

*Talgo*

Double<sup>Deck</sup>



Talgo-Transtech

Double<sup>Deck</sup>

Solution for  
better

Reliability

Availability

Maintainability

Safety



The double-decker coach offers superior passenger comfort while minimising purchasing, servicing and operating costs. The Double<sup>Deck</sup> concept heralds a new generation of passenger coaches. For passengers, Double<sup>Deck</sup> means unprecedented travel comfort. For operators, Double<sup>Deck</sup> provides a new way of assessing costs and new opportunities for boosting income.

# Double<sup>Deck</sup> Concept for economy and passenger comfort



The Double<sup>Deck</sup> concept developed by Talgo-Transtech applies modern design and manufacturing technology to passenger transport requirements to provide a leading-edge solution. The concept was developed in collaboration with VR Limited (Finnish Railways). The first Double<sup>Deck</sup> coaches were commissioned in 1998.



The Double<sup>Deck</sup> concept significantly reduces the purchasing and operating costs of rolling stock compared to traditional coaches. The extruded aluminium profile technology of the pressure-tight body shell gives the coach an aesthetic finish that lasts throughout its service lifetime. A major advantage is the reduction in weight – c. 20 % less weight per passenger seat compared to a traditional coach. The coaches are extremely well equipped and their structure allows them to be continuously developed and modified. The outstanding features of Double<sup>Deck</sup> coaches enable them to be deployed for different duties, such as InterCity passenger coaches, dining cars and sleeping cars.

## Double<sup>Deck</sup> combines design and production

The Talgo Pilot Arena modelling method was applied to the design and manufacture of the coaches in order to ensure that the service concept was practically implemented and to optimize the manufacture and maintenance of the coaches. A mock-up of the coach was made of wood, textile and plywood during the design phase so that the dimensioning, materials, ergonomics and lighting of the coaches could be fully tested in practice. Talgo Pilot Arena enhances design quality, speeds up the design process and enables earlier ramp-up of series production.

## Double<sup>Deck</sup> Modules

The coaches are based on a modular design. The modular assembly includes interior linings and fittings, electrical cabinets and racks, cable harnesses and various mechanical components and systems such as HVAC, toilets, etc. Modularity offers distinct advantages for production, enabling fast and cost-efficient manufacture of large series of coaches. The aluminium body shell and the integrated, precisely dimensioned slots for fixing elements of interior fittings facilitate high-quality finishing of the coach interiors while providing for their wide-ranging adaptability.

## Double<sup>Deck</sup> Economy

Double<sup>Deck</sup> ensures cost-efficiency in maintenance servicing operations, since the coaches are designed for reliability and for easy accessibility and maintainability of built-in equipment. The availability of the Double<sup>Deck</sup> coach is boosted because maintenance is targeted on exchange modules. Practical operation has shown a significant reduction in maintenance and operating costs compared to a traditional coach.



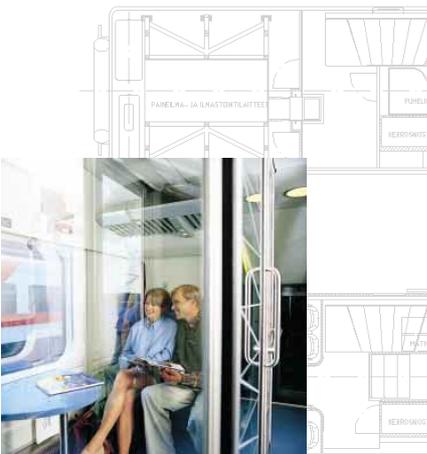
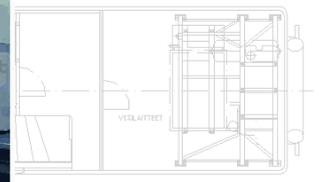
### DoubleDeck Safety

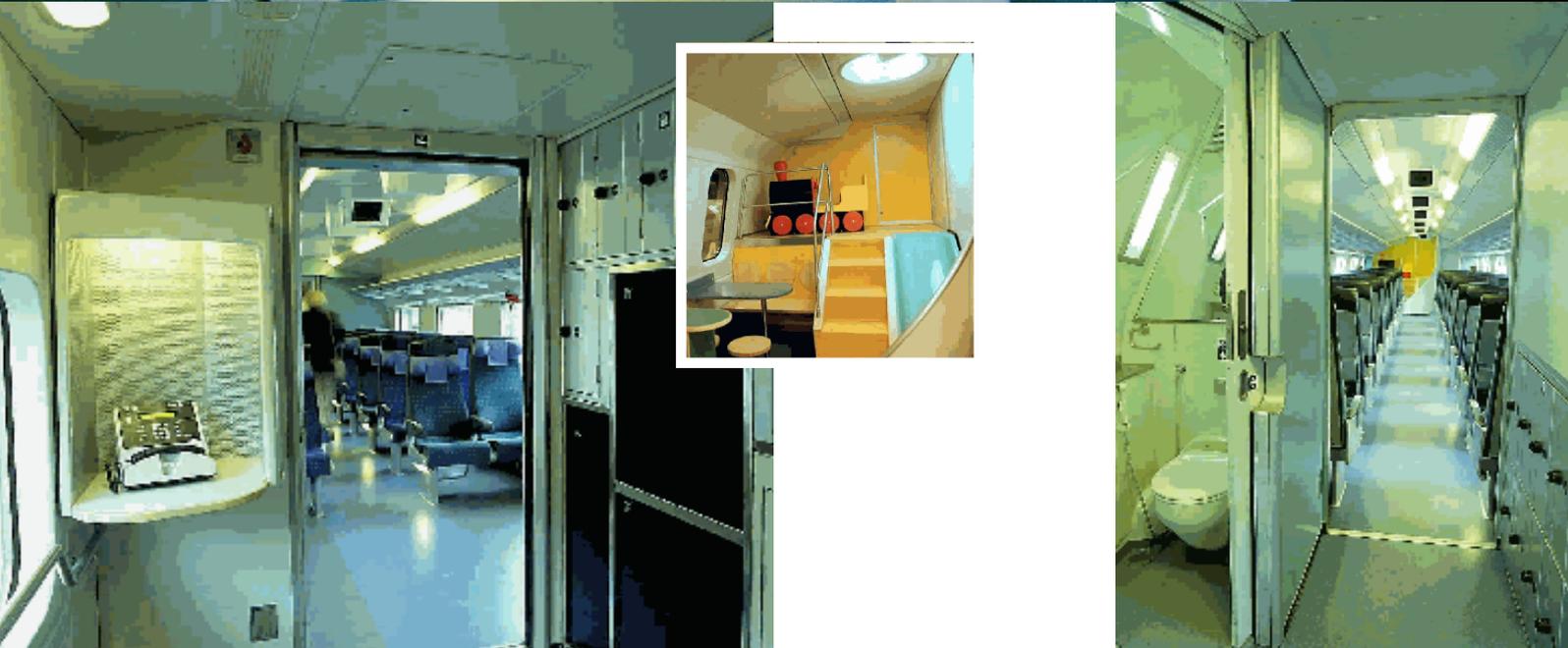
The safety of the DoubleDeck is underpinned by its solid design, the expertise behind the materials used in its constructions and the solutions applied, and thorough testing. All systems in the coach that affect reliability and safety use tested products from leading suppliers. The interior has been designed and finished with passenger safety in mind. The aluminium construction forms a robust and integrated body shell provided with absorption zones at both ends for added safety.

### DoubleDeck ultimate comfort

The style of the interior of DoubleDeck coaches is modern and enduring. Their running behaviour is exceptionally comfortable. All coaches are pressure-tight and air-conditioned. The boarding deck provides easy entry from the platform, while the upper deck offers relaxing travel accommodation without disruptive passenger movement and external noise. The digital passenger information system can provide passengers with a wide range of information and entertainment. Sockets under the fixed tables are provided for charging laptop computers and mobile phones.

For families with children the DoubleDeck service coach is provided with a family compartment, a children's play area and special storage area for prams and pushchairs. The interior of the coach caters for passengers in wheelchairs. The lower deck also has two places for wheelchairs, a toilet for handicapped people, and a public telephone positioned at a suitable height for passengers in wheelchairs.



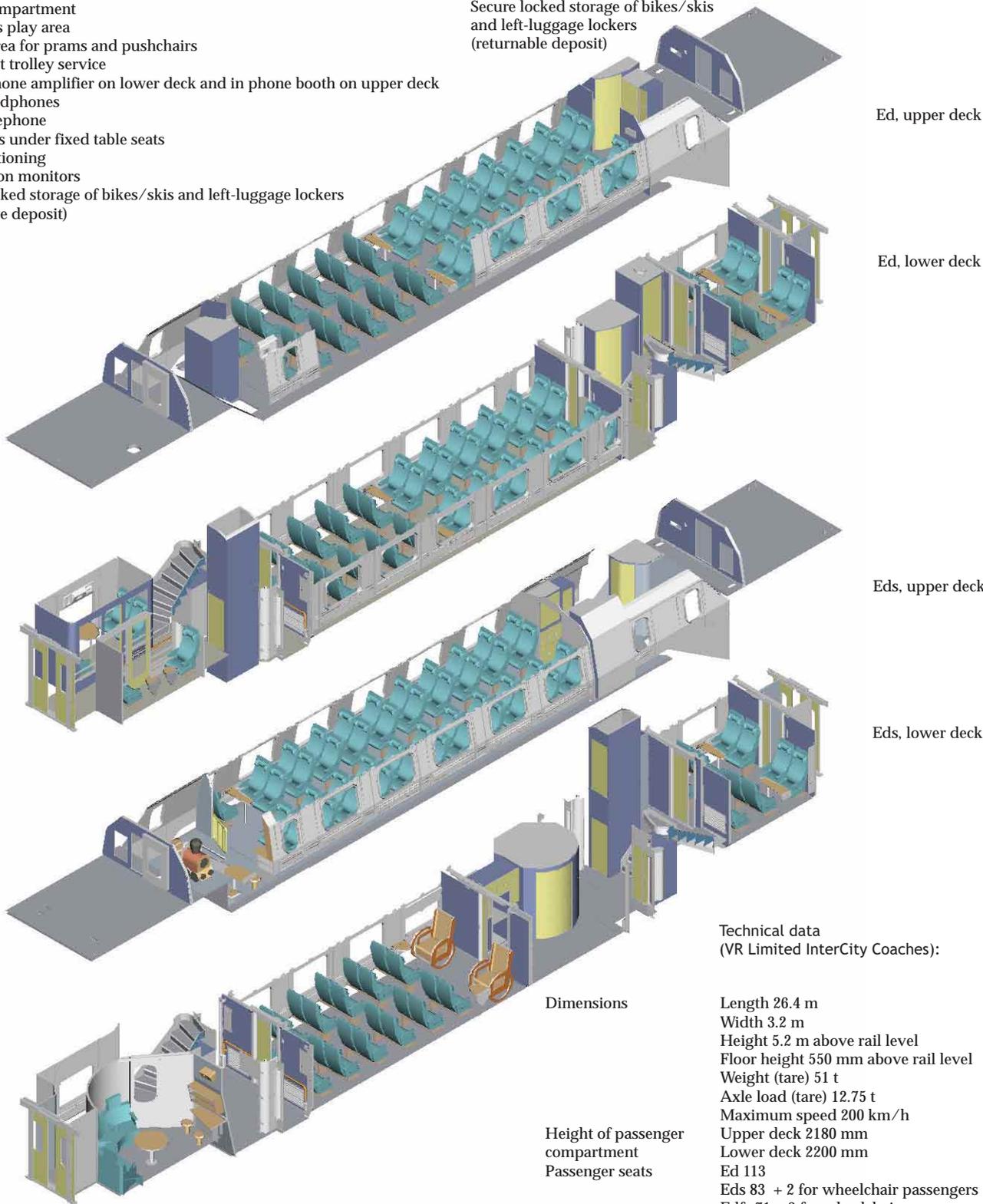


**Services:**

Double Deck Ed: 113 seats  
 MiniPuffet trolley service  
 Mobile phone amplifier on lower deck and in phone booth on upper deck  
 Radio headphones  
 Public telephone  
 PC sockets under fixed table seats  
 Air conditioning  
 Information monitors  
 Secure locked storage of bikes/skis and left-luggage lockers (returnable deposit)

Double Deck Eds: 83 seats + 2 places for wheelchair passengers  
 Services and facilities for handicapped passengers  
 Family compartment  
 Children's play area  
 Storage area for prams and pushchairs  
 MiniPuffet trolley service  
 Mobile phone amplifier on lower deck and in phone booth on upper deck  
 Radio headphones  
 Public telephone  
 PC sockets under fixed table seats  
 Air conditioning  
 Information monitors  
 Secure locked storage of bikes/skis and left-luggage lockers (returnable deposit)

Double Deck Edfs: 71 seats + 2 places for wheelchair passengers  
 Services and facilities for handicapped passengers  
 Family compartment  
 Children's play area  
 Storage area for prams and pushchairs  
 Train captain's compartment  
 Catering compartment with cold storage space  
 MiniPuffet trolley service  
 Mobile phone amplifier on lower deck and in phone booth on upper deck  
 Radio headphones  
 Public telephone  
 PC sockets under fixed table seats  
 Air conditioning  
 Information monitors  
 Secure locked storage of bikes/skis and left-luggage lockers (returnable deposit)



**Technical data (VR Limited InterCity Coaches):**

|                                 |   |
|---------------------------------|---|
| Dimensions                      | Length 26.4 m<br>Width 3.2 m<br>Height 5.2 m above rail level<br>Floor height 550 mm above rail level<br>Weight (tare) 51 t<br>Axle load (tare) 12.75 t<br>Maximum speed 200 km/h |
| Height of passenger compartment | Upper deck 2180 mm<br>Lower deck 2200 mm  |
| Passenger seats                 | Ed 113<br>Eds 83 + 2 for wheelchair passengers<br>Edfs 71 + 2 for wheelchair passengers   |
| Seating arrangement             | 2 + 2   |

TALGO-TRANSTECH OY  
Elektroniikkatie 2  
FIN-90570 Oulu, Finland  
Tel. +358 8 870 6900  
Fax +358 8 870 6970  
[www.talgo.fi](http://www.talgo.fi)

MAIN HEADQUARTERS  
Gabriel Garcia Márquez, 4  
E-28230 Las Rozas (Madrid), Spain  
Tel. + 34 91 631 38 00  
Fax + 34 91 631 38 99  
[www.talgo.com](http://www.talgo.com)

