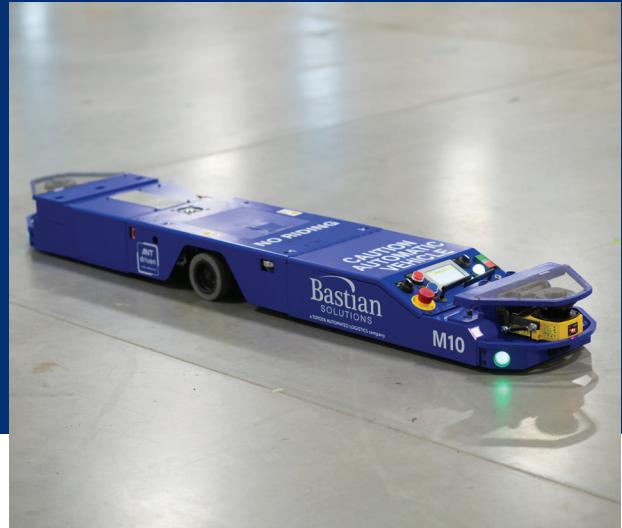


M10 Tug AV with Natural Features Navigation

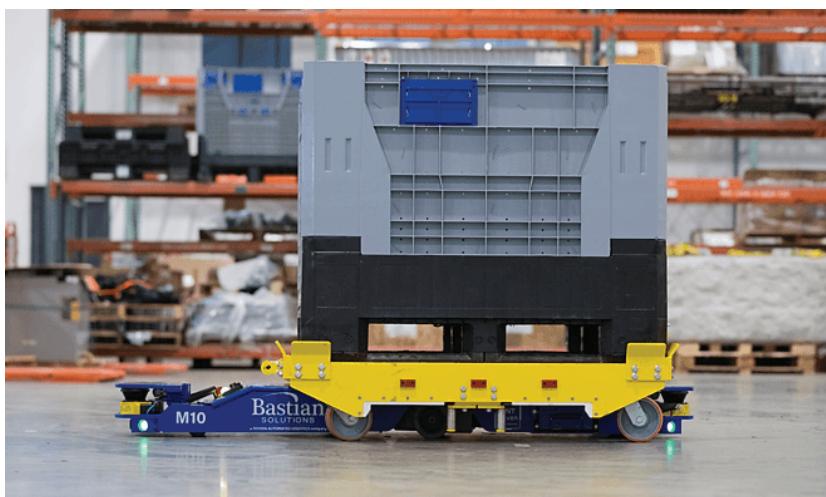


The M10 Tug AV powered by Bastian Solutions is a game changer for manufacturing

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.

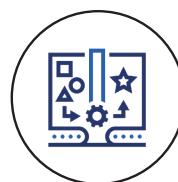
The M10 can optimize manufacturing applications such as pallet transportation, assembly line conveyance and lineside deliveries.



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
PAYOUT 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 brushless 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