

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



## M10 Tug AV with Natural Features Navigation

### 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.

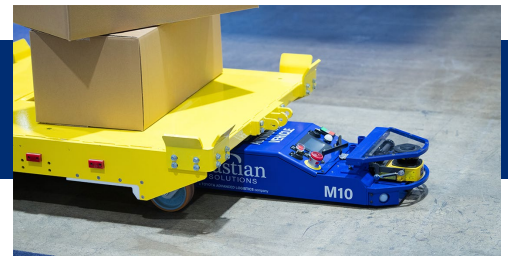
The M10 can optimize manufacturing applications such as pallet transportation, assembly line conveyance and lineside deliveries.



### 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

# M10 Tug AV Specifications



General Data			M10
<b>Payload Capacity</b>	<b>kg (lbs)</b>		1000 (2200)
<b>Maximum Drawbar</b>	<b>kgf (lbf)</b>		19 (42)
<b>Speed</b>	<b>Maximum</b>	<b>m/s (mph)</b>	Forward: 0.83 (1.9), Reverse: 0.7 (1.6)
	<b>Minimum</b>	<b>m/s (mph)</b>	0.1 (0.2)
<b>Electrical System</b>			24-volt
<b>Battery &amp; Charging Information</b>			28 amp/hour AGM
			Standard: Automatic battery charging contacts
			Automatic power off
<b>Guidance Method</b>			Natural features via 2D LIDAR
<b>Travel Instruction Method</b>			Feature map with virtual path planning & devices
<b>Drive Type</b>			DC brushless motors
<b>Steering Method</b>			Tricycle with differential traction wheels
<b>Braking Method</b>			Controlled: reverse plug, Fail-safe: electromagnetic
<b>Cart Engagement Method</b>	<b>mm (in)</b>		30 (1.18) dia. retractable pin
<b>Coupling Sensor</b>			Photo-reflective sensor to lower pin
<b>Drive Unit Up/Down Method</b>			Electric lift (toggle switch)
<b>Wireless Communications</b>			WIFI - 2.4 & 5.0 GHz
<b>Human-Machine Interface (HMI)</b>			Configuration interface & status display
<b>Safety Devices</b>	<b>Optical Sensor</b>		CAT 3 safety rated 4 meter distance measuring LIDAR
	<b>Status Light</b>		Color to indicate AV state
	<b>Chime &amp; Melody Box</b>		Multi-tune music box: running & fault chime
	<b>Safety Controller</b>		Safety PLC
	<b>Circuit Protection</b>		Resettable breakers for: main, drive motors, pin & drive lift
<b>Minimum turning radius</b>		<b>mm (in)</b>	101.6 (4); minimum pivots on two rear fixed casters
<b>Dimensions</b>	<b>Overall Length</b>	<b>mm (in)</b>	1998 (78.7)
	<b>Overall Width</b>	<b>mm (in)</b>	370 (14.6)
	<b>Overall Height</b>	<b>mm (in)</b>	178.5 (7)
<b>Gross Vehicle Weight (without battery)</b>		<b>kg (lbs)</b>	184 (405)
<b>Floor Conditions</b>	<b>Step (ridge)</b>	<b>mm (in)</b>	5 (0.2) or less
	<b>Gap (crack)</b>	<b>mm (in)</b>	20 (0.9) or less
	<b>Waviness</b>	<b>mm (in)</b>	10 (0.4) or less over the length of the AGV
<b>Working Environment</b>	<b>Temperature</b>	<b>C° (F°)</b>	10 - 40 (50 - 104)
	<b>Humidity</b>	<b>%</b>	35 - 85 RH (no condensation)
	<b>Prohibited</b>		Outdoor, washdown and freezer
<b>Optional Accessories</b>			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