

'Helper RoboTech Co.,Ltd', the leading company in high quality seedlings

**Auto Seeding System  
(Smart, Drum, Wide)**

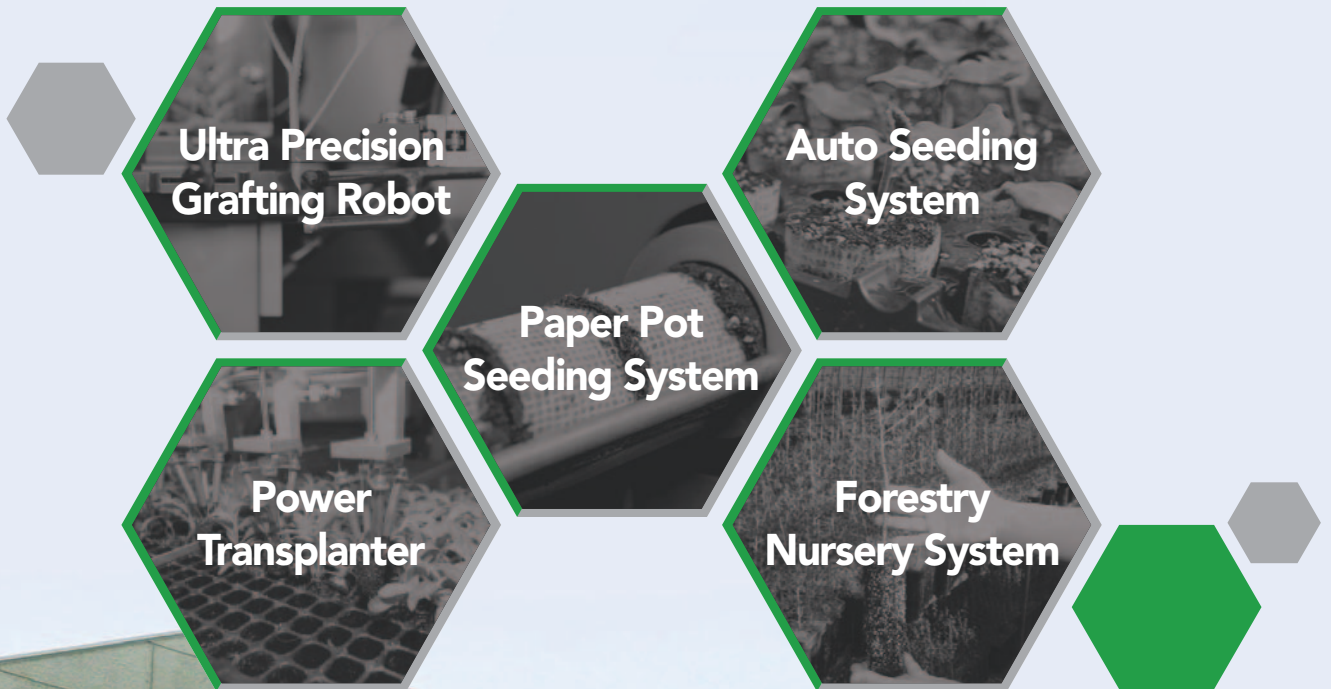
**Forestry Nursery System**

**Paper Pot Seeding System**

**Ultra Precision Grafting Robot**



We developed an “Auto Seeding System”, a fruit vegetable grafting robot so we were in the next generation sector of ‘World-class product and production company’ and we succeeded in developing “Paper Pot Seeding System” in 2016, also “Auto Seeding System(Drum)” in 2019, We are building the infrastructure for smart agriculture.



In 2023, we will be with you as new "**Drum Seeder**".

## Drum Seeder

Model name : DSS-800



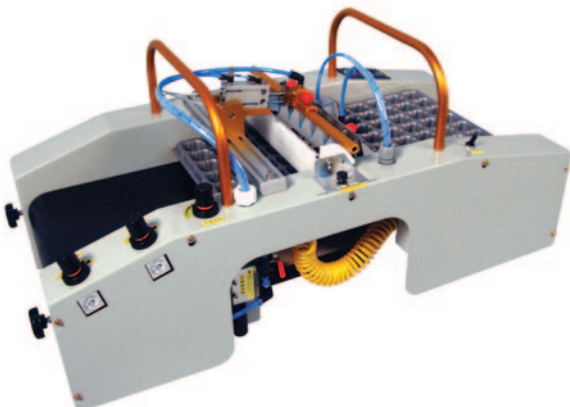
Drum Seeder System (Page 6~7)

Dimension(mm)	L	1,700
	W	860
	H	1,600
Weight(kg)		190
Power(W)		1P 150 / 3P 1,500
Compressed air		6kg/㎥

- High Productivity more than 80,000 Cells/hour
- Blow out of extra seeds by air curtain bar
- Synchronizing speed between conveyor and drum
- Less noise through vacuum pump
- Clean-up the suction hole every time by air blow-out

## Private Seeder

Model name : SD-600



Dimension(mm)	L	920
	W	470
	H	380
Weight(kg)		30
Power(W)		1P 15
Compressed air		5kg/㎥

- Private seeding by cooperative unit or farmhouse unit (lettuce, onion, flower etc)
- Easy to carry out moving tour work due to an ultra-light weight(30kg)
- Manifold: Supply customer-specified 1 piece set

# Auto Seeding System (SMART)

- 2 times speed against the existing automatic seeding system/labor saving/clean-up system
- Developed as optimal model for specially raising onion seedling.
- Only 420 Tray

## 01. Tray Feeder / TF-900

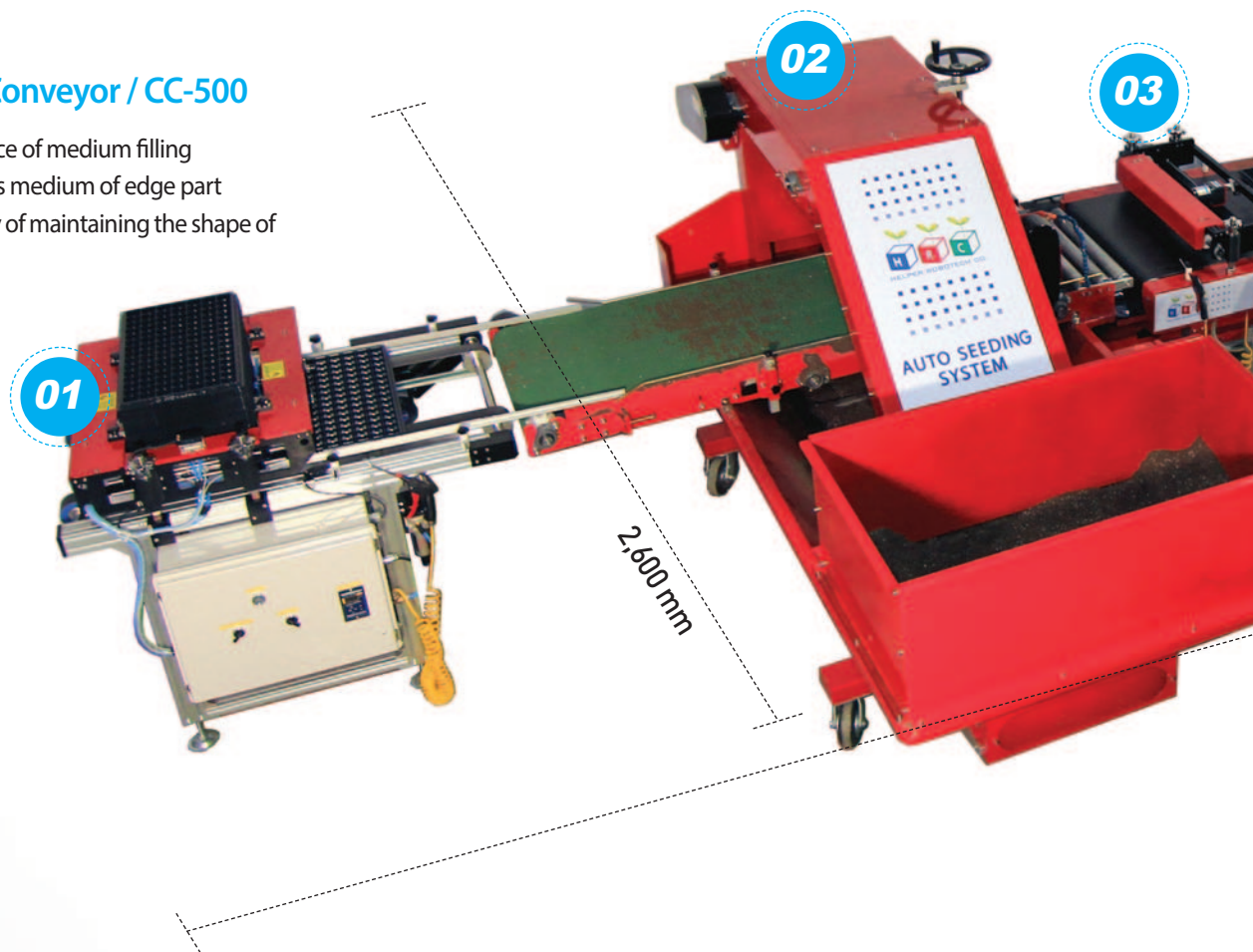
- A tray of packing 100 sheets is supplied, each sheet is divided at lower part.
- Automatically adjust supply speed, tray distance
- Only 420 Tray

## 03. Clean Conveyor / CC-500

- Brushing the surface of medium filling
- Shake down excess medium of edge part
- Special technology of maintaining the shape of dibbling result

## 02. Smart Filler / SF-500

- Expansion function of medium supply hopper 300ℓ (+ 500ℓ)
- Excess medium recovery function



### Required power(1P 220V, 3P 380V / Total : 8.4kW)

Description	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩
Smart system	Tray feeder	Smart filler	Clean conveyor	Double seeder	Seed Feeding Device	Clean top dresser	Clean irrigator	Tray stacker	Finish conveyor	Air compressor
Required power	1P 40W	3P 555W	1P 105W	1P 40W	1P 30W	1P 65W	1P 40W	1P 40W	1P 40W	3P 7.4W
Compressor 10HP	○	○	○	○				○		

## 04. Double Seeder / DS-500

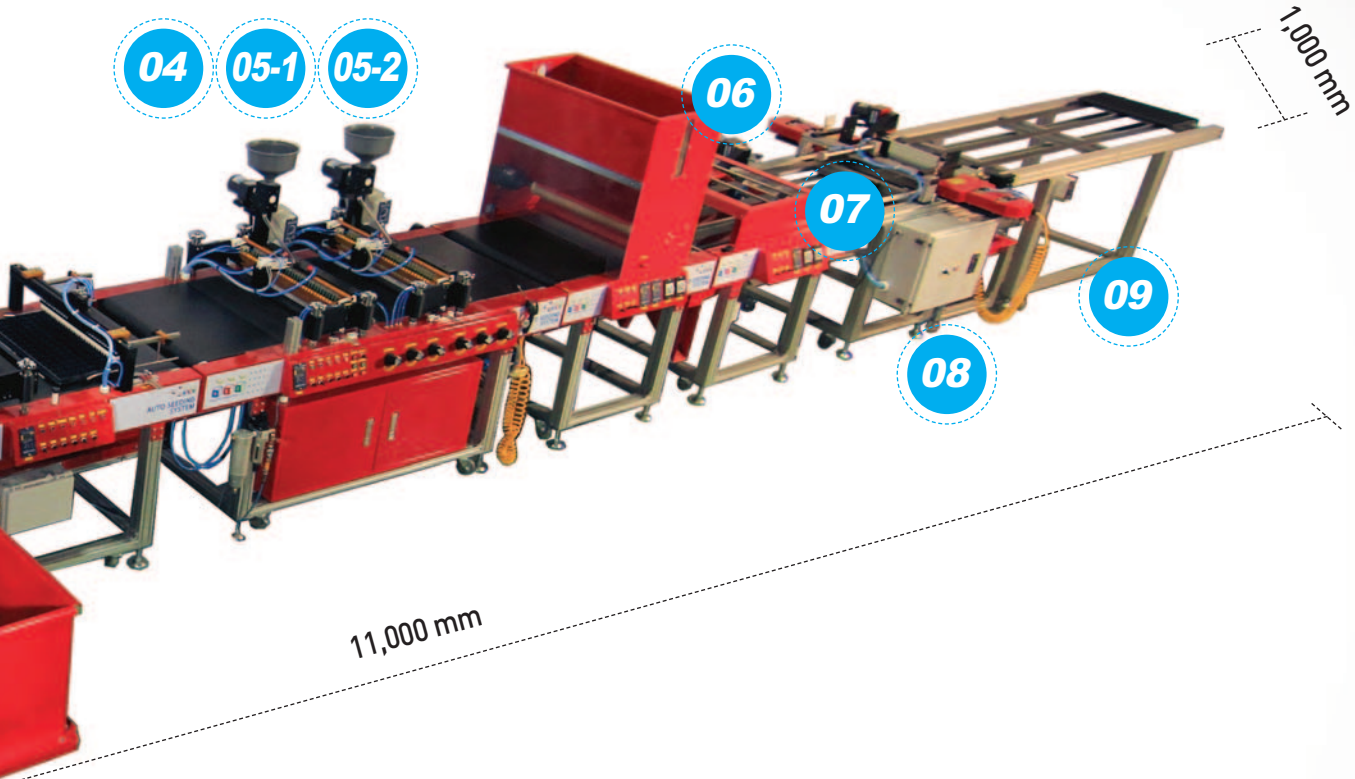
- Share seeding function of odd number row, even number row
- Only one seeder works, another seeder for spare purpose
- Only 420 Tray

## 05-1, 05-2. Seed Feeding Device / SS-F15W

- Adjust supply speed in proportion to the speed of seeding line
- Raise precision by maintaining optimal waiting quantities of seeding tray

## 06. Clean Top Dresser / CD-500

- Function of preventing flying of covering soil, dust
- Safely recovery excess covering soils



## 07. Clean Irrigator / CI-500

- Function of preventing flying of excess irrigated water
- Maintain clean environment of collecting waste water

## 10. Air Compressor : 10HP

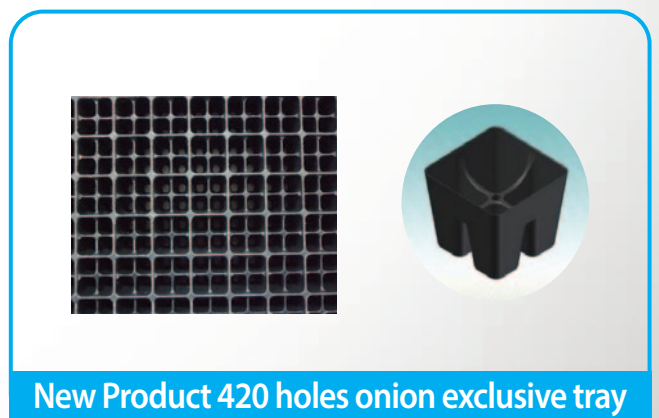
- Option

## 08. Tray Stacker / TS-900

- Block 5 sheets tray of seeding completion(setting function)
- Form 1 block of 5 sheets, distribution margin
- Only 420 Tray

## 09. Finish Conveyor / FC-500

- Distribution waiting space by block unit
- Final clean-up space for wastes



New Product 420 holes onion exclusive tray

# Drum Seeder System

- 2 times speed against the existing automation seeding system (SMART) / Labor saving / Clean-up system.
- Big size seeding such as Gourd, Pumpkin and Corn can possible



## 01. Smart Filler / SF-500

- Expansion function of medium supply hopper 300ℓ ( + 500ℓ )
- Excess medium recovery function

## 02. Clean Conveyor / CDB-800

- Brushing surface of tray
- Dibbling the half-tray at once
- Adjusting the depth of dibbling

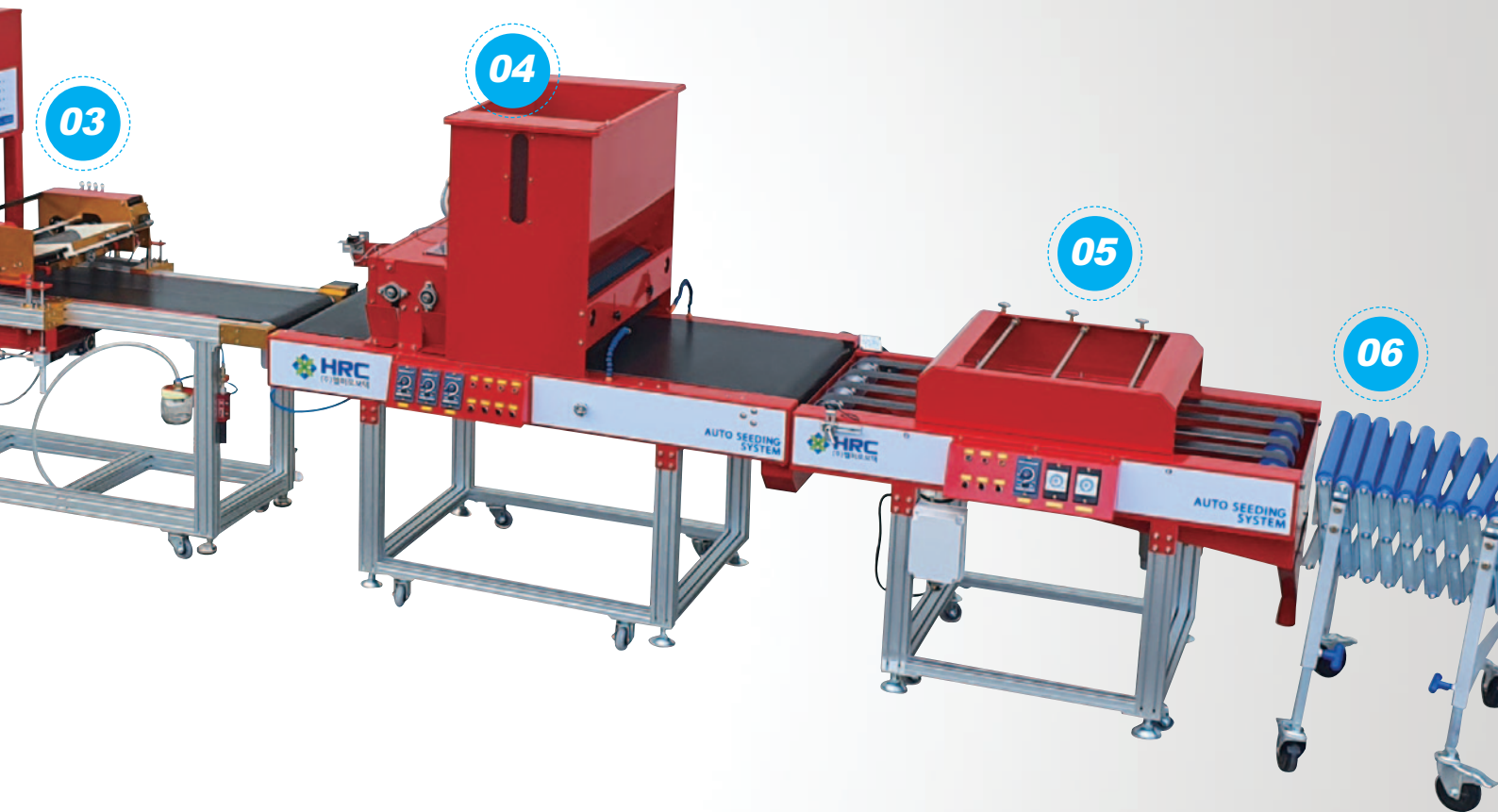
Description	Product Name	Size(mm)			Weight (kg)	Required Power(W)		Compressed air	
		L	W	H		1P	3P		
① Smart Filler	SF-500	1,800	2,400	1,300	450	180	375		
② Clean Conveyor	CDB-800	1,700	950	1,300	160	80			
③ Drum Seeder	DSS-800	1,700	860	1,600	190	150	1,500	6kg/cm <sup>2</sup>	
④ Clean Top Dresser (Substrate & Vermiculite with Drum)	CDD-800	1,500	800	1,450	165	80			
⑤ Clean Irrigator	CI-500	900	790	1,000	150	40			
⑥ Non-powered Conveyor	CV-2000	3,500	790	450~600	150	110			
⑦ Air Compressor(Optional)	3 phase / 10 hp	Depends on Manufacturer						7,500	
⑧ Plank drag + Seeding Drum	Tray (32~448 hole)								

### 03 Drum Seeder / DSS-800

- High Productivity more than 80,000 Cells/hour
- Blow out of extra seeds by air curtain bar
- Synchronizing speed between conveyor and drum
- Less noise through vacuum pump
- Clean-up the suction hole every time by air blow-out

### 04 Clean Top Dresser / CDD-800

- Top dressing both materials vermiculite and Peat moss
- Possible quantitative amount dressing thru Drum speed
- Adjusting the dressing thickness thru Gate
- Arranging of surface thru Brush



### 05 Clean Irrigator / CI-500 (Clean Irrigator)

- Function of preventing flying of excess irrigated water
- Maintain clean environment of collecting waste water

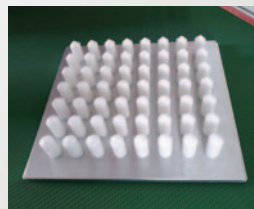
### 07 Air Compressor : 10HP

- Option

### 06 Non-powered Conveyor / CV-2000

- Distribution waiting space by block unit

### 08 Plank drag, Drums (Production by standard)



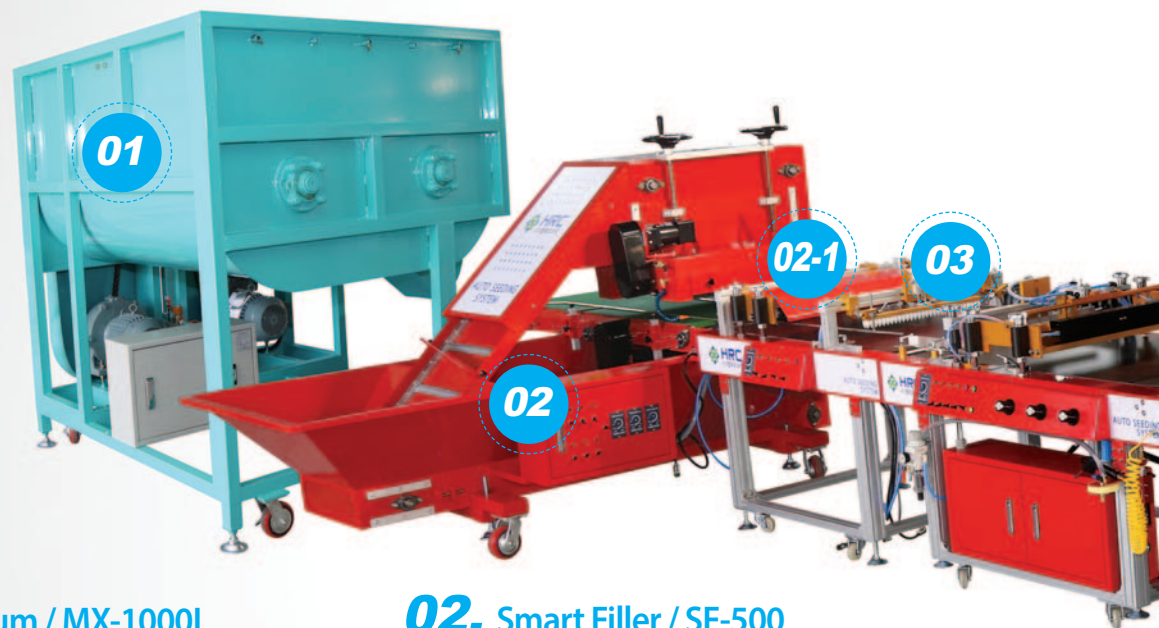
# Auto Seeding System (WIDE)

“Quality raising of seedling lies in uniform raising of seedling.”

- Secure a high productivity of 400 sheets per hour (based on 128 holes)
- Precise seeding applying control apparatus of seed sowing
- Completely prepared a prevention function of clogging of seeding needle
- Fill up uniform bed soil of the method of pressing, tamping and cutting
- Installed equipment of controlling dust scattering of covering soil

## 02-1. Clean Conveyor / CC-500

- Brushing the surface of medium filling
- Shake down excess medium of edge part
- Special technology of maintaining the shape of dibbling result



## 01. Mixer of Medium / MX-1000L

### • Use & features

It has the functions of uniformly mixing perlite, vermiculite etc on light medium, optimizing humidity of medium before seeding in parallel with irrigation during mixing and discharging automatically the mixing finished medium.

### • Effect of use

As air permeability, water retention & uniformity are directly connected with uniform raising of seedling, it is recommended to go through mixer of medium before seeding.

## 02. Smart Filler / SF-500

### • Use & features

It can contain all kinds of compounded medium in a tray. It can not only contain medium in the whole cells of tray evenly, but also cut as deeply as wanted.

### • Effect of use

If containing medium manually, it can't avoid unevenness of the middle part and edge part. This is a disadvantage that can't be corrected during a raising of seedling period. 3-step functions of scattering widely on the tray and shaking by vibration in the bottom and sweeping the surface at the exit as deeply as wanted guarantee uniform filling.

Description	Dimension(mm)			Weight (kg)	Required power(W)		Compressed air	Remarks	Use water
	L	W	H		1P	3P			
① MX-1000L	1,800	1,450	1,800	1,540		7,400			
② SF-500	1,800	2,400	1,300	450	180	375	6 kg/cm <sup>2</sup>	vibrating	
②-1 CC-500	1,210	790	1,000	110	80				
③ SD-900W	1,400	790	920	150	40		6 kg/cm <sup>2</sup>		
④ CD-500	900	790	1,300	150	80				
⑤ CI-500	900	790	1,000	150	40				401/hr
⑥ CV-2000	3,500	790	600~450	150					
⑦ Manifold	32	50	72	105	128	162	200	288	406
⑧ Aircompressor	Three-phase 5HP (Option)								



### 03. Dibbler and Seeder / SD-900W

• Use & features

If gauge of nozzle is changed, it can seed from the smallest tobacco to the biggest water melon in the various shapes and Dimensions widely. As it can produce 400 sheets(based on 128 holes) per hour continuously, it guarantees high productivity. It enables precise seeding to be made by suppressing the position movement by seed bouncing at the maximum in the close access method on medium of drop guide.

• Effect of use

If manpower does suppression for making seeding seat of cell-unit, the depth and shape are not so even that it is the cause of uneven seedling. What seeds fine seed by manpower is the inefficiency that can be beyond expression. Only this can start raising of seedling.

### 05. Clean Irrigator / CI-500

• Use & features

It implements fine irrigation work on the covered surface. It is necessary to irrigate enough in the range of covering soils not washing away. It is made with stainless material so that it can secure durability for the long-term use.

• Effect of use

As it is not possible to irrigate while inside germination room(72 hours), it is necessary to irrigate enough before being germinating room. As covering soils are specially light material, it can be washed away when irrigating.



### 04. Clean Top dresser / CD-500

• Use & features

The thickness of covering soil can be adjusted freely in the method of adjusting the gap of covering soil roller. It has a function of arranging the surface by sweeping the covered surface with a brush finely. It also has a collection function of reusing the excess covering soil swept away.

• Effect of use

If soil is covered by manpower, the thickness is not so even that germinating seed becomes different. When it is worked by manpower, the position of seed can be scattered. What can cover a certain thickness of soil is the prerequisite to uniform seedling.

### 06. Non-powered Conveyor / CV-2000

• Use & features

It is a waiting space before connecting a seeding tray being produced in a row to the next process. Its height, shape & length can be adjusted freely depending on condition of working place. It can be securely irrigated or quality-inspected while waiting.

• Effect of use

As the tray automatically rolls on the roller and comes to the place as wanted, it contributes to distribution automation. It is efficient as workers can do another work while certain quantities are waiting.

# Forest Nursery System

- Each cell of a forestry seedling tray is large and deep, and soil compaction is necessary to improve soil aeration and drainage.
- The entire process (filling the tray with bed soil, compacting and dibbling → seeding → covering with soil → irrigation) is automated.
- Labor saving, mass production and uniformity are achieved.
- It is one of the innovative measures in response to the aging labor force in producing areas.



## 01. Medium Pressing Filler for Forest Nursery / PF-400

- Freely adjusting the degree of compaction of soil (150%±α)
- Selecting one-time or two-time compaction
- Automatic recovery of excess soil
- Production: up to 400 trays/hour

## 02. Clean Conveyor / CBD-800

- Brush for cleaning
- Adjustable conveyor speed
- Dibbling

Description	Product Name	Size(mm)			Weight (kg)	Required Power(w)	Compressed Air	Production (units per hour)	Remarks	
		L	W	H						
① Medium Pressing Filler for Forest Nursery	PF-400	2,500	2,500	1,300	450	990	6kg/cm <sup>2</sup>	400	Manifold	24L, 24H, 28, 40
② Clean Conveyor	CBD-800	1,700	950	1,300	160	80	6kg/cm <sup>2</sup>	500		
③ Double Seeder	DS-500	1,800	950	1,000	150	40	6kg/cm <sup>2</sup>	450		
④ Clean Top Dresser	CD-500	900	790	1,300	150	76		100		
⑤ Clean Irrigator	CI-500	1,200	790	1,000	150	40		400	Use Water (l/h)	40
⑥ Non-Powered Conveyor	CV-2000	2,000~3,500	790	450~600	150			400		

## Comparing Human Workers to the Automated System

Items	Human Workers	Automated system
Uniformity	A large variation in the degree of compaction of soil depending on the worker's performance	Filling with uniformity, and the same amount and degree of compaction of soil (150%±α)
Productivity	100 sheets per hour with 2 workers	400 sheets per hour with 2 workers
Labor Saving	Primitive heavy labor	Nearly a quarter of the existing work force
Durability	-	Usable for more than 10 years
Lineup	-	Automated lines for the entire process

### 03 Double Seeder / DS-500

- Equipped with two seeder sections
- Productivity improvement: up to 300 to 400 sheets/hour

### 04 Clean Top Dresser / CD-500

- Adjusting the thickness of covering soil
- Preventing perlite dust from spreading

### 05 Clean Irrigator / CI-500


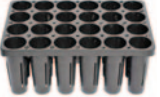

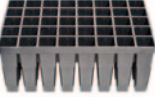
- Micro-irrigation system
- Water filtration for irrigation
- Use of corrosion control material (stainless steel)

### 06 Non-Powered Conveyor / CV-2000

- Adjustable height, length, and curve



## Applicable forestry nursery tray

Description	24holes(L) tray	24holes(H) tray	28holes tray	40holes tray
Tray				
Use	Larch	Acorn, Honey oak	Cypress, Thuja	Pine tree, Korean nut pine
Cell spec.	6.4Ø×13cm(D)	6.0Ø×16cm(D)	5.7Ø×16cm(D)	4.7SQ×16cm(D)
Cell capacity	320ml	350ml	300ml	250ml
Total capacity	7.7ℓ	8.4ℓ	8.4ℓ	10ℓ



- Freely adjust the degree of compression (150%±α)
- Automatically able to recovery excess medium
- Optional for 1 times compression or 2 times compression
- Production quantity 300~400Tray/hr

## Pot Flower Mass Production System



- Able to fill mixed material such as polishing sand, yellow soil, medium etc
- Possible to adjust the depth of filler
- Repeated work of automatic supply-filler-collection

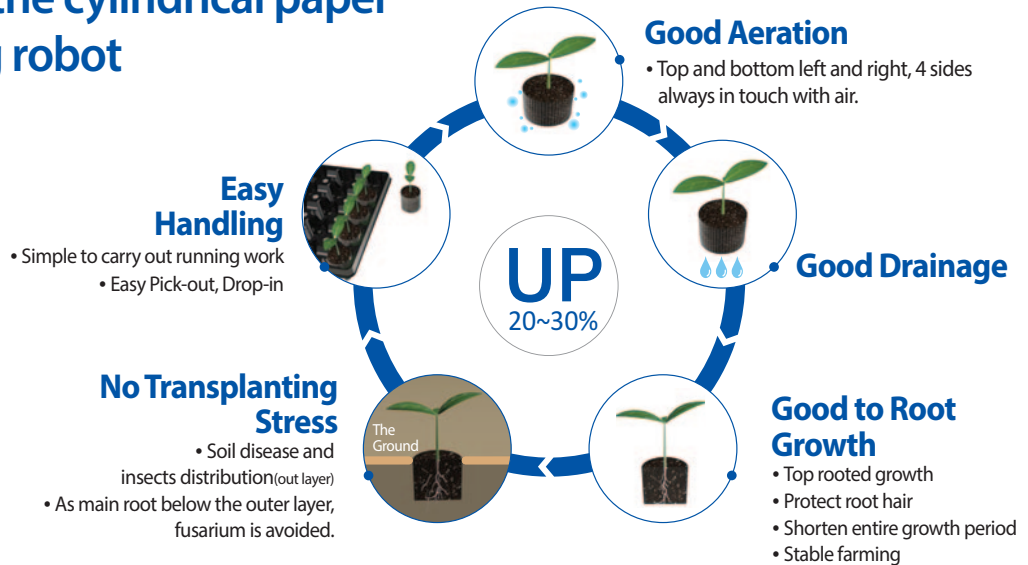
### ► Natural Soil Filler / FL-4000

Production quantity		400pot / hour
Dimension(mm)	L	3,700
	W	2,300
	H	1,800
Weight(kg)		1,800kg
Power(W)		3P 1,500 1P 310

# PAPER POTS SEEDING SYSTEM

“Helper RoboTech's Paper Pot Seeding System developed the existing plug seeding method, combined a paper pot manufacturing machine with a Seeding system so it is a highly scalable modular agricultural robot to make the users of existing seeders do fair raising seeding with the robot.”

## Benefits of the cylindrical paper pot seeding robot



## Paper Pot Seeding System

# Paper pot auto line(1) [Breaker + Maker]

### Finished paper pot

- Standard specifications : Ø40

### Substrate supply conveyor

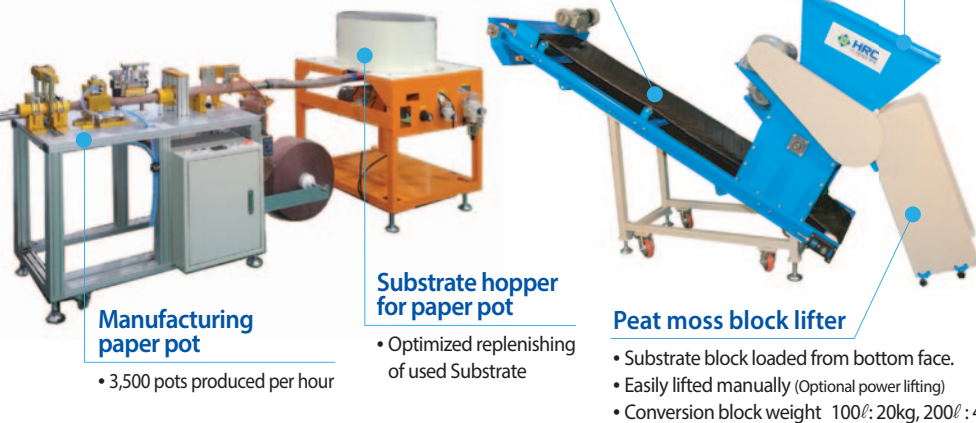
- Automatic operation with fixed-quantity hopper sensor
- Irrigating function to improved water content(50% ⇒ 60%)

### Peat moss block breaker

- 100ℓ, 200ℓ, 300ℓ block
- Bulk crushing or crushing by batch

### 주의사항

- 01 Substrate will dry out if left exposed: remove vinyl packaging immediately before use.
- 02 Substrate exposed to air needs to be irrigated continuously to prevent drying out



### Manufacturing paper pot

- 3,500 pots produced per hour

### Substrate hopper for paper pot

- Optimized replenishing of used Substrate

### Peat moss block lifter

- Substrate block loaded from bottom face.
- Easily lifted manually (Optional power lifting)
- Conversion block weight 100ℓ: 20kg, 200ℓ: 40kg, 300ℓ: 60kg

② Manufacturing paper pot

① Peat moss block breaker

Description	Product Name	Size(mm)			Weight (kg)	Required Power(w)	Production (units per hour)	Compressed Air
		L	W	H				
① Peat Moss Block Breaker	BC-500K	4,000	1,250	2,300	350	3,750	Automatic Metering	6kg/cm <sup>2</sup>
② Manufacturing Paper Pot	PLR-3K-40	3,400	920	1,500	250	965	3,500/hr	
③ Auto Loader of Paper Pot	PPL-5K-40	2,800	1,300	1,350	200	150	3,500/hr	
④ Auto Seeder for Paper Pot	PPS-5K-40	2,150	900	1,130	180	90		
⑤ Non-powered Conveyor	CV-2000	2,000~3,500	790	450~600	150	x		x

## Paper Pot Seeding System

# Paper pot auto line(2) [Loading machine + Seeding machine]

### Augering

- Cutting immediately after grafting(cucurbitaceas)
- Groove digging(solenaceae) / Optional

### Auto feeder of paper pot tray

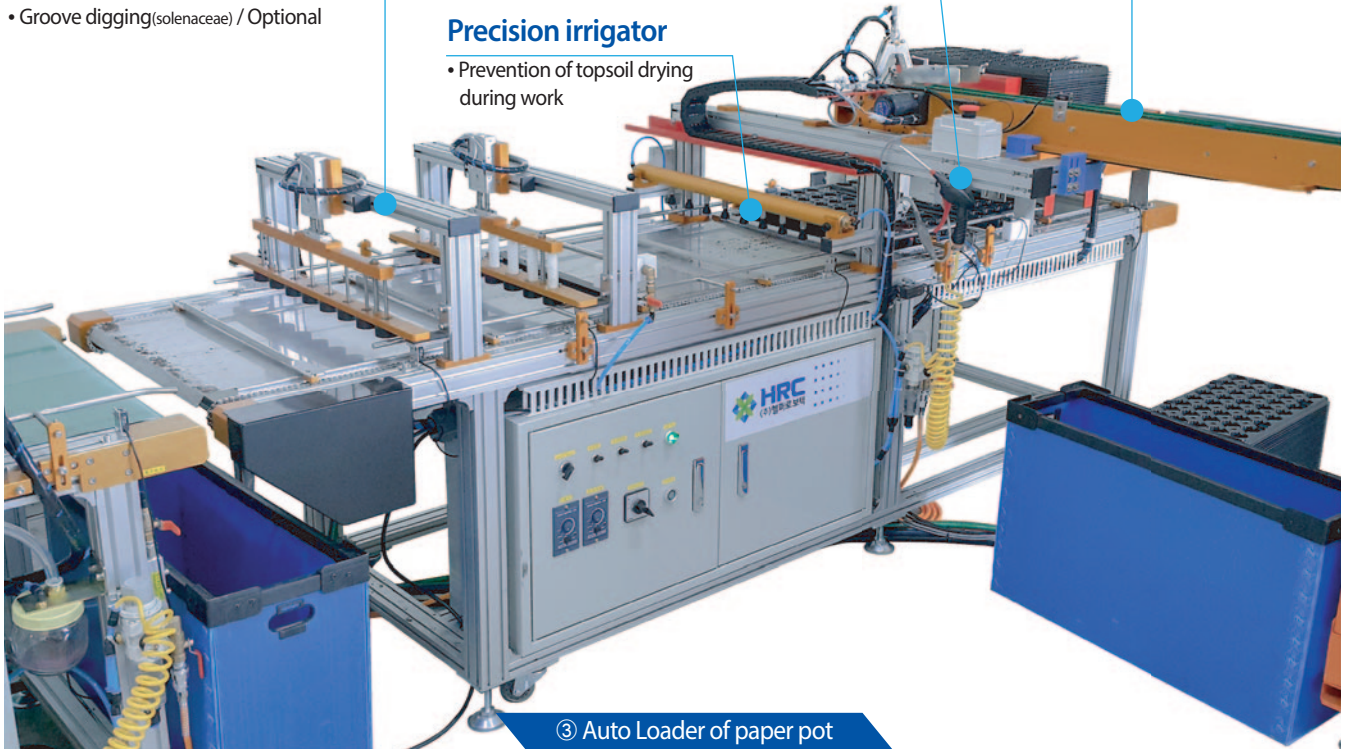
- Difference internal structure from general seeding nursery tray
- 40Ø, 50Ø

### Auto Loader of paper pot

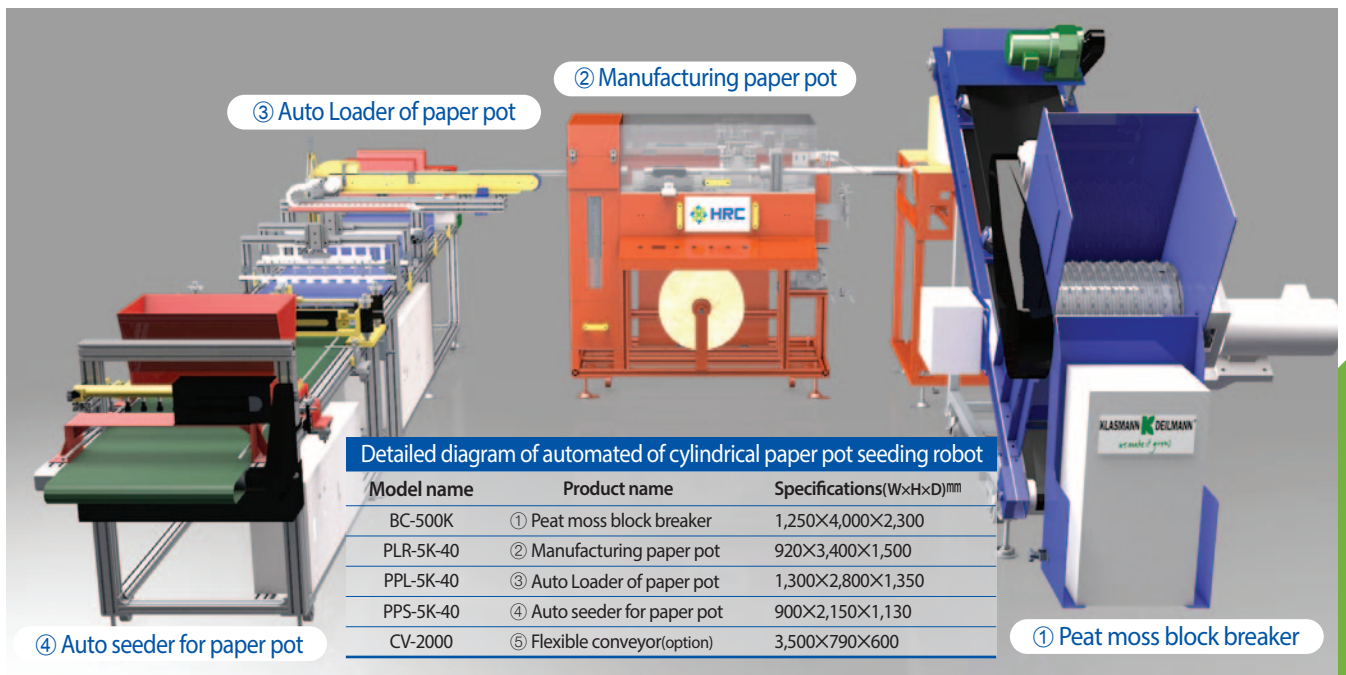
- 5,000~7,000 per hour
- Connection with dedicated tray

### Precision irrigator

- Prevention of topsoil drying during work



③ Auto Loader of paper pot



Detailed diagram of automated of cylindrical paper pot seeding robot

Model name	Product name	Specifications(W×H×D)mm
BC-500K	① Peat moss block breaker	1,250×4,000×2,300
PLR-5K-40	② Manufacturing paper pot	920×3,400×1,500
PPL-5K-40	③ Auto Loader of paper pot	1,300×2,800×1,350
PPS-5K-40	④ Auto seeder for paper pot	900×2,150×1,130
CV-2000	⑤ Flexible conveyor(option)	3,500×790×600

④ Auto seeder for paper pot

① Peat moss block breaker

③ Auto Loader of paper pot

② Manufacturing paper pot

## Ultra Precision Grafting Robot (AFGR-800CS)

Helper RoboTech Co., Ltd.'s high-precision seeding robot has been certified a world-class product by the Korean government, with cucurbitaceas and solenaceae applications.

The cross sections of the rootstock and scion are photographed to locate the central line, and the graft position is found with a margin of error within 1/100mm.



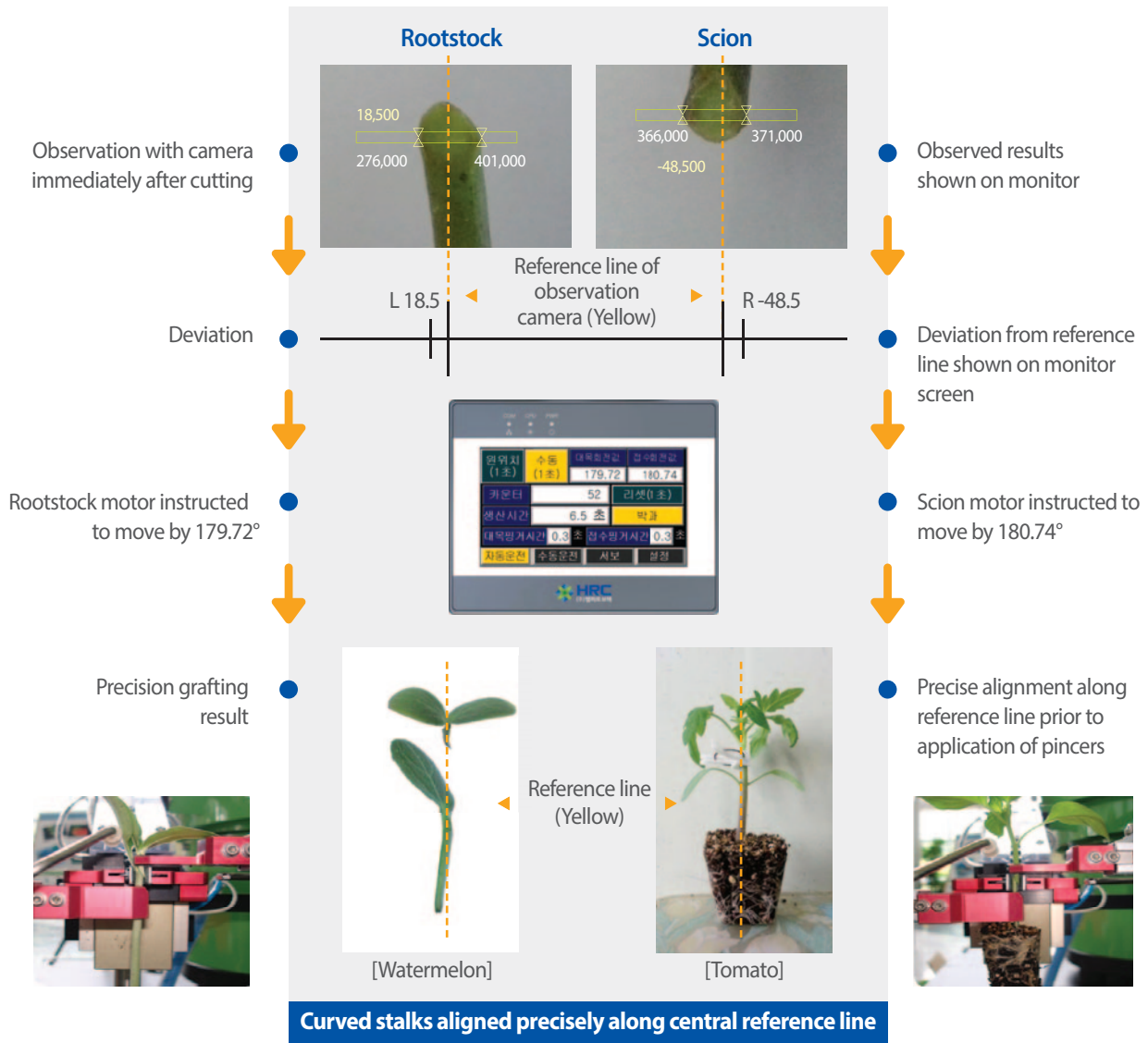
Picture of magnification

Picture of grafting

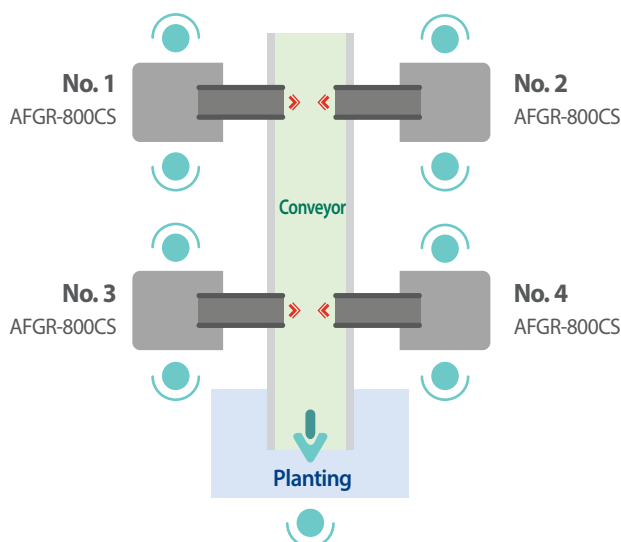
### Transferred Technology from RDA

Specification(mm)	870D×1,460L×1,080H
Weight(KGS)	180
Power and pneumatic equipment	Electric Power 1Ø 220V 2kW, Air Compressor 3HP(Optional)

## Principle of the product



## Economic system configuration



### Productivity review

#### 01 Productivity

$800 \text{ plants} \times 8 \text{ hour} \times 0.8 \times 4 \text{ machines} \approx 20,000 \text{ plants}$   
 ※ 0.8 : Standby, rest and idle time of workers

#### 02 10-person crew required

$20,000 \text{ plants} \div 10 = 2,000 \text{ plants / men / 8 hour}$



Your ideal partner for  
**'high Quality seedling'** Production :  
**Helper RoboTech Co., Ltd,**



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