



Rail & Transportation Line

speich



Since 1996, SPEICH provides performance and compact custom wiper systems to a small scope production range of **rail and multipurpose wheeled vehicles**, including: humvees, LRV, metro, trams, locomotives, EMU, DMU and HMU.

We continually work to improve our tasks and product range in order to provide fully compliant systems depending on windows size and the maximum vehicle speed.

With our deep knowledge, structured and qualified project management, SPEICH is the ideal choice for rail&transportation markets.





The Products Choice

How to choose the right product?

There is no a unique correct choice for a rail and transportation windscreen wiper

A rail and transportation windscreen wiper system is fully **custom made** for each applications and vehicle screens plan.

The system design and production is made under strictly quality criteria in order to respect the supply management plan and deliverables requirements compliance.

The choice depends on many factors:

- **VISIBILITY AREA REQUIREMENTS**
- **MAXIMUM VEHICLE SPEED**
- **CUSTOMER TECHNICAL SPECIFICATIONS**
- **FORM AND SIZE OF THE SCREEN**

Our team of design engineers will supply the best advice and assistance in order to achieve considerable savings in installation costs, the best window clearing efficiency, the best reliable, available, maintainable and safe product.



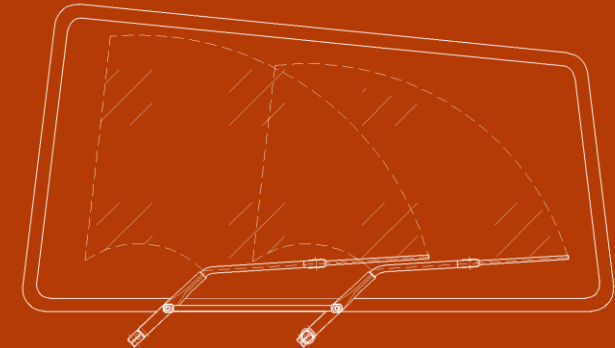
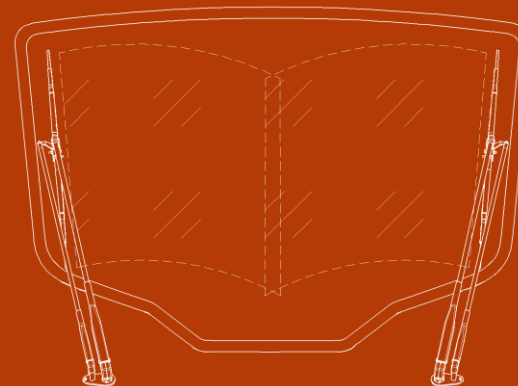
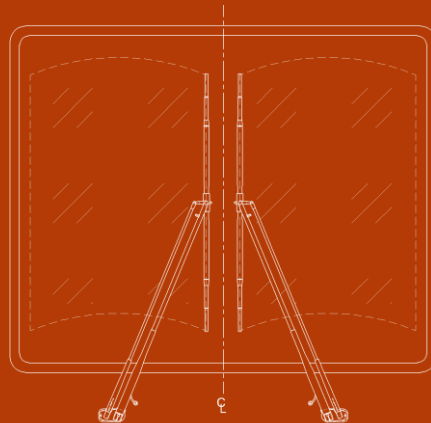
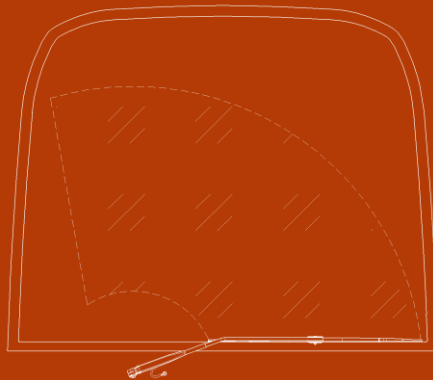
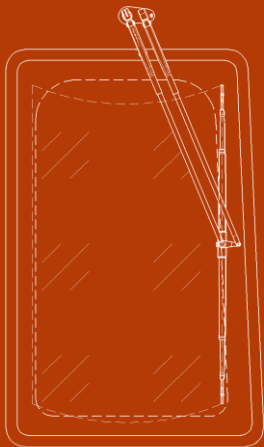
From standard flat screen vehicles to curved screens, our systems are designed to meet all the necessary customer requirements.

Single arm pantograph fully electrical wiper systems

Single arm pendulum fully electrical wiper systems

Double arm pantograph fully electrical wiper systems

Double arm pendulum fully electrical wiper systems



Wiper Motors

- Our **voltage** ranges allow us to be compatible with all vehicles: 12 Vdc, 24 Vdc, 37 Vdc, 72 Vdc, 110 Vdc
- Superior components and **corrosion resistant materials** for reliable and long-life cycle
- Ingress protection: **IP55 ÷ IP67** depending motor installation position
- Custom made designs to meet your interface requirements
- **One or two speed** mode available
- **Self-parking position**



Wiper Arms and Blades

- Pantograph and pendulum arms, flat and articulated blades are available.
- Maximum **performance**
- Wiper arms springs pressures are carefully selected to ensure **smooth operation**
- All arms constructed out of non-corrosive materials stainless steel **AISI 316**
- Two directional integrated **wash jets** used to maximize screen washing coverage
- Blade length is selected to suit the application requirements
- Bolted blade fastening for a **secure fixing**
- Wiper arms shapes, lengths and aesthetic finishes are designed to suit the application requirements

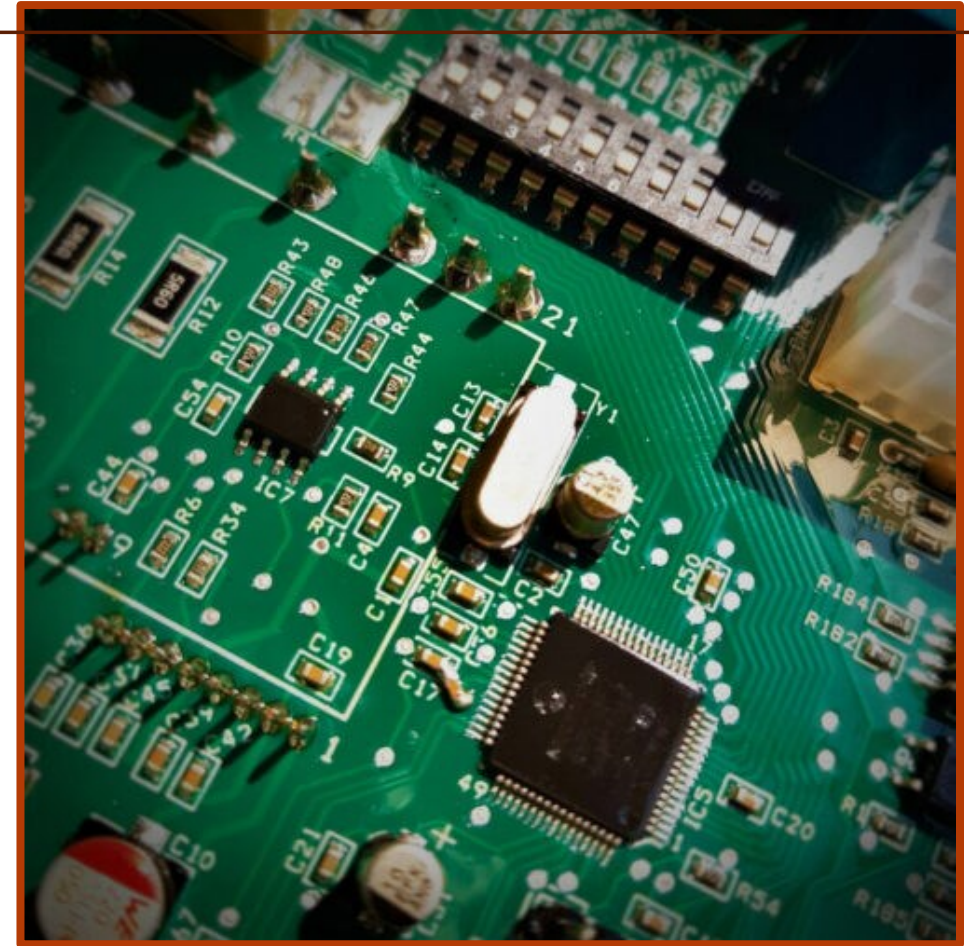


CONTROL SYSTEMS

In order to manage windscreen wiper systems and their auxiliaries, such as washer systems, SPEICH offers fully integrated control systems to enable all functionality requirements.

SPEICH provides the connections to suit your system requirements and electrical harnesses to connect your system together making it as easy as plug and play.

Switches are available with 3 intermittent operations, variable intermittent, slow, fast, park and wash cycle



SPEICH offers complete **washer systems** and relative **accessories** which are designed to meet all the necessary customer requirements.

Our washing systems include:

- Custom-made stainless steel **water tanks** manufactured to suit your space envelope.
- **Custom-made pumps** groups and **tank cups**.
- Fully integrated wash systems including **electronic** and visual **level sensors**.
- **Wash hose kits** with various adaptors for securing hoses.
- **Bulkhead connectors** and cab mounted spray nozzles.



Washer System And Accessories

DESIGN AND PROJECT MANAGEMENT

SPEICH has its own internal process for project management.

This process allows you to achieve a complete scope of supply management, innovative and optimal solutions for customer satisfactions goals.

Typical non-exhaustive list of deliverables and activities for rail & transportation sector:

- Scope of supply specifications (components, services, Contractual Deliverables Requirement List and clause by clause etc..)
- **Functional specifications** (performance, materials, dimensions, weight, finishes, fixing, accessibility, power consumption, interface connectors, spare parts support, visibility and installation specifications etc..)
- **Operational specifications** (mission profile and RAMS&LCC specifications, service condition of operations, health, safety and environment specifications, maintenance planning etc..)
- **Architectural specifications** (electrical interfaces and provisions, mechanical provisions, cabling provisions etc..)
- **Engineering specifications** (tagging, technical data publications, configuration and change management etc..)
- **Tests and design validation** (endurance tests, performance tests, type tests, first article inspection etc..)
- **Industrial specifications** (installation, commissioning and training support, personnel specifications, packaging, handling, storage and transportation specifications etc..)
- **Quality specifications** (configuration management, obsolescence management, manufacturing and control plans, quality plans, supply management plans, special processes management, FAI and FAT procedures etc..)

PRODUCTION AND TESTING

The **in-house production** of most components is part of SPEICH policy which provides several advantages:

- Full quality control manufacturing and control plans
- Very flexible production
- Short lead-time
- Long term spare parts availability
- Low obsolescence risk

Each product project is validated after dedicated testing, in our test room or a third-party laboratory, and first article inspection.

Typical testing and compliance we achieve for our wiper systems are:

- EN50155 compliance
- EMC certified to EN150121/3/2
- Environmental conditions and Vibration to EN50125-1
- Endurance and performance testing
- Salt spray testing
- IP Degree of Protection

- Full quality control
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International Sales Network

A complete list of our global service and distribution network is available on our web site:



www.speich.com

speich