



The Mobile Robot Company

Knowledge Center — Manual and Autonomous Mode Safety · 2026-08-04

<https://info.mobilerobot.com/safety-compliance/safety-overview/manual-and-autonomous-mode-safety>

Manual and Autonomous Mode Safety

The J1600 is a [dual-mode](https://info.mobilerobot.com/products/j1600/dual-mode/) vehicle: it drives like a conventional walk-behind electric pallet jack under manual control and drives itself to saved locations in autonomous mode. This page describes how safety works in each mode and at the handover between them.

Selecting a mode

A three-position key switch selects the vehicle's state:

Key position	Meaning
Power off	Vehicle powered down
Manual	Manual tiller operation only
Automatic	Autonomous task execution permitted

Automatic/manual mode selection is a certified safety function rated PL c — see [Mode selection](https://info.mobilerobot.com/safety-compliance/safety-functions/mode-selection/)).

Manual mode

In [manual mode](https://info.mobilerobot.com/documentation/user-guides/manual-operation/), the operator controls travel and lift with the tiller, like a conventional electric pallet jack. Manual mode covers the judgment-heavy work: pallet pickup, handling up to 1.6 m, difficult approaches, [sensitive or unstable loads](https://info.mobilerobot.com/application/use-cases/sensitive-or-unstable-loads/), and [exceptions](https://info.mobilerobot.com/applications/scenarios/handling-exceptions-and-irregular-loads/).

- White light indicates that the vehicle is in manual mode.
- Tiller-position switches serve two safety roles: one acts as an emergency stop, the other enables manual control. Tiller-position detection is rated PL c — see [Tiller detection](https://info.mobilerobot.com/safety-compliance/safety-functions/tiller-detection/).

- Manual gradeability is 5 percent (2.86°) without load and 3 percent (1.72°) with full load; slopes and dock plates are manual-mode territory.

Handover to autonomous mode

Handover is deliberate and operator-controlled:

1. The operator creates or selects a task on the 15-inch touchscreen and chooses the saved destination and post-delivery behavior.
2. The robot asks for confirmation to enter automatic mode.
3. The operator confirms with the physical LED start/resume button.
4. The interface instructs the operator to step away.
5. The vehicle starts the autonomous task.

The vehicle only [enters autonomous mode](https://info.mobilerobot.com/documentation/user-guides/autonomous-operation/) (<https://info.mobilerobot.com/documentation/user-guides/autonomous-operation/>), when the operator judges the environment ready. Pallet pickup has already happened manually; autonomous delivery is at floor level.

Autonomous mode

While driving itself, the J1600:

- applies a 360-degree protective field from two 2D safety LiDAR scanners, supporting forward and reverse travel;
- [expands the protective field as speed increases](https://info.mobilerobot.com/safety-compliance/safety-functions/safety-field-adjustment/) (<https://info.mobilerobot.com/safety-compliance/safety-functions/safety-field-adjustment/>), up to the top speed of 5.4 km/h (1.5 m/s);
- displays the current protected area with blue floor light strips;
- detects people in the safety field ([person detection](https://info.mobilerobot.com/safety-compliance/safety-functions/person-detection/) (<https://info.mobilerobot.com/safety-compliance/safety-functions/person-detection/>), PL d) and brakes with a certified [braking function](https://info.mobilerobot.com/safety-compliance/safety-functions/braking/) (<https://info.mobilerobot.com/safety-compliance/safety-functions/braking/>) (PL d);
- [avoids obstacles](https://info.mobilerobot.com/products/j1600/navigation-and-obstacle-avoidance/) (<https://info.mobilerobot.com/products/j1600/navigation-and-obstacle-avoidance/>) using its continuously updated 3D map, separately from the certified safety sensing — see [Navigation sensors vs. safety sensors](https://info.mobilerobot.com/safety-compliance/safety-overview/navigation-sensors-vs-safety-sensors/) (<https://info.mobilerobot.com/safety-compliance/safety-overview/navigation-sensors-vs-safety-sensors/>).

Autonomous mode is a level-floor application: automatic gradeability is 0 percent, the maximum traversable bump is 25 mm, and the maximum traversable gap is 20 mm.

Returning to manual control

Manual control is always immediately available:

- **Grab or move the tiller.** The vehicle returns to manual control at once.
- **Press an emergency stop.** Three emergency-stop buttons and a belly button for stop and reverse are fitted.
- **Use the key switch.** Turning to manual or power-off ends autonomous operation.

See [Emergency stops and manual takeover](https://info.mobilerobot.com/safety-compliance/safety-overview/emergency-stops-and-manual-takeover/) (https://info.mobilerobot.com/safety-compliance/safety-overview/emergency-stops-and-manual-takeover/) for details, and [Human responsibilities](https://info.mobilerobot.com/safety-compliance/safety-overview/human-responsibilities/) (https://info.mobilerobot.com/safety-compliance/safety-overview/human-responsibilities/) for what remains the operator's job in both modes.