Official Partner for
Material Handling Equipment

Rätt rustad för framtiden

Produktnyheter Toyota Material Handling

Susanne Wallgren
Magnus Runnander

2024-01-31

TOYOTA
MATERIAL HANDLING

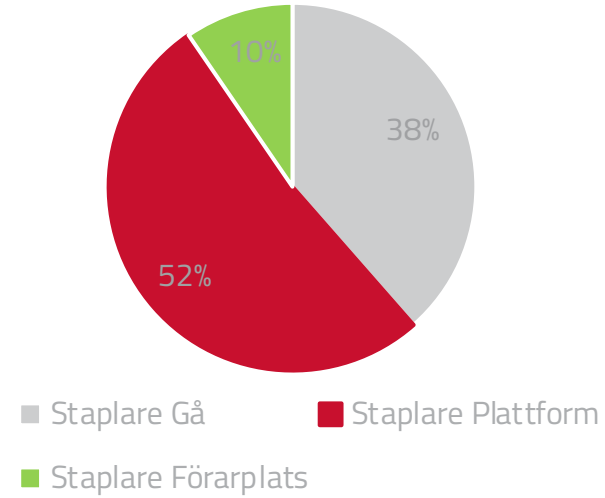
BT LEVIO
S-series
LSI200

BT STAXIO
S-series
SSI160LN, SSI200D

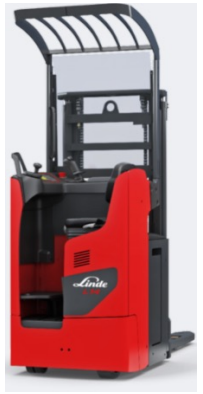
TOYOTA
MATERIAL HANDLING

Säljstatistik Ledstaplare

- Truckmarknad Sverige 6 100 st (R12)
- Staplare 52% av totala truckmarknaden i Sverige
- Ökad efterfrågan på fasta sidoskydd och skyddande förarmiljöer





TOYOTA
MATERIAL HANDLING

Built around You – Built around Li-Ion

Kravbilden

- Kompakt dimension – Kort längd och litet gångbreddsbehov
- Skyddad förarmiljö
- Bästa möjliga ergonomi, förarutrymme och körkänsla
- Snabb, enkel och säker laddning
- Hög tillgänglighet oavsett nyttjandegrad

LI-ION
Lithium-Ion Energy System

TOYOTA
MATERIAL HANDLING

Applikationer BT Levio/Staxio S

Passar en bred range av applikationer både för normala/stora ytor till trånga utrymmen och gångar

- Horisontella transporter för medium till långa distanser
- Dubbelpallshantering
- Blockstapling
- Stapling på höga höjder
- Lastning/lossning
- Fryshushantering

Utvecklade för att passa en bred range av kunder:

- industri/tillverkning, lager och distributionscenter
- Passar både små och stora verksamheter

TOYOTA
MATERIAL HANDLING

BT Levio 2.0t låglyftande ståtruck

LSI200

Klassad kapacitet	2000 kg
Gaffellängd	1000 - 2350 mm
Gaffelbredd	520, 536, 550, 570, 685 mm
Gaffelhjul	Single or boogie/heavy duty
Hastighet	12,5 km/h / 10 km/h
Truckbredd B_1	790 mm
Trucklängd l_2	822 mm
Total trucklängd	1972 mm (gl 1150)
Gångbreddsbehov (800x1200)	2468 mm

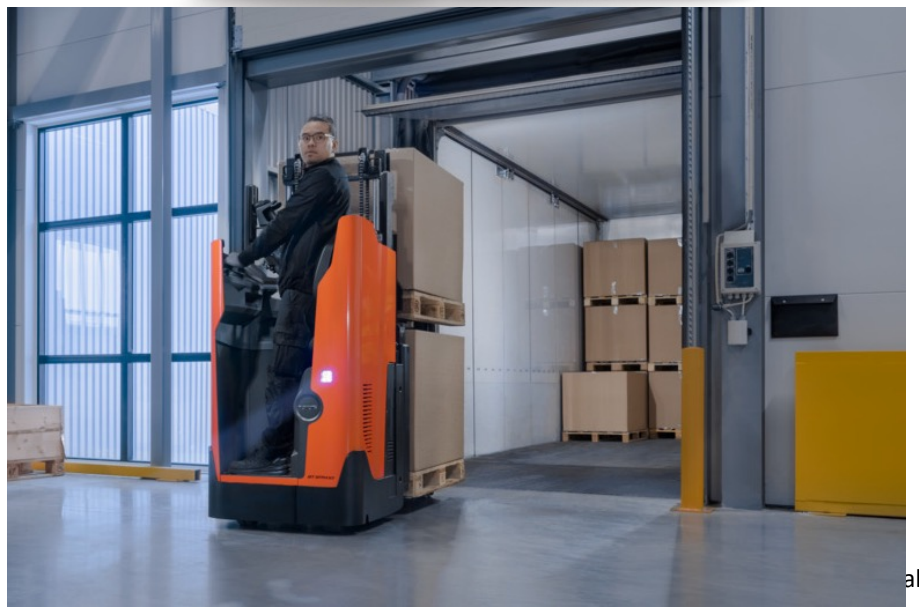
Hantering: horisontella transporter
(ex industri/tillverkn, lager, godsterminal, lossning/lastning)

TOYOTA
MATERIAL HANDLING

BT Staxio 2.0t ståstaplare dubbelpall

SSI200D

Klassad kapacitet	1000 + 1000 kg
Stödbenskapacitet	2000 kg
Max lyfthöjd	2500 mm
Hastighet	11,5 km/h / 8 km/h
Gaffellängd	1200 mm
Gaffelbredd	Boggie / Heavy duty
Truckbredd b_1	790 mm
Trucklängd l_2	1022 mm
Total trucklängd	2222 mm
Gångbreddsbehov	2694 mm



Hantering: Transport & stapling/dubbelpallshantering

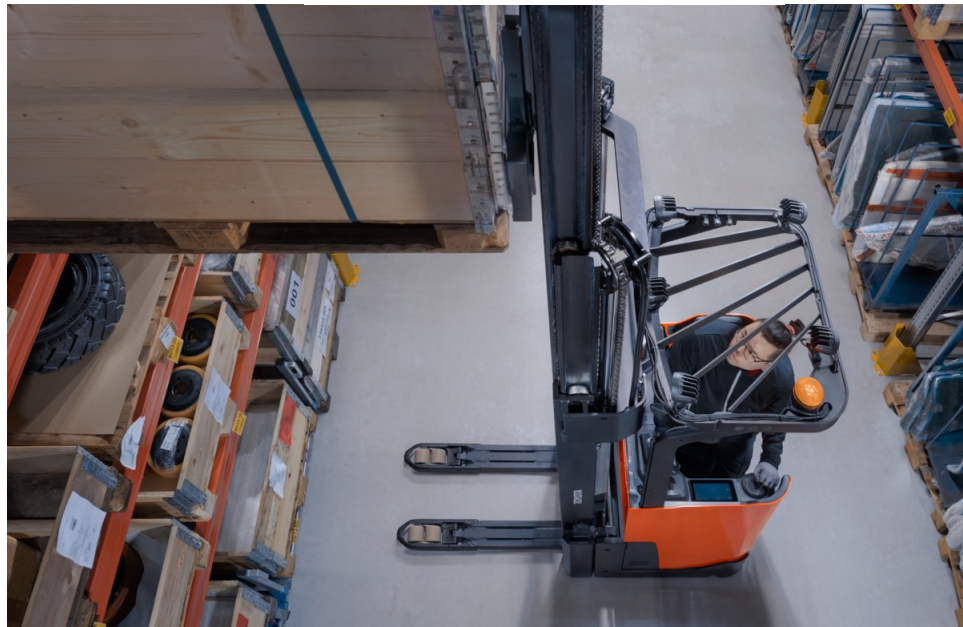
(ex industri/tillverkn, lager, godsterminal, lossning/lastning

TOYOTA
MATERIAL HANDLING

BT Staxio 1.6t smal ståstaplare med höjbara stödben

SSI160LN

Klassad kapacitet	1600 kg	
Stödbenskapacitet	2000 kg	
Max lyfthöjd	5400 mm	
Hastighet	10 km/h / 8 km/h	(tid 9 km /7,6)
Gaffellängd	1000, 1150, 1200, 1400, 1150 dubbelpall**	
Truckbredd b_1	790 mm	(tid 945 mm)
Trucklängd l_2	1030 mm	(tid 1120 mm)
Total trucklängd	2180 mm	(tid 2270 mm)
Gångbreddsbehov	**2588 mm**	(tid 2717 mm)



Hantering: Transport & stapling hög höjd

(ex industri/tillverkn, lager)

TOYOTA
MATERIAL HANDLING

Built around You

Utvecklad med föraren i fokus

ERGONOMICS

ENERGY-EFFICIENCY

SAFETY

HIGH PERFORMANCE

TOYOTA
MATERIAL HANDLING

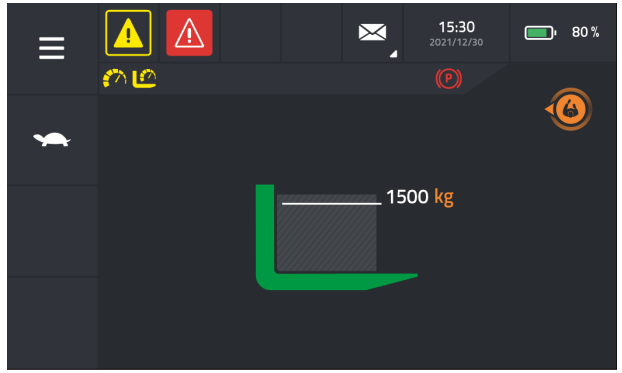
Ergonomi

- Komfortabelt förarutrymme
- Dämpat golv
- Ingen pedal - närvarokontroll på hela golvytan
- Justerbart ryggstöd och möjlighet till sittstöd

TOYOTA
MATERIAL HANDLING

Ergonomi

- Ergonomiskt utvecklat styrhandtag med justerbart handledsstöd
- Intuitiv touch-display för enklare inställningsmöjligheter, viktindikering etc
- Tyst och smidig hantering, endast 67 dB(A)



TOYOTA
MATERIAL HANDLING

Säkerhet

- Utmärkt sikt
- Närvarokontroll i golv
- Närvarokontroll i styrhandtag
- Fotsensor – stannar kontrollerat och mjukt om man har foten utanför chassi

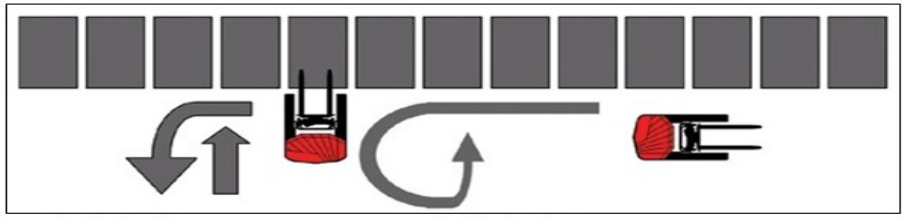
Säkerhet

- Automatisk hastighetsreducering vid kurvtagning
- Mjuk körning, accelleration, nedbromsning och stapling
- Blå alt röd ljussignal markering i golv vid körning (option) (drivhjulsriktning / gaffelriktning)
- Daglig tillsyn (option)

TOYOTA
MATERIAL HANDLING

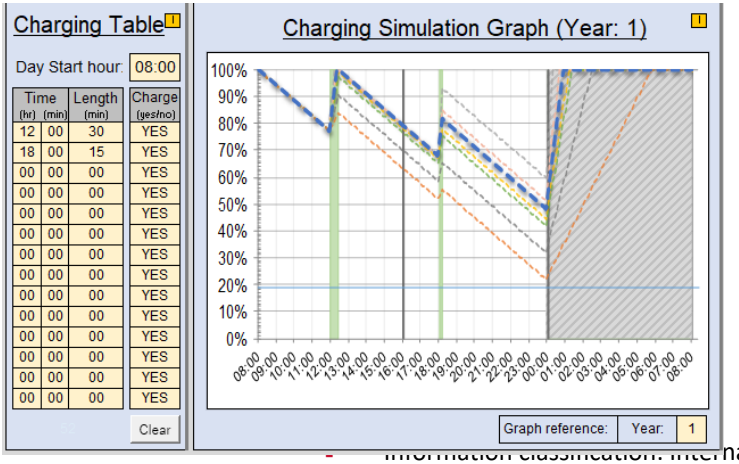
Hög produktivitet

- Slitstarka komponenter – byggd för tuff hantering
- Hög accelleration och hastighet
- Miniratt med 360 alt 180 graders styrning
- Lång räckvidd tack vare låg energiförbrukning



180° steering;
Stop – change direction – start

360° steering;
Continuous movement without stop



TOYOTA
MATERIAL HANDLING

Energieffektivitet

- Snabb, enkel och säker laddning (fulladdning 60 min)
- Pausladdning möjlig
- 3 batteristorlekar –
  samma kompakta chassi oavsett batteri

210Ah

300Ah

420Ah

TOYOTA
MATERIAL HANDLING

BT LEVIO
S-series
LSI200

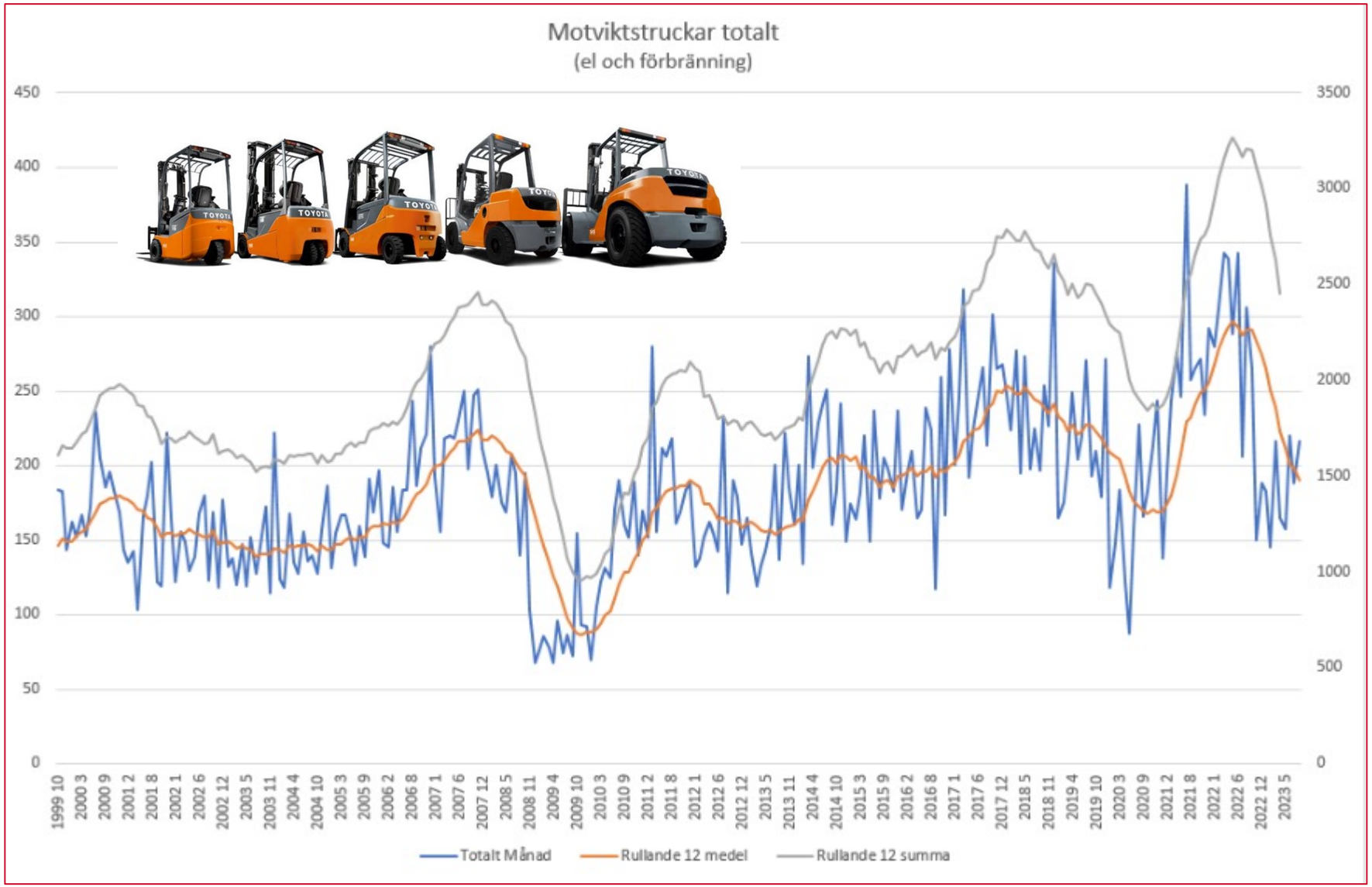
BT STAXIO
S-series
SSI160LN, SSI200D

Läs gärna mer på www.toyota-forklifts.se

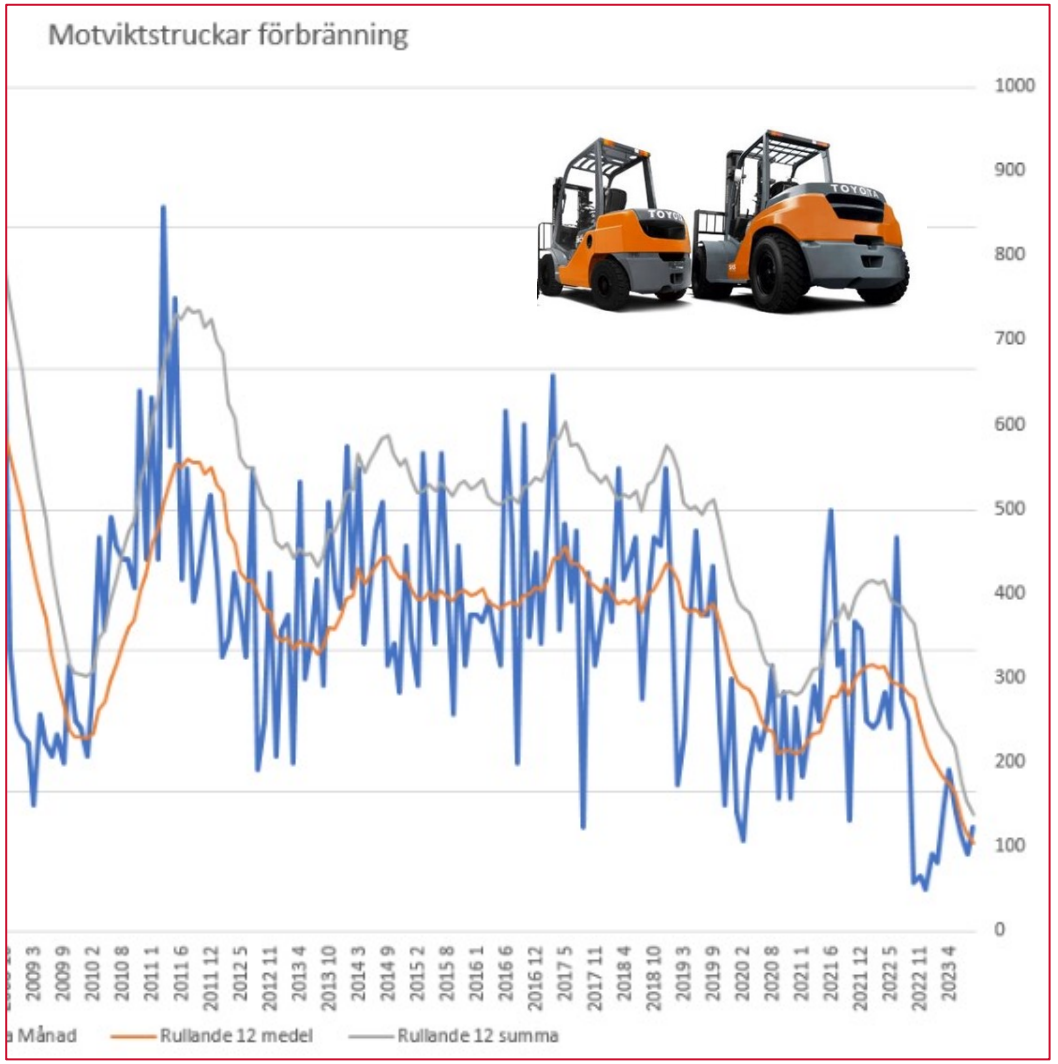
TOYOTA
MATERIAL HANDLING

Toyota motviktstruckar

Produktnyheter - Energieffektivitet



Produktnyheter - Energieffektivitet



Produktnyheter - Energieffektivitet

Bly/syra

Li-Ion

Bränslecell

Produktnyheter - Energieffektivitet

Bly/syra

Li-Ion

Bränslecell

Faktorer att ta hänsyn till:

- Klimat
- Körintensitet
- Tillgänglig laddtid
- Elnät
- Infrastruktur vätgas
- Antal truckar

Sens+

Introduction

SEnS+
smart environment sensor plus

- Sens+ is a driver assistance system
- Designed to help CB forklift operators to detect and minimize collision risks while traveling in reverse
  - More than 50% of accidents involving industrial trucks and pedestrians occur when forklift trucks are reversing*.
- The system provide visual and audible alerts along with truck speed restrictions

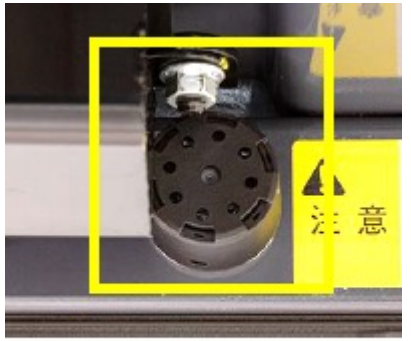
*source: BGHW Deutschland, 2014

Sens+

System overview

- The system consists of a stereoscopic camera module, 4 warning lights installed on the OHG pillars and a warning buzzer *.
- The camera module consist of 2 camera's, applying the principle of triangulation to detect obstacles in 3 dimensions enabling distance measurement.
- In addition, the camera module includes a laser sensor to support distance measurement, providing high level of accuracy.

Camera module



Warning buzzer

Warning lamps

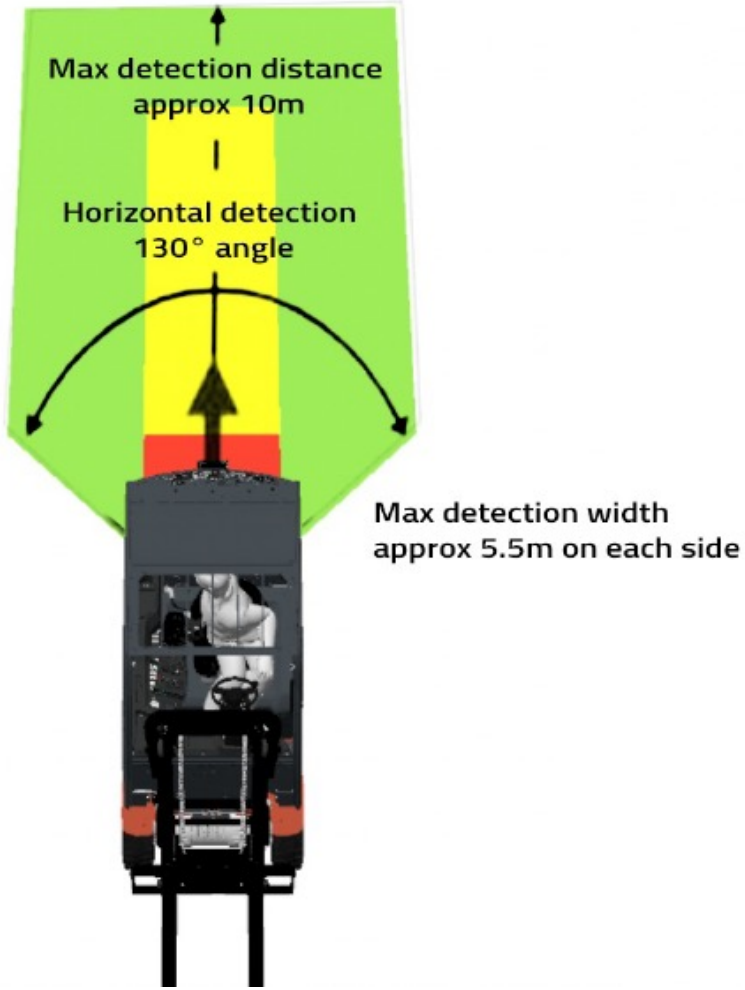
*For electric CB an additional electronic gateway module is installed as well

TOYOTA
MATERIAL HANDLING

Sens+

System overview

- This system detects obstacles within an area of approximately 10 m in distance behind the truck from the camera and approximately 5.5 m in width on either side from the camera.
- The camera unit has a horizontal detection angle of 130° and a vertical detection angle of 120°.
- The camera unit can only capture obstacles from 500 mm or more in height depending the distance from the camera.
- The camera module is rated IP67.

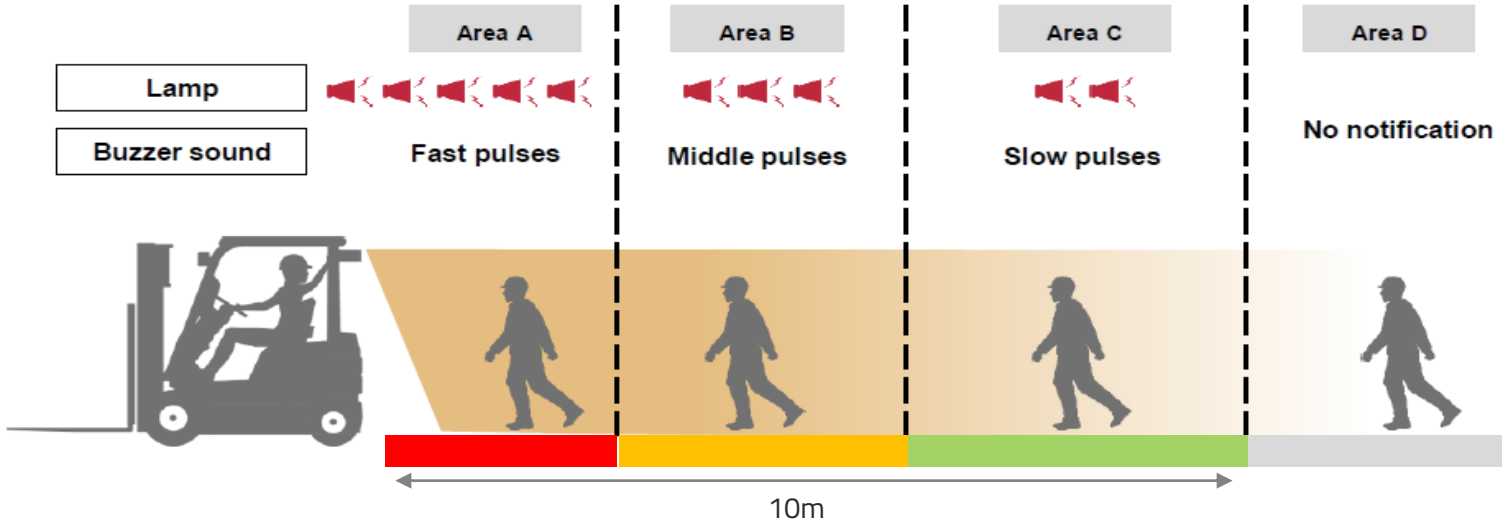


TOYOTA
MATERIAL HANDLING

Sens+

Detection area

- SEnS+ can be configured up to three detection zones (A,B,C) with different audible and visual alarms as well as traveling speed control for each zones.
- The different zones allow to have warnings and speed limitations proportional to the risk, increasing risk awareness and risk mitigation.



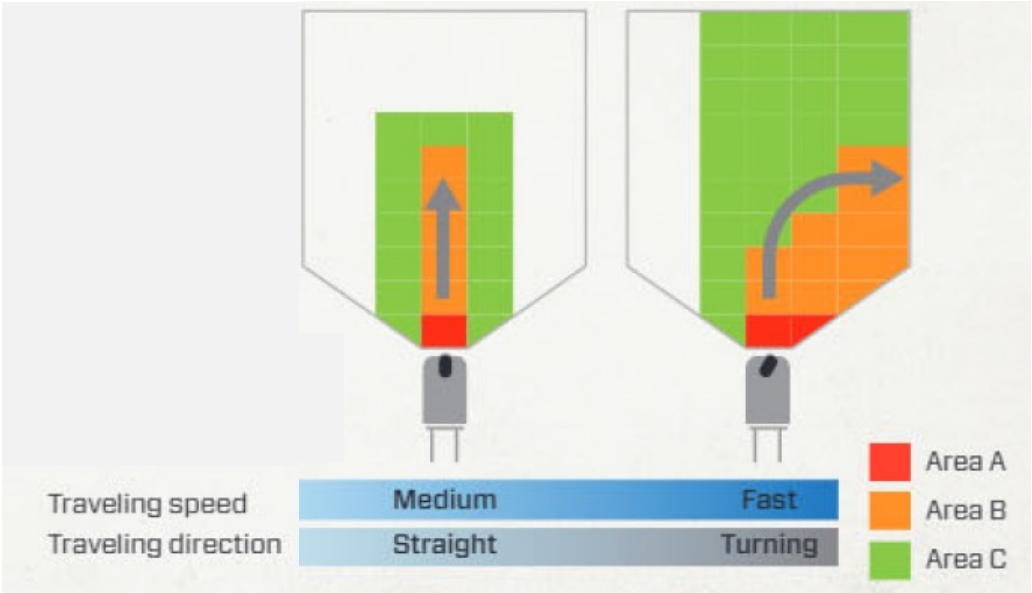
TOYOTA
MATERIAL HANDLING

Sens+

Dynamic range detection

- The system is fully embedded into the truck, enabling dynamic range detection.
- Sens+ will take truck speed and turning angle into account to automatically adjust the detection area.
- The dynamic range detection allow for more accurate risk detection, minimizing false risk notifications and speed limitations.

➢ Ensures minimal impact on productivity.

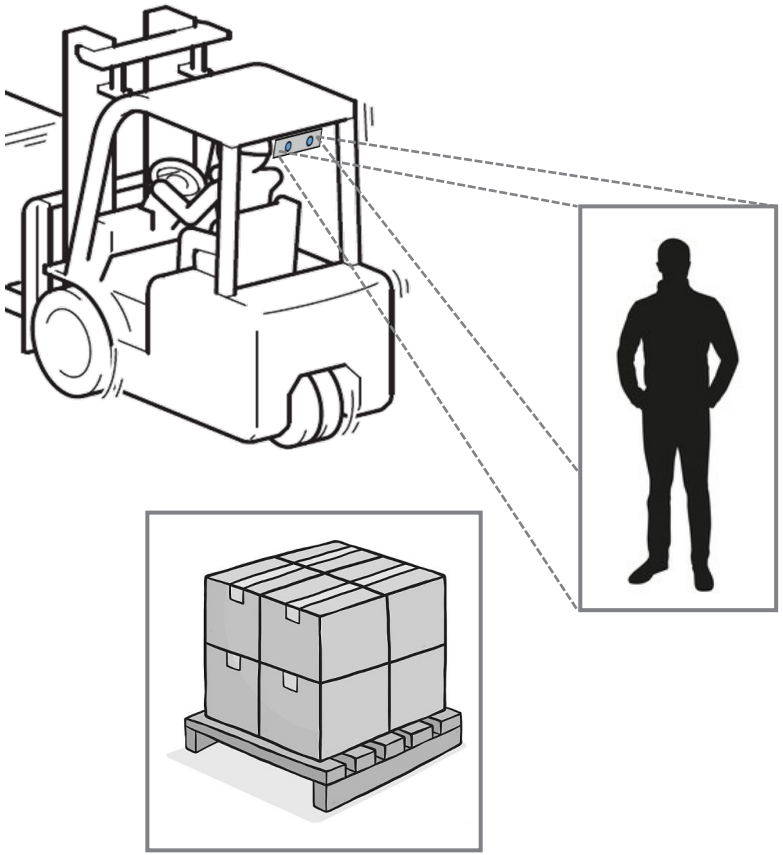


TOYOTA
MATERIAL HANDLING

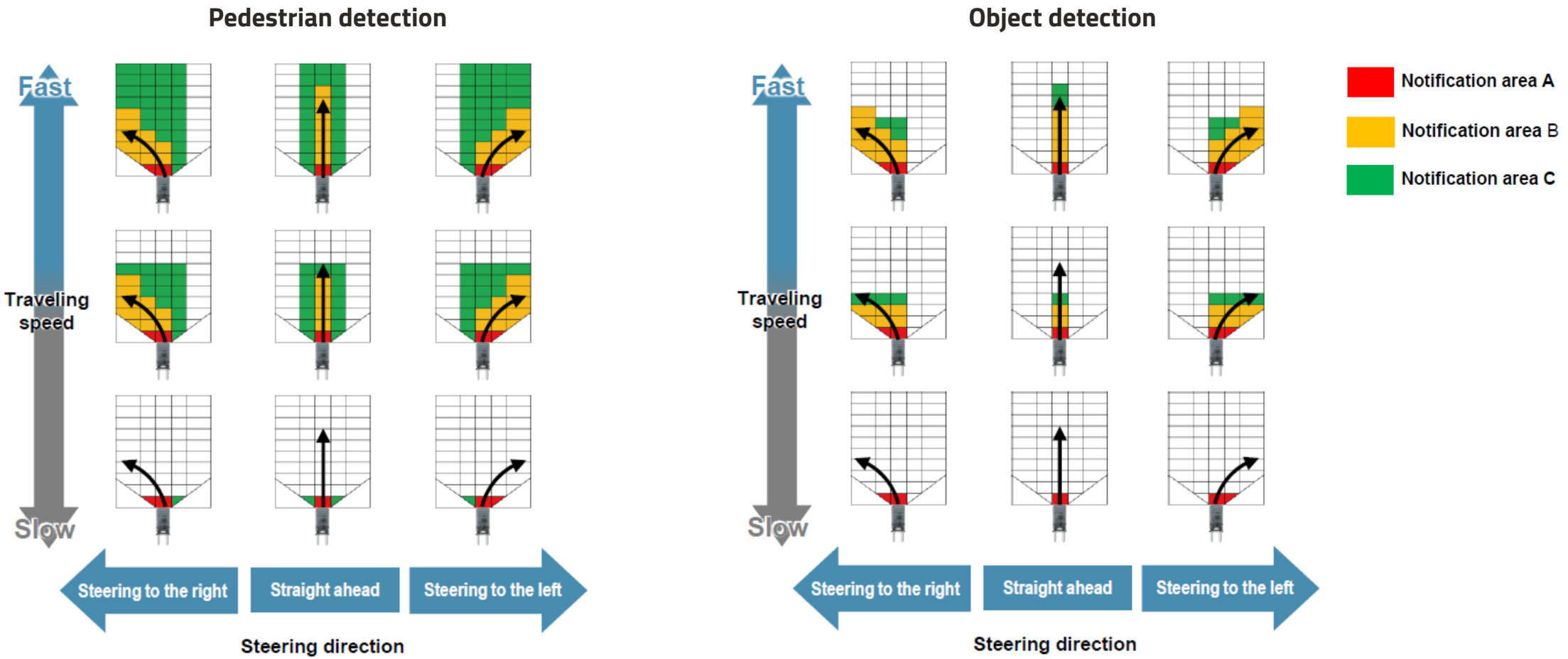
Sens+

Pedestrian & object detection

- Sens+ uses proprietary algorithms to detect and distinguish pedestrians from objects.
- It will detect obstacles as “objects" first and then recognizes those obstacles as pedestrians according the standing characteristics and walking silhouettes.
- The traveling speed control and visual & audible notifications will change depending the type of detection, i.e. pedestrian or object.
- This allow proportional collision risk mitigation, prioritizing pedestrians.



Dynamic detection pedestrian vs object



TOYOTA
MATERIAL HANDLING

Notifications and speed control pedestrian vs objects

- The detection area, notifications and speed control will be different for pedestrian detection versus object detection.
- Sens+ will look wider for pedestrians and speed restriction rules will be stricter to ensure minimal collision risk with pedestrians.
- In case of objects, the settings are less strict to ensure a good balance between safety and productivity.

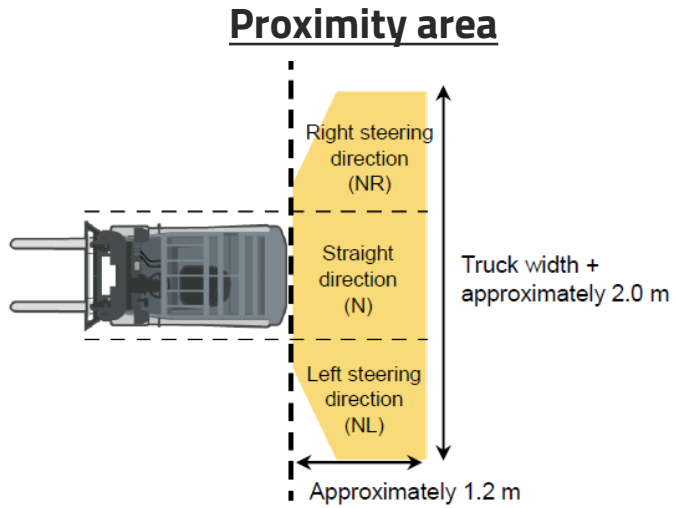
Detect area	Sens+ warning lights	Sens+ Buzzer	Speed limitation		Notification level
			Pedestrian	Objects	
Area A	 Fast blinking	 Fast pulses	Towards 0 km/h *	Depending distance to object *	**High**
Area B	 Middle blinking	 Middle pulses	Depending distance to pedestrian *	Depending distance to object	**Medium**
Area C	 Slow blinking	 Slow pulses	Depending distance to pedestrian	No limit	**Low**
Out of area	 OFF	No sound	No limit	No limit	**none**

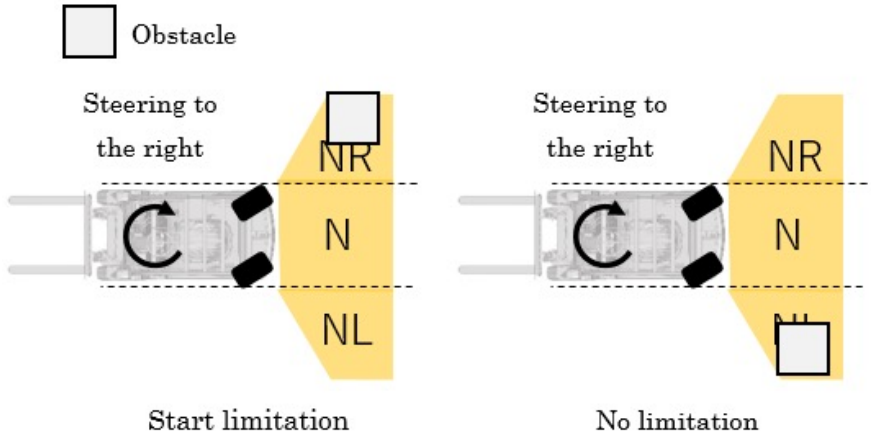
*On Tonero TC max speed limitation is set to idle speed

Sens+

Start motion prevention

- Additional functionality to limit collision risk, applicable when standing still and parking brake is not engaged.
- If an obstacle (pedestrian or obstacle) is detected behind the truck in its proximity area, the operator will be notified (low notification level) of a potential collision risk.
- When the operator is about to start to reverse (direction lever set to reverse) and the obstacle is detected in the path of travel, the system will notify the operator (high notification level) and prevent truck movement to avoid collision.
- This functionality can be overridden if needed by returning to neutral and/or (de)pressing again the accelerator pedal, limiting the truck to creep speed until the risk detection is cleared.



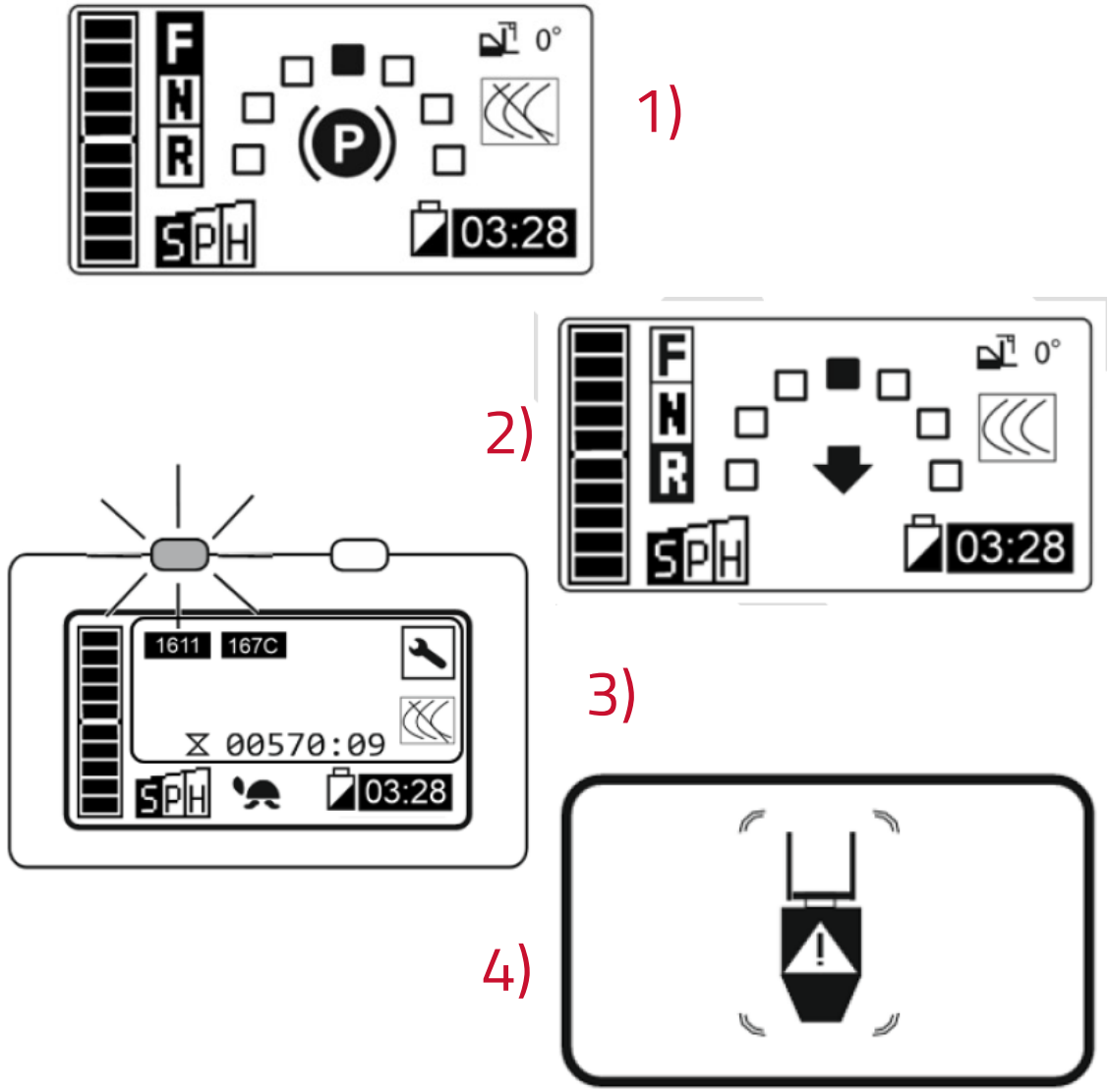


TOYOTA
MATERIAL HANDLING

Traigo48

Display Information

1. At start-up, the SEnS+ function stop indicator will be displayed as the system is booting up. This process takes approx. 10sec. When finished the indicator disappear, signaling the system is functional.
2. During operation, when the camera detects an obstacle while travelling, the display will show an icon.
3. In case of malfunction the Sens+ function stop indicator will be displayed potentially together with an error code.
4. In case the start motion prevention function is activated a dedicated visual will be displayed.

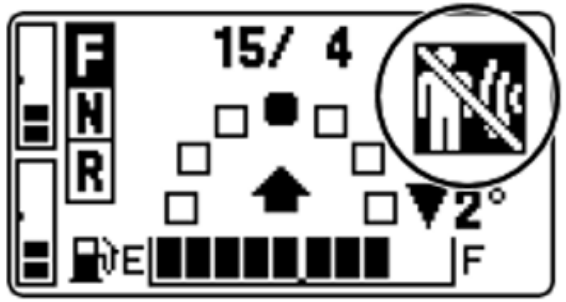


TOYOTA
MATERIAL HANDLING

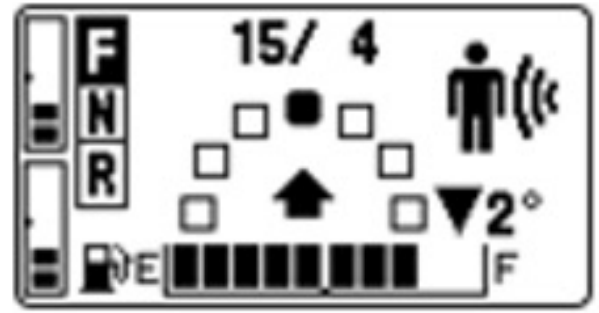
Tonero

Display Information

1. At start-up, the SEnS+ function stop indicator will be displayed as the system is booting up. This process takes approx. 10sec. When finished the indicator disappear, signaling the system is functional.
2. During operation, when the camera detects an obstacle while travelling, the display will show an icon.
3. In case of malfunction the Sens+ function stop indicator or an error code will be displayed.
4. In case the start motion prevention function is activated a dedicated visual will be displayed indicating the position of the detected obstacle.



1)



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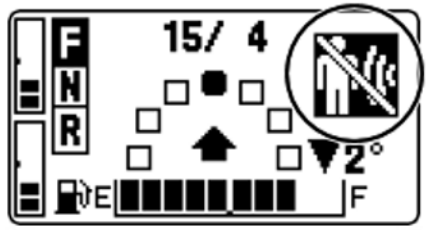

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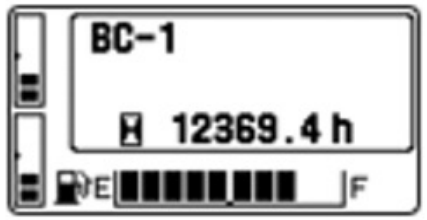
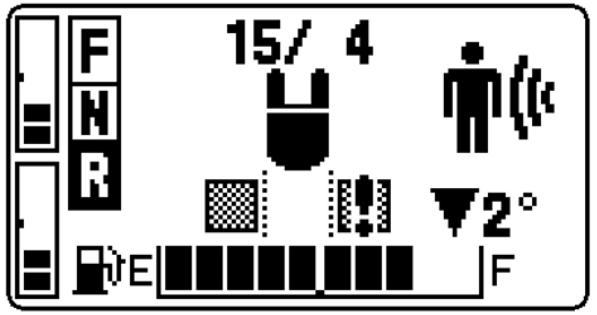




4)

TOYOTA
MATERIAL HANDLING

Sens+

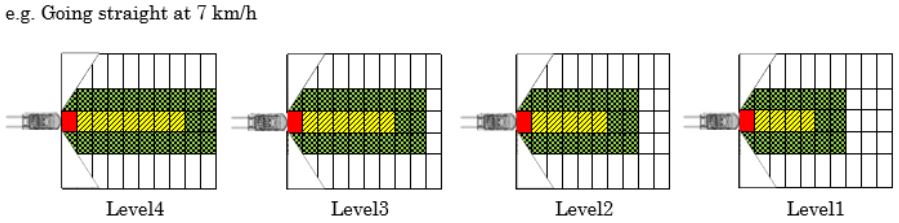
Tuning & settings

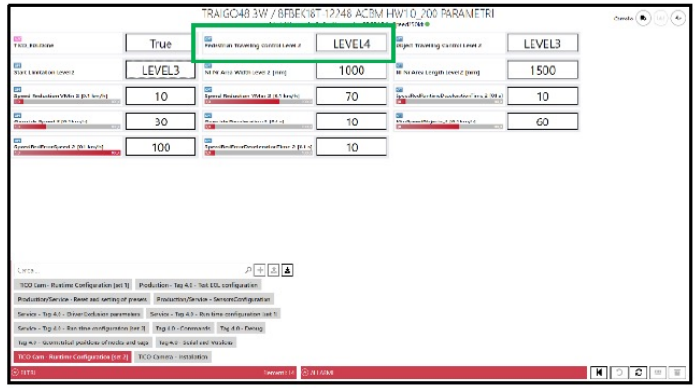
- The SEnS+ system can be customized in different functionality aspects to meet the end user needs.
  - The detection area for pedestrian and objects, the start restriction function and deceleration* are adjustable according to customer requirements, usage, and environment.

- Depending the truck model, these settings can be adjusted through the display and/or CB Truckcom.

- Example of potential situations requiring settings adjustment:
  - Truck usage in narrow area's such as aisles, rackings, in-between goods triggering notifications and speed controls

Example customization for pedestrian detection area





*Only applicable on Traigo

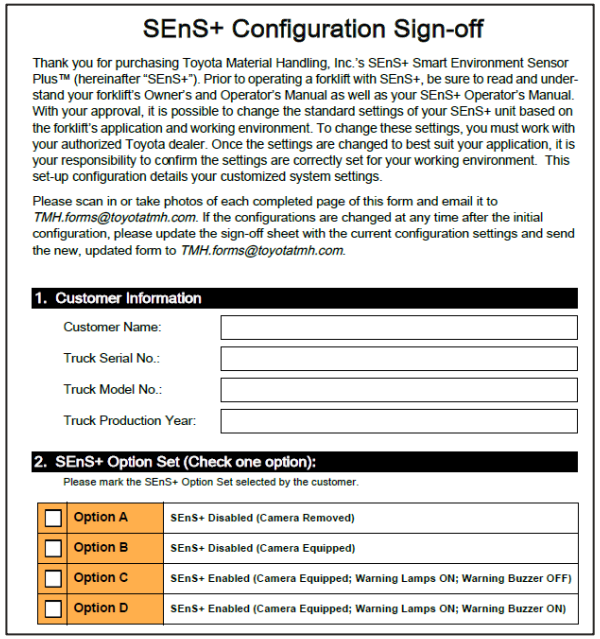
TOYOTA
MATERIAL HANDLING

Sens+

Warnings!

- Sens+ is not a Safety system!
- It is an assistance system designed to support operators.
- The system gradually decelerates by regenerative braking or engine braking to control the truck and does not automatically stop by applying the brakes.
- Operators are fully responsible to take appropriate action to avoid collisions.

- When delivering the system or in case of parameter change a sign-off document is needed between the customer/ end user and the Toyota representative to make sure all parties agree and are aware of the functionalities/ settings of the system.
  - ➢ Cover any potential liability risks in case of misuse.
    - A template will be made available. (set-up to be confirmed)



SEnS+ Configuration Sign-off

Thank you for purchasing Toyota Material Handling, Inc.'s SEnS+ Smart Environment Sensor Plus™ (hereinafter "SEnS+"). Prior to operating a forklift with SEnS+, be sure to read and understand your forklift's Owner's and Operator's Manual as well as your SEnS+ Operator's Manual. With your approval, it is possible to change the standard settings of your SEnS+ unit based on the forklift's application and working environment. To change these settings, you must work with your authorized Toyota dealer. Once the settings are changed to best suit your application, it is your responsibility to confirm the settings are correctly set for your working environment. This set-up configuration details your customized system settings.

Please scan in or take photos of each completed page of this form and email it to *TMH.forms@toyotatmh.com*. If the configurations are changed at any time after the initial configuration, please update the sign-off sheet with the current configuration settings and send the new, updated form to *TMH.forms@toyotatmh.com*.

1. Customer Information

Customer Name:	
Truck Serial No.:	
Truck Model No.:	
Truck Production Year:	

2. SEnS+ Option Set (Check one option):

Please mark the SEnS+ Option Set selected by the customer.

☐ Option A	SEnS+ Disabled (Camera Removed)
☐ Option B	SEnS+ Disabled (Camera Equipped)
☐ Option C	SEnS+ Enabled (Camera Equipped; Warning Lamps ON; Warning Buzzer OFF)
☐ Option D	SEnS+ Enabled (Camera Equipped; Warning Lamps ON; Warning Buzzer ON)

Example sign-off document

TOYOTA
MATERIAL HANDLING

Sens+

Recap / Key points

- Driver assistance solution
- Based on stereoscopic camera, including warning lights and buzzer
- Dynamic range detection based on truck parameters to ensure optimal and accurate risk detection
- Distinguish between objects and pedestrians enabling different behavior, prioritizing pedestrians
- Provide traveling speed control and notifications depending the detection risk, enabling optimum risk awareness & mitigation
- Start motion prevention functionality to limit collision risk at start

Official Partner for
Material Handling Equipment