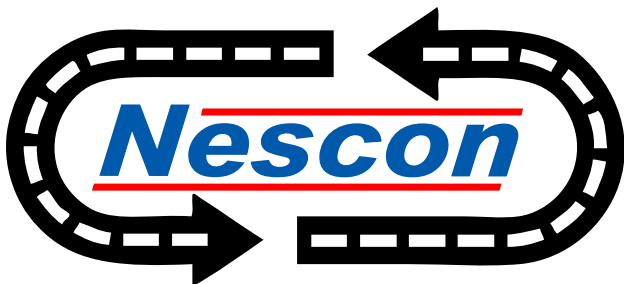


# XBroom

**PM<sub>10</sub>**  
**Certified**



## *High Production, Efficient Pickup Broom*



- Extra Large Hopper (5 Yards Net)
- 12" Touchscreen Controls
- 300+ HP high-torque engine
- Operates all brooms at Engine Idle
- High-Efficiency triple pump Hydraulic System
- Dual Operator stations
- Fast, Space saving Hopper Lift System
- Superior Maintenance Access

*Innovative Products for the road building and maintenance industry.*

**[www.nescon.co](http://www.nescon.co)**

**480-505-0001**

## **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 dumping. 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* is built on a Freightliner M2 chassis. It is powered by a 300 horsepower, 860 ft-lb torque Cummins engine that meets all 50 states emission requirements and clean idle. The truck comes standard with a 6-speed Allison automatic transmission and a 2-speed rear end. The rear suspension is air-ride with a 23,000 lb axle and the front axle is rated at 12,000 lb. The fuel tank is 50 gallons, the mirrors are powered and heated, and the truck comes standard with dual driver positions.



## **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 5 tip 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 steel 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 bottom sweeping height can be set into the PLC and this height will be repeated each time the elevator is lowered to sweep as well as adjusted manually from the touchscreen. The elevator is tilted back with two hydraulic cylinders.

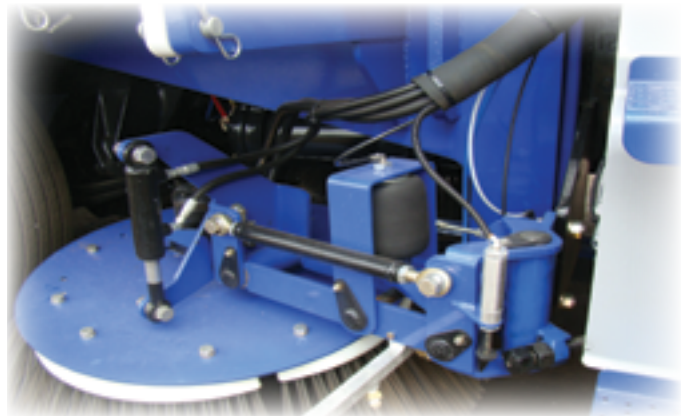
With hopper raised, all frame components are very accessible.



## 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 provided by low friction air cylinders and the down pressure is adjusted by individual left and right side precision regulators. The operator can select a **light, medium, or heavy** sweeping down pressure on the touchscreen. The computer will adjust the down pressure of the left and right sides of the broom to 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. The low friction air cylinders have quick exhaust valves that allow the broom to stay in contact with the ground over rough terrain, even when driving over a speed bump.





## Control System

The control used on the **X-Broom** is an industrial grade Programmable Logic Controller (PLC) with a 12" touchscreen display panel. This enables fully automatic operation of the sweeping functions. The operator just touches a "GO" button or move the joystick 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 touches **LEFT GUTTER BROOM** to enable if they want it to run during sweeping operation. Moving the joystick left will do the same.

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

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

The operator touches **RIGHT GUTTER BROOM** to enable if they want it to run during sweeping operation. Moving the joystick right will toggle on or off.

Water tank level.

Buttons to navigate to other screens.

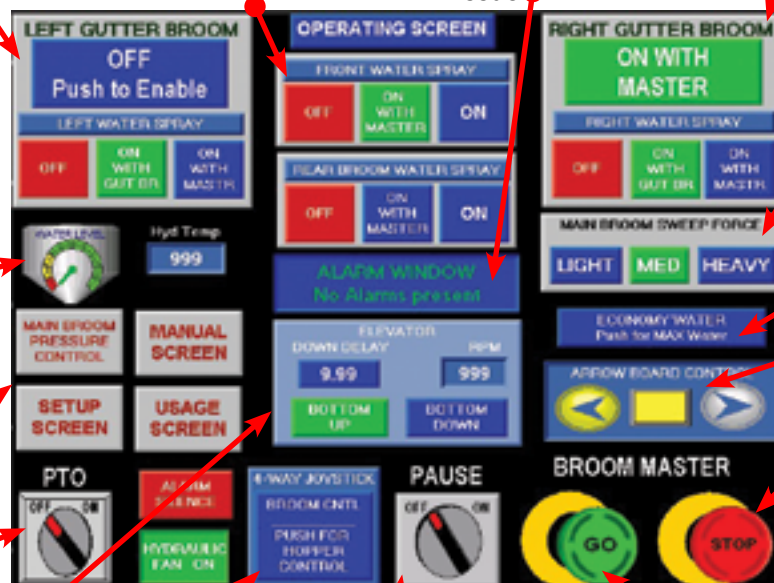
Button to activate hydraulic pumps.

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

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.

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 operator selects **LIGHT**, **MED**, or **HEAVY** main broom sweep force.

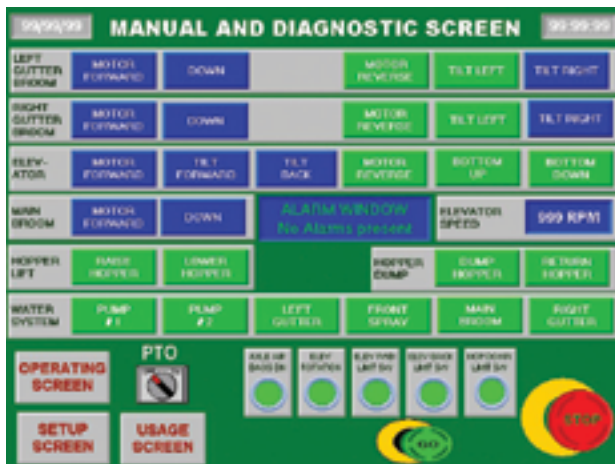
The operator selects **ECONOMY** or **MAX** water spray modes.

The operator selects **LEFT**, **RIGHT**, or **BAR** to flash patterns on 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.

## Usage Meters

The PLC has a separate hour meter for all brooms, elevator, water pumps, hydraulic fan, PTO, and revolution counter 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.



## Setup Screen

The setup screen is for configuring the computer to perform the functions desired. There are options buttons to bypass a sensor in case of a problem. This is also where you could change the function of stopping brooms when shifted into reverse and determining the flash patterns of the arrow board. This screen also has the controls for downloading production information to removable memory.



## Diagnostic Screen

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.



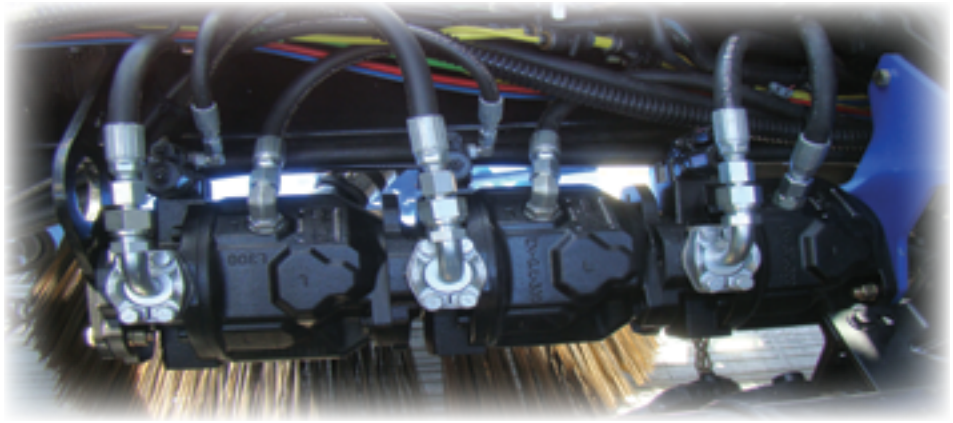
## Hopper Dump Control

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 the most efficient hydraulic system available, much more efficient than single pump systems on 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, horizontal bar or 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

Freightliner M2

|                  |                                |
|------------------|--------------------------------|
| Engine           | Cummins                        |
| HP               | 300                            |
| Torque           | 860 ft-lb                      |
| Wheelbase        | 140"                           |
| Transmission     | Allison 3500, 6-spd            |
| Front Axle       | 12,000 lbs                     |
| Rear Axle        | 23,000 lbs 2-spd               |
| Suspension       | Air Ride                       |
| GVW              | 33,000 lbs                     |
| 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.<br>Light, med, heavy down pressure controlled from cab. Automatically adjust pressure throughout broom life. |
| Lift       | Pneumatic                                                                                                                                      |
| Drive      | Variable speed hydraulic motor<br>Dedicated load sensing pump<br>insures constant speed<br>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<br>Dedicated load sensing pump for both gutter brooms |
| Rotation      | Both brooms reversible                                                               |
| Width         | Infinitely adjustable up to 140"                                                     |
| Down pressure | Pneumatic from cab,<br>low friction airbag                                           |
| Extension     | Pneumatic extension and retraction                                                   |

## Elevator

|                |                                                             |
|----------------|-------------------------------------------------------------|
| Type           | Dual steel roller chain drag slat                           |
| Sprockets      | Polyurethane                                                |
| Squeegee       | 14 bucket type w/rubber wear strips                         |
| Drive          | Direct drive hydraulic motor<br>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<br>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<br>Level float and high temp switches for PLC alarms.<br>Temperature displayed on touchscreen.<br>Hydraulic fan ON temp set on touchscreen. |

## Water Spray System

|               |                                                                                                                      |
|---------------|----------------------------------------------------------------------------------------------------------------------|
| Tank Capacity | 300 gallons polyethylene                                                                                             |
| Pumps         | Dual electric<br>2nd pump used for max water flow automatically controlled by PLC                                    |
| Nozzles       | 3 fine mist spray tips on each gutter broom<br>5 spray tips on front spray bar<br>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 |

## Controls

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

## Options

Cab Beacon / Strobe  
Aluminum Wheels  
DOT 25-light Arrow Board  
Chrome Bumper, Mirrors  
Backup Camera

## Warantee

The Nescon X-Broom is warranted against defects due to faulty materials and or workmanship for a period of 1 year or 1100 hours. The truck chassis warranty is usually 2 years with extended warranty available.



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