

## **SUGGESTIONS FOR WRITING BID SPECIFICATIONS FOR A BATTERY POWERED RIDER SCRUBBER**

**Adgressor<sup>®</sup>: 2820C, X2820C, 2820D, X2820D, 3220C, X3220C, 3220D, X3220D, 3520C, X3520C, 3520D, X3520D, 3820C, X3820C, 3820D, X3820D**

***INTENT:*** The intent of these specifications are to describe a single machine capable of scrubbing a surface such as concrete, asphalt, tile, marble, or terrazzo flooring.

In order to reduce labor costs, the capacities of this machine are critical.

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.

### ***SCRUBBING SYSTEM:***

Shall be available in one of the following configurations:

- 28 inch (71 cm) disc scrub path deck with two 0.6 hp motors turning two 14 inch (35.6 cm) disc brushes rotating at a minimum of 250 rpm.
- 28 inch (71 cm) cylindrical scrub path deck with two 0.75 hp motors turning two counter-rotating cylindrical brushes at a minimum of 900 rpm brush speed.
- 32 inch (81 cm) disc scrub path deck with two 0.6 hp motors turning two 16 inch (40.6 cm) disc brushes rotating at a minimum of 250 rpm.
- 32 inch (81 cm) cylindrical scrub path deck with two 0.75 hp motors turning two counter-rotating cylindrical brushes at a minimum of 900 rpm brush speed.
- 35 inch (89 cm) disc scrub path deck with three 0.6 hp motors turning three 12 inch (30.5 cm) disc brushes rotating at a minimum of 250 rpm.
- 35 inch (89 cm) cylindrical scrub path deck with two 0.75 hp motors turning two counter-rotating cylindrical brushes at a minimum of 900 rpm brush speed.
- 38 inch (97 cm) disc scrub path deck with three 0.6 hp motors turning three 13 inch (33.0 cm) disc brushes rotating at a minimum of 250 rpm.
- 38 inch (97 cm) cylindrical scrub path deck with two 0.75 hp motors turning two counter-rotating cylindrical brushes at a minimum of 900 rpm brush speed.

Brushes to automatically turn on when scrub deck is lowered and propelled in forward and reverse. Brushes turn off in neutral required for floor protection and energy savings. Solution off in neutral required.

Brush decks shall be removable without the use of tools. Shall have electronic current sensing that adjusts for normal and heavy scrubbing. Variety of scrub brushes available for any application.

**POWER SOURCES:** Machine shall be powered by six, 6 Volt industrial deep cycle batteries of not less than 312 amp hours with option of 412 amp hour batteries. Machine shall be equipped with a shelf charger or onboard charger.

Unit must be equipped with a low voltage shutdown system to protect batteries. Brushes to automatically shut off and gauge to notify operator required at 80% discharge.

**VACUUM SYSTEM:** Shall be equipped with a three-stage,  $\frac{3}{4}$  hp, 36-volt motor protected by both an automatic float shut-off and an in-line filter. Shall be capable of producing 65 inches of waterlift. Option of a second vacuum motor must be available.

**DRIVE SYSTEM:** Shall have one 1.5 hp motor with gear transmission, front wheel drive, band brake and dynamic braking. Shall also be equipped with a programmable Curtis PMC Speed Controller for transport speeds up to 4.5 mph and scrub speeds up to 3.8 mph. The scrub speed shall be programmable to suit the operator's needs.

**GRADABILITY:** Ramp climbing (gradeability) capability of 20% / 11.5 deg. in transport and 8% / 4.6 deg. while scrubbing.

**STEERING:** Shall have front wheel steering and short wheel base that allows a 180 degree turn in aisles as narrow as 63 inches (160 cm) wide with a right or left turn.

**SQUEEGEE DESIGN:** Shall have a four-sided wiping blade, quick-release mechanism, "break-away" design, and electric actuator that automatically raises squeegee when backing up. Shall be made from rust resistant material and require no tools for adjustment.

**SOLUTION TANK:** Shall be minimum capacity of 42 gallons (157 L) roto-molded polyethylene with flexible drain hose.

**RECOVERY TANK:** Shall be minimum capacity of 42 gallons (157 L) roto-molded polyethylene sloped to drain 100% with a 1.5 inch (3.8 cm) diameter, 36 inch (91 cm) long drain hose. Shall have ball-float vacuum air shut-off. Tank shall be designed to easily rinse out debris. Shall require no tools to lift off recovery tank for service access to batteries and squeegee assembly.

Shall have a drain hose with a flexible end such that an operator can meter the speed at which the tank drains for those applications with floor drains that cannot accept 42 gallons of water in approximately 1 minute.

**SOLUTION FEED SYSTEM:** The solution flow rate should be capable of up to 1.2 gallons per minute (4.5 L per minute) for tough applications. System shall have an electric solenoid valve for on/off control and automatic solution shut-off in neutral and have an in-line filter.

**DETERGENT CONSERVATION SYSTEM:** Machine shall have an optional onboard detergent dispensing system (EcoFlex™ onboard detergent dispensing system) utilizing a 1.25 gal (4 L) refillable cartridge that allows the use of any manufacturer's detergent, operates at all available flow rates, and allows the quick interchange of multiple detergent cartridges for varied cleaning applications.

Machine shall as a default dispense detergents at an ultra-low dilution ratio of 400:1 for normal cleaning at any flow rate or brush pressure selected by the operator.

The operator shall be able to temporarily override the 400:1 ratio for a timed interval of 60 seconds at the touch of a single button. While in the temporary override state detergent shall be dispensed at a ratio pre-selected by the operator, brush pressure will increase to the next higher pressure setting, and simultaneously the solution flow rate will increase to the next highest flow rate available.

The onboard detergent system shall be capable of accurately diluting detergents at the following ratios at any flow rate.

- 400:1, ¼ oz/gal, 0.25%
- 300:1, - oz/gal, 0.3%
- 256:1, ½ oz/gal, 0.4%
- 200:1, - oz/gal, 0.5%
- 150:1, - oz/gal, 0.7%
- 128:1, 1 oz/gal, 0.8%
- 100:1, - oz/gal, 1.0%
- 64:1, 2 oz/gal, 1.5
- 50:1, 2.5 oz/gal, 2%
- 32:1, 4 oz/gal, 3%

**WATER CONSERVATION SYSTEM:** Machine shall come standard with a calibrated low solution flow rate setting (Smart Solutions™) that consistently and repeatedly sets a low solution flow rate not to exceed 0.33 gal/min (1.4 L/min). This allows the machine to consistently clean the floor for 127 minutes before it has to be refilled.

**SEAT:** Must be adjustable fore and aft for operator comfort.

**DIMENSIONS:** Shall not exceed

- Length 61 inches (155 cm)
- Height 53 inches (135 cm)

**WEIGHT:** Shall not exceed

- Without batteries or solution 657 lb (298 kg)
- With full tank and standard batteries 1,553 lb (705 kg)
- Shipping with standard batteries 1,413 lb (641 kg)

***TIRES:*** Solid or equal, non-marking style tires required to protect scrubbing surface. Minimum 12 inches (30.48 cm) diameter for negotiating unimproved surfaces. Rear wheels shall be polyurethane.

***BRAKING:*** Dynamic brake that must stop unit within its own length is required for safety of operator and pedestrians. Electromechanically operated parking brake must set without attention of operator when unit is in the stopped position. Unit must be capable of holding the braking position without attention of operator on a 8° incline. Unit must be equipped with pedal proportional braking so unit can descend a 12° ramp with the operator being able to control the speed down to a stop.

***CONSTRUCTION:*** Machine shall have solid 10-gauge unitized steel, tubular designed frame that is prime coated and painted to resist rust. Shall have adjustable seat and tilt adjusting steering wheel. Shall have side and front exits. Seat shall have “safety seat interlock” system.

***SOUND LEVEL:*** Shall be maximum 68 dB A at operator position.

***SAFETY APPROVAL:*** Must be certified to UL553 and a label must be displayed showing that the unit has been safety tested to the standards of an independent testing lab equivalent to ETL.

***OPERATING SYSTEM:*** All controls shall be ergonomically located. All functions shall be automatic on integrated touch-pad control panel which include:

- One-Touch™ scrubbing system - A single button to start and stop all scrubbing functions
- Master key switch
- Parking brake
- Foot operated propel both forward and reverse
- Emergency shut off switch
- Back up alarm
- Horn
- Hour meter
- Onboard diagnostics
- Solution on/off switch
- Vacuum delay shut off of 8-10 seconds
- 80% battery discharge automatic brush shut-down (low voltage cutoff)
- Pre-wetting brush feature
- Shall have water flow control within operator’s reach

***WARRANTY:*** The warranty must provide the following minimum coverages:  
2 years/2,000 hours labor, 6 months travel, 3 years/2,000 hours parts, 8 years roto molded components