MODULAR SYSTEMS
Adjustable Bolt Connections
Requirements

Application: Locomotives

Customer needs

- Network operators demand short downtimes for maintenance, upgrade and repair

- Lower your customers’ total cost of ownership over the life cycle. Components are replaced every 3-5 years on a chassis with a life span of 40 years

- High performance demands on the connection
Solutions
HALFEN adjustable bolt connections

Features

• Quick and simple assembly and disassembly with Halfen channels and bolts (even up to 3 feet in length). Better than welding or drilling

• The chassis is ready for future upgrades, even with equipment of different sizes or from different vendors, using integrated hot-rolled Halfen framing channels

• Hot rolled channel better withstands dynamic loads – $2 \times 10^6$ load cycles tested - and supports high torque connections

Benefits

• Improved rate of operability – your customers have your product in revenue service more often

• Expensive modification of the chassis due to individual customer demands or upgrades is eliminated

• An adjustable connection available for a wide range of high load situations

Future Oriented

Only one type of base model is needed, which can be used for multiple specific country or customer related needs

Minimal effort

Easily customize the base model to suit individual clients’ needs

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Requirements

Application: Locomotives

Customer needs

- Coordination – design, engineering, assembly and revenue service all occur in different countries
- Safe and secure connection of many different components
- Reliability
# Solutions

**HALFEN adjustable bolt connections**

### Features

- Rolling stock made in the USA, Japan, Korea, China and across Europe is produced with Halfen channels and bolts.

- Guaranteed secure connection with Halfen channels and bolts – up to 15,700 lbs (70kN) load transfer.

- More than 80 years production experience – “Made in Germany”

### Benefits

- **Engineering and after sales support worldwide**

- **Wide design flexibility with Halfen solution**

- **German quality and dependability with US support and service**

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### High Performance

- Experienced Halfen specialists offer advice and assistance.

### Well-engineered

- Wide range of applications.
Requirements
Application: Trains

Customer needs

- Today’s globalized market requires many models with country specific properties
- Compensate for wide production tolerances
- Cost effective modernization at each stage of service life
Solutions

HALFEN adjustable bolt connections

**Features**

- Country specific adaptation is possible without modification of the chassis
- Components with different production tolerances can be easily combined
- Components can be replaced quickly and easily

**Benefits**

- Elaborate customization and adaptation work is eliminated
- Tight tolerances are expensive – reduce your production costs
- Easier modernization reduces the need for planning, modification and installation resources

• Flexibility
  Easily make to country and customer specific requirements

• Ready for operation
  Rough tolerances can be compensated for quickly, without customization work
Requirements

Application: Buses and coaches

Customer needs

- Different buses have different uses – wide spaced seats for coaches, narrow spacing for buses

- Different customers like different seats

- Effective load transfer to chassis
Solutions

HALFEN adjustable bolt connections

**Features**

- Quick and simple adjustment, from wide to tight spacings, on exactly the same chassis

- Individual customer requirements for different seating arrangements from a range of seating manufacturers can be met now, or later in the production cycle

- Hot rolled channel offers adjustable bolt connections with maximum safety

**Benefits**

- Lower production cost and shorter production schedule

- Make your production system more adaptable, and broaden your supplier options

- A safer seat fixing can save lives

**High performance**
Hot rolled Halfen channels with optimal lip shape offer maximum safety

**Simple**
Clean and quick setting of seat spacing
Requirements
Application: Cargo restraints

Customer needs

- Pre-mounted cargo restraints protect sensitive cargo in the transport vehicle

- Fast locking cargo restraints secure a range of goods with little effort

- Cargo restraints protect the load and personnel under emergency conditions
Solutions
HALFEN adjustable bolt connections

Features

- One basic and continuously variable connection point in the transport vehicle allows extremely fast handling

- Proprietary quick releases in conjunction with Halfen framing channels allows optimal positioning of the fixing point

- High point-load capacity and interlocking bolt connections with hot-rolled toothed channels offer great safety over friction only restraint systems

Advantages

- High safety for vulnerable cargo, in seconds

- Individual, rapid fixing anywhere in the loading area

- High safety for all transport users, quickly and easily

- Hot rolled
  High resistance to dynamic loads

- Ready for operation
  No delay in securing the load – rapid adjustability
Requirements

Application: Ropeways

Customer needs

- **Product modules must be installed on the job site. Modules are fabricated before site measuring can be done**

- **Delivery of replacement modules direct from spare parts stock, without any rework or customisation**

- **Mounting belts must be tensioned**
Solutions
HALFEN adjustable bolt connections

**Features**

- Unlike fixed position connections, Halfen channel connections require no prior site or project specific information at the time of production

- Several semi-standard items requiring machining or rework become a single, standard stock item. Repair many models with one part directly from stock

- Continuous and unrestricted tensioning range. Not incremental adjustment

**Benefit**

- No further requirement for detailed site information – eliminate research time and site visits – especially for international projects

- Faster installation and at lower cost

- 100% optimal tension – no compromise

**Reputation**

Halfen is the choice of world leading OEMs in high demand industries

**Adaptability**

One element can suit any jobsite
Requirements
Application: Ships

Customer needs

- Simple planning. Avoid having to produce detailed documentation for many individual mounting positions

- Adapt existing standard solutions to better suit customer requirements

- Replace welding and still maintain industry standards
Solutions
HALFEN adjustable bolt connections

**Features**

- Simple, standard system permits fully adjustable installation without the need for exact specifications or tight tolerances

- Combine existing solutions into a custom assembly

- Halfen bolts and hot rolled channels are the world’s leading adjustable connection for mechanical engineers

**Benefits**

- Less documentation means shorter production cycle

- An adjustable installation solution allows positional flexibility to suit all customer variations without changing components or connection designs

- 100% guaranteed performance and safety

- **Ready for operation**
  Fast maintenance and repair

- **Versatility**
  Simplified installation, particularly in hard to reach areas
HALFEN References:
HALFEN proudly counts the following companies amongst its customers:

Rolling stock customers
Alstom Transport
Bombardier Transportation
CAF
CNR
CSR
Faiveley Transport
Undisclosed US locomotive manufacturer
Hitachi Transport System
Hyundai Rotem
Knorr Bremse
Krauss Maffei Wegmann
Rheinmetall
Siemens Mobility
Talgo
Ultimate Transportation Equipment
Voith Turbo Locomotive
Vossloh

Models supplied include:
AVE high speed
CRH3 high speed
Velaro high-speed family (ICE 3, ICE 4)
LHB Coradia LINT regional train
MBTA heavy passenger railcar
Eurosprinter ES 64 locomotive family
HXD1 / DJ4
HXD3
KNR 8200
Vectron
Traxx locomotive family
ALP 45 DP
Genesis locomotives
Diesel locomotives
Combino low floor LRV
Flexity Outlook LRV
Modular Metro
Singapore Metro prototype
Always there for you.

Do you want to know more about HALFEN in certain countries?

We have compiled all important information in our website. You can contact us, our international subsidiaries, distributors and partners under just one address:

www.halfen.com
## CONTACT HALFEN WORLDWIDE

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