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Leisure accommodation vehicles — Motor caravans —

Part 1:

Habitation requirements

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Partie 1: Exigences d'habitation

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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.

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.

International Standard ISO 8377-1 was prepared by Technical Committee ISO/TC 177, *Caravans*.

ISO 8377 consists of the following parts, under the general title *Leisure accommodation vehicles — Motor caravans*:

- *Part 1: Habitation requirements*
- *Part 2: Installation of oil-fired and liquefied petroleum gas-fired space heaters*

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Leisure accommodation vehicles — Motor caravans —

Part 1: Habitation requirements

1 Scope

This part of ISO 8377 specifies certain functional requirements for the habitation aspects of motor caravans that conform with national and/or international regulations for road vehicles, and certain safety requirements. It does not cover their road vehicle aspects nor requirements relating to payloads; requirements for these will be covered at a later stage.

NOTE 1 This part of ISO 8377 is one of a series for the habitation aspects of leisure accommodation vehicles.

ISO 7420:1987, *Leisure accommodation vehicles — Oil-fired heating systems.*

ISO 7421:1991, *Leisure accommodation vehicles — Liquefied petroleum gas systems.*

ISO 8377-2:1992, *Leisure accommodation vehicles — Motor caravans — Part 2: Installation of oil-fired and liquefied petroleum gas-fired space heaters.*

IEC 364-7-708:1988, *Electrical installations of buildings — Part 7: Requirements for special installations or locations — Section 708: Electrical installations in caravan parks and caravans.*

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 8377. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO 8377 are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 228-1:1982, *Pipe threads where pressure-tight joints are not made on the threads — Part 1: Designation, dimensions and tolerances.*

ISO 1176:1990, *Road vehicles — Masses — Vocabulary and codes.*

ISO 7418:1989, *Leisure accommodation vehicles — Vocabulary.*

ISO 7419:1991, *Leisure accommodation vehicles — Ventilation requirements.*

3 Definitions

For the purposes of this part of ISO 8377, the definitions given in ISO 1176 and ISO 7418 apply.

4 Construction and design

Materials used in the construction should comply with the requirements of relevant ISO standards. The structure should be rainproof both when the motor caravan is stationary and when it is in motion. In particular, the floor should be proof against the penetration of water thrown up from the road when the motor caravan is in motion and, when it is stationary, from moisture rising from the ground.

4.1 Occupancy

The occupancy shall be designated as the number of seats used for transport and the number of berths, both basic and optional, additional, berths.

4.2 Awning attachment (when provided)

When an awning attachment takes the form of an awning channel, the sizes of the awning channel shall be as shown in figure 1. The jaws shall be free from burrs which obstruct the insertion of the awning. Junctions of channel shall be aligned and shall be free from burrs.

4.3 Entrance step

A step shall be provided to an entrance door of the living compartment if it is higher than 400 mm above the ground when the vehicle is unladen. When in position for use, the step, together with its method of fixing, shall reveal no permanent deformation after the application of a load of 2 000 N on a surface of 100 mm × 150 mm irrespective of the zone of application.

4.4 Doors

4.4.1 Securing of doors

All doors including sliding doors, both external and internal, shall be equipped with a securing or locking device capable of keeping the door closed when subjected to all forces caused by movement of the motor caravan.

4.4.2 Positioning of entrance doors

If a motor caravan has only one entrance door, it shall be fitted at the rear end of the motor caravan or on the side furthest from the centre of the highway (depending on the country of sale) when the

motor caravan is being driven. If a motor caravan has more than one exterior door, then at least one door shall be fitted in one or other of these positions.

4.4.3 Childproof locks

An entrance door, with the exception of the driver's door, which is on the side nearest to the centre of the highway (depending on the country of sale) when the motor caravan is being driven, shall be fitted with a childproof lock.

When a door is fitted with a childproof lock, a notice shall be permanently fixed adjacent to the lock. The notice shall read:

"Ensure that the childproof lock is not activated when the motor caravan is parked off the road."

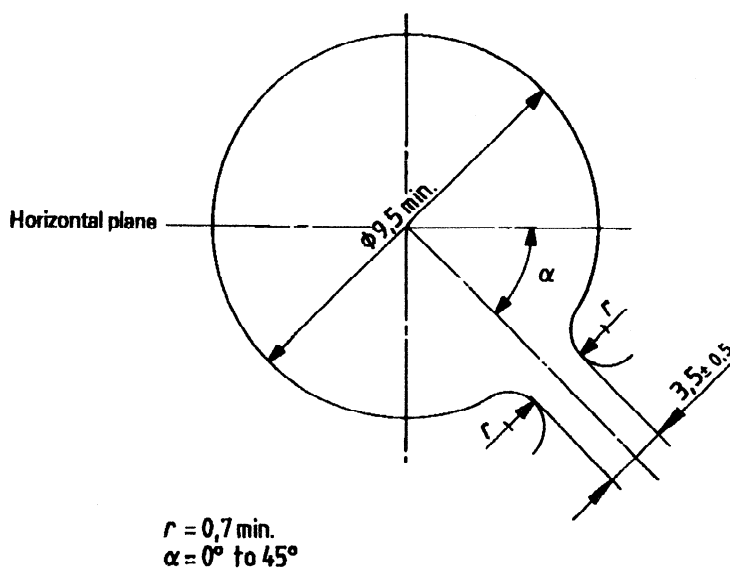
4.5 Rooflights

Rooflights and their fittings shall be such that they cannot work loose when a motor caravan is in motion. A mosquito screen shall be provided internally.

5 Internal equipment

5.1 Bed and bunk sizes

The length and width of all bed and bunk mattresses, when in position ready for use, shall be stated in the manufacturer's catalogue. These sizes shall have a tolerance of ± 20 mm. Where bunks are provided without mattresses, the overall size of the length and width of the bunk shall be stated.



Dimensions in millimetres

Figure 1 — Sizes of awning channel

5.2 Space for refrigerator

When a refrigerator is not provided, but space is allowed for one to be fitted, this shall be stated in the Users' Handbook, together with the sizes of the space and details of any provisions made for the connection of a refrigerator to the gas and/or electricity installation.

5.3 Wardrobes

The sizes of the height, width and depth of a wardrobe shall be stated in the manufacturer's catalogue.

Wardrobes shall be designed and manufactured to prevent damage to clothes.

5.4 Shelves and dividers

5.4.1 High level cupboards

Storage shelves in kitchens and in high level cupboards elsewhere shall have a means of preventing the contents from sliding out.

5.4.2 Roof lockers

Roof lockers exceeding 1,25 m in length shall be fitted with dividers such that each compartment so formed does not exceed 1,25 m.

5.5 Tables

A table or tables shall provide at least as many places as there are berths, including optional ones. Where possible a width of 450 mm per place should be allowed.

5.6 Cooking appliance

A cooking appliance shall have a minimum of one cooking ring.

5.7 Sink

A sink shall be provided with a minimum size internally on plan of 250 mm × 200 mm × 120 mm deep or, if circular in plan, with a diameter of not less than 200 mm.

5.8 Toilet

A toilet shall be provided.

6 Water supply, storage and disposal (when provided)

6.1 General

Couplings for connection to water supply and disposal shall be located at easily accessible points on the outside of a motor caravan. They shall not protrude into the designed ground clearance space or designed angle of departure, nor add to the width or length of the body.

6.2 Fresh water

6.2.1 Fitted tank

When a fitted tank is provided, it shall have a minimum capacity of 10 l. It shall be made of non-toxic material and shall be capable of being flushed and cleaned by hand.

6.2.2 Design of filler for fitted tank

A fresh water tank shall be fitted with either a coupling consisting of a threaded connector with 12 mm bore with the threads in accordance with ISO 228-1 or a free inlet. A suitable protective cap complete with a retainer shall be provided. When a coupling is fitted, conditions of water pressure shall be taken into account.

6.2.3 Portable containers

When a portable container is provided, provisions shall be made for it to be firmly secured when the motor caravan is in motion. When no container is supplied, space shall be provided for the storage and securing of such a container.

6.3 Waste water disposal

6.3.1 General

Discharge from showers, basins and sinks shall be collected in a closed system.

6.3.2 Capacity and size of outlets of holding tanks

Holding tanks for the discharge of waste water from showers, basins and sinks shall have a minimum capacity of 10 l or that of the fitted fresh water tank, whichever is the greater. The internal diameter of a waste water outlet shall be a minimum of 25 mm.

6.4 Toilet waste disposal

6.4.1 Holding tanks and capacities

Discharge from a toilet shall be collected in a closed system. If the holding tank or tanks used for waste

water (see 6.3.2) also receive discharge from a toilet, an increased capacity shall be provided appropriate to the toilet that is fitted. A fixed tank intended to receive discharge from a toilet shall be fitted with a level indicator.

NOTE 2 In certain countries, site disposal facilities do not allow waste water and toilet waste to be discharged from the same tank and a separate tank for toilet waste is required.

6.4.2 Outlets and couplings from holding tanks

The internal diameter of a coupling taking discharge from a toilet holding tank shall be a minimum of 75 mm. It shall have a bayonet fitting to receive a 75 mm internal diameter hose and a 1,5 m length of such hose shall be provided.

6.5 Marking

Couplings for fresh water supply pipes shall be clearly identified in blue and couplings for discharge pipes shall be clearly identified in grey.

7 Space heating

7.1 Type of heaters

Space heaters shall be of the room-sealed type.

7.2 Installation of appliances by manufacturer

Space heaters shall be installed in accordance with the requirements of ISO 8377-2.

7.3 Subsequent installation of appliance

When a space heating appliance is not installed originally by the motor caravan manufacturer, but space is provided for one, its recommended output shall be in the Users' Handbook and it shall be stated that, for reasons of safety, it should be of the room-sealed type and installed by a qualified fitter in accordance with the appliance manufacturer's instructions and the requirements of ISO 8377-2.

8 Use in winter conditions

For a motor caravan intended for prolonged use in an ambient temperature of 0 °C or lower, an average temperature difference of at least 20 K shall be achieved and any heating installation installed or recommended shall achieve this. This condition will be deemed to be complied with if the air temperature 1 m above the centre of the floor area after 2 h use of the heating appliance is:

- a) at least 20 K above the external ambient temperature; and

- b) not more than 5 K higher than the air temperature measured 10 cm away from any wall or window in the living area.

For a motor caravan intended for use in an ambient temperature that could reach -15 °C, an average temperature difference of at least 35 K shall be achieved; suitable precautions shall be taken to ensure that all water services will still operate.

9 Services

9.1 Electricity

9.1.1 Low-voltage (LV)

Low-voltage electrical installations shall be in accordance with the requirements of IEC 364-7-708.

9.1.2 Extra-low-voltage (ELV)

Extra-low-voltage installations shall comply with the requirements laid down for the ELV installation of the base vehicle.

9.2 Liquefied petroleum gas installations

Liquefied petroleum gas systems shall be installed in accordance with the requirements of ISO 7421 and ISO 8377-2.

9.3 Oil-fired installations

Oil-fired heating systems shall be installed in accordance with the requirements of ISO 7420 and ISO 8377-2.

9.4 Solid fuel installations

Solid fuel appliances shall not be fitted.

10 Ventilation

10.1 General

Natural ventilation shall be provided, in accordance with the requirements of ISO 7419, for when the vehicle is stationary and used for habitation.

10.2 Adjustment of ventilators

It is permissible to provide a means of adjusting the fixed free area of ventilation of a low level ventilator, to prevent draughts when a motor caravan is in motion. If such means of adjustment are provided, a notice shall be permanently fixed in a conspicuous position in the interior of the motor caravan. The notice shall read:

"Ensure that all ventilators are fully open when the vehicle is stationary and the engine is switched off."

10.3 Location of ventilation openings

Low level ventilation openings shall be located so that there is no danger of exhaust fumes from the engine of the motor caravan being drawn into the interior. No ventilation opening provided for a refrigerator shall be located within 500 mm of the refuelling point.

11 Fire precautions

11.1 Means of escape

11.1.1 Emergency exits

Each separate living compartment which can be closed off from the rest of the motor caravan other than by a loose curtain shall be provided with an emergency exit giving direct access to the outside of the motor caravan in accordance with 11.1.3 or 11.1.4. Every motor caravan shall have an emergency exit on at least two of its six sides.

11.1.2 Toilet compartments

Toilet compartments shall be equipped with an emergency exit when evacuation necessitates transit through a zone of risk (e.g. past heating or cooking equipment) unless the compartment door is situated less than 2 000 mm from an entrance door of the motor caravan.

11.1.3 Emergency doors

Escape doors shall open outwards, and shall provide a clear opening area of not less than 0,65 m², the minimum dimensions, free from obstruction, being 500 mm in width and 1 000 mm in height.

Doors, when locked from the outside, shall be capable of being immediately opened from the inside. For requirements for childproof locks, see 4.4.3. Opening mechanisms for interior doors shall be capable of being operated from both sides. Lever handles shall open interior doors and, preferably, entrance doors by being pushed downwards. Where an interior door is fitted with a locking mechanism on the inside, an emergency unlocking system shall be fitted on the opposite side.

11.1.4 Emergency windows and emergency panels

Emergency windows and emergency panels shall open outwards or slide horizontally and shall provide a clear opening, free from obstruction, of not less than 0,25 m², with a minimum size in any di-

rection of 450 mm. The lower edge shall not be more than 950 mm above floor level unless the opening is in the roof. Where such windows or panels are hinged at the top, they shall be capable of opening through at least 70 °C and shall stay fully open until closed manually. Means of escape shall not be provided by means of windows pivoted horizontally other than along the top edge.

11.1.5 Work surface

Any work surface which opens towards an external doorway shall not obstruct it, leaving a clear opening as in 11.1.3.

11.1.6 Heating and cooking equipment

Equipment for heating or cooking shall not be mounted on doors, nor installed in front of emergency exits.

11.2 Protection of adjacent surfaces

Protection of surfaces adjacent to heat-generating appliances shall be achieved by ensuring that all such appliances installed are certified by an approved body as complying with appropriate national, regional or International Standards with regard to safety and relevant installation requirements. Such appliances shall only be installed in accordance with the manufacturers' instructions.

11.3 Fire extinguisher

If a fire extinguisher is provided (see 12.2), it should be at least a 1 kg powder extinguisher: a future International Standard will specify requirements.

12 Warning notice

12.1 Provision of warning notice

A permanent notice, not less than 200 mm by 130 mm, giving simple fire prevention advice and setting out the action to be taken in the event of fire shall be fixed inside the caravan in a position where it can be easily and readily seen. The height of the lettering for the headings, which shall be printed in red, shall be not less than 6 mm and for the text not less than 3 mm.

12.2 Wording of warning notice

The wording and layout of the notice shall be as follows:

ADVICE TO USERS

Ventilation