

**SPECIFICATION
FOR
ROLLERS, COMPACTION, VIBRATORY
(SINGLE DRUM, ASPHALT COMPACTION)**

(This specification is released for procurement purposes until revised or rescinded.)

SCOPE

This specification covers diesel engine-driven, articulated, pneumatic tired, single smooth drum vibratory compactors. It does not include all types and sizes of commercially available compactors, but only the size generally used by the North Carolina Department of Transportation, Division of Highways.

I. CLASSIFICATION

This specification covers only one size single drum vibratory compactor.

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 J930 - Storage Batteries For Off-road Work Machines
SAE J1040 - Roll Over Protective Structures (ROPS)
SAE J1083 - Unauthorized Starting or Movement of Machines
SAE J1472 - Braking Performance-Roller/Compactors

SAE J1349 - Engine Test Code
Society of Automotive Engineers, Inc. (SAE)
400 Commonwealth Drive
Warrendale, PA 15096

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, single steel drum vibratory compactors and attachments of conventional design and heavy duty construction, complete with all necessary operating accessories customarily furnished by the manufacturer with compactors 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 compactor offered shall be a new standard production model of latest design and 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 compactor will withstand the extremely hard usage encountered in service, such as 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 compactor 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 compactor manufacturer for use in combination with the compactor. Front and rear articulated frames shall be joined by a rugged hinge assembly.

5. Compactor Operating Weight

The compactor operating weight shall include ROPS canopy, 175 pound operator, fuel, oil, coolants, lubricants, standard advertised tires, standard advertised equipment, and hydraulic controls. The compactor operating weight shall not include any ballast.

6. Occupational Safety and Health Act

The machine 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, fenders, horn and back-up alarm.

29 CFR 1926.100 - Rollover Protective Structures (ROPS)

29 CFR 1910.145 - Specifications for Accident Prevention Signs and Tags

Slow moving vehicle emblem.

B. OPERATING AND DIMENSIONAL REQUIREMENTS

The requirements given below are minimum unless otherwise indicated.

Operating Weight (Empty)	12,000 lbs.
Drum Width	66"
Drum Diameter	48"
Dynamic Force (at high amplitude)	22,000 LBS.
Gradeability	25%
Net Brake Flywheel Horsepower (SAE J1349)	75
Travel Speed-Forward	6.0 mph
Water Tank Capacity	75 gal.

C. ENGINE

1. Diesel Engine

The engine shall be of the compression ignition type, two or four-stroke cycle, liquid or air 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. The minimum net brake horsepower at the engine flywheel (SAE J1349) shall be as specified in Section III.B.

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 engine. The engine starting system shall be capable of cranking the engine in an ambient temperature of -20F. The battery shall be specifically designed to withstand the shock, vibration, and dusty environment normally encountered by off-road work machines. A shock resistant battery mount is not an acceptable substitute for the type of battery required, though such mount may be furnished in addition to the proper battery. A means shall be provided to lock the starting controls and a concealed electrical disconnect shall be provided (SAE J1083).

4. Engine Cooling System

a. Water Cooled - The unit shall have heavy duty radiator and blade type fan. The cooling system shall be protected to a minimum of -20°F and so tagged.

b. Air Cooled - An audible alarm or engine shut-down shall be provided to protect the engine in case of overheating situation.

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. PROPULSION SYSTEM

The propulsion system shall be of the fully hydrostatic, closed circuit type with single-lever control of both direction and speed, and shall be independent of the vibration system.

F. STEERING

The steering system shall be of the hydraulic, full-power design and shall utilize a double-acting steering cylinder/s, separate steering pump, hydraulic servo-type valving, and safety relief valving for overload protection.

G. BRAKING SYSTEMS

The machine shall be equipped with a service brake system, a secondary braking system, and a parking brake system, all of which shall conform to the requirements of SAE J1472.

H. GRADEABILITY

The theoretical gradeability of the machine, without the use of the vibratory system, shall be as specified in Section III.B.

I. TIRES

The manufacturer's standard advertised tires for this equipment will be acceptable, unless otherwise specified in the IFB.

J. HYDRAULIC SYSTEM

The reservoir may be common to propulsion, vibration, and steering and shall have adequate capacity for all hydraulic requirements. The reservoir shall be equipped with a full flow, in-line filter of at least 10 micron filtration. Cooling capacity must be sufficient for continuous operation at 125°F (52°C).

K. VIBRATORY SYSTEM

The vibratory system shall consist of an axial, piston-type hydraulic pump (or gear type hydraulic pump) driving an axial, piston or gear type hydraulic motor directly coupled to an in-the-drum eccentric shaft-type vibrator. The eccentric shaft shall be mounted in heavy-duty antifriction bearings, with oil-splash lubrication, providing a dynamic force at the drum contact line of not less than 22,000 lbs. at high amplitude. The machine shall have a dual or multiple amplitude capability.

Manual and automatic means for cutout of the eccentric mechanism shall be provided. The amplitude control shall be controlled from the operator's station. An on/off switch at the operator's station for the vibratory function is considered an acceptable amplitude control.

L. DRUM

The vibrating drum shall be the smooth type. The drum size shall be as specified in Section III.B. The drum's top surface shall be visible at all times to the operator. The drum edges at ground contact point on either side must be visible without discomfort.

A flexible, adjustable, non-metallic drum-scraping device shall be mounted on the frame structure that surrounds the drum. The drum and its vibrating parts shall be isolated from the rest of the roller by resilient, replaceable supports that isolate at least 90% of vibration under normal operation. The drum surface must be machined and have a beveled edge to prevent marking the mat.

M. DRUM AND TIRE SPRAY SYSTEMS

The water tank for the drum shall be rust resistant and be equipped with a lockable filler cap, a strainer and a drain plug. A water pump is to provide pressurized water to fan-type spray nozzles. Additional water filtration is to be provided by an in-line filter. Nozzles must be able to be removed and cleaned without the use of special tools. The tank capacity shall be as specified in Section III.B.

A pressurized water spray system for providing a wetting solution to the tires is to be provided, along with the installation of cocoa mats and scrapers on the tires.

N. OPERATOR STATION

The operator's station shall have a safe, comfortable, seat with a clear view of the drum and drum edges. The seat shall be adjustable. The operating controls shall be grouped to promote safety and ease of operation. ROPS/FOPS canopy, conforming to SAE J1040, shall be provided. A seat belt is to be furnished.

O. TOOLS AND LUBRICATING EQUIPMENT

Special tools and greasing equipment shall be furnished with the machine. A tool box with hasp and padlock shall be provided.

P. PAINTING

All exposed metal parts of the compactor shall be cleaned of all mill scale, rust, grease, etc., then primed and undercoated with a rust resistance paint in accordance with the acceptable shop practice. The finish coat shall be Department of Transportation, Division of Highways, Yellow, Moline MPM-#11-Y169A leadfree, or its acceptable equivalent.

Q. INSTRUMENTS AND GAUGES

The manufacturer's standard instrumentation shall be furnished unless otherwise specified in the IFB. The instrument panel shall be protected by a lockable cover.

R. EQUIPMENT

The following equipment shall be furnished with the machine:

1. Muffler
2. Air cleaner restriction indicator of the proper size and setting, Bacharach or equal.

3. Slow moving vehicle emblem
4. Horn
5. Vandalism protection kit. The kit shall include locking cover for instruments and lock type caps for exposed filler caps and oil dipstick pipe (less padlocks)
6. Engine hood side doors and shields
7. Instrument lights, and front and rear hazard flashers
8. Tie down hooks for transporting the machine
9. Backup alarm
10. In line fuel heater located prior to fuel filter
11. One (1) fire extinguisher, 5 lb., BC type, rechargeable, metal discharge valve, appropriately mounted.

IV. WARRANTY

The contractor warrants to the owner that all equipment furnished under this specification will be new, 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 12 months from date put in operation. Such replacement shall include all parts, labor and transportation costs to the location where equipment is down, free of any charge to the owner or his representative.

Under same and all conditions as above, the power train (engine, transmission, torque converter, and final drive) shall be covered for an additional period of at least 24 months. Any periodic inspections which may be performed by the contractor or his representative shall be without charge to the owner.

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 for a minimum period of eight hours.

An operator's manual, shop manual, and complete parts book shall be furnished as specified in the Invitation for Bids.

VI. ACCEPTANCE EVALUATION AND QUALITY ASSURANCE

Upon receipt of each machine at the receiving point, the purchaser or his authorized representative shall arrange for an acceptance inspection for compliance with the provisions of this specification.

VII. DELIVERY AND PAYMENT

Delivery of and payment for machines 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.

Machines shall be completely serviced and ready for operation when delivered.

VIII. ORDERING DATA (For Procurement Use Only)

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

1. Title, number, and date of this specification
2. If machine is to be painted other than Moline MPM #11-y169a LEADFREE.

3. If special instruments and gauges are required
4. If tires, other than the manufacturer's standard advertised tires are required.
5. If manuals and parts books are required
6. If on the job site training by a technician in the operation and maintenance of the compactor is not required