

Edition: 1/2019



Larisa

solutions for the transport sector

PPHU Larisa is a reliable and solid business partner, which designs and manufactures modern pneumatic, mechanical, electrical and electronic equipment and accessories.

PPHU Larisa develops and upgrades its proprietary solutions for the transport sector. PPHU Larisa supplies European, African and Asian destinations. The innovation of the products from PPHU Larisa is firstly their compact sizes and minimised weight of proprietary mechanical and control systems. The biggest advantages of PPHU Larisa is short lead times and competitive pricing of solutions.



RESEARCH AND DEVELOPMENT:



PPHU Larisa is a manufacturer of state-of-the-art, high-quality products, which are highly acclaimed by buyers and users.

To ensure continuous development of the product range and continuous improvement of product quality, PPHU Larisa invests in the development of its resources as well as workforce training. PPHU Larisa approaches each project individually. The specialists at PPHU Larisa strive to ensure maximum service life and safety of solutions. Each product undergoes stringent testing of durability, functionality, and ergonomics before release for serial production.

INDIVIDUAL PROJECTS:

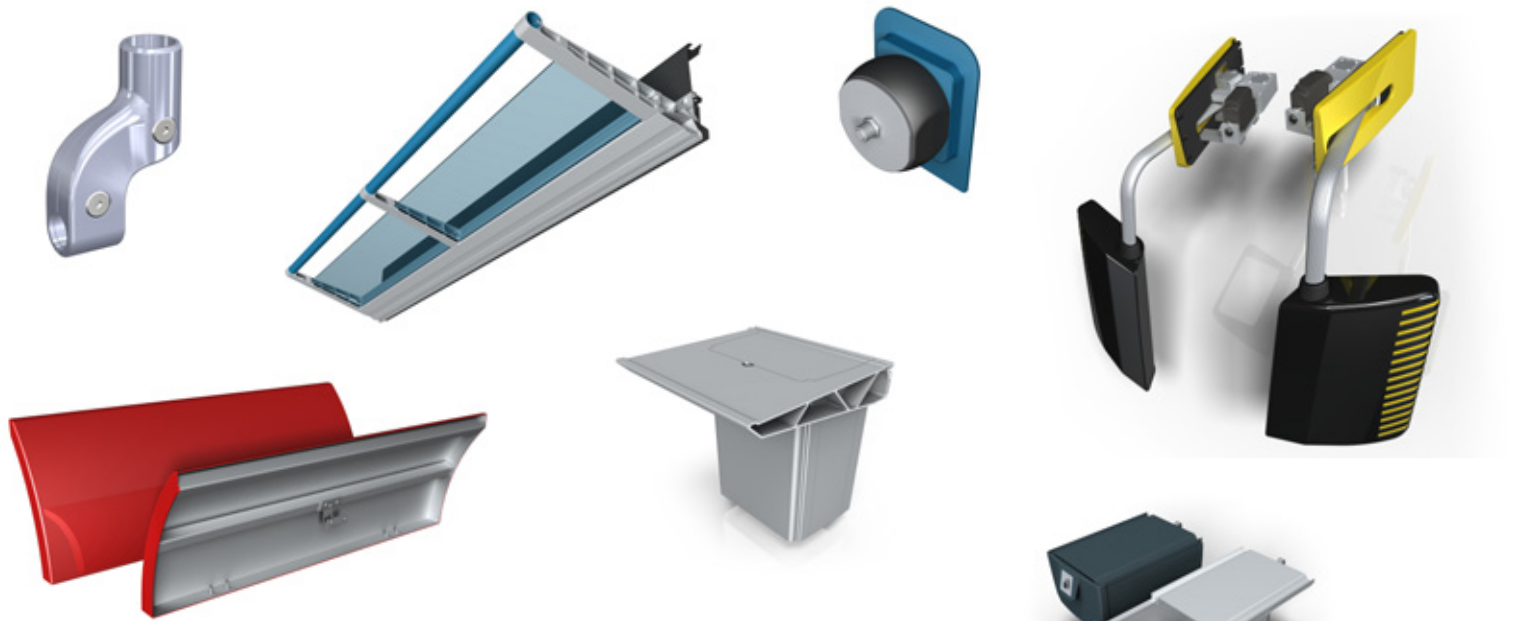


Apart from the stock solutions showcased in this catalogue, PPHU Larisa specialises in projects per custom specifications of buyers or end users. PPHU Larisa can deliver products from entrusted design engineering documentation or design, develop and build solutions from scratch, per the functional and appearance quality specifications. Qualified personnel oversees the design engineering and production processes with sufficient resources and tools for an optimum final quality of the deliverables.

QUALITY:



The main business mission of PPHU Larisa is to provide customers with products conforming to the engineering and appearance specifications, made in compliance with regulations and engineering standards to secure approvals and certifications required for rolling stock products.



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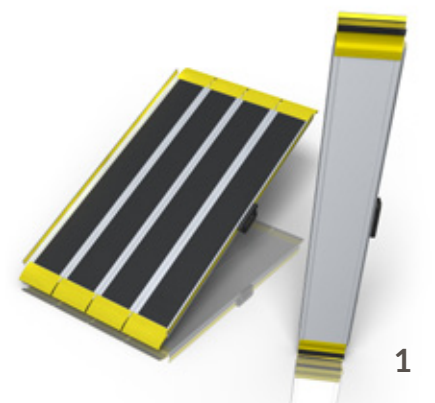
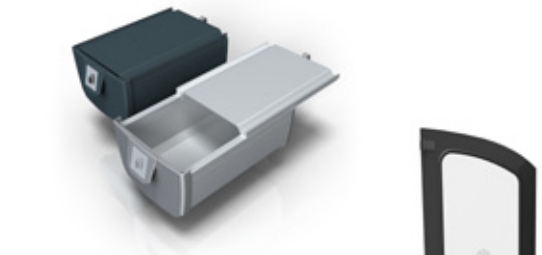
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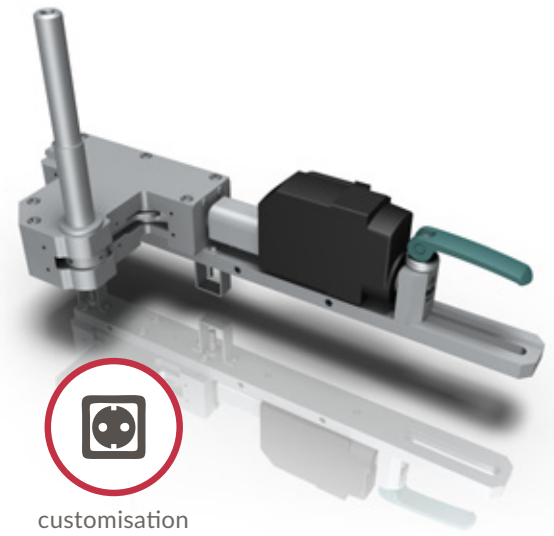


Larisa Rear-view mirrors

Rear-view mirrors are used for visual monitoring of the vehicle side view fields installed alone or to complement onboard rear-view camera systems.

The advantages of rear-view mirror applications include:

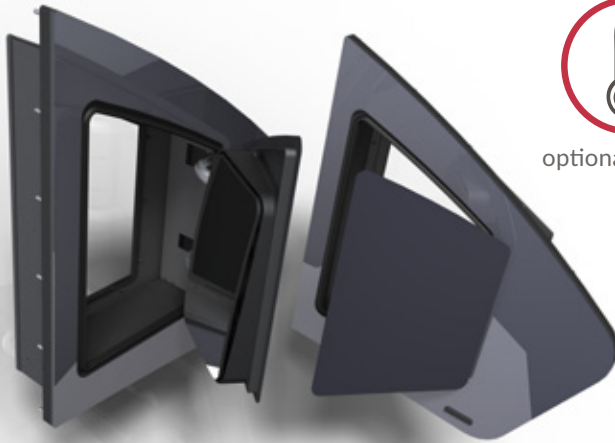
- Zero adaptation time to variations in light intensity exposure (the rear-view mirror image output, unlike video camera feeds, does not suffer from the delay to adapt to changes in illumination when e.g. entering or leaving tunnels);
- The analogue image output by rear-view mirrors is preferred by drivers as more reliable than video camera feeds output to display monitors;
- The visual output of the rear-view mirror image is free from the typical noise and defects in video feed systems;
- Rear-view mirror heating automatically removes the atmospheric precipitate from the mirror surface (e.g. rain drops, fog, frost, and ice).



customisation for various power supply voltage standards



optional heating



The rear-view mirrors are designed in compliance with applicable technical standards and international and national laws. On request, the products can be certified by accredited research bodies for compliance with the following and other standards:

EN 50155

Railway applications. Rolling stock. Electronic equipment

EN 61373

Railway applications. Rolling stock equipment. Shock and vibration tests

EN 50121

Railway applications. Electromagnetic compatibility

EN 45545

Railway applications. Fire protection on railway vehicles

Each new rear-view mirror design is delivered with functional studies, field of view and visibility studies, and strength calculations

REAR-VIEW MIRRORS FOR LOCOMOTIVE AND MULTIPLE TRAIN UNIT CABS

The rear-view mirror systems manufactured by PPHU Larisa for railway trains are designed for heavy duty railway operations, including the exposure to high passing speeds, frost and wind blasts. The rear-view mirrors are installed in the latest railway vehicles produced by world leaders.

The operating reliability and service life is proven in extreme tests of EM resistance, vibration resistance, and artificial weathering.

The rear-view mirrors from PPHU Larisa are unique due to:

- Perfect visibility and field of vision clarity
- High resistance to supply voltage variations
- High durability and strength
- Extreme resistance to changing weather
- Vibration resistance
- Compatibility with pre-configured control systems

PPHU Larisa delivers custom solution projects according to customer specifications or develops new solutions from scratch per customer's guidelines. The experienced in-house design engineers and industrial design experts guarantee satisfaction with the design engineering results.



vibration resistance



customised nacelle designs to match the vehicle style



Developed from a design by PESA Bydgoszcz SA for DMU LINK trains



perfect visibility and field of vision clarity



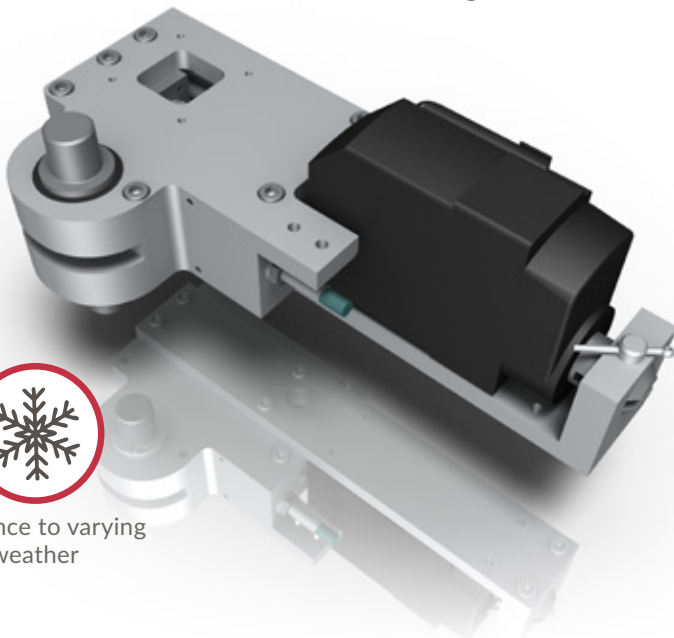
Developed from a design by PESA Bydgoszcz SA for JAZZ tram cars

TRAM CAR REAR-VIEW MIRRORS

Tram cars are rail vehicles with unique performance and design features (like overall dimensions and geometrical features); hence, they require a design of the rear-view mirrors unlike the designs applied in trains. The main unique feature of a tram car rear-view mirror is a long arm between the mirror nacelle and the mirror mechanism. The considerable length of the arm is necessitated by a low sitting position of the driver above the ground.

The product designs developed by PPHU Larisa feature several innovative solutions for an improved operating convenience of tram car drivers and the maximum safety of rail vehicle passengers. These include:

- Compliance with rail vehicle gauge and envelope: the rear-view mirror mechanism is installed below the rail vehicle skin
- Maximum seal integrity of the cab: the rear-view mirror folding mechanism is installed in an outer recess at the rail vehicle front
- Minimum line disturbance between the motor and the controller: the rear-view mirror controller unit is integrated with the actuator



resistance to varying weather



resistance to wind blasts



custom dimensions

Larisa Access ramps

A proprietary line of vehicle access ramps for passengers with mobility challenges and the response of PPHU Larisa to the demand for barrier-free commuting equipment. Each of the products shown herein is a result of in-depth analyses, long testing and consultations, and optimum design engineering procedures. The products are tested and certified by an accredited research body for compliance with TSI PRM.

The ramps are manufactured in compliance with:

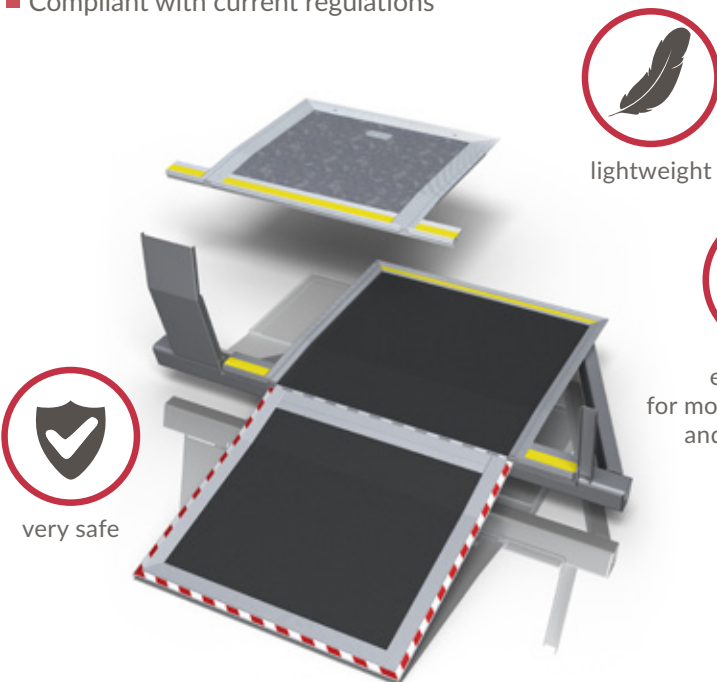
- TSI PRM
- UIC
- DIN 32985

A number of proprietary solutions are applied in the products to ensure the highest user satisfaction:

- **Larisa® RubberFooting** – a superior anti-slip and anti-vibration flooring surface;
- **Larisa® FastLock** – a fast-acting and secure folded ramp closure with a robust and simple Velcro strap;
- **Larisa® EasyClean** – anti-corrosive protection of structural components for easy cleaning;
- **Larisa® SuperSafety** – a hybrid support structure of the product parts.

Key product features:

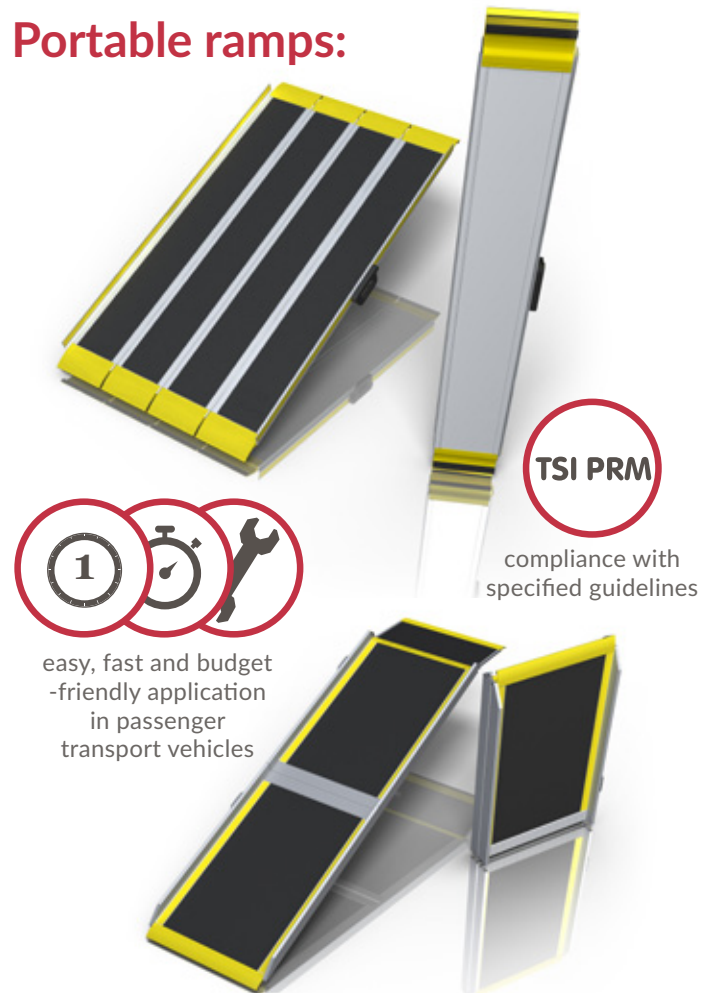
- Safety
- High strength
- Low weight
- Easy operation
- High structural durability
- Corrosion resistant
- Easy cleaning
- Compliant with current regulations



PPHU Larisa provides manual or automatic operation stationary ramps.

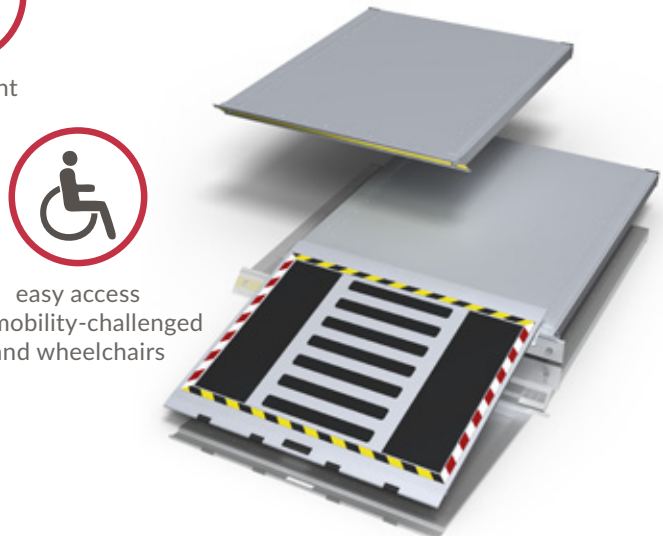
PPHU Larisa provides the great flexibility of custom design at competitive prices.

Portable ramps:



Portable ramps are easy to move and deploy at every location of use. The portable ramps fit the doors on both sides of the vehicle; each pair of opposite doors require one ramp only, which saves onboard storage space, reduces the service weight of the vehicle and cuts down the outfitting costs.

Stationary ramps:



The stationary ramps are the ramp models permanently installed in the vehicle, which reduce deployment time as compared to portable models.

The ramps can be integrated with:

- a chassis (and deployed by extension from beneath the floor)
- a floor (as a part of it)
- a cubicle by the access door (and with an articulated mount)

Luggage shelves

PPHU Larisa designs, develops and produces luggage racks and shelves for luggage and passenger compartments. The manufacturing process is based on innovative solutions, including the aluminium extrusion process. This makes the products from PPHU Larisa lightweight, optimised in service life, and complete with a sleek, contemporary design. The shelving from PPHU Larisa are safety-focused luggage storage solutions, which meet stringent railway engineering standards.



lightweight



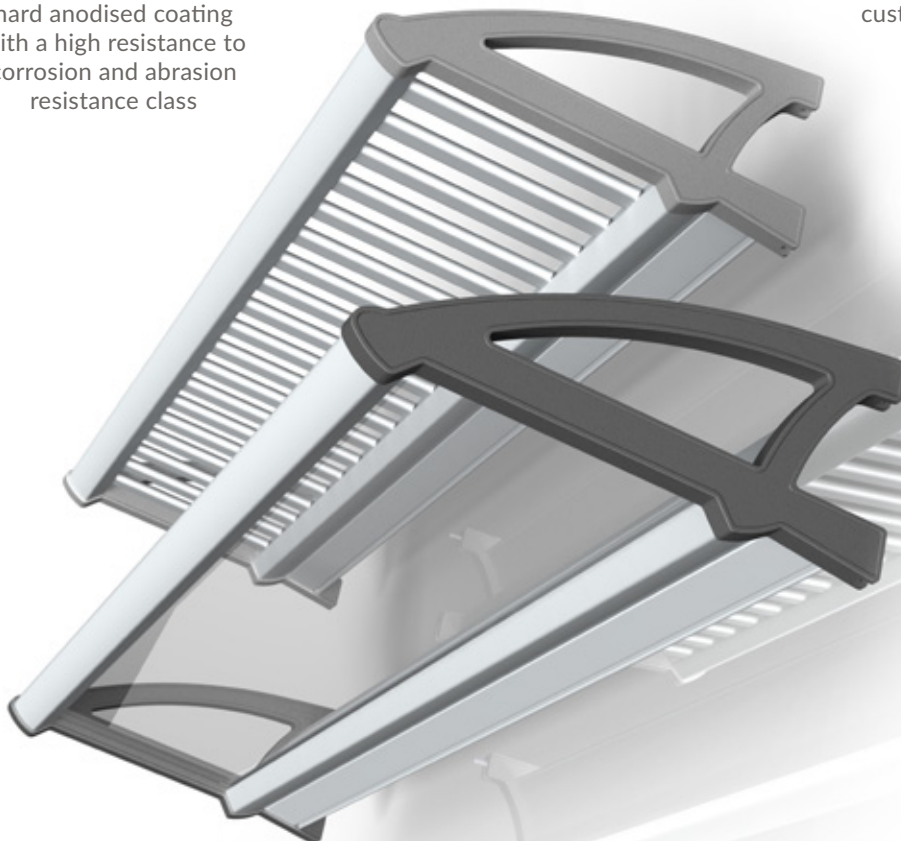
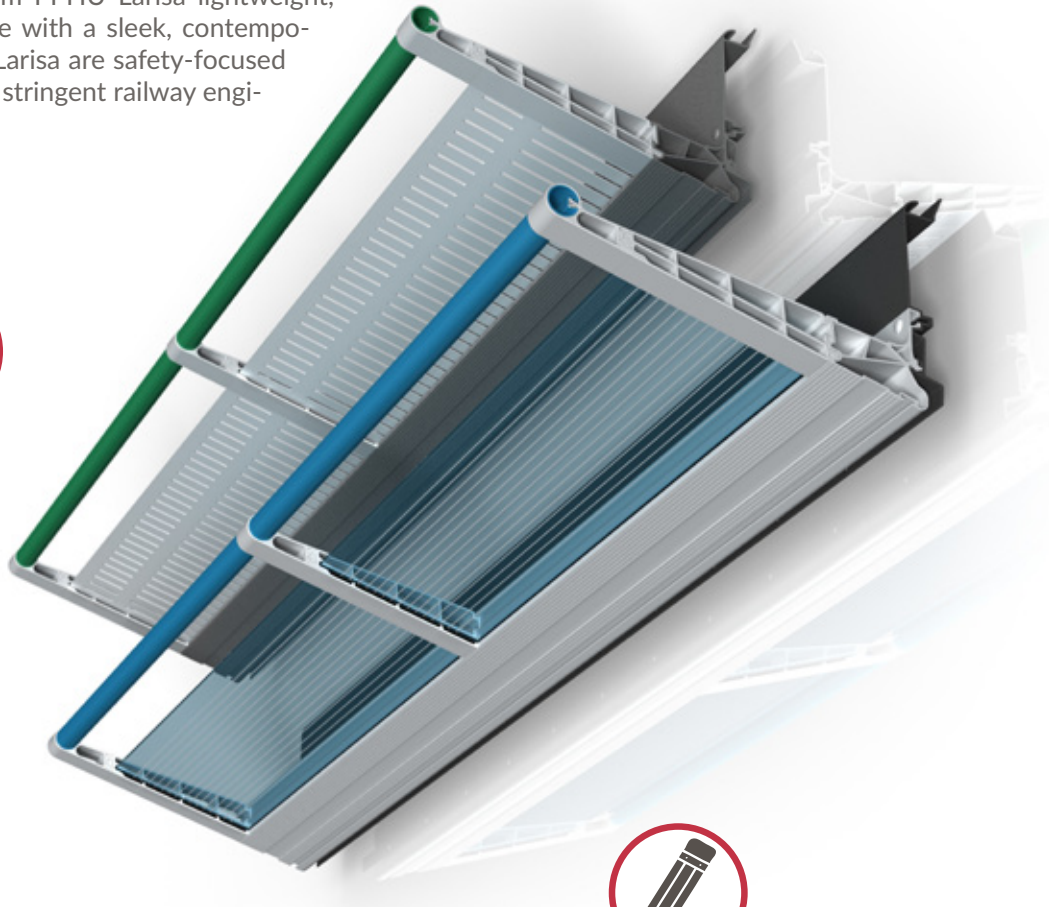
custom dimensions



hard anodised coating
with a high resistance to
corrosion and abrasion
resistance class



custom design





Luggage shelves with lighting

The luggage racks and shelves with integrated directional lamps are made specially for premium passenger compartments. They may also be enhanced with seat booking systems, or advertisement carriers. Not unlike other solutions by PPHU Larisa, these products can be customised in a wide selection of materials: aluminium, steel, tempered glass, and natural or engineered wood options. The colour patterns of metal and glass are customised to the general design of the surrounding space. Product versions with cloak hooks are also available.



highly sanitary



easy installation



wide colour selection



high load capacity



customised directional lights



Roof installation covers

The roof installation covers are manufactured per customer designs or designed by PPHU Larisa from scratch, according to custom specifications. The roof installation cover components are largely made from composite materials and aluminium shapes. The products are precision-made for easy on-site installation; this is the benefit of automated production and multiple inspections of components and the finished products. PPHU Larisa is always happy to help with each project to enable streamlined integration of the roof installation covers with other roof components.



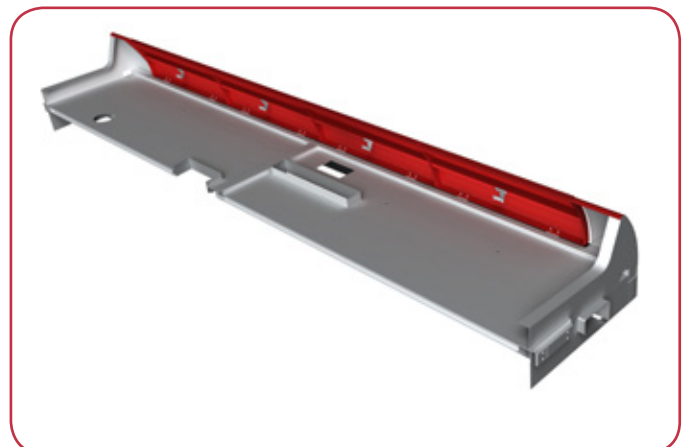
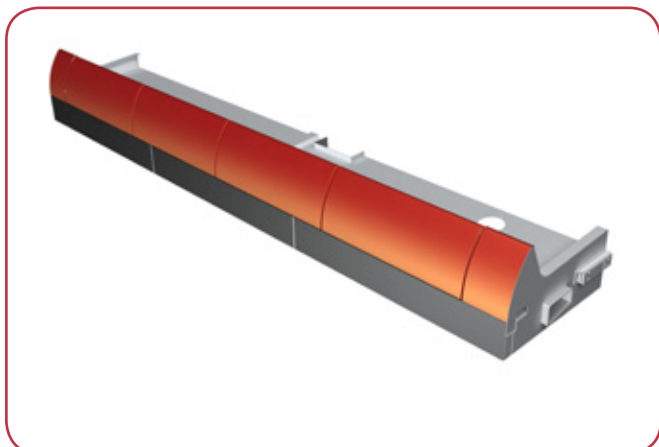
lightweight



high aesthetic quality



resistance to varying weather





Compartment tables

PPHU Larisa's state-of-the-art tables for railway vehicles are very convenient and come with trendy and attractive design forms. Folding, window bottom, armrest-integrated, and/or complete with various fastener systems: these are the tables from PPHU Larisa. The tables may optionally be equipped with accessories which include dustbins, cupholders, induction chargers, and more. The tables are usually made from aluminium shape systems and plastics, which makes them light yet durable.

The product range includes:

- small tables (with optional dustbins)
- medium tables (with optional dustbins)
- large tables with expandable tops.



high quality



light and durable construction



custom design



hard anodised coating with a high resistance to corrosion and abrasion resistance class

Tables S-D-S-001

High functionality and minimalistic design: the two flagship features of type S-D-S-001 tables. They are designed to enable custom configuration of the table tops. The recesses were designed to prevent objects (like bottles, cups and other liquid containers) from shifting and falling during sudden deceleration of the rail vehicle. The table top rests on a robust foot finished with chrome plating. To facilitate cleaning and sanitation, the table is fastened to the compartment wall with two hinges that facilitate lifting and folding. In the standard version the table tops are made from HPL plywood panels. The premium version includes lightweight aluminium table tops. Other materials are available on request.

The standard and premium versions are EN 45545 compliant.



high aesthetic quality



custom design



hard anodised coating with a high resistance to corrosion and abrasion resistance class



Larisa Tables SK-I-01

Type SK-I-01 tables are designed for premium-level passenger compartments. The durable aluminium table tops ensure a long service life while being light-weight, and the HPL lining helps match the product colour to the interior trim. An induction charger is integrated with the table top for wireless recharging of compatible mobile phones. When ready for recharging, the LED indicator goes on.

A dedicated non-slip adhesive pad insures higher safety of the mobile phone should the rail vehicle suddenly decelerate. The table can be customised in size or fitted with an optional dustbin. The table is EN 45545 compliant.



easy to clean



high aesthetic quality



Table/Small dustbins



high aesthetic quality



easy to clean



easy to empty

Larisa Large dustbins

The dustbins from PPHU Larisa are universal sanitation products for public transport. The dustbins are available in standalone versions and as optional accessories dedicated to the tables from PPHU Larisa. All products are made from corrosion-resistant materials (aluminium, stainless steel and/or plastics). The finish options include anodising and powder coating. The capacity ranges from 0.5 L to 5 L. Instead of plastic liner bags, which can be easily torn and reduce the aesthetic value of the vehicle interior, PPHU Larisa provides optional disposable polymer trays designed to fit the Larisa dustbin line.



high aesthetic quality



custom design

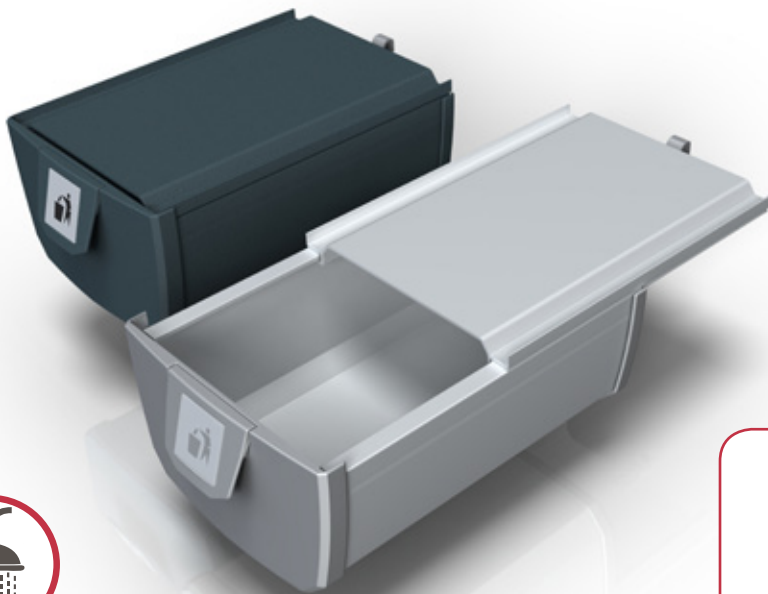


easy to empty



very safe

Small dustbins



highly sanitary



high quality



easy to empty

LARISA Re-railing covers

The re-railing channel covers complete the plating of the vehicle, increasing its aesthetic quality. The re-railing channel covers also protect the rail vehicle lifting bar from weather damage. The re-railing channel covers are made from a system of expanding elastomers, which are resistant to diluted acids, alkalis and oil over the entire operating range, while the elastic action of the material provides self-centring of the cover fascia. The re-railing channel covers are highly resistant to heavy-duty operation in severe urban environments and impervious to changing weather conditions.



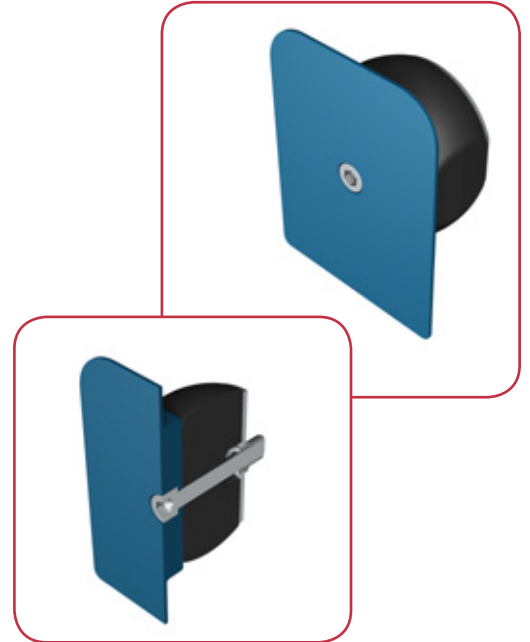
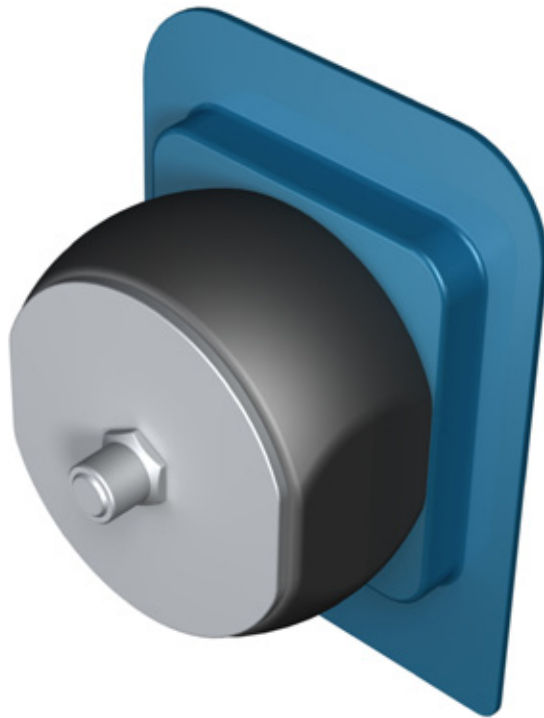
easy installation and removal



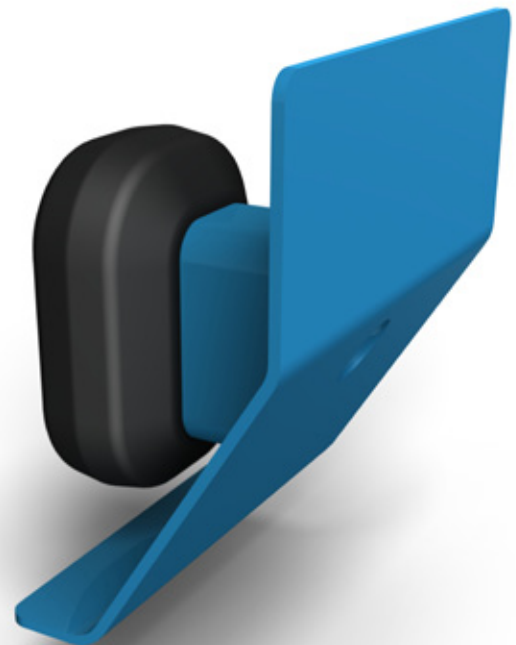
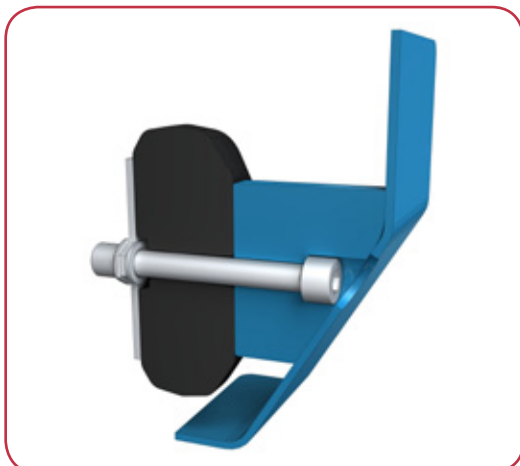
corrosion-resistant



robust vibration-resistant mounts



weather (ice and water) resistant

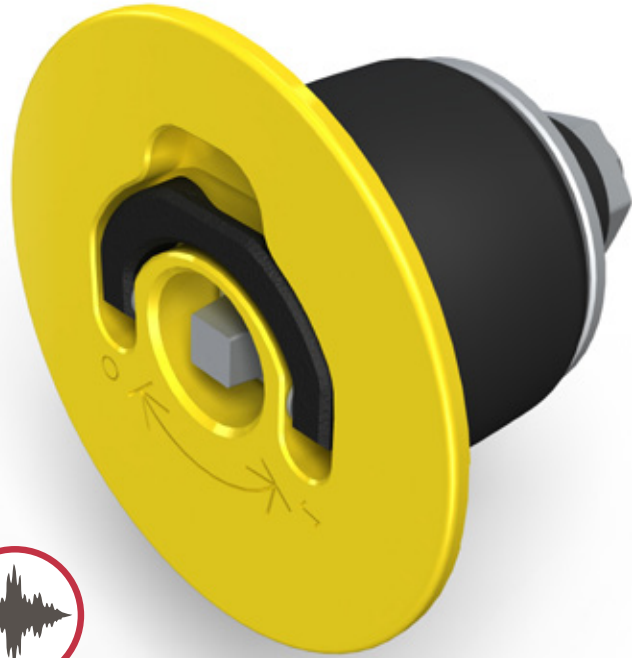
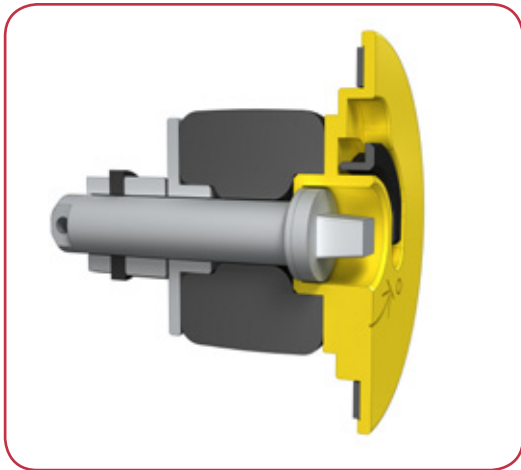


LARISA Sander fill plugs

A universal product which can be adapted to the sander fill port diameter. The metal parts and the expanding elastomer seal provide improved resistance to heavy-duty conditions of railway service. The front fascia colour is customisable to match the body skin livery.

Key features of the sander fill plugs:

- Quick and easy operation
- Sure fit and seal
- High durability



vibration resistance



corrosion-resistant



easy installation

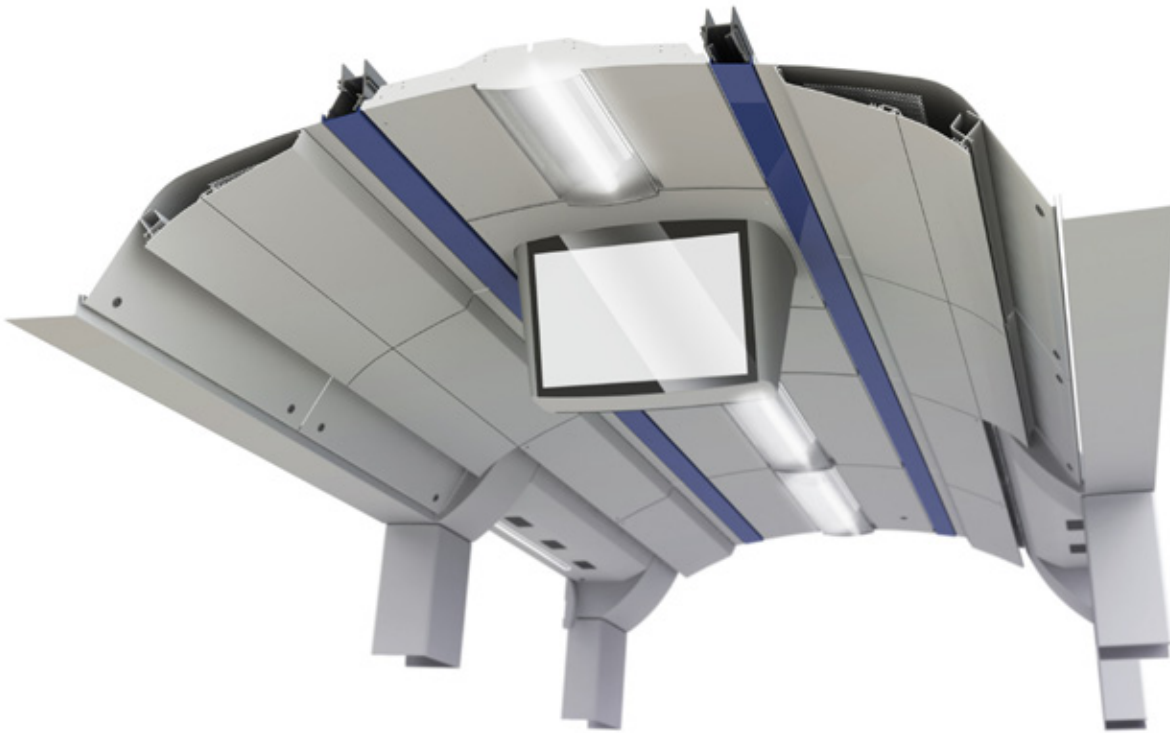


weather-resistant



Ceiling systems

In response to popular demand, PPHU Larisa has expanded its product range with durable and lightweight ceiling systems based on aluminium shapes. The ceiling systems can be adapted to accommodate including HVAC vents, lamps and structural supports for handrails and other trim features. The ceiling systems are modular and customisable to non-standard of the vehicle interior.



lightweight



high aesthetic
quality

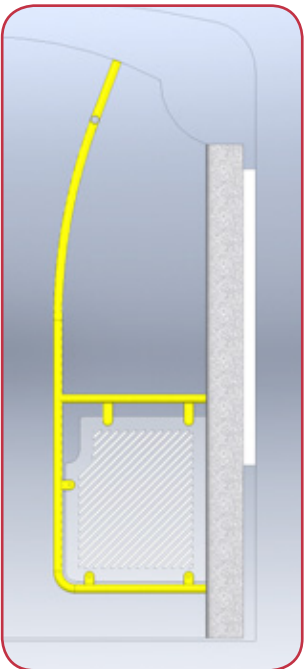
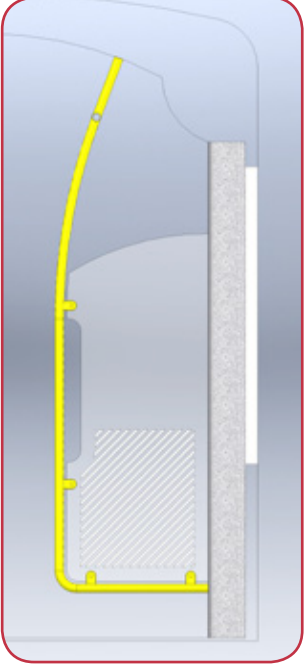
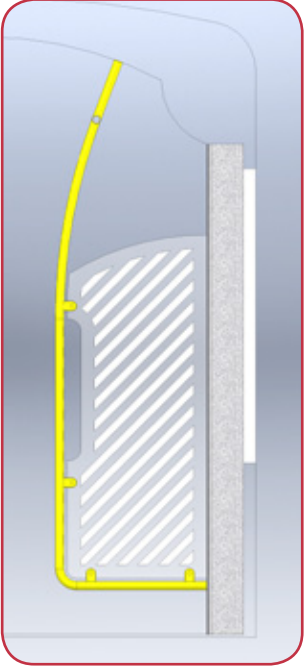
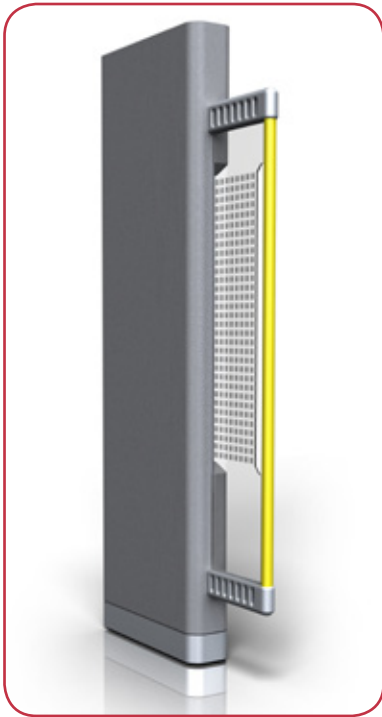


easy installation
and removal



Developed from a design by PESA Bydgoszcz SA

The system of vestibules protects the compartments from undesirable indoor temperature changes caused by the ingress of ambient air and improves the travelling comfort by shielding the passengers from the draught of ambient air. PPHU Larisa makes its vestibule units from stainless steel, tempered glass, and extruded light aluminium alloy shapes. The vestibules can optionally be equipped air heaters and dustbins between 16 and 20 litres of capacity. Custom design and installation configurations can be delivered according to customer designs or proprietary design engineering projects developed from concepts approved by the customers. All products offered by PPHU Larisa meet the applicable railway engineering standards.



thermal comfort for the passengers



Custom design



Can accommodate optional dustbins



easy installation and removal



safe and convenient to use



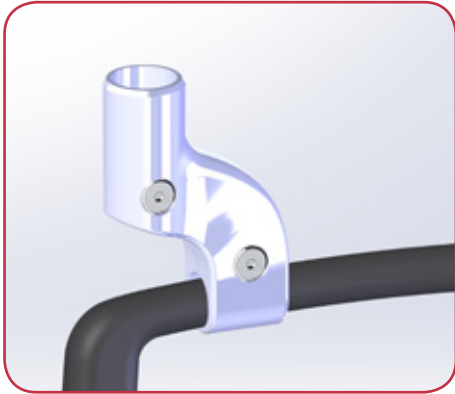
energy-efficient



TSI-compliant handrails

Larisa Handrail connectors

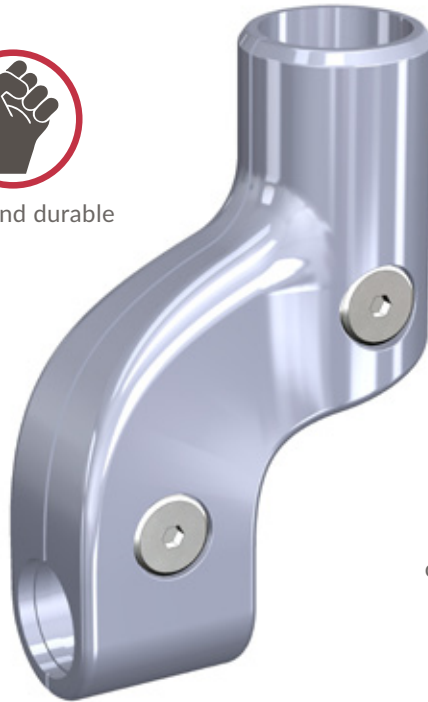
The proprietary handrail connector system from PPHU Larisa guarantees efficient and strong joining of handrails, handholds, and vestibule units. These products feature superior quality provided by die casting of aluminium alloy components. The ergonomic shape of the handrail connectors provides comfortable and safe use of onboard handrail systems. Exceptional industrial design features and the powder-coat finish in any RAL colour of choice help harmonise the handrail solutions from PPHU Larisa with every vehicle interior colour pattern.



strong and durable



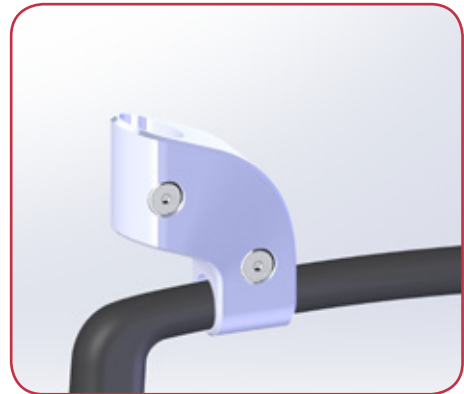
corrosion-resistant



contemporary design



dimensioned for standard handrails



easy installation and removal



PPHU Larisa has optimised its cab door solutions for tram cars and trains according to the suggestions and feedback from vehicle drivers, based on the real-life use of the products. The cab doors harmoniously blend ergonomics, safety and aesthetic qualities. The cab doors can be provided with any configuration of door locks, latches, glazing, storage pockets, trays, and communication and display units, with custom livery colours to match the vehicles.

Locomotive driver's cab doors



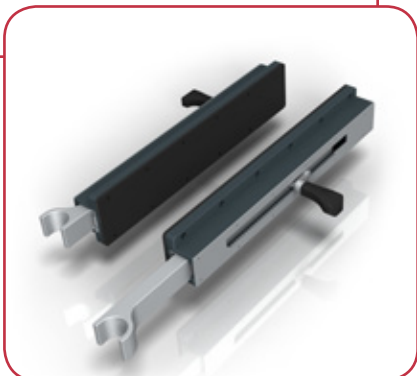
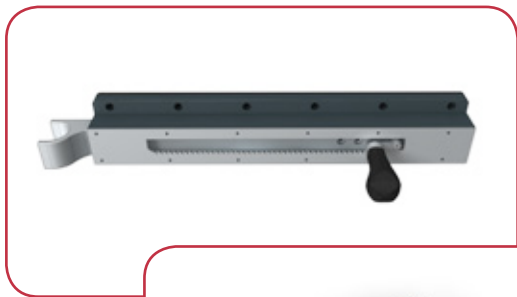
strong and durable



very safe



Tram driver's cab doors



good ergonomics



high quality



THE QUALITY OF PPHU LARISA PRODUCTS IS PROVEN BY THE FOLLOWING TESTS AT THESE BODIES:

RAILWAY INSTITUTE:

- Climatic tests;
- Strength and electrical efficiency tests;
- Electromagnetic compatibility tests.

INSTITUTE OF AVIATION

- Impact resistance tests;
- Vibration resistance tests.

In 2013, PPHU Larisa implemented an ISO 9001 Quality Management System.



ISO 9001

LL-C (Certification)



Larisa

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