## Automatic Guided Vehicles



**AGV Comprehensive Catalog** 



# Meidensha AGVs solve the problem! We will provide the best AGV for you

#### Meidensha AGVs

Our **technical capability** has been cultivated over our long history. Founded in 1897 as "Meiden Motors" the **motor** and **control technology** that we have accumulated in over 120 years is irreplaceable. We support motors, control devices and guidance technology, the core technologies at the heart of AGVs.

We have **EXPERIENCE** and **KNOW-hOW** from working together with a wide variety of industries that require high-level transportation technology. We support "monozukuri" in Japan over the years by providing AGVs. We make full use of our experience as we have continually responded to the harsh operating conditions, frequent line changes, and high demand for reliability.

#### With an open AGV interface and full line of system support tools,

we provide AGVs that are easy to use.

#### **AGV Features**

#### **Excellent Traveling Control**

MEIDI

- Excellent steering control allows our AGVs to smoothly travel even steep curves and gently carry loads with little lateral shaking.
- •Without any stationary steering of the drive wheels by powered wheels steering, vehicle height is kept low.

#### Excellent Guidance Systems Ex

- •We provide various guidance systems from traditional magnet guidance systems to the latest multi guidance system so that you can utilize the system best suited to the environment at your site.
- The multi guidance system is a proprietary guidance system that achieves both autonomous travel adopted a SLAM system and a stopping accuracy of ±10 mm.
- **Excellent User Interface**
- AGV travel is controlled according to route data. Created on a PC, route data is configured using over 200 types of commands.
- •Using a command mark system, the simple model AGV Kit provides a user interface that allows you to configure a system on your own.

#### Transport Weight and Applicable AGV Model

We provide the best AGV for your Transport system needs for goods weight from 150 kg to maximum 6000 kg.



#### Guidance Systems

We have magnetic, laser, and multi (autonomous travel type) guidance systems. You can select the best guidance system suited to the environment in which the AGV will operate.

Guidance systems	System description	Features	Supported models
Magnetic guidance system	In some cases, a course is created by burying magnetic rods along the course or applying magnetic tape to the floor. The AGV detects the magnetism and follows the guide path.	<ul> <li>The guidance system with the most proven track record.</li> <li>Requires burying magnetic rods or laying magnetic tapes.</li> </ul>	•Platform type •Forklift type •Low-platform type •All kit type
Laser guidance system	The AGV travels by detecting its position and orientation by using laser radar to scan for reflector installed in the ceiling and walls. This keeps down dust caused by construction because guide wires do not need to be buried.	<ul> <li>Allows creating and changing the traveling route using CAD software running on a PC.</li> <li>Does not require laying a guide path.</li> <li>Requires installation of reflectors on the ceiling and walls.</li> </ul>	•Platform type •Forklift type
Multi guidance system	The AGV drives autonomously by using a laser range finder to measure the surrounding environment. This system provides high precision positioning by using both magnet and laser guidance.	<ul> <li>①Allows the automatic generation of a map and creation of a traveling route on the map using a PC.</li> <li>②Changing the traveling route using a PC is easy</li> <li>③Perform guide path construction and installation of reflectors in locations that require positioning.</li> </ul>	• Platform type of 3MC series

vel type) guidance systems.



#### Features



#### Excellent traveling performance

- •Traveling in all directions is possible, such as forward, backward, sideways, slantwise, and spin turn.
- •Efficient traveling is possible with a high degree of freedom, making full use of spin turn performance.



Simple operation •Operation is simple using a touch panel. • Displays AGV operating status, I/O monitor, and errors.

#### Specifications

Туре	3MC-M2.5	3MC-M2.5 3MC-M10		3MC-M60	
Load capacity	250kg	1000kg	3000kg	6000kg	
Guidance system		Magnetic rod and Magne	etic tape, Laser, and Multi		
Driving, Steering system		Front/Rear wheel drive, F	Front/Rear wheel steering		
Traveling direction	Forward, Backward, Sideways, Slantwise and Spin turn				
Max. Rated speed	Forward/Backward 60m/min Sideways 30m/min		Forward/Backward 60m/min Sideways 30m/min	Forward/Backward 30m/min Sideways 15m/min	
Min. turning radius	850mm 730mm		1200mm(Forward 30m/min)		
Stopping accuracy	±10mm ±10mm		±10mm		
Vehicle size	W704×H340×D1184mm W1150×H307/407×D1950mm		W1522×H47	7×D2740mm	
Cargo transfer height	340mm (cargo transfer unit excluded)	Automatic charging type:307mm、 Manual charging type:405mm (cargo transfer unit excluded)		mm unit excluded)	
Vehicle weight	230kg	600kg	155	Okg	

#### Sample applications



①Chain conveyor transfer machine

3

Securely transfer slippery palettes using a chain conveyor.



②Push-pull arm type transfer machine

conveyor on top.

A push-pull arm comes out Position the AGV under a frame to transfer a work from the to lift cylindrical works. Transfers heavy loads stably thanks to the low height of the vehicle.





④V-shaped bucket type transfer machine

Securely take hold of works with a V-shaped bucket, while an outrigger absorbs the shock at the time of transfer.

transfer machine forwards and backwards on a roller conveyor.

Transfer super heavy loads

Platform, Forward and Backward type

# 2ACB

There are product lineups from small to medium types to be chosen according to cargo sizes. This model is most suitable for intra-process transportation in production lines.

#### Features

- •This is a standard AGV of the 3-wheel type vehicle.
- •The carrier coms in the roller table (2-serial, 3-serial, and 2-stage type), lifter, and push-pull type, useful in a variety of applications.
- •These models support options such as automatic battery charging, destination orders using a wireless LAN, and intersection control.

#### Sample applications





①Lifter type transfer machine Transfer castings with a compact lifter transfer machine.

②Two-stage, two-level conveyor transfer machine Transfer a lot of works at once using a two-stage. two-level conveyor.

#### Platform, All directional type

**ACBM** All directional type

Most suitable for transportation in a narrow space.

#### Features

- •This AGV is of the Front/Rear wheel driving and steering type.
- •Traveling forward/backward, traverse slantwise, and spin turn is possible.
- •Traveling is possible in a narrow space.
- Because it is possible to be moved to all direction, the cycle time can be shortened.

#### Sample applications



With a roller conveyor that goes up

works on the conveyor to a different

and down, this vehicle transfers

conveyor level.



②Two-stage conveyor transfer machine

Transfer two works at once using a two-stage conveyor

Туре Loa Guio Drivi

Trav

Max. Vehi



#### Specifications

Туре	2ACB2.5	2ACB5	
Load capacity	250kg	500kg	
Guidance system	Magnetic rod and Magnetic tape, Laser		
Driving, Steering system	Front wheel drive, Front wheel steering		
Traveling direction	Forward (Backward: optional) and Spin turn		
Max. Rated speed	60m/min		
Vehicle size	W685×H340×D1600mm	W800×H350×D1750mm	



③Roller conveyor transfer machine Transfer works while preventing slipping with special rollers.



(4) Elevator slide arm type transfer machine Position the vehicle using an outrigger and transfer works with high accuracy using an elevator slide arm.



#### Specifications

e	ACBM2.5
d capacity	250kg
dance system	Magnetic rod and Magnetic tape, Laser
ving, Steering system	Front/Rear wheel driving and Steering type
eling direction	All direction and Spin turn
K. Rated speed	60m/min
icle size	W755×H360×D1600mm



③Three-stage conveyor transfer machine

Transfer three works at once using a three-stage conveyor.



④Two-stage, two-level conveyor transfer machine Transfer a lot of works at once using a two-stage, two-level

conveyor.

Forklift type

## Side-Fork Type **Pallet Transport AGV** PS Magnetic/ 1.1t

AGV especially for conveying palettes.



#### Features

- Even along a passage of 2400mm in width, it is possible to gain access to the destination without changing the posture.
- •A 180°spin-turn is possible in a passage of 3000mm in width.
- •Since the brushless motor is adopted for the driving unit, properties of cleanliness and maintainability have been improved.
- Every direction has obstacle senser and bumpers in order to secure high safety.



#### Specifications

Туре	3ML-M11
Load capacity	1100kg(Cargo center 600mm, deviation from the center of gravity ±50mm)
Guidance system	Magnetic rod and Magnetic tape,Laser
Driving, Steering system	Front/Rear wheel driving and Steering type
Traveling direction	Forward/Backward Sideways, and Spin turn
Max. Rated speed	60m/min(Sideways 30m/min)
Max. Elevating height	1000mm, or 1800mm for optional
Max. Elevating speed	250mm/sec
Reach stroke	1350mm
Reach speed	250mm/sec
Min. turning radius	1500mm (Forward/Backward 15m/min)
Stopping accuracy	Vehicle base end ±10mm, Fork end ±30mm
Transport pallet size	Max.1200×1200mm
Vehicle size	W2278×L1748×H1738mm
Vehicle weight	2050kg
Voltage	Automatic battery charging system 48V 150Ah



#### Full flat low-platform type

#### Lift type Low-platform AGV PS Magnetic 350ka

This Lift type low-platform AGV is suitable to customers who do not want to modify their existing carts.

#### Features

- •Carts do not need to be modified because they are lifted and carried by the lifter transfer unit.
- •Attachments can be customized to match the shape of the carts.
- •This AGV is strong enough to transfer 350kg, so it can also be used to transport heavy objects.
- •The forward and backward function allow it to be loaded into an elevator.

#### Wireless battery charger option

• Power receiving coil and unit built in to the AGV •Resilient against mispositioning and easy to install.

Specifications	
Туре	D-Broad Mini
Manufacturer	DAIHEN Corporation
Rated input power	1.0KW
Output voltage/current	30V/20A
Distance between coils	30mm±10mm







#### Sample applications



5

each other.



#### Specifications

Туре	3MS-3.5E
Load capacity	350kg
Guidance system	Magnetic rod and Magnetic tape
Driving, Steering system	Front wheel drive, Front wheel steering
Traveling direction	Forward/Simple backward (straight-line)/ Spin turn
Max. Rated speed	60m/min(Backward 30m/min)
Stopping accuracy	±10mm
Working time	1h (Continuous with auto-charge feature)
Vehicle size	W380×H180×D1650mm
Cage cart dimensions	W800~1100×D600~1100mm Secure width of 440 mm or more for vehicle body to slide under Distance between bottom plate and floor: Cage truck set condition: Positioning accuracy ±10mm
Storage battery	Lithium-ion battery
Vehicle weight	150kg



because the AGV lifts up ad carries the truck frame. **Lift up cage truck and transport it.** 



The truck at the head of the line can be taken away one at a time.

#### Automatic Guided Vehicle Kit

#### Meiden AGV Kit MK2/5 Series **1.4**t

Wouldn't you like to gave such an AGV? Anyone can use it. This is an open interface AGV that permits easy system structuring.

#### Basic unit





Light-weight drive unit

Heavy-weight drive unit





Control unit

Specifications

Operating switch

#### Setting of options

<ul> <li>Battery</li> </ul>	<ul> <li>Tape bumper</li> </ul>
<ul> <li>Battery charger</li> </ul>	<ul> <li>Obstacle sensor</li> </ul>
<ul> <li>Battery voltmeter</li> </ul>	<ul> <li>Traveling melody unit</li> </ul>
<ul> <li>Setter on vehicle (A/2B type)</li> </ul>	<ul> <li>Magnetic tape marker</li> </ul>
Laminate pilot lamp	<ul> <li>Urethane tire</li> </ul>
<ul> <li>Auto-charger</li> </ul>	<ul> <li>Manual operation pendant</li> </ul>
<ul> <li>Wireless controller</li> </ul>	<ul> <li>Magnetic brake</li> </ul>
•Simple backward function	<ul> <li>Traversing and spin turn function</li> </ul>



•The AGV offered meets arbitrary requirements, from a basic unit to a completed vehicle.

1ユニット

2ユニット

Example of basic unit installation

最大1000kg搬送

最大1400kg搬送

- •Start/Stop operetion is simple with a single button.
- •Since an external I/O circuit is released to be open, any customer can establish a favorite system.

#### Flexible interaction possible with layout change !

- •Stick a magnetic tape to the floor surface-That's all. By taking such an easy action, a traveling route can be easily set up.
- •When markers are installed on the floor, operation control for acceleration and deceleration can be accomplished easily.
- •Using a simplified backward traveling function, varios running routes can be established.

#### Expansibility that is attractive !

- •A wireless controller option can be used to provide call in control, dispatch control and standby control.
- •There are two control systems available according to applications.

Command mark system :	Command markers are stuck
	to the floor for simple control.
Relative address system :	Operation is programmed for
-	each mark on the floor for
	complicated operation control.

						-	
		Light-duty class (MK2)		Heavy-duty class (MK5)			
			Standard type	High-speed type	Heavy load type	High-speed type	Heavy load type
		Advance	250kg	250kg	500kg	500kg	1000kg
load <sup>%1</sup> (total weight)		Forward/Backward travel	350kg	350kg	700kg	700kg	1400kg
(total freight)	2Units	Traverse **2	350kg	350kg	700kg	700kg	1400kg
		Spin turne <sup>**2</sup>	175kg	175kg	350kg	350kg	700kg
Rated speed <sup>**3.4.5</sup>		30m/min	60m/min	30m/min	60m/min	30m/min	
Guidance system		Magnetic tape					
Traveling direction		Forward (Backward for optional)					
Stopping accuracy <sup>%6</sup>		Standard ±30mm( ±15mm for optional) Standard ±15mm			1±15mm		
Gradability (5m continuous)		2% (at the rated load), 3% (at 70% load)					
Voltage		DC24V					
Enviroument <sup>*7</sup>		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					

\*\*Note 1. The allowable load includes vehicle. The allowable weight also varies depending on the traveling resistance of caster wheels.

- \*\*Note 2. The allowable load given for lateral travel and spin turning is for when solid elastomer is used for the caster wheel material.
- \*Note 3. When the AGV is fully charged and moving a standard empty frame

\*Note 4. Maximum speed during traverse or spin turning is 15 m/min. \*Note 5. Maximum speed during simple backward travel is 20 m/min.

\*\*Note 6. The stopping accuracy for lateral travel and spin turning is ±30 mm. \*\*Note 7. Lateral travel and spin turning should be done on a non-sloping surface.





#### Assembled carts with AGV Kit

Assembled carts equipped with an AGV Kit are also available.



#### [Practical Assembly] With the AGV Kit you can create an AGV suited to the items to be carried



Hand pallet towing truck You can attach a hand palette behind a truck equipped with an AGV Kit and tow it. Once detached, it can be used as an ordinary hand palette.



#### Truck for conveying heavy items

When two drive units are attached, loads up to 1400 kg can be conveyed. Convey loads by placing a truck with installed AGV Kit under a truck already being used (up to 1,000 kg per drive unit).

transported at a time.

Allows you to take down heavy loads easily.

conveyor is not needed.





units travel on a guide path.



Assembly pallets and parts trays are loaded on AGVs, and unit part assembly work is done on the AGVs. AGVs run at a creeping speed of 1.5 meters per minute, and assembly work proceeds without stopping. By AGVs continuously traveling, time loss for transporting work is reduced. Moreover, the transport route is selected from model information recorded to RFIDs mounted on assembly pallets for automatic operation.

#### **1** Effects of introduction

- ① Flexible response to fluctuations in production volume and changes to layouts
- 2 Achievement of optimal and efficient transport per model, which was difficult to achieve with assembly conveyors
- ③ Achievement of mixed flow production with large variety by processes that use creeping speed type AGV and RFID

#### **2** System composition

Location introduced to	Unit assembly line
Model name	AGV Kit heavy-duty class MK5 special assembled vehicle
Travelling speed	Creeping speed travel 1.5 m/min Ordinary speed travel 30 m/min
Transported Items	Assembly pallets, parts trays
Transport weight	Up to 500 kg
Ground equipment	1 system control board, 8 automatic battery chargers, 3 wireless LAN access points



50 AGV Kit special assembled vehicles

#### **3** System operation



AGV introduction 2 Machining line

## 24-hour-a-day automated operation made possible.

This automated transport system automatically supplies machining lines with materials and processing work. It applys AGVs that can travel in all directions, enabling reduced travelling space requirements and tight turning. The system control panel constantly

#### **1** Effects of introduction

- ① Achievement of automatic transport of pallets holding materials and processing work
- 2 Ability to operate fully automated 24 hours a day thanks to automated battery charging
- ③ Minimal impact of broken down vehicles due to function to automatically generate detours when vehicles break down

#### **2** System composition

Location introduced to	Machining line
Model name	Platform type AGV 3MC-M10
Travelling speed	Max. speed 60 m/min
Transported Items	Material/processing work pallet
Transport weight	Up to 1,000 kg
Travel directions	All directional travel (forward, backward, sidewa
Ground equipment	1 system control board, 4 automatic battery 13 wireless LAN access points

#### **3** System operation







communicates with the AGVs by wireless LAN, identifying where the AGVs are and their status to prevent collisions between AGVs and efficiently give transport instructions after unloading work.



ays, and spin turn) chargers,

10 3MC-M10s

AGV introduction S Cage truck shipping line

**Easy automation of transport** without need to modify existing cage trucks.

With this system, cage trucks are transported automatically without intervention by workers on the shipping line where products are transported by cage trucks. AGVs are low-platform type, and they slide underneath cage trucks and lift them up to transport

them, meaning no modifications need to be made to cage trucks. And as they can pass underneath cage trucks, they can transport in order from the first one in a line, thereby reducing the space needed for cage truck holding areas.

#### **1** Effects of introduction

- ① Cage truck received on third floor, transported to the stock area, and then automatically transported to the shipping lane on the first floor
- 2 Ability to use without modifying existing cage trucks means reduced total costs at introduction
- ③ Space needed for straging cage trucks is reduced, so the customer can make the maximum use of its work area

#### **2** System composition

Location introduced to	Lined stock area and shipping sorting area					
Model name	Lift type low-platform AGV 3MS-3.5					
Travelling speed	Max. speed 60 m/min					
Transported Items	Cage trucks loaded with products					
Transport weight	Up to 350 kg					
Ground equipment	<ol> <li>system control board, 1 status monitoring panel,</li> <li>automatic battery chargers, 1 cage truck positioner,</li> <li>wireless LAN access points</li> </ol>					

# Seven 3MS-3.5s

(three on 3rd floor, four on 1st floor)



AGV introduction 4 Food production line

### **Contribution made to** automation of manned forklift work.

This system automatically supplies production lines with pallets loaded with containers, caps, and other materials. Manned forklift work was automated with two types of AGV—side-fork type AGV for cargo sorting in warehouses and towing truck AGV for

#### **1** Effects of introduction

- automated warehouse

tion introduced to	Material storage warehouse, food production
el name	Side-fork type AGV 3ML-M11, AGV Kit MK5 special towing truck
elling speed	Max. speed 60 m/min
sported Items	Pallets loaded with materials
sport weight	Up to 800 kg
Ind equipment	1 system control board, 2 automatic battery 1 wireless LAN access point





production lines. Pallets loaded with materials are removed by side-fork type AGV and unloaded to special towing truck AGV, and the AGV tow them to the production line.

#### Dimensions unit(mm)



### Specifications

Items		Platform, Forward and Backward type		Platform, All directional type				Forklift type	Full flat Low-platform type			
		2ACB2.5	2ACB5	ACBM2.5	3MC-M2.5	3MC-M10	3MC-M 30/60	3ML-M11	3MS-3.5E			
	Load capacity (including transfer unit)	kg	250 (400)	500 (750)	25 (40		1000 (1500)	3000/ 6000	1100	350		
	Guidance system		Magneti	ic rod / c tapes / ser	Magnetic rod / Magnetic tapes / Laser Multi				Magnetic rod / Magnetic tapes / Laser	Magnetic rod / Magnetic tapes /		
	Driving, Steering system		Front whe Front whe		Front/Rear wheel driving, Steering				Front/ Rear wheel driving,Steering	Front wheel driving,Front wheel steering		
	Bac		Opti	onal	0				0	$\bigcirc$		
	Traveling direction	AII directional	-	_	0					—		
	uncetion	Spin turn	0									
	Rated speed		6	0	Forward/Backward 60 Traverse 30 (3MC-M60 Forward/Backward 30 Traverse 15)				Forward/ Backward 60 Traverse 30	Forward 60 Backward 30		
₽.	Elevating speed	mm/s	_	_		-			250			
	Reach speed		-	_	_					—		
	Minimum turning radius	mm	850	900	1000	850	730	1200	1500	800		
	Stopping accuracy (Speed before stop: 8m/min)	mm	±.	10	±10				Machine base end ±10 Fork end ±30	±10		
	Gradienty (5m continuous)	%			2							
	Standard working time	h	٤	3	8			Continuous Automatic charge type				
	Length/ ( ) Spec. for backward	mm	1550 (1600)	1655 (1750)	1600	1184	1950	2740	1748	1650		
suc	Width	mm	685	800	756	704	1150	1522	2278	380		
Major dimensions	Height	mm	340	350	360	340	307 (Automatic charging type) 407 (Manual charge type)	4//	1738	180		
	Load-carrying platform height	mm	340	350	360	340	307 (Automatic charging type) 407 (Manual charge type)	477	35~1035	180		
	Minimum ground height	mm	25 30		30 25		30		35	20		
	Weight	kg	220	360	290	230	600	1550	2050	150		
oatteries	Туре		Open type lead batteries for battery replacement system, Enclosed type lead batter						ries for auto-c	harge system		
Storage batteries	Voltage	V	24	48	24	1	4	48		24		
Automatic battery charge type		Optional							0			
	Wireless LAN	N	Optional									

Note. Road surface where AGV cannot be used:

#### Water and oil are prevalent.

Path surfaces where level differences, grooves and warps exceed specified values.

#### Option

#### Automatic Battery Charge

#### Features:

- Around-the-clock continuous operation is possible with a feature of automatic battery charging.
- •Charging is performed after confirming the stop position of AGV.
- •Wireless battery chargers also can be used.

#### Wireless LAN unit

#### Features:

1-1-1

•Using a wireless LAN unit, high-speed communication with a ground station can be carried out. •Wireless Standard IEEE802,

- 11b/g/n 2.4GHz
- Used for the destination order or call in control.



or more.

Road surface heavily contaminated

Asphalt-covered road surface

Magnetically active path surfaces such as steel floors (when using magnetic guidance)

#### Introduction to AGV Factory

AGV Factory is an exhibition space set up at the Nagoya Works.

- •Four types of AGV with differing features are on permanent display.
- •Features of vehicles with different guide methods and demonstrations of two trucks working in tandem to deliver cargo can be viewed.



To sign up for a tour, please use the inquiry form at "AGV Navi"" on the Meidensha website. (Please do not sign up if you are in the same industry.)



#### MEIDENSHA CORPORATION

ThinkPark Tower, 2-1-1, Osaki, Shinagawa-ku, Tokyo, 141-6029 Japan

#### www.meidensha.com

**Overseas Offices & Group Companies** 

#### CHINA MEIDENSHA (SHANGHAI) CORPORATE MANAGEMENT CO., LTD. MEIDEN PACIFIC (CHINA) LTD. MEIDEN ZHENGZHOU ELECTRIC CO., LTD. MEIDEN HANGZHOU DRIVE SYSTEM CO., LTD. MEIDEN (HANGZHOU) DRIVE TECHNOLOGY CO., LTD.

MEIDEN INDIA PVT. LTD. MEIDEN T&D (INDIA) LTD.

P.T. MEIDEN ENGINEERING INDONESIA

MEIDEN KOREA CO., LTD.

https://www.meidensha.com/contact/

including loss of profit and special damages.

Contact Us

MEIDEN MALAYSIA SDN.BHD. MEIDEN METAL ENGINEERING SDN. BHD. MEIDEN ASIA PTE. LTD. MEIDEN SINGAPORE PTE. LTD.

SINGAPOR

VIETNIAM

THAI MEIDENSHA CO., LTD.

VIETSTAR MEIDEN CORPORATION

GERMAN MEIDEN EUROPE GMBH. TRIDELTA MEIDENSHA GMBH.

THE UNITED STATES

MEIDEN AMERICA, INC. MEIDEN AMERICA SWICHGEAR, INC.



Specifications in this catalog are subject to change without notice. The seller shall not be liable for incidental damages, consequential damages

Please contact us through the following URL or QR code

Automatic guided vehicle (AGV) systems

