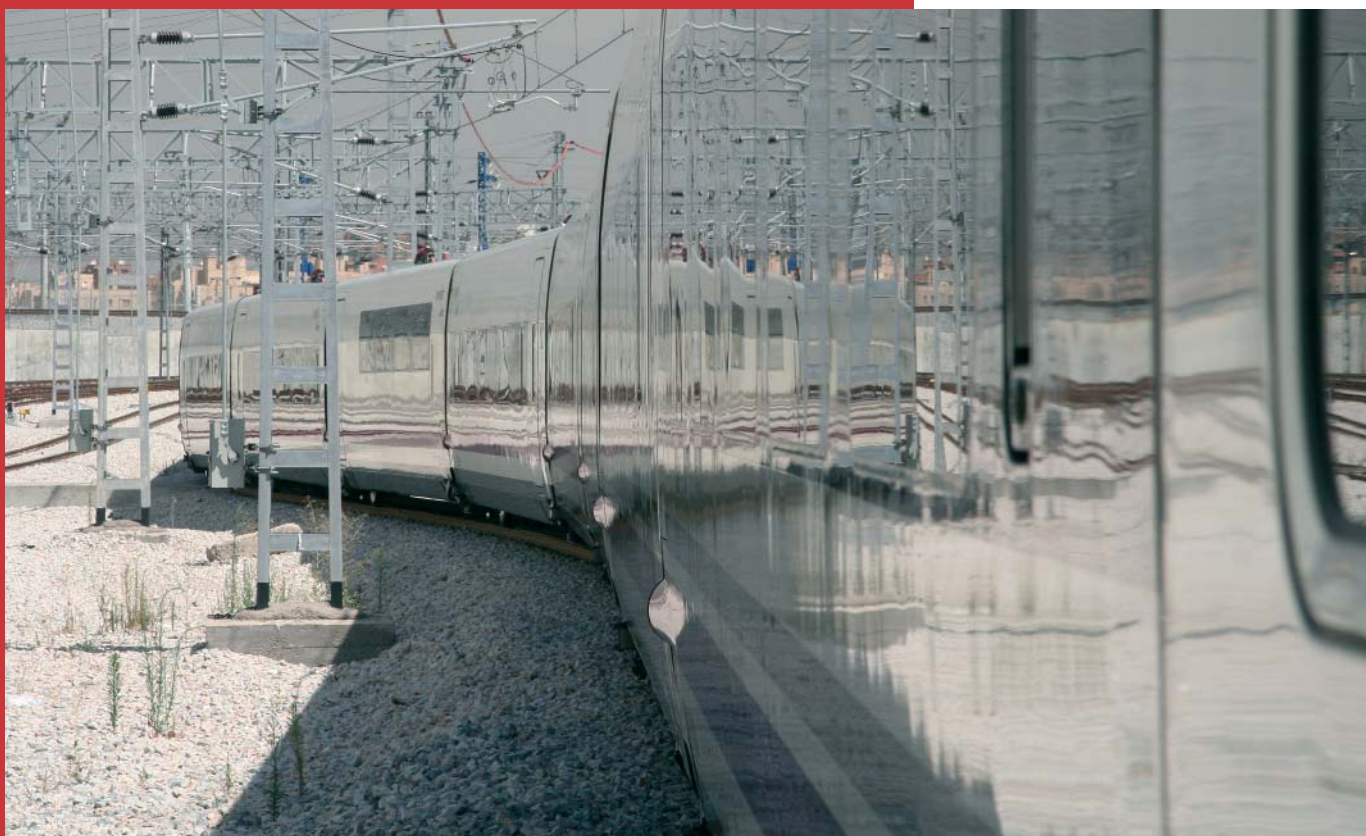


The Talgo Pendular Coaches



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Coaches

Talgo

Talgo

The TALGO Pendular Coaches

The Pendular TALGO trainsets are equipped with a suspension system which improves the rails transport possibilities, allowing significant increases of the running speed on curved track, with maximum comfort and security for the passenger and a low level of forces on the track.

A Pendular TALGO trainset is made up of a succession of coaches linked by means of articulated unions, which allow a great freedom of movements to each one of them and, at the same time, form a rigid and undeformable set.

The sets of wheels, which are situated between two adjoining coaches, are monoaxle, with independent wheels, and run guided by a simple device which guarantees that the wheels are always parallel to the track.

The high dynamic performance qualities of the Pendular TALGO trains, the simplicity of its design, its maintenance and its capacity to be hauled by any type of locomotive, either on high speed tracks or conventional tracks, allow a very versatile and highly profitable commercial venture.



THE TALGO PENDULAR TRAINS

- The wide range of TALGO Pendular coches allows a variety of combinations to suit the specific needs of any commercial service.
- Reduced weight for energy saving.
- Independent wheels for permanently guided.
- Natural Pendulation for increased speed on curves a perfect adaptability to any type of track.
- Simple maintenance.
- A versatile and reliable train designed to optimize passenger rail transport.

MAIN FEATURES

- Lightweight, short carbodies (13.14 m. (43.1') long), based on welded aluminum-alloy extrusions.
- Mechanical resistance in accordance with UIC and FRA standards.
- 2942 mm. (9.65') wide.
- Anti-overturn and anti-override systems.
- Five panoramic windows on each side wall.
- Air-conditioning units underneath the frame.
- Easy access, without steps, from the side of the car.
- Automatic interior and exterior doors.
- Ergonomic, reclining and rotating seats, adjustable to the direction of travel, with footrests .
- Individual reading light and power outlet in every seat.
- Personalized audio equipment with volume control and channel selector (four audio channels and two video channels).
- Video/TV screens.
- One restroom in every car, with ecological toilets and vacuum empty cleaning
- Global Positioning System (GPS) equipment to inform passengers about the location of the train throughout the trip.
- Liquid crystal displays with interactive information for passengers.
- Cars with special features for wheelchair-bound passengers .
- Bistro cars fully equipped to provide service.





SEAT COACHES:

- First and second class seat coaches (26 and 36 reclining and revolving seats, in standard type, respectively)
- Coaches for disabled passengers (32 + 2 seats in coach class or 22+2 seats in first class)
- Internal and external automatic doors.
- Folding individual tables.
- Air conditioned.
- Music and megaphonic services with individual and/or environmental diffusion.
- Video
- Power supply for mobile phone portable computers or other electrical appliances
- Spacious luggage-rack.
- Individual reading lighting.
- Closed toilets, etc...



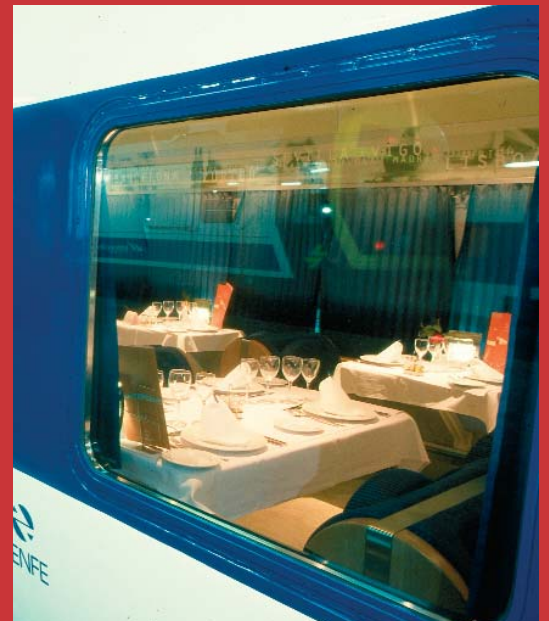
THE PENDULAR TALGO SET OF WHEELS

- The TALGO Pendular set of wheels is assembled between two adjoining coaches. The set of wheels is a monoaxle assembly with independent wheels to prevent hunting movement and to reduce wheel-hand integration
- The pneumatic springs of the suspension situated in a high position above the Centre of Gravity in combination with the coach body make a configuration similar to a pendulum which, under the action of the centrifugal acceleration, tilts the coach naturally to the inside of the curve.
- A mechanical Steering System maintains the wheels permanently parallel to the rail
- Shock absorbers are mounted between two adjoining coaches
- In the original design of the union between two adjoining coaches are included several elements that are in opposition to the isolated overturning of the coaches and to the mounting.



NIGHT COACHES

- The Gran Class sleeper coaches offer luxurious compartments for one or two passengers, with private shower, basin and W.C. facilities.
- Standard sleeper coaches, with compartments for one or two passengers.
- Tourist sleeper coaches, with compartments for four passengers.
- Night coach with super-reclining seats with 20 couchettes placed in longitudinal sense.
- All the compartments and couchettes have seats for daytime travel.



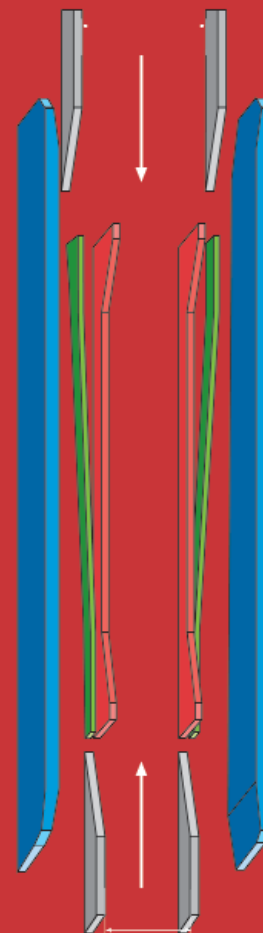
SERVICES COACHES

- Cafeteria-Kitchen coach, with facilities adapted to the particularities of each commercial service.
- Restaurant coach, with 30 places distributed in 5 tables seating 4 and 5 tables seating 2.
- End service coach, with electric generators, air compressors, water reservoirs, batteries and other equipment for the service of the train.



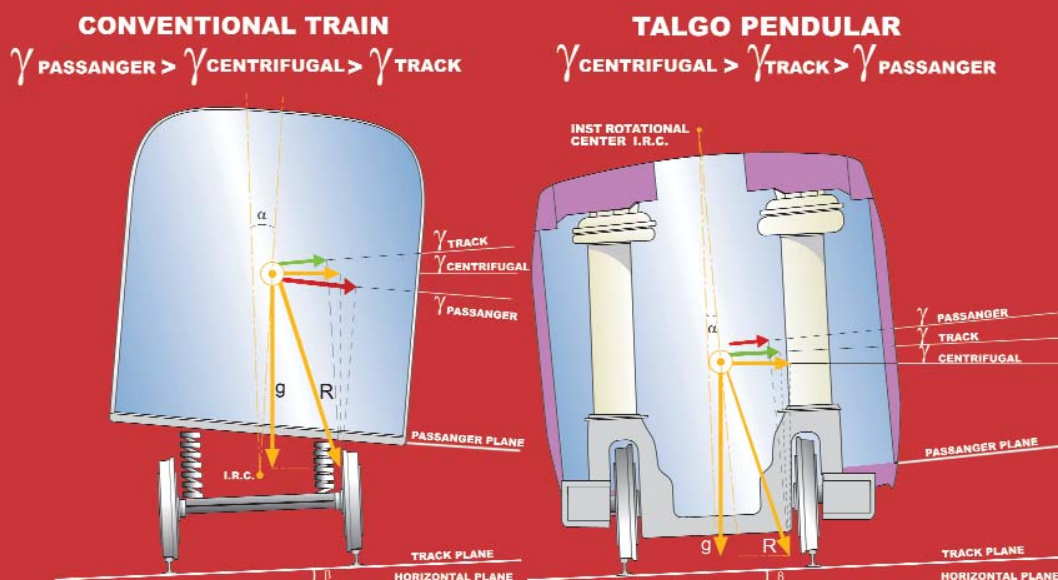
TALGO RD

- TALGO's RD System, used to change automatically the distance between the wheels of the axles, has been successfully used since 1968 in variable-gauge axles of Talgo's trains.
- The TALGO RD System permits the automatic change of the distance between the wheels of the railway vehicles in order to make possible the running on different gauge tracks.
- The TALGO RD system can be applied to different models of Talgo Pendular trains (passenger coaches, power heads and), and to any type of freight wagon, with full security and reliability, through standard /Spanish and Russian / standard gauge Railway networks.
- The change is made without human intervention while the train is running at low speed (15 Km/h) through a special installation fixed on the track in between the tracks of different gauges.



TALGO PENDULAR SYSTEM

- This is a unique and simple system based on the elevation of the support plane of the suspension springs above the Centre of Gravity of the carbodies. This system is used to reduce the lateral forces that affect passengers when traveling on curves.
- The carbodies actuate under the effect of natural (centrifugal) forces without any loss of safety and comfort levels, thanks to the steered wheels and the unique talgo wheelset assembly characteristics...
 - ... carbodies tilt toward the interior of the curves in direct relationship to travelling velocity...
 - ... reducing the values of lateral forces that act upon the passengers...
 - ... thereby enabling a 25% increase in travel speed when traveling on a curve, provided that the tracks' resistance characteristics are appropriate.
 - ... reducing the levels of the wheel-rail interactions allowing to increase speeds in curves without affecting safety.



POWER HEAD TALGO 250

An electric and dual-voltage Power Head with variable gauge.

Main Characteristics:

- Basic configuration: 2 PH + up to 11 coaches
- Power Supply: 25kV AC / 3kV DC
- Variable track gauges: 1668 <> 1435 / 1520 <> 1435 mm (automatic commutable)
- Traction power (MW): 4.8 (AC), 4 (DC)
- Regenerative and rheostatic braking
- Max. service speed: 250 km/h
- Bogie Configuration: Bo'Bo'

Propulsion and signalling equipment:

- State of the art AC propulsion with water cooled IGBT technology
- Auxiliary converter integrated into main converter
- ATP system incl. ETCS Level 2, LZB, ASFA and Ebicab900TBS





FILIALES:
COMPANIES IN THE GROUP

ALEMANIA / GERMANY

Talgo Deutschland GmbH

Revaler Strasse, 99
D-10245 Berlin
Tel: (+49) 302 388 000
Fax: (+49) 302 388 0011
info@talgo.de
www.talgo.de

KAZAJSTÁN / KAZAKHSTAN

Talgo Kazajstán

Polezhaeva 1 a
KZ-050016 Almaty
Telf.: + 7 3272 96 13 13
Fax: + 7 3272 96 19 24

ESTADOS UNIDOS / USA

Oficinas / Offices

Talgo Inc

505 Fifth Avenue South, Suite 630
Seattle, WA 98104
Tel: (+1) 206 748 61 40
Fax: (+1) 206 748 61 47
seattle@talgo.com
www.talgoamerica.com

Talleres / Workshops

Talgo Inc
1739 Third Avenue South
Seattle, WA 98134
Tel: (+1) 206 748 61 40
Fax: (+1) 206 748 61 47

TALGO EN ESPAÑA
TALGO IN SPAIN

FÁBRICACIÓN:
MANUFACTURING PLANTS

Madrid - Las Matas II

Paseo del Tren Talgo nº 2
28290 - Las Matas (Madrid)
Tel: (+34) 91 630 91 50
Fax: (+34) 91 630 92 48

Alava

Rio Bayas, 5.
01213 - Rivabellosa (Alava)
Tel: (+34) 94 535 52 30
Fax: (+34) 94 535 51 73

MANTENIMIENTO:
MAINTENANCE WORKSHOPS

Madrid - Las Matas I

Ctra. N-VI, Km. 23,500
28230 - Las Matas (Madrid)
Tel: (+34) 91 636 91 50
Fax: (+34) 91 630 15 02

Madrid - Santa Catalina

Santa Catalina 14
28053 - Madrid
Tel: (+34) 91 785 65 34
Fax: (+34) 91 785 65 86

Barcelona

Ferrán Junoy s/n
08030 Barcelona
Tel: (+34) 93 274 52 93
Fax: (+34) 93 311 49 57

OFICINAS CENTRALES:
MAIN OFFICES

ESPAÑA / SPAIN

PATENTES TALGO S.A.

Gabriel García Márquez 4
Parque Empresarial Las Rozas
28232 Las Rozas (Madrid)
Tel : (+34) 91 631 38 70
Fax : (+34) 91 631 38 93
marketing@talgo.com

