SAE International	SURFACE VEHICLE STANDARD	SAE J732 JUN2012
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Specification Definitions - Loaders

RATIONALE

This document is being cancelled and superseded by ISO 7131 and ISO 14397-1.

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Foreword—ISO 7131 and ISO 8313, although different in structure and broader in coverage than SAE J732, are technically equivalent in the areas it addresses, with the following exceptions:

a. The locations identified on the machine for measuring ground clearance.
b. The definition of the bucket roll-back position used for determining dump time.

1. Scope—This SAE Standard provides uniform definitions of specification terms peculiar to loaders as defined in SAE J1057. The specifications must be qualified by stating the track shoe type, width or the tire type, size, ply, and specified inflation pressure; the model number or type of bucket disregarding teeth; and the type and amount of counterweight and/or ballast, if any, with which the machine is equipped. Paragraphs 4.1 to 4.16 are further defined by Figures 1 to 4. The figures are not intended to be exactly descriptive of any particular machine.

1.1 Rationale—This document has been reaffirmed to comply with the SAE 5-Year Review policy.

2. References

2.1 Applicable Publications—The following publications form a part of this specification to the extent specified herein. The latest issue of SAE publications shall apply.

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

SAE J742 FEB85—Capacity Rating—Loader Bucket
SAE J818 MAY88—Rated Operating Load for Loaders
SAE J1234 JAN85—Specification Definitions—Off-Road Work Machines

2.1.2 ISO PUBLICATIONS—Available from ANSI, 25 West 43rd Street, New York, NY 10036-8002, Tel: 212-642-4900, www.ansi.org.

ISO 6746—Earth-moving machinery—Definitions of dimensions and symbols
ISO 7131—Earth-moving machinery—Loaders—Terminology and commercial specifications
ISO 8313—Earth-moving machinery—Loaders—Methods of measuring tool forces and tipping loads

3. Definitions

3.1 Ground Reference Plane (GRP)—A hard, level surface on which a machine is located for the purpose of ascertaining its specifications.

3.2 Angle of Approach—The angle in degrees between the GRP and a plane tangent to the forward tires or tracks of a machine and passing through the lowest point of any structure or component forward of the tires and tracks, which limits the magnitude of the angle.

4. Specifications—Dimensional—Dimensional specifications are to be determined without assembly changes.

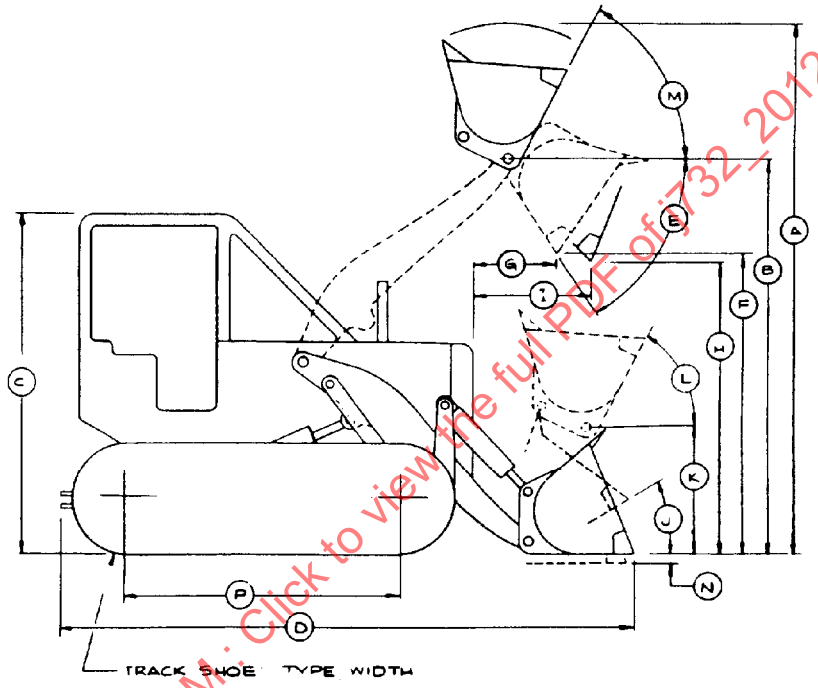

FIGURE 1—LOADER—CRAWLER

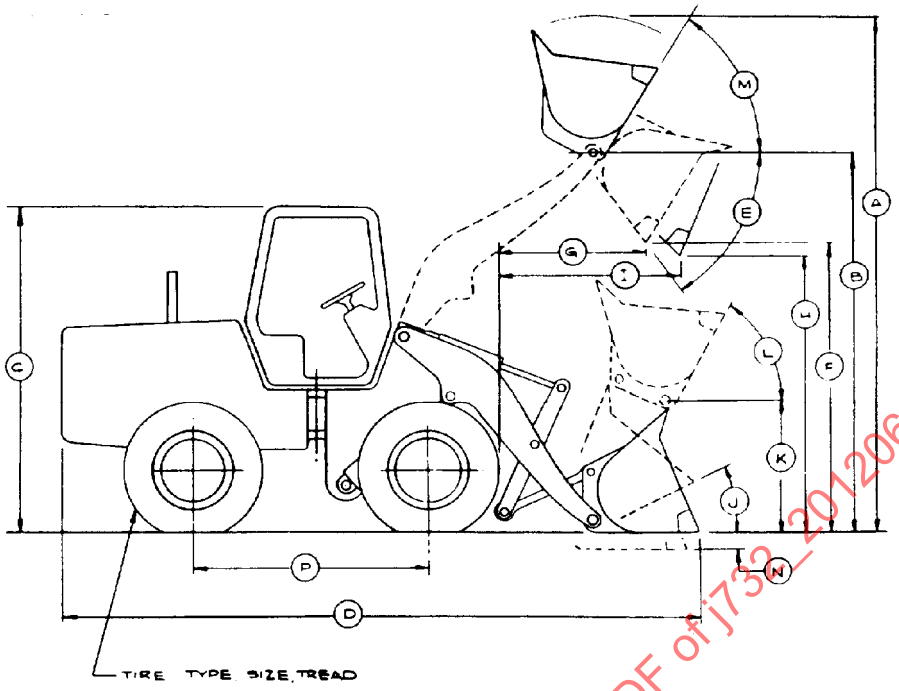

FIGURE 2—LOADER—WHEEL

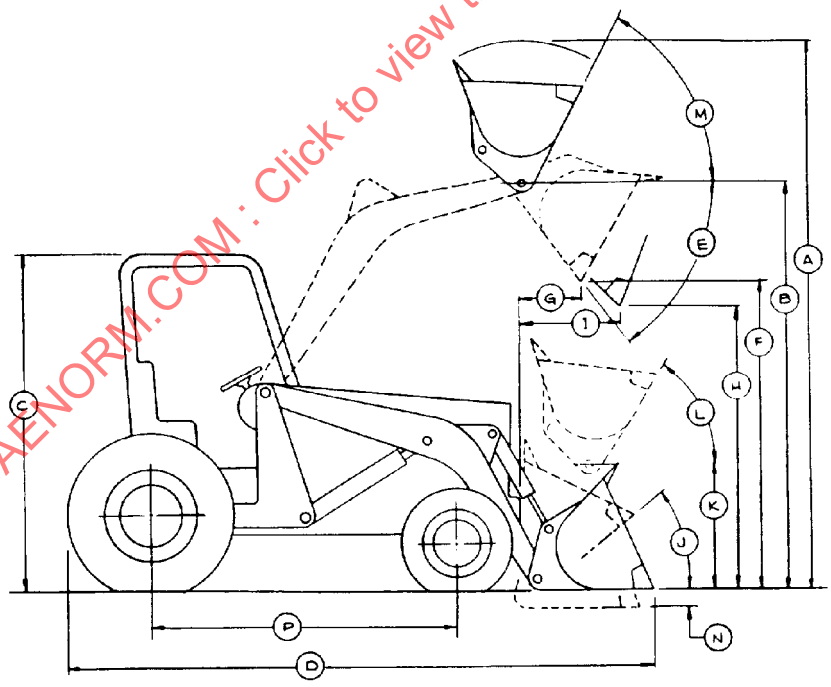

FIGURE 3—LOADER—WHEEL

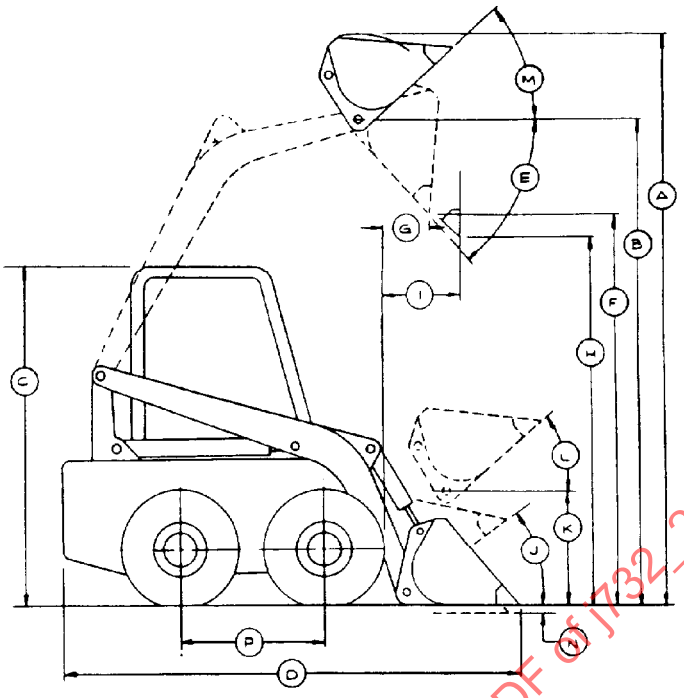

FIGURE 4—LOADER—SKID STEER

4.1 Overall Operating Height (A)—Fully Raised—The vertical distance in millimeters from the GRP to the highest point attainable with the bucket hinge pin at maximum height.

4.2 Height to Hinge Pin (B)—Fully Raised—The vertical distance in millimeters from the GRP to the centerline of the bucket hinge pin.

4.3 Overall Height (C)—The vertical distance in millimeters from the GRP to the highest point on the unit with the bucket on the ground reference plane (GRP).

4.4 Height to Any Other Point—The vertical distance in millimeters form the GRP (must be defined and clearly shown).

4.5 Overall Length (D)—The horizontal distance in millimeters with the bucket level on the GRP, measured from the foremost point of the bucket cutting edge to the rearmost point of the machine.

4.6 Dump Angle (E)—Maximum angle in degrees that the longest flat section of the inside bottom of the bucket will rotate below horizontal with the bucket hinge pin at the maximum height.

4.7 Dump Height (F)—The vertical distance in millimeters from the GRP to the lowest point of the cutting edge with the bucket hinge pin at maximum height and the bucket at a 45 degree dump angle. If the dump angle is less than 45 degrees, specify the angle.

4.8 Reach (G)—Fully Raised—The horizontal distance in millimeters from the foremost point on the machine (including tires, tracks, or loader frames) to the rearmost point of the bucket cutting edge tip with the bucket hinge pin at maximum height and the bucket at a 45 degree dump angle. If the dump angle is less than 45 degrees, specify the angle.

4.9 Reach (I) at Specified Height (H)—The horizontal distance in millimeters from the foremost point on the machine (including tires, tracks, or loader frame) to the rearmost point of the bucket cutting edge tip at a 45 degree dump angle. Specify angles less than 45 degrees.

4.10 Rollback—The angle in degrees that the bottom of the bucket will rotate above horizontal.

4.11 Maximum Rollback (J) at Ground—Maximum rollback angle in degrees from horizontal without movement of the lift arm, starting with the bottom of the cutting edge level on the GRP.

4.12 Carry Position (K)—Vertical distance in millimeters between the GRP and the centerline of the bucket hinge pin, with the angle of approach at 15 degrees.

4.13 Maximum Rollback (L) at Carry Position—Angle in degrees from horizontal to the bottom surface of the bucket cutting edge in the maximum rollback position with the lift arms at carry position.

4.14 Maximum Rollback (M)—Fully Raised—The angle in degrees from the horizontal to the bottom surface of the bucket cutting edge in the maximum rollback position with lift arms fully raised.

4.15 Digging Depth (N)—The vertical distance in millimeters from the GRP to the bottom of the bucket cutting edge at the lowest position with the bucket cutting edge horizontal.

4.16 Wheelbase (P)—The horizontal distance in millimeters from the center of the front wheel or idler to the center of the rear wheel or sprocket with all wheels in the straight ahead position. For the machine equipped with a rear tandem, the center of the rear wheel is the line midway between the two axles of the tandem.

4.17 Overall Width—The maximum outside width in millimeters of the machine specified, exclusive of bucket.

4.18 Bucket Width—The maximum outside width in millimeters of the bucket specified.

4.19 Ground Clearance—The minimum vertical distance in millimeters from the GRP to the lowest point on the machine between the tires or tracks when viewed from the front or rear position with the lift arms raised.

4.20 Tread or Track Gage—The transverse distance in millimeters between the centerlines of the tires or sprockets. If the front and rear are different, both must be specified.

4.21 Maximum Grading Angle—Bucket—Maximum angle in degrees from the GRP that the bucket cutting edge will rotate below the horizontal, with the bucket cutting edge on the GRP. In this situation, the lift arms must be partially raised.

5. Specifications—Operations—Operational specifications are determined with all relief valves at recommended setting and pump flow at rated engine speed.

5.1 Bucket Capacity—As specified by SAE J742 (nominal heaped).

5.2 Operating Mass—The mass of a machine with operator (75 kg), full fuel tank and all other fluid compartments at the manufacturer's specified level. Specify how the machine is equipped, including any optional equipment and/or special attachments.

5.3 Tipping Capacity—SAE Rating—The minimum mass in kilograms acting through the centroid of the SAE rated bucket volume that will:

a. On Crawler Tractors—rotate the machine to a point where the front track rollers are clear of the track.
b. On Wheel Loaders—rotate the machine to a point where the rear tires are clear of the GRP.