INTERNATIONAL STANDARD

**ISO 18207**

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# Road vehicles — Trailers up to 3,5 t — Control of welded towing brackets for coupling ball after fatigue testing

*Véhicules routiers — Remorques jusqu'à 3,5 t — Contrôle des supports de boule d'attelage mécanosoudés après essai de fatigue*

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## Foreword

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International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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.

ISO 18207 was prepared by Technical Committee ISO/TC 22, *Road vehicles*, Subcommittee SC 4, *Caravans and light trailers*.

## Introduction

Almost all of the towing brackets available on the European market are made of steel parts constructed by mechanical welding using semi-automatic machines. This process of welding is used for its good adaptation to mass production which generates welding defects that do not necessarily lead to cracking or fatigue ruptures during the test.

The uniqueness of control after fatigue testing thus leads to the detection of indications[1)] of which the origin, determining the outcome of the control, cannot be deduced with certainty:

— Welding defects which have not developed after the imposed $2\times,10^6$ cycles, thus deduced without seriousness;

— Fatigue cracks initiated during the test or defects of welding having started a process of cracking, constituting a crippling deterioration.

In the absence of data on the initial state of the product before fatigue test, the discrimination of these two types of indications can require long and expensive work (appropriate cutting up of the coupling for micrographic and/or microfractographic examination under a scanning electron microscope), which is not possible in a systematic way for economic reasons within the framework of these tests.

Hence, the requirement for a method of non-destructive tests acceptable in all cases without having to resort to these long and expensive examinations.



1) As defined in NF A 09-500 for control by penetrant testing or magnetic images, and in NF A 09-590 for control by magnetic particle testing. The often employed term “default” is used in the following text to designate these indications.

 

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## 1 Scope

This International Standard defines a simplified and reliable check procedure of the mechanical coupling devices between light trailers, and towing vehicles, covered by ISO 3853 and European regulation (94/20/CE), which specify a dynamic test of mechanical resistance at the conclusion of which these devices should present neither fractures, splits, cracks, nor visible external deteriorations caused by the test.

This International Standard is applicable to all the components of the mechanical coupling devices whose failure can cause the fracture of the attachment, manufactured out of steel, forged steel or cast steel (i.e. generally in ferromagnetic materials).

In the case of use of other materials, the manufacturer will check their compatibility with the methods of non-destructive testing.

## 2 Normative references

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

ISO 3853, *Road vehicles — Towing vehicle coupling device to tow caravans or light trailers — Mechanical strength test*

EN 473, *Non destructive testing — Qualification and certification of NDT personnel — General principles*

NF E 83-100, *Construction d'ensembles mécanosoudés — Techniques de soudage*

94/20/CE, *Directive 94/20/EC of the European Parliament and of the Council of 30 May 1994 relating to the mechanical coupling devices of motor vehicles and their trailers and their attachment to those vehicles*

## 3 Aim of controls and principles

The purpose of fatigue controls is to detect the defects caused by the fatigue resistance test (required by ISO 3853), i.e. to distinguish the evolutionary defects among all the possible defects (required by NF E 83-100) which do not necessarily affect the fatigue strength.

Controls consist of detecting, measuring, indexing and “charting” if needed, the indications before fatigue test then carrying out a new control after fatigue tests and comparing the results obtained.

## 4 Applicability of control

Control deals with all the components, all the welding, all the machining and all the parts of the coupling device whose failure can cause the rupture of the aforementioned.