

**The American Road Machinery Company**  
**MODEL 1503 TRAILER-MOUNTED VACUUM LEAF LOADER – March 2013**

**GENERAL:**

This specification describes a rear intake hose trailer mounted power driven vacuum leaf loading machine. The fan inlet is at the rear of the trailer and the power unit radiator faces the tongue of the trailer. The machine is designed for one person operation and capable of picking up leaves from curb sides, median strips, ditches, open spillways, and other areas. Further, the machine mulches the leaves and deposits them in the bed (hopper) of a tow vehicle.

Bidders must offer a regularly-manufactured machine and supply descriptive literature and complete technical specifications.

**POWER UNIT: (Deere 4045T Tier 4 74HP)**

Type: In-Line 4 cylinder, 4-cycle, Turbo Diesel.

Displacement: 275 Cubic Inches (4.5 Liters)

Gross Power: 74 HP (55 KW) Intermittent at 2400 RPM.

Instruments: Curb side, in shock-mounted panel.  
Vernier type throttle.  
On/Start/Off Switch.  
Combination Voltmeter - Tachometer - Hour Meter -  
Water temperature and Oil pressure with safety shut-off.

Accessories: Gear-driven variable speed governor.  
Gear-driven Hydraulic Pump, 18.6 GPM at 1800 PSI.

Alternator: 72 Ampere.

Battery: 950 Cold Cranking Amps, 185 Minute Reserve.

Muffler: Vertical, external.

Fuel Tank: 30 U.S. Gallons - High density, cross linking, non-permeating polyethylene. Molded as one piece, no weld seams or add-ons.

**TRAILER FRAME:**

Overall dimensions are approximately 70" wide, 140" long, and 104" high. The trailer main frame is 34" wide by 121" long and fabricated of 9 pounds per foot 5" structural channel with a minimum of two 9-pound channel cross braces, one 1/2" angle cross brace and one 3/8" by 4" steel plate cross brace. Axle weight is balanced so the trailer tongue can be lifted by one person and easily moved on level ground. The trailer tongue includes a screw type swing away parking stand. The tongue is telescopic with an 18" length adjustment, to facilitate various truck hitch locations. It also has a height adjustment of 14"

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to 46" above ground level and a 1-1/2" thick lunette ring for connection to a pintle or clevis hitch. Two 36" long 5/16" steel link safety chains are supplied. The trailer includes brake/hazard lights, turn signals, side reflectors, and male/female electrical connectors.

**AXLES AND TIRES:**

The single axle is tubular steel, 3" diameter. Springs are slipper-type rated at 5000 pounds per pair and fastened to the frame with high alloy heat treated bushings that require no lubrication. Tires are 7.00 x 15, 8-ply rating.

**HOSE SUPPORT AND SUPPORT FRAME:**

A hose support boom attaches to an all-steel frame made of 4" x 1-1/2" x 1/8" wall rectangular tubing, which bolts to the rear of the main trailer frame. This allows the boom to pivot to the right or left side of the machine for pickup in either direction. The horizontal arm is 4" x 1-1/2" structural rectangular tubing with a 1/8" thick wall. A 1" standard pipe allows 29" horizontal movement of a roller assembly with two extension springs that facilitate operation of the suction hose and permit easy maneuverability. The horizontal boom is attached to a vertical support pipe by means of two 3/8" shackles welded to the horizontal arm.

**FAN DRIVE:**

The suction fan is direct driven by a 10" heavy duty over-center clutch with a 2-1/4" straight output shaft, coated with anti-seize material. The fan is positioned on the shaft by a 5/8" square by 4-1/4" long key and secured by a 1" - 14 by 2" long grade 5 bolt and split 'lock' washer. The 1" bolt clamps a 1/2" by 4" flat washer to the end of the P.T.O. shaft and the washer is secured to the fan hub with four 3/8"-16 by 1" socket head cap screws and split 'lock' washers. The clutch housing has a double lip seal. The clutch shaft has a sealed pilot bearing and two 2-1/4" I.D. tapered roller bearings, each with a basic rating of 3370 pounds radial and 2330 pounds thrust. The clutch handle is extended to provide easy access by the operator, thereby allowing engagement and disengagement of the fan while the engine is running.

**SUCTION FAN:**

The fan is 25" diameter, 8-1/4" wide at the tip and has a minimum of six radial blades. The fan backing plate is 1/4" thick steel and the blades are 3/8" thick AR400 abrasion resisting alloy steel with 1/8" formed reinforcing welded to the back faces. After welding the complete fan is stress relieved for two hours at 1100 degrees F. This treatment relieves stresses induced by welding and reduces the possibility of weld failure due to shock loads. The fan produces 16,600 C.F.M. of air movement through a 16" diameter by 10' long hose under normal working conditions.

**FAN HOUSING:**

The fan housing is approximately 32-3/8" high, 34-1/4" long, and 10-1/2" wide, made of 1/4" steel plate. For added resistance to abrasive debris, the housing includes a two-piece replaceable liner made of 1/4" thick steel. To prevent worn liner sections from being drawn into the rotating fan blades, the sections are secured by ten alloy steel flat head socket cap

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screws and elastic stop nuts. The fan housing is rigidly attached to the engine frame. To prevent severe engine and P.T.O. damage should large foreign objects be sucked into the blower housing, the back of the blower housing incorporates a safety band clamped to the P.T.O. housing, to divert shock loads to the engine frame rather than to the P.T.O. housing and engine block. Fan removal is accomplished by removing eleven bolts on the adaptor flange at the front of the housing. In order to change the fan, it is not necessary to remove the entire blower housing.

**FAN TO HOUSING EFFICIENCY:**

A high efficiency fan and housing design combines a 25" diameter fan and low fan tip clearance. This provides substantial engine horsepower reserve for picking up dense debris under adverse conditions and prevents engine stall-out. It also prevents excessive material build-up in the fan housing and produces the most efficient ratio of intake material to hopper air exhaust.

**DISCHARGE:**

The discharge duct is made of 12 gauge steel with a 143 square inch (11" by 13") rectangular opening at the blower housing and a gradual curve to a rubber transition cuff connecting the rectangular duct to a 16" diameter round hopper discharge pipe. The transition cuff allows the discharge pipe to move without binding when the tow vehicle turns corners or travels on uneven terrain. The discharge duct is supported by a 2-3/8" diameter tube with an adjustable cradle. The discharge duct has a smooth extension from the fan housing with no bends or turns that may create unusual wear or restrict normal material flow at the connecting point to the fan housing.

**INTAKE:**

Leaf pick-up is through a 16" diameter by 10' long heavy duty rubber hose with a wax blooming rubber liner (which resists wear and build-up of material), an abrasive resistant cover, a wire reinforced 13" bend radius, and a weight of 7.5 pounds per foot. The hose has a bolted-on 14 gauge steel adaptor that is bolted to the fan housing. The hose is supported by a horizontal boom arm: 4" by 1-1/2" by 1/8" wall structural rectangular tubing. A 1" diameter standard pipe allows 29" of horizontal movement of a roller assembly with two hanger arm extension springs that permit ease of operation and aid hose maneuverability. A hose control handle assembly aids the operator in maneuvering the hose the hose. The hose and intake assembly are convertible for right-hand or left-hand pick-up.

**PAINT:**

The engine and fan housing is thoroughly cleaned and given two coats of rust inhibiting primer and two coats of white finish. The trailer frame and axles are similarly primed and finished in black.

**DEVIATIONS:**

All deviations from and exceptions to this specification must be completely explained and included with the bid. Otherwise the purchasing authority will assume the proposed

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machine to be exactly as described above and, after delivery, may return the machine for noncompliance with the specifications.

**OPTIONAL EQUIPMENT**

**WARNING BEACON:**

A 360 degree amber rotating beacon is fitted to the engine housing so that it is visible from the sides and rear of the unit. The beacon is connected to the on/start/aux switch to operate when the engine is running.

**WARNING FLASHER LIGHTS:**

Two 7" diameter warning flasher lights are fitted to the engine housing. The flasher is connected to the starter the starter switch and operates when the engine is running.

**TRAILER BRAKES:**

Electric brakes are installed on the trailer. An electronic brake control is provided for mounting in the cab of the tow vehicle. A safety break away switch is mounted on the trailer.

**HOPPER:**

A 12 gauge steel reinforced hopper has a fully enclosed screen top, flexible exhaust seal, full width rear door. The hopper has lifting hooks at each corner, and it is welded together for continued durability and reliability. The hopper has a capacity of 11-3/4 or 9-3/4 cubic yards.

**HOPPER COLLAR:**

A collar consisting of a steel frame and bolted-on gasket of tough rubber belting is attached to the hopper opening.

**HYDRAULIC HOSE SUPPORT:**

A 12 volt electric-hydraulic power unit provides up and down movement of the standard hose boom through a two inch cylinder that is activated with push button switches mounted in a hand held pendant which can be mounted at the operator's station. The boom hydraulics are totally independent of any other hydraulic system such as a parking stand system.

**RADIATOR SCREEN:**

A pleated aluminum auxiliary screen, mounted in a hinged frame, provides additional protection to the radiator with no reduction of air flow.

**HOSE QUICK DISCONNECT:**

The suction hose is connected to the blower housing adaptor without the use of bolts or wing nuts. The Quick Disconnect device includes a flange on the end of the suction hose, a split ring attached to the blower housing, and an over-center clamp for locking the split ring over the hose flange. A safety cover is also provided, for use when the suction hose

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is removed. The safety cover is similarly retained by the split ring and over-center clamp.

**FLUID COUPLER**

The suction fan is direct driven by a heavy duty fluid coupler through a 2 1/4" diameter straight output shaft. The fan hub is coated with anti-seize material and is positioned on the shaft by a 5/8" square by 4-1/4" long key and secured by a 1" -14 by 2" long grade 5 bolt and split 'lock' washer. The 1" bolt clamps a 1/2" by 4" flat washer to the end of output shaft and the washer is secured to the fan hub with four 3/8"-16 by 1" socket head cap screws and split 'lock' washers. The housing has a double lip seal. The fluid coupler has a sealed pilot bearing and heavy duty roller bearings. The fluid coupler provides smooth engagement as the engine RPM is increased from idle and disengages when the engine RPM is returned to idle. This eliminates clutch wear and damage done by high RPM engagement that can occur with any clutch type PTO.

**Available Optional Engine Selections**

**POWER UNIT:** (Deere 4045TFTIII - 85)

Type:	In-Line 4-cylinder, 4-cycle, Turbo Diesel.
Displacement:	276 Cubic Inches (4.5 Liters)
Gross Power:	85 HP (60 kW) Intermittent at 2500 RPM.
Instruments:	Curb side, in shock-mounted panel. Electronic type throttle. On/Start/Off Switch. Digital Combination Voltmeter - Tachometer - Hour Meter - Water temperature and Oil pressure with safety shut-off. LED indicator lights.
Accessories:	Gear-driven variable speed governor. Gear-driven Hydraulic Pump, 18.6 GPM at 1800 PSI.
Alternator:	65 Ampere.
Battery:	950 Cold Cranking Amps, 185 Minute Reserve.
Muffler:	Vertical, external.
Fuel Tank:	30 U.S. Gallons - High density, cross linking, non-permeating polyethylene. Molded as one piece, no weld seams or add-ons.