

27-03-2025

## BT levio

### Product presentation LWI160



***LI-ION***

**Lithium-Ion Energy System**

## Product presentation BT Levio W – LW1160

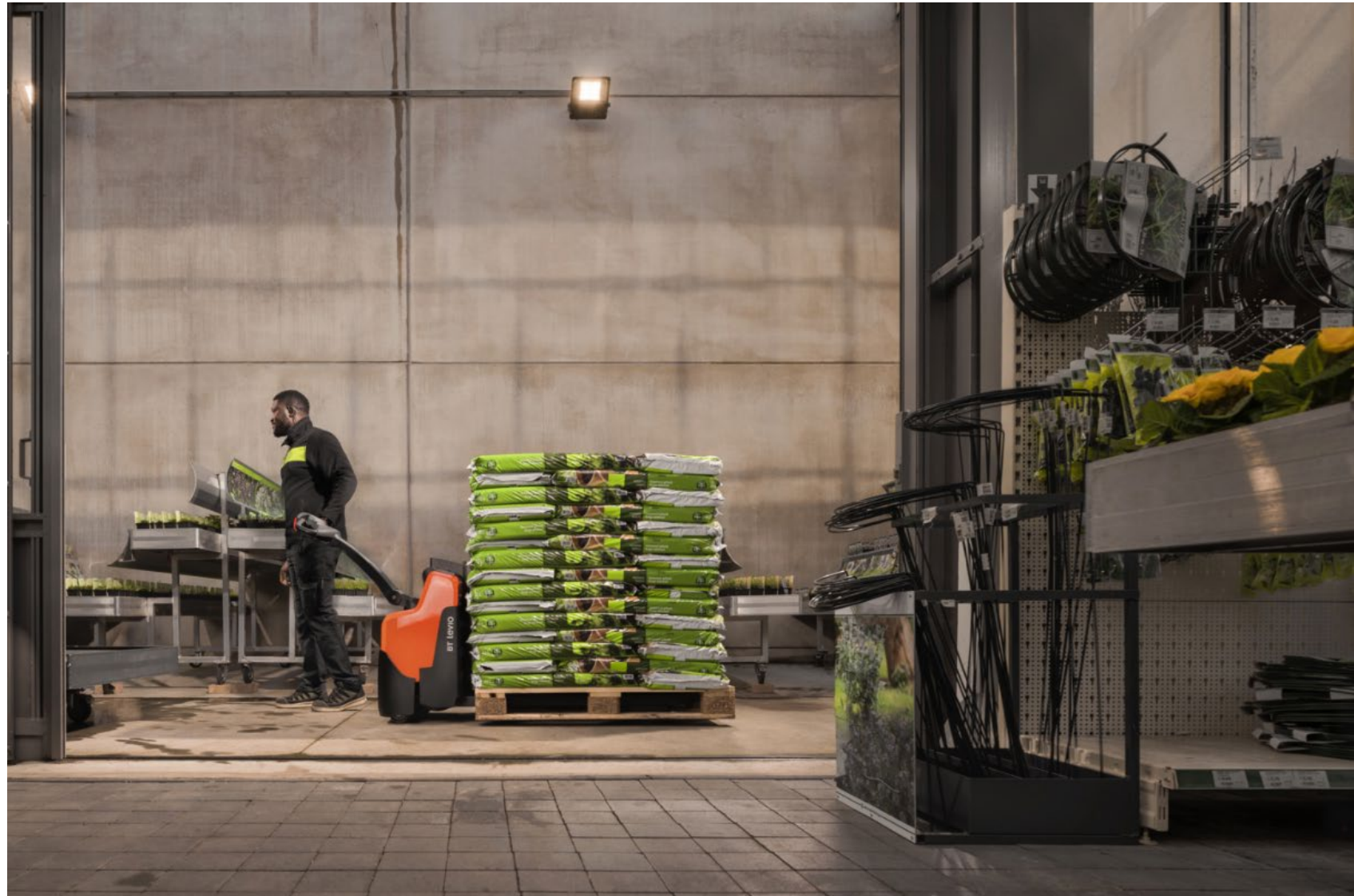
### Content

#### Product Range Overview

- Main specifications & design principles

#### Product Features & Benefits

- Productivity
- Driveability
- Safety
- Durability





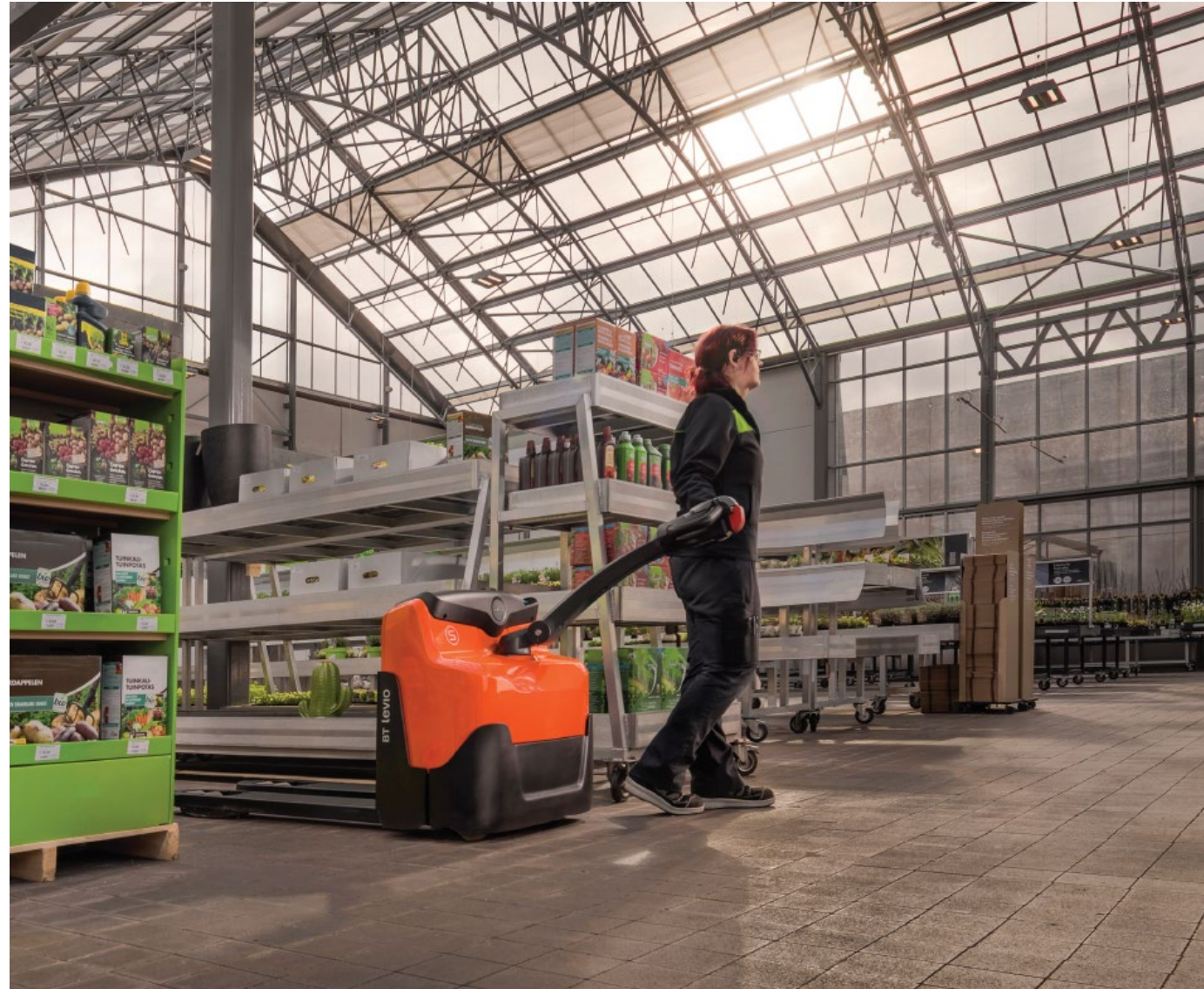
## BT Levio W – LWI160

Electric 24V powered pallet truck

Load capacity 1.6t

Developed and manufactured in Europe (Sweden)

First lowlifter from Toyota that is solely designed around a modular Li-Ion battery concept making the truck very compact, light and energy efficient.



## BT Levio W – LWI160

- Add-on model to the Levio W range
- Same Quality, Stability and Performance as LWE160
- Using proven main components from LWE
- Adding new unique features





## Application BT Levio W – LWI160

- Suits a wide range of applications: Horizontal transport, loading/unloading, order picking
- Used at many different customers: Onboard lorries, Warehouses, distribution centres, stores/supermarkets, industry
- Powered pallet pedestrian truck for: low, medium and high intensity pedestrian applications





## New Standard for Pedestrian Powered Pallet trucks

What problems can we solve for our customers?  
→ Here we find value!

- Battery lasting long enough?
- Need smaller truck?
- Need lighter truck?
- Need less energy consumption?
- Need better visibility of forks/ load?
- Maintenance of battery an issue?
- Need lower noise?

LWI160 provides more value in above areas.  
It is the New Standard in Pedestrian powered pallet trucks.

**Unique. Different. Better.**



## Utilising the benefits of Li-Ion on the new LWI160



No battery  
exchange  
necessary



No charging  
room  
needed



Zero  
maintenance  
required



Using 30%  
less energy



3x the life  
of Lead acid



Quick and  
easy charging



Less  
emissions



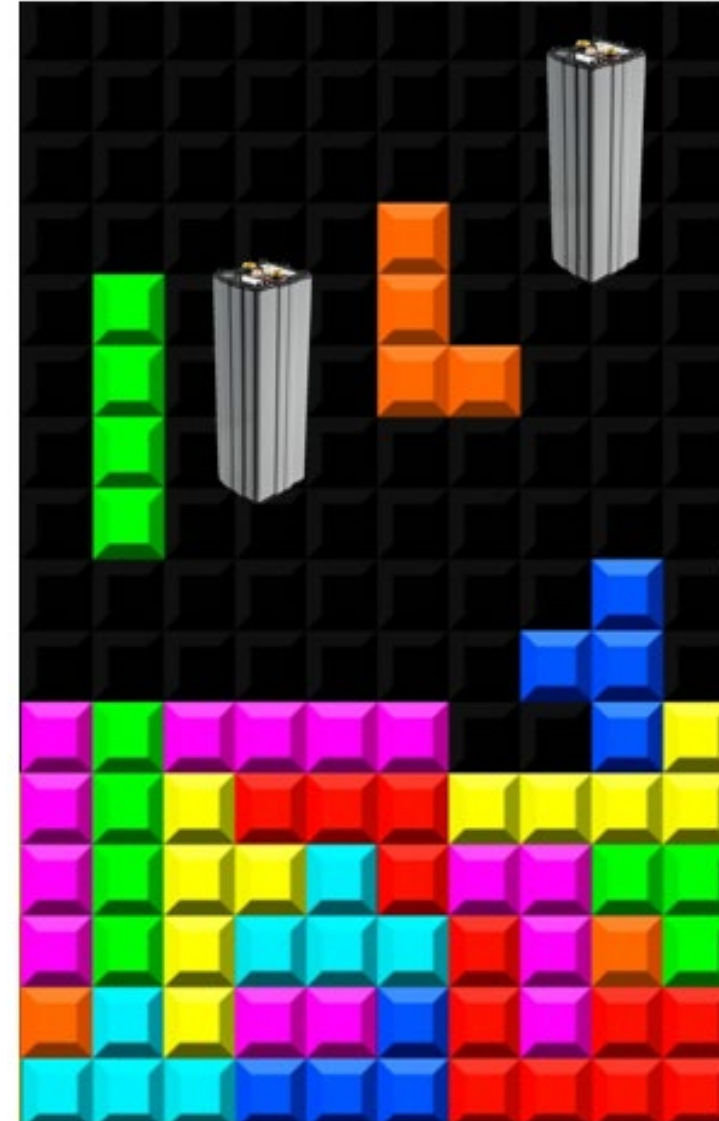
Cost  
reduction

**LI-ION**



## Thinking out of the box

- Thanks to our unique, modular, compact and scalable Li-Ion solution we can utilize the opportunity to remove the box, the traditional battery compartment by:
- Optimising component position, weight and weight distribution
- Re-think design standards
- Taking next level of energy efficiency





## Product

# LWI160

Rated capacity	1600 kg
Speed	6 km/h
Battery sizes	50/105/150 Ah (Li-Ion)
Body width $b_1$	726 mm
Truck length $l_2$	419 mm
Lift height	215 mm
Weight	269 kg (with 105 Ah battery)



**LI-ION**

## Main Features &amp; Benefits – LWI160

## One compact machine size

**Features**

- One compact machine size for all battery capacities – 50, 105 or 150 Ah
- $L_2$  is 119 mm shorter than standard LWE160 with Medium battery compartment
- Chassis height is 750 mm which is 105 mm lower than standard LWE160

**Benefits**

- Compactness offers easy maneuvering in confined areas and excellent visibility over forks





## Intelligent Energy Pack

### Features

- Three battery capacities – 50, 105 or 150 Ah Li-Ion
- Run hours ~ 3, 7 or 10 hours on one full charge
- Choice of External charging, Inbuilt charging and Onboard lorry charging
- Wide range of charger capacities: See next slide
- New generation charging connector: See separate slide

### Benefits

- Customized energy solution depending on customer needs
- Easy and fast charging procedure



External charger










Inbuilt charger

# Intelligent Energy Pack

(Below is max charging time if batteries are discharged to 20% (h:mm))



20% (h:mm))			Charger type			
			Inbuilt		External	
			Onboard lorry	Wall socket	Portable/ Mounted	Wall mounted
						
			up to 15A (110-240V)	30A (110-240V)	40A or 80A 1-Phase	120A, 1-Phase 130A, 3-Phase
Battery size		50 Ah	2:22	1:20	1:00	1:00
		105 Ah	5:24	2:48	1:03 or 2:06	1:00
		150 Ah	7:48	4:00	1:30 or 3:00	1:00



Main Features & Benefits – LWI160

Intelligent Energy Pack

(Below is max operation time depending on energy pack/charger/30 min opportunity charge (h:mm))

Intelligent Energy Pack		Shift 1								Shift 2							
Li-ion LWI160		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Standard Pack	Run time on full battery	→ 3:34 (h:m)															
Inbuilt 30A	Extra run time with 30 min slot charging	→ 4:54 (h:m)								+1:20 (h:m)							
External 40A		→ 5:21 (h:m)								+1:47 (h:m)							
Intensive Pack	Run time on full battery	→ 7:30 (h:m)															
Inbuilt 30A	Extra run time with 30 min slot charging	→ 8:50 (h:m)								+1:20 (h:m)							
External 40A		→ 9:17 (h:m)								+1:47 (h:m)							
External 80A		→ 11:04 (h:m)								+3:34 (h:m)							
Max Pack	Run time on full battery	→ 10:43 (h:m)															
Inbuilt 30A	Extra run time with 30 min slot charging	→ 12:03 (h:m)								+1:20 (h:m)							
External 80A		→ 14:17 (h:m)								+3:34 (h:m)							
External 130A		→ 16:04 (h:m)								+5:21 (h:m)							



## Main Features &amp; Benefits – LWI160

## New generation Li-Ion connector

**Features**

- Introduced first on LWI160 – all other models will follow
- Easy push-in procedure
- Locking lever
- LED light indicate charge status
- Automotive-like
- No spare plug needed anymore
- Adaptor box old->new connector available

**Benefits**

- Easy, safe and fast charging procedure



Electrical data	Cable crossection	Cable length	Protection class
max. 160A / 96V	35 mm <sup>2</sup>	3000 mm	IP23



## Main Features & Benefits – LWI160

### Low weight

#### Features

- Low weight – Weight reduced by 43% in comparison with lead acid battery trucks
- Only 269 kg including 105 Ah battery

#### Benefits

- Can enter more weight restricted areas such as elevators, lorries and mezzanine floors
- Improved slope performance
- Lighter steering - Less strain for the operator



## Main Features & Benefits – LWI160

### Low energy consumption

#### Features

- Low energy consumption – thanks to low weight, Li-Ion technology and no lifting of battery
- Energy consumption: 0,27 kWh/h\*

#### Benefits

- More uptime per charge and less CO<sub>2</sub> emissions



\*according to EN 16796:2016

## Low sound level

### Features

- Low sound level
- Only 59 dB (A)\* – lowest in its class
- 10 dB (A) lower compared with LWE160

### Benefits

- Perfect for late night/early morning deliveries or noise restricted areas
- Less driver fatigue

\*at the operator's ear according to EN 12053





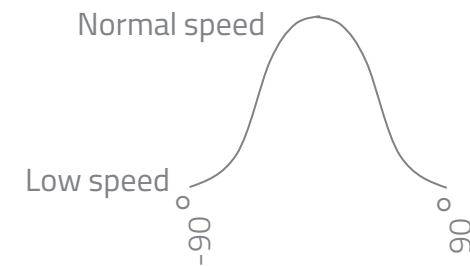
## Optimized Corner Control (OCC)

### Features

- Automatic speed reduction when cornering depending on steering arm angle. Ideal when handling tall and/or unstable loads
- Steering wheel sensor continuously monitors the steering angle
- Programmable start angle for speed reduction and minimum speed at max angle

### Benefits

- Continuously variable speed for safe and productive operation
- Reduced risk of load instability when cornering.
- Reduced risk of foot injuries, especially when operating in high steering arm angles.



## Main Features & Benefits – LWI160

### Electrical outlet

#### Features

- 5V USB electrical outlet as standard
- 12V or 24V outlet as option  
(in combination with DC/DC converter)

#### Benefits

- Simple electricity/charging for smart phone, tablet or other external equipment



## Main Features & Benefits – LWI160

### Lifting lug

#### Features

- Appropriate and centrally located lifting lug

#### Benefits

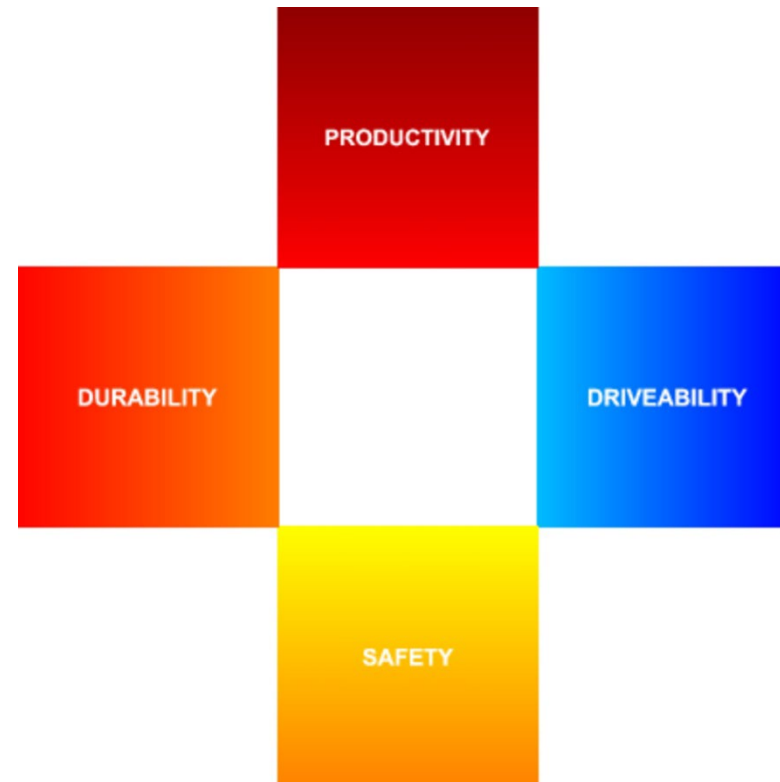
- For quick and easy maintenance work such as wheel exchange
- For easy and safe lift during transport
- For securing the machine during lorry transport





## BT levio

is designed around 4 core values that customers can benefit from:



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is designed around 4 core values that customers can benefit from:



## Simple and intuitive tiller arm control

### Features

- Ergonomic and intuitive control buttons
- All functions can be used with either hand

### Benefits

- Enables excellent control and thereby productivity
- Easy maneuvering in confined areas
- Possible to use either hand



Simplicity and optimized ergonomics = increased driveability = high productive operators = reduced handling costs / pallet





## Steering arm angle

### Features

- +/- 93° steering angle

### Benefits

- Excellent manoeuvrability also in confined areas



Wide steering angle = excellent maneuverability = increased driveability = productive operators = reduced handling costs / pallet



## Features & Benefits Driveability

### Steering arm

#### Features

- Tiller arm within truck profile in upright position

#### Benefits

- Excellent maneuverability also in confined areas when used in Click-2-Creep mode



Superior handling of truck in confined areas = safe and productive operators  
= reduced handling costs / pallet



## Programmable operator parameters

### Features

- Easy programming of operator parameters
  - Acceleration
  - Speed
  - Speed reduction power
- 10 different operator profiles possible

### Benefits

- Operational adaptable
  - The truck can be fitted to the operator's skill level and/or the application



Programmable operator parameters = better driveability due to control of the truck supporting the operator  
= high productive and safe operators = reduced handling costs / pallet





## Programmable operator parameters

No.	Parameter type	Unit	Min. / Max.	Slow value	Std. value	Max Perf.	Notes
3	Acceleration	%	10-100	60	80	100	10: Slow acceleration 100: Fast acceleration In increments of 5
4	Automatic speed reduction power	%	10-100	50	90	100	Speed reduction when the speed control is released to neutral position 10: Slow speed reduction 100: Fast speed reduction In increments of 5
6	Top speed	%	30-100	90	100	100	30: Lowest top speed setting 100: Highest top speed setting In steps of 5

## Programmability

### Features

- Several parameters that are possible for service engineer to set, ex:
  - Automatic shut off time
  - Click-2-Creep, on/off
  - Turtle button speed
  - OCC settings
  - Time for service intervals

### Benefits

- Operational adaptable
  - The truck can be optimized to the application



Programmable service parameters = better driveability due to control of the truck supporting the operator =  
high productive and safe operators = reduced handling costs / pallet



## Click-2-Creep

### Features

- Ability to drive the truck with the tiller arm in upright position at creep speed by double clicking the speed control
- Deactivate in the same way, or wait ten seconds

### Benefits

- Improved drivability in confined areas.
- The operator doesn't have to push a button - can use either hand to drive the truck



Click-2-Creep = better driveability due to control of the truck supporting the operator  
= high productive and safe operators = reduced handling costs / pallet



## 5 Wheel configuration

### Features

- 5-wheel configuration – steering wheel centrally placed
- Drive wheel close to the frame

### Benefits

- No sideways movement after slipping
- Easy climbing
- Increased durability



5-wheel configuration = support the operator's application = less accidents and high drivability  
= reduced handling costs / pallet



## BT levio

is designed around 4 core values that customers can benefit from:





## Features &amp; Benefits Safety

## Steering arm

**Features**

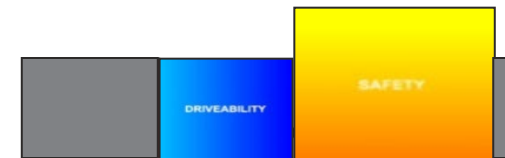
- Low and centrally placed tiller arm
- Optimized length

**Benefits**

- True walkie model
- Easy manoeuvring
- Good safety distance to feet



Safe operators = high productive operators = reduced handling costs / pallet



## Tiller arm safety button

### Features

- Changes drive direction when pushed if driving in steering arm direction

### Benefits

- Reduces the risk for operator getting stuck between obstacle and truck



Safety button at truck = increased safety = high productive operators = reduced handling costs / pallet

## Emergency switch

### Features

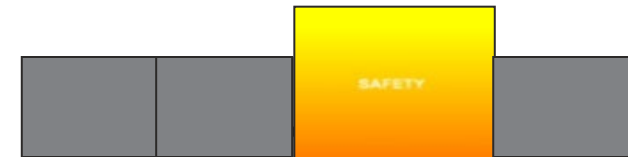
- Placed on a high position
  - Press the button to cut off traction or lift
  - The truck stops immediately

### Benefits

- Easy to reach, easy to use - safe



Emergency switch = increased safety = less injuries = reduced handling costs / pallet



## Features & Benefits Safety

### Visibility

#### Features

- Excellent visibility is a combination of:
  - Low and centrally placed tiller arm
  - Low chassis
  - Optimised length of tiller arm

#### Benefits

- Excellent visibility in all situations



Design for excellent visibility = high productive and less injuries = reduced handling costs / pallet



## Features & Benefits Safety

### Horn

#### Features

- Double buttons for easy reach with one hand to use the horn

#### Benefits

- The operator can warn the surrounding environment to avoid accidents



Horn = increased safety = high productive operators = reduced handling costs / pallet





## Pin-code or Smart Access

### Features

- Start up the truck with:
  - A four-digit pin-code or...
  - A Smart Access card or fob

### Benefits

- Enables easy access
- Prevents unauthorized use of the truck



Pin-code/Smart Access = prevents unauthorized operators = increased safety = less accidents = reduced handling costs / pallet



## Automatic shut off

### Features

- If the truck is left unattended, it will automatically shut off
  - The time can be set to between 1-20 minutes or 4 hours

### Benefits

- Automatic shut off prevents unauthorized use of the truck
  - In environments where there's a lot of people moving around the truck, it is possible to have a very short shut off time for safety reasons



Automatic shut off = prevents unauthorized operators = increased safety = less accidents  
= reduced handling costs / pallet



## Features & Benefits Safety

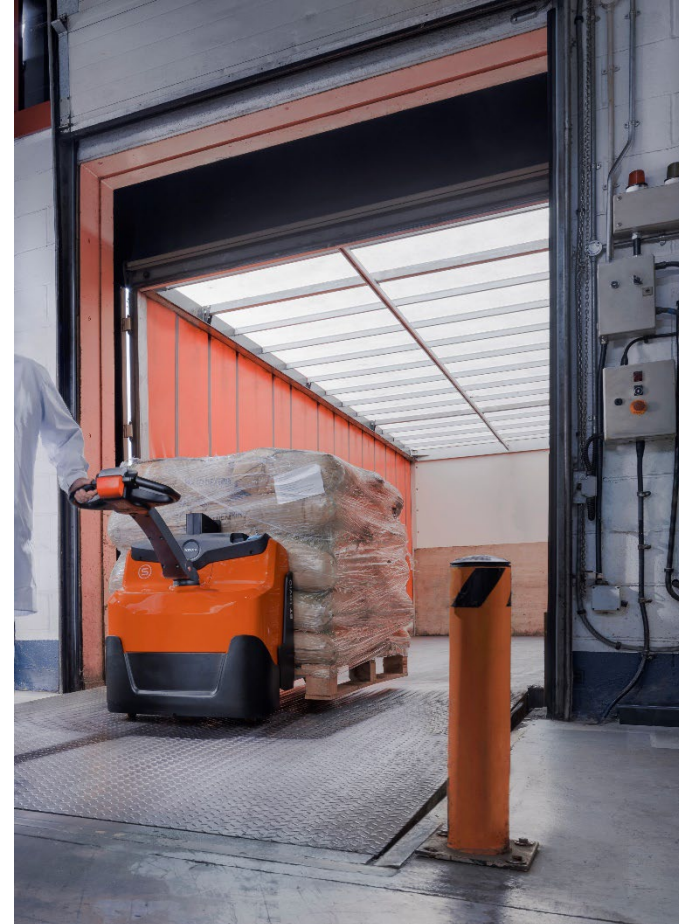
### Brakes

#### Features

- No unintentional roll back when starting/stopping on ramps and slopes

#### Benefits

- Protects operator's feet



Safe operators = high productive operators = reduced handling costs / pallet



## Features & Benefits Safety

### Brakes

#### Features

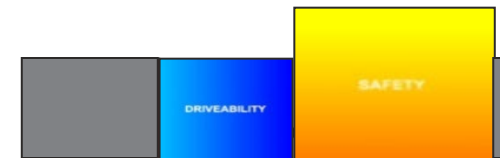
- Parking brake is activated when the steering arm is in it's lowest and highest position
  - The arm automatically rises to the highest position
  - There's a damper before the arm gets to it's lowest position

#### Benefits

- Easy to brake
  - The parking brake is activated as soon as the operator leaves the truck



Use of parking brake = less accidents = high productive operators = reduced handling costs / pallet



## Chassis

### Features

- Castor wheels turn inside truck profile
- The lower part of the chassis is compression moulded
- The distance to floor is 35 mm
- All corners are rounded

### Benefits

- No risk of feet injuries or damaged goods due to swirling castor wheels
- The compression moulding makes the chassis stronger and thereby the truck more durable
- The short distance between floor and chassis protects operator's feet
- Rounded corner gives excellent maneuverability

Less feet accidents = high productive operators = reduced handling costs / pallet





## Features & Benefits Safety

### Lowering safety

#### Features

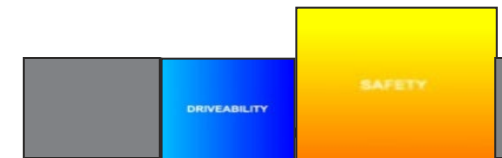
- When operating at steering angle  $>80^\circ$  the lowering command is blocked preventing the operator from unintentionally lowering the load on his/hers feet.
- The display will show "turn" in this condition forcing the operator to turn the steering arm and take a step back from the critical area and lower the forks.
- This function is activated as standard but can be turned off via Service parameter 315.

#### Benefits

- Protects operator's feet

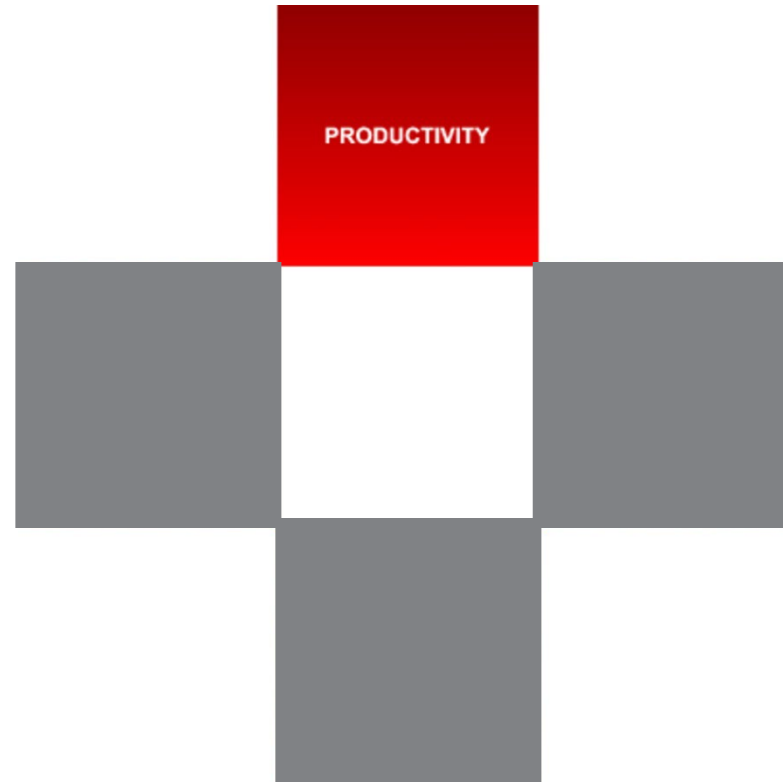


Safe operators = high productive operators = reduced handling costs / pallet



## BT levio

is designed around 4 core values that customers can benefit from:



## Display

### Features

- Up front information to the operator about truck status  
Hour meter/Error codes/Battery status

### Benefits

- Immediate operator alert
- Easy error identification
- Easy battery monitoring



Information at a glance = useable information for planning work with truck = high productive operators = reduced handling costs / pallet.



## BT levio

is designed around 4 core values that customers can benefit from:



## Features & Benefits Durability

Can access

### Features

- Can access

### Benefits

- Easy to access for fast and easy service diagnostics and settings



Easy service = increased uptime = increased productivity = reduced handling costs / pallet





## Motor cover

### Features

- Hood made of durable plastic material
- Fastened with four screws

### Benefits

- Withstands rough environment
- Easy to remove



Durable covers = less maintenance = increased productivity = reduced handling costs / pallet



## Features &amp; Benefits Durability

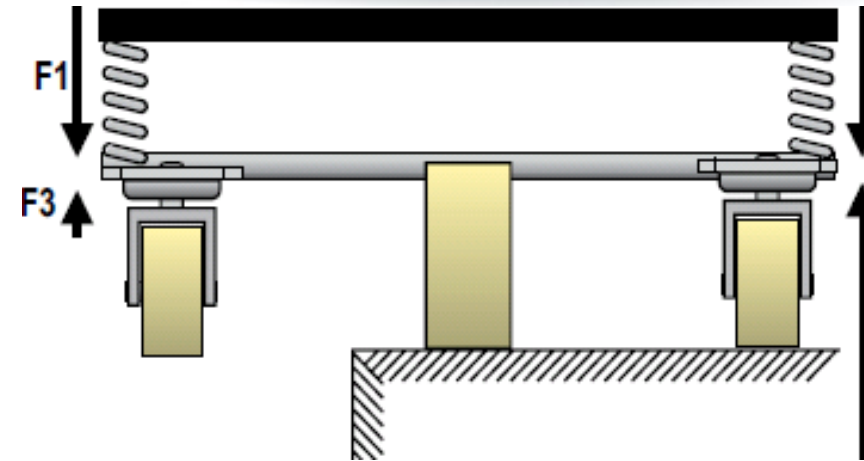
## Castor wheels

**Features**

- BT Castor Link
- Stable drive performance

**Benefits**

- No “walking duck”
- No damaged wheels
- Even distribution of weight
- Increased durability



Durable castor wheel concept = increased uptime = increased productivity = reduced handling costs / pallet



## Transmission and drive motor

### Features

- Fixed 1.0 kW motor, AC Drive motor
- Synthetic transmission oil
  - Excellent lubrication

### Benefits

- No carbon brushes, no wear
- No moving cables and enables a very compact machine
- No need to change the oil during the trucks life time, energy saving



Less service = increased uptime = increased productivity = reduced handling costs / pallet



IP class

Component	Unit	IP class
Motor		
	Drive motor	IP43
	Pump motor	IP44
Electronic cards		
	Main card in tiller arm	IP54
	Motor controller	IP65



Durable and protected components = increased uptime = increased productivity = reduced handling costs / pallet



## Features &amp; Benefits Durability

## Heavy-Duty forks

**Features**

- Fork carriage with 180 mm wide forks

**Benefits**

- The fork carriage is more robust than a narrow fork carriage as on LWE130, LWE140 and LWE160. This is a plus in medium and high intensive applications where priority is on higher load capacities.



Durable forks = increased uptime = increased productivity = reduced handling costs / pallet





## Features &amp; Benefits Durability

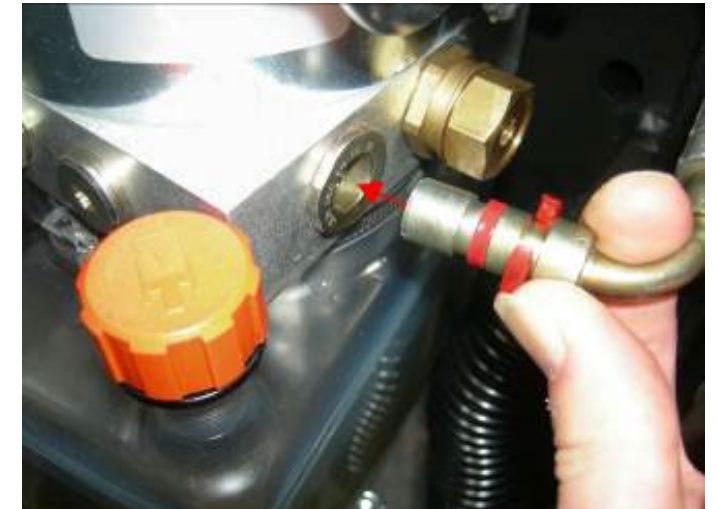
## Durable components

**Features**

- All hydraulic connections are of quick connection type
- Bushings made of composite with Teflon coating
- Hardened axles
- The cable that connects the steering arm is spiral shaped

**Benefits**

- Minimizes the risk for leaking oil and enables a compact truck since there's no need for space for tools
- Long life time and no need for greasing
- No twisting of cable , only bending



Durable components = increased uptime = increased productivity = reduced handling costs / pallet



## Cables

### Features

- MQS (Micro Quadlock System) Contacts
- Common electrical components for LWE

### Benefits

- Used in the car industry - reliable communication also in rough environments
- Easy for the service engineer, needs less spare parts



Durable components = increased uptime = increased productivity = reduced handling costs / pallet



## Features &amp; Benefits Durability

## Battery saving mode

**Features**

- The battery will enter sleep mode after a period of time based on an algorithm of inactive time and state of charge
- A button is introduced to wake up the battery from sleep mode or actively put it to sleep mode

**Benefits**






- Holds the state of charge for a longer time
- Protects the battery from being fully discharged if truck has been left idle for a long time



Durable battery = increased uptime = increased productivity = reduced handling costs / pallet



Without competition...

		 Toyota LWI160	 Jungheinrich EJE 116	 Jungheinrich EJE 116i	 Linde T16 / [T16 ION]	 Still EXU 16 / [Li-Ion]
Load capacity/rated load, Q	kg	1600	1600	1600	1600	1600
Net weight incl battery	kg	269	420	280	421 / [328]	430 / [357]
Length to face of forks, l <sub>2</sub>	mm	419	486	416	500	510
Turning radius, W <sub>a</sub>	mm	1338	1441	1363	1440	1560
Battery voltage/nominal capacity, Li-Ion	V/Ah	24V/50/105/150 Ah	25,6V/110 Ah	24V/40 Ah	24V/82, 164Ah	24V/82, 164 Ah
Sound level (EN12053)	dB(A)	59	61	61	<70	68.7
Energy consumption (EN16796:2016)	kWh/h	0,27	0,31	0,31	0,38 (VDI)	0,38 (VDI)

Take also into account the flexible energy solution and the lower body profile of LWI160!