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**Hoists for the transfer of persons with
disabilities — Part 2: Mobile hoist**

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Foreword

This translation has been made based on the original Japanese Industrial Standard established by the Minister of Economy, Trade and Industry, through deliberations at the Japanese Industrial Standards Committee in accordance with the Industrial Standardization Law.

This JIS document is protected by the Copyright Law.

Attention is drawn to the possibility that some parts of this Standard may conflict with a patent right, application for a patent after opening to the public, utility model right or application for registration of utility model after opening to the public which have technical properties. The relevant Minister and the Japanese Industrial Standards Committee are not responsible for identifying the patent right, application for a patent after opening to the public, utility model right or application for registration of utility model after opening to the public which have the said technical properties.

JIS T 9241 consists of the following 5 parts under the general title “*Hoists for the transfer of persons with disabilities*”:

Part 1 : Classification and general requirement

Part 2 : Mobile hoist

Part 3 : Stationary hoists

Part 4 : Rail guide hoists

Part 5 : Sling Sheets

Hoists for the transfer of persons with disabilities—

Part 2 : Mobile hoist

Introduction

This Japanese Industrial Standard has been prepared based on the first edition of ISO 10535 published in 1998 dividing into parts by classification of products and with some modifications of the technical contents to reflect domestic situation.

The portions given continuous sidelines or dotted underlines are the matters not stated in the original International Standard. A list of modifications with the explanation is given in Annex JA.

1 Scope

This Standard specifies the mobile hoists which are a type of hoists used for the persons unable to easily transfer or move on their own (hereafter referred to as “hoists”).

NOTE : The International Standard corresponding to this Standard is as follows.

ISO 10535:1998 *Hoists for the transfer of disabled persons—Requirements and test methods* (MOD)

In addition, symbols, which denote the degree of correspondence in the contents between the relevant International Standard and JIS, are IDT (identical), MOD (modified), and NEQ (not equivalent) according to ISO/IEC Guide 21.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this Standard. The most recent editions of the standards (including amendments) indicated below shall be applied.

JIS B 8360	<i>Wire reinforced rubber hose assemblies for hydraulic use</i>
JIS B 8361	<i>Hydraulic fluid power—General rules relating to systems</i>
JIS B 8364	<i>Textile reinforced rubber hose assemblies for hydraulic use</i>
JIS B 8370	<i>Pneumatic fluid power—General rules relating to systems</i>
JIS C 1509-1	<i>Electroacoustics—Sound level meters—Part 1: Specifications</i>
JIS C 9730-1	<i>Automatic electrical controls for household and similar use—Part 1: General requirements</i>
JIS T 9241-1	<i>Hoists for the transfer of persons with disabilities—Part 1: Classification and general requirement</i>
JIS Z 8703	<i>Standard atmospheric conditions for testing</i>

3 Terms and definitions

For the purposes of this Standard, the terms and definitions given in JIS T 9241-1 and the following terms and definitions apply:

3.1 mobile hoist

a hoist fitted with a device or devices (e.g. wheels) that is freely movable and propellable along the floor, and with which a lifted person is lifted, transferred or moved (see figure 1)

3.2 attendant

the person who operates the hoist to transfer or move the lifted person

3.3 backrest

the part of the body-support unit that supports the back of the person being lifted, moved or transferred (e.g. sling, seat, stretcher, etc.) along with the associated attachment construction

3.4 backwards

180° to the forwards direction of travel

3.5 body-support unit

the part of the hoist that supports the person being lifted, moved or transferred (e.g. sling, seat, stretcher, etc) along with the associated attachment construction

3.6 central suspension point (CSP)

a reference point on the hoist to be used for measurements (this point may be a connecting point)

3.7 connecting point

the part to which the body-support unit attaches

3.8 control devices

the part or parts of the hoist which operates the lifting and lowering mechanisms of the CSP as well as other functions

3.9 end limiting device

a device that stops any movement at a predetermined end position

3.10 flexible device

a component of the lifting device which connects the spreader bar with the component that functions as a lifting device (e.g. chain, tape, rope)

3.11 free wheeling

the mechanism to transmit only a force in one way direction and to spin free in the reverse rotation, like a rear wheel of bicycles

3.12 forwards

the intended direction of travel, as stated by the manufacturer, in relation to the person who is moving the hoist

3.13 functional test

the test to confirm that the corresponding mechanism and construction meet the requirements specified in clause 5, by means of operating, etc.

3.14 hoisting range

the vertical distance between the maximum and minimum heights of the CSP

3.15 hoisting reach

the unimpeded horizontal distance between the post and a vertical line passing through the CSP at a given height within the hoisting range (see figure 1)

3.16 hold to run control device

control device which initiates and maintains the operation of the hoist element only as long as the manual control is actuated

The manual control automatically returns to the “stop” or “off” position when released.

3.17 lifted person

the person who is transferred by the hoist

3.18 lifting cycle

the raising and lowering of the lifting machinery for the same distance in both directions

3.19 lifting device

means of lifting and lowering the body-support unit

3.20 lifting machinery

device that performs the lifting function

3.21 maximum load

the greatest permissible load, including the lifted person, the body-support unit, etc., that can be applied to the hoist

3.22 adverse condition

the condition in which failure is most likely to occur

3.23 sling

the body-support unit manufactured from such soft cloth that fits the body and to be attached to the lifting device of the hoist

3.24 rigid body-support unit

a preformed seat or recumbent device, manufactured from rigid materials (if necessary padded), or flexible materials encased by a frame, with associated connecting means for attaching to the lifting device or hoist

3.25 single fault condition

condition in which a single means for protection against a safety hazard in equipment is defective or a single external abnormal condition ¹⁾ is present

Note ¹⁾ For example, electric power failure is supposed.

3.26 sitting part

part of the body-support unit that is available for sitting on

3.27 spreader bar

a rigid construction with more than one connection point, onto which the body-support unit is attached

3.28 turning diameter

the diameter of the minimum circle drawn by the outermost part of hoist, when it is turned 360° in the same direction

3.29 hoists trolley

a type of mobile hoist that is freely movable and propellable along the floor and that mounts a stretcher on which a lifted person is held, transferred or moved

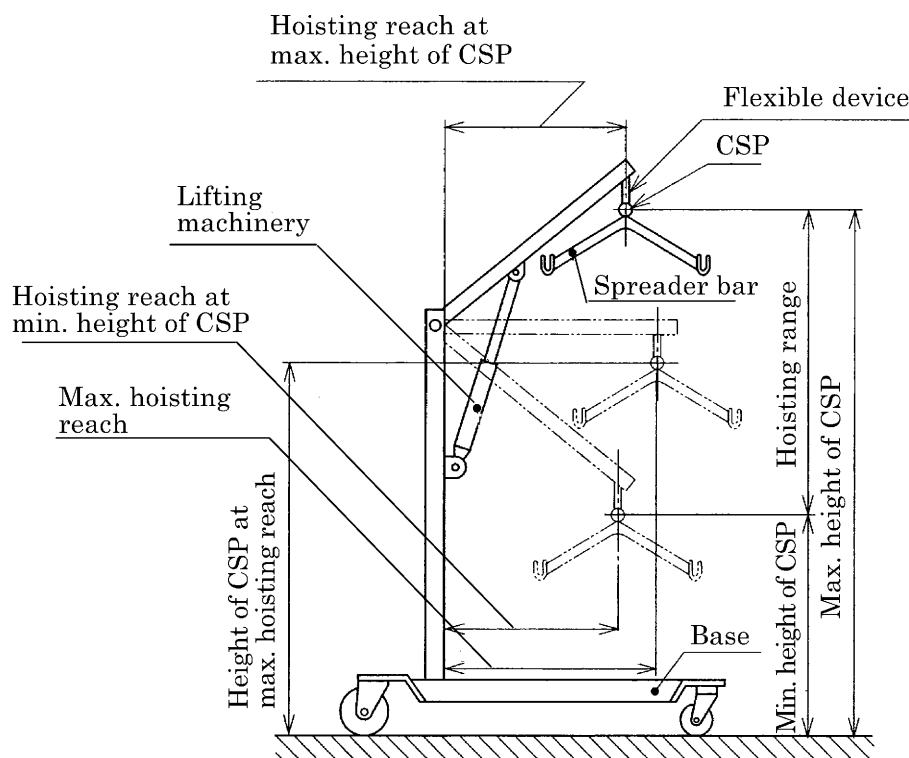


Figure 1 Mobile hoist (Hoisting range/reach)

4 Classification and division

4.1 Classification

The classification of mobile hoists shall be as given in 4.1.1 of JIS T 9241-1.

4.2 Division (symbol for division) according to maximum load

The division (symbol for division) according to the maximum load shall be as given in 4.2 of JIS T 9241-1.

5 Design, appearance and construction

5.1 Design

5.1.1 Risk analysis

The risk analysis shall be as given in 5.2.1 of JIS 9241-1.

5.1.2 Ergonomics factors

The ergonomics factors of mobile hoists shall be as given in 5.2.2 of JIS 9241-1.

5.2 Appearance

The appearance shall be as follows.

- a) For hoists, all accessible edges, corners and surfaces shall be smooth and have no burrs or sharp edges.
- b) If coated, the surface shall be smooth and free from noticeable holes or bubbles.

5.3 Construction

The construction of mobile hoist shall be as given in 5.3 of JIS 9241-1, and as follows.

- a) All load-bearing fasteners shall be either self-locking or fitted with a locking device to prevent inadvertent detachment.
- b) Single use components (e.g. self-tapping screws) shall not be used to secure any component that can be deemed to be load-bearing. In addition, they shall not be used for the assembly of any component(s) that is intended to be removed for the purpose of dismantling for transport or storage.
- c) All projections shall be avoided or fitted with adequate protection, such as covers and cushions to prevent damage or injury (e.g. shearing or crushing).
- d) The hoist shall include in its design some means (e.g. limiting switches, the principal of free-wheeling, etc.) that will ensure that, when lowering, should the body-support unit, spreader bar or lifting arm come into contact with the lifted person, the total load imposed on the lifted person shall not be greater than the total mass of any of those parts. When operated, these means shall not allow the hoist to face unsafe conditions such as falling off of the lifting arm.
- e) All control devices, for lowering or raising the lifted person, shall be easily accessible and operable by the person operating the hoist.

- f) Electrically operated hoists shall be provided with an emergency device which is readily accessible and is wired to isolate the power supply and to stop any electrically produced mechanical movement which could cause a safety hazard.
- g) All control devices shall be of the 'hold to run' type.
- h) Hoists shall be provided with a safety device that ensures that the lifted person does not fall in the event of a single-fault condition of the lifting machinery.
- i) The connection point(s) shall be smooth thus avoiding excessive wear of any connectors.
- j) All hoists shall be provided with an emergency lowering device.

NOTE : The emergency lowering device is a safety device which ensures to lower the lifted person in an emergency.

- k) Hoists with hydraulic system or pneumatic system shall be as specified in Annex A.
- l) The hoist shall be designed for the purpose of transferring a lifted person according to the field of application, as stated by the manufacturer (see Annex C) and it shall be able to be operated by one person. If not, this shall be stated in the instructions for use.
- m) On all battery-powered hoists, a warning device(s) shall be provided that will indicate when the battery or batteries require charging. Once this device starts operating, the sufficient power shall be available to complete one (1) full lifting cycle with the maximum load.
- n) Any hoist shall be so designed that it shall not operate if the load of more than 1.5 times the maximum load is applied.
- o) The CSP shall be so designed that the spreader bar does not fall during the normal operation
- p) When the width of the spreader bar is adjustable during use, a safety device shall be provided to prevent the spreader bar from falling.
- q) Brake(s) shall be provided on any mobile hoists.

6 Performance

6.1 General requirements

General requirements are as follows.

- a) Electrically operated hoists shall conform to clauses 8, 9 and 13 of JIS C 9730-1 regarding electrical safety.
- b) The electromagnetic compatibility of electrically operated hoists shall conform to clauses 23 and 26 of JIS C 9730-1.
- c) After the static test, in accordance with 7.2.1 a), any flexible lifting devices such as tape, rope or chain, associated lifting joints and hinge connections shall show no sign of damage that will affect the function of the hoist as stated by the manufacturer.