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Motorcycles and mopeds — Controls — Types, positions and functions

Motocycles et cyclomoteurs — Commandes — Types, positions et fonctions

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Foreword

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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).

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For an explanation of 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 www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 22, *Road vehicles*, Subcommittee SC 38, *Motorcycles and mopeds*.

This second edition cancels and replaces the first edition (ISO 9021:1988), which has been technically revised.

The main changes compared to the previous edition are as follows:

— the scope has been expanded to mopeds, and the second edition of ISO 4151:1987 which was technically revised has been integrated, and

— new controls have been added due to technology changes.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Motorcycles and mopeds — Controls — Types, positions and functions

1 Scope

This document describes the types, positions and functions of the rider-operated controls on a motorcycle/moped[1)], in order to facilitate use.

Annex A specifies controls, indicators and tell-tales for which identification is obligatory and the appropriate graphical symbols. Annex B provides the information for applying for electrically propelled motorcycle/moped[1)].

This document applies to those controls which, when fitted, are commonly used by the rider of a motorcycle/moped.

The definition or specification of a control does not signify the mandatory presence of each and every control listed in this document on a vehicle.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 6727, *Road vehicles — Motorcycles and Mopeds — Symbols for controls, indicators and tell-tales*

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:

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

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

3.1
vehicle
motorcycles and mopeds as defined in ISO 3833 but not including a steering wheel type

3.2
device
element or assembly of elements used to perform one or more functions

3.3
control
device (3.2) operated by the rider to obtain functions for which the different mechanisms of the *vehicle* (3.1) are designed

EXAMPLE Accelerator, brake, etc.

1) "motorcycle/moped" as defined in ISO 3833 but does not include a steering wheel type.

3.4
handlebar
any part of the bar or bars connected to the fork top by means of which the *vehicle* (3.1) is steered

3.5
handgrip
part of the *handlebars* (3.4), furthest from the centre, by which the rider holds the handlebars

3.5.1
rotating handgrip
handgrip (3.5), operating some functional mechanism of the *vehicle* (3.1), which is free to rotate round the *handlebars* (3.4) when so turned by the rider

3.6
frame
any part of the frame, chassis or cradle of the *vehicle* (3.1) to which the engine and/or transmission unit and/or the engine and transmission unit itself are attached

3.7
lever
device (3.2) consisting of an arm turning on a fulcrum, by means of which some functional mechanism of the *vehicle* (3.1) is operated

3.7.1
hand lever
lever (3.7) operated by the rider's hand

Note 1 to entry: Unless otherwise stated, a hand lever is operated by compression (i.e. moving the apex of the lever towards the supporting structure), e.g. for braking or declutching.

3.7.2
foot lever
lever (3.7) operated by contact between the rider 's foot and a spur projecting from the lever arm

3.7.3
pedal
lever (3.7) operated by contact between the rider 's foot and a pad on the lever, so placed as to allow pressure to be applied to the lever arm

Note 1 to entry: Unless otherwise stated, a pedal is operated by depression, e.g. for braking.

3.7.4
riding pedal
device (3.2) which is linked to some form of transmission and may be used to propel a moped

3.7.5
rocker arm
lever (3.7), pivoted at or near its centre and having a pad or spur at each end, operated by contact between the driver's foot and the pads or spurs

3.8
combined service brake
system of operation (by hydraulic action or mechanical linkage or both or by any actuation by means of electrical and/or electronic signal and equipment) whereby both the front and the rear brakes of the *vehicle* (3.1) are brought into operation, at least partially, by the use of only one *control* (3.3)

3.9
indicator
device (3.2) which presents information on the functioning or situation of a system or part of a system

3.10
tell-tale
display that indicates, by means of a light-emitting *device* (3.2), the actuation of a device, a correct or defective functioning or condition, or a failure to function

3.11
symbol
visually perceptible figure used to transmit information independently of language, produced by drawing, printing or other means

4 General requirements

4.1 Type and position

When a control is fitted, it shall be of the type and in the position specified in Clause 5.

4.2 General design

4.2.1 All the controls specified in 5.1, 5.2, 5.3, 5.4 and 5.5 shall be within the rider's reach when seated in the riding position and shall be located in the positions or areas specified in those subclauses.

4.2.2 The controls specified in 5.6 ("cold starting device/manual choke" and "manual fuel shut-off control/manual fuel shut-off valve") shall be located so that they are operable and within reach of the rider when seated. These controls may not be visible from the rider's position.

4.2.3 The position of the controls on the handlebars shown below shall be such that they can be reached without the rider moving his hand from the respective handgrip.

— Engine cut-out (see 5.2.3.1).

— Front brake (see 5.3.1).

— Rear brake (alternative) (see 5.3.2.2).

— Clutch (see 5.4.1).

— Horn (audible warning device) (see 5.5.1).

— High (main/driving) beam/low (dipped/passing) beam control (see 5.5.2.2).

— Direction indicator control (see 5.5.3).

— Hazard warning signal control (see 5.5.4).

— Electrically selected gears selection (in case of equipped on hand-operated switch) (see 5.4.2.2.1).

4.3 Access

The rider's reach to the controls shall not be impeded by intrusion of any other control or any part of the structure of the vehicle.

4.4 Identification

The identification of the controls, indicators and tell-tales, if fitted to the vehicle, shall be in accordance with the requirements of Annex A.

4.5 Orientation and directions

4.5.1 Right side/left side

The right/left sides in 5.2, 5.3, 5.4 and 5.5 shall be right side or left side respectively of the longitudinal median plane of the vehicle when facing forward.

4.5.2 Forward (in relation to the handlebars)

The forward in 5.3 and 5.4 shall be the part of the handlebars lying furthest from the driver when seated in the riding position.

4.5.3 Clockwise/anticlockwise

The clockwise/anticlockwise in 5.1, 5.2, 5.4 and 5.5 shall be around the axis when viewed from the upper or outer side of the part considered.

5 Individual requirements

5.1 Electrical controls

5.1.1 Ignition switch/main switch

The device that enables the engine to run and may also allow operation of other electrical systems on a vehicle.

In the case of a rotary switch, the direction of motion shall be clockwise from the ignition “off” position to the ignition “on” position.

5.2 Engine controls

5.2.1 Starting

5.2.1.1 Starter switch/electric starter

The starter switch/electric starter shall be operated as follows:

— Position of control: on handlebars, right side

— Type of control: push

5.2.1.2 Combined ignition/starter switch

In the case of a rotary switch, motion shall be clockwise, passing from ignition “off” to ignition “on” and then to the starter energizing position.

5.2.2 Speed

5.2.2.1 Speed control (accelerator or throttle)

The speed of the engine shall be adjusted by a hand-operated control as follows:

— Position of control: on handlebars, right side

— Type of control: rotating handgrip

— Direction of rotation: anticlockwise to increase speed

The control shall be self-closing to idle in a clockwise direction after release of the hand unless a vehicle speed control device is activated.

5.2.3 Stop

5.2.3.1 Engine cut-out

As a means of stopping the engine, alternative to the engine ignition switch (see 5.1.1) the vehicle may be equipped with an electrical power cut-out.

— Position of control: on handlebars, right side

— Type of control: no special requirement

5.3 Brakes

5.3.1 Front (wheel) brake

The front brake shall be operated as follows:

— Position of control: on handlebars, right side, forward

— Type of control: hand lever

5.3.2 Rear (wheel) brake

5.3.2.1 Vehicles with hand-operated clutch

In case of vehicles with hand-operated clutch, the rear brake shall be operated as follows:

— Position of control: around rider's foot, right side

— Type of control: pedal

5.3.2.2 Vehicles without hand-operated clutch

In case of vehicles without hand-operated clutch, they may conform to the requirement either a) or b).

a) Position of control: on handlebars, left side, forward
Type of control: hand lever

b) Position of control: around rider's foot, right side
Type of control: pedal

5.3.3 Combined service brake

Nothing in the requirements of 5.3.1 or 5.3.2 shall prohibit a vehicle from being equipped with a combined service brake, the position and type of control of which shall be as specified in 5.3.1 or 5.3.2.

5.3.4 Parking brake

The parking brake shall be operated as follows:

— Position of control: no special requirement

— Type of control: lever or pedal

5.4 Transmission

5.4.1 Clutch

The manual operating control shall be as follows:

— Position of control: on handlebars, left side, forward

— Type of control: hand lever

This requirement shall not prohibit, as a device for actuating the clutch mechanism, the use of a combined foot lever control for both clutch operation and gear selection.

The position for such a combined foot lever shall be as specified in 5.4.2.1.1.

5.4.2 Gear selection

5.4.2.1 Mechanically selected gears

5.4.2.1.1 In the case of vehicles equipped with a gear-selection control operated by a foot lever either in conjunction with or independently of the clutch control, the vehicle shall conform to the following requirements.

— Position of control: around rider's foot, left side

— Type of control: foot lever or rocker arm

Method of operating control:

Moving the forward part of the foot lever or rocker arm shall progressively select the gears: upward movement of the forward part for shifting to a higher gear position and downward movement for shifting to a lower gear position. If a separate, positive "neutral" position is provided, it shall be either in the first or the second position in the gear selection order (i.e. N-1-2-3-4-... or 1- N-2-3-4-...).

Alternatively, for vehicles with an engine capacity of less than 200 cc, transmissions with the following shift patterns may be fitted:

— rotary pattern (i.e. N-1-2-3-4-5-N-1...),

— reverse pattern, where moving the forward part of the foot lever or rocker arm shall progressively select the gears,

— upward movement of the forward part for shifting to a lower gear position, and

— downward movement for shifting to a higher gear position.

5.4.2.1.2 In the case of vehicles equipped with a gear selection control operated in conjunction with a hand-operated clutch, the vehicle shall conform to the following requirements.

— Position of control: on handlebars, left side

— Type of control: rotating handgrip

Method of operating control:

If the operation of the control is through rotation of the handgrip, the anticlockwise rotation shall progressively select gears giving an increased forward speed and conversely for a reduced forward speed. If a separate, positive "neutral" position is provided it shall be either in the first position or the second position in the gear selection order (i.e. N-1-2-3-4-... or 1-N-2-3-4-...).

5.4.2.2 Electrically selected gears

5.4.2.2.1 In the case of vehicles equipped with an electrical manual gear selection control operated by hand-operated switch, the vehicle shall conform to the following requirements.

— Position of control: on handlebars, left side

— Type of control: (See following)

Method of operating control:

If the shift-operating switch is aligned vertically, the switch in the upward position shall be for shifting to a higher gear position, and the switch in the downward position shall be for shifting to a lower gear position.

If the shift-operating switch is aligned horizontally, the switch in the forward position shall be for shifting to a higher gear position, and the switch in the backward position shall be for shifting to a lower gear position.

5.4.2.2.2 In the case of vehicles equipped with an electrical manual gear selection control operated by a foot lever, the vehicle shall conform to the following requirements.

— Position of control: around rider's foot, left side

— Type of control: foot lever or rocker arm

Method of operating control:

Moving the forward part of the foot lever or rocker arm shall progressively select the gears, upward movement of the forward part for shifting to a higher gear position and downward movement for shifting to a lower gear position.

5.5 Lighting and signalling controls

5.5.1 Horn (audible warning device)

The horn shall be operated as follows:

— Position of control: on handlebars, left side

— Type of control: push

5.5.1.1 For vehicles with mechanical-gear selection located on the handlebars: left side and operated in conjunction with a hand-operated clutch, the vehicle shall meet the following requirements.

— Position of control: on handlebars, right side

— Type of control: push

5.5.2 Lighting

5.5.2.1 Light control switch

In the case of a rotary switch, clockwise operation shall illuminate, successively, the vehicle's position (side-) lights and then the headlights.

This requirement does not preclude additional switch positions, provided that they are clearly marked.

The light control switch may be combined with the ignition switch.

5.5.2.2 High (main/driving) beam/low (dipped/passing) beam switch

The high/low beam switch shall be operated as follows:

— Position of control: on handlebars, left side

— Type of control: no special requirement

5.5.2.2.1 For vehicles with mechanical-gear selection located on the handlebars: left side and operated in conjunction with a hand-operated clutch, the vehicle shall meet the following requirements.

— Position of control: on handlebars, right side

— Type of control: no special requirement

5.5.2.3 Headlight flasher (optical warning device)

The control for this device, for which there is no special requirement concerning type, shall be adjacent to the high/low beam switch or an additional function of it.

5.5.3 Direction-indicator switch

The direction-indicator switch shall be operated as follows:

— Position of control: on handlebars

— Type of control: (See following)

The control shall be so designed that, when viewed from the rider's seat, manual operation of the left-hand portion, or movement to the left actuates the left-side direction-indicators and the inverse for the right-side direction-indicators. The disabling of both left and right direction indicators can be done manually or automatically. The control shall be clearly marked to show the side of the vehicle on which the indicators are working.

5.5.4 Hazard warning signal

The hazard warning signal shall be operated as follows:

— Position of control: on handlebars

— Type of control: no special requirement

5.6 Fuel supply controls

5.6.1 Cold starting device (manual choke)

No special requirement concerning type.

Any manual control shall be located so that they are operable and within reach of the rider when seated.

These controls need not be visible from the rider's position.

5.6.2 Manual fuel shut-off control (manual fuel shut-off valve)

The control shall have separate, positive positions for "off", "on" and "reserve" (where a reserve supply is provided).

The control shall be "on" when the fuel flow points downstream from the fuel tank to the engine:

— it shall be "off" when it is perpendicular to fuel flow.

— it shall be "reserve" (when applicable) when it points upstream of the fuel flow.

Annex A
(normative)

Controls, indicators and tell-tales for which (when fitted) identification is mandatory, and symbols to be used

A.1 Requirements

The requirements of ISO 6727 shall be respected for controls, indicators and tell-tales for which identification is mandatory.

A.2 Symbols

The symbols to be used to identify controls, indicators and tell-tales shall be those specified in ISO 6727.