

## 1 Safety information



This manual should be read before the product is being operated. The manufacturer can not be held responsible for personal injuries or other damages caused by misuse of the product. For future use, the manual should always be kept with the product.

### 1.1 Safety for children and disabled

This product can be used by children at the age of 8 and older, and by people with reduced physical, sensory or mental capability. This product can also be used by people with lack of experience and knowledge, if they are supervised and instructed in how the product should be used in a safe way and also understand the risks associated with their use. Children should not play with this product. All packaging material should be kept away from children in order to avoid suffocation.

### 1.2 General safety

The product is intended to be used for unloading heavy mobile food transport carts. It is not allowed to use the product for other purposes. This product should be connected to the power grid with wall socket that provides a safe connection to iodine. When the power plug is

loosened from the socket, it is important to use your hand to physically unplug the socket. Do not pull the power plug.

The product must be disconnected from the power socket before performing troubleshooting or maintenance.

To avoid danger, only the manufacturer, service agent or personnel with equivalent knowledge should replace the spiral cable and plug.

Make sure that ventilations openings are not blocked.

Avoid to transport or place the product in angled surfaces.

Follow the instructions for cleaning and maintenance that are written in this manual.

Do not use the high pressure washer for cleaning.

Before switching the system on, make sure that the sensor handles are completely free of external forces.

Do not use trolleys with Ergo Drive+ system on slopes exceeding a 6 degree angle.

The emergency switch is not a brake. The switch is intended to switch the drive wheel off. In case the switch is pressed during active braking of the trolley (for instance on a slope) the brake will be shut off, causing the trolley to roll on through.

The key of the key-lock shall always be removed in case the trolley is left unattended in public spaces.

Regularly check the Ergo Drive+ components for loose parts and wear. In case of any irregularities stop use of the system and contact your supplier.

Always switch the system off before carrying out maintenance.

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## 2 Product description

This manual describes usage of the Ergo Drive+. Ergo Drive+ is an add-on solution for heavy mobile food carts products. Typical applications for Ergo Drive+ are beds and stretchers for patient transport, heavy medical equipment, patient lifts and facility trolleys. The system provides power assisted drive functionality for forwards, backwards and (optionally) sideways movement of these products.

For readability 'heavy mobile care products' will be named 'trolley' from here on.

Ergo Drive+ makes it possible to move trolleys in a natural way, whether the routes are long, on carpet, over thresholds, on slopes or while maneuvering in small spaces. Heavy trolleys are moved around as if they only weigh a couple of kilograms.

The system is available in two different versions, with main differences in the construction of the drive wheel. With the Ergo Drive+ Fixed version it is possible to drive forwards, backwards and in curves.

1. Ergo Drive+

Each system consists of a set of components.

1. Sensor handles (2x)
2. User interface
3. Sensor combiner
4. Drive Unit
5. Controller box
6. Power supply

Depending on how components are integrated on a trolley not all components may be visible and accessible to the end user.

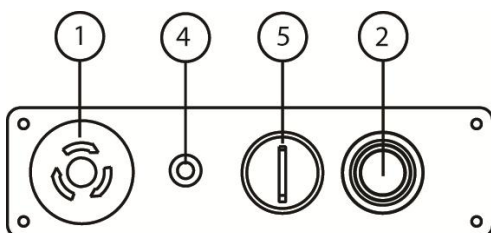
### Notice!

The Ergo Drive+ system only concerns the functionality for electric power assist drive of the trolley. Please refer to the user manual of the trolley for any information regarding its complete functionality.

## 3 Use

### 3.1 Understanding the user interface

The user interfaces for Ergo Drive+ include an on/ off switch, an indication LED for communication of the system status, a key lock for prevention of unattended driving and an emergency switch to de-activate the system in case of emergency. The interface for Ergo Drive+ includes an additional docking switch for sideways driving.



1. Emergency switch
2. On/ off switch
3. Indication LED
4. Key lock switch

The indication LED is used for communication of the system status. The information includes battery level and charge indication, activation status of the emergency switch and indication of system errors.

Indication LED	Explanation	Remarks
Green continuously lit	System OK, Battery 100-71%	System fully functional
Orange continuously lit	System OK, Battery 70-41%	System fully functional
Red continuously lit	System OK, Battery 40-11%	System fully functional
Red blinking fast*	System OK, Battery >10%	Urgent charging required. System fully functional
Orange blinking fast*	System in error mode	Power assisted drive deactivated
Orange blinking average speed*	System locked by emergency switch	Power assisted drive deactivated
Orange blinking slow*	System locked by the key-lock (or an additional switch).	Power assisted drive deactivated
Green blinking average speed*	System calibrating	Power assisted drive deactivated
Green blinking slow*	Battery connected to active charger, but not yet charging or finished charging	Power assisted drive deactivated
Changing red, orange, green animation	Battery charging	Power assisted drive deactivated
Continuously lit in any color, but with an orange blink every 10 seconds	System error in communication with the battery	System functional, but power assisted drive is not deactivated during charging

\* Fast speed blinking is 5 blinks per second. Average speed blinking is 1 blink per second. Slow speed blinking is 1 blink every 3 seconds

The use instructions on following pages refer to the above table as the 'indication table'.

## 3.2 Preparations

The Ergo Drive+ system is activated by pushing the on/ off switch briefly. Directly after the system is switched on it requires a few seconds to calibrate the force sensors inside the sensor handles. During this period the indication LED blinks green in average speed; once every second. After calibration the indication LED remains continuously lit. The system is now ready for use.

**Caution!**

Before switching the system on, make sure that the sensor handles are completely free of external forces.

- Prevent objects, such as cutlery or blankets, to push against the sensor handles.
- Do not hang clothes, bags, etc. to the handles. Take care that no objects are clamped between the sensor handles and the tabletop.

In extreme situations such external forces during calibration may lead to unexpected behavior of the drive system.

**Notice!**

Do not place your hands on the sensor handles immediately after activation of the Ergo Drive+ system. The sensor handles shall not be moved or touched during calibration. If this happens the system will postpone calibration until the sensor handles are released. The indication LED will continue to blink green until calibration has been performed successfully.

In case calibration was not successful within one minute the system will switch to error mode. Failure of calibration may be caused by an external reason, as described above, but may also be caused by a failure in the sensor handle. Please contact your trolley supplier in case the problem persists.

**Notice!**

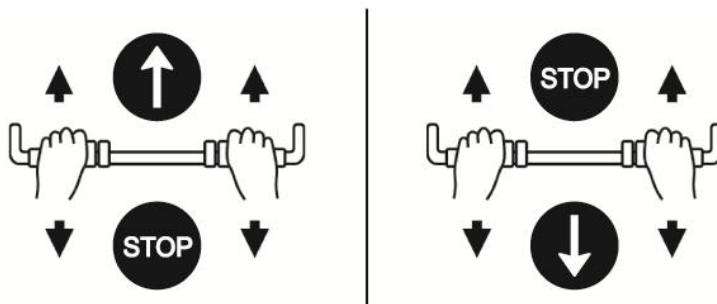
Please make sure the brakes of the trolley castors are released before use of the Ergo Drive+ system.

### 3.3 Driving

Power assisted forwards and backwards driving of the trolley is done in the same manner as forwards and backwards driving of a trolley without Ergo Drive+. The power assisted drive is automatically activated by placing both hands on the sensor handles and pushing and pulling the trolley quietly forwards and backwards. Driving corners is done by applying more force with one hand than the other.

Power assisted driving is by standard maximized on a speed of 4 km/ h. For specific products this setting can be altered. Please contact your supplier for details.

The system will automatically brake in case the sensor handles are released during driving. The trolley can also be actively braked by practicing force on the sensor handles in the opposite direction of the direction of travel.



The trolley can be braked actively by practicing force on the sensor handles in the opposite direction of the direction of travel.

The Ergo Drive+ system also provides powered drive when moving a trolley up and down on slopes. In case a trolley is released on a ramp it will brake and, depending on the slope angle, will gradually drive down slowly.

**Warning!**

Do not use trolleys with Ergo Drive+ system on slopes exceeding a 6 degree angle.

**Notice!**

Always push and pull the sensor handles gently. In exceptional situations, if too much force is put on the sensor, the system automatically switches to error mode. In this case the power assisted drive is switched off and the indication LED starts blinking orange fast. To reset the system in this situation the sensor handles shall be released and the system shall be switched off and on again.

**Notice!**

In case the trolley is still driving forwards or backwards, the sideways driving functionality will not work immediately. Pushing the docking switch will first actively brake the trolley to stand still before the trolley starts driving sideways.

### 3.4 Emergencies

The Power Assist system is equipped with an emergency switch. Pressing this switch immediately switches off the power assisted drive. The switch shall be used only when control over the trolley is lost.

After pressing the emergency switch the indication LED will start flashing as described in the indication table. The emergency switch can be unlocked by turning it clockwise. After unlocking, the indication LED will remain flashing. The system can be reactivated by pressing the on/ off switch briefly.

**Warning!**

The emergency switch is not a brake. The switch is intended to switch the drive wheel off. In case the switch is pressed during active braking of the trolley (for instance on a slope) the brake will be shut off, causing the trolley to roll on through.

**Notice!**

The emergency switch is not designed for switching off the system. Only use the switch in case of emergency. Use the on/ off switch to turn the system off.

### 3.5 After use

Always switch the system off after use or in case the trolley is (temporary) left unattended. The system is switched off by pressing the on/ off switch for a few seconds. The indication LED will switch off. The system switches off automatically after 15 minutes of inactivity.

### 3.6 Charging

The controller box has an internal battery and battery charger. A full battery provides power for up to 15 kilometers of power assisted driving. In most use situations this is sufficient for days of use.

It's advised to recharge the battery when the LED indication is lit continuously red.

**Notice!**

In case the LED indication starts blinking red the battery is almost empty and immediate charging is required.

In case the trolley comes with a separate power supply, please connect this power supply on one side to a mains socket and on the other side to the power connector on controller box.

In case the trolley comes with an integrated power supply, please connect the power cord of the trolley to a mains socket.

Charging of the battery can both be done with the system switched off and the system switched on. When the system is switched on during charging, the power assist functionality will automatically be switched off. The indication LED will communicate as described in the indication table in paragraph 4.1. After 15 minutes the system will be switched off automatically.

Although the system may be charging, the indication LED will not give any charge indication when the system is switched off.

Charging of a fully empty battery takes up to 8 hours. It is advised to charge the battery overnight on a regular basis.

### 3.7 Use of the key-lock

The user interface includes a key-lock. This key-lock does not switch the entire system on and off but only deactivates the power assisted drive functionality. To activate the drive functionality the provided key shall be turned clockwise. To deactivate the drive functionality the key shall be turned counter clockwise. The key can only be taken out in deactivated state.

In case the system is switched on in active position of the key, the system will start normal. In case the system is switched on in deactivated position of the key, the indication LED will blink orange slowly and Power Assist functionality remains switched off. In case the battery is charging when the key is in deactivated position, the indication LED will communicate the battery charge status as described in the indication table in paragraph 4.1.

#### **Caution!**

The key of the key-lock shall always be removed in case the trolley is left unattended in public spaces.

## 4 Maintenance

The sensor handles, user interface panel and drive wheel can be cleaned with a well-wrung wet cloth. Use an ordinary, non-abrasive detergent (pH 5.5-8).

Regularly check the axis of the drive wheel for accumulation of hair and dust. Carefully remove any windings from the axis.

#### **Caution!**

Regularly check the Ergo Drive+ components for loose parts and wear. In case of any irregularities stop use of the system and contact your supplier.

#### **Caution!**

Always switch the system off before carrying out maintenance.

#### **Caution!**

Maintenance on the electrical system shall be performed by qualified service



personnel only.

**Notice!**

Avoid the use of aggressive detergents/ solvents and excess of water. The Ergo Drive+ components are not designed for exposure to large amounts (jets) of water. The system is not suitable for machine washing.

**Notice!**

Even when the system is not used, the battery slowly drains. A fully drained battery can get damaged. Such damage is excluded from guarantee. It is strongly advised to fully charge the battery at least every three months. Damage to the battery due to the battery not being charged for a long time is excluded from warranty.

## 5 Quick debugging guide

In case the Ergo Drive+ system fails operation, perform following steps:

1. Check if the system is switched on. The system switches off automatically in case it is not used for 15 minutes.
2. Make sure the sensor handles are not touched or moved for a few seconds directly after start of the system. The sensors need some time for calibration. In case the sensor handles are touched during calibration the calibration will be postponed. The indication LED will remain blinking as described in the indication table in paragraph 4.1.
3. Switch the system off and on again. Let the system reboot and check if the system operates normal again.
4. Check whether the emergency switch is activated (pressed). The emergency switch can be unlocked by turning it clockwise. After unlocking the indication LED will remain blinking. The system can be reactivated by pressing the on/ off switch briefly.
5. Check the remaining battery power. Charge the battery in case required.
6. Check if the trolley is connected to the mains with a power cord or the controller box is connected to an active power supply. The drive wheel is switched off during charging of the battery of the trolley. Disconnect the power cord and check if the system operates normal again.
7. Check after switching the system on if the indication LED remains flashing in orange fast. This indicates the system is in error mode. If the problem persists after switching the system off and on again, please contact your trolley supplier for further assistance.

In case the Ergo Drive+ system operates unexpectedly, perform following steps:

1. Switch the Ergo Drive+ system off and on again. Let the system reboot and check if the system operates normal again. With repeated occurrence of the malfunction, contact your trolley supplier.
2. Check if the sensor handles can move freely. Remove any obstacles and check if the system resumes correct operation.

Please contact your trolley supplier in case above steps did not resolve the problem.

## 6 Product specification

Use environment	The drive unit is suited for indoor use only on hard (solid), dry and clean industrial surfaces.
Ambient use temperature	
• Charging	10° to 40° C
• Discharging (Power assisted driving)	-20° to 50° C
Storage temperature	
• Longer period	-20° to 35° C
• Up to one week	-20° to 60° C
Charge time for full charge	8 h
Max. assisted speed **	4.5 km/h
Max. slope angle (At trolley weight up to 400 kg)	6°
Max. threshold	20 mm
Average braking distance at release of trolley sensor handles*	1.6 m
Average braking distance for active braking*	0.8 m
Water resistance external components	
• Sensor handles	IPx5
• Switches	IPx4
• Drive Unit Fixed	IPx4
• Controller box	IPx2 ***
Average power consumption	
• Standby	< 0.5 W
• Rest	< 2.5 W
• Horizontal plane/ acceleration*	72 W
• Horizontal plane/ constant speed	24 W
• At max. torque	480 W/ max. 10 seconds 360 W/ max. 5 minutes 240 W/ continuous

\* Standard setting. May be changed for specific trolleys.

\*\* All measured at speed accelerating to app. 2.5 km/ h. Total weight of trolley and load 400 kg.

\*\*\* IP class is met only with lid of power connector cover closed

## 7 Warranty

ScanBox grants two years warranty on the Ergo Drive+ system. The manufacturer does not warranty parts that are prone to wear and tear, as for instance the tire of the drive wheel.

Warranty on the battery pack is 500 full charge cycles or two years, whichever comes first. A counter in the battery battery management system and date of integration of the Ergo Drive+ system define this cycle number or time. Damage to the battery caused by the battery being fully drained after a period not being charged is excluded from warranty.

Warranty will only be granted on the technical functioning of the Ergo Drive+ system under normal use and does not cover damage or defects that may be caused by incorrect or improper use or repair by third parties. The assessment of this lies with the manufacturer or a designated representative. Warranty applies only to the components of the Ergo Drive+ system. Other costs that are possibly related to the defect are not covered by the manufacturer's warranty.

The manufacturer reserves the right to make changes to the product, contrary to what is described in this manual, without further notice in advance.

## 8 Compliance

The Ergo Drive+ system is a 24 V DC powered add-on system for food or health care facility transport trolleys.

The essential requirements of **EC Machinery Directive 2006/42/EC** have been applied and fulfilled.