TECHNICAL REPORT 6546

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INTERNATIONAL ORGANIZATION FOR STANDARDIZATION•МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ•ORGANISATION INTERNATIONALE DE NORMALISATION

Road vehicles — Information core appropriate to the field study of accidents in which seat belts are used

Véhicules routiers — Noyau d'information relatif à l'étude in situ d'accidents dans lesquels des ceintures de sécurité sont utilisées

Technical Report 6546 was drawn up by Technical Committee ISO/TC 22, *Road vehicles*, and approved by the majority of its members. The reasons which led to the decision to publish the document in the form of a Technical Report are as follows :

— Data compiled on the basis of this report will facilitate biomechanical studies of the consequences of an accident. As this science is constantly evolving, it is logical to publish a technical report which will be reviewed as knowledge in this field develops.

— The different organizations which deal with this problem already have their study methods and this document has been drawn up to enable them to supplement their methods.

— Alignment of their methods with the one proposed will thus facilitate exchange and comparison.

1 SCOPE AND FIELD OF APPLICATION

This Technical Report specifies information necessary for the study of accidents to vehicle occupants wearing seat belts. This "information core" has been designed to be appropriate to *in-situ* accident investigation techniques.

2 REFERENCE

ISO 3779, *Road vehicles — Vehicle identification number (VIN) — Content and structure.*

3 INFORMATION CONCERNING THE VEHICLE

3.1 Brief description of accident, including order of impacts in multiple impact situation. Involvement of fire and water should be included.

3.2 Date of accident.

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3.3 Vehicle make, model (specifying engine size).

3.4 Vehicle identification number (conforming to ISO 3779).

3.5 First date of circulation.

3.6 Odometer reading (this may help in assessing the amount of conditioning of an inertia reel).

3.7 Object struck (should be covered in sufficient detail to allow estimates of the velocity difference, ΔV).

3.8 Vehicle deformation index (for both vehicles).

3.9 Occupant trajectory angle.

3.10 Driver estimated speed prior to accident.

3.11 Velocity difference (ΔV).

3.12 Equivalent test.

3.13 Equivalent test speed (E.T.S.).

3.14 Mass ratio.

} If obtainable

3.15 Was side continuity interrupted (i.e. were door locks, hinges and pillars intact) ?

3.16 Displacement of the steering — Lateral, vertical and longitudinal steering hub displacement.

3.17 Contact with steering wheel. (Which part of wheel has been in contact with which region of the body ?)

3.18 Intrusion into passenger compartment defined so that intrusion in three separate horizontal levels can be determined (i.e. head/facia/footwell).

3.19 Was there any pre-impact braking or other action likely to cause the occupant to be out of position ?

4 DETAILS OF THE RESTRAINT SYSTEM

4.1 Make, model and identification number of belt.

4.2 Strap width.

4.3 Type of belt (i.e. two point single strap, three point belt, two straps, two point shoulder belt with or without knee bolster, lap belt, passive belt system and detailed description).

4.4 Geometry modifiers fitted (i.e. guide loop, comfort clip, etc.).

4.5 Retractor type and position (i.e. vehicle/belt/dual sensitivity).

4.6 If adjustable anchorage is fitted, where positioned ?

4.7 Type of inboard anchorage (wire loop, semi-rigid stalk, seat attached, etc.).

5 INFORMATION ON EACH SEATING POSITION IN CAR FITTED WITH A BELT

5.1 Belt used or not.

5.2 Tongue insert or coating marked/penetrated (particularly in low energy accidents it is important to differentiate between marks induced by normal use and those produced by accident loading).

5.3 Belt burns on seat.

5.4 Squab burns (produced by interaction between occupant and seat base cushion).

5.5 Webbing damage (none, torn, cut, abraded, roped).

5.6 Buckle operation (correct, damaged, jammed) and accessibility.

5.7 Was there any physical difficulty in releasing belt ? Could occupant do it ?

5.8 Evidence of webbing transfer between lap and shoulder section (which way, how far) ?

5.9 Mounting damage (pillar, outboard, inboard, reel).

5.10 Reel performance (locking angle on hand-held tilt test, conducted in same direction as major impact force).

5.11 Retractor (correct, jammed, broken).

5.12 Running loop coating (marked/penetrated). (Normal use markings can be deceptive.)

5.13 Running loop. Does it swivel as designed ?

5.14 Belt movement through loop under load (how far ?).

5.15 Seat position on horizontal adjusters and vertical adjusters.

5.16 Was seat back fully reclined ?

5.17 Was there additional loading on the occupant (if so, by what) ?

5.18 Was occupant partly or wholly ejected (if so, via where) ?

5.19 Was occupant trapped (if so, how) ?

5.20 Middle of buckle to centre line of subject (applicable to cases where inboard section of belt, leading to buckle, is adjustable).

5.21 Dimensions of belt at loading, as evidenced by material transfer marks from swivel and buckle.

5.22 Length of webbing left on reel when belt first took load.

5.23 Total webbing length in inertia reel system.

5.24 Seating test (if possible) to detect if belt was tight or loose (requires details of occupant dimensions and clothing).

5.25 Was belt cut, if so, by whom (occupant, rescuer etc.) ? Reason for this (buckle operation impossible, faster help).

6 INFORMATION ABOUT OCCUPANT

6.1 General

Vehicle occupation giving positions of all occupants, specifying which are restrained.

6.2 Individual occupant information

6.2.1 Age.

6.2.2 Sex.

6.2.3 Height.

6.2.4 Mass.

6.2.5 Rating of injuries according to Abbreviated Injury Scale (AIS).

6.2.6 Overall AIS.

6.2.7 Injury Severity Score (ISS).

6.2.8 Occupant contacts and level of confidence of injury producing contacts. (One of the aims of this sub-clause is to differentiate between belt-induced injuries and those resulting from other sources).