



Self-Propelled High Speed Airport Runway Sweeper

Model S3100B



The Model S3100B is a front mounted, high speed, airport runway sweeper. The sweeper is driven with a closed-loop, hydrostatic brush drive. Brush widths are available in 16 to 24 ft. wide with a 46 inch diameter. The brush angles a full 45° to the left and right. It clears a 16 to 22 ft. wide path at speeds up to 30 mph. The Model S3100B is capable of sweeping wet, slushy snow as well as fine, dry snow in winter. During the warm months the sweeper can be utilized to clean general debris. All units are fully assembled and tested for proper operation. Upon delivery of the equipment, a qualified factory representative will come directly to the airport to provide operator training at the jobsite. Training will include correct operation and preventative maintenance.

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Quality Products For A Cleaner Environment

BRUSH & MOUNTING

The most important part of a sweeper is the brush. The S3100B brush head has hydrostatic drive with in-cab control. Adjustable brush pattern and hood stripper assures a clean sweep in any weather condition. The self-leveling frame, heavy duty swing and anti-shimmy casters provide easy operation.



Hydrostatic Brush Drive

The brush is driven by a closed loop, variable speed, hydrostatic system. The hydrostatic system gives optimum brush power at an infinite number of brush speeds from 5 to 500 RPM. The pump is a heavy duty roller bearing, closed loop, variable displacement, hydrostatic, piston type pump. The pump is driven from the crankshaft of the sweeper engine. An electrically activated, adjustable swash plate in the pump gives infinitely variable brush speed. This drive system eliminates high maintenance drive components used on mechanical sweepers.

Center Mounted Motor

For maximum strength and balance the brush core is split into two equal halves. One closed loop, hydrostatic motor with planetary reduction, mounted in the middle of the divided brush, drives both brush cores. The ends of the brush cores are supported by heavy duty bearings. All motors and moving components are mounted inside the brush framework to protect against accidental collision damage.

Front Mounted Brush

The brush head is mounted to the front of the vehicle. The operator can directly observe the area being swept. The runway surface is cleaned before sweeper caster or vehicle tires pack down the snow.

High Speed Brush

The brush can be 16, 18, 20, 22 or 24 feet wide with a 46 inch diameter. The larger diameter brush generates high tip speeds between 5 and 500 RPM with no variance in torque. The brush and bristles are designed for airport operation. The bristles are fastened into rings protected with rubber inserts to take the shock load from the bristles themselves. The brush is available in polypropylene, wire or a combination of 1/2 poly 1/2 wire. The brush core is divided in half for easy brush replacement and balance. Sweepster's high speed brushes meet military specification number MIL F-83002.

Adjustable Brush Pattern

The brush pattern adjusts with one bolt. The operator can set the correct brush pattern to meet any sweeping condition quickly, even in bad weather. Sweeping with the correct brush pattern reduces brush wear and extends brush life.

Easy Access Brush Hood

The brush hood is heavy gauge steel permanently welded to the frame. It shields the top half of the brush and includes the air deflector on the front. The brush hood tips up and away to provide easy access for brush maintenance.

Air Deflector

The hydraulic air deflector is mounted on the front of the brush hood. It is designed to positively change the angle that the snow leaves the brush. The operator can direct the snow down toward the runway or up for the wind to carry it away. In-cab control lets the operator quickly adjust the air deflector to meet the changing sweeping conditions.

Brush Hood Stripper

The brush hood incorporates an independently adjustable rigid snow stripper to prevent carry over and clogging in difficult snow conditions. Two crank handles on each end of the hood adjust the hood as the brush wears. The entire hood assembly can be adjusted until the front edge is within 1/4 to 3/8 in. from the bristles. The front edge acts as a stripper, cleaning snow, slush, water and debris from the brush and preventing carry over from falling back on the runway.

Self-Leveling Brush Frame

A revolutionary ball joint, independent, spherical bearing suspension carries the brush. This suspension allows the brush to move both perpendicular and parallel to the line of travel. Free movement keeps the brush level, giving you a clean sweep and reducing brush wear.



Heavy Duty Swing

The swing assembly is constructed of heavy duty rectangular tubing. The pivot point is bearing mounted for easy movement.

Brush Lift and Angle

The brush lift and angle are powered by a hydraulic pump which is driven from the sweeper/airblast engine. Direction valves are electro-hydraulic with multi-axis control. The exposed rods on hydraulic cylinders used for lift and swing are equipped with hard, chrome plated finish. An optional system is available which has a separate hydraulic tank independent from the sweeper hydrostatic system.

Caster System

The majority of the weight of the sweeper is carried on the casters, not on the vehicle. Four 18 X 7 X 8 16 ply tires are mounted on swivel casters. Two tapered roller bearings support each caster shaft. Rear mounted casters travel in the swept path of the brush providing a clean sweep.

The casters are equipped with the exclusive SWEEPSTER anti-shimmy system. This extremely effective system tightens the caster when the sweeper is moving in a forward direction. When the sweeper is turned or backed up, the system automatically releases the tension to allow the caster to pivot freely. This simple system prevents damage prevalent in complicated hydraulic caster anti-shimmy systems. The caster tires are nitrogen filled. The rims are welded to the hub to prevent wheel bolts from coming loose.

AIRBLAST SYSTEM

PRIME MOVER

The powerful airblast retracts within the wheel width of the chassis, while leaving a clear unobstructed path down the walk ways on both sides of the prime mover.



High Capacity Fan

The fan is a double inlet, double outlet, centrifugal blower. This high capacity fan provides air velocity at the nozzle up to 320 m.p.h. The blower is capable of moving water and sand off of the runway and removing fresh fallen snow from runway lights in one pass.

Hydrostatic Airblast Drive

The airblast is powered by a independent, closed loop, hydrostatic system driven from a rear mounted engine. The hydrostatic motor is mounted directly to the fan blade shaft. The pump is connected to the sweeper engine. Direct power drive eliminates belts, chains and other machinery susceptible to high wear and high maintenance costs.

Air Delivery

The movable air chutes on the S3100B raise and lower. The airblast can be directed to the right or left with in-cab control. The 3 x 11 inch (7.62 cm x 27.94 cm) duct opening provides airflow 90° toward the direction of the brush discharge. The brush and airblast work together. The airblast angle and lift change automatically to match the brush head. An optional manual control allows for independent operation of the airblast system separate from the broom if preferred.

The most important aspect of an air blower system is how well it actually moves debris off the surface being cleaned. The biggest obstacle to this is the air blower duct work which changes the direction of airflow 2 or 3 times causing turbulence within the air stream. The highest level of air velocity is useless if turbulence causes the airstream to disperse in all directions at the work surface.

By reducing ductwork and changing airflow direction only one time, the result is pinpoint directed air discharge which cleans with the highest level of efficiency. Additionally Sweepster's compact design allows the airblast system to be mounted under the truck catwalks leaving unobstructed walkways and reducing noise levels within the truck cab.

Optional Equipment

- Dual Motor Brush Drive
- Brush Widths up to 24 ft.
- Snow Free Hood
- Cassette Style Brush

Comfortable Cab

The cab is located forward and above the brush for good visibility and to minimize snow spray distractions. Two seats with seat belts and heater keep the operator comfortable during long snow removal sessions.

A VHF radio transceiver per the airport specification is included and all control panels, meters and indicators used while driving the vehicle and operating the sweeper equipment are in the cab.

Maneuverability

The prime mover attains a forward traveling speed of at least 50 mph with snow handling capacity in the range of 0-30 mph.

GVW Rating

The prime mover has a 35,000 lbs. GVW rating. The steerable front axle has a maximum capacity of 12,000 lbs. and the nonsteerable driven rear axle has a minimum capacity of 23,000 lbs.

Tires

The prime mover is equipped with 15 x 22.5 minimum 16 ply, nylon aggressive type tread tires. One mounted spare tire is included. Front and rear tires are covered with fenders and mud flaps.

Fuel Capacity

A 250 gal. fuel storage capacity keeps the Model S3100B on the runway sweeping.

Brakes

A 12 cfm air compressor powers full air, all wheel drum brakes.

Lights

Visibility and safety lighting include amber 360° beacon or strobe, sealed beam spotlights, headlights, two all weather driving lamps, stop lights, taillights, clearance lights, reflectors, back-up lights, dome light and class "A" signal filament directional signals.

POWER SUPPLY

Specifications

For maximum maneuverability and snow handling capacity, the vehicle is powered by a diesel engine which develops 300 hp at 1,800 continuous duty RPM driving and Allison Automatic Transmission. The brush and airblast are powered by a diesel engine developing 250 hp or more depending on the width of the brush head. The engines are equipped with heavy duty air cleaners including precleaner with automatic shutdown for engine oil pressure and coolant temperature. Cold climate features include a minimum of 30 below zero coolant, ether cold start with thermal safety or a 110 volt 2,000 watt block heater. An option 220 volt is available.

The engines are readily accessible with large access panels. The catwalk is constructed of grip strut type open grating and reinforcing members. Platforms on both sides of the engine housing, provide walkways and work areas. Grab handles and steps on both sides are provided.

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