

**SPECIFICATION
FOR
LOADERS, SKID STEER**

This specification is released for procurement purposes until revised or rescinded.

SCOPE

This specification covers diesel engine-driven, pneumatic tired, four-wheel drive skid steer loaders. It categorizes these machines into several size classes which cover the range of most models available in the marketplace.

I. CLASSIFICATION

This specification covers nine sizes of skid steer loaders.

II. APPLICABLE STANDARDS

The following documents of issue in effect on the date of the Invitation for Bids shall form a part of this specification to the extent described in REQUIREMENTS.

- SAE J732 - Specification Definitions - Loaders
- SAE J742 - Capacity Rating - Loader Bucket
- SAE J818 - Operating Load For Loaders
- SAE J930 - Storage Batteries for Off-road Work Machines
- SAE J1040 - Roll Over Protective Structures (ROPS)
- SAE J1349 - Engine Power Test Code, Net Power Rating
- SAE J1995 - Engine Power Test Code, Gross Power Rating

SAE standards are available from:
Society of Automotive Engineers, Inc. (SAE)
400 Commonwealth Drive
Warrendale, PA 15096

ISO 3449 - Earth-moving machinery – Falling-object protective structures – Laboratory tests and performance requirements

ISO 3450 - Earth-moving machinery – Braking systems of rubber-tyred machines – Systems and performance requirements and test procedures

ISO standards are available from:
IHS Inc.
15 Inverness Way East
Englewood, CO 80112
Tel: 1-800-525-7052 or 303-790-0600. Customer service 800-447-3352

Federal Occupational Safety and Health Act Codes

U.S. Department of Labor
200 Constitutional Ave., NW
Washington, DC 20210

State Occupational Safety and Health Act Codes (OSHA)

N.C. Department of Labor
OSHA Division
4 West Edenton Street
Raleigh, N.C. 27601

III. REQUIREMENTS

A. GENERAL

This specification covers diesel engine, pneumatic tired, four-wheel drive, skid steer loader and attachments of conventional design and heavy duty construction, complete with all necessary operating accessories customarily furnished by the manufacturer with loaders of this type whether stipulated herein or not, together with such modifications and attachments as may be necessary to enable the unit to function reliably and efficiently in sustained operation.

1. Standard Product

The machine offered shall be new and the latest production model as represented in the manufacturer's current published literature intended for the general public. The machine shall be equipped as specified herein. The component parts of the unit need not be the product of the same manufacturer.

2. Use Conditions

Design and construction shall be such that the skid steer loader will withstand the extremely hard usage encountered in service, such as digging, lifting, transporting, dumping of materials, operation over rough terrain and storage and operation in the open air under all weather conditions for extended periods of time. Components, particularly of the electrical, fuel, and exhaust systems, shall be so designed as to resist any harmful effects of dust or water.

3. Ease of Maintenance

The design of the skid steer loader and accessory installation shall permit ready accessibility for servicing, replacement, and adjustment of component parts and accessories with minimum disturbance of other elements.

4. Frame

The frame shall be designed to withstand maximum stresses under normal operating conditions, and in addition, provide adequate support for attaching any device approved by the loader manufacturer for use in combination with the loader.

5. Skid Steer Loader Operating Weight

The skid steer loader operating weight shall include the manufacturer's standard dirt bucket (or the manufacturer's bucket normally prescribed for such purpose, if manufacturer uses different bucket terminology), ROPS, 175 pound operator, full fuel,

full servicing, tires as identified in the specification table and/or dimension chart in the manufacturer's current published literature, standard advertised counterweight, standard advertised equipment, and hydraulic controls. The skid steer loader operating weight shall not include additional optional counterweight, or tire hydroinflation.

6. Operating Load

The skid steer loader operating load shall be in accordance with SAE J818. Unit is to be at operating weight specified in section III.A.5 herein. Optional counterweight is prohibited. Operating load offered in bid shall not be in excess of the value stated in the manufacturer's published brochure for the machine with standard counterweight.

7. Tipping Load

Reserved.

8. Height to Hinge Pin, Fully Raised

Height to hinge pin, fully raised, shall be the vertical distance from ground level to the centerline of the bucket hinge pin, when the bucket hinge pin is at its maximum height. Height to hinge pin shall be measured with loader equipped with the tires specified for the dimension drawing or table in the manufacturer's current published literature.

9. Breakout Force

Reserved.

10. Occupational Safety and Health Act

The skid steer loader shall be furnished with all applicable equipment and accessories as required by the Occupational Safety and Health Act (U.S. Dept. of Labor and N.C. Dept. of Labor), including the following:

29 CFR 1926.602 - Material Handling Equipment

Seat belts, brakes, horn, back-up alarm ("reverse signal alarm"), and posting of rated capacity.

11. Travel Speed

Manufacturer's rated travel speed of the loader, in both forward and reverse, shall be minimum 5 MPH.

B. OPERATING AND DIMENSIONAL REQUIREMENTS

The requirements given below are minimums, and are to be met without the inclusion of any optional counterweights which may be available from the manufacturer. Where necessary, definitions for each requirement in the first column are provided in the section identified in parentheses after the respective requirement. Concerning the operating loads specified below, see note under item #2 in section VIII, Ordering Data.

Size class	1	2	3	4	5	6	7	8	9
Operating load, lbs (III.A.6)	1000	1250	1500	1600	1900	2000	2200	2400	3000

Operating weight, lbs (III.A.5)	4000	4600	5400	5800	6400	6700	7000	7800	8800
Engine net HP (III.C.1)	30	45	46	54	59	70	70	76	82
Hinge pin height, in. (III.A.8)	103	109	114	114	115	120	120	124	125

C. ENGINE

1. Diesel Engine

The engine shall be of the compression ignition type, four-stroke cycle, liquid cooled, and capable of operating on commercial diesel fuel as recommended by the manufacturer. The engine shall be equipped with an adequate and efficient fuel injection mechanism, heavy duty fuel oil filter system, and heavy duty full flow type lubricating oil filter. Air filter shall be heavy duty dry type, dual stage (primary and safety elements). Air cleaner hose shall be of metal or heavy duty flexible, non-collapsible type, (wire reinforced hose not acceptable) and with metal or molded rubber elbows. All air cleaner hose connections must be banded.

Engine gross horsepower shall be in accordance with SAE J-1995. Engine net horsepower, shall be in accordance with SAE J-1349.

Engines cooled by a combination of oil and air may also be offered, provided they are in compliance with all other engine requirements herein. The State reserves the right to require documentation which verifies, to its satisfaction, the proven performance and reliability of the engine offered.

2. Engine Governor

The engine governor shall be of the mechanical or hydraulic type and shall be driven from the engine. Provisions shall be made for permitting regulation of the governed speed-setting throughout the engine load range while the unit is in operation.

3. Engine Starting System

The manufacturer's standard electric starting system with heavy duty battery (SAE J930) shall be acceptable for cranking the loader engine. The engine starting system shall be capable of cranking the loader engine in an ambient temperature of -20°F. The battery shall be designed to withstand the shock, vibration, and dusty environment normally encountered by off-road work machines.

4. Engine Cooling System

The unit shall be water cooled with heavy duty radiator and blade type or blower type (squirrel cage or equivalent) fan. The cooling system shall be protected with permanent type antifreeze to -20°F or lower.

5. Engine Lubricating System

The manufacturer's current standard production lubricating system is acceptable.

D. FUEL TANK

The manufacturer's standard fuel tank(s) is (are) acceptable and shall be located so as not to be affected by heat from the engine exhaust pipe or muffler.

E. TRANSMISSION

The transmission shall be of the hydrostatic type, with at least the forward and reverse travel speed specified herein.

F. BRAKING SYSTEMS

The service braking, emergency stopping and parking systems shall conform to the requirements of SAE-J1473.

G. TIRES

The manufacturer's standard tire shall be furnished unless otherwise specified in the Invitation For Bids.

H. HYDRAULIC SYSTEM

The lift and bucket mechanisms shall be operated by hydraulic cylinders. Hydraulic pump shall be on a live drive from the engine and shall provide adequate pressure for bucket operations. Ample pump and reservoir capacity shall be furnished for continuous duty-cycle operation without overheating. A replaceable oil filter and system relief valve to prevent engine stall-out shall be provided.

For safety purposes, a boom lock-out feature which prevents hydraulic operation of the boom when the operator is not seated is to be provided. The lock-out feature may be actuated by a "seat bar" mechanism, by the seat itself (automatically when the operator is not in position on the seat), or by an equivalent means.

I. ROPS/FOPS CANOPY

The ROPS/FOPS canopy shall conform to SAE-J1040 and SAE-J231. The operator's seat shall be located within easy reach of all operating controls, and allow a good view of bucket and the work area. The seat shall be adjustable, bucket type, foam rubber cushioned, upholstered, with arm rests (or a "seat bar" which also functions as an armrest) and seatbelt.

J. BUCKET CONTROLS

The lift circuit shall provide the functions of raise, hold, lower, and float. The tilt circuit shall provide the functions of roll back, hold, and dump.

K. PAINTING

All exposed metal parts of the loader shall be cleaned of all mill scale, rust, grease, etc., then primed and undercoated with a rust resistant paint in accordance with the acceptable shop practice. The finish coat shall be manufacturer's standard.

L. INSTRUMENTS AND GAUGES

The instrument panel shall be located in view of the seated operator. The manufacturer's standard instrumentation shall be furnished unless otherwise specified in the IFB.

M. EQUIPMENT

The following equipment shall be furnished with the skid steer loader:

1. Muffler, spark arrester type
2. Radiator guard
3. Horn
4. Engine hood
5. Front work lights
6. Backup alarm
7. Auxiliary hydraulics
8. Hourmeter
9. Quick attachment mounting system
10. Fuel gauge (not dipstick)
11. Canopy side screens, and rear screen or rear safety-glass window

N. ATTACHMENTS AND OPTIONAL EQUIPMENT

Attachments and optional equipment shall be as specified in the IFB. Buckets shall be sized according to SAE J-742.

IV. WARRANTY

The contractor warrants to the owner that all equipment furnished under this specification will be new and of good material and workmanship, and agrees to replace promptly any part or parts which by reason of defective material or workmanship shall fail under normal use, free of negligence or accident, for a minimum period of twelve (12) months from date put in operation, except for engine and drivetrain, which shall be so warranted for a minimum ADDITIONAL period of twelve (12) months (for a total period of 24 months). Such replacement shall include all parts, freight, labor, and travel costs to the location where equipment is down, free of any charge to the owner or his representative. In addition, any provisions of the manufacturer's standard warranty which exceed the above requirements are to be provided to the user.

V. SERVICE, PARTS, AND MANUALS

The contractor shall furnish a qualified representative to instruct the owner's operator(s) in the operation and maintenance of the equipment. Such instruction shall be provided at the user's site, and on a date and schedule approved by the user.

An operator's manual and maintenance/repair parts list shall be furnished to the user.

VI. ACCEPTANCE EVALUATION AND QUALITY ASSURANCE

Upon receipt of the skid steer loader, the purchaser or his authorized representative shall arrange for an acceptance inspection for compliance with the provisions of this specification and with any additional technical requirements in the Invitation For Bids.

VII. DELIVERY AND PAYMENT

Delivery of and payment for the skid steer loader under this specification shall be in accordance with the terms and conditions of the Invitation for Bids. The contractor shall be responsible for any packing, packaging, or protection required to insure delivery in an undamaged condition.

Skid steer loader shall be completely serviced and ready for operation when delivered.

VIII. ORDERING DATA (for purchaser's and requisitioner's use only)

Purchasers should exercise any desired option offered herein and should specify the following:

1. Title, number, and date of this specification
2. Skid steer loader size. NOTE: The operating and dimensional requirements as specified in the table in section III.B for the size class of machine desired are NOT to be changed in the bid solicitation document.
3. If flotation tires are required in lieu of manufacturer's standard tires.
4. If special instruments and gauges are required
5. All attachments and optional equipment desired must be specified in IFB including type and size of bucket.

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