XBroom

PM10 Certified

High Production, Efficient Pickup Broom

Nescon

- **Extra Large Hopper (5 Yards Net)**
- **PLC Computer Controlled, 12” Touch Screen**
- **300+ HP high-torque engines**
- **Operates all brooms at Engine Idle.**
- **High-Efficiency triple pump Hydraulic System**
- **Dual Operator stations**
- **Fast, Space saving Hopper Lift System**
- **Many Maintenance saving features**

Innovative Products for the road building and maintenance industry.

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X-Broom *by Nescon*

The ***X-Broom*** pickup broom was designed for heavy duty, high production sweeping. The broom is ideal for cleanup behind milling or chipping operations. The extra large hopper capacity means more time sweeping and less time looking for a place to dump. The high efficiency hydraulic system and the high torque engine enable the broom to sweep at engine idle, minimizing brake riding. The unique lift system can dump faster and higher and leaves the center of the truck wide open for maintenance. The PLC control system fully automates the sweeping process enabling the operator to concentrate on driving and traffic. The broom was designed for easy access to all components for maintenance. All broom components are powder coated to stand up to harsh environments.

Truck Chassis

The *X-Broom* can be built with either an International 4400 chassis or a Freightliner M2 chassis. The International comes with a 310 HP, 950 Ft-lb torque Maxforce 9 engine. The Freightliner comes with a 300 HP, 860 Ft-lb torque Cummins engine. Both meet 2010 emissions. Both chassis have 50 gallon fuel tanks, Allison transmissions, power and heated mirrors, dual steering and controls, Air Ride suspension, for a smooth ride, and 23,000 lb 2-speed rear axle.

Water System

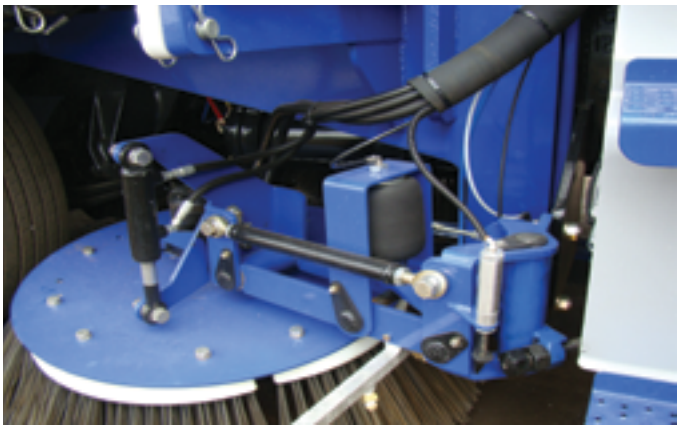
The water system consists of two electric pumps. One pump is sufficient for PM-10 operations. The second pump can be selected with the “Max” water function on the touch screen, and is available for a backup. The operator can select an “Economy” mode on the PLC for low water use or the “Max” mode for dry sweeping conditions. The standard water tank is 300 gallons and there is a water level gauge display with a low level alarm. The pumps can run dry without damage. A front spray bar is standard along with 3 spray tips on each gutter broom and a spray bar in front of the main broom. The system pumps and tips are designed for misting, (smaller drop size), doing a better job knocking down dust while minimizing water use. The spray bar valves and pumps are automatically controlled.

Elevator System

The elevator is a drag slat type conveyor. Unique features include a longer, steeper design with 14 bucket type slats with replaceable rubber squeegee flights, polyurethane shaft sprockets, and dual roller chain. The elevator is driven with a hydraulic motor directly mounted to the elevator head shaft. There are no drive chains or sprockets to wear out and replace. There is a standard jam indicator that alerts the operator if there is a blockage. The speed of the conveyor is easily adjusted without tools and the RPM is displayed on the touch screen. The motor can be reversed in case of a jam. The elevator sweeping height is able to be raised and lowered from the cab. The sweeping height can be set into the PLC and this height will be repeated each time the elevator is lowered to sweep. The elevator is tilted back with two hydraulic cylinders.

With hopper raised, all frame components are very accessible.

Gutter Brooms



The gutter brooms are a full floating, trailing arm, air-bag suspended design. The gutter broom speed is variable and the down pressure is adjusted from the cab. Both brooms are reversible. The extension of the gutter brooms is with pneumatic cylinders and the width is infinitely adjustable. The steel broom disc protects from curb strikes and has mounting holes for either 4 or 5 segment replaceable gutter brooms. Each gutter broom has standard hydraulic tilting left or right from the cab. No failure prone electric actuators.

The gutter brooms are suspended with an air bag and the linkage joints are all sealed ball bearings. This very low friction design allows for the ability to sweep with extremely light down pressure, greatly extending broom life. There is also a remote extension device for cul-de-sacs.

Main Broom

The main broom is 60” wide with replaceable poly or steel wafers. The suspension of the broom is operated with air cylinders and the down pressure is adjusted by individual left and right side precision regulators. The operator can select a low, medium, or high sweeping down pressure on the touchscreen. The computer will adjust the down pressure of the left and right sides of the broom. This will maintain even wear, eliminating broom coning. Broom adjustments are much easier with this system than the springs, chains, and adjustment bolts of other systems. The air suspension will automatically compensate as the broom wears. The broom drive is with a floating hydraulic motor rigidly coupled to the 2” broom shaft. This eliminates the wear and replacement of drive chains and sprockets. Bearings are sealed, self-aligning, 2-bolt pillow blocks for quick broom changes.

Control System

The control used on the ***X-Broom*** is an industrial grade Programmable Logic Controller (PLC) with a 12" touchscreen display panel. All functions of the broom are controlled by the PLC. This enables fully automatic operation of the sweeping functions. The operator just touches a "GO" button and the PLC activates all the functions needed to sweep. This involves starting, lowering, and extending the gutter brooms, starting the elevator and lowering to the desired height, lowering the skid shoes and main broom and starting the broom motor, opening the water spray valves and starting the water pump(s). The PLC always monitors the position of the elevator, insuring that it is fully forward before starting. It also monitors the hydraulic temperature and level and will flash a warning on the display to alert the operator. The PLC will automatically raise all brooms if the transmission is placed in reverse. There is a "Pause" button that will stop the brooms, elevator, and water sprays but leave the brooms down if the sweeper has to stop for traffic. The "STOP" button will stop and raise all brooms, stop and raise the elevator, and turn off the water sprays and pumps. The elevator can be programmed to continue to run for up to 6 seconds to empty out.

With total automatic operation, the operator can concentrate on driving and traffic rather than making sure all the right switches are on.

The compact size of the touchscreen control panel leaves more space available in the cab versus the huge consoles of other brands.

The operator selects ON WITH MASTER if they want the left gutter broom to run during sweeping operation.

The operator selects OFF, ON WITH GB (Gutter Broom) or ON WITH MASTER to control the left gutter broom spray.

Buttons to tilt gutter broom left or right.

Water tank level.

Buttons to navigate to other screens.

Button to activate hydraulic pumps.

Operator sets value for elevator sweeping height. Buttons to manually raise and lower elevator. Display of elevator speed in RPM.

The operator selects OFF, ON WITH MASTER or ON ALWAYS to control the front spray bar.

ALARM WINDOW
Notification area for any alarm condition such as: elevator jam, low water, or hydraulics issue

Button to change the joystick function from BROOM CONTROL to HOPPER CONTROL.

Operator selects PAUSE to stop the brooms, elevator, and water sprays without lifting brooms for momentary delays, such as traffic.

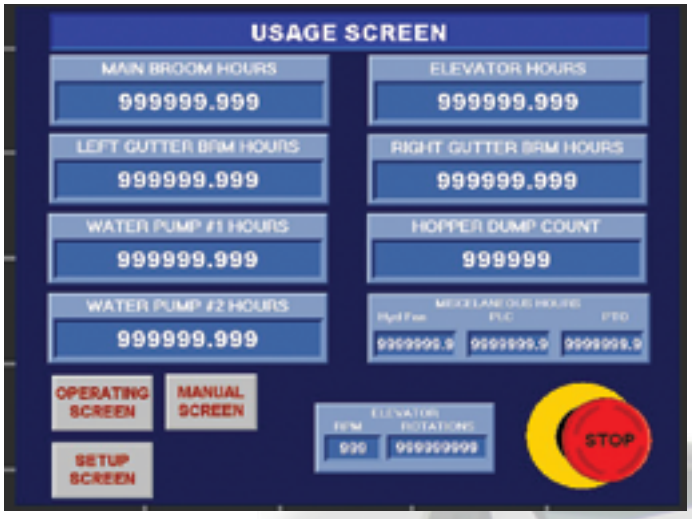
The operator selects ON WITH MASTER if they want the right gutter broom to run during sweeping operation.

The operator selects ECONOMY or MAX water spray modes.

The operator selects LEFT ARROW, RIGHT ARROW, or BAR to flash the arrow board on the back of machine.

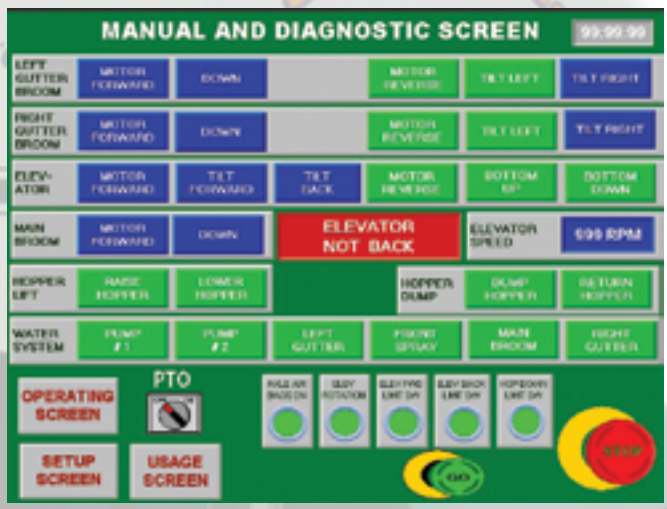
Operator selects STOP to stop all sweeping operations, stop all water sprays, and raise all brooms and the elevator.

Operator selects GO to commence sweeping operation. The PLC will start the gutter brooms selected above, the water sprays selected above, the elevator, and the main broom.
The operator can also use the joystick to control the broom operation without having to look at the screen.



The PLC has a separate hour meter for all brooms, elevator, water pumps, hydraulic fan, PTO, and how many revolutions of the elevator head shaft. The PLC also keeps a count on how many times the hopper has dumped. This lets you track broom wear to actual operating hours of the individual broom.

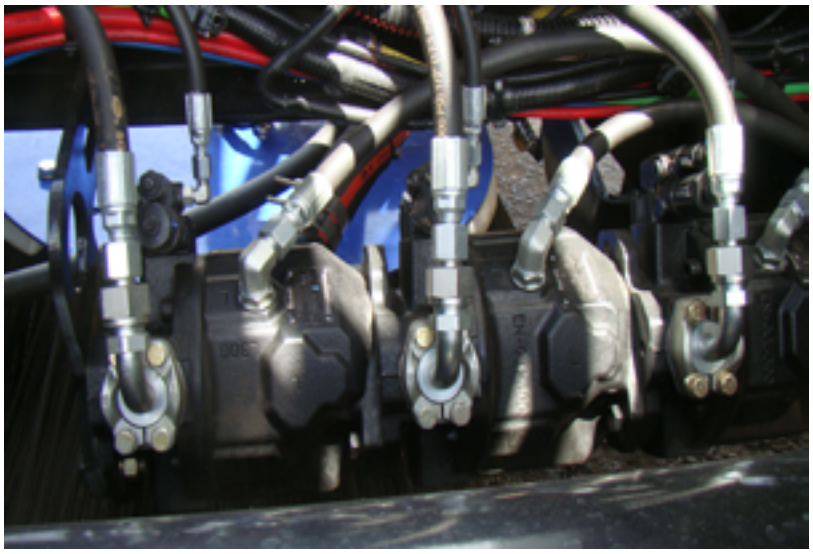
There is a screen for Manual Operation of each component for testing and diagnostics. The buttons also give a visual indication of what is “on” and the status of each limit switch. The PLC greatly simplifies the wiring to the valves and solenoids on the broom.



The hopper dumping functions are controlled with a joystick on the front panel. When the hopper is full, the operator will push a button on the touchscreen to enable the joystick to control the hopper dumping.

When the joystick is moved up to raise the hopper, the PLC will tilt the elevator back and insure that the elevator is clear before raising the hopper. The operator can then use the joystick to raise and dump the hopper without having to look at the screen. After lowering the hopper, the PLC will insure that the hopper is clear and then tilt the elevator forward into the hopper.

Hydraulic System



The broom uses three separate hydraulic pumps. One pump runs the gutter brooms, one runs the elevator, and one runs the main broom. Each pump is a load sensing, pressure compensated, variable volume piston pump. This is much more efficient than using only one pump like most other sweepers. With only one pressure compensated pump, every function operates at the highest pressure needed for any single function. This causes higher horsepower and excess heating of the hydraulic fluid. With three pumps, each pump only operates at the minimum pressure needed to carry the load. The lower horsepower required saves fuel and does not require the engine to operate above idle. The hydraulic system runs much cooler than other single pump designs.

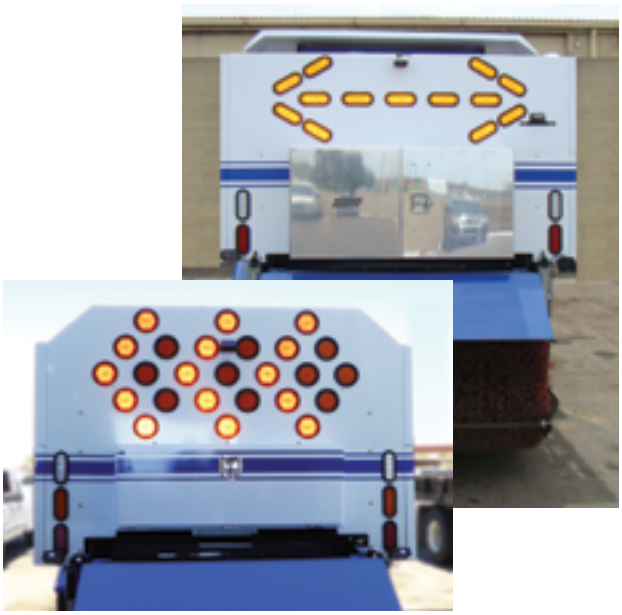
There are two valve manifolds mounted close to their functions. This puts the valves very close to the motors and cylinders minimizing the hose lengths. Notice the open access to the hydraulics and other functions provided by the large horizontal door.

The 40 gallon hydraulic tank is mounted directly behind the cab, high on the left side. This keeps the tank away from the dirt and provides better suction flow to the pumps. There is a large in-tank return filter, glass sight level with a thermometer, and an in-tank float and over-temperature switch for operator warning indicators. Every hose has a female JIC swivel on both ends, making replacement, if necessary, easier.

Arrow Board

The ***X-Broom*** comes standard with high intensity arrows mounted integrally with the back housing. The arrows are made up of 13 - 24 LED sealed lights. The operator can select either a left arrow, right arrow, horizontal bar, or both arrows on the touchscreen. The lights are dual intensity, long life, low power amber LEDs. The flash speed can be set by the operator on the touch screen.

Optionally, you can get a DOT approved arrow board that is made up of 25 4" LED lights. The overall size of the arrow board is 60" wide by 30" tall. The patterns available are left or right sequential chevrons, left or right flashing arrows or bar, and alternating diamonds.



Hopper – Xtra Large

The ***X-Broom*** was designed to have the largest hopper volume in its class. Total volume of 6 Cubic Yards with usable net capacity of 4.9 CY. The hopper net capacity is at least twice as large as most high-lift sweepers. The elevator load point to the floor is 50 inches. Compare this to 24 inches of most other sweepers. This enables the broom to spend more time sweeping than dumping. The hopper is much larger because of not having a scissor lift underneath taking up half the volume available and the longer elevator loads the hopper from a higher level. The hopper has a large 42" long discharge door to dump the load in the center of a truck. The door has dual hydraulic cylinders and can be dumped from any height. Hopper loading can be viewed from the cab window or an access door on the left side. The hopper floor is a formed 3/16" plate for extra strength, and the hopper is treated inside and out with two coats of powder coat for long life.

Lift System

Unique two-stage vertical mast enables a larger volume hopper and **completely open truck frame** for maintenance and cleaning. With the mast directly behind the cab, the hopper can extend down to the frame. The 19" of vertical height used on other manufacturer's scissor lifts is used for extra hopper volume. All moving parts roll on sealed bearings with no bushings or sliding blocks to wear out. The hopper is lifted to a height of 12'-6" and the lift capacity is 15,000 pounds.

Note the accessibility for maintenance and cleaning with hopper raised.

Specification Sheet

Truck Chassis

	Int'l 4400	Freightliner M2 Durastar
Engine	Maxforce 9	Cummins
HP	310	300
Torque	950	860
Wheelbase	138	138
Transmission	Allison 3000	Allison 3500
Front Axle	10,000	12,000
Rear Axle	23,000 2-spd	23,000 2-spd
Suspension	Air Ride	Air Ride
GVW	33,000	33,000
Fuel Tank (Both)	50 gallons - mounted under cab	

Main Broom

Diameter	36" (914mm)
Width	60" (1.52m)
Type	Poly wafers
Suspension	Pneumatic w/precision regulators. Low, med, hi down pressure controlled from cab. Automatically adjust pressure throughout broom life.
Lift	Pneumatic
Drive	Variable speed hydraulic motor Dedicated load sensing pump insures constant speed Direct drive (no chains)
Skid Shoes	Double row carbide

Gutter Brooms

Type	4 or 5 segment wire fill
Tilt	Hydraulic control from cab
Diameter	46"
Drive	Variable speed hydraulic drive Dedicated load sensing pump for both gutter brooms
Rotation	Both brooms reversible
Width	Infinitely adjustable up to 140"
Down pressure	Pneumatic from cab
Extension	Pneumatic and retraction

Elevator

Type	Dual roller chain drag slat
Sprockets	Polyurethane
Squeegee	14 bucket type w/rubber wear strips
Drive	Direct drive hydraulic motor Dedicated load sensing pump
Speed	Variable and reversible from cab
Lift	Hydraulic
Bearings	Self aligning, sealed, and shielded
Sweep height	Adjustable from cab
Rotation alarm	Standard, RPM display, Rotation Counter

Hopper

Type:	High lift, right side dump
Capacity:	6 Cy total, 4.9CY Net
Dump height:	variable to 150"
Lift capacity:	15,000lbs
Lift type:	2-stage vertical mast
Max dump angle	50 degrees
Dump controls	Joystick or touch screen
Lift time to max ht	15 seconds

Hydraulic System

Type	3 variable volume piston pumps Load sensing, pressure compensated
Drive	By truck engine through transmission mounted PTO
Pump capacity	12 GPM each (36 total) at engine idle. 96 GPM max.
Tank capacity	40 gallons, mounted high behind cab
Filtration	10 micron in-tank
Cooler	Thermostatically controlled fan
Gauges	Site gauge/thermometer Level float and high temp switches for PLC alarms

Water Spray System

Tank Capacity	300 gallons polyethylene
Pumps	Dual electric-one for PM-10 2nd pump used for max water flow automatically controlled by PLC
Nozzles	3 fine mist spray tips on each gutter broom 6 spray tips on front spray bar 5 spray tips in main broom housing
Filter	80 mesh
Fill	Hydrant or water truck fill w/air gap
Paint	Powder Coat, choice of colors

Electrical

Voltage	12 volts
Alternator	160 amp
Protection	Circuit breakers, manual reset

KELLAR EQUIPMENT

Controls

Industrial grade programmable logic controller, (PLC)
12 inch touchscreen display panel
Joystick for hopper dump

Options

Cab Beacon / Strobe
Automatic Lubrication
Aluminum Wheels

Warantee

The Nescon X-Broom is warranted against defects due to faulty materials and or workmanship for a period of 1 year or 1500 hours. The truck chassis warranty is usually 2 years with extended warranty available.

For inquiries and pricing contact Kellar Equipment

(909) 312-1669
kellarequipment.com

Nescon

www.Nescon.co
www.nescon.co
480-423-7603
info@nescon.co