

Product presentation

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TOYOTA

MATERIAL HANDLING

BT optio *TRACTO* TSE N-Series



Content

- Product Range Overview
 - Design principles & Main specifications
- Applications of use
 - Mail order / E-commerce
 - Production and Service / Maintenance
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- Product Features & Benefits
 - Productivity
 - Driveability
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Toyota Tracto and BT Optio N-series

- The Toyota Tracto and BT Optio N-series range is a family of stand on towing and order picking trucks for internal material handling of light and medium heavy goods. The trucks bridges the gap between manual goods handling using trolleys/trailers and conventional forklift trucks
- The N-series range consists of two categories of models
 - Towing (TSE100/TSE150 Tracto)
 - Order picking (TSE100W BT Optio)
- Built by Helge Nyberg AB at the factory in Ulricehamn, Sweden
- 24V



Product range overview

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MATERIAL HANDLING

Towing tractors - Tracto



TSE100 - 702



TSE150 - 708



TSE150 - 728

Order pickers – BT Optio



TSE100W - 709



TSE100W - 710



TSE100W - 713

Product range overview

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MATERIAL HANDLING

Towing tractors - Tracto

- The three tractor models within the Tracto N-series are well suited for horizontal transport for light and medium duty applications
- These products are useful for many types of material transports. Example of customers are within the manufacturing industry, maintenance and hospital applications
- The tractors can be equipped with several different types of towing devices as option. A trolley or trailer are attached to the tractor with the tow device



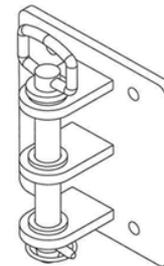
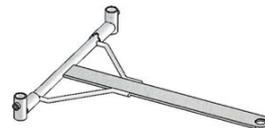
TSE100 - 702



TSE150 - 708



TSE150 - 728



Examples of towing devices, Towing bar to TSE100-702 and Towing pin / Quick towing pin to TSE150-708/728.

The option presentation shows further information about towing devices

Product range overview

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MATERIAL HANDLING

Order picking trucks – BT Optio

- The three models within the BT Optio N-series are well suited for light and medium duty order picking applications.
- Customers are mainly within order picking, mail order, e-commerce, spare parts and hospital applications
- Thanks to the unique docking system, different models of trolleys can be docked to the truck, the truck and trolley become one unit



Example of the unique docking system with a step trailer on TSE100W - 709



TSE100W - 709



TSE100W - 713

Product range overview

Overall product data

Toyota Tracto and BT Optio N-series					
Model	Voltage	Load capacity (kg)	Rated drawbar pull (N)	Width (mm)	Length (mm)
TSE100 - 702	24V	1000	600	600	1266
TSE150 - 708	24V	1500	600	595	1299
TSE150 - 728	24V	1500	600	731	1726
TSE100W - 709	24V	1000	-*	747	1583
TSE100W - 710	24V	1000	-*	975	1583
TSE100W - 713	24V	1000	-*	1327	1475

- * = Truck + trolley is one unit, therefore no data
- For more product data, see the product specification sheets

Product range overview

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MATERIAL HANDLING

Main specifications

Toyota Tracto and BT Optio N series

		TSE100-702	TSE150-708	TSE150-728	TSE100W-709	TSE100W-710	TSE100W-713
Main characteristics							
Load capacity / rated load	kg	1000	1500	1500	1000	1000	1000
Rated drawbar pull	N	600	600	600	.*	.*	.*
Wheelbase	mm	815	815	1165	1165	1165	1053
Service weight including battery (105 Ah)	kg	270	430	400	260	280	300
Wheels - number front/rear (x = drive wheel)	-	1x+2/2	1x+2/2	1x+2/2	1x+2/2	1x+2/2	1x+2/2
Dimensions							
Overall length	mm	1266	1299	1726	1583	1583	1475
Chassis width	mm	600	600	747	747	975	1327
Turning radius	mm	1085	1085	1432	1432	1440	1320
Stand height	mm	70	70	70	70	70	70
Coupling Height (towing bar 702/708/728)	mm	270	231/331/431	231/331/431	92	92	83
Motor and Performance							
Travel speed with/without load	km/h	9/12	6/12	9/12	9/12	9/12	9/12
Acceleration time, with/without load (0-10m)	s	5.7/4.7	5.7/4.7	5.7/4.7	5.7/4.7	5.7/4.7	5.7/4.7
Max. gradeability laden/unladen	%	10/10	10/10	10/10	10/10	10/10	10/10
Drive motor	kW	1.0	1.0	1.0	1.0	1.0	1.0

- * = Truck + trolley is one unit, therefore no data
- For more product data, see the product specification sheets

Product range overview

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MATERIAL HANDLING

Trolleys for Tracto N-series towing tractors

- There are many different models of trolleys available. The models presented in the ELP for Tracto N-series are:
 - Shelf trolleys
 - Platform trolleys
 - Parcel trolleys
- There are two capacities of trolleys:
 - Basic one with 500 kg capacity
 - Premium one with 750 kg capacity
- More information about the trolleys in separate product presentations



500 kg



750 kg

Product range overview

Trolleys for Tracto N-series

There are different trolley models available for Tracto N-series, shelf trolleys, platform trolleys and parcel trolleys. All to be combined with other trolleys in a train with up to three trolleys in a train. There are a lot of options for all trolleys like extra shelves etc. Important that the swiveling wheels are the front wheels of the trolley (see image below).

- **Shelf trolleys.** The most common trolley when handling different kinds of loads or when a sortation of items is needed. The shelf trolleys comes in three different models
- **Platform trolleys.** A simple platform style trolley designed to handle all type of goods. Allows fast, easy and flexible transportation of goods
- **Parcel trolleys.** For transportation of items in multiple size and shape, allowing secure and safe transportation



Model 25



Model 27



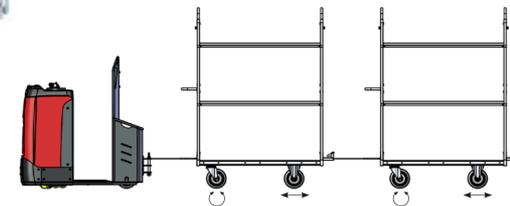
Model 750



Model 55



Model 86



Wheel setup for TSE100/150

Product range overview

Trolleys to BT Optio N-series order picker

- There are many different models of trolleys available. The models presented in the ELP for BT Optio N-series are:
 - Step trolleys
 - Shelf trolleys
 - Platform trolleys
 - Parcel trolleys
- There are two capacities of trolleys:
 - Basic one with 500 kg capacity
 - Premium one with 750 kg capacity
- More information about the trolleys in separate product presentations



Step: Model 27



Step: Model 750



Parcel: Model 86



Platform: Model 55



Shelf: Model 25



Shelf: Model 27



Shelf: Model 750

Product range overview

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MATERIAL HANDLING

Trolleys to BT Optio N-series order picking trucks

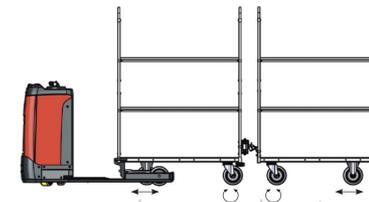
The trolleys available for BT Optio N-series are used together with the unique docking system for BT Optio N-series that attach and deattach the trolleys to the truck in a quick and easy way. It is recommended to use up to two trolleys in a train after the truck. Important that the wheels of the trolleys are as the image below.

- **Example of an efficient combination:**

- Use a TSE100W – 709 (smallest version) and use a Shelf trolley or a Step trolley (for higher picking height) to dock to the truck.
- Connect a shelf trolley as a second trolley in the train together with a pick train solution to minimize the turning radius and also the walking distances around the truck. The pick train solution is also efficient to attach/deattach the trolleys from each other.



Docking system BT Optio N-series



Wheel setup for TSE100W



Pick train solution

Application of use

Mail order and e-commerce

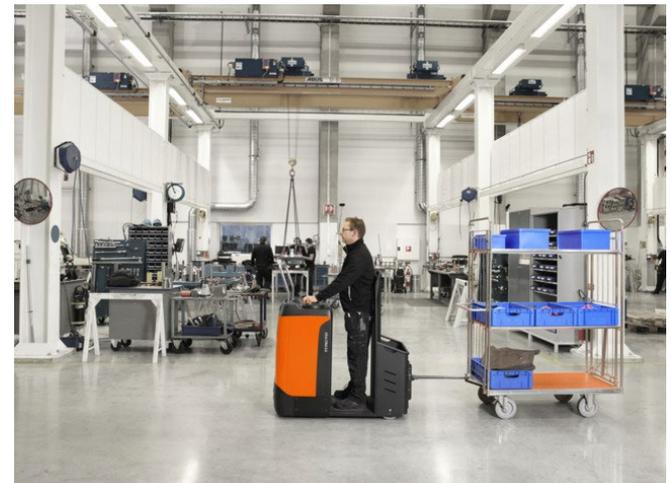
- TSE N-series are very common and efficient trucks when it comes to Mail order and E-commerce applications
- In this applications the aisles are often quite narrow. With it's quick flexible driving ability together with very low instep height (70mm) and the small width (from 600mm) the TSE N-series is the perfect match for this application
- A typical configuration would be a TSE100W together with a docked step trolley or a shelf trolley with an extra shelf trolleys in a train
- Helge Nyberg has a wide range of trolleys for this application and market and are making the trolleys according to the customer needs.



Application of use

Production and Service / Maintenance

- Important applications for the TSE N-series are Production, Service and Maintenance
- Within producing companies, the TSE N-series can be used for transporting goods or production equipment to a working station at the production line
- The TSE N-series can also be used for transportation of maintenance tools
- Other areas of use can be parcel handling within a company
- A good combination for this application would be one of the towing tractors (TSE100/150) together with one or two shelf trolleys in a train



Application of use

Hospitals

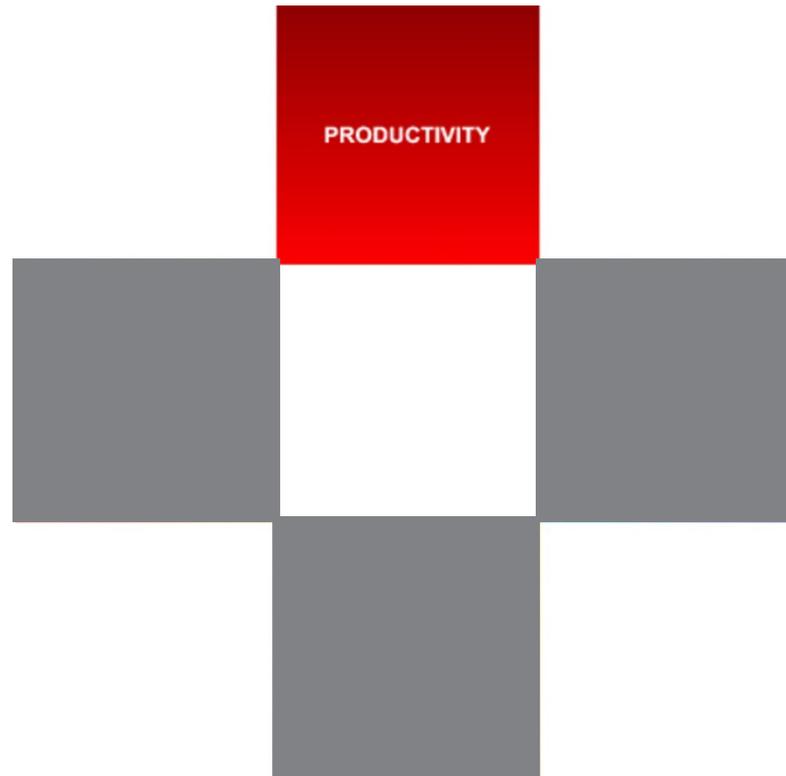
- Another application for the TSE N-series are hospitals
- Hospitals are an application where a lot of goods, equipment and patients are transported within and between buildings. To achieve that a small product as the TSE N-series is suitable
- Hospitals also uses a large quantity of internal mail and packages that needs to be delivered all over the buildings. Helge Nyberg has a wide range of solutions for this application and market.
- Helge Nyberg customizes the products to fit the hospital needs



Solution for transportation of bed, wheelchairs and walking patient

BT optio *TRACTO* N-series

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



Product Features & Benefits

TOYOTA

MATERIAL HANDLING

[TSE100/TSE150/TSE100W]

Capacity

Features

- Tracto N-series
 - TSE100-702 with 1t capacity
 - TSE150 – 708/728 with 1.5t capacity
- BT Optio N-series
 - TSE 100W-709/710/713 with 1t capacity

Benefits

- High capacity in relation to the weight of the truck
- High capacity performance results in a more efficient towing and order picking application due to less number of transports



PRODUCTIVITY

RELIABILITY

SAFETY

ENVIRONMENTAL

Product Features & Benefits

TOYOTA

MATERIAL HANDLING

[TSE100/TSE150/TSE100W]

High performance

Features

- High maximum Travel speed (with load / without load)
 - TSE100 – 702: (6/12 km/h)
 - TSE150 – 708/728: (9/12 km/h)
 - TSE100W – 709/710/713: (9/12 km/h)
- Quick response in acceleration (with load / without load) 0-10m:
 - All models: (5.4/4.7 s)
- Quick response in the mechanical steering and the trucks are intuitive and easy to drive



Benefits

- High speed means more efficient cycles due to less transport time
- High acceleration reduces time in between stops

PRODUCTIVITY

DRIVEABILITY

SAFETY

ENVIRONMENTAL

Product Features & Benefits

TOYOTA

MATERIAL HANDLING

[TSE100/TSE150/TSE100W]

Chassis design

Features

- Narrow chassis design with market leading width from 600 mm for the TSE N-series
- The narrow design allows shorter distance between the racks which makes it possible to store more items in the warehouse

Benefits

- Narrow aisles optimizes the surface of the warehouse
- Easier to work with several trucks in the same aisle



PRODUCTIVITY

DRIVEABILITY

SAFETY

ENVIRONMENTAL

Product Features & Benefits

TOYOTA

MATERIAL HANDLING

[TSE100/TSE150/TSE100W]

Light weight

Features

- The N series has a light weight. Weights including batteries with 105 Ah:
 - TSE100-702: 270 kg
 - TSE150-708/728: 430/400 kg
 - TSE100W-709/710/713: 260/280/300 kg

Benefits

- Wide application fit, it can be used on most mezzanine floors
- Good capacity despite the quite low weight



PRODUCTIVITY

DRIVEABILITY

SAFETY

ENVIRONMENTAL

Product Features & Benefits

TOYOTA

MATERIAL HANDLING

Docking system TSE100W – 709/710/713

Features

- Unique docking system for BT Optio N-series, the truck and the trolley becomes one unit
- Step trolleys and Shelf trolleys are used to dock to the truck
- With a quick maneuver it is really easy to attach and deattach the trolley to the truck
- Deattaching can be done without getting of the truck

Benefits

- The unique docking system makes it possible to make fast exchange of the trolleys when order picking
- Different trolleys can be used by the same truck.
- Depending on the application and type of trolleys in a train, the truck becomes an effective order picker for e-commerce, mail order, spare parts etc.

[TSE100W]



PRODUCTIVITY

DRIVEABILITY

SAFETY

COMFORT

Product Features & Benefits

TOYOTA

MATERIAL HANDLING

Battery

Features

- Gel batteries, available in two different battery sizes, 2x76 Ah and 2x105 Ah
- Li-ion batteries, available in the size of 105 Ah, to be used with opportunity charging
- Each battery cassette includes two batteries for Gel batteries and one for Li-ion
- A battery cassette is always included in the truck
- Battery exchange is made in the front
- For optimized battery exchange for Gel batteries use a battery exchange table, an extra battery cassette with an extra battery set

Benefits

- Battery choices due to customer needs
- Quick and easy battery replacement or charging

[TSE100/TSE150/TSE100W]



PRODUCTIVITY

RELIABILITY

SAFETY

ENVIRONMENTAL

Product Features & Benefits

TOYOTA

MATERIAL HANDLING

Storage

Features

- Storage compartments for small items pens, knives, cans etc. are standard for on models in TSE N-series
- A compartment for the Operator manual and other documents are standards on all TSE N-series
- The TSE150-708 has got a large storage compartment behind the driver
- The TSE150-728 has a platform in the back, together with the cargo case option it becomes a large and useful storage compartment

[TSE100/TSE150/TSE100W]



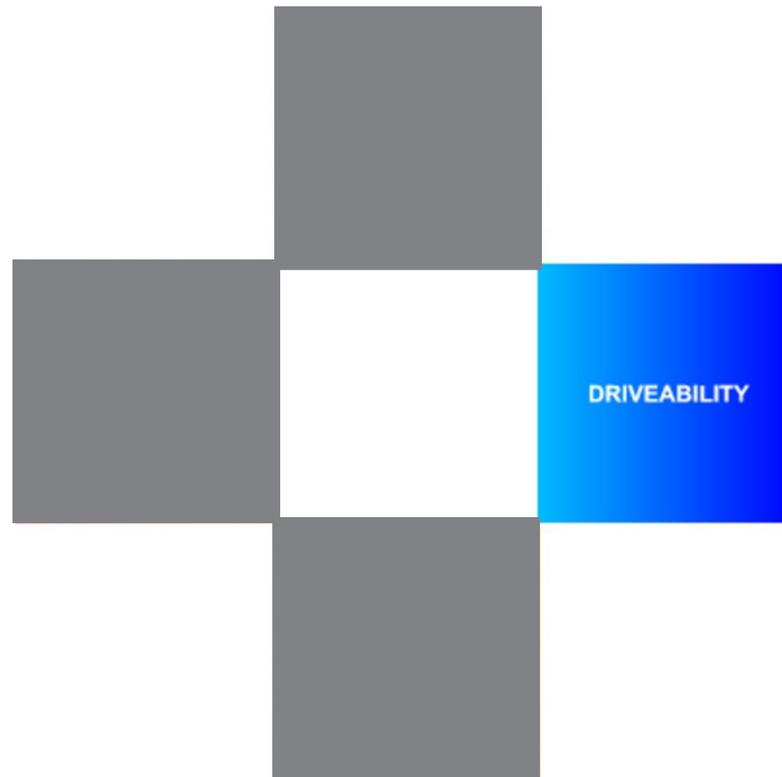
Benefits

- Easy access to carry-on items saves time



BT optio *TRACTO* N-series

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



Product Features & Benefits

TOYOTA

MATERIAL HANDLING

[TSE100/TSE150/TSE100W]

Instep height

Features

- All models has low, market leading, instep height of 70 mm

Benefits

- Easy and safe stepping on & off, the most important ergonomic issue for a towing and order picker truck
- Less tiring work



PRODUCTIVITY

DRIVEABILITY

SAFETY

RELIABILITY

Product Features & Benefits

TOYOTA

MATERIAL HANDLING

[TSE100/TSE150/TSE100W]

Vibration damped floor

Features

- Vibration damped floor are standard for all TSE N-series models

Benefits

- To improve operator comfort when travelling across bumps and uneven floors. This feature protects the operator from unpleasant vibrations



PRODUCTIVITY

DRIVEABILITY

SAFETY

ENVIRONMENTAL

Product Features & Benefits

TOYOTA

MATERIAL HANDLING

[TSE150]

Backrest, TSE150 - 708

Features

- Ergonomic designed height adjustable backrest in durable material
- Only available on model TSE150-708

Benefits

- Increasing the ergonomics for the driver during long driving distance
- Fits all sizes of operator



Product Features & Benefits

TOYOTA

MATERIAL HANDLING

[TSE100/TSE150/TSE100W]

Quiet in operation

Features

- Quiet driving despite a large drive motor

Benefits

- Improves the driver working environment
- Improves the working environment in the operating area



Product Features & Benefits

TOYOTA

MATERIAL HANDLING

[TSE100/TSE150/TSE100W]

Driver interface

Features

- The TSE N-series has two separate controls.
 - A steering wheel with a knob on the left hand
 - Travel control where the speed, brake and reverse controls are combined into one at the right-hand side
 - The horn is included in the right-hand handle



Benefits

- Intuitive and easy to use controls with nice driver feeling and response
- Ergonomic shaped handles to avoid worn out muscles of the operator
- Increased safety due to the two-hand grip



Product Features & Benefits

TOYOTA

MATERIAL HANDLING

Informative Display

[TSE100/TSE150/TSE100W]

Features

- Showing battery charge level, speed and total operating hours while driving
- Error codes: In case of error the error code is shown
- The battery charge level indicates:
 - 40-100% = Green
 - 20-39% = Yellow
 - 10-19% = Red + flashing battery symbol
 - 0-9% = Red + Error code symbol (wrench) + flashing battery symbol
- Charging: When charging the charge symbol is shown
- Parking brake: While parked, a P-symbol is shown
- Driving direction: A green arrow shows the driving direction
- Operator sensor: While standing on the platform a safety pedal symbol is shown



Benefits

- By a glance the driver can observe information about the truck



Product Features & Benefits

TOYOTA

MATERIAL HANDLING

[TSE100/TSE150/TSE100W]

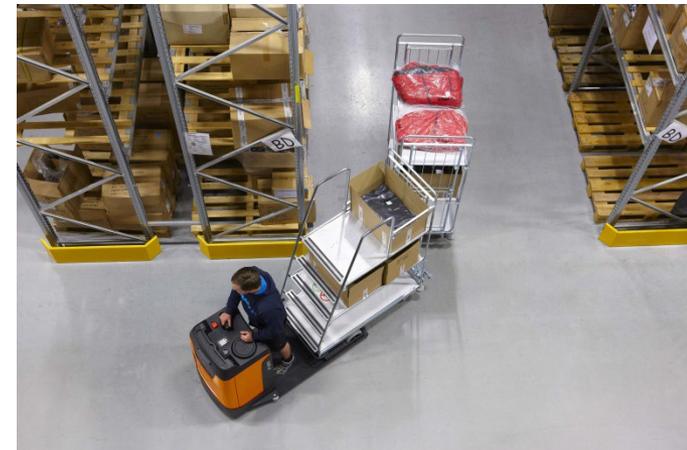
Small turning radius

Features

- The steering of the trucks allows them to pivot about its own axis and by that the truck get a small turning radius
- To keep the turning radius as small as possible when using trolleys in a train, the best set up is to use the Pick train solution between the trolleys

Benefits

- Increases the drivability in tight areas



Pick train solution



Product Features & Benefits

TOYOTA

MATERIAL HANDLING

[TSE100/TSE150/TSE100W]

Brakes

Features

- Reversing brake. The motor brake is easily applied when the operator moves the speed control past the neutral position to reverse the truck
- Neutral brake. The motor brake is engaged when the operator releases the speed control in the centre position
- Automatic parking brake activated when the truck stops

Benefits

- Reversing and neutral brake means controlled slowing down of the truck. This supports the driver and increase the drivability
- Parking brake is always applied automatically when the truck is stopped, which increases safety and productivity



Product Features & Benefits

TOYOTA

MATERIAL HANDLING

BT optio *TRACTO* N-series

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



Product Features & Benefits

TOYOTA

MATERIAL HANDLING

[TSE100/TSE150/TSE100W]

Access

Features

- Keyless access by PIN codes
- Up to 20 personal PIN codes can be chosen and saved in the truck
- Delivered with a transportation code

Benefits

- Prevents unauthorised use of the truck
- No key is needed for start of the truck



Product Features & Benefits

TOYOTA

MATERIAL HANDLING

[TSE100/TSE150/TSE100W]

Emergency switch

Features

- Easily accessible Emergency switch close to the speed handle



Benefits

- Cuts off the motor in case of an emergency
- Easy to reach, easy and safe to use



Product Features & Benefits

TOYOTA

MATERIAL HANDLING

[TSE100/TSE150/TSE100W]

Awareness light

Features

- The truck is equipped with a led light in the front for awareness

Benefits

- Makes the truck more visible for the surroundings to avoid accidents



Product Features & Benefits

TOYOTA

MATERIAL HANDLING

[TSE100/TSE150/TSE100W]

Horn

Features

- The horn sounds as long as the button is pressed in.
- Positioned on the driving handle for easy access

Benefits

- An easy way to alert the surroundings if a situation occurs



BT optio *TRACTO* N-series

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



Product Features & Benefits

TOYOTA

MATERIAL HANDLING

[TSE100/TSE150/TSE100W]

Integrated front bumper

Features

- The front of the truck includes an integrated steel bumper to resist lighter collisions

Benefits

- Protects the truck in case of a collision
- Increases the life of the products



Product Features & Benefits

TOYOTA

MATERIAL HANDLING

[TSE100/TSE150/TSE100W]

Robust design

Features

- The truck has a robust design with a solid chassis and durable covers
- Options well protected from the surroundings

Benefits

- Reducing need of maintenance
- Increasing truck uptime



Product Features & Benefits

TOYOTA

MATERIAL HANDLING

[TSE100/TSE150/TSE100W]

Large drive motor

Features

- The truck has a large drive motor of 1 kW.
- The drive motor is an AC brushless motor of high quality

Benefits

- Low maintenance cost.
- High uptime



END OF MODULE

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MATERIAL HANDLING