



JAPANESE
INDUSTRIAL
STANDARD

Translated and Published by
Japanese Standards Association

JIS A 8340-5 : 2012

(JCMA/JSA)

**Earth-moving machinery — Safety —
Part 5: Requirements for dumpers**

ICS 13.100;53.100

Reference number : JIS A 8340-5 : 2012 (E)

PROTECTED BY COPYRIGHT

Date of Establishment: 2005-03-25

Date of Revision: 2012-12-25

Date of Public Notice in Official Gazette: 2012-12-25

Investigated by: Japanese Industrial Standards Committee
Standards Board

Technical Committee on Industrial Machinery

JIS A 8340-5 : 2012, First English edition published in 2013-10

Translated and published by: Japanese Standards Association
4-1-24, Akasaka, Minato-ku, Tokyo, 107-8440 JAPAN

In the event of any doubts arising as to the contents,
the original JIS is to be the final authority.

© JSA 2013

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from the publisher.

Printed in Japan

PROTECTED BY COPYRIGHT

Contents

	Page
Introduction	1
1 Scope	1
2 Normative references	2
3 Terms and definitions	3
3A List of significant hazards inherent in dumpers	5
4 Safety requirements and/or protective measures	5
4.1 General	5
4.2 Dump body	5
4.3 Retarder	6
4.4 Articulated frame lock	6
4.5 Roll-over protective structure (ROPS)	6
4.6 Falling-object protective structure (FOPS)	7
4.7 Operator's station	7
4.8 Steering system	8
4.9 (Deleted)	8
4.10 Visibility	8
5 Verification of safety requirements and/or protective measures	9
6 Information on use	9
Annex A (informative) Examples of representative types of dumpers	11
Annex JA (informative) List of significant hazards inherent in dumpers	14
Annex JB (informative) Bibliography	15
Annex JC (informative) Comparison table between JIS and corresponding International Standard	16

Foreword

This translation has been made based on the original Japanese Industrial Standard revised by the Minister of Health, Labour and Welfare and the Minister of Economy, Trade and Industry, through deliberations at the Japanese Industrial Standards Committee as the result of proposal of revision of Japanese Industrial Standard submitted by Japan Construction Machinery and Construction Association (JCMA)/Japanese Standards Association (JSA) with the draft being attached, based on the provision of Article 12 Clause 1 of the Industrial Standardization Law applicable to the case of revision by the provision of Article 14.

Consequently **JIS A 8340-5** : 2005 is replaced with this Standard.

This **JIS** document is protected by the Copyright Law.

Attention is drawn to the possibility that some parts of this Standard may conflict with patent rights, applications for a patent after opening to the public or utility model rights. The relevant Ministers and the Japanese Industrial Standards Committee are not responsible for identifying any of such patent rights, applications for a patent after opening to the public or utility model rights.

JIS A 8340 series consists of the following seven parts under the general title “*Earth-moving machinery—Safety*”:

Part 1: General requirements

Part 2: Requirements for bulldozers

Part 3: Requirements for loaders

Part 4: Requirements for hydraulic excavators

Part 5: Requirements for dumpers

Part 6: Requirements for cable excavators

Part 7: Requirements for graders

Earth-moving machinery — Safety — Part 5 : Requirements for dumpers

Introduction

This Japanese Industrial Standard has been prepared based on the first edition of **ISO 20474-6** published in 2008 with some modifications of the technical contents.

The portions given continuous side lines or dotted underlines are the matters in which the contents of the corresponding International Standard have been modified. A list of modifications with their explanations is given in Annex JC. Annex JA and Annex JB in this Standard are not contained in the corresponding International Standard.

This Standard is a type-C standard (machine safety standard) as stated in **JIS B 9700-1**.

The machinery concerned and the extent to which hazards, hazardous situations or hazardous events are covered are indicated in the scope of this Standard.

When requirements of this type-C standard are different from those which are stated in type-A or -B standards, the requirements of this type-C standard take precedence over the requirements of other standards.

1 Scope

This Standard gives the safety requirements specific to dumpers as defined in **JIS A 8308** [haul trucks and rough terrain haulers (including compact dumpers and compact dumpers with a standing operator position)] as well as those of derivated machinery.

It does not apply to ordinary dump trucks (trucks to travel on public roads equipped with a dump body).

This Standard is intended to be used in conjunction with **JIS A 8340-1**, which specifies general safety requirements common to earth-moving machine families, but the specific requirements given in this Standard take precedence over the general requirements of **JIS A 8340-1**.

This Standard deals with all significant hazards, hazardous situations and events (see Annex JA of this Standard and Annex JA of **JIS A 8340-1**) relevant to the dumpers within its scope when used as intended or under conditions of misuse reasonably foreseeable by the manufacturer. It specifies the appropriate technical measures for eliminating or reducing risks arising from significant hazards, hazardous situations or events during commissioning, operation and maintenance.

NOTE : The International Standard corresponding to this Standard and the symbol of degree of correspondence are as follows.

ISO 20474-6 : 2008 *Earth-moving machinery — Safety — Part 6 : Requirements for dumpers* (MOD)

The symbols which denote the degree of correspondence in the contents in the corresponding International Standard and **JIS** are **IDT** (identical), **MOD** (modified) and **NEQ** (not equivalent) according to **ISO/IEC Guide 21-1**.

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 A 8304 *Earth-moving machinery — Laboratory evaluation of operator seat vibration*

NOTE : Corresponding International Standard : **ISO 7096** *Earth-moving machinery — Laboratory evaluation of operator seat vibration* (IDT)

JIS A 8308 *Earth-moving machinery — Basic types — Vocabulary*

NOTE : Corresponding International Standard : **ISO 6165** *Earth-moving machinery — Basic types — Identification and terms and definitions* (IDT)

JIS A 8311 *Earth-moving machinery — Operator's field of view — Test method and performance criteria*

JIS A 8320 *Earth-moving machinery — Methods of measuring the masses of whole machines, their equipment and components*

NOTE : Corresponding International Standard : **ISO 6016** *Earth-moving machinery — Methods of measuring the masses of whole machines, their equipment and components* (IDT)

JIS A 8329 *Earth-moving machinery — Retarders for dumpers and tractor-scrapers — Performance tests*

NOTE : Corresponding International Standard : **ISO 10268** *Earth-moving machinery — Retarders for dumpers and tractor-scrapers — Performance tests* (MOD)

JIS A 8332 *Earth-moving machinery — Dumper body support and operator's cab tilt support devices*

NOTE : Corresponding International Standard : **ISO 13333** *Earth-moving machinery — Dumper body support and operator's cab tilt support devices* (IDT)

JIS A 8340-1 *Earth-moving machinery — Safety — Part 1 : General requirements*

NOTE : Corresponding International Standard : **ISO 20474-1** *Earth-moving machinery — Safety — Part 1 : General requirements* (MOD)

JIS A 8346 *Earth-moving machinery — Articulated frame lock — Performance requirements*

NOTE : Corresponding International Standard : **ISO 10570** *Earth-moving machinery — Articulated frame lock — Performance requirements* (IDT)

JIS A 8422-1 *Earth-moving machinery — Dumpers — Part 1 : Terminology and*

commercial specifications

NOTE : Corresponding International Standard : **ISO 7132** *Earth-moving machinery — Dumpers — Terminology and commercial specifications* (MOD)

JIS A 8910 *Earth-moving machinery — Roll-over protective structures — Laboratory tests and performance requirements*

NOTE : Corresponding International Standard : **ISO 3471** *Earth-moving machinery — Roll-over protective structures — Laboratory tests and performance requirements* (IDT)

JIS A 8920 *Earth-moving machinery — Falling-object protective structures — Laboratory tests and performance requirements*

NOTE : Corresponding International Standard : **ISO 3449** *Earth-moving machinery — Falling-object protective structures — Laboratory tests and performance requirements* (IDT)

3 Terms and definitions

For the purpose of this Standard, the terms and definitions given in **JIS A 8340-1** and **JIS A 8422-1** and the following apply (see Annex A).

3.1 dumper

self-propelled machine on crawlers or wheels, with an open body, which transports and dumps or spreads materials such as earth and sand

Dumpers include ordinary dump trucks, haul trucks, and rough terrain haulers.

NOTE 1 See **JIS A 8308** and figures A.1 to A.9 in this Standard.

NOTE 2 Except in the case of some compact dumpers, loading is performed by other machines or equipment.

3.1A ordinary dump truck

self-propelled dumper on wheels that can travel on public roads

3.1B haul truck

self-propelled dumper on wheels of operating mass 15 000 kg or over that travels on other places than public roads

See figures A.1 and A.2.

3.1C rough terrain hauler

dumper for use in places unreachable by dump trucks, such as uneven terrains, soft grounds, steep grounds or narrow field sites

NOTE : See **JIS A 8308** and figures A.3 to A.9 of this Standard.

3.2 rigid frame dumper

dumper with a rigid frame and wheel or crawler steering

NOTE : See **JIS A 8308** and figures A.1, A.3, A.5, A.7, A.8 and A.9 of this Standard.

3.3 articulated frame dumper

dumper with an articulated frame for steering

NOTE : See JIS A 8308 and figures A.2, A.4, and A.6 of this Standard.

3.4 swing dumper

dumper having a 360° swing upper structure

NOTE 1 See JIS A 8308 and figure A.9 of this Standard.

NOTE 2 The upper structure is comprised of a rigid frame, open body and operator's station. The undercarriage consists of a track-type or wheeled unit.

3.4A compact dumper with half-swing body

dumper having a body which rotates by 90° to the left and right from the longitudinal centre of the vehicle body

NOTE : See figure A.8.

3.5 compact dumper

rigid or articulated dumper having an operating mass (see JIS A 8320) of 4 500 kg or less

NOTE 1 See JIS A 8308 and figures A.4, A.5, A.6, A.7 and A.8 of this Standard.

NOTE 2 A compact dumper may have integral self-loading equipment.

3.5A compact dumper with a standing operator position

compact dumper having a ride-on platform on which the operator can stand, in place of an operator's seat,

NOTE : See figure A.7.

3.6 self-loading equipment

integral mounted bucket-supporting structure and linkage permanently fitted to the dumper, enabling it to fill its own open body with materials such as earth and sand

NOTE : See figure A.6.

3.7 operating mass

mass of the base machine, with a work piece and an empty attachment in the most usual configuration as specified by the manufacturer, full fuel tank, and water and oils at the levels specified by the manufacturer, to which the mass of the operator (75 kg) and handy tools are added (see JIS A 8320)

3.8 gross machinery mass

mass which combines the operating mass and the rated payload (see JIS A 8320)

3.9 rated payload

maximum mass that can be carried by the machine, as specified by the manufacturer (see JIS A 8320)

3A List of significant hazards inherent in dumpers

All the hazards, hazardous situations and hazardous events that are identified as significant hazards inherent in dumpers by risk assessment, and that require measures to eliminate or reduce the risks generated therefrom are listed in Annex JA.

4 Safety requirements and/or protective measures

4.1 General

Dumpers shall conform to the safety requirements and protective measures specified in JIS A 8340-1, and the requirements specific to dumpers given in this clause.

4.2 Dump body

4.2.1 Control device

When the content of the body can be dumped manually, the control device shall be designed and placed so that opening and closing can be actuated safely, e.g. from the operator's position or from a side different from the tipping direction.

The operating direction of the control device of the body shall coincide with the body movement, except for the case of bodies that open in the right-left direction.

4.2.2 Body lowering

Even when the power is lost, the dumper shall be capable of lowering the body to the transporting position.

4.2.3 Body-down indicator

Dumpers shall have the following provisions :

- A device preventing travelling in a transmission ratio higher than second gear or with a speed greater than 10 km/h when the body is not completely lowered.
- An audible and/or visible warning device functioning when the body is not in a lowered position and the transmission is engaged.

Compact dumpers and crawler dumpers without a cab are excluded from these requirements.

4.2.4 Body support device

Dump body shall be equipped with a mechanical body support device which can hold the dumper body in a raised or tilted position for maintenance, servicing or other non-operational purposes. The device shall meet the requirements in JIS A 8332.

4.2.5 Sticking load

Where there is a risk of losing stability while dumping due to the load, e.g. wet clay or freezing material sticking to the body, provision shall be made to assist the discharge of the load.

Example : Provision of an exhaust heating system for the dump body.

Compact dumpers are excluded from this requirement.