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**Road vehicles — Fully automatic  
coupling systems 24 V (FACS)  
for heavy commercial vehicle  
combinations —**

**Part 2:  
50 mm fifth wheel couplings —  
Electrical and pneumatic interface**

*Véhicules routiers — Dispositifs d'attelage entièrement automatiques  
24 V (FACS) pour ensembles routiers lourds —*

*Partie 2: Sellettes d'attelage pour pivot de 50 mm — Interface  
électrique et pneumatique*



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Fax + 41 22 749 09 47  
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## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2. [www.iso.org/directives](http://www.iso.org/directives)

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received. [www.iso.org/patents](http://www.iso.org/patents)

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

The committee responsible for this document is ISO/TC 22, *Road Vehicles*, Subcommittee SC 15, *Interchangeability of components of commercial vehicles and buses*.

ISO 13044 consists of the following parts, under the general title *Road vehicles — Fully automatic coupling systems 24 V (FACS) for heavy commercial vehicle combinations*:

- *Part 1: General requirements and definitions*
- *Part 2: 50 mm fifth wheel couplings — Electrical and pneumatic interface*

## Introduction

This International Standard specifies the integrated electrical and pneumatic connections of an automated fifth wheel coupling system for articulated vehicles and related components.

Fully Automated Coupling Systems improve safety and comfort of vehicle combinations.

a) Higher safety standards

reduction of operational accidents,

less injured drivers because no need for driver to stay in the dangerous zone between the towing and the towed vehicle while uncoupling.

b) Higher comfort level

Fully Automated Coupling Systems eliminate necessity to access the coupling,

higher comfort makes “Driver-Job” easier and safer,

new components create space for future extensions and potentials.

c) Cost reduction for end user

less inactive periods for the vehicle combination due to less damage and repair,

less repair and maintenance of cables and pipes.



# Road vehicles — Fully automatic coupling systems 24 V (FACS) for heavy commercial vehicle combinations —

## Part 2:

## 50 mm fifth wheel couplings — Electrical and pneumatic interface

### 1 Scope

This part of ISO 13044 specifies the mechanical, electrical/electronic and pneumatic characteristics of a fully automated fifth wheel coupling system to ensure interchangeability between a tractor vehicle and a coupled semi-trailer(s) with 24 V nominal supply voltage. The two vehicles together constitute an articulated vehicle.

This part of ISO 13044 also supports the smooth introduction of fully automated fifth wheel coupling systems in the market. It specifies features necessary for mixed mode operation; i.e. the combination of a fully automated coupling system (FACS) equipped tractor vehicle with a conventional semi-trailer, and vice versa, the combination of a conventional tractor vehicle with a FACS-equipped semi-trailer.

### 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 337, *Road vehicles — 50 semi-trailer fifth wheel coupling pin — Basic and mounting/interchangeability dimensions*

ISO 1726-1, *Road vehicles — Mechanical coupling between tractors and semi-trailers — Part 1: Interchangeability between tractors and semi-trailers for general cargo*

ISO 1726-2, *Road vehicles — Mechanical couplings between tractors and semi-trailers — Part 2: Interchangeability between low-coupling tractors and high-volume semi-trailers*

ISO 3833, *Road vehicles — Types — Terms and definitions*

ISO 3842, *Road vehicles — Fifth wheels — Interchangeability*

ISO 4009, *Commercial vehicles — Location of electrical and pneumatic connections between towing vehicles and trailers*

ISO 4091:2003, *Road vehicles — Connectors for the electrical connection of towing and towed vehicles — Definitions, tests and requirements*

ISO 7638-1:2003, *Road vehicles — Connectors for the electrical connection of towing and towed vehicles — Part 1: Connectors for braking systems and running gear of vehicles with 24 V nominal supply voltage*

ISO 11992 (all parts), *Road vehicles — Interchange of digital information on electrical connections between towing and towed vehicles*

ISO 12098:2004, *Road vehicles — Connectors for the electrical connection of towing and towed vehicles — 15-pole connector for vehicles with 24 V nominal supply voltage*

ISO 16750-3:2012, *Road vehicles — Environmental conditions and testing for electrical and electronic equipment — Part 3: Mechanical loads*

ISO 16750-5:2003, *Road vehicles — Environmental conditions and testing for electrical and electronic equipment — Part 5: Chemical loads*

ISO 6150:1988, *Pneumatic fluid power — Cylindrical quick-action couplings for maximum working pressures of 10 bar, 16 bar and 25 bar (1 MPa, 1,6 Mpa, and 2,5 MPa) — Plug connecting dimensions, specifications, application guidelines and testing*

### 3 Terms and definitions

For the purposes of this part of ISO 13044, the terms and definitions given in ISO 13044-1 and the following terms and definitions apply.

#### 3.1 fully automated coupling system FACS

coupling and uncoupling system where all operations, i.e. mechanical, electrical, pneumatic and applicable auxiliary functions, are performed automatically, enabling the coupling and uncoupling process to be completed without direct manual intervention

Note 1 to entry: As defined in ISO 13044-1:2012.

#### 3.2 electrical/electronic-pneumatic interface module EPI module

component, combining all electrical/electronic and pneumatic connections in one mating unit, consisting of two complementary parts, the EPI plug module and the EPI socket module

##### 3.2.1 EPI plug module

part of the EPI module containing the electric male contacts, pneumatic male connections and the alignment pins. It is permanently attached to the kingpin side mounted on the semi-trailer

##### 3.2.2 EPI socket module

part of the EPI module containing the electric female contacts, pneumatic female connections and the alignment sockets. It is permanently attached to the fifth wheel which is mounted to the tractor vehicle

##### 3.2.3 semi-trailer

towed vehicle which is designed to be coupled to either a towing vehicle or to a dolly axle, and to impose a substantial vertical load either on the towing vehicle or on the dolly axle

##### 3.2.4 alignment device

device placed on the trailer-side, which makes contact to the 5th wheel throat during the coupling process and centres the EPI plug relative to the EPI socket

### 4 Requirements

#### 4.1 General

In order to guarantee best functionality, comfort and safety, the use of FACS is recommended in combination with spring-brake equipped semi-trailers only. FACS does not exonerate the driver from ensuring the semi-trailer is correctly parked before coupling or uncoupling.