

## **GENERAL BID SPECIFICATIONS BATTERY POWERED 49 inch (125 cm) RIDER SWEEPER**

***INTENT:*** The intent of this specification is to describe a battery powered rider machine capable of sweeping inside or outside areas for manufacturing facilities, warehousing, parking garages, surface lots, block and brick facilities and other similar applications. Machine must capture and transport swept debris and be capable of dumping debris at ground level or into a dumpster. Machine must incorporate a dust control system to prevent fugitive dust emissions and be capable of controlling dust across the entire sweeping path, including the side brooms.

In order to reduce labor and operating costs and to ensure proper safety, the capacities of this machine are very important. All exceptions to the specifications must be clearly identified and submitted in writing on a separate sheet of paper marked "EXCEPTIONS". Bidders who fail to submit their exceptions will not be considered.

### ***SWEEPING SYSTEM:***

A over throw sweep system is required for maximum performance.

### ***CLEANING PATH:***

- A minimum cleaning path of 49 inches (125 cm) is required in dual side broom configuration.
- A minimum of 56% of the swept path must be cleaned by the main broom system which cleans more aggressively than the side brooms.

### ***MAIN BROOM:***

- The main broom provides the most aggressive cleaning for a sweeper and a minimum width of 28 inches (70 cm) is required.
- The main broom must be able to be removed from the machine easily and without tools to minimize maintenance and downtime.
- A mechanical lever must lower the main broom into the sweep position and raise it back up to the transport position.
- When the main broom is in the lowered position it must not be engaged when the machine is stopped and it must automatically engage when the machine is in motion. This extends broom life, reduces broom polish marks on the floor, and increases safety.
- Main broom must stop automatically when foot pedal is moved to neutral.

### ***SIDE BROOM:***

- A rotary, disposable type, with molded brush block 18 inches (45 cm) diameter right and left side brooms are required.
- Side brooms are raised/lowered and controlled mechanically and separately from the main broom allowing operation without the side broom if required.
- Side brooms must stop when the foot pedal is moved to the neutral position, improving safety, minimizing broom polishing marks on the floor, and reducing broom wear and overall cost of ownership.
- Side broom assemblies must be protected from impact damage during operation using rugged steel guards and flexible mounts.
- Side brooms must float over uneven surfaces with adjustments for wear.
- No tools are required to change the side brooms or adjust the broom height.

### ***POWER SYSTEM:***

- Powered by 24 V, 310 Ah wet lead acid batteries.
- Supplied with 24 V shelf charger rated at 25 amp output capable of providing full recharge of batteries within 14 hours.
- All key machine functions (sweeping, propulsion, dust control, and hopper) to be electrically driven to maximize available run time and simplify machine service.

### ***HYDRAULICS:***

- Use of hydraulics only for hopper raise/lower functions to minimize both machine complexity and maintenance requirements.
- Self-contained electrically driven hydraulic power unit required: pump, reservoir, and valves. Provides necessary flow and pressure for hopper raise and lower functions without the need for external reservoir, cooler, or filters.
- Hydraulic pump operates only as needed during hopper raise lower functions maximizing available machine run time on a single charge.

### ***DEBRIS HOPPER:***

- Machine shall have a top loading design providing usable true rated volume capacity of 2.6 cubic feet (75 L), with a minimum weight capacity of 220 pounds (100 kg).
- Hopper is to be hydraulically raised with dump height possible from ground level up to 63 inches (159 cm).
- Safety interlock for hopper raise/lower function via the actuation of two separate switches requiring the use of both hands to eliminate any risk of pinch point injuries.
- Hopper is manually emptied from the operator's seat with mechanical lever control providing low-effort, simple, trouble-free operation.
- Integrated within the lift cylinder are automatically engaged hydraulic interlocks. These provide safe operation without the need for a manually engaged prop rod that is dependent on the operator for proper usage.
- Machine speed is automatically reduced when hopper is in partially or fully raised position to provide safer operation.

### ***DUST CONTROL SYSTEM:***

- Machine must utilize a 4 stage dust control system that includes dust control at the side brooms.
- A panel filter which offers a minimum total filtering area of 75 square feet (7 m<sup>2</sup>) and controls dust particles down to less than one micron in size is required.
- A high power 0.35 hp (260 W) electrically-driven vacuum fan is required to provide effective main broom dust control. Exhaust air is to be routed away from the operator, exiting at the rear of the machine and not directed at the floor.
- Dust is removed from the vacuum fan air stream using a panel filter located in the hopper; it is unacceptable to route dust laden, unfiltered air out of the hopper area.
- The filter system must empty filtered debris directly back into the hopper without passing through seals.
- All critical dust control system seals must be replaced when the dust filter is replaced to maintain the dust control system. The panel filter must be able to be removed in less than 30 seconds without tools and from an ergonomic lift height.
- Panel filter is cleaned utilizing a vibratory style filter shaker delivering a wide spectrum of vibration frequencies for more effective filter cleaning and restoration of dust control.
- Filter cleaning cycle must be executed by the operator pressing the filter shaker switch.

- The vacuum fan must automatically turn off when the shaker motor is activated to prevent dust particles from being imbedded more deeply into the filter.
- No dust separation system that requires disassembly with tools for cleaning and maintenance is allowed.
- Dust control system must have available side broom dust suppression system using a fine water mist to minimize the majority of side broom generated fugitive dust; a shroud system that blocks the operator's view of the side broom, pushes debris to the side of the sweep path and is vulnerable to damage is not acceptable.

### ***OPERATOR COMPARTMENT:***

- Compartment shall be equipped with
  - An adjustable operator seat with enough leg room to comfortably accommodate a 6 foot 6 inch person.
  - A single foot pedal combined with a column mounted directional switch that controls forward and reverse travel speed.
  - Mechanical foot brake used to stop the machine.
  - A foot operated parking brake is required which will keep the machine from moving while it is unattended.
- Operator compartment must not contain sharp edges that can contact an operator's knees when getting in and out of the machine.
- Operator compartment must have a roto-molded design for easy cleaning.

### ***CONTROLS:***

- For safety and comfort, the operator must be able to have clear sight lines of the edge of the right side broom without leaning outside the machine compartment.
- Tactile and LED feedback controls with buttons large enough to be operated with gloves on are utilized.
- A single main broom handle controls the automated sweeping system for easy operator training and machine operation.
- Activating sweep system with main broom lever must do all of the following:
  - Lower main broom
  - Activate dust control system
- All sweep and dust control functions, once activated, must start and stop with machine motion for safety and to reduce broom wear, reducing the cost of ownership.
- A single lever raises and lowers the side broom and once lowered activates the side brooms only while sweeping.
- Operator area must include as standard:
  - Key switch
  - Dust control switch (vacuum on / vacuum off bypass / shaker)
  - Main broom and side broom controls
  - Hopper raise/lower controls
  - Hour meter
  - Variable frequency, timed filter shaker switch
  - Horn
- All electronics are to be circuit breaker protected.
- Automotive style sealed connectors are to be utilized throughout the wiring harness for increased reliability.
- Electronic control board is to be enclosed in a roto-molded water resistant compartment.

### ***STEERING SYSTEMS:***

- Front wheel steering and front-wheel drive required for minimal user training.
- A 14 inch (36 cm) diameter steering wheel is required.
- The machine front tire must be capable of turning 90 degrees to minimize the space required for a U-turn to 76 inches (192 cm) maximum.

### ***TIRES:***

- Solid front drive tire shall be a minimum of 10 inch (25 cm) to comfortably negotiate rough surfaces and prevent flats due to punctures.
- Foam filled rear tires shall be a minimum of 12 inch (31 cm) diameter to comfortably negotiate rough surfaces and prevent flats due to punctures.

### ***MACHINE CONSTRUCTION:***

- Machine must be constructed from metal welded frame with powder coated finish to provide scratch and corrosion resistance.
- Exterior body panels of machine consisting of roto-molded polyethylene provide easy to clean surfaces, high impact resistance, and corrosion free appearance.
- All fasteners shall be corrosion resistant.

### ***SERVICE:***

- Tip out or lift off covers for easy service access are required.
- For safety during service, machine will not function without an operator sitting on the seat.
- Complete parts and service manual with quick trouble shooting guide is required and must be available on-line.

***OVERALL DIMENSIONS:*** Machine overall width shall be no more than 41 inches (104 cm) wide for ease of maneuverability with a maximum length of 65 inches (164 cm).

***WARRANTY:*** Minimum 6 months labor, 6 months travel, 2 years/2,000 hours parts, 8 years roto-molded components.

***APPROVALS:*** Shall have certification from ETL and CE and clearly displayed labels showing as such.

***LABOR, PARTS & SERVICE:*** Local parts and factory trained technicians must be available.

### ***WHERE REQUIRED:***

#### ***SIDE BROOM DUST SUPPRESSION:***

Side broom dust suppression must be provided to allow for a fully dust controlled sweep path for maximum productivity with minimum fugitive dust emissions. A water fog is dispensed from a 5.3 gal (20 L) integrated tank through nozzles directed at the side brooms to suppress dust generated by the side brooms. Nozzles must have tools free removable caps with built in filter and check valve for easy maintenance. Water mist system is to be controlled on and off automatically with side broom operation.

#### ***OVERHEAD GUARD SYSTEM:***

Must meet ANSI/ITSDF B56.1 and ISO 6055 Falling Object Protection (FOPs) requirements.