

# M3K-CF

## Counterbalance Fork 3,000 lbs Pallet Capacity

Introducing the M3K-CF – a counterbalance fork AGV built on Daifuku’s robust AGV technology, yet capable of manual operation when necessary for production needs.

With a capacity of 3,000 pound (1360 kg), the M3K-CF is ready to move heavy pallets.

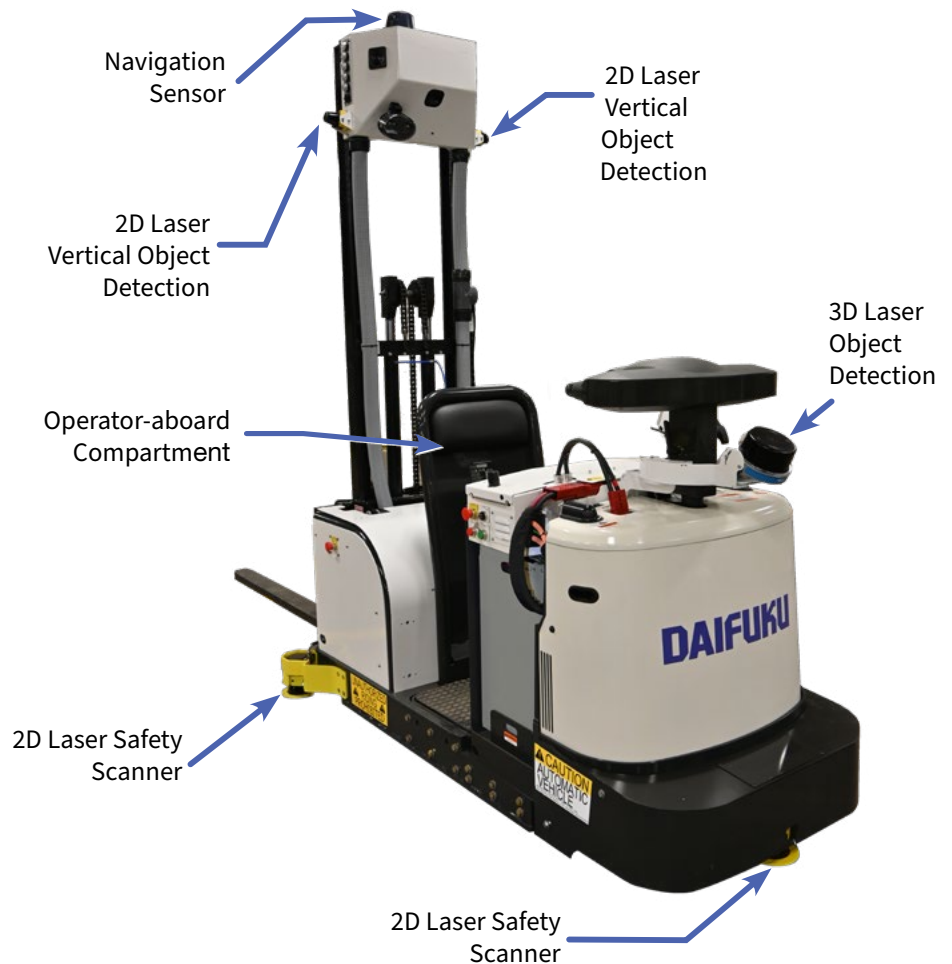
### FEATURES

**Safe:** The M3K-CF includes 6 laser scanners to detect obstructions and personnel.

**Efficient:** The M3K-CF is battery powered and charges automatically, yielding up to 24/7 fully automatic operation.

**Connected:** With Daifuku’s System Automation Manager™ (SAM) software providing traffic control and fleet coordination, AGV operations may be integrated with Plant Control Systems.

**Simple:** Daifuku’s proven CartTools™ and AGV Tools software products provide a user-friendly interface, allowing customers to modify and expand their system.



### NAVIGATION OPTIONS

**Natural Feature Navigation (NFN):** Environmental feature data is collected by on-vehicle sensors and used by the vehicle computer to determine location.

**Laser Navigation:** Field of reflective targets seen by on-vehicle sensors and used by vehicle computer to determine location.

**Inertial Navigation:** Odometry data and in-floor waypoints are used by the vehicle computer to determine location.

### NAVIGATION ENHANCEMENTS

**Enhanced Navigation:** Additional sensors can be added to augment the vehicle’s navigation technology.

**Co-Navigation Technology:** Multiple navigation packages may be used on a vehicle in challenging environments.

### FEATURES AND OPTIONS

- Automatic Charging, 300 amps
- Wi-fi Communications 802.11 a/b/g/n/ac
- Front & Rear Video Camera
- Warning Light/Horn
- Blue Warning Light
- Automatic Shut Off
- Sleep/Auto-wake
- Music Generator

### General Specifications

Weight without battery	5,200 lbs (2,358 kg)
Dimensions (less forks)	W: 46" (1168 mm) L: 84" (2133 mm)
Lift Range Options	Floor to 48" (1219 mm) • Vehicle height 83" (2108 mm) Floor to 72" (1829 mm) • Vehicle height 107" (2718 mm)
Fork dimensions	W: 3" (76 mm) L: 48" (1219 mm) Thick: 1.5" (38 mm) each Out-to-Out fork dimension 28" (711 mm)
Capacity	3,000 lbs (1360 kg) at 24" (609 mm) load center, maximum
Scanner Front – 2D Laser	Safety rated – ANSI B56.5 compliant
Scanner Rear/Side – 2D Laser X 2	Safety rated – ANSI B56.5 compliant
Scanner Front 3D Laser	Object Detection
Scanner Vertical/Side 2D Laser X 2	Object Detection
Pedestrian Awareness	Blue Warning Light, Front & Rear Stack light and horn, per ANSI B56.5
Speed – 6 speeds	15 (4.5 mpm) to 360 fpm (109 mpm), 1 fpm (.025 mpm) increments
Battery Options	24VDC
Battery weight min/max	855 lbs (388 kg) / 1550 lbs (703 kg)
- 510 AH lead acid	Charge rate 140 amp
- 450 AH sealed AGM gel	Charge rate 140 amp
- 558 AH TPPL	Charge rate to 300 amp
Automatic Charge	300 amp charge rate
Manual Charge	Up to 82 amp charge rate

### Environment

Atmosphere	0 to 40° C, 25% to 95% non-condensing humidity
Dust/Water-proof	No
Floor Specs – Edges/Debris	¼" (6.35 mm) abrupt elevation change maximum, smoothed
Expansion Joints	¼" (6.35 mm) minimum
Friction	0.6 coefficient of friction between wheels and floor, minimum
Floor Conductivity	Static dissipative, less than 3.5 x 10 <sup>7</sup> Ω
Radio Communications	IEEE 802.11a/b/g/n/ac standard

### Detailed Specifications

Drive Direction – Automatic	Forward and Reverse
Duty Cycle	88% @ Maximum Load Rating
Drive Unit – Wheel	10" X 4" (254 mm X 102 mm) Poly
Drive Type	Gear driven steerable turntable
Motor	3.8 kw AC
Brake	Spring actuated (fail-safe)
Rear Wheels	Poly 8" diameter x 4" wide (204 mm X 102 mm) (Shore A, durometer 85)
Navigation	Daifuku AGV – Natural Feature Navigation, Laser and Inertial
Steer Angle Sensor Encoder	Yes
Steering /Stopping Accuracy	+/- ½" (12.7 mm)
HMI Display	5.7" (145 mm) color touch screen – errors & destinations
Video Camera	Front/rear, 1080P, supports up to 128GB microSD card
Manual Movement	Steerhead - Operator-aboard
Minimum Path Radius	4' (1219 mm) @ 100 FPM (30 mpm), 8' (2438 mm) @ 160 FPM (48 mpm)
Drive Stalled Detection	Yes
Distance Initiated Functions	Yes – in 1" (25.4 mm) increments
Program Method	PC and Wireless
Obstacle Detection	360°, programmable up to 9' (2.8 meters)
Emergency Stop	4 – Left/Right side and 2 in rear
Wiring	Per NEC ampacity guidelines

### CARTTOOLS SOFTWARE

Simple, standardized toolbox of commands that make configuration a snap.

