INTERNATIONAL STANDARD

ISO 12214

Third edition
2018-02

Road vehicles — Direction-of-motion stereotypes for automotive hand controls

Véhicules routiers — Stéréotypes de sens d'action sur les commandes manuelles dans l'automobile

Reference number
ISO 12214:2018(E)

© ISO 2018



COPYRIGHT PROTECTED DOCUMENT

© ISO 2018

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Fax: +41 22 749 09 47
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

 © ISO 2018 – All rights reserved

Contents

Page

Foreword ..... **iv**
Introduction ..... **v**
1 Scope **1**
2 Normative references **1**
3 Terms and definitions **1**
4 Design **1**
4.1 General 1
4.2 On/increase controls 2
4.3 Specific function controls 2
4.3.1 General 2
4.3.2 Power mirror controls 2
4.3.3 Power window controls 3
4.3.4 Window regulators (cranks) 3
4.3.5 Stalk-mounted controls 3
4.3.6 Power door locks 3
Bibliography **9**

© ISO 2018 – All rights reserved

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 (see 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 (see 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.

For an explanation on the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 22, *Road vehicles*, Subcommittee SC 39, *Ergonomics*.

This third edition cancels and replaces the second edition (ISO 12214:2010), of which it constitutes a minor revision. The changes compared to the previous edition are as follows:

— the first sentence of 4.3.5.2 has been deleted and the following added: “If the wiper and turn signal are located on the same side of the steering wheel, the wiper shall only be turned on by rotating over the top”;

— in 4.3.5.3, “or pushing” has been included, so that the text reads: “Pulling or pushing the left or right stalk should be the motion for turning on the headlamp high beam.”

© ISO 2018 – All rights reserved

Introduction

Drivers develop expectations regarding the operating motions of various types of controls as a result of their accumulated experience with vehicle controls. To simplify the operation of controls for drivers, the direction-of-motion to operate these controls needs to conform to these expectations, or stereotypes.

The strength of a stereotype varies with the control configuration (control type, location, orientation and mounting plane). Studies have demonstrated that stereotype strength is not related to driver age, gender, or left- or right-handedness. Failure to conform to direction-of-motion stereotypes can lead to actuation errors, longer operating times and an increase in driver workload.

This document is based on past research and general human factor principles. Control labelling and tactile or shape coding are not addressed in this document. However, appropriate labelling and coding can improve the accuracy of control use.

© ISO 2018 – All rights reserved

Road vehicles — Direction-of-motion stereotypes for automotive hand controls

1 Scope

This document gives design recommendations and requirements for the direction-of-motion of hand controls found in passenger, multipurpose and commercial vehicles, and buses.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— IEC Electropedia: available at http://www.electropedia.org/

— ISO Online browsing platform: available at https://www.iso.org/obp

3.1
control configuration
particular combination of control type, location, orientation and mounting plane

3.2
direction-of-motion stereotype
direction of control motion expected by a majority of people to achieve a given effect for a specified control configuration

3.3
stereotype strength
percentage of people who activate the control in a particular direction

3.4
on/increase control
control whose function is to turn something on/off or to increase/decrease some unspecified effect

3.5
specific function control
control used to activate some specific function or achieve a specific effect

EXAMPLE Control to lock or unlock doors, raise or lower windows, or turn on headlamps, headlamp high beam or windshield wipers.

4 Design

4.1 General

This document gives the recommended direction-of-motion and control orientation for controls mounted on each of three orthogonal planes:

— horizontal (X-Y) plane;

© ISO 2018 – All rights reserved