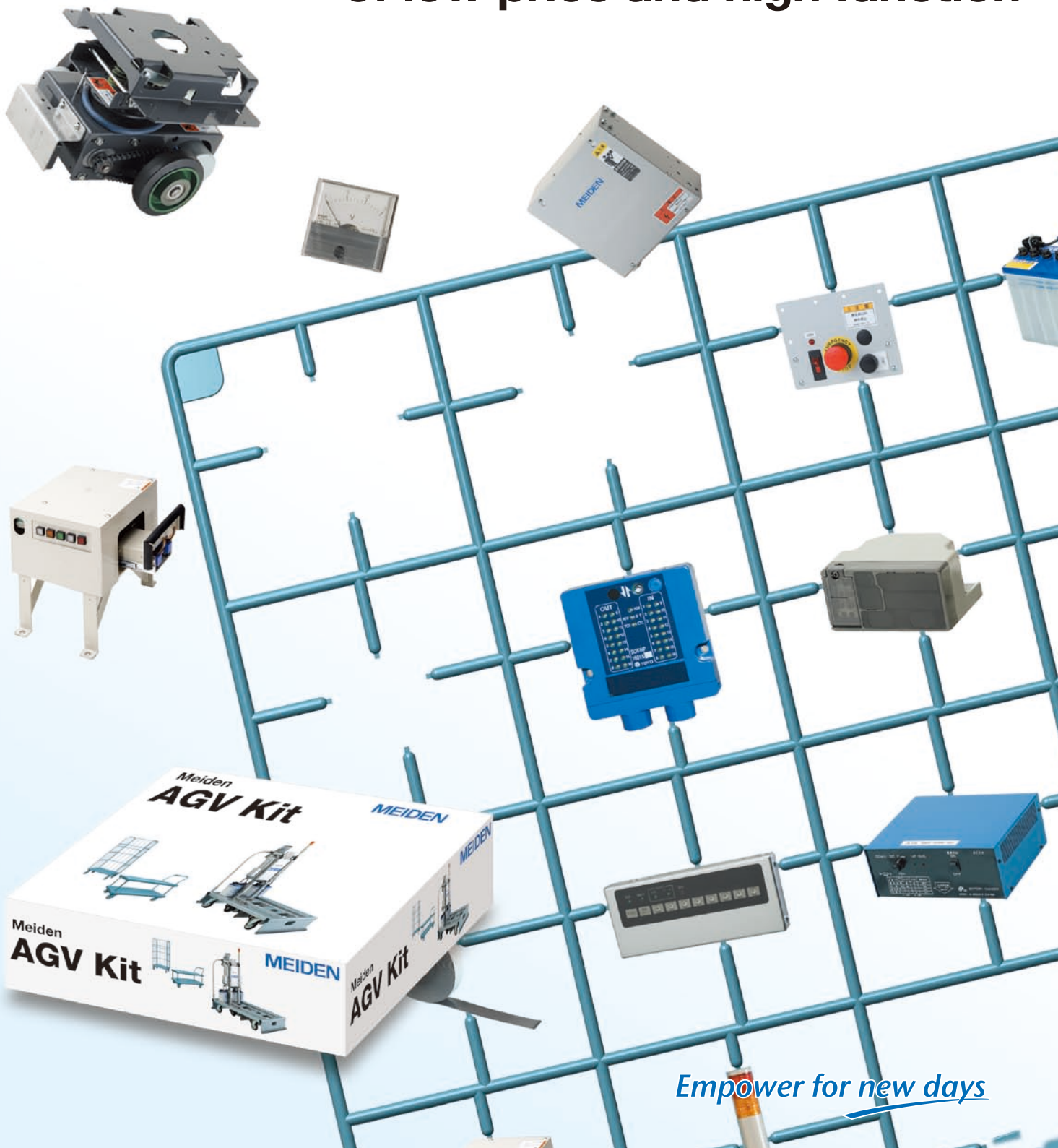


Meiden

MEIDEN

# AGV Kit

**Add-on type AGV with features  
of low price and high function**



*Empower for new days*

# AGV Kit is the one and only AGV its kind in the world.

Meiden AGV Kit

“We want to introduce the AGV, but we don’t have enough budget.”

“Conventional simplified AGVs are not enough for our plan.”

Our AGV Kit has been born from such voices on the site. The AGV Kit can combine both the keen requirements of low cost and high function. This is a simplified AGV with a high degree of freedom and expansibility.

## Great Changes Shown below as a Result of Model Changeover !

### 1 Improved functions

- The number of available stations increased to 200, and branches to 200, respectively
- Speed setup increased to 15 speeds (relative address system)
- Timer start possible after stopping at a station
- Adjustment of station stop position enabled
- External I/O control functions reinforced (improvement of speed / sensor setup)

### 2 Optional functions increased

- Motor-powered wheel lifter available
- Vehicle towing and automatic uncoupling can be carried out

### 3 Reduced control unit size and improved installation freedom

(Volumetric ratio reduced to 50% of conventional)



\* The photo shows an imaginary view.

**This model changeover will result in further expansion of AGV Kit application fields.**

#### Contents:

Advantages of AGV Kit Introduction	02
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Examples of Applications	07.08
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Establishment of AGV Courses	10
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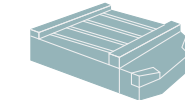
Add-on type AGV with features of low price and high function drawing on Meiden AGV technologies

## Advantages of AGV Kit introduction:

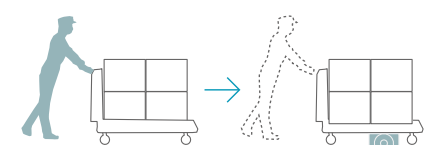
### Low cost



**AGV Kit:**  
The price is almost 1/8 that of an ordinary AGV.



**Ordinary AGV:**  
Even a standard vehicle costs tens of thousands of dollars.



### Produce high working efficiencies:

Labor saving on the transportation cost. The reduction of heavy labor and an optimal arrangement of personnel can be attained.

### Low cost and high function:

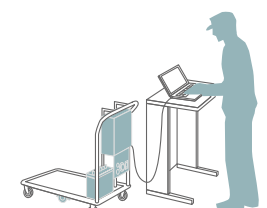
A high-function AGV can be obtained for about 1/8 of the ordinary price. Many options are available for functional upgrading.

### Simplicity



### Easy assembly:

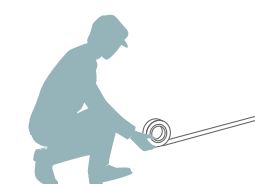
The customer can produce an original AGV by simply installing a new unit on the existing vehicle.



### Simple setup:

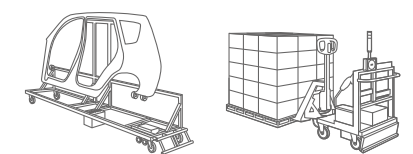
The user can easily set up the unit by connecting a PC. After that, the AGV starts and stops automatically when the switch is merely pressed ON.

### Flexibility



### Free layout:

By sticking magnetic tapes to the floor, the traveling route and stop positions can be easily set. Urgent layout changes are acceptable.



### Expansibility:

Any AGV can be produced according to the user's idea to carry cargoes. If an external I/O system is utilized, it can be developed into an auto-control system.



# Assembly is easy. Your present vehicle will become AGV you wanted.

## Basic Assembly

You can produce your own AGV by installing the basic unit and some applicable options on your existing vehicle.

STEP 0 Vehicle (belonging to the customer)

STEP 1 Basic unit

STEP 2 Optional unit (needed for traveling)

STEP 3 Optional unit (for higher functions)

\* Refer to Pages 11~12 for details about components and units.



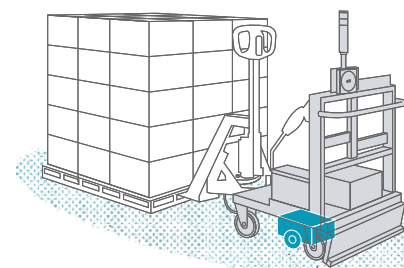
You can choose a just-fits driver unit according to the carrying weight and the traveling speed.

1 unit:  
1000kg Max.  
2 units:  
1400kg Max.

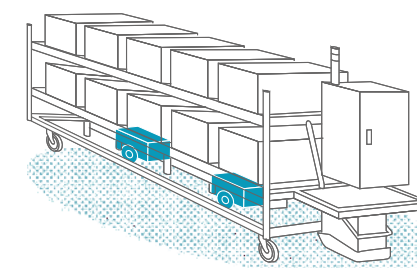
Example of basic unit installation

## Applications

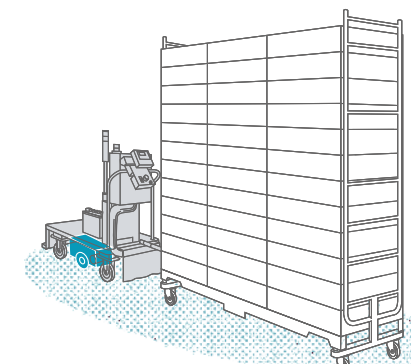
AGV Kit can make any type AGV according to the cargo being transported.



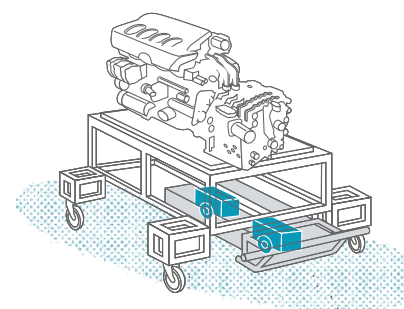
**Hand-pallet towing vehicle**  
The truck installed with AGV Kit tows the hand pallet behind it. When the joint is released, the towed hand pallet can be used as an ordinary one.



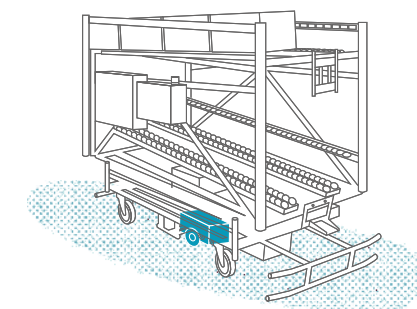
**Pick-up box carrying vehicle**  
With the digital pickup system, collected cargos can be supplied to the assembly line. Many parts boxes can be carried at a time.



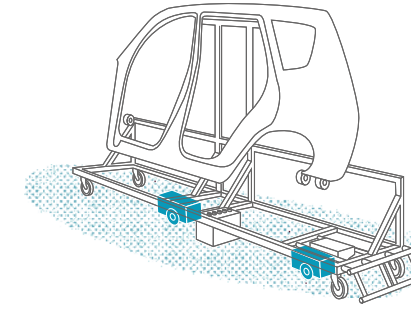
**Cart towing vehicle**  
AGV Kit tows and moves the exclusive merchandise-carrying cart from the in-cargo spot to the storage spot.



**Heavy-duty AGV**  
If two driver units are installed, a maximum of 1400kg can be transported. (Up to 1000kg per driver unit)



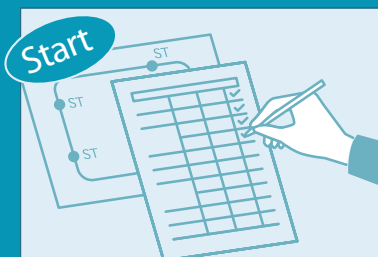
**Vehicle with an inclined conveyor**  
The loading and unloading of heavy articles can be done easily. Since a driving conveyor need not be installed, this application is useful for cost reduction.



**Lengthy article carrying vehicle**  
If two driver units are installed, the transportation of lengthy articles becomes possible. Because these two driver units run along the guided lines independently, stabilized traveling is assured.

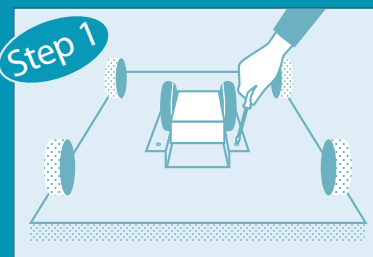


Confirmation of Details and Asking for Quotation

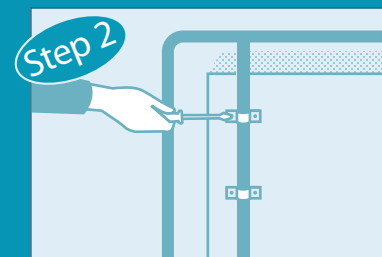


Please don't hesitate to contact us by phone or facsimile and ask us for explanations and a quotation.  
\* Please use the Specification Selection Sheet on Page 14.

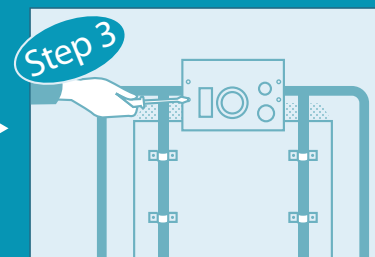
Assembly Procedures



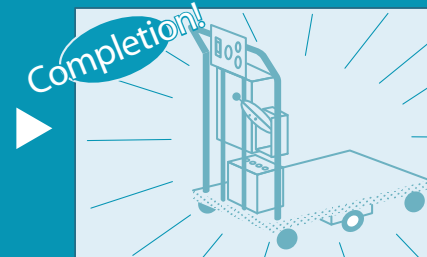
When your AGV Kit is delivered, start up the assembly work immediately. In the first place, install the driver unit and marker sensors on the reverse side of the vehicle.



Then, install the control unit. The control unit is so-to-speak the brain of AGV Kit ; it gives traveling instructions to the driver unit.



Install the operator switch and the wheel lifter. As required, install options according to the purposes.



Connect cables between the control unit and the driver unit, options, etc. When the storage battery is installed, the completed assembly is ready to run.





There are a variety of applications because you can customize your original system by yourself. The scope of the application can be widespread according to your idea.

Examples of the application of AGV Kit

Assembled components carrying vehicle

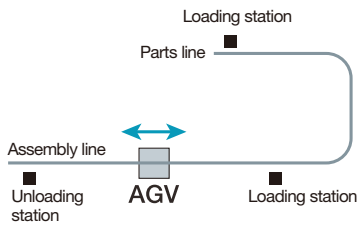


“We could cut the logistic job and more than to other job”  
(By a machine manufacturer)

- Backward function
- 2 units
- High speed

This system is used to convey the parts to the assembly line. The upper section of the vehicle is flat and is devised to have the height and shape suitable for putting parts on it. Assembly parts are procured from multiple parts shelves, and supplied to the assembly line.

- Since the vehicle can go backwards, it can enter a narrow space where cargos can be received.
- The traveling speed is as high as 60m per minute. The carrying mass is 350kg. It is a high-performance vehicle type AGV.



Hand pallet towing vehicle

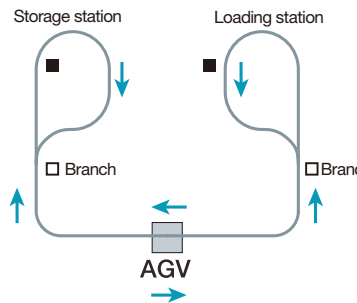


“This is a very convenient system because hand pallets can be towed immediately.”  
(By a food manufacturer)

- 1 unit
- Heavy load

The hand pallet as a whole, carrying stacks of product boxes, can be towed and transported. There is an automatic shutter on the way to the warehouse, but this shutter can be automatically opened and shut by means of a sensor that senses the arrival of AGV Kit.

- The hand pallet is directly towed.
- The vehicle comes in a small body with its length being approximately 700mm only.
- The carrying mass is 500kg, which is a heavy cargo.



Product cart towing vehicle

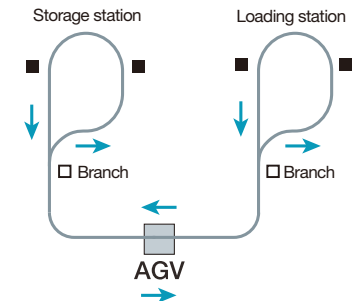


“We feel relieved because the transportation to the stowage warehouse can be automated.”  
(By a medical product manufacturer)

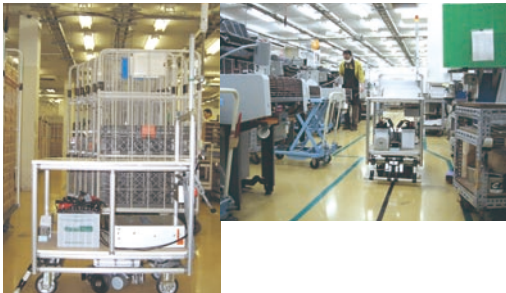
- 2 units
- Heavy load

AGV Kit tows two types of product carts, a box pallet and a flat pallet. These are combined with the pallet vehicle by means of joint pins, and automatically transported as far as the stowage warehouse. An automatic shutter on the way can be opened and shut automatically by means of a sensor that senses the arrival of AGV Kit.

- Two driver units are installed for the traction of a heavy article that amounts to 500kg.
- A joint mechanism for traction is added to a standard sheet metal truck.
- AGV Kit waits in front of the automatic shutter. It begins to run again after confirming the rise of the shutter by means of the sensor.



Printed matter carrying vehicle

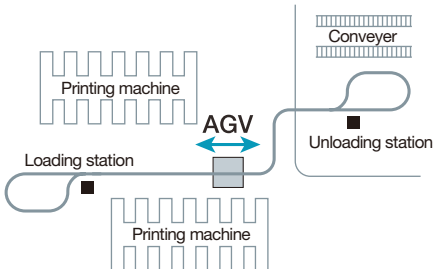


“Even an intern student could assemble it easily.”  
(By a printing company)

- 1 unit
- Standard

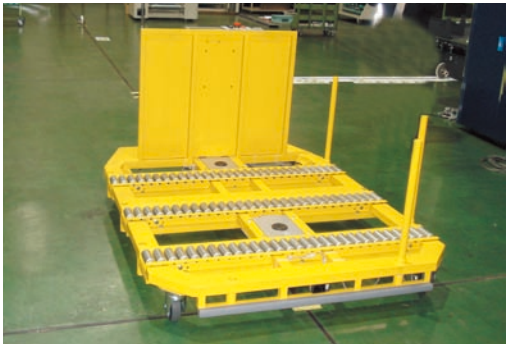
AGV Kit carries the printed plan sheets to the next process. The operator attending to each printing machine puts the printed matters on the vehicle and presses the START switch for transportation to the destination. This is the standard type with the carrying weight of 250kg and speed of 30m per minute.

- This is the standard type with a carrying mass of 250kg and a speed of 30m/min.
- Even a beginner can operate the AGV easily with a single button.



Examples of The Application of AGV Kit (More sophisticated classes)

Printing materials carrying vehicle

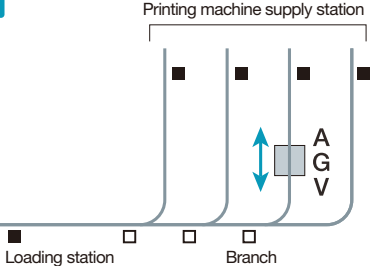


“An AGV exclusively used for large-size pallets has been established easily.”  
(By a printing company)

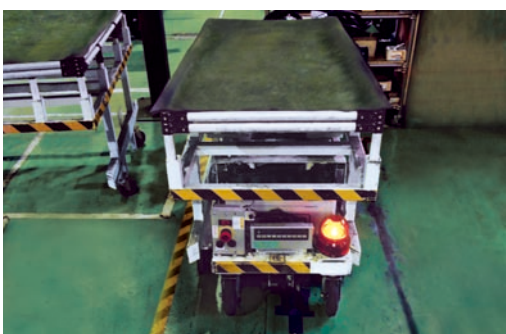
- Backward function
- 2 units
- Heavy load

This is AGV Kit used to supply raw materials to the printing machine. Raw materials are put in stacks on a pallet of 1500mm square and AGV Kit carries the materials from the material storage to the raw material supply port of the printing machine. A request for the material supply is transmitted in wireless mode from the station of the printing machine and AGV Kit carries the raw material.

- This is the large-scale forward/backward type with a carrying mass of 700kg.
- The vehicle height is made as low as possible by incorporating the free rollers.



Slip-in carrying vehicle

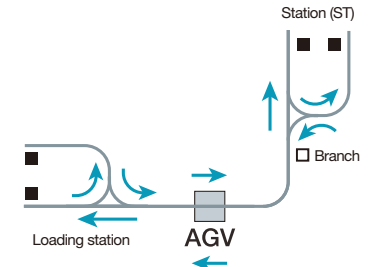


“This is our first experience to have an AGV that permits such a sharp spin turn.”  
(By a specific vehicle manufacturer)

- Backward function
- 2 units
- High speed

AGV Kit creeps under a carrying truck to be used as a tractor. The vehicle height is suppressed as low as possible and AGV Kit creeps under the truck and a traction pin is protruded from the bottom to hook it on the truck frame so that the vehicle as a whole can be towed and moved. Upon the arrival at the station, the traction pin is automatically withdrawn to let the truck remain there. AGV Kit alone moves to another point for the next transportation.

- All system management is done automatically. Destination instructions and start commands are identified by AGV Kit sensors. No instructions by workers are required.
- The wheel base has been made short to secure a sharp spin turn.



Mechanical parts carrying vehicle

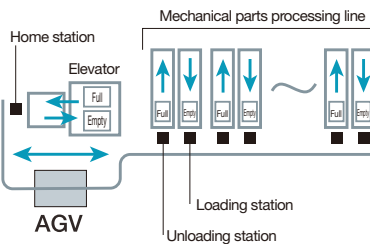


“Existing AGVs have been replaced with a low cost.”  
(By a machine manufacturer)

- Backward function
- 2 units
- Heavy load

This AGV Kit is used for materials loading and empty bucket recovery on the mechanical parts processing line. Each bucket full of materials is received from the elevator and automatically fed to the conveyor of the processing line. An empty bucket is automatically received from the processing line and automatically transferred to the elevator.

- Driving conveyers are installed for automatic load transfer with ground conveyers.
- Destination is indicated by an optical communication unit mounted on the ground conveyor.



Physical Distribution Center Cart Towing Vehicle

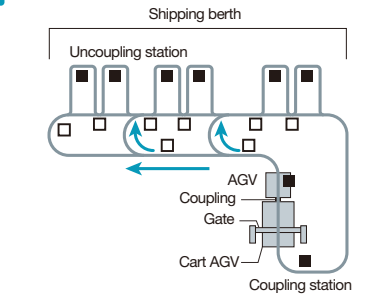


“Advantages are great because transportation personnel has been curtailed and wrong delivery is prevented.”  
(By a warehouse owner)

- 1 unit
- Heavy weight
- External I/O

At the Physical Distribution Center, incoming cart AGVs are classified and transferred to the shipping berth. Merchandise barcodes on the cart AGV are automatically read out and destination of this cart AGV is automatically discriminated. It is towed as far as the destination. Cart AGV coupling is manually performed by a worker, while uncoupling is done automatically.

- A maximum of 400kg of Cart AGV is transported at the maximum of 50m/minute.
- A merchandise barcode on the cart AGV is read out to designate the destination to the AGV Kit.
- When multiple units are operated, standby control by radio LAN is of the autonomous type.

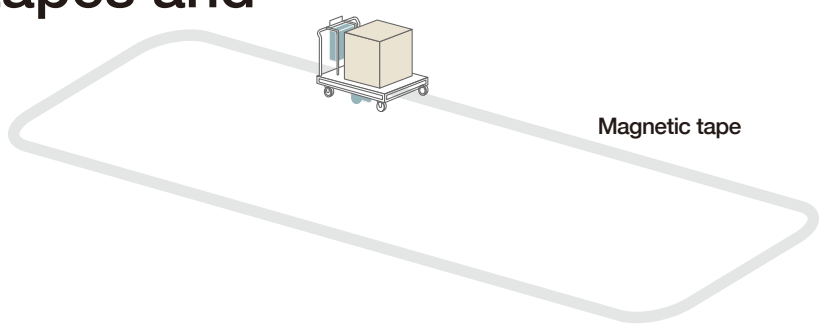




# AGV Kit control method

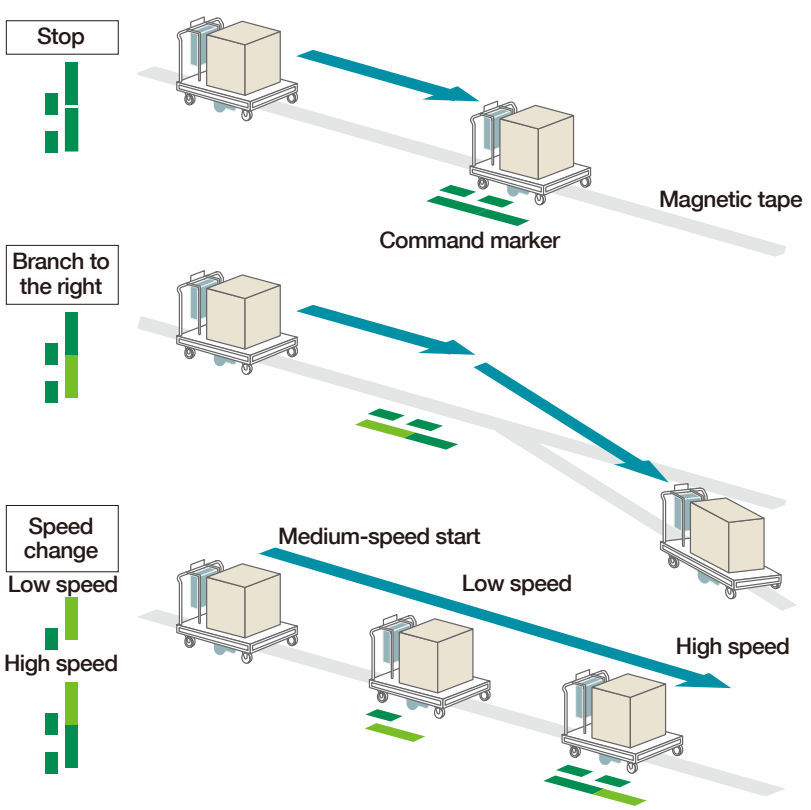
# Easy setting of an AGV route by using magnetic tapes and command markers

AGV Kit traveling route can be established easily by sticking the magnetic guidance tapes to the traveling course.  
\*Use only Meidensha magnetic tape.



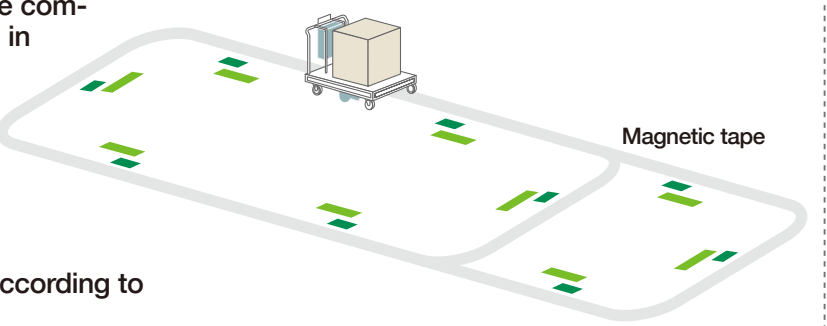
## Unit of command marker system

Until arrival at the goal station, the command markers stuck to the floor are read out and commands are sequentially executed.  
A variety of command markers can be used to give instructions of stop, branch, speed change, and so on.



## Unit of relative address system

Command markers stuck to the floor are read out and AGV Kit goes runs according to the command instructions preliminarily entered in these command markers.  
Command markers are stuck to positions where the AGV Kit has to perform stop, branch, and speed change.  
Multiple commands can be executed according to a command marker in one position. Speed setting is possible up to a maximum of 15 speeds. Obstacle sensors (scanner type) can be set up in a maximum of 15 areas. A maximum of 200 stations and a maximum of 200 branches can be set up.

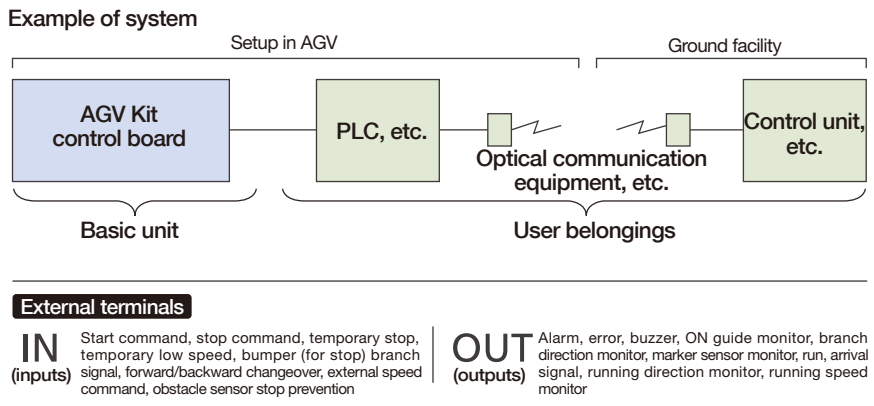


## Utilization of I/O systems “Automatic control”

It is possible to use an I/O system. By setting up applicable motions, a more functional AGV can be produced.

### Examples of possible items with applicable I/O systems

- Speed setting change
- Branch direction change
- Auto start-stop
- Forward/backward direction changeover
- Standby instructions
- Destination ST instructions & setup from external I/O



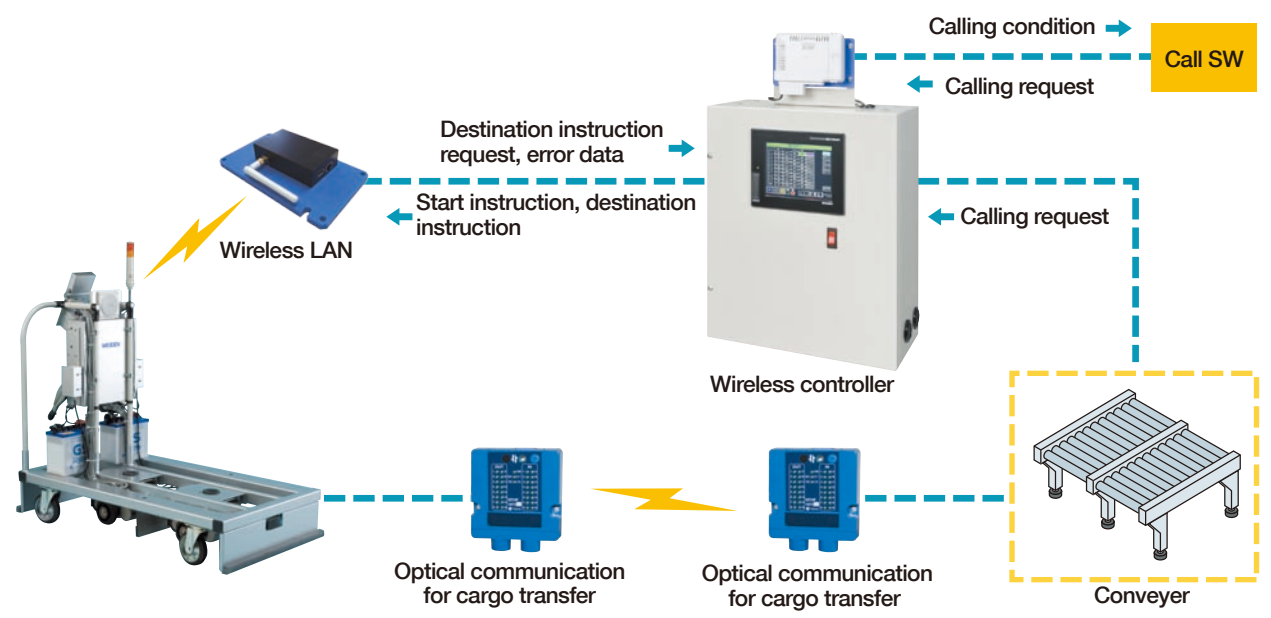
## Wireless controller exclusive for AGV Kit where a wireless LAN is installed

- Status supervision
- Timer start
- Standby control

An optional wireless LAN is also used.

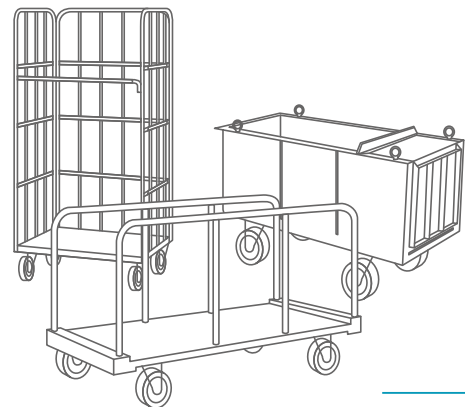
- With a signal from the I/O system, an instruction of servicing can be given to AGV Kit that is in rest condition at a station.
- Since the conveyor connection mode and the switch box connection mode are available, a nearby AGV Kit can be called up easily.

(Example)  
When the signal of a conveyor cargo sensor is applied to the controller, AGV Kit waiting for an instruction at the specific station can be called up to travel to this conveyor.  
\* Cargo transfer communication between the conveyor and AGV Kit can be exchanged by optical communication equipment. It also applies to the call switch.

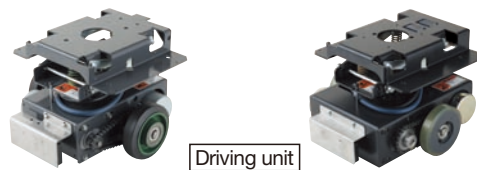


# Unit introduction

We can offer a variety of lineups to cope with various needs.



## Basic units



Driving unit

Select your favorite type.

### Light-duty class unit

Size: W353×H228×L355mm  
Min. ground height : 19mm  
Self-mass : 25kg

### Heavy-duty class unit

Size: W355×H239×L379mm  
Min. ground height : 15mm  
Self-mass : 25kg



### Control unit

This is a core section of AGV Kit. It contains a computer and a control unit.  
Size : W260×H110×L265mm  
Self-mass : 10kg  
Installing direction : Longitudinal flat installation



### Operation switch

Power, Start, and Emergency Stop switches are provided. Each LED is lit when the power supply is turned ON.



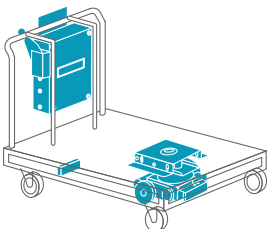
### Drive unit lifter

This device is used for the elevation of the driving block. When the driving block is lifted, the cart can be moved manually.



### Marker sensor

This is a command sensor to read out the command marker.



## Optional functions

### Back-traveling function

This is a function for the backward traveling of AGV Kit. Two sets of driver units and guidance sensors are added to modify the control unit.

### Simple reverse function

This is a function for the short-span backward traveling. It is applicable to a linear course and a large curvature. (magnetic tape radius at least 1.5m)  
Without requiring the addition of any driver units, this function can be established with the addition of guidance sensors.

### Electromagnetic brake

The shifting of cargos at the time of cargo transfer and vehicle stoppage on a slope can be prevented. (Standard installation for heavy articles)

### Encoder

With an encoder, Light-load-30m/min type vehicle can travel at lowest speed, 0.4m/min.  
Reading a pulse improves driving speed accuracy. This encoder function is used for assembling or picking work with moving AGV (instead of conveyer).

### Stopping accuracy upgrading

The stoppage accuracy is upgraded from the standard level. (±30mm → ±15mm) (Heavy-load type includes this option as a standard)  
\* The stopping accuracy is upgraded through the combination of the electromagnetic brake and the creep traveling function.

### Extension of power supply

Power is fed to optional units. (24V × 1.8A)

### I/O connector & harness

Dedicated connectors and harnesses are needed for using I/O.  
If a customer prepares harnesses, dedicated crimp tool is needed for termination.

## Optional units (required)

These optional units are needed for AGV traveling.



### Battery (24V)

Used as the AGV power supply. 25AH, 35AH, 65AH, and 100AH are available.

\*Closed mold type battery is recommended for Auto-charging.



### Battery charger

This is a battery charger. AC 100V and AC 200V versions are available.



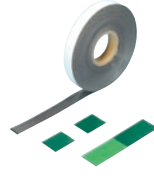
### Auto-charger (Back type)

Battery cells are charged while the AGV is in standby mode through the connections between the battery charger terminal and the charger.



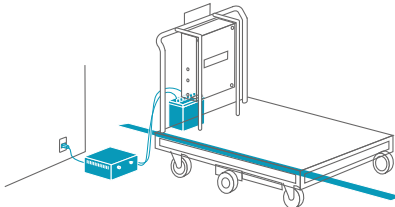
### Auto-charger (Side type)

Since it can touch the side terminal, automated charging is possible without any back-traveling function.



### Magnetic tape, marker

These are the magnetic tapes for guidance and markers.



### Operation console Type A

It is used for multi-spot stoppage with command markers. The AGV can stop at a maximum of 8 stations. A maximum of 7 branches can be set up. An error code is indicated in case of an error.



### Operation console Type 2B

It is used for relative address type multi-spot stoppage. The AGV can stop at a maximum of 200 stations and a maximum of 200 branches can be set up. An error code is indicated in case of an error.



### Laminate pilot lamp

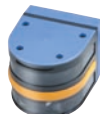
It is lit during automatic traveling, an emergency stop, a stop at a station, and others. An independently controllable buzzer is incorporated. (Up to three colors to choose from)



### Optical communication equipment

It is used when an instruction of AGV operation is given from the ground level.

\* An onboard setter may be required.  
\* Its harness needs to be crimped by customer.



### Obstacle sensor (scanner type)

The detection areas can be set up with a personal computer. For each detection area, a detection distance of 2-stage output can be set up.

\* May not be able to detect small objects, or matte black objects.



### Obstacle sensor

The presence of an obstacle is sensed by infrared rays. When coming closer to the obstacle, the vehicle loses speed and stops.

\* May not be able to detect small objects, or matte black objects.



### Tape bumper

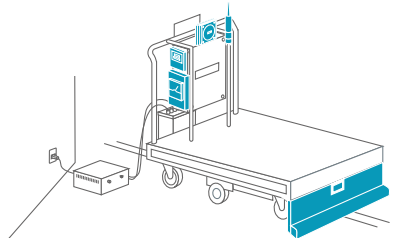
An emergency stop takes place when the tape bumper touches an obstacle.

\* Dead zones are provided to both ends.



### Running melody unit

A melody is broadcast during traveling or cargo transfer. 21 melodies and 11 types of buzzer sounds are available.

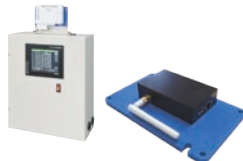


### Manual operation pendant

This is a wired remote control. It is useful when moving a heavy class vehicle outside the tapes.

## Optional units (for further improvements)

These optional units are intended for further functional improvements.



### Wireless controller + Wireless LAN unit

Refer to Page 9 for more details.



### Motor-powered wheel lifter

With a single switch, wheels of the driver unit can be elevated.

## Safety facts

This product is a unit to make an AGV and an AGV system. The final security under the operating conditions shall rest with the judgment of the customer.

\* Please refer to the JIS description in regard to the standard way of thinking. (JIS D6802 Safety Rules for the Automated Guided Vehicle Systems)

### Contact prevention

There is a danger of bone fracture or similar injury when you collide with the AGV's driver block. The AGV stops after the bumper comes in contact with an obstacle. If the AGV has to be stopped before any contact, the use of an obstacle sensor is effective. In consideration of the worst case, the emergency switch should be located where it can be touched from any position.

### Emergency stop

To reduce the braking distance in an emergency stop the electromagnetic brake option must be installed (installed by default on heavyweight models).

### Operation check

To know whether the AGV is moving, there is a visual method such that the laminate pilot lamp is made to light or blink. As an audio method, a melody may be used to notify of the running conditions.



Assembled vehicles with AGV Kit are also available.

Sheet metal carrying vehicle

Simplified backward Backward 2 units Heavy load



- Only this model is allowed to install all the specifications and options from the lineups of completed vehicle.

External truck size : W700×H1320×L1250mm  
Platform size : W700×H240×L950mm

Handle cart

Lightweight class



- This type can be immediately used to replace the conventional handle cart that is presently used.
- It is designed for any customer who wants easy usage.

External truck size : W620×H1015×L942mm  
Platform size : W620×H265×L785mm

Pipe carrying vehicle

Simplified backward Lightweight class



- This is a model whose body can be modified daily.

External truck size : W700×H1320×L1250mm  
Platform size : W700×H345×L945mm

Flat vehicle

Simplified backward Heavy load



- This is a compact low-platform model.

External truck size : W500×H350×L1232mm  
Platform size : W500×H350×L1000mm

Vehicle with a towing hook

Heavy load

- This is the hinged pin type. (Four M8 bolts are enough for installation.)
- A maximum of about one ton (specification of 30m/min) can be towed if the heavy article type has been selected.
- If an optional setup whisker type sensor is installed, safety is assured for the customer's truck with a maximum width of 1400mm.

External truck size : W620×H1015×L942mm



Vehicle with a towing hook (motor-powered uncoupling system)

Heavy load



Newcomer

- Vehicle towing and automatic uncoupling can be carried out.
- A maximum of 400kg can be towed at 60m/min at the highest.

External dimensions of the vehicle: W620×H1015×L942mm

Specification

	Light-duty class (MK2)			Heavy-duty class (MK5)	
	Standard type	High-speed type	Heavy load type	High-speed type	Heavy load type
Guidance system	Magnetic guidance system				
Traveling direction	Forward (Backward for optional)				
Rated load *1 1 unit / 2 units	250/350kg	250/350kg	500/700kg	500/700kg	1000/1400kg
Rated speed *2	30m/min	60m/min	30m/min	60m/min	30m/min
Stoppage accuracy	Standard ± 30mm (± 15mm for optional)*3			Standard ±15mm*3	
Gradability (5m continuous)	2% (at the rated load), 3% (at 70% load)				
Source voltage	DC24V				
Operating environment	Temperature 0~40°C, Relative humidity 20~80% Road surface step differences within 6mm (at 15m/min speed), road surface undulations within 10mm, groove width not more than 20mm				

\*1. A self-mass is included.  
\*2. The standard frame is unloaded and the battery is fully charged.  
\*3. For the relative address unit, an optional stopping accuracy upgrading function can be added to make the stop position accurate to ±10mm.

Specification selection sheet

Basic unit

Item	Specifications		Quantity
Basic unit  (Driver unit, control unit, operator switch, elevator lever, marker sensor)	Standard type	Light-duty	
		Light-duty	
	High-speed type	Light-duty	
		Heavy-duty	
	Heavy load type	Light-duty	
		Heavy-duty	

Standard vehicle

Item	Specifications	Quantity
Standard truck (completed truck)	Sheet metal vehicle type	
	Hand-push vehicle type (light-duty only)	
	Pipe vehicle type (light-duty only)	
	Flat vehicle type	
	Vehicle with a towing hook	
	Vehicle with a towing hook (motor-powered)	

Options (Selected as required, or procured by customers)

Item	Specifications	Quantity
1	Battery	24V(25・35・65・100AH)
	Connector only	
2	Charger	Separate charger (for AC 100V)
		Separate charger (for AC 200V)
		Simplified auto-charger (for AC 200V)
3	Magnetic tape	For running guidance (W30mm×L25m) Pole N
		For marker (W50mm × L1m) Pole N
		For marker (W50mm × L1m) Pole S
4	Bumper	Bumpers for completed vehicles (forward)
		Bumpers for completed vehicles (forward/backward)
		Bumper alone ( mm)
5	Battery voltmeter	Analog type
		Digital type
6	Onboard setter	Type A (Stop at 8 stations)
		Type 2B (Stop at 200 stations)
7	Wireless controller + Wireless LAN unit	For wireless LAN control (Ad hoc communication function provided)

\*4. Recommended to use if there is a strong impact to be received frequently at the drive unit.

Using conditions

- Not available for outdoor use.
- Do not apply a large impact to the vehicle while cargos are loaded.
- Road surfaces refuse traveling.
- Road surface wet with water or oil
- Road surface gradient more than 3%
- Road surface heavily contaminated
- Asphalt-paved road surface



## ■ Please inquire from the Web site



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