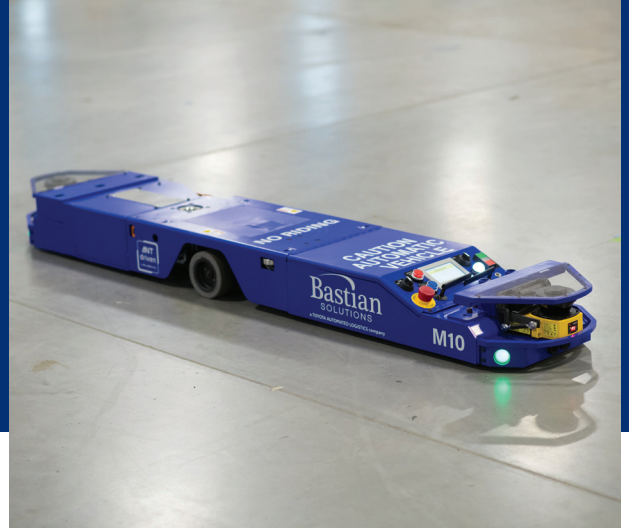


M10 Tug AV with Natural Features Navigation



The M10 Tug AV powered by Bastian Solutions is a game changer for manufacturing

EXECUTIVE SUMMARY

The M10 Tug AV is designed to fit under various carts/ payloads, allowing 360-degree access while reducing the footprint required in your facility. The natural features guided M10 automatically hitches and unhitches carts/payloads, allowing the vehicle to run autonomously. This frees up labor for more valuable tasks while improving reliability, system uptime and product safety.

The M10 can optimize manufacturing applications such as pallet transportation, assembly line conveyance and lineside deliveries.

PRODUCT OVERVIEW

- Payload capacity up to 1000kg (2200 lbs.)
- Drawbar pull up to 19kgf (42 lbf.)
- Natural features navigation via LIDAR
- DC brushless motors
- Bi-directional travel with category 3 safety
- 101.6mm (4 in.) turning radius
- Drive suspension system maintains consistent traction on slightly uneven floor

FEATURES



Assembly Line Indexing



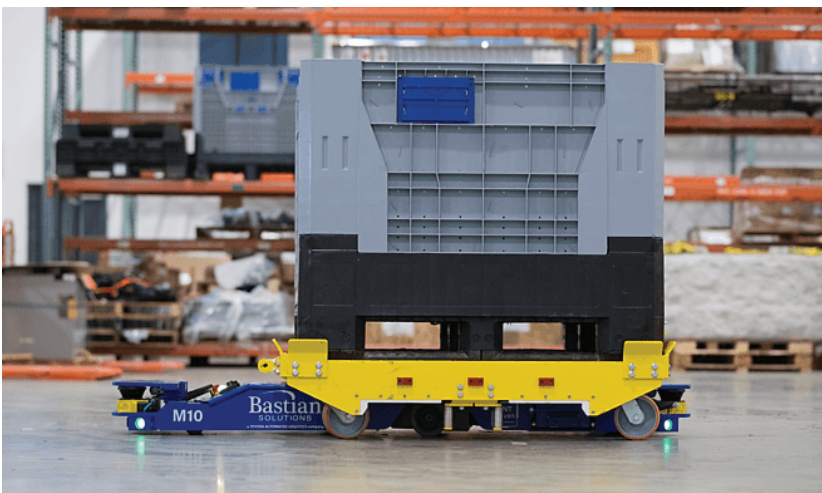
Custom Applications



Interfacing with Robotic Cells



Enables 24/7 Automated Operations



TECHNICAL DATA SPECIFICATIONS

General Data			M10
PAYLOAD CAPACITY		kg (lbs.)	1000 (2200)
MAXIMUM DRAWBAR		kgf (lbf.)	19 (42)
SPEED	Maximum	m/s (mph)	Forward: 0.83 (1.9), Reverse: 0.7 (1.6)
	Minimum	m/s (mph)	0.1 (0.2)
ELECTRICAL SYSTEM			24-volt
BATTERY			28 amp/hour AGM
			Standard: Automatic battery charging contacts
			Automatic power off
GUIDANCE METHOD			Natural features via 2D LIDAR
TRAVEL INSTRUCTION METHOD			Feature map with virtual path planning & devices
DRIVE TYPE			DC vrrushless motors
STEERING			Tricycle with differential traction wheels
BRAKES			Controlled: Reverse plug Fail-Safe: Electromagnetic
CART ENGAGEMENT METHOD		mm (in.)	30 (1.18) dia. retractable pin
COUPLING SENSOR			Photo-reflective sensor to lower pin
DRIVE UNIT UP/DOWN METHOD			Electric lift (toggle switch)
WIRELESS COMMUNICATIONS			WIFI - 2.4 & 5.0 GHz
HUMAN-MACHINE INTERFACE (HMI)			Configuration interface & status display
SAFETY DEVICES	Optical Sensor		CAT 3 safety rated 4 meter distance measuring LIDAR
	Status Light		Color to indicate AV state
	Chime & Melody Box		Multi-tune music box: running & fault chime
	Safety Controller		Safety PLC
	Circuit Protection		Resettable breakers for: main, drive motors, pin & drive lift
MINIMUM TURNING RADIUS		mm (in.)	101.6 (4); minimum pivots on two rear fixed casters
DIMENSIONS	Overall Length	mm (in.)	1998 (78.7)
	Overall Width	mm (in.)	370 (14.6)
	Overall Height	mm (in.)	178.5 (7)
GROSS VEHICLE WEIGHT (WITHOUT BATTERY)		kg (lbs)	184 (405)
FLOOR CONDITIONS	Step (ridge)	mm (in.)	5 (0.2) or less
	Gap (crack)	mm (in.)	20 (0.9) or less
	Waviness	mm (in.)	10 (0.4) or less over the length of the AGV
WORKING ENVIRONMENT	Temperature	C° (F°)	10 - 40 (50 -104)
	Humidity	mm (in.)	5 - 85 RH (no condensation)
	Prohibited	mm (in.)	Outdoor, washdown and freezer
OPTIONAL ACCESSORIES			Automatic battery charging station (includes 2-contact floor plate, 110V / 40 amp battery charger & 10 ft. wire lead for floor plate)
			12 pin breakaway connector for remote I/O