

037520 LITTER PICKER, TOWED, TRAILER MOUNTED, ENGINE POWERED

A. INTENT STATEMENT:

It is the intent of this specification to describe the minimum requirements for a towed diesel-powered debris retrieving machine which shall be operated electronically by one person from the cab of the towing vehicle. The unit shall be designed to lift and elevate unwanted debris from the side of the road (paved or unpaved), highway, medians, along curbs and barricades to a material hopper which can be hydraulically raised and dumped. It shall be capable of cleaning at speeds from 0 to 18 MPH and be towed at speeds of up to 65 MPH. Ref. Barber Model 200.

B. Specifications:1. General Dimensions:

1.	Height	8'5"	7.	Clearance Height	9'
2.	Width	8'4"	8.	Dumped	8'
3.	Length	17'4"	9.	Cleaning Speed	1.5 MPH
4.	Weight	6,600 lbs.	10.	Highway Speed	65 MPH
5.	Tires	235/8SR/16	11.	Hopper Capacity	4 cu yds
6.	Cleaning Width	8'6"	12.	Tongue Weight	1400 lbs.

2. ENGINE and ACCESSORIES:

1. Drive Train – 19 H.P. water cooled diesel engine, that provides power hydraulically to activate all function.
2. Towing – Hitch Assembly shall come equipped 3-inch Lunette eye.
3. Gutter brooms shall be mounted on each side of the machine to pull material onto the conveyor. Referenced Acceptable Model – Barber LP-200
4. Delivery 180 days after receipt of order.

The engine shall be a water-cooled diesel of adequate size capable of performing all ROAD RAKE operations. The engine and hydraulic pump shall be completely enclosed in a lockable metal compartment with adequate ventilation for the radiator. It shall be equipped with a low oil pressure and high-water temperature shut down system. The engine must meet current EPA Tier 4 compliance standards.

A dry type air cleaner equipped with an automatic dust and water pre-filter evacuator as recommended by the engine manufacturer. The air filter housing shall be mounted on top of the engine compartment. It shall have a "filter minder" vacuum restriction gauge attached to the air filter. The gauge shall be red lined at maximum restriction as recommended by the engine manufacturer.

A spin on type replaceable oil filter and water separating fuel filter.

A FLOCS system (Fast Lube Change System) shall be installed with all fittings, brackets, clamps and hoses. Hose from oil pan to FLOCS fitting shall be hydraulic hose with a 100R2 rating and properly secured. The system shall be compatible with all fittings presently used by the Department. The final placement of the male half of the snap coupler, on the equipment, shall be determined at the pre-build meeting. Ref: EQN-351A.

A twelve-volt electric system, including an electric starter and a minimum 35-amp alternator.

A maintenance free battery with a minimum CCA rating of 500 Amperes at 0o F. and a reserve capacity of 80 minutes.

Direct drive to hydraulic pump.

The muffler/spark arrestor shall comply with the U.S. Forest Service regulations.

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2. ENGINE and ACCESSORIES: (continued)

The fuel tank shall have adequate capacity to operate the engine for not less than eight (8) hours under full-load operating conditions without refueling.

The engine flywheel and fan shall be enclosed in a steel housing.

INSTRUMENT PANEL: There shall be an instrument panel located where it is visible to an operator in the vicinity of the engine. The panel shall include the following:

An hour meter

Voltmeter or ammeter

Oil pressure gauge

Water temperature gauge

Fuel gauge. A sight tube is not acceptable.

3. HYDRAULICS:

Engine driven gear type pump min six (6) GPM. Needed valving sized for all hydraulic component operation and functions for maximum payload capacity.

Steel or stainless steel approve tubing for hydraulic plumbing.

Hydraulic hoses shall be rated for maximum system operating psi. with steel or stainless-steel crimped fittings.

4. CONVEYOR:

The unit shall use a bar flight type conveyor with double torsion tines. A minimum of 200 tines, in four rows. The tines shall be made of stainless steel - spring steel and be individually replaceable. The conveyor shall be driven by a minimum #80 roller chain with reduction drive.

A 1/8" thick corrosion resistant steel moldboard shall be used to deflect debris to the elevating portion of the conveyor.

5. GUTTER BROOM:

Two hydraulically driven gutter brooms shall be mounted to the front and to the outside of the conveyor mechanism. Gutter brooms shall be 16" in diameter and adjustable up, down, in, and out. The arms shall be shock mounted to prevent damage.

6. HOPPER:

It shall be minimum ten (10) gauge steel fully welded and capable of dumping 4 cubic yards, weighing up to 2000 lbs., to any dumping height from five to eight feet.

7. CONTROLS:

A handheld remote-control box shall be supplied and designed for use from the tow vehicle. A lockable compartment shall be provided when controller is not in use. The handheld remote-control box shall have the following:

a. paddle type control to raise/lower the Road Rake between transport and work positions.

b. Conveyor on/off.

c. Hopper raise/dump control switches.

All controls shall be permanently marked.

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8. FRAME:

The frame shall be fully welded structural steel tubing of adequate size to withstand the shock and stresses.

9. AXLE, TIRES AND WHEELS:

The axle shall have a minimum gross axle weight rating (GAWR) of 7,200 pounds. The axle assembly shall be the rubber torsion type. (Ref. Dexter Torflex)

Tires shall be OEM standard option rated for GAWR, tubeless radial ply light truck (LT) type, rated for "Highway Use" The tires and wheels shall be mounted and balanced as an assembly and rated for highway use 65MPH.

The wheels shall be 16-inch drop center steel disc type wheels designed for radial ply tires.

They shall meet or exceed the rated capacity of the axle and be of a size and type recommended by the tire manufacturer for the tires being furnished. Rims and tires shall be new and the same make and model. Mobile home style tire and rims will not be accepted

Metal fenders shall cover the rear tires.

Two 16-inch diameter front solid rubber guide casters shall be supplied to carry part of the load during the cleaning operation. These casters shall be adjustable up and down.

10. TONGUE:

Heavy-duty bumper pull type, 3-inch Lunette eye installed. Delivered hitch height shall be set at 28 inches from ground to center of eye with trailer level.

A decal stating, "(MLWR) Trailers actual load carrying capacity is _____" shall be posted on the trailer in minimum 1-inch lettering.

A metal identification tag stating manufacturer's information, model number, serial number and date of build shall be mounted within the tongue area.

12. MISCELLANEOUS:

a. All BEARINGS shall be protected by the use of proper seals and shields.

b. Safety Shields - Two chain guards will cover the conveyor drive chains. Attached to these chain guards will be rubber exclusion guards. A top shield shall connect to these guards and cover the top of the conveyor. This shield shall open for easy access. There will be a mechanical safety prop for the hopper attached to the machine. There will be hinged safety cover plates for the sides of the machine. A chain case will securely enclose the #80 roller chain drive.

13. BRAKES: Hydraulic surge brake system properly rated for GVWR Trailers are to be equipped with surge brakes and rely on a mechanical braking system. The use of electrical connections such as solenoids or dump valves and manual lockout devices will not be accepted for trailer backing. The axle brake shoes MUST be "FREE BACKING" type.

14. ELECTRICAL EQUIPMENT:

All wiring installed by the manufacturer or supplier shall be the stranded copper type, shall have cross-linked polyethylene insulation, and be protected in vinyl plastic auto loom. Rigid or flexible conduit may be used. The edge of all metal members which wire harness or loom pass through shall be deburred, flanged, rolled, or bushed with suitable grommets.

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14. ELECTRICAL EQUIPMENT: (continued)

In general, wire routing shall be such that maximum protection is provided by the vehicle sheet metal and structural components.

Adequate size gauge wire shall be used in accordance with SAE standards for distance from the power source and load demand.

The wire ends shall be mechanically stripped, and the terminals crimped securely and sealed. All electrical work and installation of equipment/devices shall be completed in a workmanlike manner, mechanically and electrically secure. Devices, lamps, etc., requiring periodic service shall be serviceable and accessible by providing wire length to reasonably accomplish.

15. LIGHTS:

All lighting shall be DOT approved and 12-volt LED rubber shock mounted with sealed wiring harness Ref. EQN-80B for guidance. Grote Ultra Blue, or equal power cord, with one end severed and hard wired into a weatherproof box shall extend 2 feet in length beyond Pintle eye.

The power cable shall be seven (7) wire with six (6) wires of twelve (12) gauge and one (1) ground wire of ten (10) gauge. Adequate size gauge of wire to the lights shall be used in accordance with SAE standards for distance from power source and load demand. There shall be a Cole Hersee No. 11750 stor-a-way trailer connector plug-holder located in the tongue area. All harness pass-through locations shall be protected by a grommet. All wiring shall be protected within a frame-rail, metal enclosure or conduit. The wiring shall be secured to minimize sagging or abrasive movement. Wiring shall not be exposed within a wheel-well.

A six to eight-week lead time is required for delivery of light kits Whelen contact is Brad Walker (740) 325-6727 or bwalker@fleetreps.com

Rear lighting shall be Whelen PN# 01-066B1866R1J (M6BTDD) light for stop tail and turn one (1) to each side. Lights shall be mounted no higher than 72 inches from ground level to top of light.

Two (2) Whelen PN# 01-066A797-A1H (M6AD) amber shall be mounted at upper rear corners for warning. Amber lights shall be separated from brake, tail and turn to increase visibility and reduce confusion for following motorist.

All other lights shall be OEM's standard LED sealed, and shock mounted.

There shall be no connections outside of a sealed box, unless connections are soldered and properly sealed with heat shrink. **3M type (Scotch Lock) crimp connectors are unacceptable and will not be accepted.** All electrical connection shall be coated with dielectric grease.

16. SAFETY CHAINS:

Two (2), minimum non-rusting, coil-proof, high tensile. Each chain shall have a minimum breaking strength rated equal or above the GVWR. The safety chain shall be attached to each side of the tongue, not less than 18 inches rear of the lunette eye. The safety chain shall be attached with a coupling link to a 5/8-inch round stock formed in a loop or half-circle and lap welded to each side of the tongue. Forged steel hooks with safety hasp to fit a minimum 5/8-inch up to and including a 3/4-inch D-ring (from tow vehicle) at the end of chain and the other end of the chain shall be permanently mounted to trailer and extend not less than 3 feet (36 inches) beyond the lunette eye. The safety chains shall pass through a common 1/2-inch metal round bar "U" shaped loop, approximately 3-inches wide x 3-inches high, located rear of the lunette eye and on the lower side of the tongue.

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17. PAINT/PREPERATION:

All metal surfaces shall be finish painted (including the outside, inside, underside, compartment interiors, etc., as applicable). All surfaces to be painted shall be prepared in accordance with the paint manufacturer's recommendations to provide maximum paint adhesion. All metal surfaces to be painted shall be pre-cleaned as necessary primed with two-part epoxy paint and finished with two-part polyurethane paint.

Prior to painting, all metal surfaces shall be cleaned utilizing a phosphate wash procedure, sandblasted or shot beaded to insure proper paint adherence and rust prevention, with all edges and holes de-burred, and all weld splatter removed, the unit shall receive a minimum of (2) coats of paint, (1) shall be a zinc-based epoxy primer, and (1) coat of finish paint.

Conspicuity per EQN-127A and EQN-122A shall be applied to rear surface.

Pricing shall be provided for Manufactures standard yellow paint and PENNDOT yellow paint.

COLOR: Wheels can be white, yellow, silver or argent.

Option: Paint Penn Dot yellow. Reference DuPont F9885, PPG 85246, Sherwin Williams 73266, NAPA 73266 and Sikkens 4017 shade only.

18. SAFETY:

EQN-552 Decal shall be applied to left side stating the overall height of the unit, unloaded.

EQN-552-1 Any area design for a walking surface or step shall be coated with anti-slip paint and built with "Three Point of Contact".

C. MANUALS:

The successful vendor shall furnish all applicable manuals per unit:

- 1 Operator's
- 1 Parts
- 1 Service complete engine and chassis
- 1 Engine
- 1 Electrical System Charts
- 1 Control System/Hydraulic and Electrical System Schematics

The manuals listed above shall be official O.E.M. publications supplemented with technical manuals for all components as published by sub-vendors/manufacturers.

Parts Service Manuals presented must be relative to "all" items utilized to build these units, with appropriate part numbers.

All manuals shall be supplied on thumb drive in PDF format that can be loaded to a dedicated website.

Paper manuals may be supplied if available from manufacture. Paper manuals do not relieve the requirement for the thumb drives.

Delivery of these manuals shall be completed with delivery of the unit.

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D. Drawings:

EQN-80B	dated	Rev.	05-16-18	1 sheet	WIRING DIAGRAM 7 WAY ROUND PIN MALE CONNECTOR
EQN0122A	dated	Rev.	04-09-12	1 sheet	REAR REFLECTIVE SHEETING
EQN-127A	dated	Rev.	01-02-09	1 sheet	CONSPICUITY TAPE STRIPING REQUIREMENTS
EQN-351A	dated	Rev.	06-19-13	2 sheets	FLOC OIL CHANGE SYSTEM
EQN-552	dated	Rev.	07-25-18	1 sheet	MAX. TRAVEL HEIGHT
EQN-552-1	dated	Rev.	07-24-18	1 sheet	THREE POINTS OF CONTACT

E. WARRANTY: Per PCID No. 1075

February 28, 2023, GAW