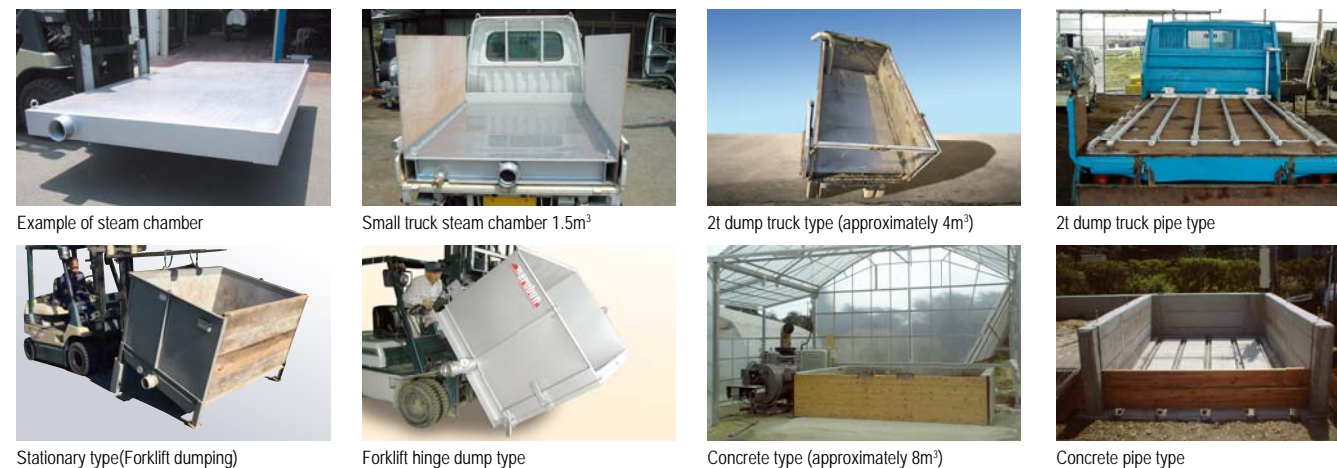
- Front panel opens for easy access.
- Steam ports are made from durable stainless steel.
- Three sizes available, 1.2m<sup>3</sup>, 1.6m<sup>3</sup> and 2.0m<sup>3</sup>.



list of specifications	C-1.2			C-1.6			C-2.0		
	Stationary type	Hand push	Tractor	Stationary type	Hand push	Tractor	Stationary type	Hand push	Tractor
Maximum treatment volume	1.2			1.6			2.0		
Dimensions in tank									
Width	1,210			1,610			2,010		
Depth	1,190			1,190			1,190		
Height	830			830			830		
Installation method	Stationary type	Hand push	Tractor	Stationary type	Hand push	Tractor	Stationary type	Hand push	Tractor
External dimensions									
Total length	1,295	1,835	1,995	1,695	2,235	2,395	2,095	2,635	2,795
Total width	1,260	1,500	1,500	1,260	1,500	1,500	1,260	1,500	1,500
Total height	1,110	1,150	1,150	1,110	1,150	1,150	1,110	1,150	1,150
Product weight	187	279	304	223	315	340	262	351	376

※Please note that the specifications may be changed without notice to improve the product.

## Custom Steam Tanks Designed to meet your exact specifications.



Thinking about health of human and soil  
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# A solution to the problems of continuous cropping, weeds and pathogens Soil Steamer



Improving soil health without chemicals.  
 Living in harmony with nature

## A pioneer of soil disinfection

Faced with the difficulty of farmers to simply and safely deal with pests, we developed a revolutionary method which is now an invaluable and essential element of modern Japanese horticulture.

In 1965 we cooperated with the Shizuoka Prefectural Research Institute of Agriculture and Forestry and JA. Since then we have become the leading supplier to farmers and agricultural businesses all over Japan.



SB-650K type (self-propelled type)

**marubun**

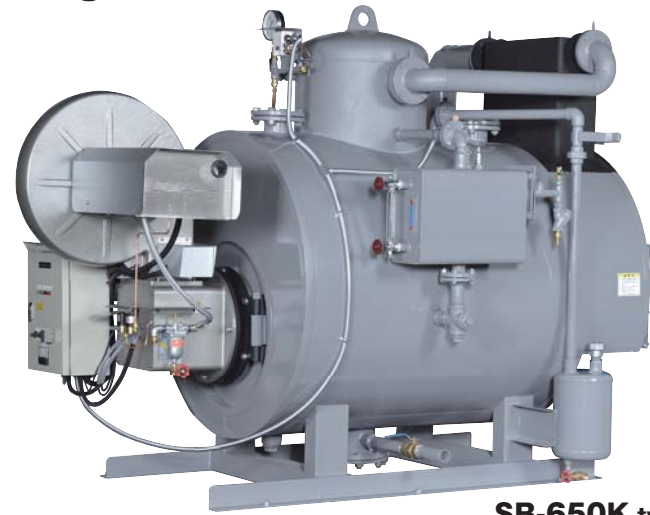
A solution to the problems of continuous cropping, weeds and pathogens

# Soil Steamer

## Five Benefits

- ▶ Completely non-toxic. Safe for neighboring crops, nearby livestock and people.
- ▶ Drastically reduces the number of weeds, insects and pathogens.
- ▶ Soil can be used soon after treatment.
- ▶ Effectiveness can easily be confirmed by measuring soil temperature.
- ▶ Not only for soils, but can be used on rock wool, pots, tools and more.

### Large model SB-650K type



**SB-650K type**  
(stationary type)

### Medium model SB-400 type SB-500 type SB-550 type



**SB-400 type**  
(stationary type)

### Small model SB-150 type SB-200 type SB-300 type



**SB-200 type**  
(wheel type)

\* For this model, the stationary type is also available.

Low temperature steaming enables gentle sterilization, preserving beneficial soil microbes.

# Low temperature steaming methods

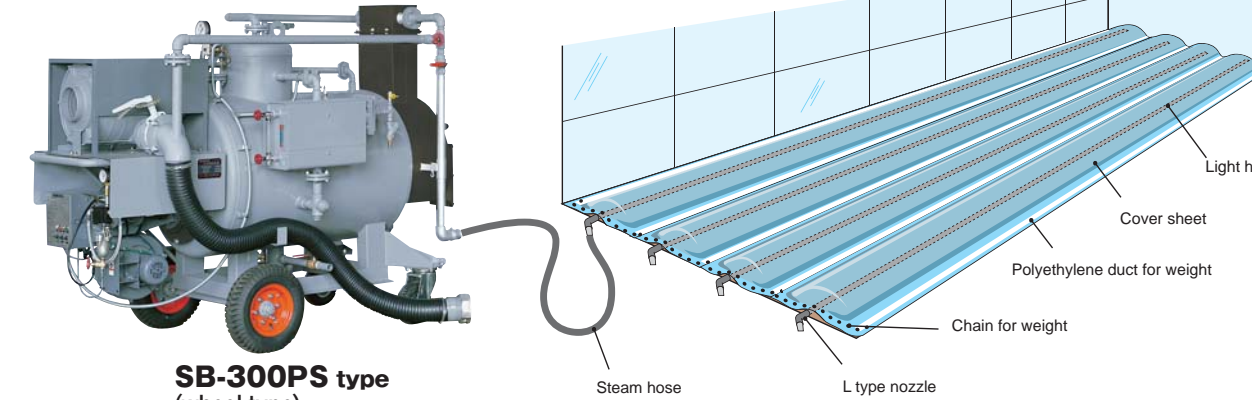
## Five Benefits

- ▶ Can preserve beneficial (ie nitrifying) bacteria and enable the quick recovery of microflora.
- ▶ Helps prevent recontamination after treatment.
- ▶ Helps nitrogen mineralization and prevents build-up of ammonium nitrogen.
- ▶ Soil cools quickly and can be used soon after treatment.
- ▶ Promotes plant growth and root health.



**SB-200PS type**  
(wheel type)

**C-2.0 type**  
(stationary type)



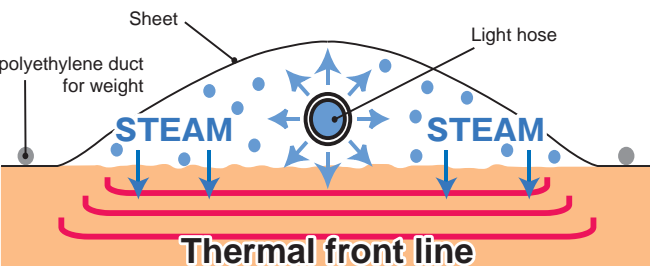
**SB-300PS type**  
(wheel type)

● Greenhouse soil can also be treated by using attachments such as a light hose.

### Greenhouse Preparation Procedure

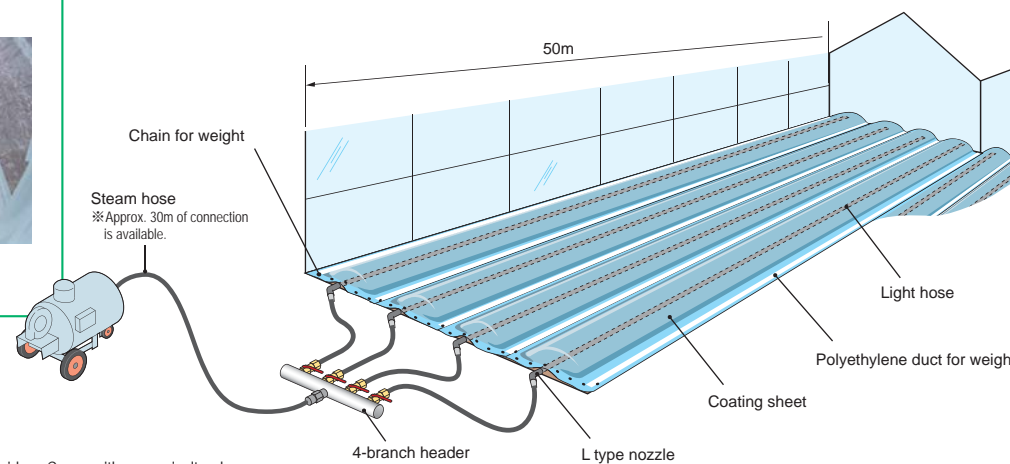


- 1 Lay light hose along center of ridge.
- 2 Cover ground with agricultural polyethylene sheet.
- 3 Lay polyvinyl tube for weight.
- 4 Completed preparation.



Lay light hoses on the surface of the soil running along the center of the ridge. Cover with an agricultural polyethylene sheet and weigh it down. Steam is fed into the light hose and is ejected forming a heat front on the surface of the soil. The continuous supply of steam makes the heat front travel down into the soil.

Generally this method is used to treat the whole greenhouse. This technique can be used even for permeable soil containing a lot of organic matter. It will enable an even temperature distribution and well-treated soil throughout the greenhouse.



### Time Required for Low Temperature Steaming (Estimated)

{ SB-110VS type SB-200PS type } + Steaming tank { C-1.2 type C-1.6 type C-2.0 type }  
{ SB-150PS type SB-300PS type }

Time to heat to 80°C + forced cooldown to normal temperatures.

Model	Elapsed time (minutes)	0	30min	60min	90min	120min	150min	180min	210min
SB-110VS	C-1.2	Preparation work for steaming.	Increases to 80°C (40 min)		Forced draft cooling (80 min)		To seeding / settled planting work		
	C-1.6	Preparation of fuel (kerosene or heavy oil)	Increases to 80°C (53 min)		Forced draft cooling (106 min)		To seeding / settled planting work		
	C-2.0	Water supply to steamer, connection of power cord.	Increases to 80°C (67 min)		Forced draft cooling (133 min)		To seeding / settled planting work		
SB-150PS	C-1.6	Transfer of soil to steaming tank.	Increases to 80°C (40 min)		Forced draft cooling (80 min)		To seeding / settled planting work		
	C-2.0		Increases to 80°C (50 min)		Forced draft cooling (100 min)		To seeding / settled planting work		
SB-200PS	C-1.6		Increases to 80°C (30 min)		Forced draft cooling (60 min)		To seeding / settled planting work		
	C-2.0		Increases to 80°C (38 min)		Forced draft cooling (76 min)		To seeding / settled planting work		
SB-300PS	C-1.6		Increases to 80°C (25 min)		Forced draft cooling (50 min)		To seeding / settled planting work		
	C-2.0								

Boiler operation start. Steam generation and treatment start. Temp reaches 80°C. Burner stopped / Blower started. Cooling to normal temperature. Blower stopped.

\* Time required will differ depending on soil moisture content, water temperature, soil composition etc.

### High temperature steaming type

List of specifications	Large			Medium			Small															
	SB-650K	SB-550	SB-400	SB-500	SB-400	SB-300	SB-200	SB-150														
Equivalent amount of evaporation (high 50Hz/60Hz)	650			550			500 (60Hz specification)															
Maximum pressure used MPa	3.47			3.47			3.38															
Heat transmission area m <sup>2</sup>	3.47			3.47			3.38															
Boiler application classification	Small Boiler (Certified)			Small Boiler (Certified)			Simple Boiler															
Power supply V	200V (three-phase)			200V (three-phase)			100V or 200V (three-phase)															
Required power kw 50Hz/60Hz	1.5			0.9			0.49															
Fuel	Heavy oil A or heating oil			Heavy oil A or heating oil			Kerosene															
Fuel consumption l/h	49.6			42.8			28.0/31.1															
Control method	ON/OFF automatically controlled (low fire start)			ON/OFF automatically controlled			ON/OFF automatically controlled															
Safety features	ON/OFF automatically controlled (low fire start)			ON/OFF automatically controlled			ON/OFF automatically controlled															
Installation method	Stationary Tractor Self-propelled			Stationary Tractor Self-propelled			Stationary type Wheel type															
External dimensions	Length mm	2,230	3,300	3,100	2,300	3,300	3,060	2,200	3,300	3,060	2,170	2,170	1,980	1,980	1,980	1,980						
Width mm	1,430	1,480	1,430	1,360	1,480	1,360	1,360	1,480	1,360	1,280	1,480	1,280	1,140	1,140	1,090	1,090						
Height mm	1,640	2,260	2,130	1,585	2,205	2,075	1,585	2,205	2,075	1,490	2,110	1,980	1,400	1,610	1,380	1,590	1,380					
Product weight kg	711	931	1,238	670	890	1,197	650	870	1,177	631	851	1,158	460	493	338	370	328					
Operating weight kg	1,091	1,311	1,618	1,050	1,270	1,577	1,030	1,250	1,557	961	1,181	1,488	705	738	548	580	528					
Reference	Steaming capability* m <sup>3</sup> /h	8.7			7.3			6.8			3.7/4.1			2.7			2.0					
	Steaming area per hour m <sup>2</sup> /h	43 - 58			37 - 49			34 - 45			27 - 36			20 - 27			13 - 18			10 - 13		

\* Assuming soil moisture content of 40%, well-plowed permeable soil, covered with a well-sealed sheet.  
● Can be equipped with an (optional) water softening device if needed. ● Requires training prior to use (excluding the SB-200 · SB150). ● Please note that specifications may change without notice.

### Customized to meet your needs.



### Dual Purpose Steamers

Specifications	Separated			Combined model (boiler + steaming tank)			
	SB-300PS*	SB-200PS	SB-150PS	SB-110VU-1.2	SB-110VU-1.6	SB-110VU-2.0	SB-110VS
Equivalent amount of evaporation (high 50Hz/60Hz)	270/300			110			
Maximum pressure used MPa	0.05			0.02			
Heat transmission area m <sup>2</sup>	3.13			1.6			
Boiler application classification	Small boiler			Simplified boiler			
Power supply V	200V (three-phase)			200V (three-phase)			
Required power kw 50Hz/60Hz	1.89			1.74/1.87			
Fuel	Heavy oil A or kerosene			Kerosene			
Fuel consumption l/h	20.8/22.1			17.1			
Control method	ON/OFF automatically controlled			ON/OFF automatically controlled			
Safety features	Combustion control / Dry burning prevention (Low water cut-off) / Pressure switch / U-type standpipe			Combustion control / Dry burning prevention (Low water cut-off) / U-type standpipe			
Installation method	Stationary type	Wheel type	Stationary type	Wheel type	Stationary type	Wheel type	Stationary type
External dimensions	Length mm	2,170	2,170	1,980	1,980	1,980	1,980
Width mm	1,140	1,140	1,090	1,090	1,090	1,090	1,090
Height mm	1,400	1,610	1,380	1,590	1,380	1,590	1,380
Product weight kg	518	551	396	428	388	420	340
Operating weight kg	763	796	606	638	588	620	412
Capacity m <sup>3</sup> /h	4.4/4.8 (low temperature 80°C) 3.2 (low temperature 80°C) 3.7/4.1 (high temperature) 2.7 (high temperature)			2.4 (low temperature 80°C) 2.0 (high temperature)			

\* Requires training prior to use. ● Please note that specifications may change without notice.

### Low Temperature Steamers