

CATALOG 2026



VERDEGRO®

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**IT'S ALL
ABOUT
SAVING
LIVES**

LIGHTING



LLTT-HYBRID



LLTT-HYBRID XL



LLTT-HYBRID XXL



LLTB-HYBRID



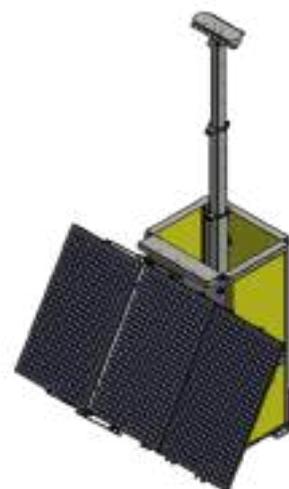
LLTU



LLTT-BATTERY



LLTT-SOLAR



L-MOBICAM

CRASH



AVAILABLE 2026



COMING SOON



BLADE - TMA 100K (MASH)



BLADE - TTMA 100K (MASH)



BLADE - TMA EU 100K (CEN/TS)



BLADE - TTMA EU 100K (CEN/TS)



TMA-US 100K (NCHRP)



TTMA-US 100K (NCHRP)

CRASH



LTMA-US 70K (NCHRP)



TLTMA-US 70K (NCHRP)



TMA-EU 70K (NCHRP)



TMA-EU 100K (NCHRP)



DIFFERENT TMA INSTALLATIONS

ARROW BOARDS



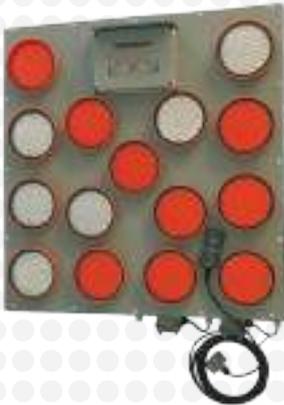
VD-SL230



VD-SL250



VD-SL230 RED-X



MINI ARROW BOARD (LP15)



DIFFERENT ARROW BOARDS

ADD-ONS



LED-LIFT



TRUCK LIGHT TOWER (TLT)



WINGS

TRAFFIC



VMS TRAILER (VD2-200)



VMS-H



VMS SKID



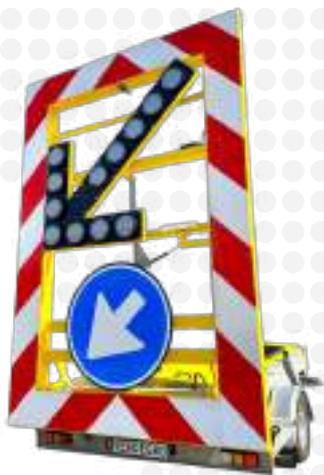
RAIN TRAILER



RAIN SKID



ADVANCE WARNING TRAILER (VD1-VW)



VD1-PL



VD2-PL



VD2-PL CHEVRON

TRAFFIC



SMT 2.0



SMT-RAIN



SMU



AUTOCONE 2.0



INCIDENT MANAGEMENT TRUCK



DIRT GRABBER



RUMBLE MAT LAYER (RML)

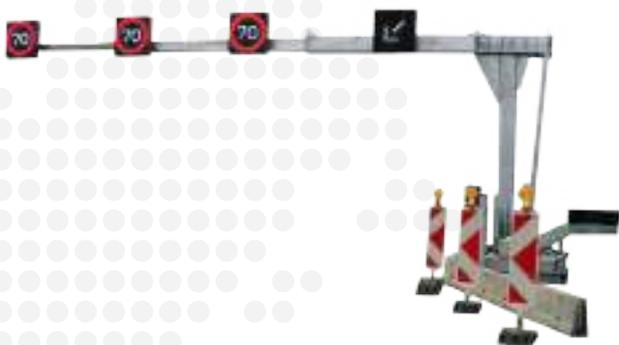


RML-CM



RML-CMS

TRAFFIC



ROAD INFORMATION SYSTEM (RIS)



MOBILE LANE SIGNALING SYSTEM (MLS)



SPECIALS (CUSTOM BUILD)

**A LEADER...
NOT A
FOLLOWER!**



INTRODUCTION

Dear reader,

Thank you for your interest in the new Verdegro catalog.

In this catalog, we proudly present our product lines and products, and we explain the history of our company.

The catalog is divided into three sections, each representing one of our product groups. Lighting, which includes all our CO₂-neutral and Solar Hybrid LED light towers. Crash, featuring the world's largest range of full-scale tested crash attenuators. Traffic, offering innovative solutions to elevate temporary roadworks to a higher level.

We hope you enjoy reading this catalog. If you have any further questions or if you are interested in an option not listed in the catalog, do not hesitate to contact us at sales@verdegro.com or take a look at our website www.verdegro.com.

Yours sincerely,





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The beginning

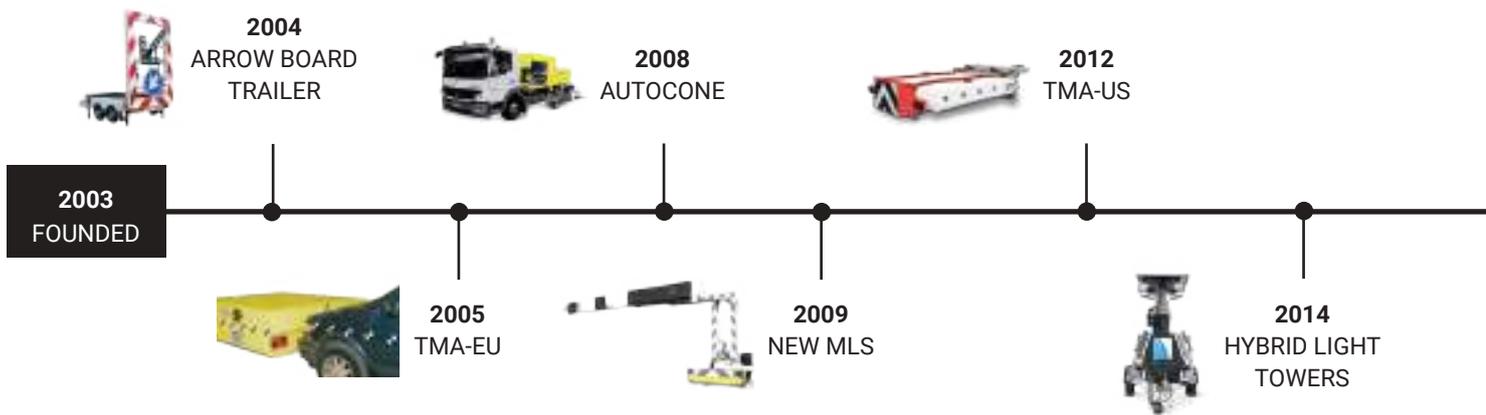
Verdegro was founded in 2003 by Gerrit Verwijs and Sjoerd de Groot. The company name Verdegro originated from the surnames of the two founders.

It all started with the development of mobile traffic systems. Three years later, Verdegro has grown into one of the largest players on the market.



Roosendaal

Thanks to the development of the first solar-powered LED arrow board trailer, which was an immediate success, the need arose to move to a larger building with better facilities.



Etten-Leur

Since moving to Etten-Leur in 2008, Verdegro has grown into one of the world's largest manufacturers of mobile traffic systems.



Verdegro USA LLC

The company established itself in the United States (USA) in 2017. In addition to the location in Etten-Leur, there is now also a location in Chicago, Illinois.



Expansion 2022

Verdegro has come a long way in recent years, and it was time for a new expansion. The production facility is now larger than ever.



2016
BLADE



2018
LLTT-H XL



2021
AUTOCONE 2.0



2018
LLTB-H



2018
BLADE TRAILER



Expansion 2017

In addition to the fact that Verdegro went international this year, the branch in Etten-Leur has also expanded further. A new production facility (2000 m²) has been added.

17 JULY 2019
† SJOERD DE GROOT
At the age of 41,
Co-owner and
Co-founder Mr. de
Groot passed away.



Our newly developed, next-generation production facility in Etten-Leur, The Netherlands

VERDEGRO

- High quality traffic safety products
- Worldwide presence
- Biggest crash cushions program available
- Custom builds available
- In-house R&D

Verdegro is a globally recognized brand delivering high-quality products. We offer three categories: **Crash, Lighting, and Traffic**. All products are manufactured at our factory in Etten-Leur, ensuring an efficient in-house production process. We also provide custom solutions tailored to our customers' needs.

CRASH

Our crash product line meets the following safety standards: NCHRP 350, CEN/TS 16786, and MASH 2016. We offer solutions across various speed classes, including both truck-mounted and trailer-mounted attenuators. Check out our crash line for more information.

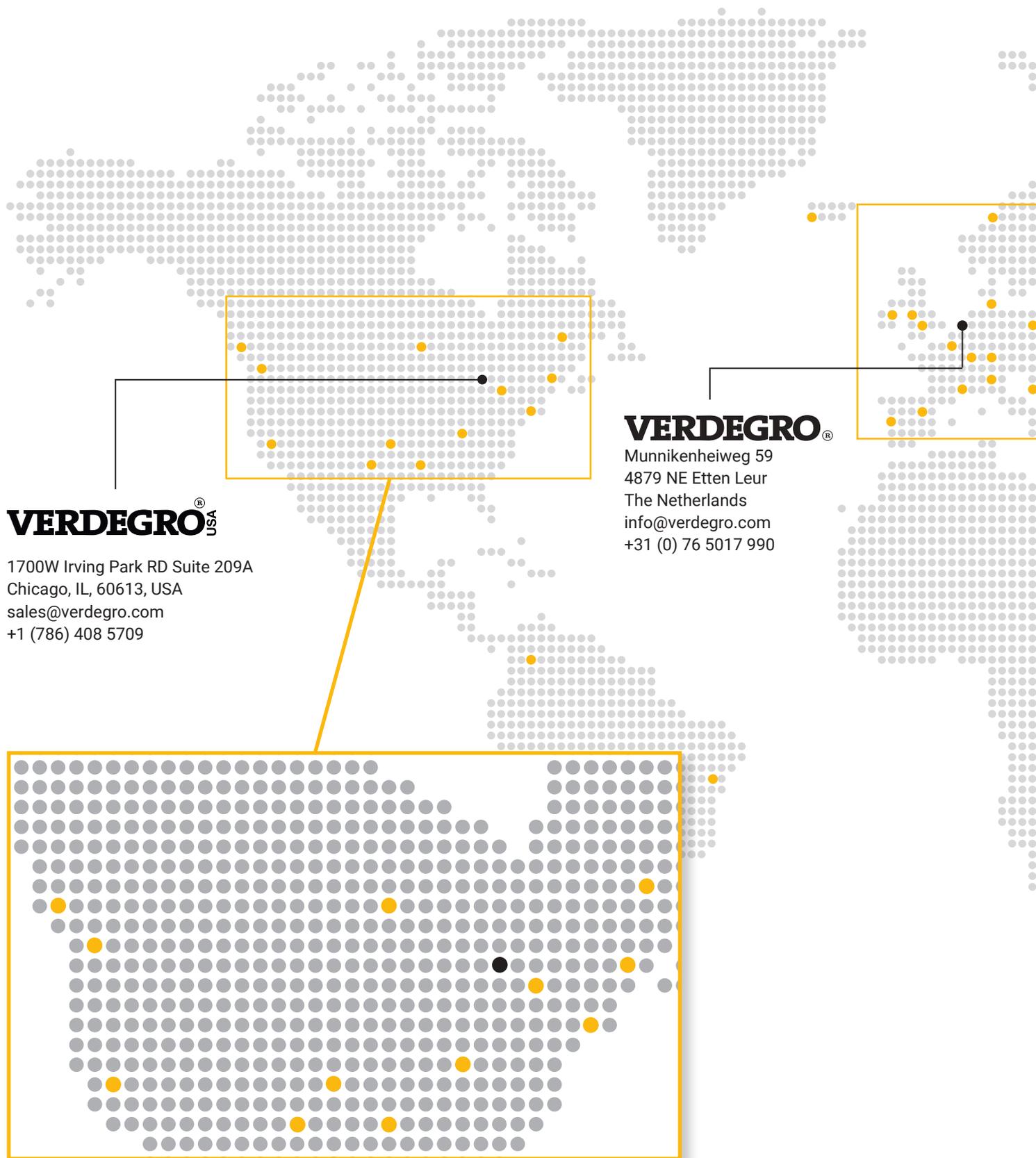
LIGHTING

Verdegro's hybrid light towers are the most efficient hybrids on the market. The combination of solar power, a battery bank, and a backup generator makes them the perfect solution for any application. Explore our lighting line for more details.

TRAFFIC

Our traffic product line includes everything needed for work zones. We provide both custom-built solutions and globally recognized products. The superior quality and durability of our products set the industry standard. That's why we lead the market—not follow it. Discover more about our traffic line today.





VERDEGRO® USA

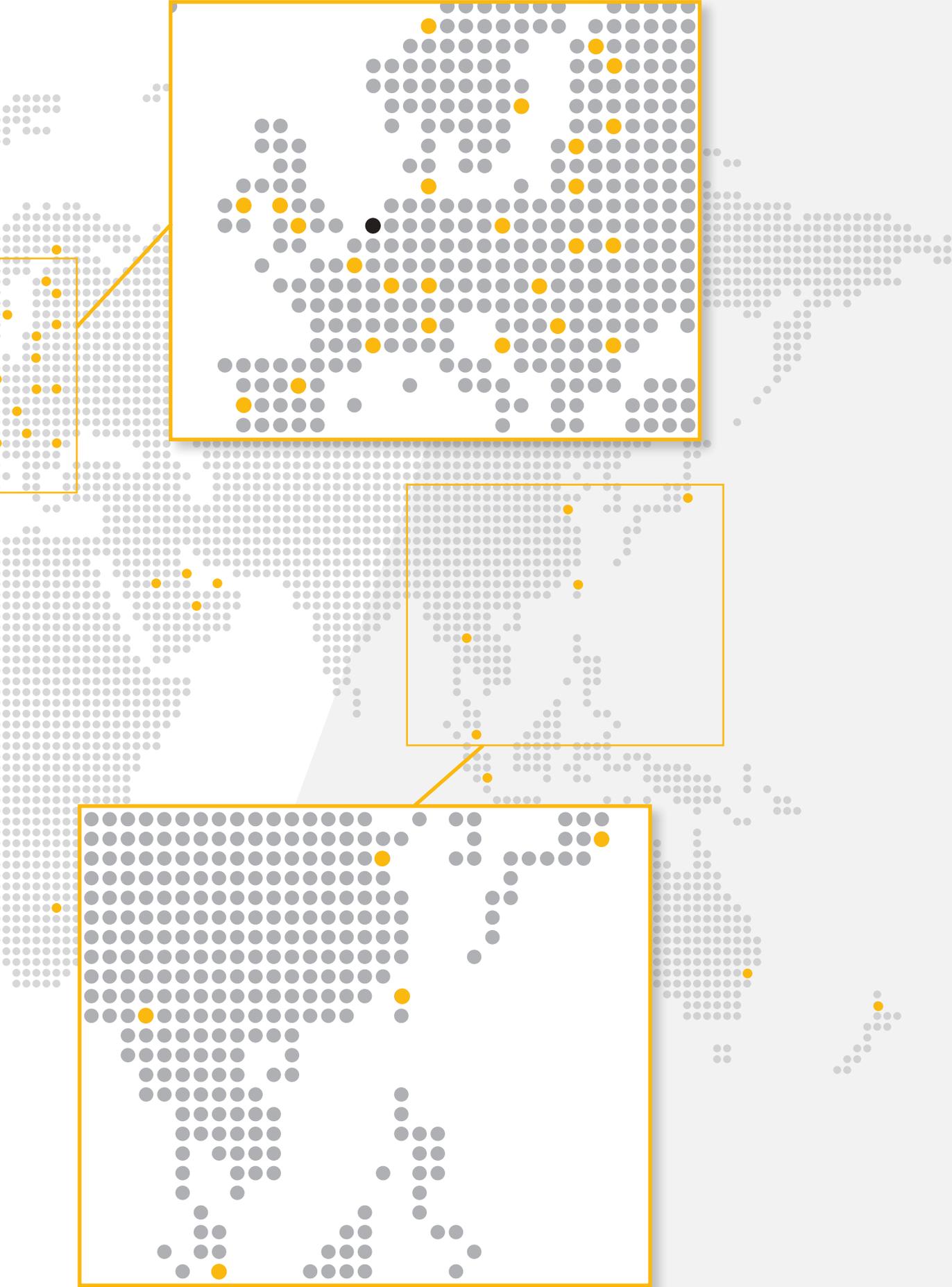
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* Marks are informative, please visit our website to find your local dealer.

ACTIVE IN 57 COUNTRIES



02 | LIGHTING



LED LIGHT TOWER TRAILER - HYBRID

Battery powered + Solar
P. 22



LED LIGHT TOWER TRAILER XL - HYBRID

Battery powered + Solar
P. 24



LED LIGHT TOWER TRAILER XXL - HYBRID

Battery powered + Solar
P. 26



LED LIGHT TOWER BUCKET - HYBRID

Battery powered + Solar
P. 28



LED LIGHT TOWER UNIT

Battery powered
P. 30



LED LIGHT TOWER TRAILER BATTERY

Battery powered
P. 32



LED LIGHT TOWER TRAILER SOLAR

Battery powered + Solar
P. 34



L-MOBICAM

Battery powered + Solar
P. 36

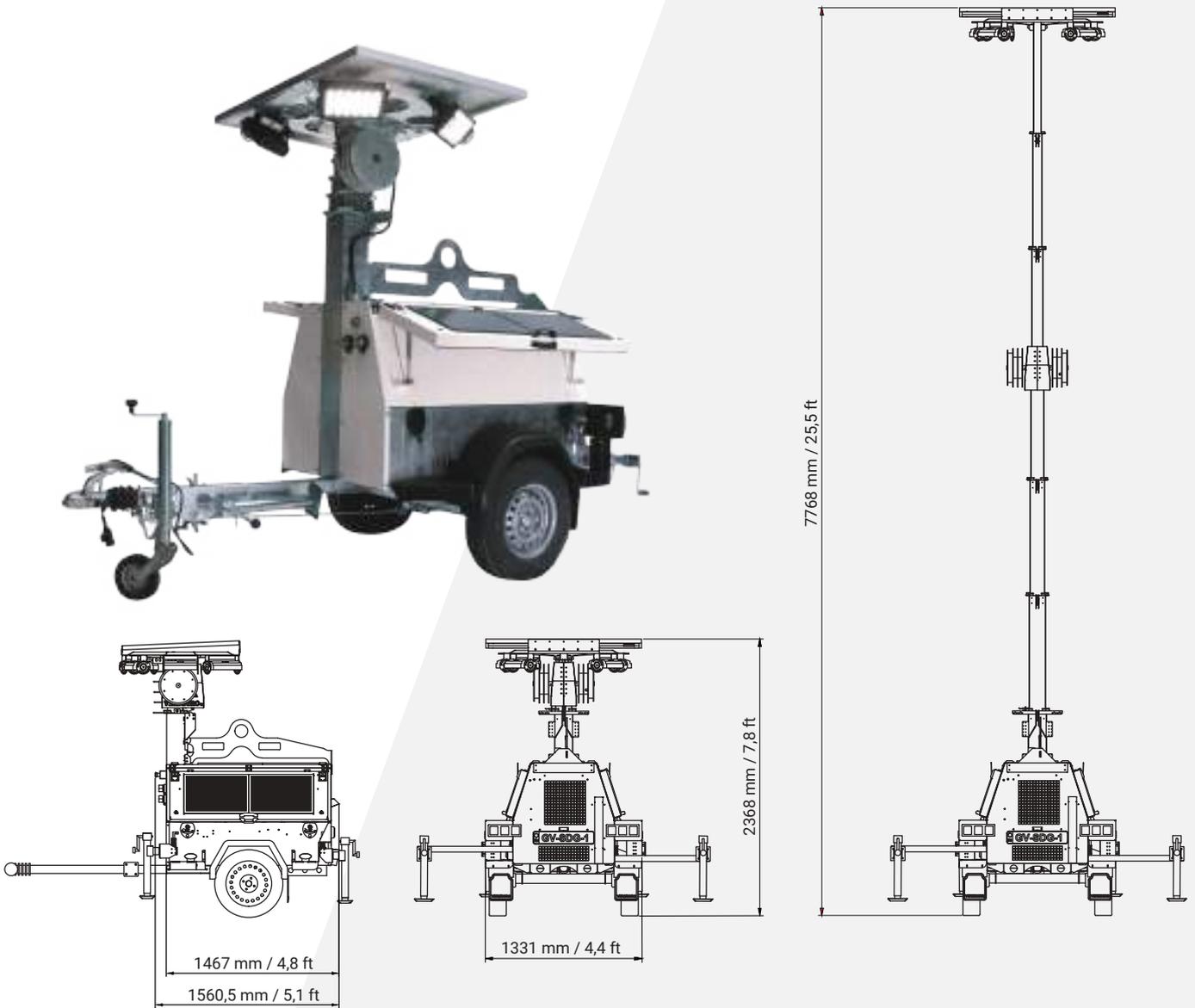
**THE MOST
EFFICIENT
SOLAR
HYBRIDS
ON THE
MARKET!**

The LED Light Tower Trailer Hybrid is the result of 15 years of experience and innovation. Its hybrid technology ensures the lowest fuel consumption in its class.

**"This is the light tower
you always needed
for your job!"**

H-11177





DIMENSIONS AND WEIGHT

- Dimension min : 1922mm x 1331mm x 2299mm
- Dimension max : 1922mm x 2520mm x 7799mm
- Total weight without fuel : 985 kg / 2171 lbs

FEATURES

- 100 W LED floodlight with 17000 effective lumen
Standard equipped with 4 up to 6 lights
- Photocell daylight sensor (automatic/on/off)
- Spiral cable
- Geo fencing by Mobilityplanner (optional)
- Two front + two back outriggers and leveling jacks
- Torsion rubber suspension axle
- Information LED backlight controller screen
- Forklift pockets below chassis
- Geo fencing by Mobilityplanner (optional): visibility in Waze, Flitsmeister, Apple Maps, Here

LIFTING SYSTEM

- Electric winch, automatically
- 8 m high
- Maximum wind speed 110 km/h

ENGINE

- Kubota Z482 Tier 4
- Diesel / HVO100
- Tank capacity : 140L / 37 gallon (110% liquid spill containment)
- Consumption (L/H) : 0.4 L/H 0.1 gal/H
- Noise level at 7 meters : 65 dB(A)
- Runtime 35 days standalone depending on light output
- Engine speed : 3200 RPM (2 cylinders)
- Engine cooling : liquid

BATTERY BANK

- Long life gel AGM battery bank 300 Ah 24 Vdc
- Standard equipped with battery guard
- 55 Ah starter battery for Kubota Z482 engine

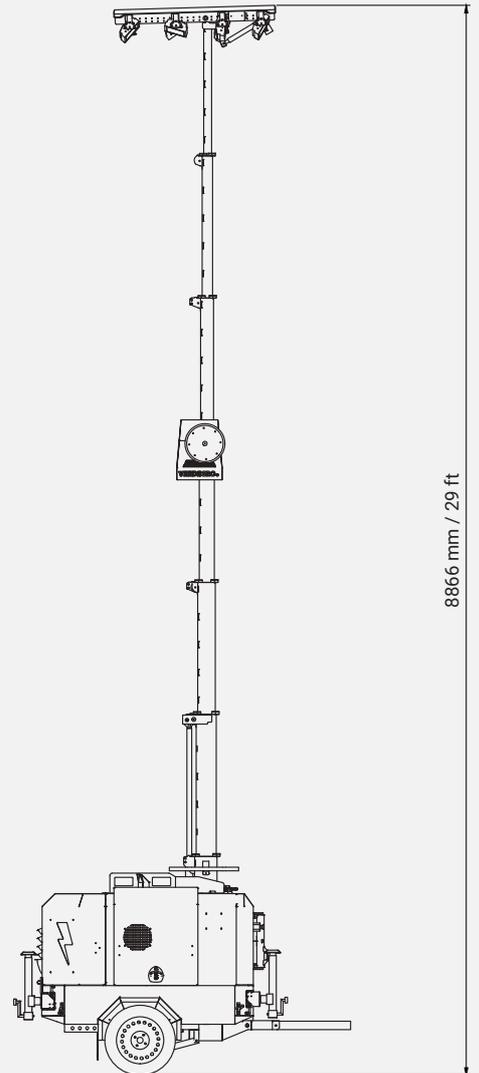
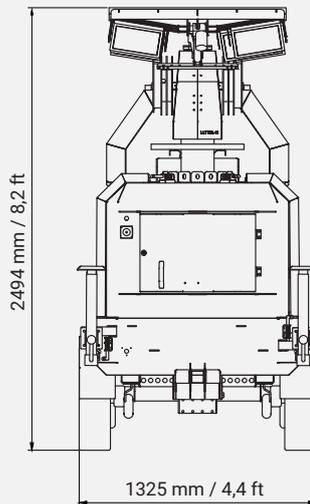
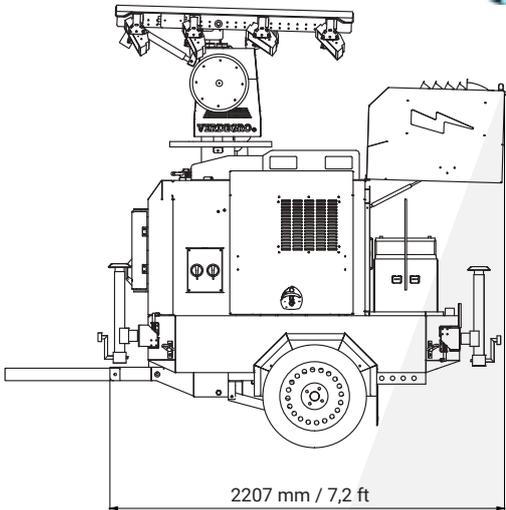
SOLAR SYSTEM

- Solar system 435 Wp (standard)
- Solar charger 20 A

L11TT-H XL

The Verdegro LED Light Tower Trailer Hybrid XL is standard equipped with 6 LED floodlights of 100 W. Optional 8 LED floodlights version available.





DIMENSIONS AND WEIGHT

- Dimension min : 1330mm x 1150mm x 2180mm
- Dimension max : 2806mm x 2626mm x 8730mm
- Total weight without fuel: 1350 kg / 2976 lbs

FEATURES

- 100 W LED floodlight with 17000 effective lumen
Standard equipped with 6 up to 8 lights
- Photocell daylight sensor (automatic/on/off)
- Spiral cable
- Two front + two back outriggers and leveling jacks
- Torsion rubber suspension axle
- Information LED backlight controller screen
- Forklift pockets below chassis
- Geo fencing by Mobilityplanner (optional): visibility in Waze, Flitsmeister, Apple Maps, Here

LIFTING SYSTEM

- Hydraulic winch, automatically
- 9 m high
- Maximum wind speed 110 km/h

ENGINE

- Kubota Z482 Tier 4
- Diesel / HVO100
- Tank capacity : 270L / 71 gallon (115% liquid spill containment)
- Consumption (L/H) : 0.4 L/H 0.1 gal/H
- Noise level at 7 meters : 65 dB(A)
- Runtime 65-70 days standalone depending on light output
- Engine speed : 3200 RPM (2 cylinders)
- Engine cooling : liquid

BATTERY PACK

- Long life gel AGM battery pack 400 Ah 24 Vdc
- Replaceable battery pack
- 55 Ah starter battery for Kubota Z482 engine

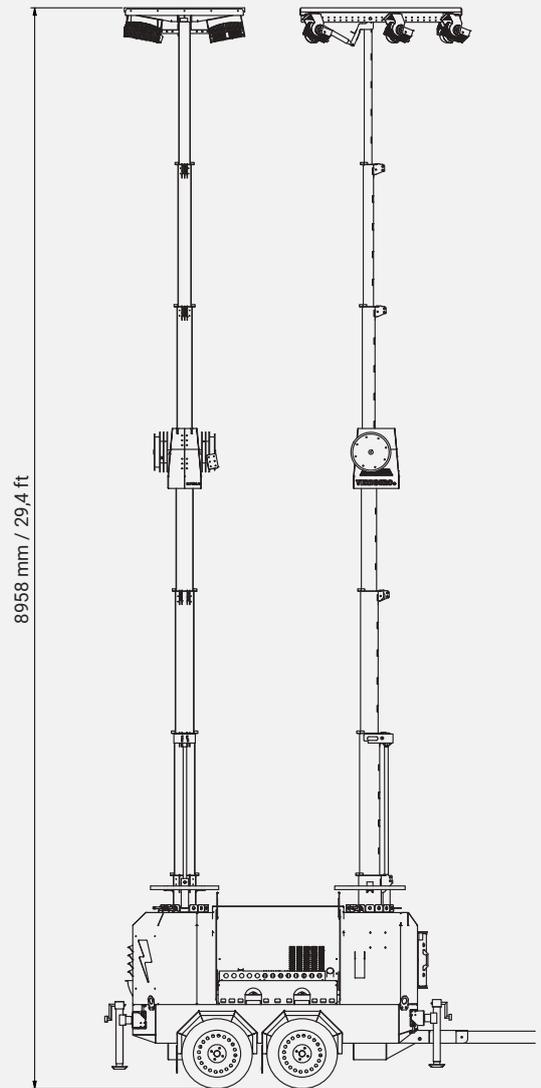
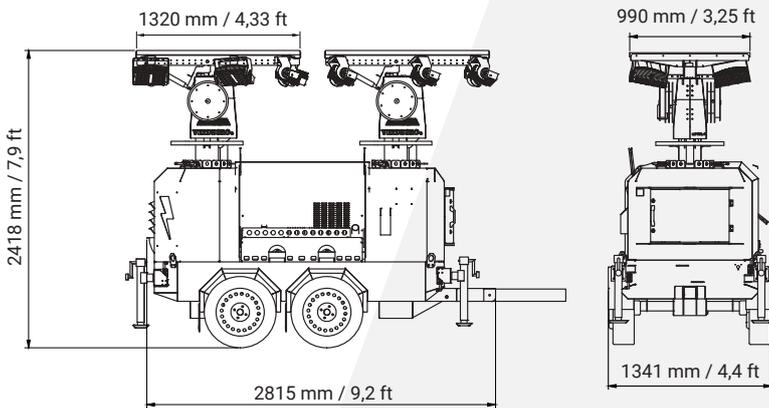
SOLAR SYSTEM

- Solar system 255 Wp (standard)
- Solar charger 20 A

LLTT-H-1111
XXL



Verdegro's LED Light Tower Trailer Hybrid XXL is the enhanced version of the XL, offering even more power and coverage.



DIMENSIONS AND WEIGHT

- Dimension min : 2984mm x 1295mm x 2423mm
- Dimension max : 2984mm x 2605mm x 8963mm
- Total weight without fuel : 1590 kg / 3505 lbs

FEATURES

- 100 W LED floodlight with 17000 effective lumen
Standard equipped with 2x 6 up to 8 lights
- Photocell daylight sensor (automatic/on/off)
- Spiral cable
- Four outriggers with stabilizing jacks
- Information LED backlight controller screen
- Aluminium covers painted in any RAL colour desired
- Forklift pockets below chassis
- Geo fencing by Mobilityplanner (optional): visibility in Waze, Flitsmeister, Apple Maps, Here

LIFTING SYSTEM

- Hydraulic winch, automatically
- 9 m high
- Maximum wind speed 110 km/h

ENGINE

- Kubota Z482 Tier 4
- Diesel / HVO100
- Tank capacity : 270L / 71 gallon (115% liquid spill containment)
- Consumption (L/H) : 0.4 L/H 0.1 gal/H
- Noise level at 7 meters : 65 dB(A)
- Runtime 65-70 days standalone depending on light output
- Engine speed : 3200 RPM (2 cylinders)
- Engine cooling : liquid

BATTERY PACK

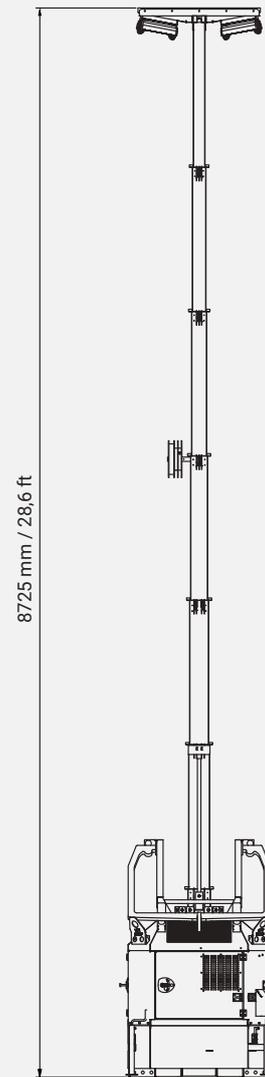
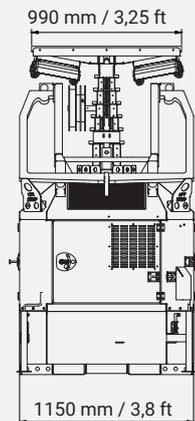
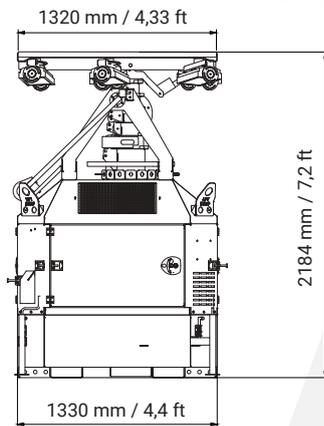
- Long life gel AGM battery pack 400 Ah 24 Vdc
- Replaceable battery pack
- 55 Ah starter battery for Kubota Z482 engine

SOLAR SYSTEM

- Solar system 510 Wp (standard)
- Solar charger 20 A

Verdegro's LED Light Tower Bucket Hybrid has an unique bucket handling system with tiltable hood.





DIMENSIONS AND WEIGHT

- Dimension min : 1330mm x 1150mm x 2180mm
- Dimension max : 2806mm x 2626mm x 8730mm
- Total weight without fuel : 1250 kg / 2755 lbs

FEATURES

- 100 W LED floodlight with 17000 effective lumen
Standard equipped with 4 up to 8 lights
- Unique bucket handling system with tiltable hood
- Automatic darkness sensor
- Spiral cable
- Rotatable swivel jacks
- Information LED backlight controller screen
- Forklift pockets below chassis
- Equipped with a spill container
- Geo fencing by Mobilityplanner (optional): visibility in Waze, Flitsmeister, Apple Maps, Here

LIFTING SYSTEM

- Hydraulic winch, automatically
- 9 m high
- Maximum wind speed 110 km/h

ENGINE

- Kubota Z482 Tier 4
- Diesel / HVO100
- Tank capacity : 270L / 71 gallon (110% liquid spill containment)
- Consumption (L/H) : 0.4 L/H 0.1 gal/H
- Noise level at 7 meters : 65 dB(A)
- Runtime 65-70 days standalone depending on light output
- Engine speed : 3200 RPM (2 cylinders)
- Engine cooling : liquid

BATTERY BANK

- Long life gel AGM battery bank 400 Ah 24 Vdc
- Maintenance free battery bank
- 55 Ah starter battery for Kubota Z482 engine

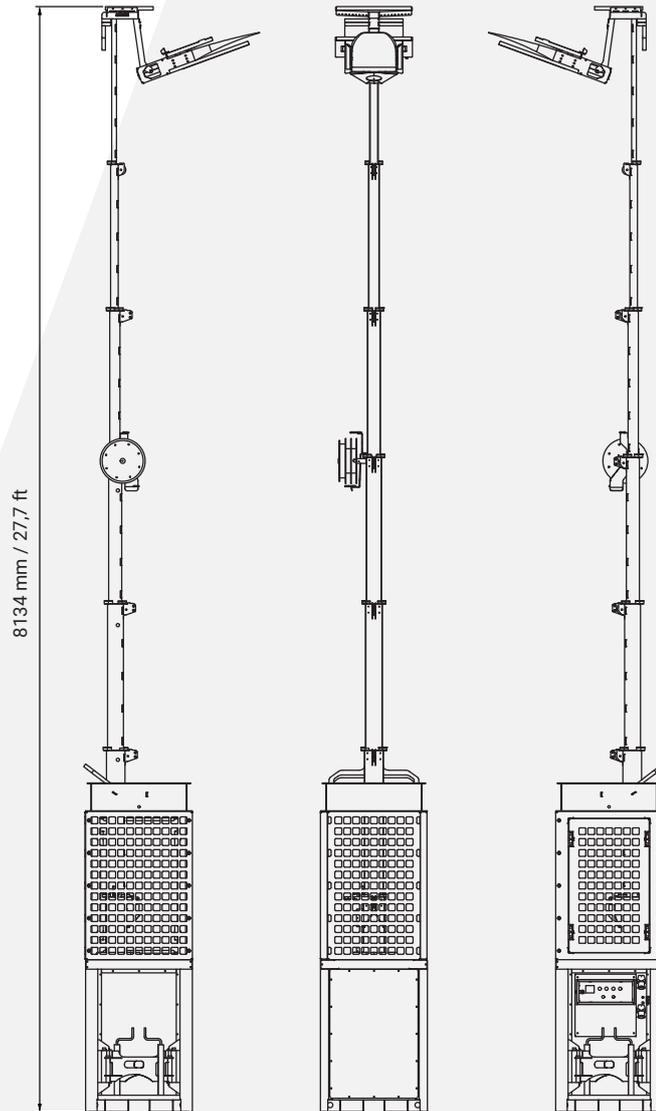
SOLAR SYSTEM

- Solar system 375 Wp (standard)
- Solar charger 20 A

LLTU

Up to 30 of Verdegro's LED Light Tower Units can fit in a single transport!





DIMENSIONS AND WEIGHT

- Dimension min : 780mm x 780mm x 2562mm
- Dimension max : 780mm x 780mm x 8134mm
- Total weight : 650 kg / 1433 lbs

FEATURES

- 100 W LED streetlight
- Automatic darkness sensor
- Rotatable swivel jacks
- Control panel with battery level indicator
- Forklift pockets below chassis

LIFTING SYSTEM

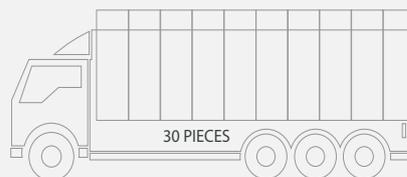
- Electric winch
- 8 m high
- Maximum wind speed 85 km/h (stamped)

BATTERY BANK

- Long life gel AGM battery bank 200 Ah 24 Vdc
- Maintenance free battery bank
- Running time up to 32 hours

SOLAR SYSTEM

- Solar system 60 Wp (standard)
- Solar charger 20 A



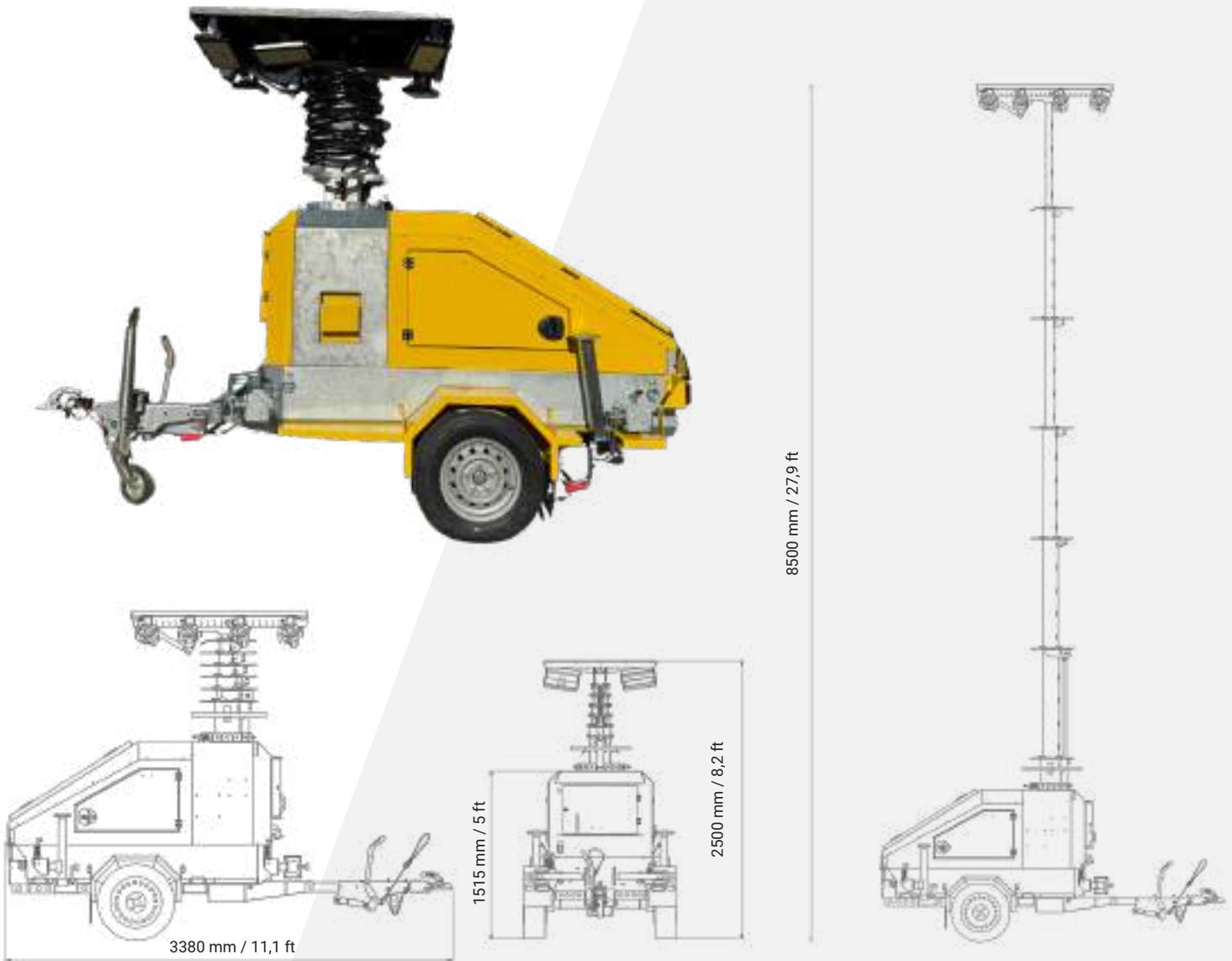
Possible to transport 30 pieces

Verdegro's newest battery powered LED Light Tower Trailer. Running on a 900 Ah 24 Vdc battery pack!



LED-LIGHT-TOWER-B





DIMENSIONS AND WEIGHT

- Dimension min : 3380mm x 1345mm x 2510mm
- Dimension max : 3380mm x 1345mm x 8500mm
- Total weight without fuel : 1400 kg / 3086 lbs

FEATURES

- 100 W LED floodlight with 17000 effective lumen
Standard equipped with 4 up to 6 lights
- Photocell daylight sensor (automatic/on/off)
- Spiral cable
- Two front + two back outriggers and leveling jacks
- Torsion rubber suspension axle
- Forklift pockets below chassis

LIFTING SYSTEM

- Hydraulic mast, automatically
- 8.5 m high
- Maximum wind speed 110 km/h

BATTERY PACK

- Long life gel AGM battery pack 900 Ah 24 Vdc
- Standard equipped with battery guard
- Removable battery pack
- Running time up to 54 hours with 4 lights and 36 hours with 6 lights
- Including 3000 W wall charger

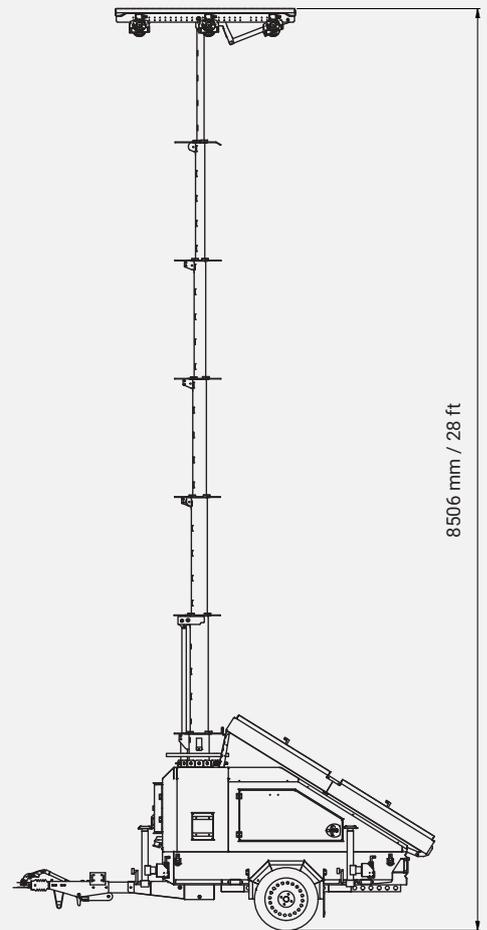
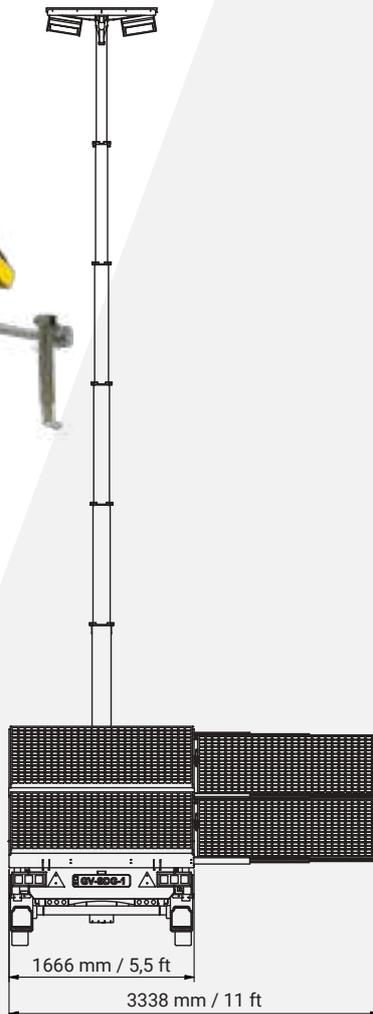
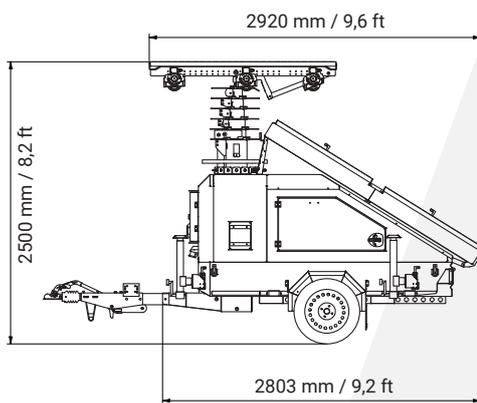
SOLAR SYSTEM

- Solar system 255 Wp (standard)
- Solar charger 20 A
- Tilttable solar panel



The Verdegro LED Light Tower Trailer Solar is equipped with a big battery bank , charged by solar power charge system.

LLTT-S



DIMENSIONS AND WEIGHT

- Dimensions min : 2800mm x 1700mm x 2500 mm
- Dimensions max : 2800mm x 3338mm x 8506mm
- Total weight : 1525 kg / 3362 lbs

FEATURES

- 100 W LED floodlight with 17000 effective lumen. Standard equipped with 4 up to 8 lights
- Photocell daylight sensor (automatic/on/off)
- Spiral cable
- Two front + two back outriggers and leveling jacks
- Torsion rubber suspension axle
- Information LED backlight controller screen
- 270° mast rotation
- Forklift pockets below chassis

LIFTING SYSTEM

- Hydraulic winch, automatically
- 9 m high
- Maximum wind speed 110 km/h

BATTERY BANK

- Long life gel AGM battery bank 900 Ah 24 Vdc
- Standard equipped with battery guard

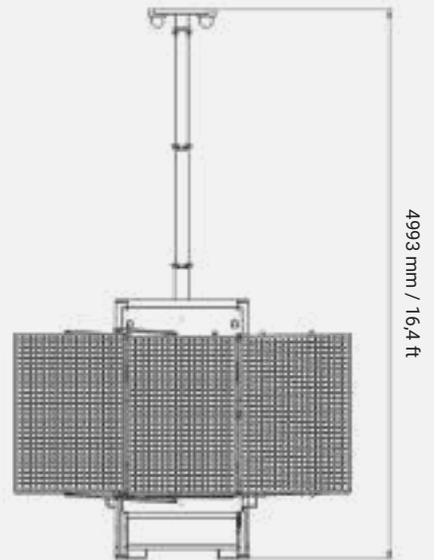
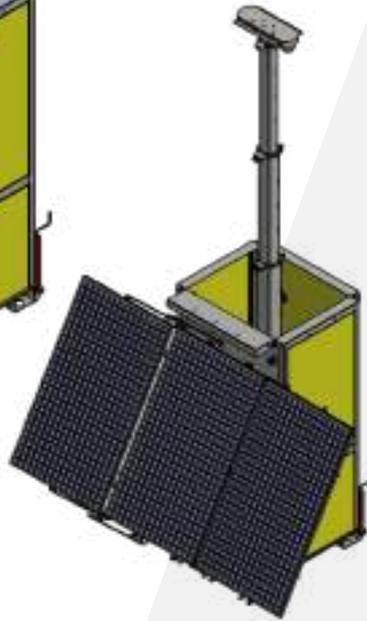
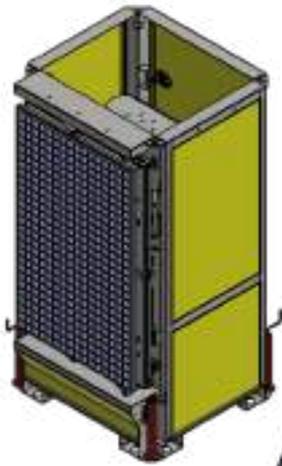
SOLAR SYSTEM

- Solar system 1600 Wp (standard)

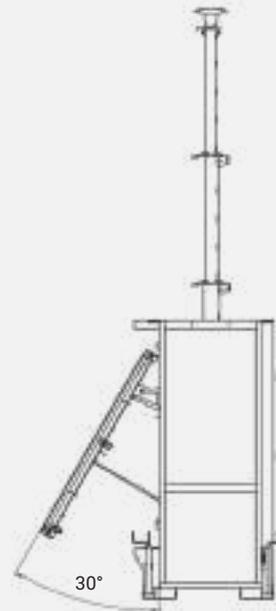
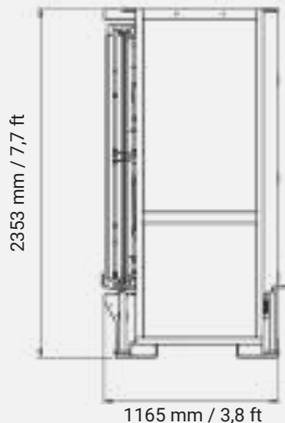
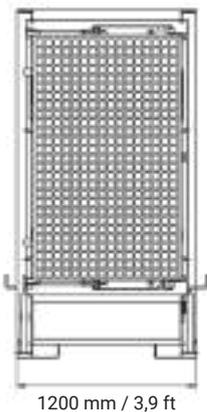
L-MOBIGAM



Verdegro introduces its first mobility camera with solar panels: a CO₂-neutral security mast.



**INCLUDING A
30° FOLDABLE
960 W SOLAR PANEL**



DIMENSIONS AND WEIGHT

- Dimension min : 1165mm x 1200mm x 2353mm
- Dimension max : 1165mm x 3045mm x 4993mm
- Total weight : 800 kg / 1763 lbs

FEATURES

- Camera system integrated within Mobilityplanner
- Spiral cable
- Two front + two back outriggers and leveling jacks
- All doors are lockable
- Forklift pockets below chassis
- CO₂ neutral

LIFTING SYSTEM

- Manual lifting system
- Stabilized mast with steel cables
- 4.5 m high
- Maximum wind speed 110 km/h

BATTERY BANK

- Long life gel AGM battery bank 400 Ah 24 Vdc
- Standard equipped with battery guard
- Including 1250 W wall charger

SOLAR SYSTEM

- Solar system 960 Wp (standard)
- Solar charger 50 A
- Foldable solar panel

CAMERA SYSTEM

- Features advanced PTZ cameras (up to 3) for enhanced coverage
- Quick and easy setup of high-quality temporary surveillance cameras
- Fully compliant with all relevant laws and regulations
- Ideal for monitoring various outdoor environments
- Receive instant notifications for specific actions
- Remote access for real-time monitoring



**CUSTOM
BUILD?
THAT'S
POSSIBLE!**

CRASH



ARMADILLO

Available 2026

P. 42



VANGUARD

Coming soon



BLADE – TRUCK MOUNTED ATTENUATOR

MASH 2016 TL-3 100K
UK optional 110K test TD49/07
P. 50



BLADE – TRAILER TRUCK MOUNTED ATTENUATOR

MASH 2016 TL-3 100K
Including the optional 3-54 test
P. 56



BLADE – TRUCK MOUNTED ATTENUATOR EU

CEN/TS 16786 100K
Including the optional 100-4 test
P. 58



BLADE – TRAILER TRUCK MOUNTED ATTENUATOR EU

CEN/TS 16786 100K
Including the optional 100-4 test
P. 60



TRUCK MOUNTED ATTENUATOR US

NCHRP-350 TL-3 100K
UK optional 110K test TD49/07
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TRAILER TRUCK MOUNTED ATTENUATOR US

NCHRP-350 TL-3 100K
P. 64



LIGHT TRUCK MOUNTED ATTENUATOR US

NCHRP-350 TL-2 70K
P. 66



TRAILER LIGHT TRUCK MOUNTED ATTENUATOR US

NCHRP-350 TL-2 70K
Pending approval!
P. 76



TRUCK MOUNTED ATTENUATOR EU

NCHRP-350 TL-2 70K
P. 78



TRUCK MOUNTED ATTENUATOR EU

NCHRP-350 TL-3 100K
P. 80



VD-SL230

Arrow board

P. 86



VD-SL250

Arrow board

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VD-SL230 RED-X

Arrow board

P. 90



LP15

Mini arrow board

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LED-LIFT

Add-on

P. 96



TRUCK LIGHT TOWER

Add-on

P. 98



WINGS

Add-on

P. 100



**DIFFERENT TMA
INSTALLATIONS**

Country specified (overview)

P. 82



**DIFFERENT ARROW
BOARDS**

Country specified (overview)

P. 94

Armadillo: Verdegro's newest crash cushion, fully tested and approved in accordance with MASH 2016 TL-3 at 100 km/h which equals 62 mph!



TECHNICAL SPECIFICATIONS

- Fully crash tested and approved according to MASH 2016 TL-3 (3-50 | 3-51 | 3-52 | 3-53)
- The arrow board bracket and the multi-truck bracket are also MASH tested
- Standard operation from the truck using a wired in-cab controller
- Equipped with 175 A or 350 A Anderson plug supplying full system power from the vehicle's 12 Vdc or 24 Vdc electrical system
- Complete hydraulic and electronic unit enclosed in a sealed protective housing
- Two hydraulic rams for reliable raising and lowering of the crash cushion
- Integrated under-ride protection built into steel framework
- Galvanised steel structure
- Aluminium crash cushion can be finished in any desired RAL colour(s)
- Delivered with official crash test certifications and CE marking / EMC compliant
- Geo fencing by Mobilityplanner (optional): visibility in Waze, Flitsmeister, Apple Maps, Here

OUR NEWEST INNOVATION

Meet the Armadillo TMA, Verdegro's latest Truck Mounted Attenuator, introduced to the market in 2026. The Armadillo TMA has been rigorously tested and fully approved in accordance with MASH 2016 TL-3. All performance values remain within the requirements of this crash standard, delivering a high-quality, low-maintenance, and easy-to-use product for routine use in traffic management operations.

EVOLVING MASH 2016 PERFORMANCE

The Armadillo TMA builds on the proven MASH 2016 performance of BLADE-TMA, but refines the concept for greater efficiency and simplicity. While BLADE-TMA remains a robust and trusted solution, the Armadillo TMA represents the next step in TMA design.

Compared to BLADE-TMA, Armadillo TMA is lighter, more compact, and mechanically less complicated, making it easier to operate and service. The system is simplified and uses no sensors or other electronic components – only a hydraulic power pack.

Unlike BLADE-TMA, the Armadillo TMA consists of a single cushion element, eliminating the need for extension mechanisms or extra motors. This results in a simpler, more reliable design and a more affordable product.

The Armadillo TMA meets the full MASH 2016 standard, offering the same high protection in a more efficient, simplified design.

PATENTED DESIGN

The Armadillo features a patented design, developed to deliver proven performance and reliability. The design is protected by multiple international patents, including:

- **Europe:** EP3414397
- **United States:** US9739328
- **China:** 201780012010-9
- **Hong Kong:** 1259882



Table of contents and dimensions

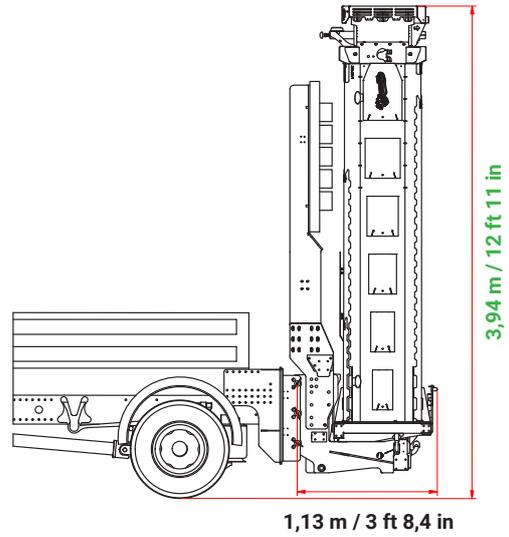
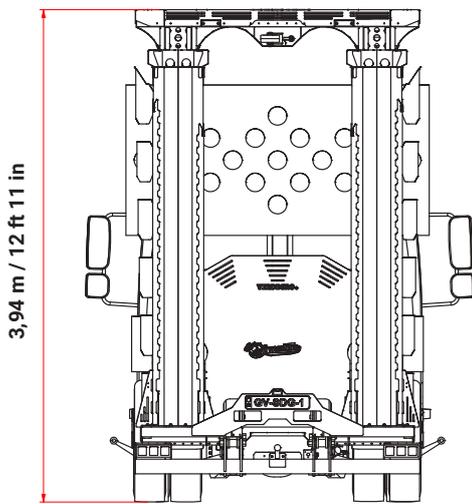
Transport height	3940 mm / 12 ft 11 in
Installation length, excluding bracket	4360 mm / 14 ft 3,7 in
Width	2300 mm / 7 ft 6,6 in
Level system	± 4 degrees
Hood to road	12"± 1"
Weight complete installation	Approx. 950 kg / 2095 lbs
Minimum weight support truck	7228 kg / 15,935 lbs
Maximum weight support truck	11,247 kg / 24,792 lbs
Maximum roll-ahead distance	7250 mm / 23 ft 9,3 in

Note: all these dimensions are approximately, no rights can be derived.

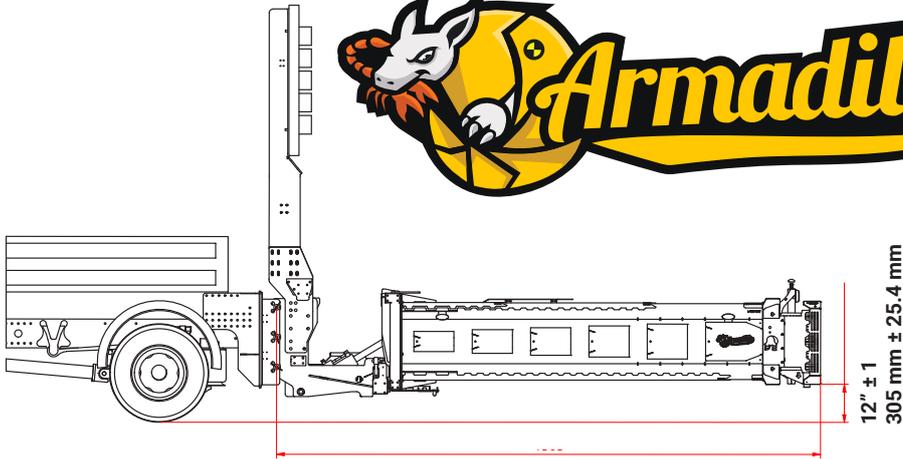
THE ARMADILLO FEASTS ON INSECTS AND SMALL ANIMALS... YES, EVEN SCORPIONS!!!



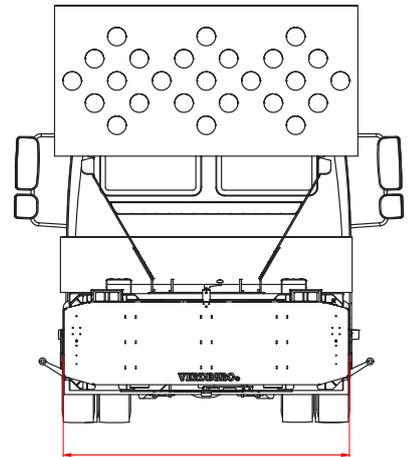
ARMADILLO MASH TL-3



1,13 m / 3 ft 8,4 in



4,3 m / 14ft 4,6 in



2,3 m / 7 ft 6,8 in



Transport position

- ARMADILLO ACCESSORIES:**
- Quick connect: easy to swap attenuator and arrow board by forklift (standard)
 - Multi-truck bracket: MASH approved (optional)
 - Arrow board bracket: MASH approved (optional)
 - Jockey wheels (optional)
 - Reflective foil chevrons according to country specifications (optional)



Operational position

THE FACTS

ENGINEERED FOR REAL-WORLD RELIABILITY

The Armadillo TMA is designed for today's roads and real working conditions, offering high-quality performance with minimal maintenance and easy-to-use operation for traffic management.

THE UPRIGHT DESIGN

The transport position of the Armadillo TMA is 3,94 m / 12 ft 11 in. The upright configuration preserves full access to the truck's flatbed. No obstructions on the flatbed that limit usability when the system is in transport position. This way operators retain complete use of the flatbed.

Rather than reducing height at the expense of day-to-day functionality, the Armadillo TMA is optimized for practical operation in active road maintenance conditions.

SINGLE-STAGE DEPLOYMENT

The Armadillo TMA in horizontal operational position has a total length of 4.3 m / 14 ft 4.6 in from the rear of the vehicle. The system consists of a single cushion element that deploys in one continuous motion in less than 20 seconds while driving 50 mph / 80 kph.

By eliminating secondary extension stages, deployment remains consistent and straightforward. This reduces mechanical complexity and allows the system to reach operational status quickly and predictably.

COMPACT DESIGN

With an overall width of 2.3 m / 7 ft 6,8 in, the Armadillo TMA maintains a slim design while still offering sufficient coverage to safely protect against crashes. This balance between compact dimensions and functional coverage allows the system to operate easily in narrow lanes and constrained work zones, without unnecessary overhang and with the Armadillo TMA offering the shortest possible turning circle.

MECHANICAL SIMPLICITY

The Armadillo TMA operates without sensors or reliance on electronic feedback systems, significantly reducing the number of potential failures. This simplified design makes the system easier to maintain in harsh and demanding environments. Additionally, due to the position of the hydraulic rams, there are no oil leaks or environmental risks in the crash zone.

FULL SCALE CRASH TESTED

Our safety performance extends beyond the attenuator itself. The arrow board bracket and the multi-truck bracket have also been crash tested as part of an integrated system. This confirms that all structural components perform together as intended, ensuring controlled energy management across the entire assembly in the event of an impact.

INTERESTED?

Interested in discovering what the Armadillo TMA can do for your operations? Our sales team is ready to answer your questions, provide detailed information, or discuss how the Armadillo TMA fits your specific needs. Feel free to contact us at sales@verdegro.com

ACCESSORIES



**Quick connect
(standard)**



Multi-truck bracket



Arrow board bracket



Jockey wheels



**Reflective foil chevrons
according to country
specifications**

**A SCORPION FOLDS,
THE ARMADILLO ABSORBS**



KEEP IT EVEN SIMPLER... WITH THE ARMADILLO TMA



1

COMPLETE DIFFERENT DESIGN

The Armadillo TMA does not extend and therefore requires no moving or additional parts.



2

SHORTEST WHEELBASE AND TURNING CIRCLE

Protect your road workers and road users with the safest, most innovative TMA on the market, featuring the shortest possible wheelbase and turning circle.



3

MAXIMUM LOADING SPACE

With the Armadillo TMA, the operator will not lose any space on the truck's flatbed as with a fold-over attenuator.



4

EASY TO MAINTAIN

The Armadillo TMA is the most affordable and easiest-to-maintain crash cushion, certified & approved to MASH 2016 TL-3 standard.



5

ZERO FUSES

No fuses required – the Armadillo TMA simplifies operation like no other.



6

SINGLE PIVOT POINT

The Armadillo TMA's single-pivot modular design allows for low-cost repairs and full replacement in 4 hours, with hydraulics and truck mount remaining intact in 98% of the impacts.



7

FAST DEPLOYMENT UNDER 20 SECONDS

Fast deployment under 20 seconds, from transport to full operational mode, even while driving at speeds up to 50 mph / 80 kph on flat surface roads.



8

BUILT TO LAST

All steel parts of the Armadillo TMA are galvanised, providing superior corrosion resistance and long-lasting durability.



9

CLEAN AND SAFE DESIGN

No hydraulic hoses or extra pivot points in the impact absorbing area, eliminating all environmental risks and oil spillage. The two hydraulic cylinders and the powerpack are located inside the attenuator mount.



10

UNIQUE DESIGN

The Armadillo TMA requires no extension and is the only crash cushion in the world under 4 meters in transport position, certified & approved to MASH 2016 TL-3.



11

ZERO PC BOARDS

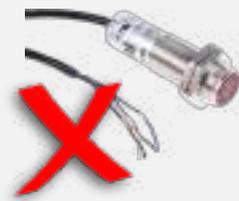
The Armadillo TMA runs without a PC board, for a simpler, more reliable operation.



12

ZERO SENSORS

The Armadillo TMA operates without any sensors.



13

APPROVED AS DESIGNED

No design or structural modifications were needed during final crash testing of the Armadillo TMA – built to perform perfectly from the start.



14

LOW ADDITIONAL COSTS FOR ARROW BOARD FRAME

The Armadillo TMA requires no expensive foldable or hydraulically raised arrow board frame.



15

NO VEHICLE INTRUSION

The Armadillo TMA's patented design prevents vehicles from driving underneath the cushion, unlike some other TMA systems.



16

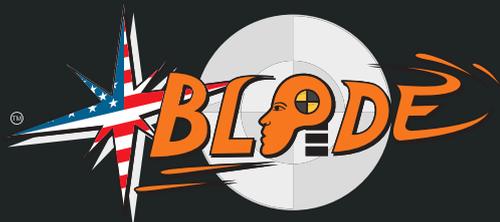
TRUE TO REAL LIFE OPERATIONS

The Armadillo TMA is not mounted to the road, ensuring crash tests remain realistic due to suspension behavior. Infinite weight testing has no value, as TMA trucks are not bolted to the road surface in real-life operations. Roll-ahead distance is key to protect road workers from impact.



**VERDE
THE NO
SUPPLIE
WOI**

VERDEGRO®



EGRO D. 1 TMA R IN THE RLD



BLADE-TMA is full-scale crash tested at the Texas Transportation Institute (TTI) according to the Manual for Assessing Safety Hardware (MASH), which supersedes the 20-year-old NCHRP-350.



BLADE-TMA

TECHNICAL SPECIFICATIONS

- Fully crash tested and approved according to MASH 2016 TL-3 (3-50 | 3-51 | 3-52 | 3-53)
- Fully crash tested and approved according to the UK optional 110K test (TD49/07)
- Standard operation from the truck using a wired in-cab controller
- Equipped with 175 A or 350 A plug supplying full system power from the vehicle's 12 Vdc or 24 Vdc electrical system
- Complete hydraulic and electronics units enclosed in a sealed protective housing
- Two hydraulic rams for reliable raising and lowering of the crash cushion
- Integrated under-ride protection built into steel framework
- Galvanised steel structure
- Aluminium crash cushion can be finished in any desired RAL colour(s)
- Delivered with official crash test certifications and CE marking / EMC compliant
- Geo fencing by Mobilityplanner (optional): visibility in Waze, Flitsmeister, Apple Maps, Here

THE BLADE-TMA MASH 2016 TL-3

The BLADE-TMA delivers the highest safety level achievable in its class. All ride-down values remained well within the preferred MASH limits, with a longitudinal ride-down of 15.0G and a maximum of 20.49G. In addition, the BLADE-TMA successfully passed the UK optional 70 mph / 110 kph (TD49/07) test, ensuring proven reliability even at higher operating speeds.

THE ENGINEERING BEHIND THE BLADE-TMA

The patented BLADE-TMA absorbs impact energy through an innovative system of composite aluminium welded profiles. The attenuator features 12 internal blades that react in a precisely engineered sequence during impact:

- The first four blades cut through the aluminium H-beams, initiating controlled deformation.
- After unlocking, the next eight blades continue to cut through the welded tubes, progressively dissipating energy.
- Finally, the remaining lightweight aluminium components bend away safely, directing forces away from the vehicle and occupants.

This unique blade-cutting principle is the foundation of the patent and ensures predictable, repeatable crash performance with minimal vehicle damage.

WHY MASH MATTERS FOR TMAs

The MASH 2016 standard sets stricter criteria for Truck Mounted Attenuators (TMAs) to keep up with modern vehicle changes. Cars and light trucks have grown larger, and bumper heights have increased since 1993, making previous highway safety designs inadequate.

For TMAs, this means testing requires bigger and heavier vehicles, stricter shadow vehicle criteria, and evaluation of both upper and lower truck weights. Ballast must be fixed, the arrow board and TMA construction must be tested together, and previously optional offset angle tests are now mandatory.

These updates ensure highway safety equipment effectively protects all road users in today's traffic.

Table of contents and dimensions	
Transport height	3940 mm / 12 ft 11 in
Installation length, excluding bracket	5890 mm / 19 ft 4 in
Width	2300 mm / 7 ft 6,7 in
Level system	± 4 degrees
Hood to road	12"± 1"
Weight complete installation	Approx. 1043 kg / 2300 lbs

Note: all these dimensions are approximately, no rights can be derived.

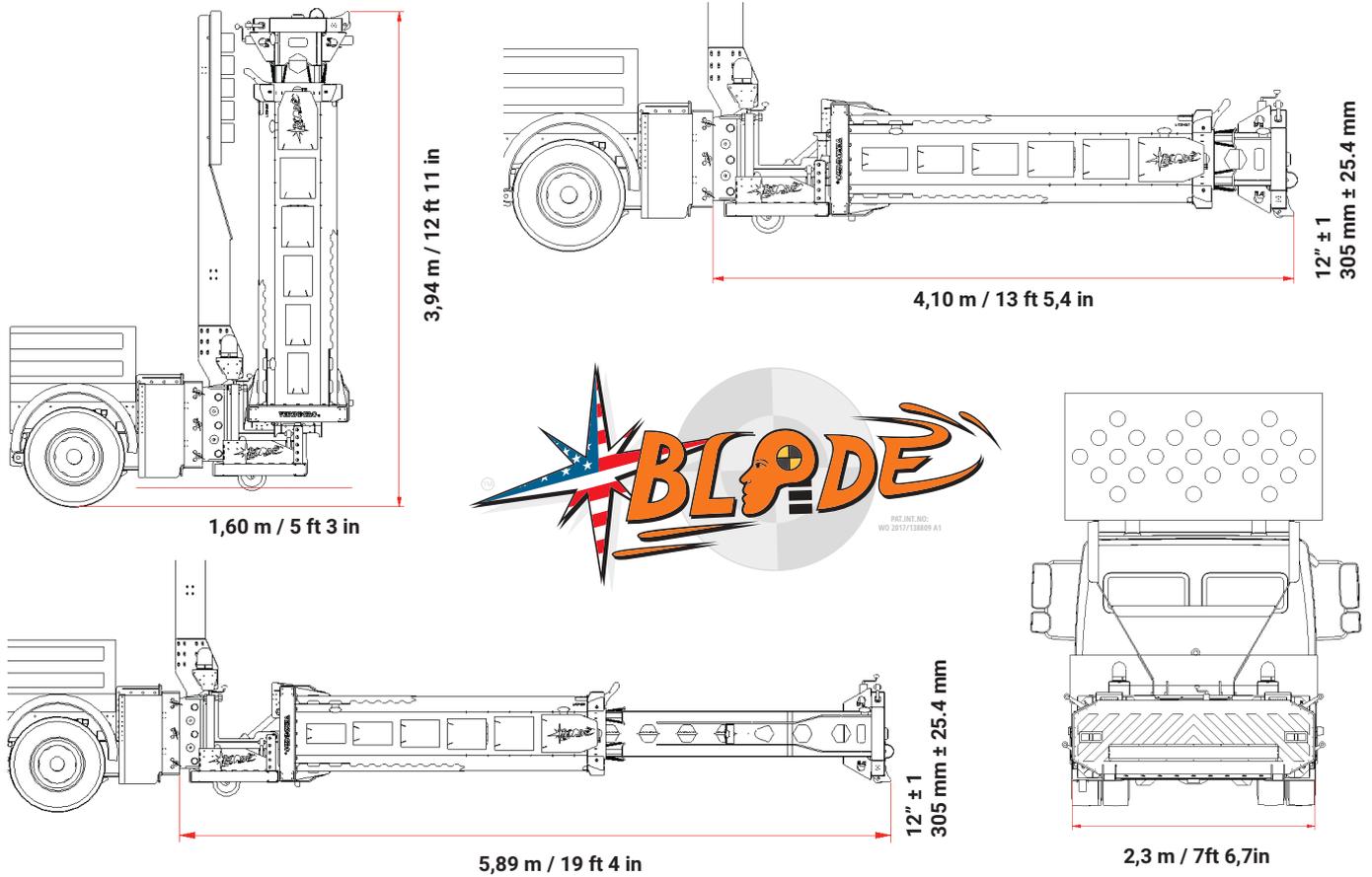
THIS IS WHY YOU WANT THE BLADE-TMA MASH 2016 TL-3

- **Maximum Safety:** Protects and redirects vehicles away from the "coffin corner" at the rear of the truck. FHWA eligible and DOT approved. Optional Dr. Airbrake system instantly locks brakes on impact.
- **Tested & Reliable:** Proven on trucks from 7262 kg up to 18,000 kg (16,010–40,000 lbs). Patented, innovative design absorbs energy even in the retracted position.
- **Quick Deployment:** Fully deploys in 20 seconds, even while driving up to 50 mph / 80 kph. Hydraulic powerpack is fully integrated within the attenuator.
- **Easy Installation & Flexibility:** Ships fully assembled. Optional crash-tested truck bracket allows fast installation without welding or fabrication (MASH compliant). Attenuator and arrow board can be swapped to another truck in 10 minutes.
- **Cost-Effective:** Modular design reduces repair costs and allows easy parts replacement. Optional arrow board mounts directly on top.
- **Smart Design:** Vertical, open design saves truck bed space and keeps it free for its intended use, reduces wind resistance, and minimizes vibration.
- **Universal Fit:** Usable on all box trucks. No bracket installation on the truck body or flatbed is required.
- **Patented Design:** This design is protected by patents in Europe (EP3414397), the United States (US9739328), China (201780012010-9), and Hong Kong (1259882).

BLADE-TMA ACCESSORIES:

- Quick connect: easily swap for attenuator and arrow board + level system (standard)
- Multi-truck bracket incl. fenders (optional)
- Arrow board bracket (optional)
- Jockey wheels (optional)
- Reflective foil chevrons according to country specifications (optional)

BLADE-TMA MASH TL-3

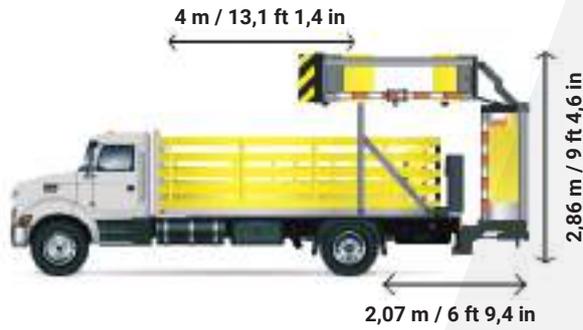


Comparison MASH TMA results

		MASH Test 3-50*	MASH Test 3-51*	MASH Test 3-52*	MASH Test 3-53*
Max. G-force by MASH	Preferred:	15.0G	15.0G	15.0G	15.0G
	Max:	20.49G	20.49G	20.49G	20.49G
BLADE-TMA G-force (ride down)		12.0G	15.0G	13.8G	11.5G
Other MASH available TMA G-force (ride down)		19.2G	20.1G	18.6G	12.5G
Roll-ahead BLADE-TMA					4420mm
Roll-ahead other MASH TMA					5121mm
BLADE-TMA G-force reduction compared to another brand!		± 37,5%	± 24,9%	± 25,8%	± 8%

* FHWA Website

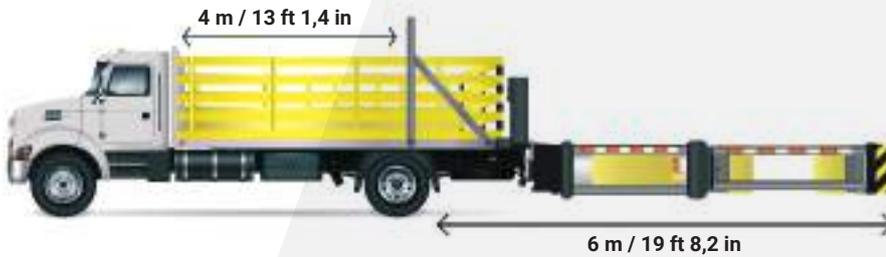
ATTENUATOR TRUCK BENEFITS



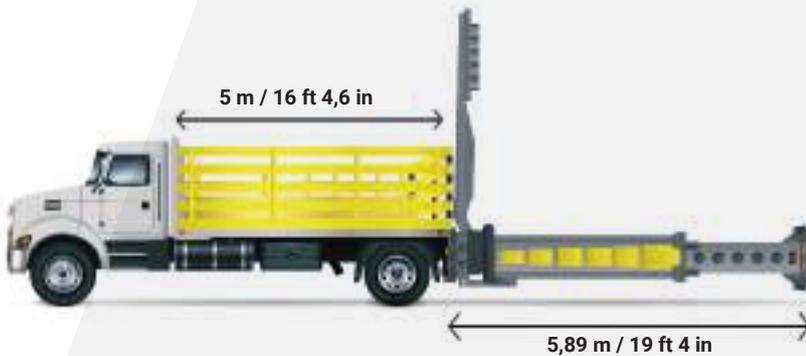
OTHER TMA



BLADE-TMA



OTHER TMA



BLADE-TMA

ACCESSORIES



Quick connect + level system (standard)



Truck bracket



Arrow board bracket



Jockey wheels



Reflective foil chevrons according to country specifications



**INCLUDING
THE CABIN
CONTROL UNIT**

PROUDLY TESTED IN THE U.S.A.

The first and only TMA with all crash test movies shown public

Texas A&M Transportation Institute
Proving Ground

Test Report No. 2016-03-0014
Test Report Date: January 2017

M-REV-14-TL-1 Evaluation of the Verdegro R1400 TMA

By:
D. Laine, Ph.D., P.E.,
Senior Research Engineer

Wanda J. Moore,
Research Specialist Ph.D.

and
Robert L. Bales, Ph.D.,
Research Specialist Ph.D.



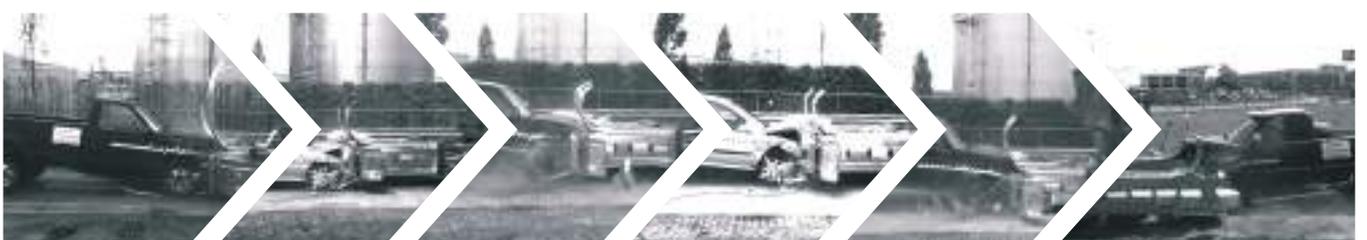
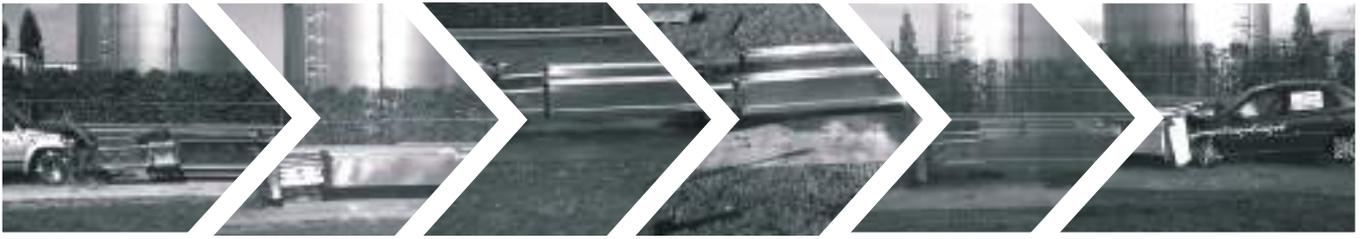
Contract No.: 1086275
Test No.: 1086275-VER1/VER2/VER3/VER4
Test Date: 2016-03-12 13:43:02-14:12:44

Sponsored by:
Verdegro Holding BV

TEXAS A&M TRANSPORTATION INSTITUTE PROVING GROUND

Working Address: 10000 N. Loop West, Suite 1000, Houston, TX 77040
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Fax: 281-859-3334
Website: www.tamutransportationinstitute.org

THE 39 CRASH TESTS



The BLADE-TTMA is a high-performance, energy-absorbing trailer mounted at the rear of a truck, also known as a truck-mounted attenuator, lorry-mounted crash cushion, or utility vehicle attenuator.

BLADE - TTMA



TECHNICAL SPECIFICATIONS

- Fully crash tested and approved according to MASH 2016 TL-3 (3-50 | 3-51 | 3-52 | 3-53 | and the optional 3-54)
- Standard operation from the truck using a wired in-cab controller
- Equipped with 175 A or 350 A plug supplying full system power from the vehicle's 12 Vdc or 24 Vdc electrical system
- Four electric actuators, four electric gearbox motors and LED driving lights
- Fully automated and retractable for easy operation
- Galvanised steel structure
- The aluminium crash cushion can be painted in any desired RAL colour(s)
- Delivered with official crash test certifications and CE marking / EMC compliant
- Geo fencing by Mobilityplanner (optional): visibility in Waze, Flitsmeister, Apple Maps, Here

REMARKABLE TEST PERFORMANCE

A Trailer Truck Mounted Attenuator (TTMA) is designed to safely control and reduce the impact of vehicles striking the rear of a truck. TTMA's have been used since the mid-1970s to protect highway maintenance crews.

HOW THE BLADE-TTMA WORKS

The patented BLADE-TTMA is engineered for maximum safety and efficiency. It consists of the following core components:

- Two galvanised steel CUT and BEND mechanisms
- Two aluminium energy-absorbing tube sections and H-beams
- A steel support structure for secure attachment to the truck
- Standard LED trailer lighting system
- A steel axle with two wheels

Once attached to the rear of a truck, the frame assembly is designed to collapse in a controlled manner when impacted by a vehicle. The complete BLADE-TTMA system allows fast and effortless attachment or removal, thanks to the built-in jockey wheel.

PATENTED DESIGN

This design is protected by patents in Europe (EP3414397), the United States (US9739328), China (201780012010-9), and Hong Kong (1259882).

Table of contents and dimensions

Transport height with AB	2575 mm / 8,5 ft
Installation length	6340 mm / 20,8 ft
Width	2300 mm / 7,6 ft
Hood to road	315 mm / 12 in
Weight complete installation	Approx. 1179 kg / 2600 lbs

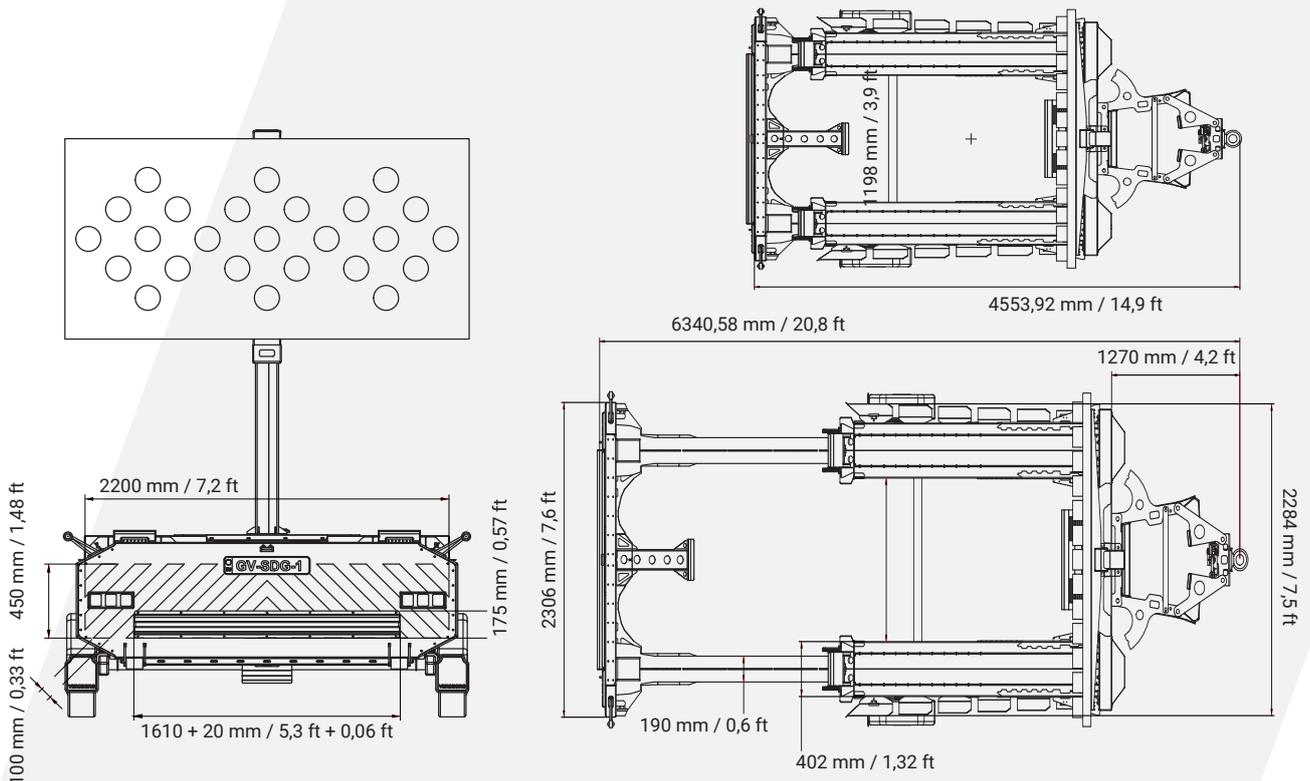
Note: all these dimensions are approximately, no rights can be derived.



EXTRA OPTIONS:

- Electrically raised arrow board frame
- Chevrons / Reflective foil

BLADE-TTMA MASH 2016





BLADE - TMA EU

A 100K crash cushion tested to CEN/TS 16786 TL-3 standards and an R58-3 approved bumper!

TECHNICAL SPECIFICATIONS

- Fully crash tested and approved according to CEN/TS 16786 Table 5 (T-TMA100-1 | T-TMA100-2 | T-TMA100-3 | T-TMA100-4)
- Operated from the towing vehicle via a wired controller
- Equipped with 175 A or 350 A plug supplying full system power from the vehicle's 12 Vdc or 24 Vdc electrical system
- Hydraulic and electrical components are safely enclosed in a sealed compartment
- Two protected hydraulic cylinders tilt the cushion
- Rear and reversing lights are integrated into the cushion and tilting block
- The aluminium crash cushion and the galvanised construction can be painted in any desired RAL colour(s) (additional cost)
- Geo fencing by Mobilityplanner (optional): visibility in Waze, Flitsmeister, Apple Maps, Here

MEET THE BLADE-TMA EU

The BLADE-TMA EU is tested and approved in accordance with CEN/TS 16786, delivering top-tier crash protection across Europe. Optional features include an LED arrow board, full-color VMS display, or lift system with LED display, all compliant with European and national safety standards.

HIGH-PERFORMANCE EU CRASH ABSORBER

The BLADE-TMA EU is a crash absorber, consisting of a tilting frame, 100K crash cushion (TL-3), and R58-3 approved bumper. The system can also be equipped with a 3500 kg / 7716 lbs towing device.

DOCUMENTATION AND CERTIFICATION

The BLADE-TMA EU is supplied with a CE certificate, crash test reports, and construction certificates in accordance with the Dutch Rijkswaterstaat directives.

The BLADE-TMA EU is listed on the Rijkswaterstaat (NL) Quick Reference Card and is included in the approved crash absorber list of the Belgian Roads and Traffic Agency (BE).

PATENTED DESIGN

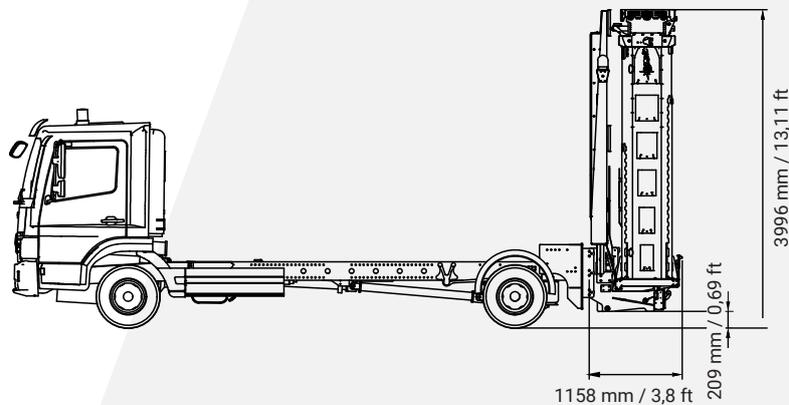
This design is protected by patents in Europe (EP3414397), the United States (US9739328), China (201780012010-9), and Hong Kong (1259882).

Table of contents and dimensions

Transport height with AB	3996 mm / 13,1 ft
Width	2300 mm / 7,6 ft
Hood to road	315 mm / 12 inch
Weight complete installation	Approx. 1000 kg / 2200 lbs

Note: all these dimensions are approximately, no rights can be derived.

BLADE-TMA EU CEN/TS 16786



UNIQUE SELLING POINTS:

- 2000P tests performed with 2000 kg / 4409 lbs European-style SUVs
- Double safety blocking device for enhanced protection
- Efficient hydraulic rotation system for maneuverability
- Forklift pockets facilitate easy handling and transportation
- Robust steel hot galvanised mounting system ensures durability
- Energy absorption aluminium moisture-proof cartridge enhances safety

BLADE-TMA EU ACCESSORIES:

- Reflective foil according your specs
- Swivel wheels front & back (optional)
- Rubber impact strip (optional)
- Dr. AirBrake brake system (optional)

TECHNICAL SPECIFICATIONS: LIGHT ARROW BOARD (NL+BE)

- Light arrow board with Class 3 red and white reflective foil
- 23 amber LED lights with left/right arrow and cross formations
- Hydraulic rotating bottom plate D02, made in Class 3, round
- Four amber LED strobe lights (approx. 300 mm) on the side frame (optional)
- Equipped with side flashing lights and/or regional version (optional)

TECHNICAL SPECIFICATIONS: FULL COLOR LED DISPLAY

- LED arrow board with Class 3 red and white reflective foil
- Full-color 80x80 20mm LED display, compliant with EN12966
- Hydraulic rotating bottom plate D02, Class 3, round 1000 mm and/or 900 mm
- Two amber LED strobe lights (approx. 300 mm) on the top frame (optional)
- Equipped with signal lights and additional 200 mm LED strobelsights (optional)



The No. 1 TTMA tested and approved according to CEN/TS 16786: Finally a new leader is born.

BLADE-TTMA EU

TECHNICAL SPECIFICATIONS

- Fully crash tested and approved according to CEN/TS 16786 Table 5 (T-TMA100-1 | T-TMA100-2 | T-TMA100-3 | T-TMA100-4)
- Equipped with standard 100K crash cushion, made entirely of aluminum
- Operated from the towing vehicle via a wired controller
- Equipped with 175 A or 350 A plug supplying full system power from the vehicle's 12 Vdc or 24 Vdc electrical system
- The aluminium crash cushion and the galvanised construction can be painted in any desired RAL colour(s) (additional cost)
- Extra features include an LED arrow board, full-color VMS display, or lift system with LED display, all compliant with European and national safety standards (optional)
- Including test certifications and CE marking
- Geo fencing by Mobilityplanner (optional): visibility in Waze, Flitsmeister, Apple Maps, Here

ABOUT THE BLADE-TTMA EU

The BLADE-TTMA EU is a state-of-the-art Trailer Truck Mounted Attenuator developed and tested to meet the highest European safety standards. The system has been 100 km/h crash tested and approved in accordance with CEN/TS 16786, ensuring reliable performance and optimal protection for both road workers and motorists in the event of an impact.

Engineered for strength, stability, and easy maintenance, the BLADE-TTMA EU combines energy-absorbing technology with a compact, durable design for European road applications.

DOCUMENTS AND CERTIFICATES

The BLADE-TTMA EU is supplied with a CE certificate, crash test reports, and construction certificates in accordance with the Dutch Rijkswaterstaat directives.

In addition, the BLADE-TTMA EU can be supplied with a TÜV approval for individual trailer homologation, authorizing its use on public roads throughout the European Union, where such approval is required.

PATENTED DESIGN

This design is protected by patents in Europe (EP3414397), the United States (US9739328), China (201780012010-9), and Hong Kong (1259882).

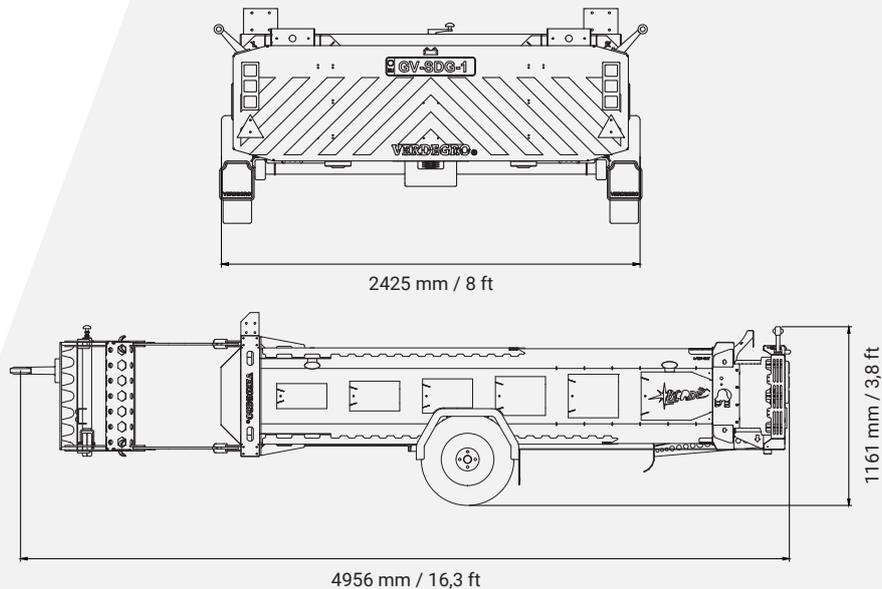
Table of contents and dimensions

Transport height	1161 mm / 3,8 ft
Installation length	5084 mm / 16,8 ft
Width	2425 mm / 8 ft
Hood to road	364 mm / 1,2 ft
Weight complete installation	Approx. 750 kg / 1650 lbs

Note: all these dimensions are approximately, no rights can be derived.



BLADE-TTMA EU CEN/TS 16786



BLADE-TTMA EU ACCESSORIES:

- Arrow board frame – electrically raised (CEN/TS crash tested) (optional)
- Black foil chevrons or reflective foil chevrons on the trailer's impact plate, with lights according to national specifications (optional)
- Strobe lights mounted on the sides of the arrow board (optional)
- Strobe lights mounted on the top of the impact plate (optional)
- Dr. AirBrake brake system (optional)



The TMA-US 100K is tested to NCHRP-350 TL III standards, including 2000 kg pickup tests, and meets UK optional 110K requirements.

TMA-US

TECHNICAL SPECIFICATIONS

- Tested according to NCHRP-350 TL III (3-50 | 3-51 | 3-52 | 3-53). 2000P tests conducted with a 2000 kg / 4409 lbs US pickup truck
- Fully crash tested and approved according to the UK optional 110K test (TD49/07)
- Equipped with compartments for back-up power or a battery bank
- Operated from the towing vehicle via a wired controller and a 10-pole connector
- The entire machine can also be operated from the control unit on the machine (optional)
- A 175 A or 350 A plus is installed on the TMA, to power the entire machine from the vehicle
- Standard 24 Vdc system, also available in 12 Vdc (optional)
- Rear driving lights integrated into the support structure and crash cushion
- Including test certifications and CE marking
- Geo fencing by Mobilityplanner (optional): visibility in Waze, Flitsmeister, Apple Maps, Here

THE TMA-US IN DETAIL

The TMA-US delivers outstanding protection, reliability, and ease of use. Its aluminium cushion and hot-dip galvanised steel frame eliminate moisture problems, while pre-bent aluminium tubes on the top and bottom ensure a sleek, durable design. Vibration-tested and built to last, it's engineered for the toughest road conditions.

The replaceable aluminium hood with bolted connections allows quick maintenance, and the integrated LED taillights provide maximum visibility. The hydraulic rotating system ensures smooth and secure operation every time.

WHAT DOES THE TMA-US OFFER?

Made to European standards, the TMA-US features energy-absorbing, moisture-proof components, forklift pockets for easy handling, and reflective foil according to your country specifications.

Optional features include a LED arrow board, strobe light or light bar next to the license plate, multiple colour variations, reflective chevrons on the back of the TMA cushion, contour foil, and availability in any RAL colour – making the TMA-US as functional as it is distinctive.

Table of contents and dimensions

Transport height	3979 mm / 13 ft
Installation length	4075 mm / 13,4 ft
Width	2300 mm / 7,6 ft
Hood to road	280 mm / 11 inch
Weight complete installation	Approx. 1200 kg / 2650 lbs

Note: all these dimensions are approximately, no rights can be derived.

NORWAY:

TMA-US 100K with Norwegian style LED arrow board

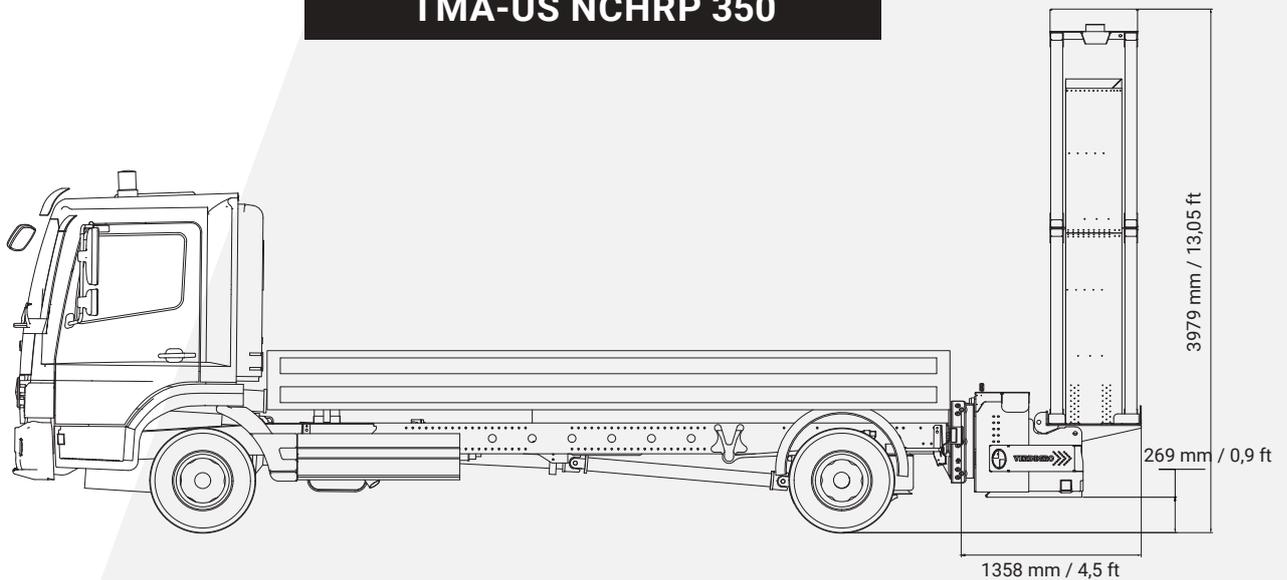


GERMANY:

TMA-US 100K with German style LED arrow board, mounted on a Unimog



TMA-US NCHRP 350



LED ARROW BOARD OPTIONS:

- 200 mm LED arrow board with hydraulically synchronised blue arrows (left/right)
- Reflective foil applied to the top frame of the arrow board
- Functions: left/right arrow and top-mounted cross, plus hydraulic lower sign with rotatable blue arrow.
- Two 300 mm alternating LED lights positioned on the corners of the framework
- Wired Verdegro controller in the cabin, with integrated control for the TMA-US.

This TTMA features a robust 100K crash cushion made entirely of aluminium for maximum durability and safety.



TECHNICAL SPECIFICATIONS

- Tested according to NCHRP-350 TL III (3-50 | 3-51 | 3-52). 2000P tests conducted with a 2000 kg / 4409 lbs US pickup truck
- TTMA 100K crash cushion, made entirely of aluminum, except for the galvanised backplate
- DIN towing eye 40 or 50 (40 standard, 50 optional), suitable for a truck tow-eye height of 1000 mm ±5%
- Energy-absorbing towbar with special design to enhance safety during impact.
- 24 Vdc driving lights and side marker lamps for optimal visibility
- Energy absorbing special design towbar
- Jockey wheel with automatic turnover and locking for easy handling
- Rubber suspension axle combined with low-profile 10-inch wheels for smooth towing
- Including test certifications and CE marking
- Geo fencing by Mobilityplanner (optional): visibility in Waze, Flitsmeister, Apple Maps, Here

TTMA-US ADVANTAGES

The TTMA-US is designed for maximum safety, durability, and ease of use. Its aluminium cushion, combined with a galvanised structure, ensures there are no moisture problems, while the pre-bent aluminium tubes on the top and bottom of the cushion merge strength with modern design. Fully vibration-tested, it guarantees reliable performance!

Maintenance is simple thanks to the easily replaceable hood with bolted connections, and a wide range of colour options allows the TTMA-US to match any fleet. Built to European quality standards, it is as practical as it is durable, offering a user-friendly experience for operators.

THERE IS MORE!

Optional features make this unit even more versatile. A LED arrow board can be added (the unit weighs 860 kg / 1600 lbs without it), and reflective foil on the cushion hood is available on request. For enhanced visibility, a strobe light or light bar can be installed between the hood and cushion.

Table of contents and dimensions

Transport height	1123 mm / 3,6 ft
Installation length	5814 mm / 19,1 ft
Width	2349 mm / 7,7 ft
Hood to road	280 mm / 11 inch
Weight complete installation	Approx. 1100 kg / 2400 lbs

Note: all these dimensions are approximately, no rights can be derived.

CHINA:

TTMA-US 100K deployed in China, fitted with a Norwegian style LED arrow board

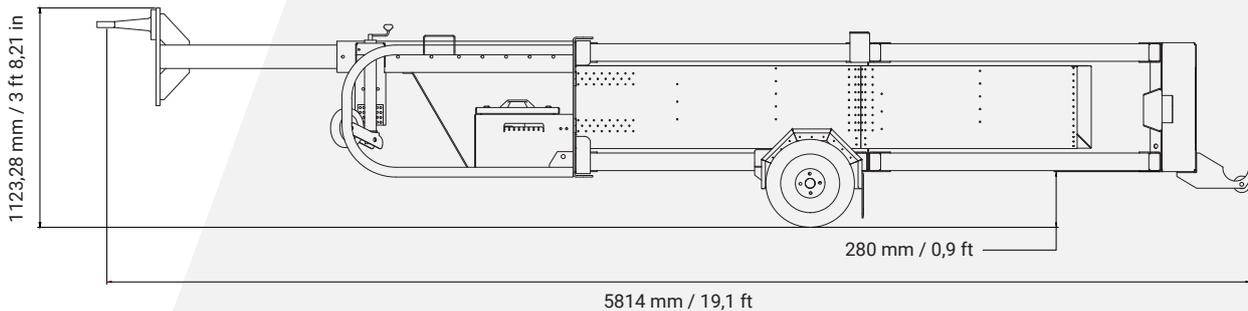


THE NETHERLANDS:

TTMA-US 100K, operating in the Netherlands, with NL + BE style LED arrow board



TTMA-US NCHRP 350



TTMA-US EXTRA OPTIONS:

- Approved height adjustable towbar with brake system for 1350 kg / 2976 lbs axle (required when using the optional arrow board if a license plate is needed for trailers over 750 kg / 1653 lbs)
- Hydraulic foldable arrow board on the TTMA with hydraulic undersign and reflective foil frames according to country specifications.
- Wireless remote control unit for convenient operation
- Export license and individual trailer homologation by TÜV can be provided (if required for EU license plate documentation)
- Galvanised steel structure, can be painted in your RAL colour
- Galvanised steel structure, with the crash cushion and tubes can be painted in your chosen RAL colour(s)

**A LEADER...
NOT A
FOLLOWER!**

MASH 2016 (AASHTO'S MANUAL FOR ASSESSING SAFETY HARDWARE)

WHAT IS MASH 2016?

AASHTO's Manual for Assessing Safety Hardware (MASH), released in the spring of 2016, serves as an updated replacement for NCHRP Report 350. At a high level, MASH provides "uniform guidelines for crash testing permanent and temporary highway safety features and recommends evaluation criteria to assess test results." Beyond expanding on the testing requirements of NCHRP 350, MASH also provides guidance on when MASH-tested and approved attenuators must be used on TMA trucks.

KEY DIFFERENCES FROM NCHRP 350?

Compared to NCHRP Report 350, MASH introduces several changes that make testing stricter and more challenging for attenuators. To understand these differences, we first look at the original NCHRP 350 tests.

Test Level	Test Designation	Impact Conditions*			Impact Point	Evaluation Criteria* (See Table 5.1)	EVALUATION CRITERIA* (See Table 5.1)
		Vehicle	Nominal Speed (km/h)	Nominal Angle, θ (deg)			
2 Basic Level	2-50	820C	70	0	(b)	D,F,H,I,(J),K	C,D,F,I,(J),K
	S2-50*	700C	70	0	(b)	D,F,H,I,(J),K	C,D,F,I,(J),K
	2-51	2000P	70	0	(b)	D,F,H,I,(J),K	C,D,F,I,(J),K
	2-52	2000P	70	0	(b)	D,F,H,I,(J),K	C,D,F,I,(J),K
	2-53	2000P	70	10	(b)	D,F,H,I,(J),K	C,D,F,I,(J),K
3	3-50	820C	100	0	(b)	D,F,H,I,(J),K	C,D,F,I,(J),K
	S3-50	700C	100	0	(b)	D,F,H,I,(J),K	C,D,F,I,(J),K
	3-51	2000P	100	0	(b)	D,F,H,I,(J),K	C,D,F,I,(J),K
	3-52	2000P	100	0	(b)	D,F,H,I,(J),K	C,D,F,I,(J),K
	3-53	2000P	100	10	(b)	D,F,H,I,(J),K	C,D,F,I,(J),K

Test level 2: Mandatory

- Test 50: The first mandatory test done was set to, "to evaluate risks to occupants of a small car impacting the TMA." An 820C vehicle weighing 816 kg / 1800 lbs struck the TMA at 70 kph (\approx 43.5 mph).
- Test 51: Same scenario but with a 2000P pickup truck weighing 4400 lbs.

Optional tests in NCHRP 350

The NCHRP Report 350, also listed two optional tests for a TMA to undertake. The report even says that, "Tests 52 and 53 are new tests and there is no assurance that current TMA designs can meet requirements of these tests. Moreover, there is no assurance that new TMA designs can be made to meet these test requirements without significant increases in cost or without detrimental effects on truck handling, TMA durability, or other operational considerations."

- Test 52: 2000P pickup strikes the TMA offset from center.
- Test 53: 2000P pickup hits the center of the TMA at a 10-degree angle.

Test level 3: Mandatory if the attenuator is being certified for TL-3 performance

It involves the same tests as Test Level 2 (the basic level) but conducted at a higher speed of 100 km/h (≈62 mph), while applying the same evaluation criteria.

THE CRITERIA

All the tests were judged on the same criteria, including:

- *“Acceptable test article performance may be by redirection, controlled penetration, or controlled stopping of the vehicle”*
- *“Detached elements, fragments or other debris from the test article should not penetrate the occupant compartment, or present an undue hazard to other traffic, pedestrians, or personnel in a work zone.”*
- *“The vehicle should remain upright during and after collision although moderate roll, pitching and yawing are acceptable.”*
- *“After collision it is preferable that the vehicle’s trajectory not intrude into adjacent traffic lanes”*
- *“Fully assembled BLADE-TMA attenuators shipped and easy to install using the truck bracket, no additional assembly (labor) costs!”*

CHANGES INTRODUCED BY MASH

At the time these tests were created (1993), they were considered adequate for evaluating TMAs, but they are now outdated compared to modern vehicle and traffic conditions.

Now that we know what exactly the NCHRP 350 tests for truck mounted attenuators entailed, we can examine the changes that the MASH testing made.

First change: Heavier impact vehicles

- Small car: 820C has been increased to a 1100C vehicle (1097 kg / 2420 lbs)
- Pickup truck: 2000P has been increased to a 2270P vehicle (2268 kg / 5000 lbs)

These changes were made to reflect the increased weight of new passenger vehicles on the market today compared to when the tests were originally created. With the evaluation criteria remaining the same, a heavier impact vehicle makes passing the tests a much more difficult task.

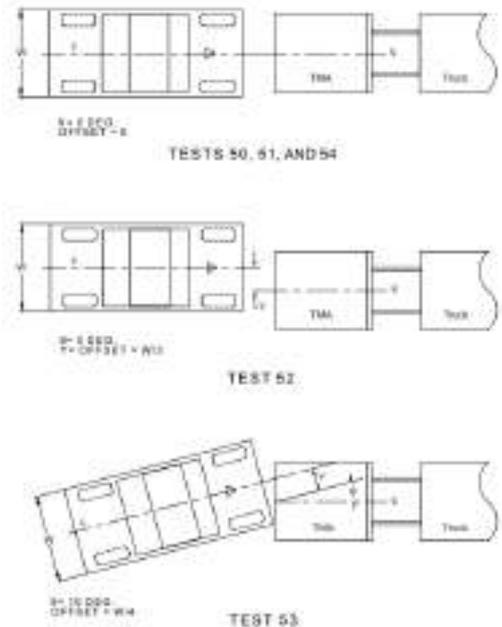
Second change: Mandatory Tests 52 & 53

- Unlike NCHRP 350, these previously optional tests are now required.
- This ensures the TMA is tested under realistic crash conditions, as vehicles rarely hit the attenuator perfectly centered or straight.

In short: by making Tests 52 and 53 mandatory, the attenuator is better tested to mimic real life scenarios it will face.

PURPOSE OF MASH TESTING

The changes in MASH testing aim to ensure that TMAs on the market today can withstand real-world crash scenarios commonly encountered in modern work zones. With worker safety as the top priority, a MASH-approved TMA clearly indicates that the unit is reliable and safe for deployment in active work zones.



NCHRP 350 (NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM REPORT 350)

WHAT IS NCHRP 350?

The National Cooperative Highway Research Program (NCHRP) Report 350 outlines standardized procedures for vehicle crash testing and in-service evaluation of roadside safety features. These procedures ensure consistent testing and allow engineers to compare the safety performance of different designs tested by various agencies.

SCOPE OF APPLICATION

NCHRP 350 applies to a wide range of roadside and work zone safety devices, including:

1. Longitudinal barriers (bridge rails, guardrails, median barriers, transitions, terminals)
2. Crash cushions
3. Breakaway or yielding supports for signs and luminaires
4. Breakaway utility poles
5. Truck-mounted attenuators (TMAs)
6. Work zone traffic control devices

PURPOSE AND APPROACH

The purpose NCHRP 350 is to promote uniform testing and inservice evaluation of roadside safety hardware so that highway engineers may confidently compare the safety performance of designs that are tested and evaluated by different agencies.

- The procedures are guidelines describing how features should be tested and assessed.
- Policy decisions, such as which features to test, what performance level to achieve, or what criteria are acceptable – are left to individual agencies.
- Factors such as cost, aesthetics, and maintenance are not addressed; the focus is solely on safety performance.

Because it's impossible to replicate every real-world condition, the report establishes standardized (normalized) test conditions. For example:

- Straight barriers are tested, even though installations may be curved.
- Tests are conducted on flat grades, even though real sites may be sloped or behind curbs.
- Idealized soils are specified, even though installations may occur in poor or frozen ground.

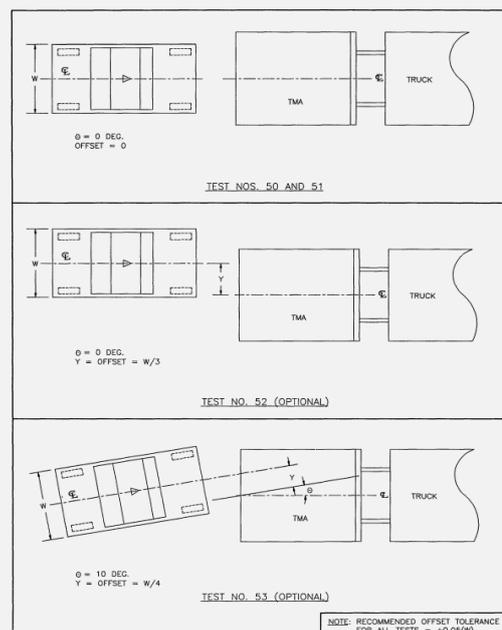
These normalized conditions simplify comparisons between systems, even though they may affect real-world performance.

CRASH TEST CONDITIONS

Crash tests are designed to subject safety features to severe impact conditions.

They specify parameters such as:

- Vehicle mass and type: from small passenger cars to ¾-ton pickups, single-unit trucks, and tractor-trailers.
- Impact speeds: 35 – 100 km/h (≈ 20 – 60 mph).
- Impact angles: 0 – 25 degrees.
- Impact location: defined points on the safety feature.



EVALUATION CRITERIA

Three primary appraisal factors are presented for evaluating the crash test performance:

1. **Structural Adequacy:** the safety feature must contain, redirect, allow controlled penetration, or bring the vehicle to a predictable, controlled stop.
2. **Occupant Risk:** measures the potential hazard to vehicle occupants based on impact velocity against interior surfaces and subsequent deceleration forces.
3. **After-Collision Vehicle Trajectory:** evaluates the vehicle's post-impact path and its potential to affect other traffic or exhibit undesirable behavior such as pocketing or snagging.

Because crash tests involve complex and sometimes unpredictable conditions, results must be interpreted carefully.

IN-SERVICE EVALUATION

In-service evaluation represents the final stage in the development of new or significantly modified roadside safety features. It assesses how these features perform under real-world roadway conditions, including a range of collision types, environmental factors, and maintenance situations.

This process updates and builds upon the guidelines from NCHRP Report 230, considering the real-world complexity of traffic accidents and the limited resources available to monitoring agencies.

APPENDICES

NCHRP Report 350 also includes supporting materials such as:

- (a). Commentary on the test procedures' basis
- (b). Soil specifications for the installation of safety features
- (c). Specifications for the instrumentation of the tests
- (d). A summary on the analytical and experimental tools that can be used in the research and development phase for safety features
- (e). A methodology for quantifying the damage to the occupant compartment of a test vehicle
- (f). A description of calculation procedures for alternate measures of occupant risk (e.g., THIV, PHD, and ASI)
- (g). A methodology for conducting and evaluating side impact tests.

CEN/TS 16786:2018 (EUROPEAN TECHNICAL SPECIFICATION FOR TRUCK MOUNTED ATTENUATORS)

WHAT IS CEN/TS 16786?

CEN/TS 16786:2018 is a European Technical Specification that defines the performance classes, impact test acceptance criteria, and testing methods for Truck Mounted Attenuators (TMAs). It establishes how complete TMA systems – including the attenuator, the host vehicle (mobile carrier), and the connection between them – should be tested under impact conditions. The specification was developed by CEN/TC 226 "Road Equipment" and serves as a provisional standard that may later be adopted as a full European Standard (EN).

PURPOSE AND SCOPE

The purpose is to determine the safety performance of TMAs under standardized, repeatable crash conditions. Testing evaluates:

- The severity of impact for vehicle occupants,
- the structural integrity of both the TMA and the carrier vehicle,
- and the post-impact trajectories of all vehicles involved.

It focuses purely on safety performance, not cost, maintenance, or aesthetics.

NORMATIVE REFERENCES

The testing methodology is aligned with several key European and international standards:

- **EN 1317-1:** Road restraint systems, general criteria for test methods
- **EN 13036-4:** Measurement of surface friction (Pendulum Test)
- **ISO 8349:** Determination of road surface friction
- **ISO 10392:** Determination of a vehicle's center of gravity

TEST CONDITIONS

Test Site

- The test track must be paved (asphalt or concrete), long enough to measure roll-ahead distance and wide enough for vehicle trajectory evaluation.
- Friction must be measured using the Pendulum Test Value (PTV) under dry conditions.
- No surface contaminants (gravel, dust, polished asphalt, etc.) are permitted.

Test Vehicles

- Two vehicle masses are used: 900 kg and 2000 kg, representative of typical European passenger cars.
- Vehicles must be less than 8 years old.
- The mobile carrier (truck or trailer) must meet load distribution requirements and may not exceed the manufacturer's limits.
- An ATD (crash test dummy) is placed in the driver's seat during 900 kg tests.

TEST MATRIX AND SPEED CLASSES

TMA systems are tested under three standardized speed classes:

Class	Impact Speed (km/h)	Typical test configurations
TMA-50	50	Head-on and 10° offset impacts
TMA-80	80	Series of tests with 900 kg and 2000 kg vehicles
TMA-100	100	Same as above, for high-energy impacts

Each class includes several test "approaches," covering maximum, minimum, and rigidly-blocked system masses to reflect different operational conditions.

MEASUREMENT ACCURACY

- Impact speed: within $\pm 1\%$ accuracy (allowable deviation $-0\% / +6\%$)
- Impact angle: within $\pm 1.0^\circ$ accuracy
- Combined tolerances for speed and angle are restricted to prevent excessive impact energy deviation
- Lateral displacement: within ± 0.10 m at contact

EVALUATION CRITERIA

The overall system must meet the defined test and performance requirements.

Acceptable TMA performance is demonstrated through controlled deceleration of the impacting vehicle without excessive intrusion or detachment.

1. Structural Adequacy

The TMA must bring the impacting vehicle to a controlled stop without excessive intrusion or structural failure.

2. Deformation

- No part of the TMA may penetrate the occupant compartment.
- Detached parts (>2 kg) must not strike or endanger the carrier vehicle or surrounding area.

3. Vehicle Trajectory

- The impacting vehicle must not roll over or overturn.

4. Severity Indices

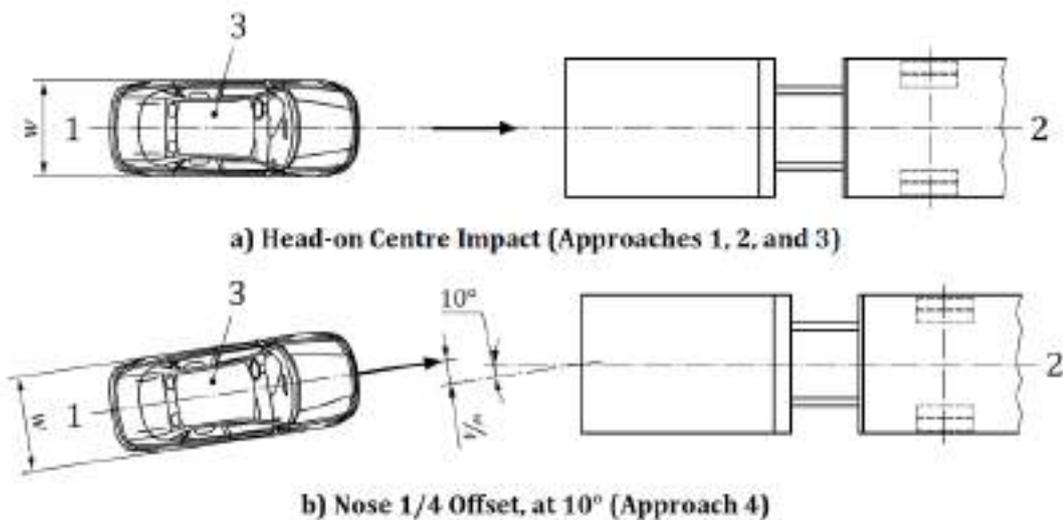
Impact severity is quantified using two measures:

Index	Description	Maximum allowed value
ASI (Acceleration Severity Index)	Measures occupant deceleration severity	$A \leq 1.0 \cdot B \leq 1.4 \cdot C \leq 1.9$
THIV (Theoretical Head Impact Velocity)	Estimates potential head impact velocity	$\leq 44 \text{ km/h}$

SUMMARY

CEN/TS 16786:2018 provides a harmonized European procedure for evaluating the crash performance of Truck Mounted Attenuators. It ensures:

- Consistent and comparable test results across manufacturers,
- Objective measurement of occupant safety and system response,
- Clear classification of TMA systems by speed class and impact severity.



Key

- 1 centre line of impacting vehicle
- 2 centre line of TMA
- 3 location of driver's side of vehicle

**INNOVATION
WITHOUT
LIMITS**



Compatible with a full-colour VMS 80x80 (20 mm) LED display or the Verdegro LP15 mini arrow board!

TECHNICAL SPECIFICATIONS

- Tested according to NCHRP-350 TL II (2-50 | 2-51). 2000P tests were done with a 2000 kg / 4409 lbs US pickup truck
- LTMA 70K crash cushion, made entirely of aluminum, except for the galvanised backplate
- Operated by control buttons (up to 15 m range) from inside the towing vehicle
- 12 Vdc or 24 Vdc driving lights and side marker lamps for optimal visibility
- Custom subframe available for easy mounting between chassis and cargo floor (optional)
- Hydraulic Energy Pack offered in 12 Vdc or 24 Vdc configurations (optional)
- Including test certifications and CE marking
- Geo fencing by Mobilityplanner (optional): visibility in Waze, Flitsmeister, Apple Maps, Here
- This design is protected by a Dutch patent: NL2011417

ABOUT THE LTMA-US

The Verdegro LTMA-US (Light Truck Mounted Attenuator) is designed for light vehicles up to 3.5 tons, making it perfect for urban roadworks and daily use on roads up to 70 km/h.

LIGHTWEIGHT & DURABLE DESIGN

The LTMA-US combines a robust yet lightweight structure with everyday practicality. Its aluminium cushion and galvanised frame eliminate moisture problems, while the pre-bent aluminium tubes ensure strength and a professional look.

EASY MAINTENANCE & FLEXIBILITY

The unit is vibration tested and designed for easy maintenance, featuring a bolted hood that can be quickly replaced when needed.

The galvanised steel structure can be painted in your preferred RAL colour. To ensure visual consistency with your fleet, the crash cushion and tubes can also be finished in matching RAL colour(s). For enhanced visibility, reflective foil on the cushion hood is available on request. This is all optional.

QUALITY & CERTIFICATION

Built to European quality standards, the LTMA-US is CE approved and delivered with full documentation and an English instruction manual.

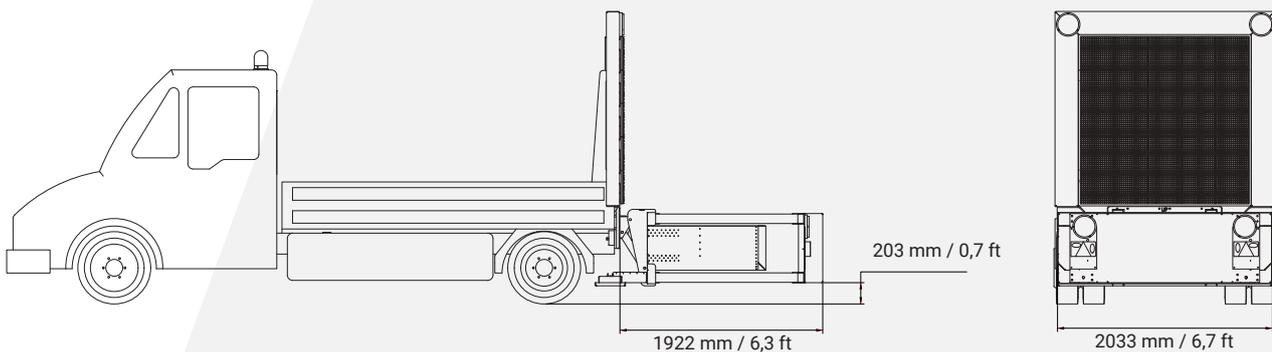
Table of contents and dimensions

Transport height	2630 mm / 8,6 ft
Installation length	1922 mm / 6,3 ft
Width	2033 mm / 6,7 ft
Hood to road	203 mm / 0,7 ft
Weight complete installation	Approx. 260 kg / 600 lbs

Note: all these dimensions are approximately, no rights can be derived.



LTMA-US NCHRP 350



LTMA-US EXTRA OPTIONS:

- Hydraulic energy pack system 12 Vdc / 24 Vdc
- Manual rotating mounting frame for sweepers, with bracket for installing the LP15 Mini Arrow Board
- Welding plates for mounting to a locally fabricated subframe positioned between the chassis and cargo body
- Full-colour VMS 48x48 or 80x80 (20 mm pitch) LED display with reflective foil frame, flashers, and 4G/WiFi modem
- Verdegro LP15 Mini Board (TMA version), 12 Vdc / 24 Vdc, with combined wired TMA cabin controller (as shown and described)
- Dr. Airbrake impact brake strip, installed on LTMA (not a complete system)

The TLTMA-US 70K tested according NCHRP 350 TL-2 is still pending approval!



TECHNICAL SPECIFICATIONS

- Tested according to NCHRP-350 TL II (2-50 | 2-51). 2000P tests were done with a 2000 kg / 4409 lbs US pickup truck
- TLTMA 70K crash cushion, made entirely of aluminum, except for the galvanised backplate
- Operated by control buttons (up to 15 m range) from inside the towing vehicle
- 12 Vdc or 24 Vdc driving lights and side marker lamps mounted on cushion impact plate for optimal visibility
- Hydraulic Energy Pack offered in 12 Vdc or 24 Vdc configurations (optional)
- Galvanised steel structure, painted in your RAL colour (optional)
- Crash cushion and tubes painted in your RAL colour(s) (optional)
- Reflective foil on the cushion hood available on request
- Including test certifications and CE marking
- Geo fencing by Mobilityplanner (optional): visibility in Waze, Flitsmeister, Apple Maps, Here

INFORMATION ABOUT THE TLTMA-US 70K

The Verdegro TLTMA-US (Light Truck Mounted Attenuator) provides a reliable safety solution for work zones. Designed for vehicles up to 3.5 tons, it is ideal for daily use in urban roadworks and can be safely operated on roads with speeds up to 70 km/h.

ROBUST, RELIABLE AND EASY TO MAINTAIN

The TLTMA-US is designed for both durability and ease of use. Its lightweight aluminium cushion and galvanised structure prevent moisture problems and ensure long-term reliability, while pre-bent aluminium tubes on the top and bottom of the cushion provide added strength and a sleek, professional look. The unit is vibration tested for dependable performance and features an easily replaceable hood with a bolted connection, making maintenance quick and straightforward.

CUSTOMISATION & QUALITY

Available in multiple colour options, the TLTMA-US combines ease of use with European quality standards. Each unit is delivered with full documentation, CE certification, and an English A4 instruction manual, ensuring your team can deploy it safely and efficiently.

PENDING APPROVAL...

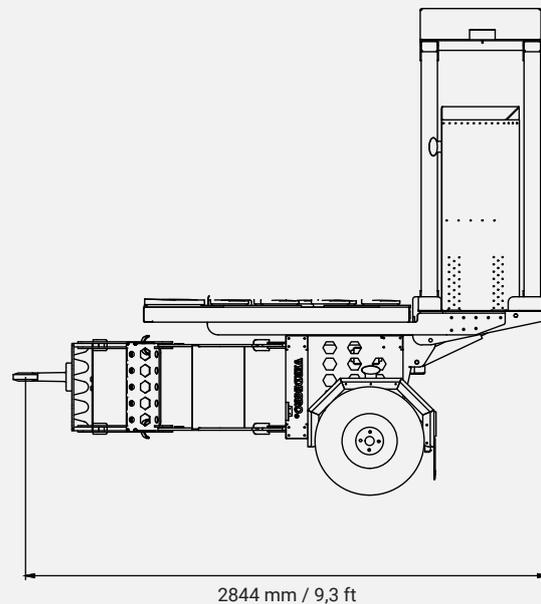
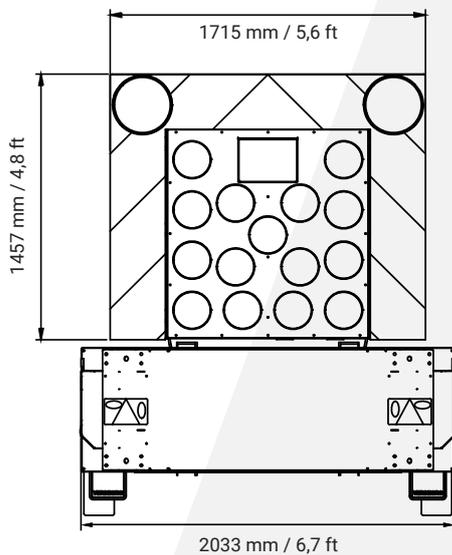
The TLTMA-US has been tested according to NCHRP-350 TL II (2-50 | 2-51) and is pending official approval.

Table of contents and dimensions

Transport height	2676 mm / 8,8 ft
Installation length	4036 mm / 13,2 ft
Width	2033 mm / 6,7 ft
Hood to road	252 mm / 0,8 ft
Weight complete installation	Approx. 907 kg / 2000 lbs

Note: all these dimensions are approximately, no rights can be derived.

TLTMA-US NCHRP 350



TLTMA-US EXTRA OPTIONS:

- Hydraulic energy pack system 12 Vdc / 24 Vdc
- Manual rotating mounting frame for sweepers, with bracket for installing the LP15 Mini Arrow Board
- Welding plates for mounting to a locally fabricated subframe positioned between the chassis and cargo body
- Full-colour VMS 48x48 of 80x80 (20 mm pitch) LED display with reflective foil frame, flashers, and 4G/WiFi modem
- Verdegro LP15 Mini Board (TMA version), 12 Vdc / 24 Vdc, with combined wired TMA cabin controller (as shown and described)

APPROVAL IS PENDING...



TMA-EU 70K

One of Verdegro's lightest TMAs!

TECHNICAL SPECIFICATIONS

- Tested for the EU, according to NCHRP 350 TL-2
- Standard operated from the towing vehicle via a 15 m wired controller
- Two hydraulic rams for raising and lowering the crash cushion
- Galvanised steel structure
- Including test certifications and CE marking
- Geo fencing by Mobilityplanner (optional): visibility in Waze, Flitsmeister, Apple Maps, Here

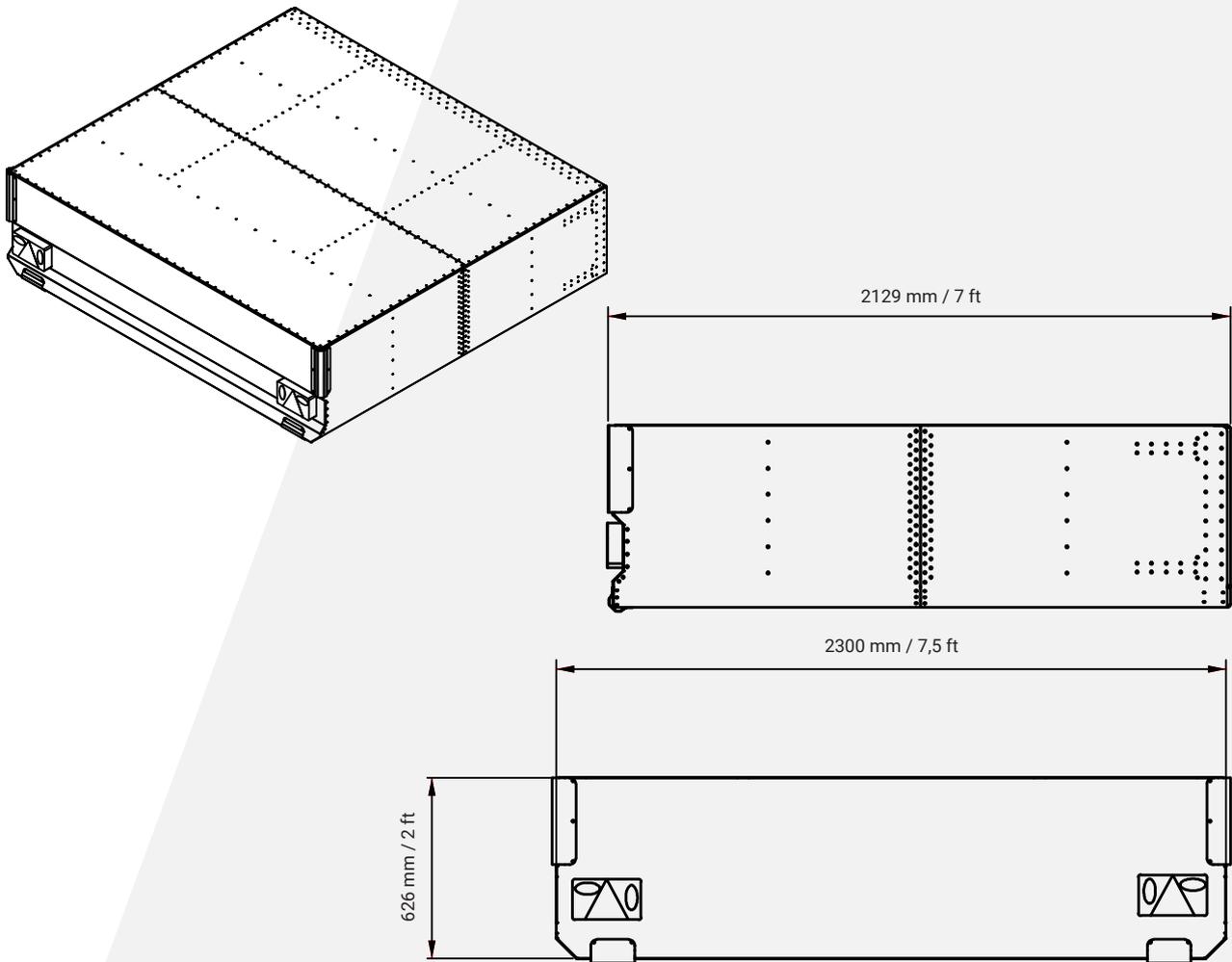
DISCOVER THE TMA-EU 70K

The TMA-EU 70K is entirely manufactured in our own factory, allowing full control over quality, safety, and craftsmanship. Verdegro is the only manufacturer in Europe producing fully aluminium crash cushions, and the only one with a proven design that truly performs in the field. Engineered for durability and reliability, the TMA-EU 70K sets a new standard for lightweight, high-performance protection.

Table of contents and dimensions	
Transport height without bracket	2129 mm / 7 ft
Installation length without bracket	2129 mm / 7 ft
Width	2300 mm / 7,5 ft
Weight complete installation	Approx. 200 kg / 440 lbs

Note: all these dimensions are approximately, no rights can be derived.

TMA-EU 70K NCHRP 350



**IT MAY LOOK LIKE A SMALL CUSHION...
BUT IT DELIVERS INCREDIBLE STRENGTH AND PROTECTION!**



TMA-EU 100K

One of Verdegro's first TMAs!

TECHNICAL SPECIFICATIONS

- Tested for the EU, according to NCHRP 350 TL-3 (3-50 | 3-51 | 3-52 | 3-53). 2000P tests were done with a 2000 kg / 4409 lbs European Style SUV
- Standard operated from the towing vehicle via a 15 m wired controller
- Two hydraulic rams for raising and lowering the crash cushion
- Galvanised steel structure
- Including test certifications and CE marking
- Geo fencing by Mobilityplanner (optional): visibility in Waze, Flitsmeister, Apple Maps, Here

ABOUT THE TMA-EU 100K

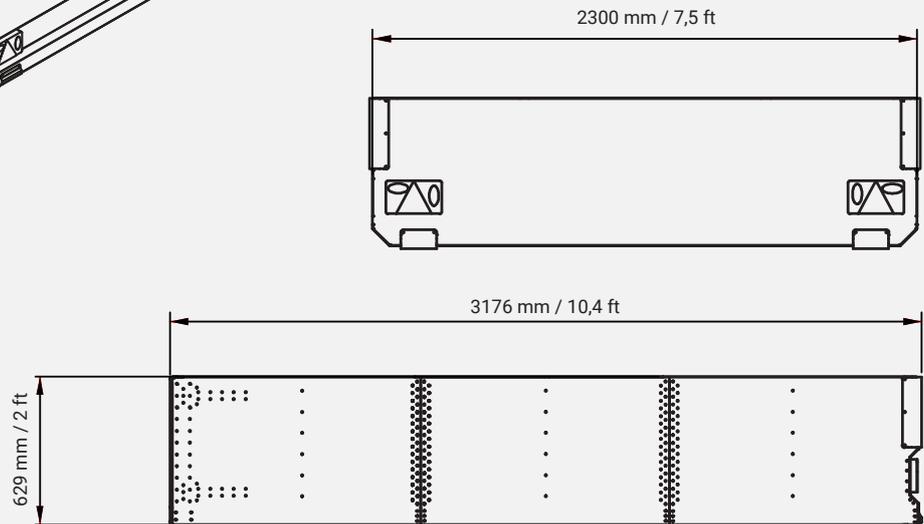
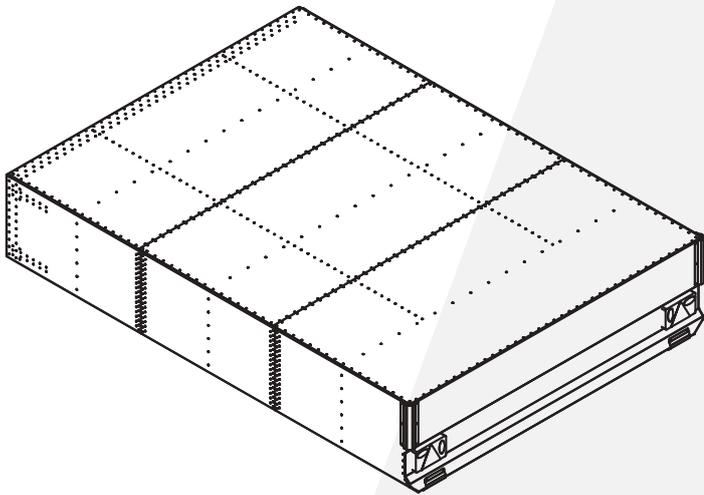
The TMA-EU 100K is fully manufactured in our own factory, allowing complete control over every step of the production process to ensure consistent quality and reliability. Verdegro is the only manufacturer in Europe producing fully aluminium crash cushions, and the only one with a proven design that performs flawlessly in real-world conditions. Our all-aluminium construction guarantees long-lasting durability, eliminating common issues found in conventional designs.

Table of contents and dimensions

Transport height without bracket	3176 mm / 10,4 ft
Installation length without bracket	3176 mm / 10,4 ft
Width	2300 mm / 7,5 ft
Weight complete installation	Approx. 220 kg / 440 lbs

Note: all these dimensions are approximately, no rights can be derived.

TMA-EU 100K NCHRP 350



**WE ONLY USE HIGH QUALITY ALUMINIUM INSIDE
– INSTEAD OF NON-DURABLE PAPER!**





There are many sorts of TMA installations!

WHAT KIND OF DIFFERENT INSTALLATIONS DOES VERDEGRO OFFER?

- 150 degrees rotator: custom build on truck
- 180 degrees rotator: custom build on truck
- Sweeper bracket
- Unimog
- SKID frame TMA

150° ROTATOR



180° ROTATOR



UNIMOG



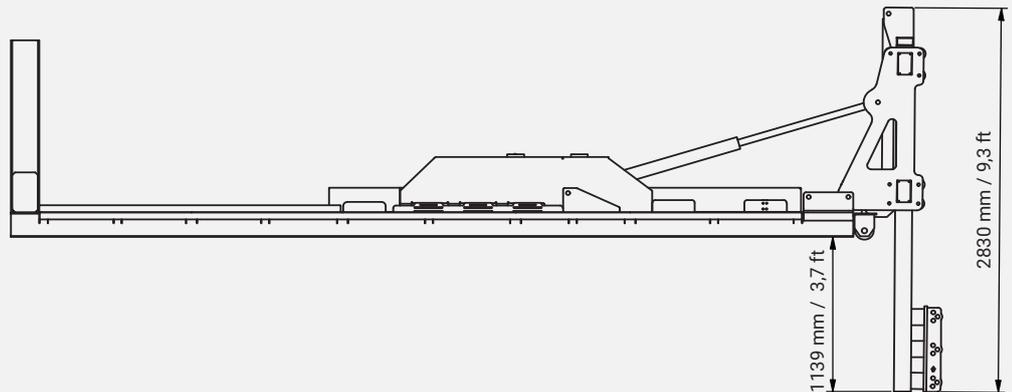
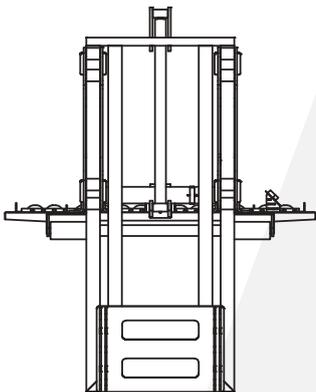
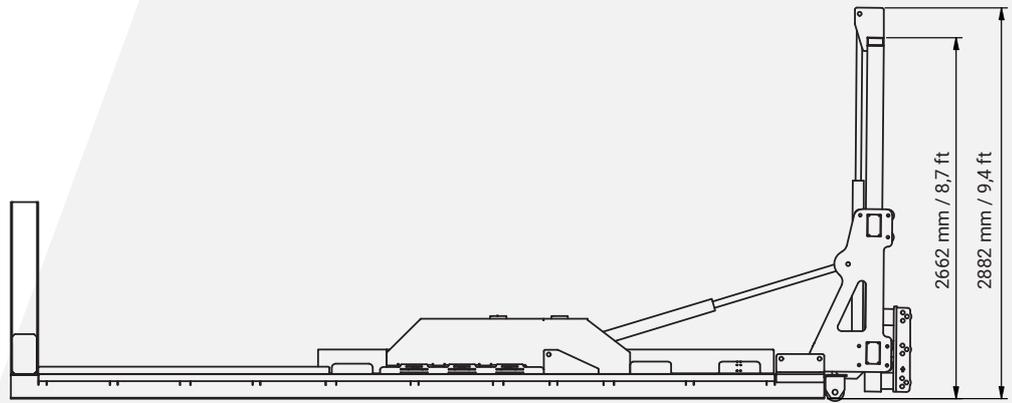
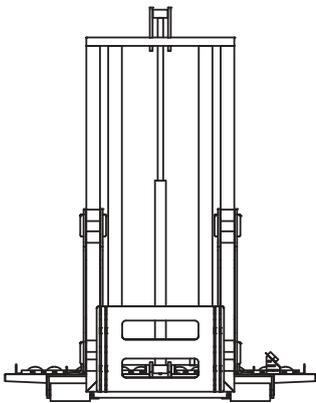
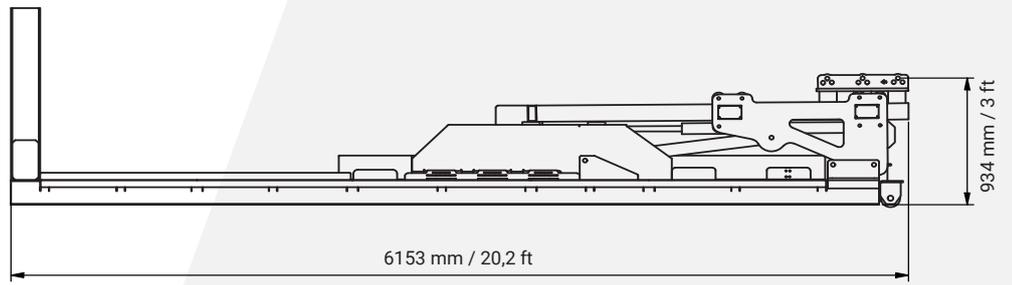
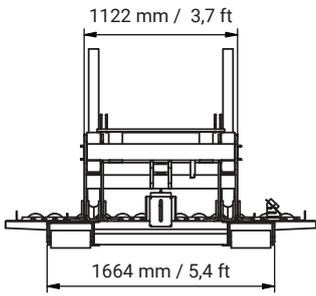
SWEEPER BRACKET



SKID FRAME TMA



SKID FRAME TMA IN DETAIL





The VD-SL230 is named this way because the width of the arrow board is the 2300 mm version.

VD-SL230

TECHNICAL SPECIFICATIONS

- 300 mm LED flashers on top board and on all four corners of the lower board
- 200 mm LED light arrow (Left, Right, Cross)
- Wired in-cabin control for TMA and arrow board
- Hydraulically movable 211 Sign, 1500 mm (Left, Right, Down)
- Hydraulic vertical lift for top arrow board

ABOUT THE VD-SL230

The VD-SL230 arrow board is a reliable and versatile system, widely used in the UAE, Qatar, and across the GCC region. It provides excellent visibility and easy operation for safe and efficient traffic management.

When used with the Verdegro TMA, the VD-SL230 can be operated through the combined wired controller, allowing the user to raise or lower the TMA and select Left Arrow, Right Arrow, or Cross modes.

The handheld controller also includes three extra buttons that can be used for additional functions such as work lights or extra flashers. This means the operator can control everything from one unit while staying focused on the job.

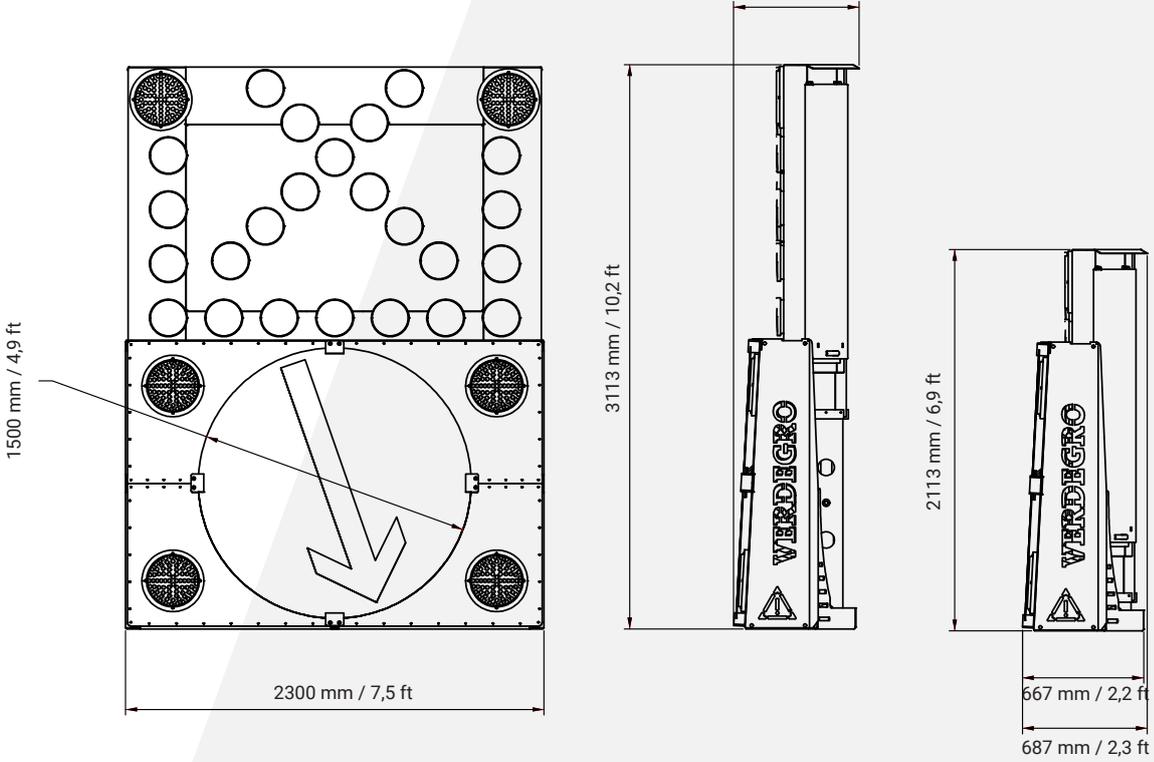
The VD-SL230 is also available as a standalone arrow board, mounted directly on the truck instead of the TMA. In this configuration, it can be equipped with a separate hydraulic power pack, making it an ideal solution for a wide range of vehicle types and operational needs.

Table of contents and dimensions

Transport height	2113 mm / 6,9 ft
Installation length	3113 mm / 10,2 ft
Width	2300 mm / 7,5 ft
Weight complete installation	Approx. 450 kg / 990 lbs

Note: all these dimensions are approximately, no rights can be derived.

VD-SL230 ARROW BOARD



The 2510 mm version!



TECHNICAL SPECIFICATIONS

- 300 mm LED flashers on top board and on all four corners of the lower board
- 200 mm LED light arrow (Left, Right, Cross)
- Wired in-cabin control for TMA and arrow board
- Hydraulically movable 211 Sign, 1500 mm (Left, Right, Down)
- Hydraulic vertical lift for top arrow board

ABOUT THE VD-SL250

The VD-SL250 arrow board is a reliable and high-performance traffic control solution widely used across the UK, UAE, Qatar, and the GCC region.

Designed for seamless integration, the VD-SL250 can be operated through the Verdegro combined TMA and arrow board wired controller when supplied as a complete system. This setup utilizes the TMA's hydraulic system, allowing the operator to raise and lower the TMA and control the left arrow, right arrow, and cross functions directly from one handheld controller.

The controller also features three programmable function buttons that can be assigned to additional tasks such as work lights or extra flashers, ensuring efficient operation and enhanced focus on the job.

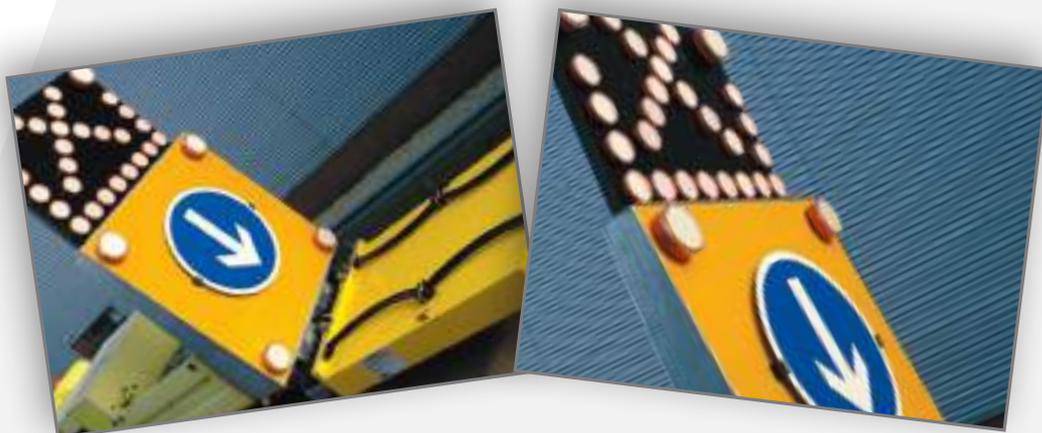
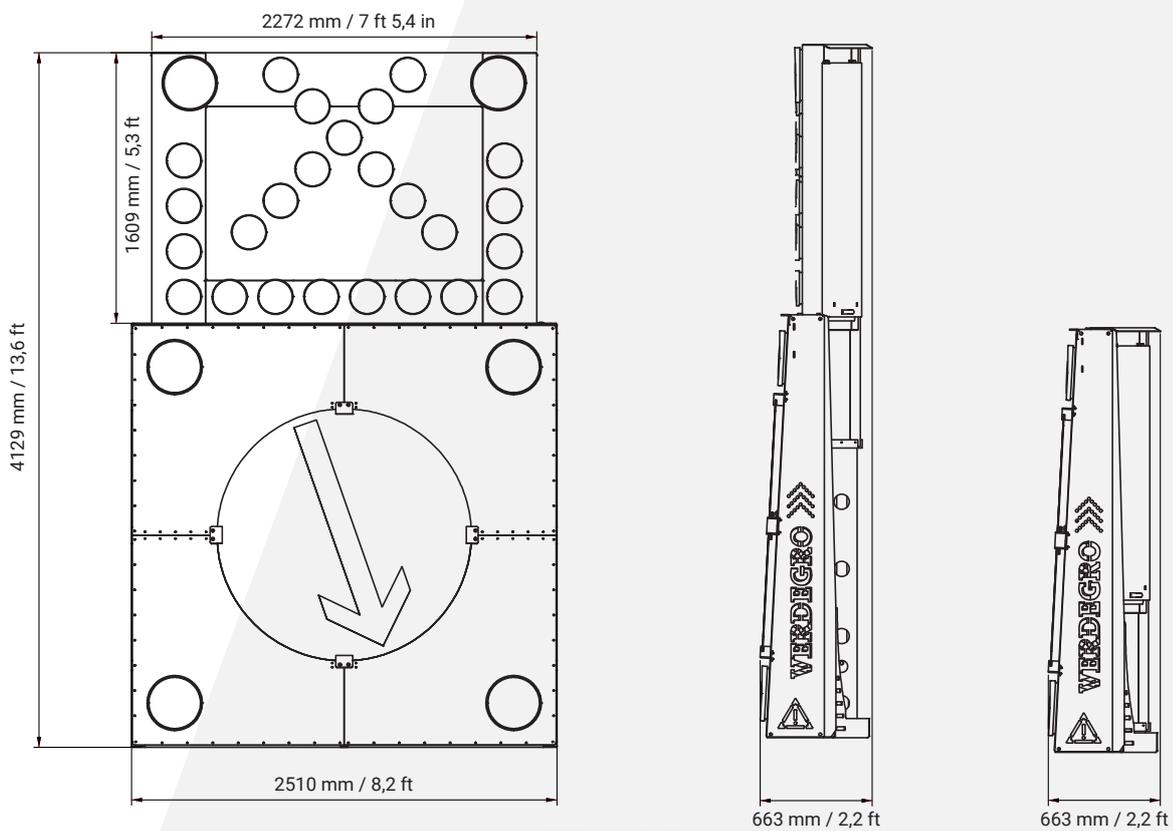
For flexible installation options, the VD-SL250 is also available as a standalone arrow board mounted directly on the vehicle. In this configuration, a separate hydraulic powerpack can be supplied for full operational capability.

Table of contents and dimensions

Transport height	2529 mm / 8,3 ft
Installation length	4129 mm / 13,5 ft
Width	2510 mm / 8,2 ft
Weight complete installation	Approx. 550 kg / 1210 lbs

Note: all these dimensions are approximately, no rights can be derived.

VD-SL250 ARROW BOARD





The VD-SL230 RED-X light board can function either as a standard light board or as a blocker vehicle using the RED-X feature.

VD-SL230 RED-X

TECHNICAL SPECIFICATIONS

Patented design

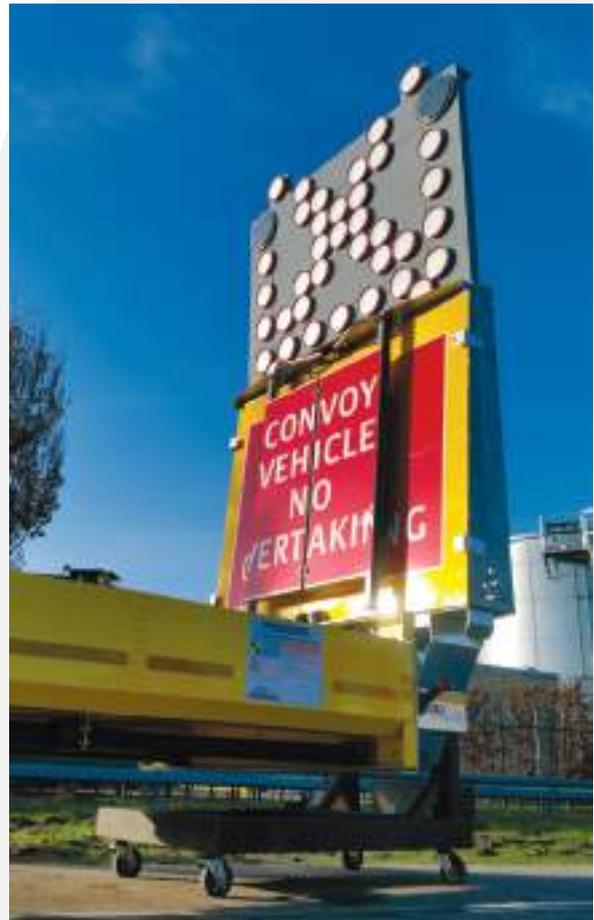
- Compliant with Chapter 8 and IAN 187/15, and approved for use on the Highways England Network (DfT Authorisation 17/05/17 – GT 50/198/0027)
- 200 mm LED arrow board with hydraulically synchronized 610 sign (Blue Arrow) for left, right, down and hard shoulder functions
- Sliding top light board with 200 mm LED lights and 300 mm LED flashers
- Folding lower board: Convoy Vehicle No Overtaking Sign, closing when RED X function is applied
- Operational as standard VD-SL230 light board, with additional RED-X functionality
- Compact Verdegro controller for operating both Verdegro TMA and LED arrow board
- Delivered with full official documentation

MORE INFORMATION ABOUT THE RED-X

The Verdegro VD-SL230 RED-X light board offers unmatched flexibility and ease of use. It can be operated seamlessly with the Verdegro controller, working together with both the Verdegro TMA and the VD-SL230 RED-X when purchased as a complete set, using the TMA's hydraulic pump.

Built entirely in our own factory in Etten-Leur, The Netherlands, the VD-SL230 is delivered with full documentation, instructions, and certifications, ensuring safe and efficient operation.

The LED arrow board features hydraulically synchronized blue arrows and reflective foil designed to meet country-specific requirements. Optional enhancements include the RED-X function and a hydraulic power pack for independent operation, providing complete versatility for every deployment.





TECHNICAL SPECIFICATIONS

- Equipped with 15 amber Verdegro 200mm LED lights, EN12352:2006 + AC:2009 (L8M), 24 Vdc, 290 mA, 7 W
- Weather protection: IP65 rated
- Fully aluminium cabinet, painted in aircraft grey (BS 693)
- Unique multi-voltage 12 Vdc (standard) or 24 Vdc V flash controller suitable for all arrow board configurations
- Standard functions LP15: Arrow Left, Arrow Right, Cross, and Four-Fold (warning) function
- Easy access flash controller cabinet, mounted on the front
- Supplied with a 4-button wired cabin controller as standard
- Easy to install using the integrated mounting frame
- Including instruction manual and CE marking
- High European quality

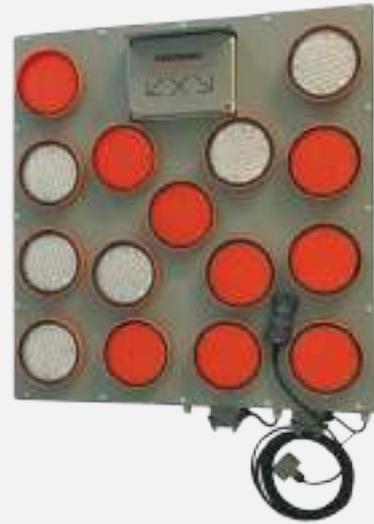
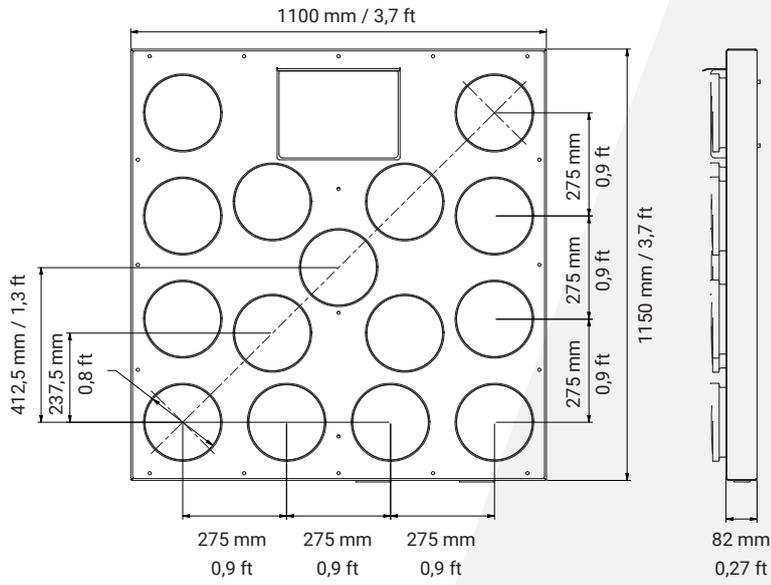
THE LP15: MINI ARROW BOARD

Introducing the Verdegro Mini Arrow Board (LP15), a compact and efficient signaling solution designed to perfectly complement the Verdegro Light Truck Mounted Attenuator (LTMA 70K). With its lightweight construction and robust performance, the LP15 enhances visibility and safety in any work zone.

Measuring 1100 mm / 3,6 ft in width and 1150 mm / 3,8 ft in height, and weighing just 50 kg / 110 lbs, this mini arrow board combines portability with strength. Despite its compact size, it delivers powerful, clear signaling to guide and protect both workers and road users.

The LP15 is easy to operate and can be tailored to your specific needs. Optional features include programmable settings and an advanced flash controller that allows direct connection of work lights to the PCB board. For optimal convenience, the system can be integrated with a combined TMA and LP15 (wired) cabin controller, equipped with extra function buttons for complete and effortless control.

MINI ARROW BOARD



LED LIGHT T-200



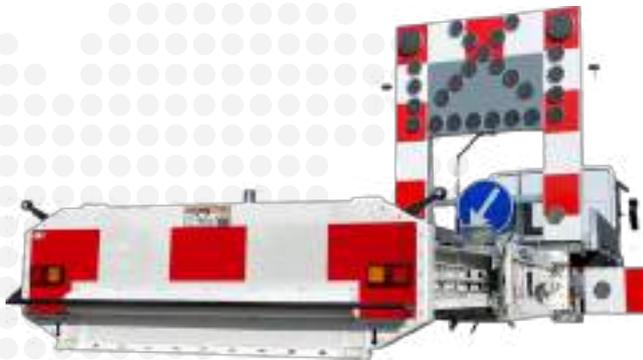
LED LIGHT T-300



USED IN COMBINATION WITH VERDEGRO'S FLASH CONTROLLER



DENMARK



HUNGARY



BELGIUM



GERMANY



FRANCE



THE NETHERLANDS



SLOVENIA



NORWAY



VD-SL230



VD-SL230 RED-X



VD-SL250



LP15



Its straightforward operation and pre-programmed standard working scenarios make it the perfect solution.

LED-LIFT



TECHNICAL SPECIFICATIONS

- LED screen meets the EN12966 standard: 80x80 pixel, 20 mm pitch LED display
- Maintenance-free mast
- Steel parts are standard galvanised
- Power supply: 24 Vdc with 2x 100 A battery bank
- Light sensor for automatic brightness adjustment
- Easy to operate via integrated touchscreen
- Easily accessible and programmable via Verdegro's Mobilityplanner (optional)
- Requires a mandatory VPN SIM card to operate on Verdegro's secure VPN

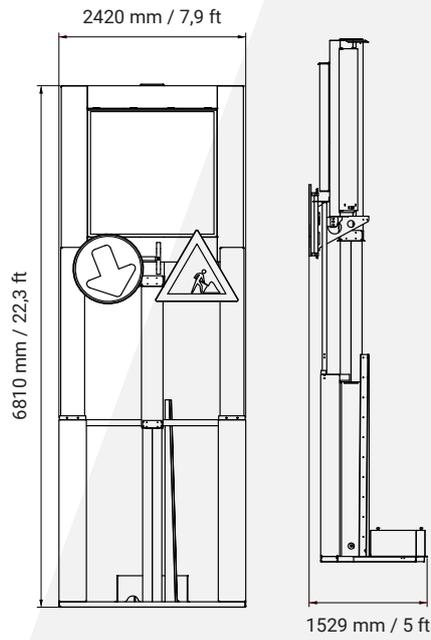
VERDEGRO'S LED-LIFT

The Verdegro Truck Mounted Attenuator (TMA) with elevated signaling offers a cutting-edge solution for enhancing safety and visibility on the road. When combined with the hydraulic LED-Lift mast (add-on), the system can achieve an impressive working height of up to 7 meters, ensuring that signals are clearly visible to approaching traffic from a distance.

The integrated LED display is fully compliant with the EN12966 standard, providing high-quality, reliable signaling under all conditions. The hydraulic LED-Lift elevates both safety and operational effectiveness, making it easier to manage traffic and protect work zones.

This compact and versatile system is designed to improve efficiency in a wide range of scenarios, from routine traffic management to emergency response operations. By combining robust engineering with advanced technology, the Verdegro TMA with LED-Lift mast ensures optimal performance while meeting the strictest safety standards, giving operators confidence and peace of mind on every deployment.

LED-LIFT (ADD-ON)





TECHNICAL SPECIFICATIONS

- Remote controlled operation from the truck cabin
- Two 100 W floodlights for powerful illumination
- High mast extends up to 4 meters
- Easy operation via remote control
- Integrated indicator light on the remote control

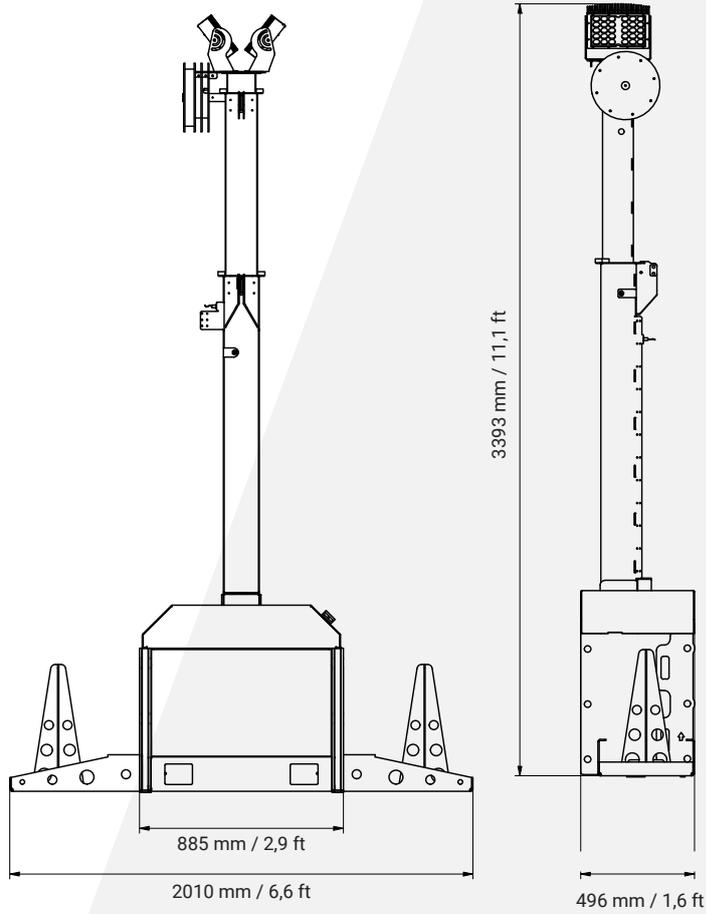
TRUCK LIGHT TOWER INTRODUCTION

The Verdegro Truck Light Tower (TLT) is designed to work seamlessly with your Truck Mounted Attenuator (TMA), providing powerful illumination for your work zone. Equipped with two 100 W floodlights mounted on a mast that extends up to 4 meters, the TLT ensures excellent visibility and enhanced safety during night operations or low-light conditions.

Operation is simple and safe thanks to remote-controlled functionality directly from the truck cabin. For extended use, additional batteries can be integrated into the system.

Our Truck Light Tower combines convenience, performance, and reliability—making it an ideal solution for efficient and well-lit roadwork environments. For more information or custom options, please contact our sales department.

TLT (ADD-ON)



Flexible lane safety – whenever and wherever you need it.

WINGS



TECHNICAL SPECIFICATIONS

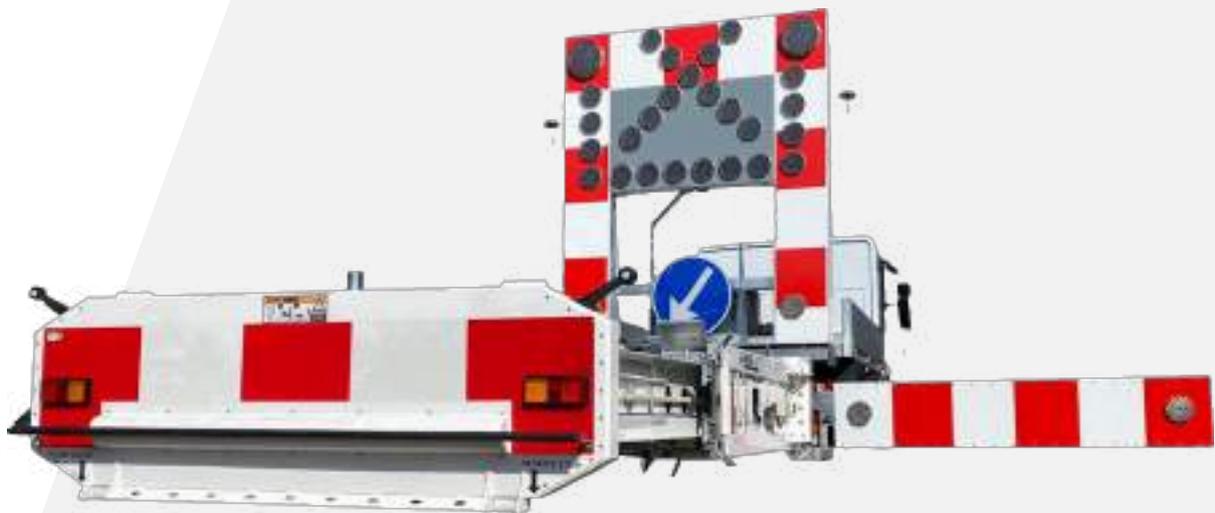
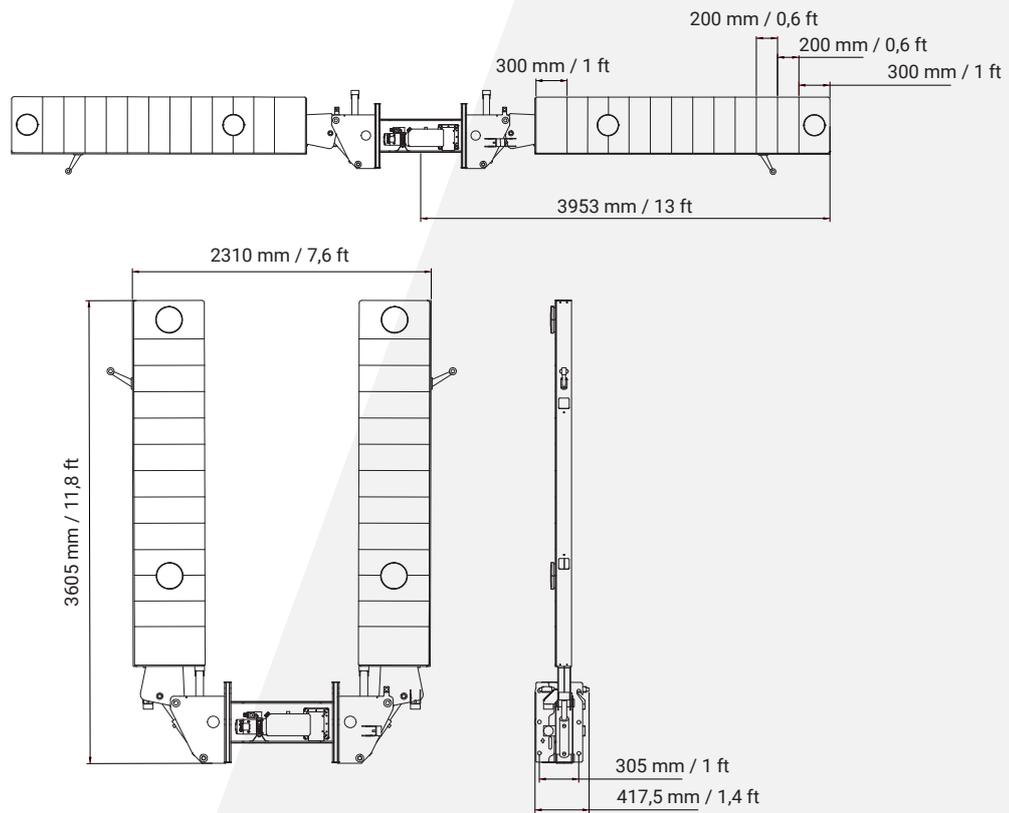
- Independently operated wings for flexible lane closure (1–3 lanes)
- Compatible with all Verdegro Truck Mounted Attenuators (TMAs)
- Robust construction designed for roadwork environments
- Quick deployment and easy operation
- Customization available to suit specific project requirements (optional)

WHAT ARE VERDEGRO'S WINGS?

The Wings (add-on) is a versatile extension for your Truck Mounted Attenuator (TMA), designed to temporarily block one to three lanes at a time, providing enhanced safety for road construction workers. Each wing can be operated independently, giving you the flexibility to adjust lane closures according to the specific requirements of your project.

By combining safety and operational efficiency, the Wings helps protect workers while maintaining smooth traffic flow. This product is part of Verdegro's range of custom solutions, crafted to meet the unique needs of our clients. For more information about this or other custom options, please contact us to explore the possibilities.

WINGS (ADD-ON)



**ENGINEERING
YOUR SAFETY**



4 70 2325

LOBY
rescue

04

TRAFFIC



VARIABLE MESSAGE SIGN TRAILER

VD2-200

P. 106



VARIABLE MESSAGE SIGN HYBRID

VMS-H

P. 108



VARIABLE MESSAGE SIGN SKID

VMS SKID

P. 110



RAIN TRAILER

VD2-170 RAIN

P. 112



RAIN SKID

RAIN SKID

P. 114



VD1-PL

Arrowtrailer

P. 116



VD2-PL

Arrowtrailer

P. 118



VD2-PL CHEVRON

Arrowtrailer Chevron

P. 120



ADVANCE WARNING TRAILER

VD1-VW

P. 122



SOLAR MESSAGE TRAILER

SMT 2.0

P. 124



SOLAR MESSAGE TRAILER RAIN

SMT-RAIN

P. 126



SOLAR MESSAGE UNIT

SMU

P. 128



MLS SYSTEM

Mobile Lane Signaling System

P. 130



ROAD INFORMATION SYSTEM

RIS

P. 132



AUTOcone 2.0

AC

P. 134



INCIDENT MANAGEMENT TRUCK

IMT

P. 136



DIRT GRABBER

VDL1800

P. 138



RUMBLE MAT LAYER

RML

P. 140



RUMBLE MAT LAYER CHASSIS MOUNTED

RML-CM

P. 142



RUMBLE MAT LAYER CHASSIS MOUNTED SINGLE

RML-CMS

P. 143



SPECIALS

Custom build products

P. 144



TECHNICAL SPECIFICATIONS

Construction & Design

- Completely closed trailer design
- Trailer weight: approx. 1850 kg / 4078 lbs
- Trailer equipped with two torsion axles, 1350 kg / 2976 lbs each, and fitted with legally required driving lights
- All hatches are easy to open and equipped with reliable locks and gas pressure springs
- One front hatch, lockable with swing locks (with key lock or push button)
- Galvanised trailer, arrow board frame coated in any desired RAL colour

Operation & Setup

- Fully hydraulic trailer with hydraulic outriggers and hydraulic nose wheel

Power supply & Battery system

- AGM battery set providing 700 Ah at 24 Vdc: absolutely maintenance-free and completely leak-proof
- 990 Wp solar panels mounted on the trailer for charging the battery pack
- Industrial battery charger with built-in wall socket output

Communication & Control

- 4G modem including software for remote programming and operation via the user-friendly, free Verdegro portal: www.mobilityplanner.com (excluding mandatory monthly data plan and SIM card with VPN connection)

VD2-200

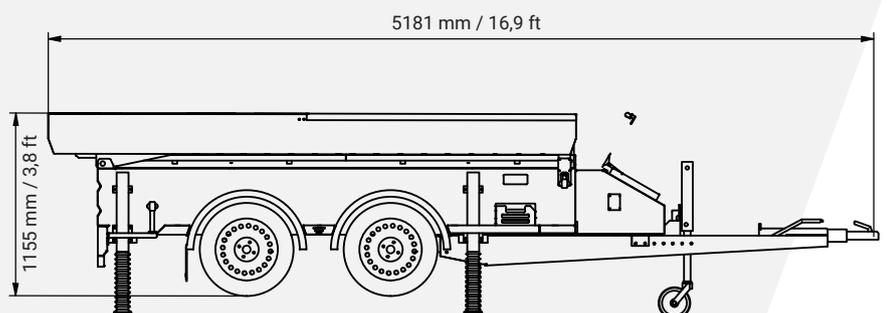
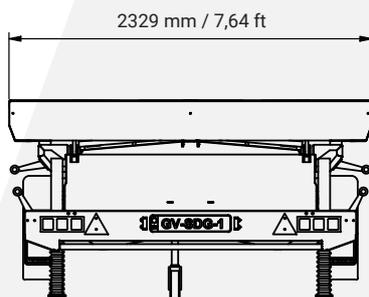
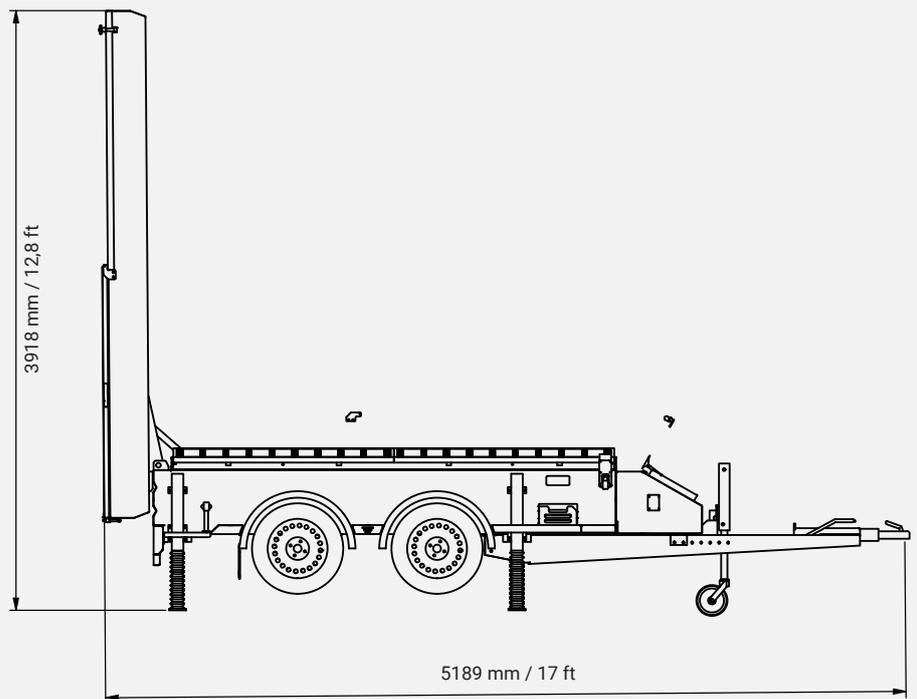
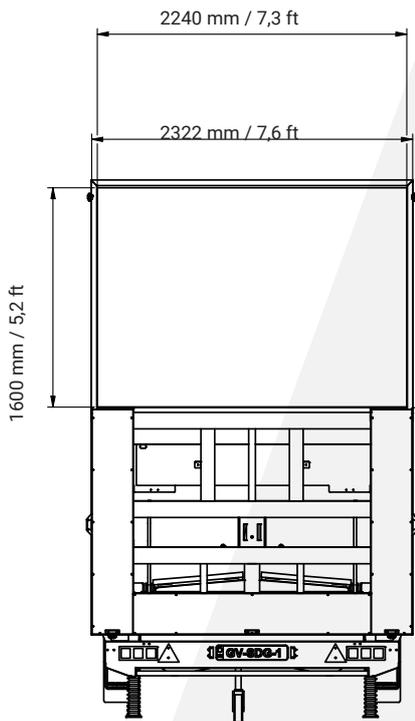
The VD2-200 is a full-matrix VMS trailer that can be used as either an arrow board or a chevron trailer, making it a versatile and multi-purpose unit.

OPTIONAL

- Andreas strip set
- Spare wheel included
- Wireless remote control unit
- Touchscreen computer mounted inside the trailer cabinet



VMS TRAILER (VD2-200)





TECHNICAL SPECIFICATIONS

Construction & Design

- Chassis constructed from MIG-welded steel and protected with hot-dip galvanisation according to EN ISO 1461
- The side walls are made of hot-dip galvanised steel
- Two supporting wedges are mounted on the trailer side walls

Trailer Dimensions

- The trailer has a useful load capacity of 210 kg / 462 lbs
- The total width of the trailer is 2200 mm
- The side walls are 350 mm high on the outside and 310 mm on the inside
- The loading area measures 1800 mm in length and 1350 mm in width
- The folded height is 3.5 m from the ground to the highest point

- When fully raised, the height is 6.5 m from the ground to the top of the LED display

Axles, Wheels & Suspension

- Equipped with double braked rubber torsion suspension axles
- Four wheels plus one spare wheel, size 5Jx13 inch
- The spare wheel is mounted at the rear of the trailer
- Jockey wheel is front-mounted, manually adjustable, with turnover and locking function

Drawbar & Coupling

- The drawbar is vertically adjustable and braked, including a parking brake
- Supplied couplings include a standard B50X ball, optional DIN40 or DIN50 couplings are available

Power supply & Battery system

- AGM battery set providing 200 Ah

Lighting & Electrical System

- Approved multi-voltage LED driving lights suitable for 12 Vdc or 24 Vdc

Communication & Control

- 4G modem including software for remote programming and operation via the user-friendly, free Verdegro portal: www.mobilityplanner.com (excluding mandatory monthly data plan and SIM card with VPN connection)

OPTIONAL

- Touchscreen computer mounted inside the trailer cabinet

TECHNICAL INFORMATION LED VARIABLE MESSAGE SIGN

Construction & Display

- The housing is constructed from MIG/TIG welded aluminium
- Display dimensions: 1920 mm (W) × 1280 mm (H)
- Full-colour and full-matrix LED display
- Matrix resolution of 96 pixels (W) × 64 pixels (H)
- Pixel pitch of 20 mm

Control & Software

- Automatic brightness control
- 4G modem including software for remote programming and operation is user-friendly

- Free Verdegro portal: www.mobilityplanner.com (excluding mandatory monthly data plan and SIM card with VPN connection)

Standards & Voltage

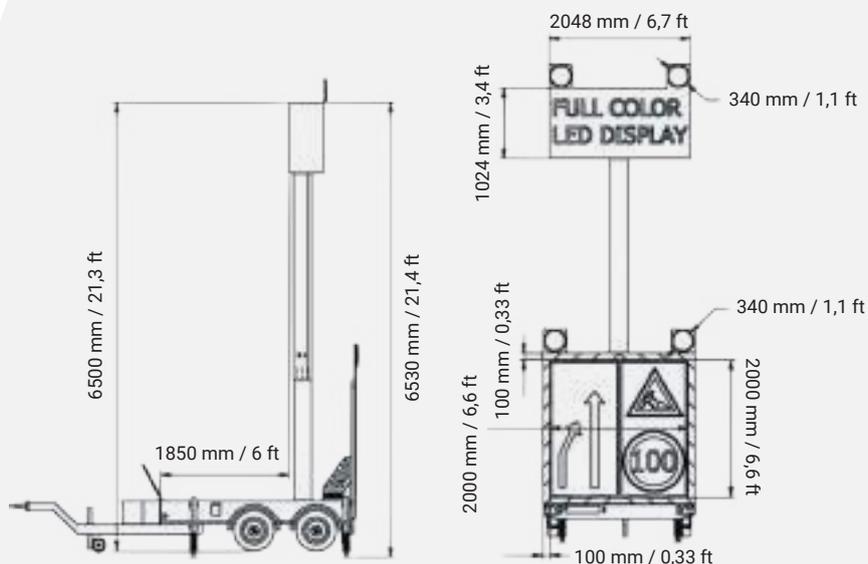
- Optical testing according to NEN-EN 12966, full test report included

Flash Lights

- Two round LED flash lights (340 mm each) mounted on the upper edges of the VMS board according to class L9H / L9M



VMS-H



VMS SKID



TECHNICAL SPECIFICATIONS

Construction & Design

- SKID weight approx. 1500kg / 3306 lbs
- SKID with a width of 2300 mm
- Complete hydraulic setup with locking system on trailer
- Aluminium components powder coated in any desired RAL colour
- Fully galvanised chassis

LED Display System

- Energy-efficient full-colour and full-matrix LED display with 80 x 80 pixels and a 20 mm pixel pitch, compliant with EN12966
- Screen size can be custom-built within this solution

Hydraulic System & Operation

- Fully hydraulic operation and locking system
- Easy to operate via wireless remote control from the truck cabin
- Complete system designed to be operated by a single person

Power supply & Battery system

- AGM battery bank providing 600 Ah at 24 Vdc, completely maintenance-free and leak-proof
- Includes battery charge indicator light

OPTIONAL

- Programmable through the SKID using VPN or fixed computer
- Side-mounted beacons for the arrow board

VMS SKID





VD2-170 RAIN

TECHNICAL SPECIFICATIONS

Construction & Design

- Narrow trailer design with a total width of 1700 mm for use on emergency lanes
- Completely closed trailer design
- Trailer weight: approx. 1800 kg / 3968 lbs
- Equipped with two torsion spring axles, each rated at 1350 kg / 2976 lbs
- All hatches are easy to open and equipped with reliable locks and gas pressure springs
- The front cabinet is lockable with a turnkey lock
- The chassis is fully galvanised, and aluminium components are coated in any desired RAL colour

Display & LED System

- Energy-efficient full-colour and full-matrix LED display with 80 × 160 pixels and a 20 mm pixel pitch, compliant with EN12966
- Integrated pixel failure detection system
- Equipped with a unique, easily interchangeable large LED tile

Hydraulic System

- Fully hydraulic trailer featuring hydraulic outriggers and display locking for fast deployment
- The power pack is mounted inside the trailer cabinet

Power supply & Battery system

- AGM battery pack providing 400 Ah at 24 Vdc, completely maintenance-free and leak-proof
- Industrial battery charger with built-in wall socket output

Lighting & Electrical System

- Approved multi-voltage LED driving lights suitable for 12 Vdc or 24 Vdc

Communication & Control

- 4G modem including software for remote programming and operation via the user-friendly, free Verdegro portal: www.mobilityplanner.com (excluding mandatory monthly data plan and SIM card with VPN connection)

OPTIONAL

- Touchscreen computer mounted inside the trailer cabinet
- Rotatable frame (horizontal)
- Hybrid model
- Diesel model

THE VD2-170 RAIN IS ALSO AVAILABLE AS:

Hybrid model

The hybrid version features a fully integrated diesel generator combined with a solar power system built into the lockable shutters. It includes a Kubota Z482 two-cylinder water-cooled diesel engine with a DC generator and an extra-large 250-litre diesel tank integrated into the trailer chassis.

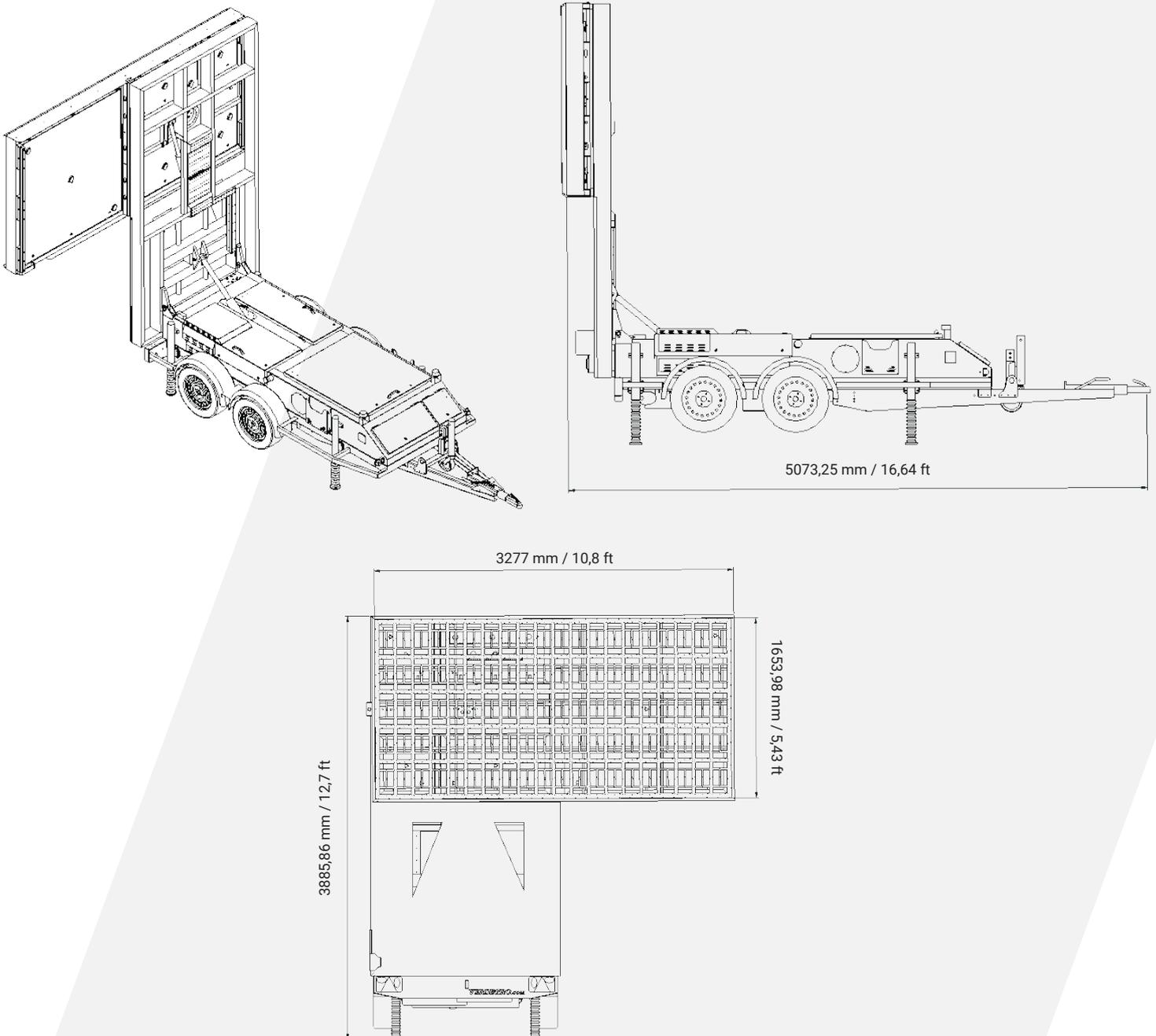
Diesel model

The diesel version is powered solely by a Kubota Z482 two-cylinder water-cooled diesel engine with a DC generator. It also includes an extra-large 250-litre diesel tank integrated into the trailer chassis.

Note

Only the Diesel and Hybrid versions are suitable for continuous operation. The Solar version (standard model) must be recharged regularly using a grid-connected battery charger.

VD2-170 RAIN





TECHNICAL SPECIFICATIONS

Construction & Design

- Narrow SKID design with a total width of 1700 mm
- SKID weight approx. 900 kg / 1984 lbs
- All doors and covers are easy to open, equipped with reliable locks and extenders
- The chassis is fully galvanised, and aluminium components are powder-coated in any desired RAL colour

Display & LED System

- Energy-efficient full-colour and full-matrix LED display with 80 x 160 pixels and a 20 mm pixel pitch, compliant with EN12966

Hydraulic System

- Full hydraulic setup and locking system for secure mounting on the trailer

Power supply & Battery system

- AGM battery pack providing 200 Ah at 24 Vdc, completely maintenance-free and leak-proof
- Industrial battery charger with built-in wall socket output
- Battery charge indicator light

Communication & Control

- 4G modem including software for remote programming and operation via the user-friendly, free Verdegro portal: www.mobilityplanner.com (excluding mandatory monthly data plan and SIM card with VPN connection)

RAIN SKID

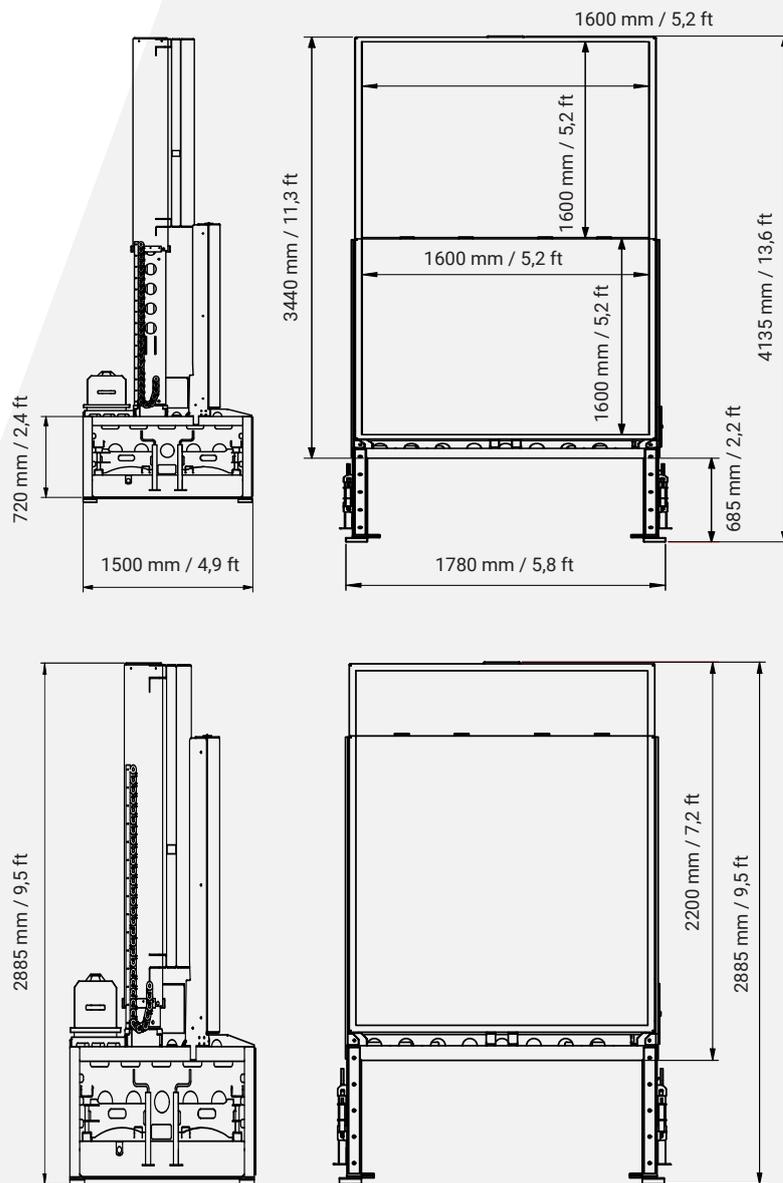
With the Verdegro RAIN SKID set, you can quickly and easily deploy up to three VMS warning skids along the roadside to protect workers ahead. In the event of an incident, the units can be set up within minutes and programmed effortlessly at the push of a button.

OPTIONAL

- Touchscreen computer mounted inside the SKID



RAIN SKID





VD1-PL

TECHNICAL SPECIFICATIONS

Construction & Design

- Trailer fitted with one torsion spring axle rated at 1350 kg / 2976 lbs
- Maximum loaded weight: approx. 1350 kg / 2976 lbs
- Equipped with legally required driving lights, braking system, and parking brake
- Fitted with a lockable front control box, complete with hinges and double-bit locks
- Storage compartment for Andreas strips (rumble strips) accessible from the side of the trailer (rumble strips not included)
- The chassis is fully galvanised, and aluminium components are powder-coated in any desired RAL colour

Arrow Board & Display System

- Arrow board fitted with 24 Vdc LED lamps, available in rotatable or fixed configurations. Compliant with EN12353 guidelines and equipped with an automatic light dimmer

Hydraulic / Manual System

- Hydraulic arrow board, foldable for transport
- Synchronized hydraulic rotation for both the LED arrow board and the traffic sign board (Ø 900 / 1000 mm)
- Manual jockey wheel for easy manoeuvring
- Four extendable manual support legs for stability

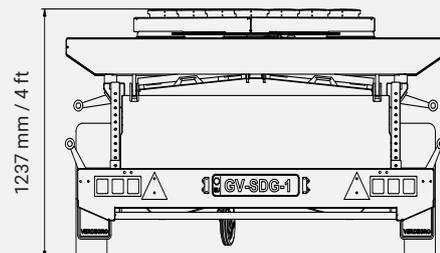
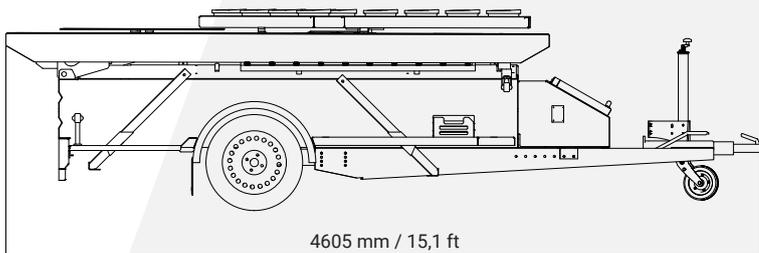
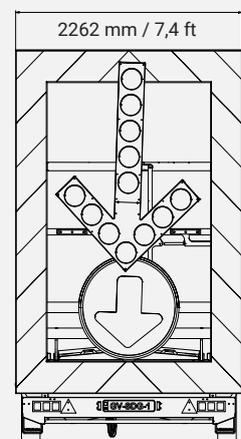
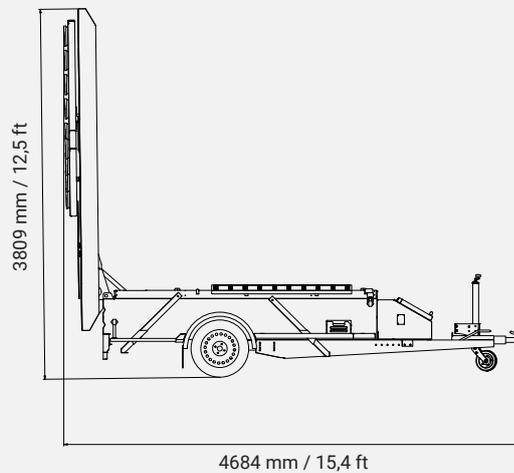
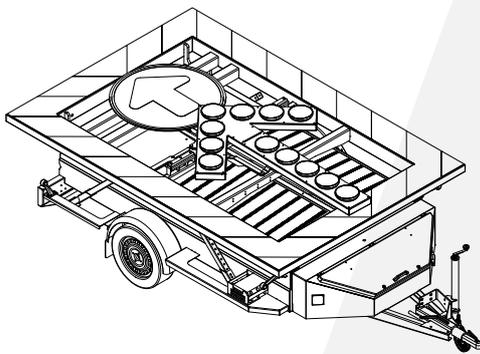
Power supply & Battery system

- Solar power system rated at 280 Wp, including a 20 A IP65 solar charge controller with display
- Four maintenance-free AGM batteries, each 100 Ah / 24 Vdc (total capacity 400 Ah)
- 175 A Anderson charging plug mounted at the front of the trailer
- Industrial battery charger with integrated grid connection and a 15 m charging cable

OPTIONAL

- Andreas strip set
- Wireless remote-control unit
- Optionally equipped with spare tyre

VD1-PL





TECHNICAL SPECIFICATIONS

Construction & Design

- Trailer fitted with 2 torsional sprung axles rated at 1350 kg / 2976 lbs each
- Maximum loaded weight: approx. 1500 kg / 3306 lbs
- Equipped with legally prescribed driving lights, braking system, and parking brake
- Fully galvanised chassis
- Body parts powder coated in your desired colour or in accordance with country specifications
- Frame built according to country specifications
- Storage box for Andreas strips (rumble strips) accessible from the side of the trailer (rumble strips not included)

Arrow Board & Display System

- Arrow board frame hydraulically foldable, fitted with retro-reflective foil class 3
- Arrow board fitted with 24 Vdc LED lamps, available in rotatable or fixed configurations. Compliant with EN12353 guidelines and equipped with an automatic light dimmer
- Arrow and sign D2 (white arrow on blue sign) (Ø 1000 mm) hydraulically rotatable

Hydraulic System

- Four extendable hydraulic support jacks for maximum stability
- Hydraulic jockey wheel for easy manoeuvring

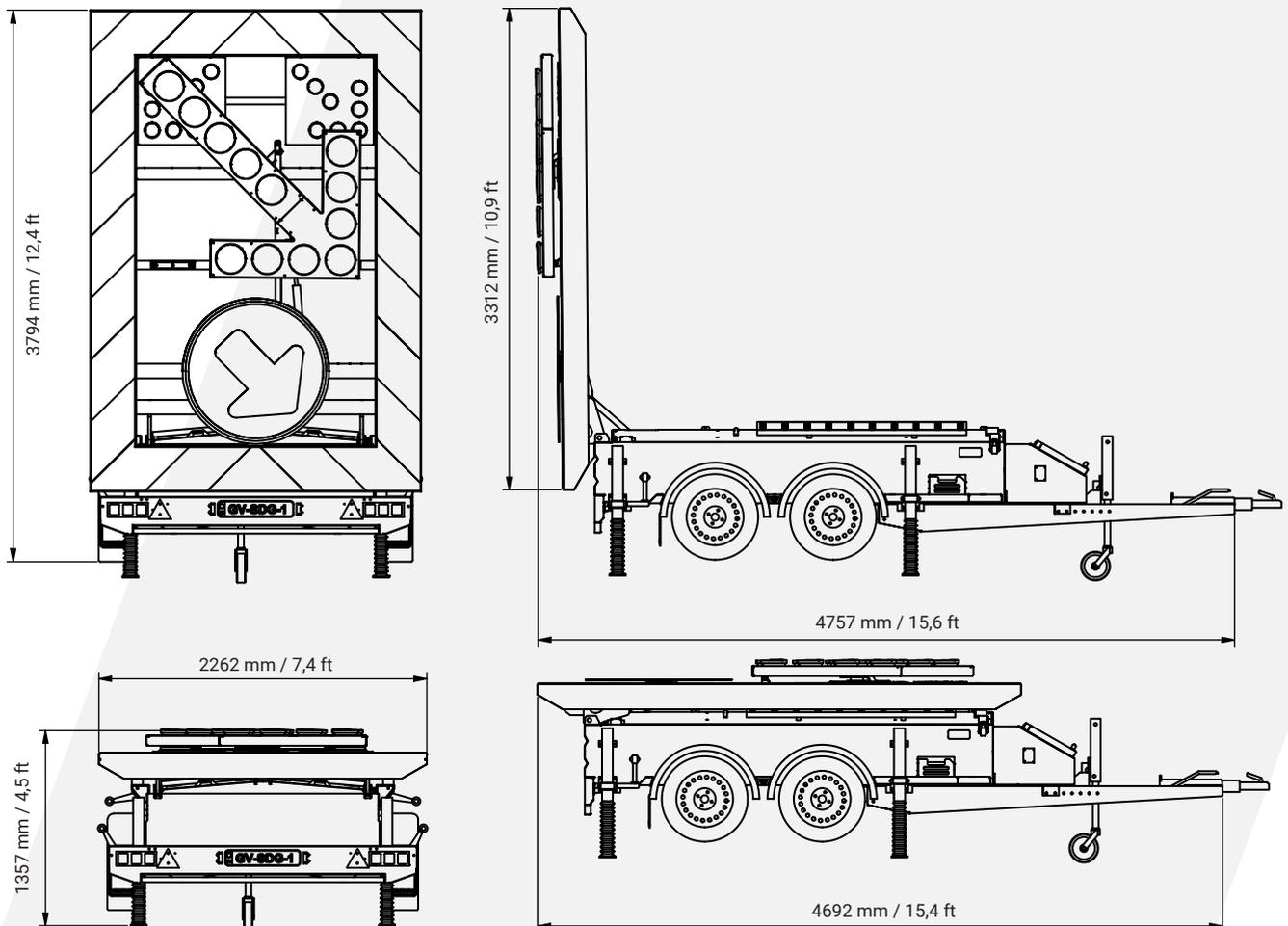
Power supply & Battery system

- Solar power system rated at 280 Wp, including 20 A IP65 solar charge controller with display
- Eight maintenance-free AGM solar batteries, each 100 Ah / 12 Vdc (total capacity 800 Ah)
- 175 A Anderson charging plug mounted at the front of the trailer
- Industrial battery charger with built-in wall socket output

OPTIONAL

- Available as a Chevron design
- Andreas strip set
- Wireless remote-control unit
- Optionally equipped with spare tyre
- Integrated Mobitrack

VD2-PL





VD2-PL CHEVRON

TECHNICAL SPECIFICATIONS

Construction & Design

- Trailer fitted with 2 torsional sprung axles rated at 1350 kg / 2976 lbs each
- Maximum loaded weight: approx. 1500 kg / 3306 lbs
- Equipped with legally prescribed driving lights, braking system, and parking brake
- Fully galvanised chassis
- Body parts powder coated in your desired colour or in accordance with country specifications
- Frame built according to country specifications
- Storage box for Andreas strips (rumble strips) accessible from the side of the trailer (rumble strips not included)

Arrow Board & Display System

- Chevron arrow board frame hydraulically foldable, fitted with retro-reflective foil class 3
- Chevron arrow board fitted with 24 Vdc LED lamps (35 pieces), available in rotatable or fixed configurations. Compliant with EN12353 guidelines and equipped with an automatic light dimmer
- Arrow and sign D2 (white arrow on blue sign) (Ø 1000 mm) hydraulically rotatable

Hydraulic System

- Four extendable hydraulic support jacks for maximum stability
- Hydraulic jockey wheel for easy manoeuvring

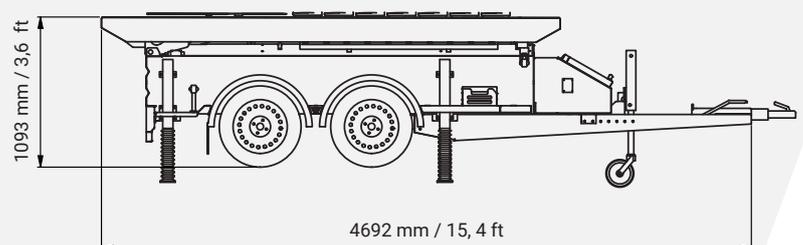
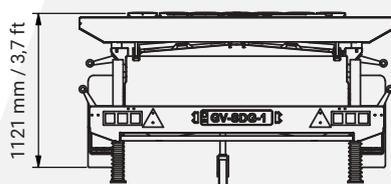
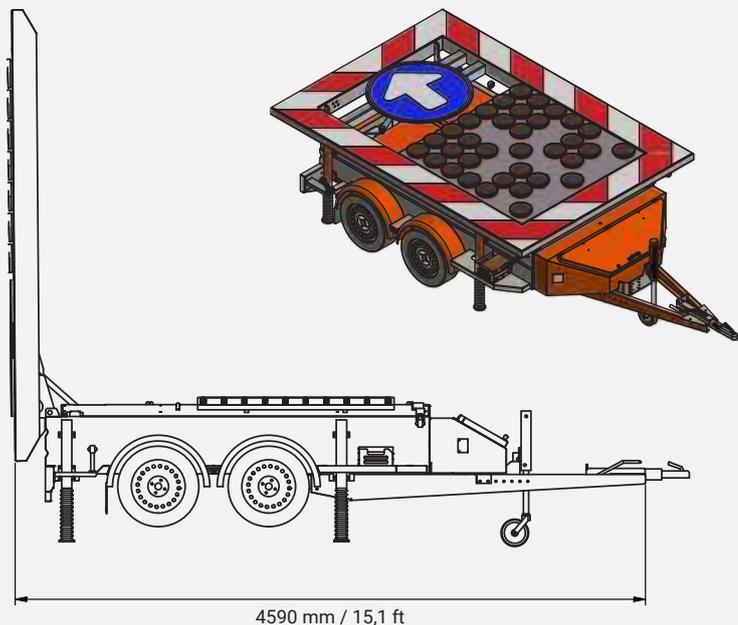
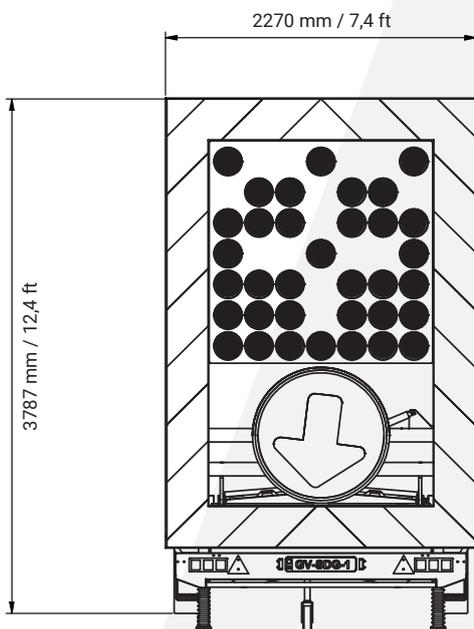
Power supply & Battery system

- Solar power system rated at 280 Wp, including 20 A IP65 solar charge controller with display
- Eight maintenance-free AGM solar batteries, each 100 Ah / 12 Vdc (total capacity 800 Ah)
- 175 A Anderson charging plug mounted at the front of the trailer
- Industrial battery charger with built-in wall socket output

OPTIONAL

- Andreas strip set
- Wireless remote-control unit
- Optionally equipped with spare tyre
- Integrated Mobitrack

VD2-PL CHEVRON





TECHNICAL SPECIFICATIONS

Construction & Design

- Trailer fitted with 1 torsion spring axle rated at 1350 kg / 2976 lbs, with overrun brake
- Trailer weight (empty): 950 kg / 2094 lbs
- Maximum permitted total weight (on registration): 1350 kg / 2976 lbs
- Equipped with legally required driving lights including rear fog lamp
- Trailer finished in RAL 1016 or in accordance with country specifications

Hydraulic System & Operation

- Fully hydraulically operated
- Single-acting (pulling) spring return support jacks and nose wheel
- Hydraulically adjustable action window

- Hydraulic-electric power pack rated at 1.6 kW
- Action window movable up to 45 m/h

Action Window

- Action window equipped with four alternating LED lights in accordance with Dutch CROW specifications
- Control unit with automatic brightness control, EN12353 approved
- Action window fitted with retro-reflective frame edges and folding sign "moving barrier", all in diamond grade foil class 3
- Mounted sign booklet

Power supply & Battery system

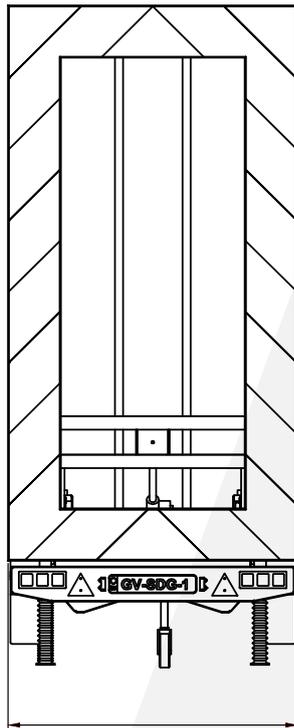
- Battery bank 400 Ah / 12 Vdc, AGM, completely maintenance-free and sealed
- Provides at least 120 hours of alternating lighting (excluding hydraulic consumption)
- 10-pole plug for operation from towing vehicle

OPTIONAL

- Andreas strip set

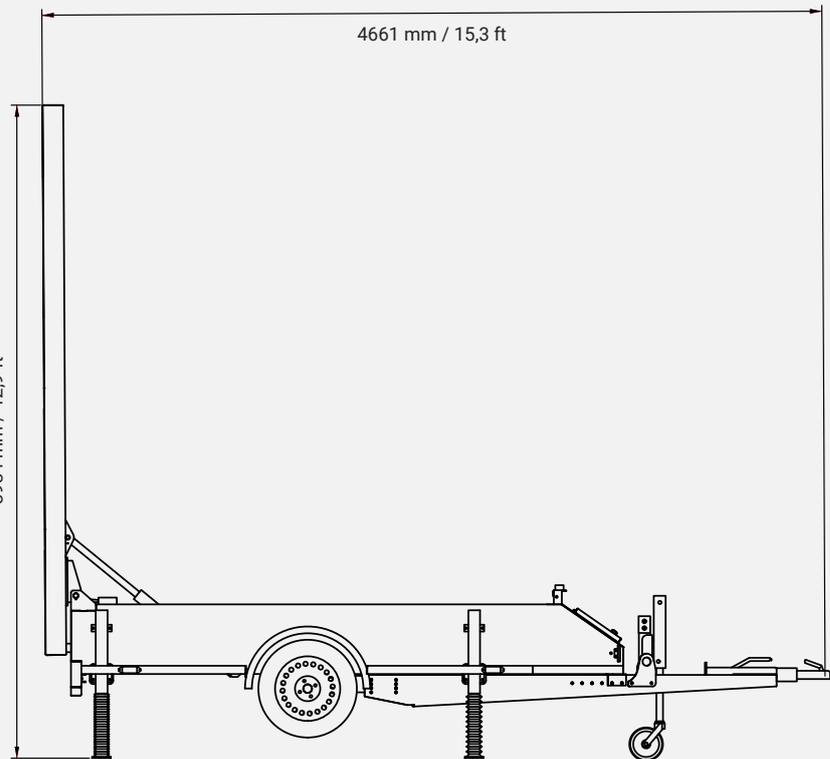
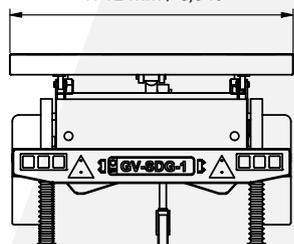


VD1-VW



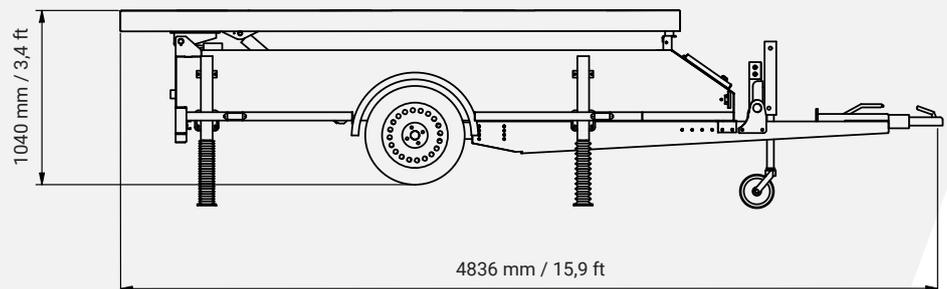
1712 mm / 5,6 ft

1712 mm / 5,6 ft



4661 mm / 15,3 ft

3934 mm / 12,9 ft



4836 mm / 15,9 ft

1040 mm / 3,4 ft



TECHNICAL SPECIFICATIONS

Construction & Design

- Completely closed trailer design
- Trailer weight: approx. 1400 kg / 3086 lbs
- Equipped with one torsion spring axle rated at 1500 kg / 3306 lbs
- All hatches are easy to open and equipped with reliable locks and gas pressure springs
- The front cabinet is lockable with a turnkey lock
- The chassis is fully galvanised, and aluminium components are coated in any desired RAL colour

Hydraulic System

- Fully hydraulic trailer featuring hydraulic outriggers and display locking for fast deployment
- The power pack is mounted inside the trailer cabinet
- Manually operated nose wheel, hydraulic operation optional

Display & LED System

- Display resolution of 64x64 pixels with a 20 mm pixel pitch, compliant with EN12966
- Equipped with a unique, easily interchangeable large LED tile

Power Supply & Battery System

- AGM battery pack providing 600 Ah at 24 Vdc, completely maintenance-free and leak-proof
- Solar system with a total capacity of 1200 Wp (900 Wp top deck + 400 Wp bottom deck)
- Industrial battery charger with built-in wall socket output

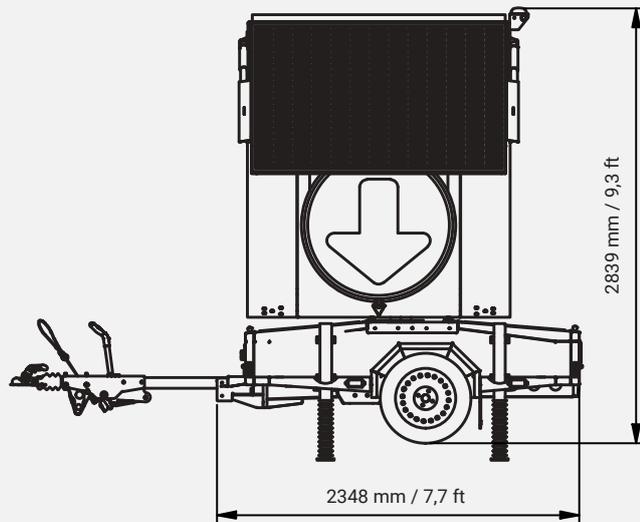
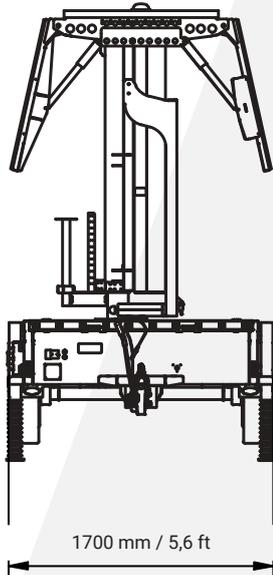
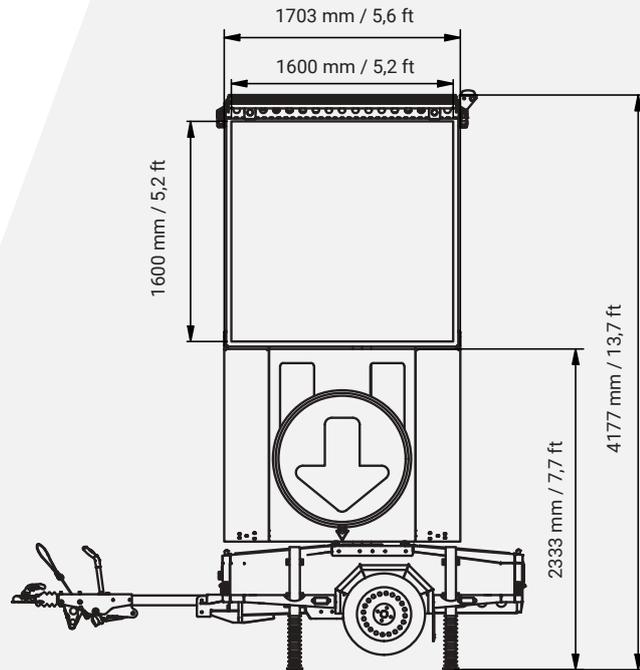
Lighting & Electrical System

- Approved multi-voltage LED driving lights suitable for 12 Vdc or 24 Vdc

Communication & Control

- 4G modem including software for remote programming and operation via the user-friendly, free Verdegro portal: www.mobilityplanner.com (excluding mandatory monthly data plan and SIM card with VPN connection)

SMT 2.0



OPTIONAL

- EN 12966 certified: upgrade display size to 80 × 80 pixels 20mm full colour
- EN 12966 certified: upgrade display size to 96 × 80 pixels 20mm full colour
- Spare LED tile (tile replace system)
- Undersign foil frame with static traffic sign
- Drawbar lock with bracket and height-adjustable drawbar
- Spare tyre
- Storage compartment for three rumble mat strips
- Touchscreen computer mounted inside the trailer cabinet
- TÜV individual homologation for EU licence plate registration



SMT-RAIN

TECHNICAL SPECIFICATIONS

Construction & Design

- Narrow trailer design with a total width of 1700 mm
- Trailer weight approx. 1000 kg / 2204 lbs
- All doors and covers are easy to open, equipped with reliable locks and extenders
- The chassis is fully galvanised, and aluminium components are powder-coated in any desired RAL colour

Display & LED System

- Energy-efficient full-colour and full-matrix LED display with 80 × 160 pixels and a 20 mm pixel pitch, compliant with EN12966

Hydraulic System

- Full hydraulic setup and locking system for secure mounting on the trailer

Power supply & Battery system

- AGM battery pack providing 300 Ah at 24 Vdc, completely maintenance-free and leak-proof
- Industrial battery charger with built-in wall socket output

Communication & Control

- 4G modem including software for remote programming and operation via the user-friendly, free Verdegro portal: www.mobilityplanner.com (excluding mandatory monthly data plan and SIM card with VPN connection)

SMT-RAIN

This unique trailer has been specially developed for vehicles with a low towing capacity. Its dimensions are designed specifically for road construction use and make it ideal for mobile roadworks.

OPTIONAL

- Touchscreen computer mounted inside the SKID

SMT-RAIN





TECHNICAL SPECIFICATIONS

Construction & Design

- Weight approx. 3300 kg / 6613 lbs
- Including additional ballast weight, concealed from view
- Overall dimensions: 2200 mm (W) × 1480 mm (D) × 2550 mm (H)
- Standard hydraulic high sliding system with a height up to 6.5 m
- Manually rotatable construction with approx. 220° rotation (±110° left and right from center)
- Fully enclosed control box
- All compartments easily accessible and fitted with proper locks
- Designed for handling by forklift or crane, equipped with forklift pockets and certified lifting points

Display & LED System

- Standard matrix size: 80 × 80 pixels (other matrix sizes available on request), with a 20 mm pixel pitch, compliant with EN12966
- Full-colour and full-matrix LED display for both text and symbol configurations
- Supplied with user-friendly software package: 4G modem including software for remote programming and operation via the user-friendly, free Verdegro portal: www.mobilityplanner.com (excluding mandatory monthly data plan and SIM card with VPN connection)

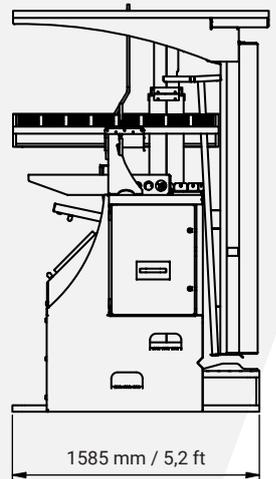
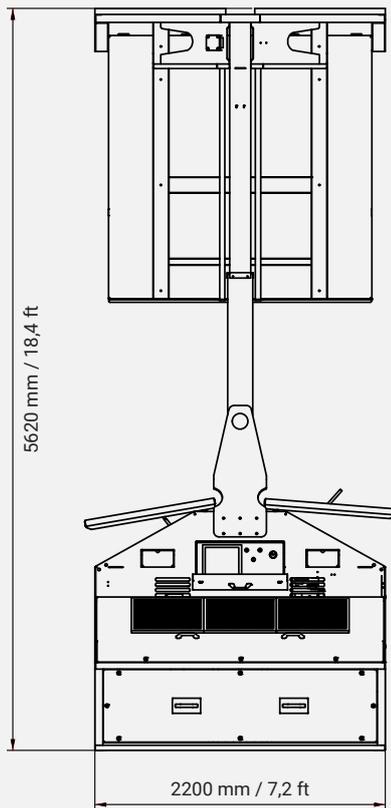
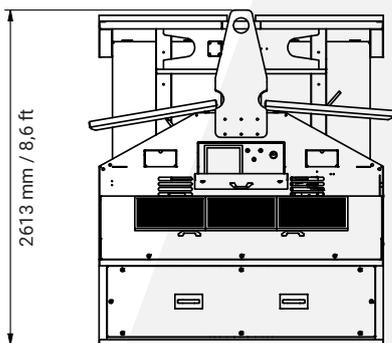
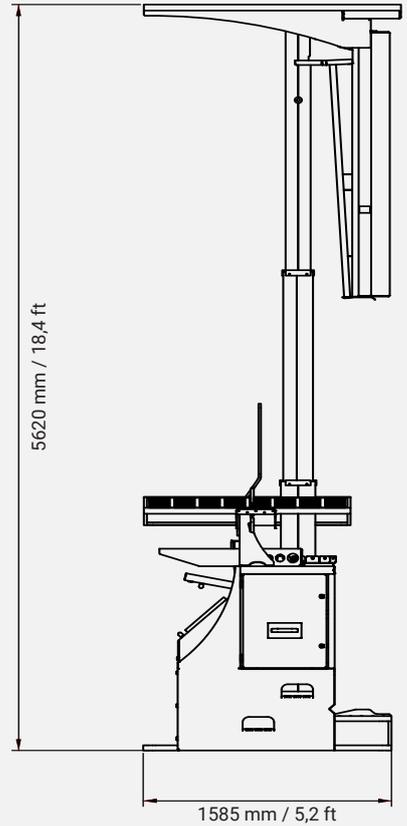
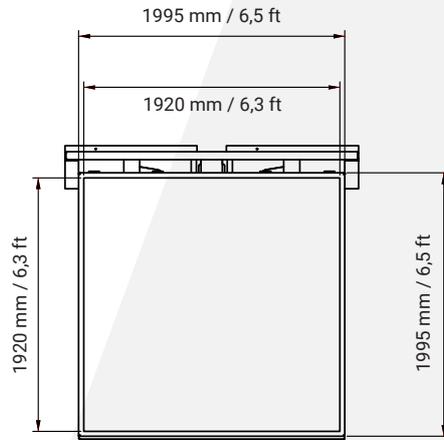
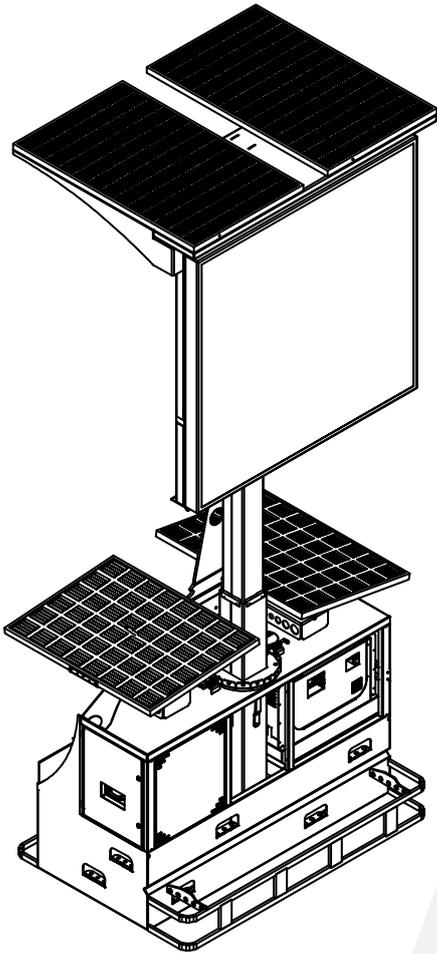
Power Supply System

- Standard equipped with solar panels

OPTIONAL POWER SUPPLY:

- Kubota Diesel 24 Vdc generator system
- Start/Stop system
- 60-litre fuel tank
- Designed for easy installation and maintenance
- Provides reliable backup power supply during winter months

SMU





MOBILE LANE SIGNALING SYSTEM

MLS Information

The Verdegro MLS is an innovative system designed for use as a Mobile Lane Signaling (MLS) or Mobile Road Information (MRI) solution. The system is available in multiple configurations and can be adapted to country specifications.

Different MLS systems available:

- MLS set (SKID + Trailer) equipped with Verdegro TMA-EU 70K NCHRP-350 TL-2 crash cushion
- MLS set (SKID + Trailer) equipped with Verdegro BLADE-TMA EU 100K CEN/TS 16786 TL-3 crash cushion
- MLS version United States equipped with Verdegro BLADE-TMA 100K MASH 2016 TL-3 crash cushion
- MLS version Middle-East equipped with Verdegro TMA-US 100K NCHRP-350 TL-3 crash cushion
- *Custom build MLS System according to customer specifications available*

TECHNICAL SPECIFICATIONS (GENERAL)

The MLS structure

The mast/arm is equipped with two hydraulic rams, positioned vertically and horizontally. It is mounted on a turntable and can be rotated 90° by a hydraulic cylinder over the road.

Horizontal Arm & Crash Absorber

The three-piece horizontal arm can be hydraulically extended to position the three LED displays / VMS over the desired lanes. A crash absorber is installed at the rear of the chassis. The total setup or downtime will not exceed 9 minutes.

The MRI solution

The MLS features a Mobile Road Information (MRI) function, allowing the LED displays / VMS to be positioned side by side. This creates a single, large display capable of showing extended messages or complex traffic information, making it highly versatile for lane management and advanced road signaling.

3- or 4-Lane Configuration

The standard setup is a three-lane configuration, with an optional four-lane configuration available. The fourth mast can be operated partially hydraulically or manually and retracted when not in use.

TECHNICAL SPECIFICATIONS (POWER & HYDRAULIC SYSTEM)

The generator and hydraulic unit are housed in lockable compartments. A 2-cylinder water-cooled diesel engine provides fully autonomous operation, with noise under 65 dBA. The fuel tank has a visible level indicator and can be safely refilled from the front. An emergency battery allows at least 24 hours of operation, with alerts if the system fails.

TECHNICAL SPECIFICATIONS (LED DISPLAY / VMS)

The LED displays / VMS use the latest EN12966 compliant technology. The symbols include:

- Arrow down
- White arrow – left and right
- Red cross with diagonal lines
- Speed limit 70 km/h and 90 km/h with red border
- Speed limit 70 km/h and 90 km/h



MLS SKID

TMA-EU 70K NCHRP-350 TL-2 crash cushion



MLS SKID + TRAILER

BLADE-TMA EU 100K CEN/TS 16786 TL-3 crash cushion



MLS UNITED STATES

BLADE-TMA 100K MASH 2016 TL-3 crash cushion



MLS MIDDLE EAST

TMA-US 100K NCHRP-350 TL-3 crash cushion

INFORMATION ABOUT MEASUREMENTS?

For detailed information on MLS measurements tailored to your country's specifications, please contact our sales department at sales@verdegro.com. Custom builds are also available – we are happy to help you find the solution that best fits your needs.



TECHNICAL SPECIFICATIONS (STANDARD)

System Overview & Application

- Modular Road Information System (RIS) based on a heavy-duty base frame
- Suitable for both portrait and landscape masts, including mounted LED displays / VMS signs
- Counterweight configuration adapted to 3-lane or 4-lane applications

Installation & Handling

- Designed for quick installation using a truck-mounted crane; system operational within approximately 2.5 hours
- Masts can be installed by truck-mounted crane and manually positioned
- LED displays / VMS signs mounted manually using truck-mounted crane

Mast & Swivel System

- Equipped with hydraulic system for rotating over the road
- Configuration available for 3-lane and 4-lane applications
- Swivel range and mast positioning adapted to lane configuration

Ballast & Base Frame Construction

- Counterweight configuration adapted to 3- or 4-lane
- Lower frame ballasted with modular concrete blocks (Lego version), up to 10,000 kg / 22,046 lbs
- Transport weight approx. 7000 kg / 15,432 lbs excluding concrete blocks (Lego version)
- Lockable battery compartment integrated in the base frame

Diesel Engine & Battery System

- Kubota Z482 Diesel engine with DC generator
- Equipped with a 400 Ah / 24 Vdc AGM battery pack

Monitoring & Control

- Standard equipped with monitoring system for battery voltage, fuel level and LED failure detection

Software & Connectivity

- Supplied with user-friendly software package: 4G modem including software for remote programming and operation via the user-friendly, free Verdegro portal: www.mobilityplanner.com (excluding mandatory monthly data plan and SIM card with VPN connection)

TECHNICAL SPECIFICATIONS (POWER & HYDRAULIC SYSTEM)

Power Generation

- Equipped with a 24 Vdc diesel generator
- Powered by a 2-cylinder, water-cooled 24 Vdc Kubota diesel engine
- System designed for autonomous operation for a minimum of four weeks

Hydraulic System

- Electric hydraulic power unit integrated
- Power and hydraulic components installed inside lockable compartments

Fuel System

- Fuel tank fitted with level sensor, connected to control unit for monitoring
- Fuel tank fill point accessible from the front, equipped with lockable fuel cap

Emergency Power & Redundancy

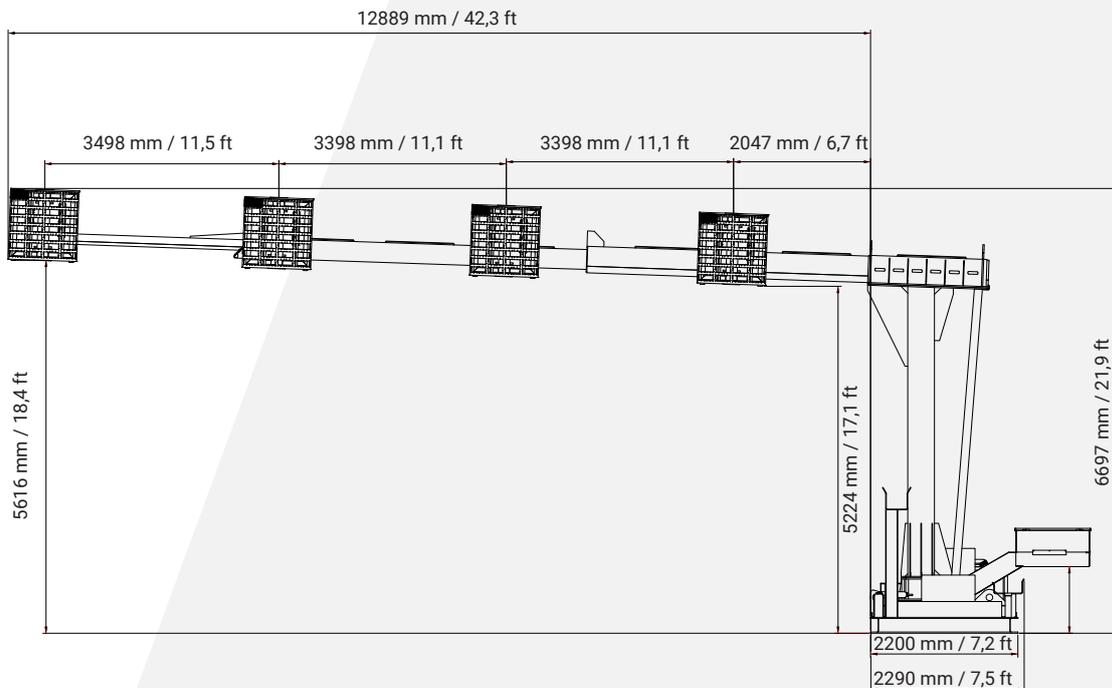
- Emergency battery pack installed as back-up power supply
- In case of generator failure, system continues operating for at least 8 hours on emergency battery pack

Monitoring & Alarms

- Failure and status notifications available when SIM card / modem is installed

OPTIONAL:

A four-lane system available, this should be mounted manually on the existing mast



TECHNICAL SPECIFICATIONS (LED DISPLAYS / VMS SIGNS)

General

- Standard configuration consists of three LED displays / VMS signs
- Manufactured using the latest LED technology in accordance with EN12966 standards

Display & Cabinet Specifications

- Matrix size: 48 × 48 pixels
- Pixel pitch: 20 mm
- Display cabinet dimensions: 1024 × 1024 × 150 mm (H × W × D)

Mounting & Serviceability

- Display cabinets mounted on the cantilever arm
- Front access through hinged service doors
- Internal cable routing through mast and arm

Symbol Set (Standard)

- Arrow down
- White arrow – left and right
- Red cross with diagonal lines
- Speed limit 70 km/h and 90 km/h with red border
- Speed limit 70 km/h and 90 km/h



**TECHNICAL SPECIFICATIONS
(SYSTEM AND GENERAL)**

Cone Type & Capacity

- Standard one-piece traffic cones, 1000 mm height, 560 × 560 mm base. Cones not included!
- Weight approx. 7.6 kg / 16 lbs per cone
- Black base with white and red high-reflective striping film, according to applicable specifications
- Extra-thick and extra-heavy square base design
- Reinforced edges and reinforced corner rings, suitable for hydraulic clamp handling
- System can be adapted for locally used cones on request, if technically feasible

Autocone Power Supply

- Powered by truck chassis engine PTO
- Hydraulic pump for all cone handling and operating functions

Autocone Finish & Colour

- The standard colour is Yellow (RAL 1023). Other RAL colours available on request

Patented Design

- This design is protected by patents in the Netherlands (NL2021455), Europe (EP3608475), and the United States (US11,105,504)

**TECHNICAL SPECIFICATIONS
(STRUCTURAL COMPONENTS)**

Autocone Sub-Frame

- High-resistance steel profiles and plates, welded construction
- Bolted to vehicle chassis with bolts and bars
- Supports cone storage, cone picking & placing units and guiding rails

Autocone guiding rails

- One set per side (left / right)
- High-resistance steel profiles and plates
- Mounted between axles, hydraulically extendable and retractable
- Specially designed and tested by Verdegro for reliable operation

TECHNICAL SPECIFICATIONS (HANDLING & OPERATION)

Autocone Storage Unit

- Barrel-type design, made of high-resistance steel profiles and aluminium plates
- Hydraulic motor driven spiral feeding system for horizontal cone rotation
- 8 columns, 50 cones per column, total capacity 400 cones
- Fully enclosed design to protect cones and moving components from dirt and weather

Autocone Picking & Placing Chamber

- Mounted in front of cone storage, semi-closed structure with rain cover
- Drag and swipe system positioned in front of rotating barrel
- Left and right hydraulic lifting units

- Fully hydraulic operation: pull out, push back and transfer cones left or right
- Electronic and optical sensors for cone position detection

Autocone Catching Clamps

- One set per side (left / right), mounted on lifting units
- Steel hinge plate construction
- Hydraulically operated cylinders for fast gripping and releasing of cones

OPTIONAL:

The Autocone 2.0 system can be installed on a standard 18-ton truck chassis of any major brand, equipped with air suspension





TECHNICAL SPECIFICATIONS

Truck Mounted Attenuator

- Different models TMA 100K TL-3! Available in MASH 2016, CEN/TS 16786 or NCHRP 350

Full Colour VMS Display

- Available in SKID and truck-mounted versions
- Both fully operational from the cabin or via online free portal: 4G modem including software for remote programming and operation via the user-friendly, free Verdegro portal: www.mobilityplanner.com (excluding mandatory monthly data plan and SIM card with VPN connection)

Rumble Mat Layer

- RML chassis mounted, available in 2 or 3 mats version
- Fully operational from the cabin

Additional Features

- Includes material storage for secure equipment handling
- Equipped with a Safe-Stop Impact Brake System to ensure complete safety during operations
- The complete system can be operated by one person only

OPTIONAL:

- Truck Light Tower (TLT) 6 meters high
- Automatic cone layer can be integrated into the system
- Specific configurations available upon request





DIRT GRABBER

TECHNICAL SPECIFICATIONS

Measurements

- Approx. 400 kg / 882 lbs
- Overall width: 2355 mm
- Overall height: 1685 mm

ABOUT THE DIRT GRABBER

Fast & Efficient Road Cleaning

With the Dirt Grabber, litter on the road can be removed quickly and efficiently without the need to stop traffic. By lowering the rotating drum while driving, waste is automatically collected and flung into the drum by the vehicle's forward motion.

Smart Design for Maximum Comfort

The integrated collection container can be easily emptied by releasing the latches. Thanks to the spring-loaded suspension, shocks from heavy debris are absorbed and barely transferred to the vehicle cabin, ensuring optimal driver comfort even during intensive use.

Easy and Flexible Installation

The Dirt Grabber can be easily mounted on a DIN plate and is equipped with its own hydraulic power pack. With only a 12 Vdc or 24 DC V power supply required, installation is quick, simple, and flexible.



VDL1800





TECHNICAL SPECIFICATIONS

Front-End Fitting & Mounting

- Front-end fitting using standard welding strips or standard DIN plate mounting system (DIN plate not included)

Power & Control

- Hydraulic powered by 24 Vdc power pack (12 Vdc version available on request)
- Joystick-controlled from the truck cabin, including a monitor for the camera system

Camera & Lighting

- Equipped with 2 cameras and lights for nighttime operations, which automatically activate during use
- Halogen headlights and direction indicators on the front of the RML.

Operational Flexibility

- Operational in any direction, able to lay down the rumble mat anywhere or off-vent
- Equipped with height and outer edge marker poles for safe and clear operation

Rumble Mat Handling

- Electromagnetic pickup system for deploying and retracting the special reinforced rumble mat

SPECIAL REINFORCED RUMBLE MAT:

- Dimensions: 2200 mm × 635 mm × 30 mm
- Made of PUR plastic with reinforced fiberglass and metal components for extra strength
- Reflectors on both top sides of the RML to ensure visibility during operations

OPTIONAL:

- Hydraulic height-adjustable bracket
- Front DIN plate mounting system
- Installation on existing truck
- Additional rumble mat



RML DIN plate mounted excluding safety covers



RML DIN plate mounted on maintenance van



RML including safety covers mounted



RML-CM

TECHNICAL SPECIFICATIONS

Camera & Lighting

- Two built-in lighted cameras that automatically turn on and off during operation

Control System

- Joystick-controlled from the truck cabin

Rumble Mat Handling

- Capacity for two or three rumble mats
- Turnable arm for flexible mat deployment
- Electromagnets pick up mats using steel plates

RML-CM

The Verdegro Rumble Mat Layer Chassis Mounted allows operators to automatically place and collect 2 or 3 rumble mats from the truck cabin. Mounted under the chassis, it is the only system on the market capable of handling up to three mats.





TECHNICAL SPECIFICATIONS

Camera & Lighting

- Two built-in lighted cameras that automatically turn on and off during operation

Control System

- Joystick-controlled from the truck cabin

Rumble Mat Handling

- Capacity for one rumble mat
- Two separate arms to collect the mat

Cost Efficiency

- Most affordable machine in the Rumble Mat Layer lineup

RML-CMS

Verdegro introduces the RML-CMS, a new, easy-to-use machine that can pick up and place one rumble mat, identical to those used on the RML and RML-CM. Designed for versatility, it can be installed under a van or truck.





SPECIALS

SPECIALS

Custom builds by Verdegro

At Verdegro, we specialize in custom-built solutions tailored to your project needs. Everything can be custom made by us, which means that every product line can be adapted to meet specific requirements, including:

- Lighting
- Crash
- Traffic

CUSTOM BUILDS BY VERDEGRO

Engineered to Fit

At Verdegro, we believe that no two projects are the same. That's why we offer fully custom-built solutions, designed and manufactured to meet your specific requirements. From the initial concept to the final product, everything can be custom made by us.

Flexible Across All Product Lines

Whether it concerns Lighting, Crash, or Traffic solutions, every product line can be tailored to suit the project, environment, and technical demands. Our flexible approach allows us to create solutions that fit seamlessly into any situation.

Expertise You Can Rely On

With our experience and technical know-how, we deliver innovative, reliable, and unique solutions that perfectly match your challenge.

Get in Touch

For custom-built solutions and special projects, please contact our sales team through sales@verdegro.com. They will be happy to discuss the possibilities and requirements with you.



**NEED SOMETHING SPECIAL?
REACH OUT TO SALES@VERDEGRO.COM**

05

MOBILITYPLANNER



MOBITRACK

Mobilityplanner

P. 144

**MOBILITY-
PLANNER
FITS IN
ALL YOUR
PRODUCTS!**

VERDEGRO®

MOBITRACK

Compatible with all Verdegro products and external units, Mobitrack can be installed on existing products, even post-production.

MOBITRACK BASIC

Specifications

- Dimensions: 70,5 X 67,0 X 25,6 mm
- Dimensions with connector socket: 85,0 X 67,0 X 25,6 mm
- Weight: 79 g

Benefits

- Delivers precise location tracking
- Logs complete location history
- Integrates seamlessly with any product
- Centralizes all products in one view
- Connects with early warning systems

MOBITRACK ADVANCED

Specifications

- Dimensions: 104,1 X 76,8 X 31,5 mm
- Weight: 197 g

Benefits

- Everything basic integration has to offer
- Allows users to request detailed product information through Mobilityplanner

MOBITRACK BASIC EXPLAINED

Mobitrack (Basic) is used to expand the Mobilityplanner platform’s capabilities, by transmitting real-time GPS location information and the online status of your products.

Seamlessly integrating with Google Maps, Apple Maps, Waze and Flitsmeister, it provides precise location data and serves as an early warning system for your fleet. Additionally, Mobitrack utilizes Geo-fencing and maintains a detailed location history for comprehensive tracking and monitoring.

MOBITRACK ADVANCED EXPLAINED

Mobitrack (Advanced) is used to expand our Mobilityplanner platform’s capabilities, by transmitting GPS location information and the online status of your products. This advanced tracker allows you to request additional data, such as the online status and activity level of your products.

Seamlessly integrating with Google Maps, Apple Maps, Waze and Flitsmeister, Mobitrack not only provides precise location data but also serves as an early warning system for your fleet. Additionally, this tracker utilizes Geo-fencing and maintains a detailed location history for comprehensive monitoring.

WHAT IS MOBILITYPLANNER?

Mobilityplanner allows customers to view their Verdegro products with real-time updating statuses and statistics. Each product has a designated dashboard where important details are displayed.

WHY MOBILITYPLANNER?

Mobilityplanner offers many benefits for customers, including:

- Geo fencing by Mobilityplanner: visibility in Waze, Flitsmeister, Apple Maps, Here
- Clear overview of your products, with real-time status updates
- Built-in calendar for planning and automating maintenance scheduling
- Early warning system for your Verdegro products with Mobitrack
- Map with live tracking, thanks to our Mobitrack integration
- Library editor for creating and publishing LED show displays
- Remote control for your Verdegro products



MOBITRACK (BASIC ADD-ON)



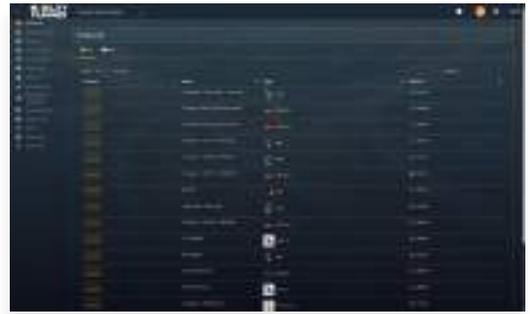
MOBITRACK (ADVANCED ADD-ON)



PRODUCTS

Under the Products tab in Mobilityplanner, you'll find an overview of all your products. Here, you can easily check the status and details of each product. You'll see immediately whether a product is online or offline and whether it's active.

In addition to the list view, there's also a map where you can view the live locations of your products. By clicking on any product, you'll access more details, such as its online status, activity, current display, and any automations in place.



LIBRARY

In the Library tab, you can browse a selection of shows compatible with your product's LED display. Here, you can easily create and edit shows to suit your needs.

With just a few clicks, you can upload images from our default library, set the display duration, and arrange the order in which they will appear. Once you're satisfied, you can save and publish the show to your product, updating it in real-time.

By using our advanced library editor – see below – you can upload an image and add lines of text with various customization options. The possibilities are endless!



LIBRARY EDITOR

Our Library Editor makes it easy to create custom displays using a variety of built-in templates. You can dynamically add images along with multiple lines of text directly into the display.

You can also select traffic sign images from our default library and incorporate them into your design. Add text to provide additional information, offering you even more customization options.

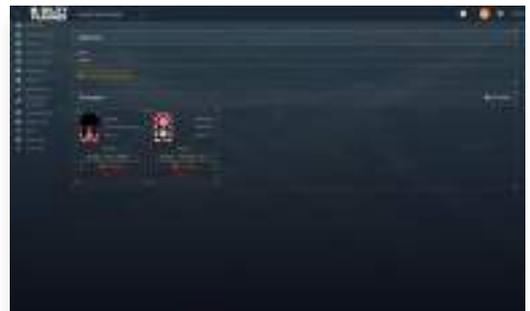
This feature ensures that your displays are tailored to your specific needs.



SCENARIOS

Our Scenarios system allows you to create and manage collections of shows that can be simultaneously published to multiple products. This feature is especially useful for quickly closing off multiple roads with a single click.

With Scenarios, you can easily control which products will display the shows and when they will appear. This makes it simple to provide early warnings to drivers about upcoming road construction or other important information.



PLANNER

With the integrated Planner feature, you can automatically schedule maintenance for your products. The planner also serves as an agenda, allowing you to manage your own schedule and track how long you've been renting a Verdegro product.



COMPANY INFO

On the Company information page, you can edit your company's credentials within Mobilityplanner, adjusting how your company appears on the platform. You can input details such as your company's name, address, contact email, contact person information, and the billing information needed for making purchases from Verdegro.



TRAVEL TIME

The Travel Time system allows you to enter a start and destination location to estimate the expected travel time between the two points. This system considers factors like traffic jams and other diversions to provide a more accurate travel time.

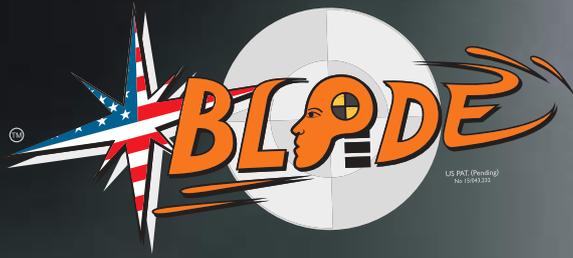


CONTACT US TO SCHEDULE A DEMO OF OUR PORTAL!
WWW.MOBILITYPLANNER.COM

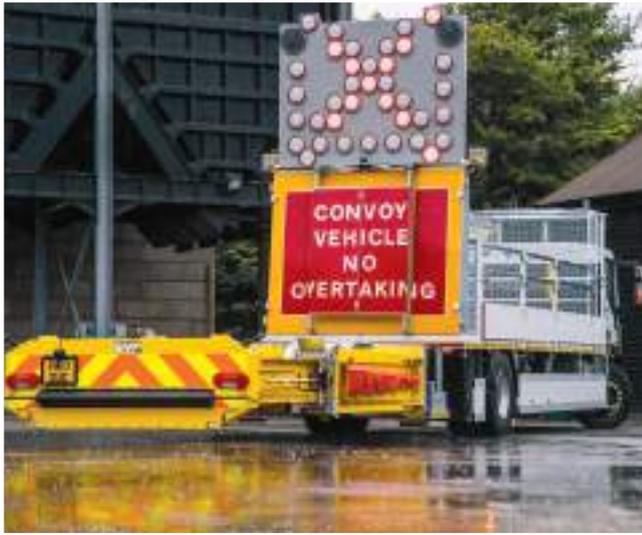




**PROVEN
SAFETY,
EVEN WHEN
IT'S NOT A
TEST**



THE WALL OF FAME





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