
From: Kevin Watt <kevin.watt@rnow-inc.com>
Sent: Wednesday, March 15, 2017 10:04 PM
To: Robert Miller (bobmiller@mc.net)
Subject: Schwarze Sweeper Specs from R.NOW, Inc.
Attachments: A7T Tornado Tier IV 115 Lifetime high strength stainless Hopper, 2017.doc; A7 Tornado 2017 Brochure.pdf; A9 Monsoon - Web.pdf

Bob,

Attached is a brochure and sample bid specifications for the Schwarze A7 Tornado an 8.4 yard machine which is our closest equivalent to the Elgin Crosswind. There are some things that Schwarze does different than the current Elgin Crosswind. The Crosswind you own now runs everything off the auxiliary engine. The current Crosswind uses a lower horsepower auxiliary engine and runs some sweeper functions off the truck transmission making for a rather complicated set up. Schwarze continues to run all sweeper functions off the auxiliary engine.

The other significant difference between the Elgin and the Schwarze is Elgin offers their 'Lifeline' hopper liner that requires annual inspections and customer paid repairs as needed to maintain the warranty. Schwarze promotes a Stainless Steel hopper including hopper screens that comes with a lifetime warranty for rust and perforation. Schwarze used to offer liners, but found that if the liner is not properly maintained, moisture and debris are allowed to get between the liner and the hopper causing the hopper to rust. We feel the stainless steel hopper is the better long term, lower maintenance option.

We also offer the A9 Monsoon which is a 9.6 yard hopper that sits on the same wheelbase chassis as the A7 Tornado. With both machines we offer up to 700 gallons of water capacity. The main difference between the A7 Tornado and the A9 Monsoon in addition to hopper capacity is a slightly higher horsepower auxiliary engine and the A9 Monsoon has a full height rear door where the A7 Tornado and Elgin Crosswind have ¾ height rear doors. The advantage to the full height rear door is we can pack a load all the way up to the ceiling of the hopper and the load dumps easily without getting stuck on the lip of the hopper above the rear door. We can mount the Schwarze sweepers on Autocar, Peterbilt and Kenworth cab over trucks and Freightliner and International conventional cabs.

We will submit a highly competitive bid proposal and hope that it will be given careful consideration for your sweeping needs. I have brand new demonstrator units in both the A7 Tornado and the A9 Monsoon and would be happy to bring them in for you to see and try out. I'm confident you would be very pleased with what I can show you in the Schwarze products. Please feel free to contact me if you have questions, need additional information, would like to demo, or if there is any other way I can be of assistance.

Thanks,

Kevin Watt



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SUGGESTED STREET SWEEPER SPECIFICATIONS

Intent

It is the intent of these specifications to describe a regenerative air street sweeper with hydraulic drives, 8.4 cubic yard hopper, 90" wide pickup head. The head must be capable of sweeping in reverse with the head down without causing damage to the pickup head or its components. Blower shall be belt driven via auxiliary engine. The unit must be equipped with vertical digger-type gutter brooms, pressurized dust control spray system and an independent engine to power the sweeping functions. The chassis for this sweeper is to be sufficiently rated to transport a full load of sweeping debris at speeds up to 55 MPH. For safety and comfort of the operator and for quick, local service along with local availability of repair parts, the chassis will NOT be a purpose built chassis built by the sweeper manufacturer. The chassis shall be equipped with spring suspension on both axles, dual steering, dual operator controls, and an automatic transmission. All tires shall be the same size and have dual tires on each side of the rear axle (six-wheel configuration).

The unit shall be new of current manufacture. No prototype, demo, used, vacuum type, or mechanical type sweepers will be accepted.

All parts not specifically mentioned which are necessary to provide a complete street sweeper shall be included in the bid and shall conform in strength, quality of materials, and workmanship to what is normally provided to the trade in general.

No deviations to these specifications will be allowed.

Bidders must indicate compliance for each item throughout the bid by writing "YES" or "NO". Failure to do so may be cause to reject the bid. All "NO" answers must be fully explained on a separate sheet of paper and be attached to and submitted with bid. Failure to explain "NO" answers may be cause to reject bid.

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SWEEPER ENGINE

- _____ A. An auxiliary diesel engine shall be provided to power the sweeper. The engine shall be a John Deere turbo charged four-cylinder with Tier IV final emission control with a horsepower rating of not less than 115 hp @ 2400 RPM and shall provide a peak torque rating of not less than 339 ft/lb at 1,600 RPM. Minimum displacement shall be not less than 275 cubic inches. Engine shall be made in North America.
- _____ B. Engine shall be equipped with a full-flow spin-on oil filter, fuel filter and fuel water separator.
- _____ C. In order to have the cleanest air possible, the air intake shall be at least 8 feet above the ground level.
- _____ D. Engine to be equipped with a 3-point safety engine shutdown device that shuts down the engine for low oil pressure, high coolant temperature, and low coolant level.
- _____ F. Auxiliary engine shall be warranted by engine manufacturer for not less than 2 years or 2,000 hrs (whichever occurs first). Emissions shall be warranted for not less than 5 years or 3,000 hrs (whichever occurs first).
- _____ G. Twelve (12) volt electrical system, electrical starter and 90 amp alternator shall be provided. Sweeper shall have resettable circuit breakers and automotive fuses.
- _____ H. Sweeper auxiliary engine shall share a 50-gallon fuel tank minimum and batteries with chassis engine. No exceptions.
- _____ I. Auxiliary engine, muffler, fuel tank, battery box, hydraulic tank and cooler to be protected by a shroud.
- _____ J. Dailey engine maintenance points, including engine oil dipstick removal, engine air cleaner removal, visual check of hydraulic oil and engine coolant must be able to be performed from ground level without the aid of a ladder or steps or lifting the hopper.
- _____ K. Hopper shall include an expanded metal screen engine cover to protect the engine and reduce buildup of leaves in the engine compartment. This engine cover shall also include three tree limb protection bars.

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HYDRAULIC SYSTEM

- _____ A. Hydraulic power shall be used to operate all broom rotation and lifting functions. Systems incorporating pneumatic-type controls will not be accepted.
- _____ B. Hydraulic pressure shall be set at 2500 PSI for all hydraulic functions.
- _____ C. Sweeper shall utilize a multi-stage gear driven hydraulic pump, minimum 25 gallon vented hydraulic reservoir, a spin-on 10 micron return filter, and high pressure hoses and fittings. Hydraulic reservoir to have tank mounted level and temperature indicator. Hydraulic reservoir shall be mounted above the hydraulic pump.
- _____ D. Hydraulic system to have a 9,000 BTU oil to air radiator type hydraulic oil cooler.
- _____ E. Hydraulic tank shall have shut-off valves for hydraulic oil filter change.
- _____ F. Hydraulic system shall have quick disconnect relief pressure check ports mounted in the hydraulic manifold(s).
- _____ G. For safety of the operator, no sweeper hydraulic lines to run into or through the cab.
- _____ H. Hydraulic valves shall have built-in diagnostic system lighting for troubleshooting hydraulic flow and electrical power.
- _____ I. A 12-volt DC hydraulic backup system shall be provided which may be used to operate all hydraulic functions without starting the auxiliary engine.
- _____ J. The hydraulic system shall have an extended warranty that includes 2 years on motors and valves and 5 years on pumps and fittings

DUST SEPARATOR

- _____ A. A centrifugal dust separator with a minimum 29,000 cubic inch volumetric area shall be supplied inside hopper to remove airborne dust from the air stream. The dust separator shall be designed so that it will not plug with normally encountered debris.

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- _____ B. The dust separator shall have a clean-out door that opens automatically and discharges debris from the separator when the hopper is raised.
- _____ C. Cable or other manual/mechanical means required for discharging debris in the separator shall not be allowed.

HOPPER

- _____ A. The volumetric capacity of the hopper shall not be less than 8.4 cubic yards. The usable capacity shall not be less than 7.0 cubic yards.
- _____ B. Hopper screen to be a High Strength Stainless Steel, two piece saw-tooth design such that airflow will not be interrupted even in difficult sweeping conditions. Flat screens are unacceptable due to premature clogging of the screen. Hopper screen shall be a minimum of 5615 square inches.
- _____ C. Hopper screens must have 2 hinges on each screen, allowing the screen to drop down from one side, providing extra safety for the operator during cleanup.
- _____ D. Dumping shall be accomplished hydraulically by tilting the hopper a minimum of 48 degrees. Contents shall be dumped to the rear of the vehicle at a height of 36 inches. Dumping system shall include twin dumping cylinders with dimensions of 4" X 16". Hopper floor shall be sloped 3 degrees making a total dump angle of 51 degrees.
- _____ E. Hopper roof, sides, floor, rear door, separator, separator screens and bulkheads to be constructed from stainless steel.
- _____ F. Dump door to be hydraulically opened, closed, and locked. Operation of the hopper dump door to be accomplished from inside or outside the cab.
- _____ G. Large 15" X 32" inspection doors shall be provided on left and right sides of hopper. These doors shall provide an easy way to manually load debris and provide a convenient access for hopper inspection and cleaning.
- _____ H. Hopper shall be airtight through the use of rubber seals on all doors and openings.
- _____ I. Weatherproof dump switches to be located outside directly behind cab for visibility and safety during the dumping process. There shall be one

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switch for each function: raising and lowering the hopper to the dump position, opening and closing the dump door, and turning the 2 rear bumper mounted flood lights on for night dumping.

- _____ J. The hopper body structure, excluding the inlet and outlet wear tubes, water nozzles and mounts, deluge plumbing, hand hose components, and suction screens, shall be warranted against rust perforation and corrosion perforation for the "LIFETIME" of the sweeper, as defined as the ownership period by the original purchaser of the new sweeper.
- _____ K. Sweepers that use a no tilt method of dumping hopper or use an inside of hopper mechanical means of pushing debris out of the hopper (raker bar) will not be accepted.
- _____ L. Hopper shall have a Stainless Steel Shroud enclosing the auxiliary engine, muffler, blower housing, fuel tank, and hydraulic tank and cooler. Shroud shall be designed to help protect components from the elements and vandals.
- _____ M. The hopper shroud shall also be designed to reduce auxiliary engine noise by having a minimum of 1" thick sound dampening material attached to the inside of shroud in the engine compartment area. Sound deadening material must consist of at least 48 Square feet of material. Shroud must be an integral part of the hopper and lift when the hopper is raised. The shroud shall give the sweeper a neat, well thought out streamlined appearance. In the interest of sweeper protection, public safety and sweeper noise reduction, sweepers that do not meet all of these requirements will not be accepted.
- _____ N. The hopper roof shall be higher at the center to allow water to run off and to reduce corrosion. Hoppers with flat roofs will not be accepted.
- _____ O. The suction tube entering hopper and pressure tube exiting hopper shall be bolt on for easy replacement and constructed of abrasion resistant steel
- _____ P. A hopper door open/close switch shall be mounted on console to allow rear door to be operated from inside cab.
- _____ Q. Hopper floor to be constructed with a High Strength Stainless Steel. The roof, bulkhead, rear door, and sides shall be constructed of a minimum of 10 gauge Stainless Steel. The hopper floor shall slope 3 degrees towards the rear door.
- _____ R. The rear door shall include an in-cab door open indicator warning light.

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- _____ S. The hopper shall include an in-cab hopper up indicator warning light.

BLOWER

- _____ A. Heavy-duty steel blower shall be used to create air pressure and suction (regenerative air) for removing debris from road surface. Sweepers that clean road surfaces by using suction only (pure vacuum) will not be accepted.
- _____ B. Blower to be powered by the sweeper auxiliary engine via a heavy-duty 5-groove v-belt. A belt safety guard shall be supplied.
- _____ C. The blower shall be a closed face turbine type with 10 curved blades, and shall be 32.75 inch diameter by 5 inches wide. The blower shall be constructed of 500 brinell hardness abrasion resistant steel. Fan to be fully balanced within 1.5 grams on both sides for long fan and bearing life. A die-cast aluminum alloy open face blower, either covered with rubber or not, or a die cast steel open face blower will not be acceptable.
- _____ D. Blower shall have a minimum rated performance of negative 65 inches of water column and 17,000 CFM. Documentation must be included with the bid packet that states that the Air Movement and Control Association has tested the fan and certifies the fan is equal to or greater than the performance data listed above. Since the rated fan performance is directly related to the performance of the sweeper, no sweeper will be considered without the fan being certified by the Air Movement and Control Association.
- _____ E. Must be Whisper Wheel equipped to provide a 360 degree average dB(a) rating of 72.0 or less at an unobstructed distance of 50 feet at 2000 engine RPM. Sound dampening material is required in the area of the auxiliary engine and blower to aid in soundproofing.
- _____ F. The blower housing shall be constructed of 3/16" abrasion resistant steel with the inside of the housing covered by a replaceable rubber wear liner.
- _____ G. Blower housing shall have a vacuum enhancer for discharging a portion of the blast air for sweeping light materials such as leaves and paper.

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The vacuum enhancer shall be electrically powered by a DC actuator and controlled from a switch located on the control panel inside the cab. The vacuum enhancer to be capable of 0 - 80% air diversion for maximum control.

- _____ H. Blower housing shall not be an integral part of the hopper and shall be mounted parallel with the front of the hopper.
- _____ I. Blower shall be mounted on sealed self-aligning anti-friction bearings. Blower shaft shall have greaseable bearings requiring 1/4 ounce of grease every 250 hours to ensure maximum life expectancy. Non-regreaseable bearings are unacceptable due to sweeper environment. Blower shaft shall be a minimum of 36 inches long and 2 1/4" diameter to reduce stress or premature bearing wear. Grease points shall be accessible from ground level.

PICKUP HEAD

- _____ A. Pickup head shall be spring balanced all steel fabricated with separate upper and lower chambers where pressurized air is blasted from the upper chamber through an elongated blast orifice to the lower chamber.
- _____ B. The blast orifice shall be a replaceable and shall have a replaceable rubber leading edge and be angled a minimum of 3 degrees towards the suction side of the pickup head. This will ensure a smooth transfer of debris by increasing pressure as the debris moves toward the suction tube. Sweepers with blast orifices that are not angled toward the suction tube will not be acceptable.
- _____ C. The pickup head shall not be less than 90 inches wide and 36 inches long giving a total head area of 3240 square inches.
- _____ D. Pressure and suction hoses shall be fourteen inches in diameter and be constructed from 3/8 inch thick heavy duty molded wire reinforced molded rubber.
- _____ E. Sweeping paths shall be:
Pickup head only = 90 inches
Pickup head and one gutter broom = 117 inches
Pickup head and two gutter brooms = 144 inches
- _____ F. Sweeper shall have Sweeps-in-Reverse which allows it to sweep in both forward and reverse with the head down without causing damage

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to the head or other components. NO EXCEPTIONS. Sweeping heads that are not designed to sweep-in-reverse and that require add-on devices such as chains attached to the head and chassis axle to meet this requirement, will not be acceptable. Sweeper must be able to sweep in reverse while making turns.

- _____ G. Pickup head shall be equipped with doublewide full length virgin carbide drag shoes for maximum life. Front and rear of drag shoe to be snowshoe design to follow road contour without damage. Shoes shall be interchangeable from either the left or right side. Sweepers that utilize tool grade carbide drag shoes shall not be considered.
- _____ H. Drag shoes shall be warranted against wear-out for a minimum of two years/2000 hours, prorated.
- _____ I. Sweeping head shall be raised and lowered hydraulically by a single switch located in the cab.
- _____ J. Head to have a quick disconnect at the lower section of the head suction tube.
- _____ K. Suction transition shall include two high volume water nozzles to lubricate the suction tube to reduce clogging during sweeping operations.
- _____ L. Head inlet and outlet tubes shall be bolt-in for easy replacement.

GUTTER BROOMS

- _____ A. Dual gutter brooms shall be 44" minimum diameter, flattened wire filled vertical digger type for removing debris from gutter area.
- _____ B. Gutter brooms to be hydraulic motor driven and shall be positioned laterally and vertically by a hydraulic cylinder and springs.
- _____ C. Each gutter broom shall have an adjustment to allow downward compensation for bristle contact, pattern and wear and shall be full floating to follow street contour.

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- _____ D. Each gutter broom shall have lateral flexibility to swing inward 15" under the chassis when encountering the impact of an immovable object thus avoiding damage to the broom assembly.
- _____ E. Each gutter broom shall be held in the up and transit position by use of a hydraulic cylinder and an electric lock valve attachment.
- _____ F. Upward motion for gutter broom storage shall be regulated by an adjustable flow control valve.
- _____ G. Gutter broom disk to be recessed to prevent such items as string and small rope like material from being wrapped around and damaging the gutter broom motor shaft seal. Disk shall be designed as to allow water to drain off, therefore eliminating water damage to the gutter broom motor seals.
- _____ H. A center deflector shall be provided to direct debris thrown by the gutter brooms into the path of the pickup head. Deflector shall be positioned under the belly of the sweeper and in between the gutter brooms. Deflector shall raise and lower with the pick-up head.
- _____ I. Each gutter broom shall additionally incorporate a hydraulically actuated tilt capability of 27 degrees, remotely controlled from the console in the cab to allow instant adjustment for debris removal from deep gutters (such as those resulting from multiple overlays of blacktop).
- _____ J. Each gutter broom shall be equipped with Gutter Broom Extension Override (GEO) with in-cab controls to be able to extend and retract while in sweeping mode. This will allow the gutter brooms to scrub the pavement surface in front of the pickup head. This system shall be adjustable from full extension to the curb with in-cab variable adjustments to a full retraction under the sweeper. Sweepers that only have a full extension and full traction without variable in-cab adjustments will not be acceptable. All controls shall be in-cab. At no time shall the operator have to leave the cab to activate this function. The system shall be activated by an electric linear actuator.
- _____ K. Each gutter broom motor shall have a heavy duty seal, seal slinger/protector and heavy duty bearing to extend life.
- _____ L. Each gutter broom shall have an in-cab variable speed control independent of the sweeper auxiliary engine RPM. This shall include a rocket switch for each gutter mounted on the sweeper console.

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DUST CONTROL SYSTEM

- _____ A. Water spray to be supplied by twin electric diaphragm water pumps. The water pumps to produce a minimum of 60 PSI, with a minimum 5.88 gpm each. The water pumps to automatically disengage when the water supply is depleted or the pre-filter is clogged. A pre-filter filter minder shall also be provided. Pumps shall be mounted below water tank bottom level.
- _____ B. Water tank capacity not to be less than 250 gallons (optional 600 gallon) and shall be constructed of polyethylene for strength and corrosion resistance.
- _____ C. A minimum 25-foot long fire hydrant fill hose shall be provided with 2.5" NST coupling to fill water tank. A minimum 2" air gap shall be provided between water fill tube and water tank. Hydrant hose shall include a hydrant wrench and hose storage rack.
- _____ D. Water system to be filtered by a 50 mesh cleanable filter with restriction indicator located between tank and water pump. For ease of cleaning, water filter to be at ground level. Water shut-off valve shall be provided to allow cleaning filter without losing water supply.
- _____ E. 2 each adjustable spray nozzles shall be located at each gutter broom.
- _____ F. Dust suppression system to include two spray nozzles at the front axle. Left nozzle to come on when left gutter broom water is in use and right nozzle to come on when right gutter broom water is in use.
- _____ G. Each water spray function to have its own independent on/off cab controlled solenoid valve.
- _____ H. An in-cab water level gauge and an in-cab low water level alarm located on the sweeper console must give operator constant visibility of water system levels.
- _____ I. Water spray nozzles shall be provided as follows: five nozzles at pickup head, two nozzles inside hopper, two nozzles at right gutter broom, two nozzles at left gutter broom, two nozzles in the suction tube, and two at the front axle.
- _____ J. No part of the water system shall be made with ferrous metal.

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- _____ K. The water system shall incorporate an air purge system for flushing water lines during freezing conditions.
- _____ L. Sweeper to be equipped with a front spray bar with 7 nozzles. Spray bar to be mounted on front bumper.

OPERATING CONTROLS AND DISPLAYS

- _____ A. Sweeper shall be equipped with dual steering and controls for left or or right side operation of the sweeper. The dual steering and controls not be installed by the sweeper manufacturer.
- _____ B. Auxiliary engine control and gauges shall be mounted on a left to right rotating control console inside the cab. Fixed base, non rotating consoles are not acceptable. They shall consist of: keyed ignition, electronic throttle control, leaf bleeder control, oil pressure gauge, water temperature gauge, voltmeter, tachometer, and hour meter. All gauges to be full color, high resolution display. The display shall include a diagnostic gauge with the ability to read and record engine error codes and engine load and fuel consumption.
- _____ C. Hydraulic temperature, dust control water level, leaf bleeder position indicator, hopper tilt status, parking brake status, and sweeper standby controller status shall be displayed on a full color, high resolution display mounted on the sweeper console.
- _____ D. Console to have independent switches for operating left gutter broom, tilt, GEO and variable speed, right gutter broom, tilt, GEO and variable speed, and pickup head. All switches to be lighted and have international symbols for easy identification.
- _____ E. Console to have individual switches water pump on/off switch and low water level warning light. Independent water control switches for left gutter broom, right gutter broom, pickup head, hopper, front bumper, and nozzles at front axles. All switches shall be lighted and have international symbols for easy identification.
- _____ F. Console to have independent switches for each gutter broom light, rear dump light, and safety strobes.
- _____ G. All sweeper main electrical systems to be separately fused at the systems locker.

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- _____ H. The console shall feature a “stand by” control that allows one touch return to sweeping after equipment selection. The standby feature shall be switch selectable to provide lift in reverse or sweep in reverse.
- _____ I. Instrument readings that are out of range including low hydraulic oil level, hydraulic oil filter restriction, communication error, spray water filter dirty, spray water low, high dump angle warning, unsafe dump angle lock out, parking brake not set shall display an warning icon and sound a warning chime. Non safety chimes may be acknowledged for 90 seconds.

HAND HOSE EQUIPMENT

- _____ A. Sweeper to have an auxiliary hand hose for cleaning remote areas inaccessible to the sweeping head and for cleaning out catch basins.
- _____ B. Hand hose to be 8" in diameter, 12' long, with spring boom and 52" long serrated tip collection nozzle. Hand hose shall be stored on the rear of the sweeper. Hand hose shall be rubber.
- _____ C. A block off plate to divert airflow to the hand hose shall be provided. Block off plate to fit in tool box. For operator safety, no sweeper will be accepted that requires the block off plate to be stored in the cab.

SAFETY EQUIPMENT

- _____ A. Sweeper to meet all federal motor vehicle safety standards. All lighting must be LED.
- _____ B. Sweeper shall include two hopper safety struts that lock hopper in the raised position during maintenance. Safety struts to be permanently mounted to sweeper. Operator to manually engage and disengage struts.
- _____ C. Sweeper shall to be equipped with an LED amber strobe light with limb guard. LED Strobe to be mounted at the highest point at the rear of the sweeper.
- _____ D. The sweeper shall have two lower LED stoplights mounted into the rear bumper at a height of 35 inches. The sweeper shall also have two integral high mounted LED stoplights mounted at a height of approximately 94 inches. For protection of the lights and to make cleanup easier, the lights shall be integrally mounted in the sweeper body.

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- _____ E. Two rear high mounted integral yellow alternating LED flashing lights to be provided. Light shall be mounted at a height of approximately 94 inches above the ground.
- _____ F. Sweeper shall be equipped with rear mounted slow moving vehicle emblem, backup alarm, cab mounted 5-lb fire extinguisher, and a warning triangle kit.
- _____ G. Permanent warning labels shall be provided at all hazard areas.
- _____ H. Sweeper shall be equipped with rear view camera and 7" cab-mounted color flat screen monitor with sound. System shall be capable of night vision with auto dimming monitor. Capable of continuous viewing or activated when chassis is shifted into reverse.

ACCESSORIES

- _____ A. Sweeper must have a full width steel rear bumper mounted to frame.
- _____ B. 8" chrome cab mounted parabolic mirrors shall be provided to aid operator in observing gutter brooms. They shall be mounted below the west coast mirrors on chassis doors.
- _____ C. An 18 7/8" wide X 10 1/2" tall X 24 5/8" deep lockable toolbox shall be provided. Access shall be from the curb side of sweeper.

PAINT COLOR

- _____ A. The sweeper shall be painted with 1 coat of sealer/primer and 2 coats of DuPont Imron Elite polyurethane paint in the manufacturer's standard white color. Paint shall be lead free.
- _____ B. Gutter brooms, pickup head, sweeper and truck frame to be painted a semi-gloss polyurethane textured black for long life.

SWEEPER WARRANTY

- _____ A. Per manufacturers published warranty, sweeper shall be warranted to be free of defective materials and workmanship for a period of 12 months or 1,200 hours from date of delivery. No exceptions.
- _____ B. Sweeper auxiliary engine shall be warranted for not less than 24 months or 2000 hours, whichever occurs first from date of delivery.

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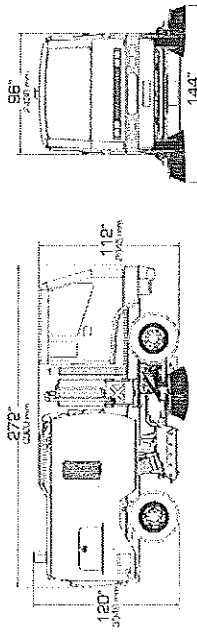
SUGGESTED STREET SWEEPER SPECIFICATIONS

- _____ C. Sweeper hydraulic system (pumps, motors and fittings) shall be warranted for not less than 60 months or 6000 hours, whichever occurs first from date of delivery.

DELIVERY

- _____ A. The unit shall be delivered completely assembled, serviced, and ready to operate. The bidder shall have a qualified service representative in attendance with the sweeper during start up operations to make any adjustments needed and to give operator instruction on the proper operation of the sweeper.
- _____ B. Bidder to state delivery date.
- _____ C. The bidder shall supply a complete sweeper manual. Manual shall include system/component descriptions, sweeper operation, maintenance, troubleshooting, illustrated parts listing with part numbers, and schematics for the sweeper. Manual shall also include reproducible periodic maintenance schedules.
- _____ D. Auxiliary engine manuals to be provided. They are to consist of operations & maintenance, maintenance schedules, component technical manual, and an illustrated parts catalog.

A7 Tornado



SWEEPING PATH	
Pickup head only	90" (2286mm)
one gutter broom	117" (2972mm)
Pickup head and two gutter brooms	144" (3658mm)

CHASSIS	
Mounts on various chassis to meet requirements	

SWEEPER BODY	
Construction	Welded 10-gauge steel plate with 3/16 steel
Safety props	Hopper floor
	Dual steel burn located under body

INSTRUMENTATION	
Sweeper engine	Tachometer, hourmeter, voltmeter, temperature gauge, oil pressure gauge

STANDARD ENGINE	
Model/type	1045T, inline 4 cylinder
Application	Uncharged diesel
Manufacturer	John Deere
Displacement	275 cu. in. (4.5)
Break horsepower	11.5 hp (8.6kW)
Torque	4.2-4.3 ft.-lb. (5.6-5.8 Nm)
Air cleaner	217 cu. ft. (6100mm)
	1500rpm
	propane, centrifugal type, air cleaner, dry type

ELECTRICAL SYSTEM	
Voltage	12 volt
Sweeper engine alternator	30 amperes

DUST CONTROL SYSTEM	
Pumps	Dual diaphragm
Capacity	250 gallon (946 l)
Trunk construction	polyethylene liner, 50 micron cleanable
Fill diameter	2.5" (63.5mm)
Fill hose	3/8" (9.5mm)
Controls	Electric, inside

PAINT	
One coat of sealer/primer and two coats of Dupont iron oxide polyurethane in standard white color	

SIDE BROOMS	
Type	Vertical steel digger
Location	Right, left, forward of pickup head
Diameter	44" (1118mm)
Drive	Hydraulic
Supersalon	Torque-sensing spring
Wear adjustment	Automatic

Dust control system cont'd	
Nozzles	2 on each broom; 5 around suction head; 2 inside suction nozzle; 2 on front axle; 2 inside hopper
Water level gauge	In-cab

BLOWER SYSTEM	
Type	Direct flow radial
Drive	Direct via 5 grooves; benton power belt
Construction	Hardox steel
Balance	1.5 grams on 2 sides
Diameter	32.75" (832mm)
Housing lining	Balloon corded rubber
Mounting	2 resin-coated sealed bearings
Vacuum enhancer	For heavy/light material; In-cab indicator

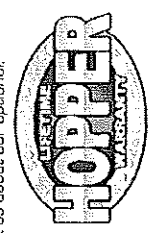
PICKUP HEAD	
Type	Dual chum bend fullwidth laser offset
Operation	Forward and reverse
Supersalon	Adjustable spring balanced
Length	90" (2286mm)
Diameter	14" (355.6mm)
Suction hose diameter	14" (355.6mm)
Hose construction	3/8" (9.5) wire-reinforced milled rubber
Head area	3.240sq. ft. (300.3sqm)
Controls	Hydraulic raise and lower
Slide	Device web
Construction	Duragrip composite Abrasion-resistant steel inlet and outlet transitions

HYDRAULIC SYSTEM	
Type	Dual output 2 location
Pump capacity	9.5 gpm (35800cm)
Drive	Direct gear
Maximum pressure	2500psi (172bar)
Reservoir	25 gallons (94 l)
Filter	10 micron spin on
Proportion	Pressure relief valve
Controls	Electro-hydraulic

AUXILIARY HYDRAULIC SYSTEM	
Type	Gear type driven by electric motor
Function	Raise/lower hopper door/clear hopper door raise/lower brooms and pickup head

Notes: Design and specifications subject to change without notice.

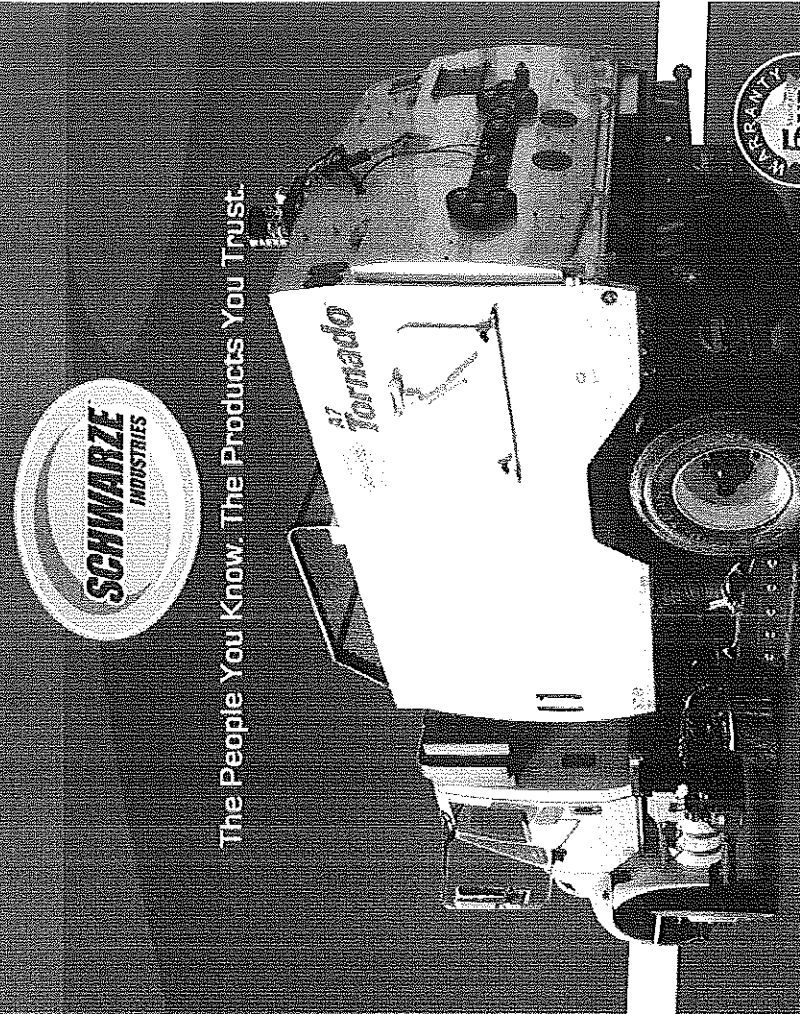
*Ask us about our optional:



@ Schwarze Industries 2016
1055 Jordan Road
Huntsville, AL 35811
800.879.7933
An Alamo Group Company



NPJA, APWA, NAWASA, AGC Bay



The People You Know. The Products You Trust.

A7 Tornado™ 8.4 Cubic Yard Regenerative Air Street Sweeper

*Sweeper shown with optional equipment

- PM 10 Certified
- WhisperWheel Fan Technology
- Schwarze Sweeps-in-Reverse
- DC Auxiliary Hydraulic Pump

✓	Due By	Performance	Public Safety	Value	Customer Support
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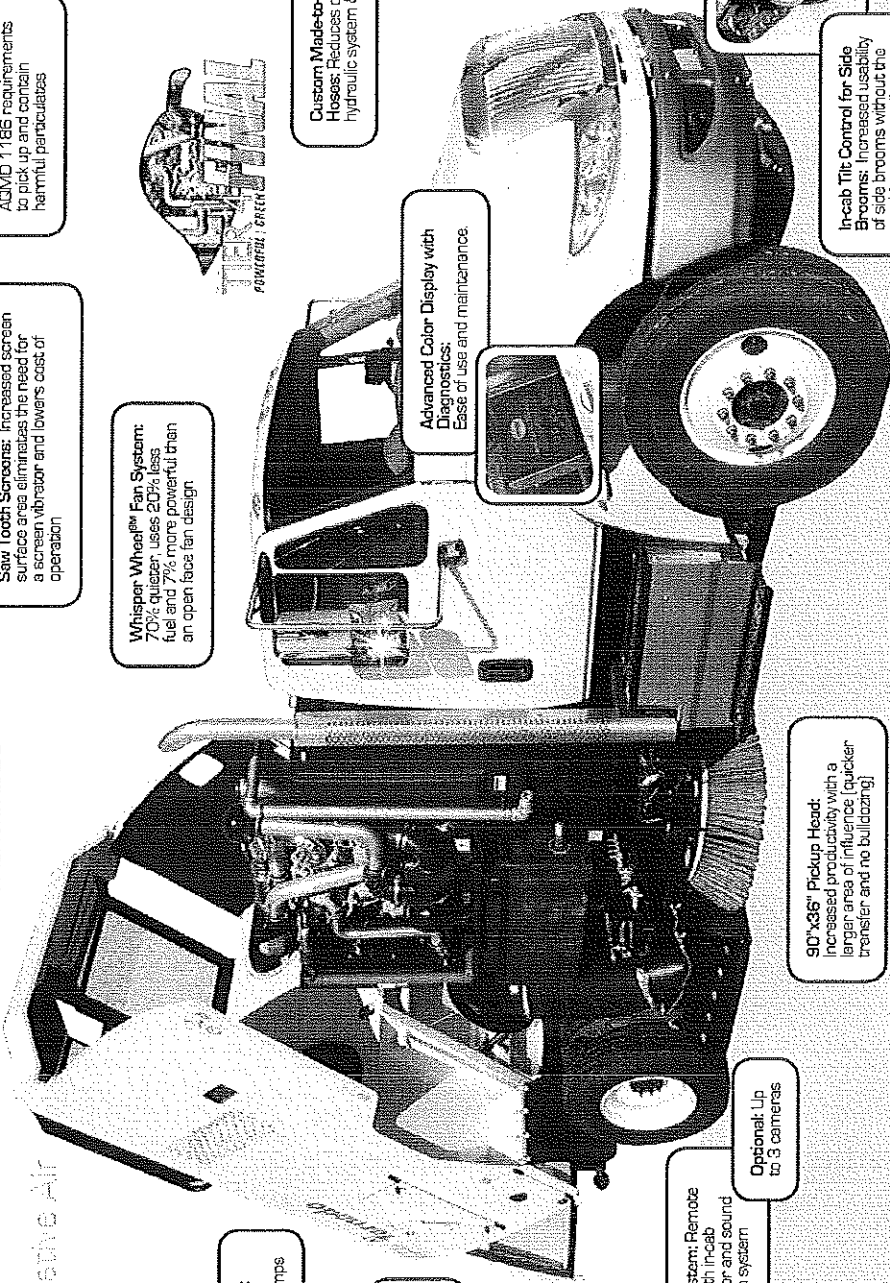
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A7 Tornado™

8.4 Cubic Yard Regenerative Air
Sweep Sweeper

AMERICAN BUILT-
AMERICAN MADE



Abrasion Resistant Steel in Critical Wear Areas:
For longer life expectancy

8.4 Cubic Yard Hopper Capacity:
Increased hopper capacity for increased production and less dumps

Liquid Tight Inspection Door:
Always a perfect seal

Sweeps-in-Reverse™:
Eliminates the need for the operator to raise the sweeping head to reverse

- Optional Equipment:**
- 8" auxiliary hand hose
 - Extra 350 gallon polyethylene water tank
 - Mechan-Pneumatic assisted head
 - Stainless steel hopper

Optional Equipment:
Gutter Broom Extension Overrides™, increased usability of side brooms and various applications, while eliminating the need for a center broom

Camera System: Remote cameras with in-cab video monitor and sound suppression system

90"x36" Pickup Head:
Increased productivity with a larger area of influence (quicker transfer and no bulldozing)

Saw Tooth Screens: Increased screen surface area eliminates the need for a screen vibrator and lowers cost of operation

Whisper Wheel™ Fan System:
70% quieter, uses 20% less fuel and 7% more powerful than an open face fan design

Advanced Color Display with Diagnostics:
Ease of use and maintenance

PM 10 Certified: Meets AQMD 1185 requirements to pick up and contain harmful particulates

Reduced Noise Levels:
Reduces operator stress & increases ability to operate in noise sensitive areas

Bolt in Pressure & Transition Tubing:
Ease of maintenance

Custom Made-to-order Hydraulic Hoses: Reduces contamination in hydraulic system & reduces downtime

Standard 12V DC Hydraulic Pump:
Able to raise and lower the sweeping head, brooms & hopper without the use of the auxiliary engine

Recessed Gutter Broom Discs with Shielded Broom Motor:
Reducing the chance of string and twine wrapping around gutter broom motor shaft

Optional:
In-cab down pressure control

In-cab Tilt Control for Side Brooms: Increased usability of side brooms without the need for manual adjustment

Also Available from Schwab Industries, Inc.



First Availability: Schwab's original equipment parts are available when you need them.

Engineered and Responsive: Schwab People are skilled in their commitment to service.

Schwab's Proactive-Engineered Structures Anticipate the Low-Maintenance Cost.

Warranty: Schwab's people are on call to support you and your equipment.

Schwab equipment is guaranteed to be free from defects due to faulty materials and/or workmanship for a period of 12 months or 2000 hours. Liability is limited to replacement of defective parts in factory or authorized dealer. The standard warranties of the chassis and auxiliary equipment may vary by manufacturer.

* Optional Equipment Chassis

