

**SUGGESTIONS FOR WRITING BID SPECIFICATIONS FOR ADVANCE ADVENGER®
2805D, 2805D-C, X2805D, X2805D-C
X2805C, X2805C-C, X3405, X3405D-C
X28205R (REV™)**

GENERAL

Machine shall be a three wheel battery-powered ride on automatic scrubber with cab forward design and the ability to scrub and vacuum in one pass.

**CLEANING
PATHS**

Shall be available in the following configurations:

- 28 inch (71 cm) disc and REV using two 14 inch (36 cm) brushes or pad holders
- 34 inch (86 cm) disc using two 17 inch (43 cm) brushes or pad holders
- 28 inch (71 cm) cylindrical using two 28 inch (71 cm) brushes

SOUND LEVEL

Sound pressure level shall not exceed 63.7 dB A when measured in accordance with IEC 60704-1/ISO 11201 for operator safety, comfort and daytime cleaning of occupied spaces.

**DETERGENT
CONSERVATION
SYSTEM**

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

The system must be able to clean in four distinct modes to minimize costs, reduce labor and ensure environmental sustainability.

- Detergent free cleaning (zero detergent)
- Ultra low detergent strength (weak detergent)
- Full detergent strength (strong detergent)
- Burst of Power (60 second increase in detergent strength, brush pressure and solution flow)

Disc and cylindrical machines 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.

REV machines shall have a user selectable weak detergent ratio and a strong detergent ratio.

The operator shall be able to temporarily override the 400:1 or weak ratio for a timed interval of 60 seconds at the touch of a 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, .25%
- 300:1, - oz/gal, .3%
- 256:1, ½ oz/gal, .4%
- 200:1, - oz/gal, .5%
- 150:1, - oz/gal, .66%
- 128:1, 1 oz/gal, .8%
- 100:1, - oz/gal, 1%
- 64:1, 2 oz/gal, 1.5
- 50:1, 2.5 oz/gal, 2%
- 32:1, 4 oz/gal, 3%

WATER CONSERVATION SYSTEM

Disc and cylindrical machines shall come standard with a calibrated low solution flow rate setting (Smart Solutions™) that consistently and repeatably sets a low solution flow rate.

Disc and cylindrical machines shall have a low flow rate not to exceed .33 gal/min (1.4 L/min). This allows the machine to consistently clean the floor for 85 minutes before it has to be refilled, increasing worker productivity.

REV machines shall have a low solution flow rate not to exceed .2 gal/min (.76 L/min) when used for daily scrubbing. This allows the machine to consistently clean the floor for 140 minutes before it has to be refilled, increasing work productivity.

OPERATING SYSTEM

Machine shall have true one-touch scrubbing using a single button to start and stop all scrubbing functions.

Machine shall have three pre-calibrated solution flow and scrub pressure settings for regular, heavy, or extreme cleaning tasks.

Pressing the scrub increase or decrease buttons shall automatically increase or decrease both brush pressure and the solution flow rate simultaneously.

Machine shall have a management lockout system preventing the operator from using one or more of the three brush pressures or solution flow rates.

In addition, the REV machine shall have a dedicated chemical free Floor Finish Removal button and mode. This sets all the scrub parameters to remove floor finish without the use of chemicals. Pressing this button shall limit the speed to 50 feet per minute, apply maximum pressure, minimum solution flow and turn the chemical off.

**SOLUTION
CONTROL
SYSTEM**

The machine shall have a gravity feed solution system for increased reliability and the lowest total cost of ownership. It shall have a solution tank height compensation system that automatically adjusts the solution flow rate based on the level of the solution tank to ensure accurate detergent dispensing and solution flow for consistent cleaning results and a consistent cost to clean.

**SOLUTION
TANK**

Machine shall have a graphical display on the operators' control panel that clearly shows how much solution is remaining in the tank, to optimize dump and refills thereby maximizing productivity. Display shall show when the tank is full, $\frac{3}{4}$ full, $\frac{1}{2}$ full, $\frac{1}{4}$ full and empty.

**RECOVERY
TANK**

Shall have a minimum capacity of 28 gallons (106 L) and be constructed of roto-molded polyethylene.

Shall have a minimum gross capacity of 29 gallons (110 L) and be constructed of roto-molded polyethylene.

Shall have a debris catch cage installed preventing objects from being emptied down the drain and creating expensive plumbing repairs.

Shall require no tools to lift off the recovery tank for service access to batteries and squeegee assembly.

**VACUUM
MOTORS**

Machine shall operate with either one vacuum motor as standard or two motors simultaneously. Each vacuum motor shall be not less than .75 hp (560 W) 3-stage, generating a sealed waterlift of 63.0 inches (15.7 kPa) and 66 cubic feet per minute with a 2 inch (5 cm) orifice.

**SQUEEGEE
SYSTEM**

On machines with a 28 inch (71 cm) cleaning path the rear squeegee shall be no wider than 32.6 inches (83 cm).

On machines with a 34 inch (86 cm) cleaning path the rear squeegee shall be no wider than 41.4 inches (105 cm).

Squeegee pitch shall be adjustable without the use of tools. Shall be a break away design with raising and lowering controlled by an electric actuator, to increase the life of the blades and reduce replacement expenses.

Shall have an anti-snag devise incorporated on each end and be able to hang on the rear of the machine to dry for ease of use, safety and maintenance. Squeegee blade shall have four working edges and be removable without the use of tools.

SIDE SKIRTS	Shall use dual side skirt squeegee blades on each side to ensure superior wiping and reducing slip and fall risks. The skirts shall be adjustable in height without the use of tools to accommodate brushes, pads and wear and ensure a clean, dry and safe floor.
POWER SOURCE	Machine shall be powered by four, six-volt industrial deep cycle batteries of not less than 310 amp hours. Machine shall have AGM maintenance-free batteries as an option.
BATTERY CHARGING	Machine shall be available with either a stand alone shelf charger for wet acid batteries or an onboard charger compatible with maintenance-free gel or AGM batteries.
DRIVE SYSTEM	<p>Shall have one 1.05 hp (780 W) drive motor with integrated electromagnetic brake. Shall use a non-marking high traction urethane tire 9.84 inches (25 cm) in diameter with a width of 3.15 inches (80 cm).</p> <p>Forward transport speed shall not be less than 3.91 mph (6.30 kph) for high productivity and low cost to clean. Reverse speed shall not be less than 2.61 mph (4.2 kph). The scrub speed shall be set at 80% of transport speed and programmable from 50% to 100% of the transport speed in 10% increments to suit the needs of the operator or facility.</p> <p>REV machines shall also have two preset low speeds used for chemical free floor finish removal. When in this mode speed 1 shall be 50 feet per minute (15 m/min.) and 65 feet per minute (20 m/min.)</p>
SCRUB MOTORS	<p>Disc scrub motors shall not be less than .64 hp (480 W) and rotate at 260 RPMs.</p> <p>Cylindrical scrub motors shall not be less than .5 hp (373 W) and rotate at 900 RPMs.</p> <p>REV scrub motors shall not be less than .75 hp (559 watts) and have dual random orbital rotation. A 14 inch (36 cm) macro orbit at 0-20 RPMS and a ¼ inch (25 mm) micro orbit at 2,250 RPMs.</p>
SCRUB PRESSURE	<p>Disc and cylindrical machines shall have a dynamically adjusted adjustment system based on scrub motor amp draw, to protect the motors and provide long service life. Amp draw level shall be determined by scrub deck type and the selected scrub setting.</p> <p>Disc scrub pressure for each setting are:</p> <ul style="list-style-type: none"> • Regular Scrub: 90 lb (41 kg) • Heavy Scrub: 120 lb (54 kg) • Extreme Scrub: 220 lb (100 kg)

Cylindrical scrub pressure for each setting are:

- 60 lb (27 kg)
- 80 lb (36 kg)
- 100 lb (45 kg)

REV machines shall use a fixed positional actuator for consistent down force and cleaning capability with automatic brush motor overload protection for long life and low cost of ownership.

REV scrub pressures for each setting are:

- Regular Scrub: 80 lb (36 kg)
- Heavy Scrub: 125 lb (57 kg)
- Extreme Scrub: 175 lb (79 kg)

CONTROLS, GAGES AND OTHER FUNCTIONS

Machine shall have a display which shows:

- The level of the solution tank
- Hour meter
- Battery discharge status
- Chemical dilution ratio (if so equipped)
- Chemical on/off status (if so equipped)
- Machine speed in chemical free floor finish removal mode (REV)
- Complete troubleshooting diagnostics codes showing any overloads, shorts and open circuits

Other Controls and functions

- One-Touch scrubbing
- EcoFlex override (applicable on EcoFlex models)
- Chemical on/off button (applicable on EcoFlex models)
- Chemical free floor finish removal button (REV)
- Scrub on/off, increase and decrease buttons
- Solution on/off, increase, and decrease buttons
- Variable volume horn
- Variable volume forward annunciator
- Off aisle wand/vacuum on/off switch
- Security key switch
- Foot operated throttle pedal (forward and reverse)
- Emergency shut off switch
- Vacuum delay shut off of 10 seconds
- Selectable low voltage cut off for wet acid and maintenance-free batteries
- Management lock out for brush pressure and solution flow rates
- Resettable circuit breaker protection against drive and scrub brush motor overloads
- Operator presence safety seat switch
- Electromagnetic parking brake
- Tools-free adjustable seat and steering wheel
- Pre-wetting brush feature

GRADEABILITY Shall be a minimum of 16% (9°) for transport mode and 9% (5°) in cleaning mode.

**SAFETY
APPROVALS** Shall be ETL listed for USA and Canada

**KEY
SPECIFICATIONS**

- Gross weight shall not exceed 1,451 lb (658 kg)
- PSI of any wheel shall not exceed 175 PSI (12.3 kg/sq. cm)
- Sound pressure shall not exceed 63.7 dB A
- Aisle turn around width for a 28 inch (71 cm) machine shall not exceed 63 inches (160 cm)
- Aisle turn around width for a 34 inch (86 cm) machine shall not exceed 67.5 inches (171 cm)
- Body height shall not exceed 51.7 inches (1,332 cm)
- Body width without squeegee shall not exceed 31.4 inches (71 cm)
- Body length shall not exceed 60 inches (153 cm)
- Protection grade shall not be less than IPX3

MACHINE SHALL BE AN ADVANCE ADVENGER®