



SURFACE VEHICLE STANDARD

J49™**MAR2020**

Issued 1973-01
Revised 2018-11
Stabilized 2020-03

Superseding J49 NOV2018

Specification Definitions - Hydraulic Backhoes

RATIONALE

This document has been determined to contain basic and stable technology which is not dynamic in nature.

STABILIZED NOTICE

This document has been declared "Stabilized" by the SAE MTC1, Loaders, Crawlers, Scrapers and Mounted Attachments Committee and will no longer be subjected to periodic reviews for currency. Users are responsible for verifying references and continued suitability of technical requirements. Newer technology may exist.

SAE Technical Standards Board Rules provide that: "This report is published by SAE to advance the state of technical and engineering sciences. The use of this report is entirely voluntary, and its applicability and suitability for any particular use, including any patent infringement arising therefrom, is the sole responsibility of the user."

SAE reviews each technical report at least every five years at which time it may be revised, reaffirmed, stabilized, or cancelled. SAE invites your written comments and suggestions.

Copyright © 2020 SAE International

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of SAE.

TO PLACE A DOCUMENT ORDER: Tel: 877-606-7323 (inside USA and Canada)
Tel: +1 724-776-4970 (outside USA)
Fax: 724-776-0790
Email: CustomerService@sae.org
<http://www.sae.org>

SAE WEB ADDRESS:

Full document details: [SAE J49_202003](#)

For more information on this standard, visit
https://www.sae.org/standards/content/J49_202003

Documents



SAE International

1. SCOPE

1.1 This standard applies to hydraulic backhoes which have no more than 190 degrees of rotational swing and are mounted on wheeled tractors and crawler tractors.

1.2 Purpose

The purpose of the standard is to establish a uniform method of providing dimensional and operational specifications for hydraulic backhoes.

Dimensional and operational specifications are determined without assembly or equipment changes such as buckets, dippersticks, etc. When specifications are affected by adjustable or extendable members, the position must be specified. Sections 4.2.1 through 6.2 are further defined by Figures 1 through 8. Figures 1 through 8 are not intended to be descriptive of any existing machine and are used only to clarify the meaning of the standard.

2. REFERENCES

2.1 Applicable Documents

The following publications form a part of this specification to the extent specified herein. Unless otherwise indicated, the latest issue of SAE publications shall apply.

2.1.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or +1 724-776-4970 (outside USA), www.sae.org.

SAE J31	Hydraulic Backhoe Lift Capacity
SAE J326	Nomenclature - Hydraulic Backhoes
SAE J695	Turning Ability and Off Tracking - Motor Vehicles
SAE J732	Specification Definitions – Loaders

2.1.2 ISO Publications

Copies of these documents are available online at <http://webstore.ansi.org/>.

ISO 7451 Earth-moving machinery - Volumetric ratings for hoe-type and grab-type buckets of hydraulic excavators and backhoe loaders

ISO 7457 Earth-moving machinery - Determination of turning dimensions of wheeled machines

ISO 8812 Earth-moving machinery - Backhoe loaders - Definitions and commercial specifications

3. SPECIFICATIONS - GENERAL

3.1 MODEL DESIGNATION

Manufacturer's model number for the backhoe specified.

3.2 TYPE OF BACKHOE

3.2.1 Integral Backhoe

A backhoe which is an integral part of the prime mover.

3.2.2 Utility Backhoe

A backhoe which is not an integral part of the prime mover.

3.3 PRIME MOVER MODEL

For utility backhoes, state the manufacturer's model number on which the specifications are based.

3.4 LOADER

State whether the unit is equipped with a loader, and if so, give manufacturer's model number of the loader. Specify type and size of loader bucket.

3.5 TIRE OR TRACK

State the track shoe type and width in millimeters (inches) or the tire type size, ply and specified tire inflation pressure; where the front and rear tires are different, both must be specified.

3.6 TREAD OR TRACK GAGE

The transverse distance in millimeters (inches) between the centerlines of the tires or sprockets; where front and rear treads are different, both must be specified.

3.7 WHEELBASE

As specified in ISO 8812.

3.8 BUCKET

Specify type, weight (kg, pound), cutting width (mm, inch) and volumetric rating (capacity) per ISO 7451.

3.9 COUNTERWEIGHT

Specify type and amount (kg, pound) of counterweight and/or ballast, if any.

3.10 EXTENDABLE DIPPERSTICK

If dipperstick is extendable, specify:

- a. Type - Telescoping, additional member, sliding collar or other.
- b. Method of Extension - Hydraulic or manual.
- c. Extension - Minimum and maximum extension and number of intermediate positions available.

4. SPECIFICATIONS - DIMENSIONAL

4.1 General

All applicable measurements shall be made at bucket teeth, unless otherwise specified. Directional references in the specifications shall be in accordance with SAE J326. When the unit is equipped with an extendable dipperstick, indicate the position of the dipperstick used for this specification.

4.2 Transport

These dimensions shall be taken with all components in the transport position. Transport position is to be defined by the manufacturer.

4.2.1 Transport Height (A)

As specified in ISO 8812.

4.2.2 Stabilizer Spread Transport (B)

The distance in mm (inch) between the farthest points of the stabilizer assemblies.

4.2.3 Ground Clearance (C)

The minimum distance in mm (inch) from the ground to lowest point on the backhoe or machine per ISO 8812.

4.2.4 Angle of Departure

As specified in ISO 8812.

4.2.5 Overall Length in Transport Position (D)

The horizontal distance in mm (inch) with loader buckets, if so equipped, at carry position as specified in ISO 8812.

4.2.6 Overall Width (E)

As specified as maximum width in ISO 8812.

4.2.7 Operating Mass

The total mass in kg (pound) of unit as specified, fully serviced, and including a full fuel tank and an 80 kg (175 pound) operator.

4.2.8 Mass Distribution (Wheeled Machined)

Front and rear wheel reactions of the unit as specified in 4.2.7.

4.2.9 Machine Clearance Diameter

As specified in ISO 7457.