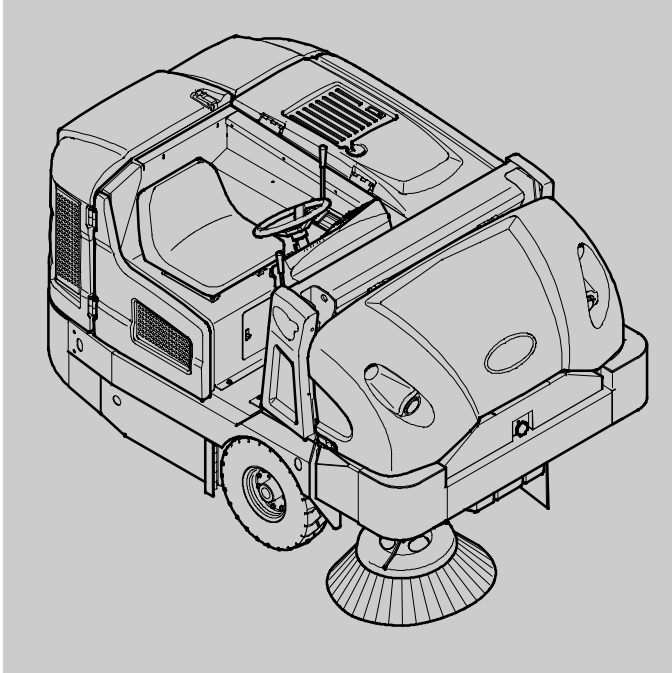




# S30

(Diesel)



Sweeper  
English **EN**  
Operator Manual



[www.tennantco.com](http://www.tennantco.com)

9004648  
Rev. 05 (03-2012)





This manual is furnished with each new model. It provides necessary operation and maintenance instructions.





**Read this manual completely and understand the machine before operating or servicing it.**

This machine will provide excellent service. However, the best results will be obtained at minimum costs if:

- The machine is operated with reasonable care.
- The machine is maintained regularly - per the machine maintenance instructions provided.
- The machine is maintained with manufacturer supplied or equivalent parts.

	<b>PROTECT THE ENVIRONMENT</b> Please dispose of packaging materials, old machine components such as batteries, hazardous fluids including antifreeze and oil, in an environmentally safe way according to local waste disposal regulations.
	Always remember to recycle.

<b>MACHINE DATA</b>	
Please fill out at time of installation for future reference.	
Model No. -	_____
Serial No. -	_____
Machine Options -	_____
Sales Rep. -	_____
Sales Rep. phone no. -	_____
Customer Number -	_____
Installation Date -	_____

 <b>TENNANT N.V.</b> Industrielaan 6 5405 AB P.O. Box 6 5400 AA Uden - The Netherlands Uden, 21-05-2010	<b>DECLARATION OF CONFORMITY FOR MACHINERY</b> (according to Annex II A of the Machinery Directive)
	Herewith declares, on our own responsibility, that the machinery <b>S30</b> - is in conformity with the provisions of the Machinery Directive (2006/42/EC), as amended and with national implementing legislation - is in conformity with the provisions of the Electro Magnetic Compatibility Directive 2004/108/EC - is in conformity with the provisions concerning noise emission for outdoor use (Directive 2000/14/CE) and with national implementing legislation - Lwa = 108 dB(A) Average & Lwa = 110 dB(A) Guaranteed <b>and that</b> - the following harmonized standards or parts of these standards have been applied: EN ISO 14121-1, EN 1037, EN 60335-1, EN 60204-1, EN ISO 13849-1, EN ISO 13849-2, EN 60529, EN ISO 4413, EN 349, EN 55012, EN 61000-6-2, EN ISO 11201, EN ISO 4871, EN ISO 3744*, EN ISO 13059*, EN ISO 3450, EN 60335-2-72. - the following national standards or parts of these standards have been used:
	

**Tennant N.V.**  
Industrielaan 6 5405 AB  
P.O. Box 6 5400 AA Uden-The Netherlands  
europe@tennantco.com  
www.tennantco.com

Specifications and parts are subject to change without notice.


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## SAFETY PRECAUTIONS

The following precautions are used throughout this manual as indicated in their description:


 **WARNING:** To warn of hazards or unsafe practices that could result in severe personal injury or death.


 **CAUTION:** To warn of unsafe practices that could result in minor or moderate personal injury.

**FOR SAFETY:** To identify actions that must be followed for safe operation of equipment.

Do not use the machine other than described in this Operator Manual. The machine is not designed for use on public roads.

The following information signals potentially dangerous conditions to the operator or equipment:

 **WARNING:** Moving belt and fan. Keep away.

 **WARNING:** Machine emits toxic gases. Serious injury or death can result. Provide adequate ventilation.

 **WARNING:** Raised hopper may fall. Engage hopper support bar.

 **WARNING:** Lift arm pinch point. Stay clear of hopper lift arms.

 **WARNING:** Burn hazard. Hot surface. Do NOT touch.

 **WARNING:** Accident may occur. Do not operate vacuum or blower wand while driving.

### FOR SAFETY:

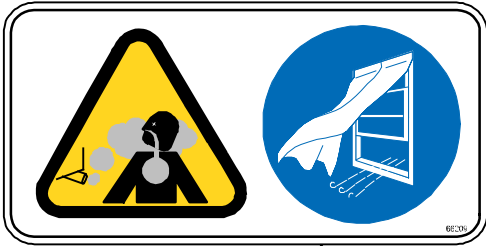
1. **Do not operate machine:**
  - Unless trained and authorized.
  - Unless operator manual is read and understood.
  - Unless mentally and physically capable of following machine instructions.
  - If it is not in proper operating condition.
  - In flammable or explosive areas.
  - In areas with possible falling objects unless equipped with overhead guard.
2. **Before starting machine:**
  - Check for fuel, oil, and liquid leaks.
  - Keep sparks and open flame away from refueling area.
  - Make sure all safety devices are in place and operate properly.
  - Check brakes and steering for proper operation.
  - Adjust seat and fasten seat belt (if so equipped).
3. **When starting machine:**
  - Keep foot on brake and directional pedal in neutral.
4. **When using machine:**
  - Do not pick up burning or smoking debris, such as cigarettes, matches or hot ashes
  - Use brakes to stop machine.
  - Go slow on inclines and slippery surfaces.
  - Use care when reversing machine.
  - Move machine with care when hopper is raised.
  - Make sure adequate clearance is available before raising hopper.
  - Do not carry passengers on machine.
  - Always follow safety and traffic rules.
  - Report machine damage or faulty operation immediately.
5. **Before leaving or servicing machine:**
  - Stop on level surface.
  - Set parking brake.
  - Turn off machine and remove key.

- 6. When servicing machine:**
  - **Avoid moving parts. Do not wear loose clothing or jewelry.**
  - **Block machine tires before jacking machine up.**
  - **Jack machine up at designated locations only. Support machine with jack stands.**
  - **Use hoist or jack that will support the weight of the machine.**
  - **Wear eye and ear protection when using pressurized air or water.**
  - **Disconnect battery connections before working on machine.**
  - **Avoid contact with battery acid.**
  - **Avoid contact with hot engine coolant.**
  - **Do not remove cap from radiator when engine is hot.**
  - **Allow engine to cool.**
  - **Keep flames and sparks away from fuel system service area. Keep area well ventilated.**
  - **Use cardboard to locate leaking hydraulic fluid under pressure.**
  - **Use Tennant supplied or approved replacement parts.**
  
- 7. When loading/unloading machine onto/off truck or trailer:**
  - **Turn off machine.**
  - **Use truck or trailer that will support the weight of the machine.**
  - **Set parking brake after machine is loaded.**
  - **Block machine tires.**
  - **Tie machine down to truck or trailer.**

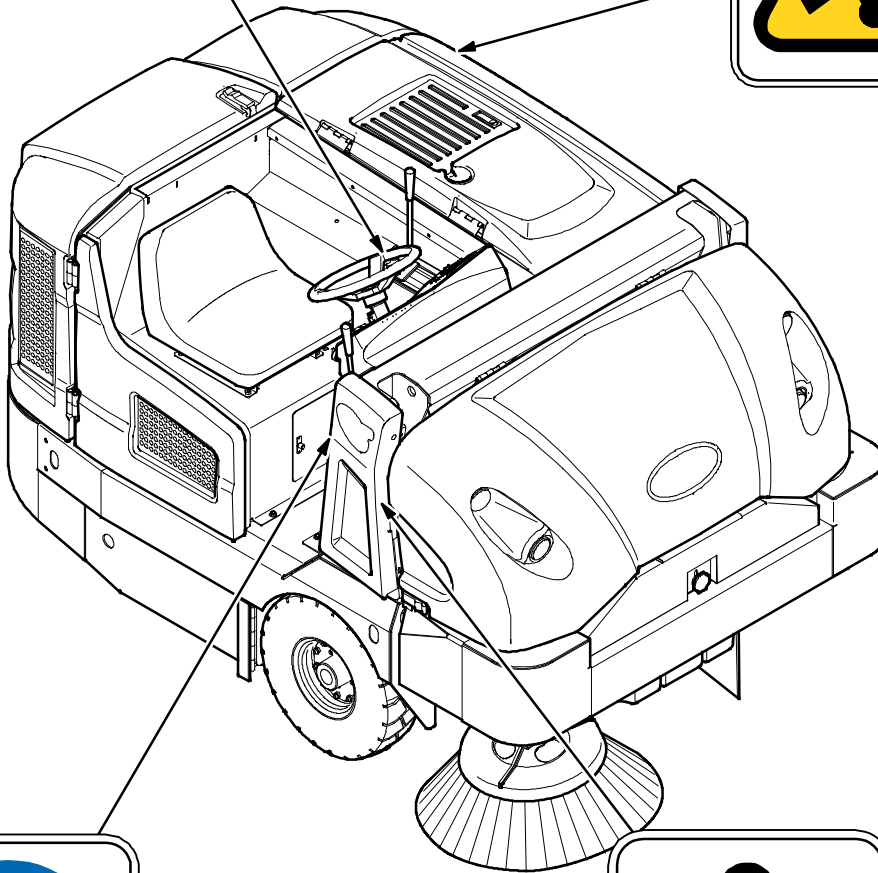
# SAFETY PRECAUTIONS

The following safety labels are mounted on the machine in the locations indicated. If any label becomes damaged or illegible, install a new label in its place.

**EMISSIONS LABEL - Located on the side of the operator compartment.**



**FAN AND BELT LABEL - Located on engine belt guard.**



**FOR SAFETY LABEL - Located on the side of the operator compartment.**



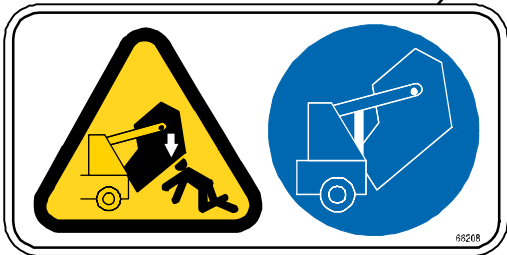
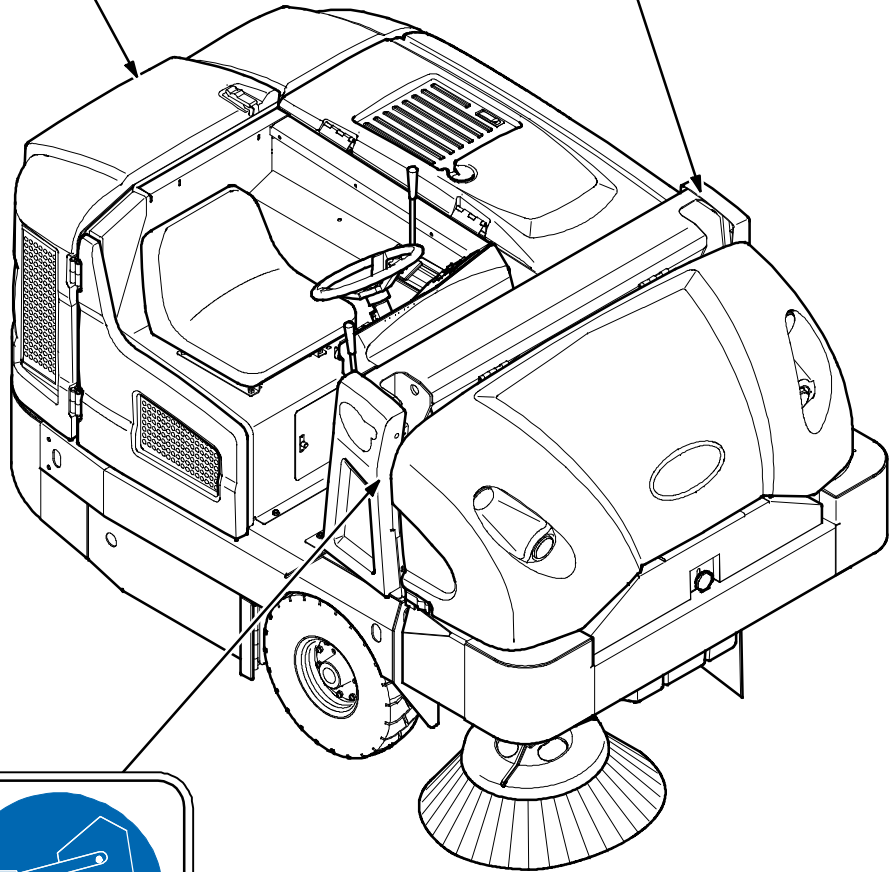
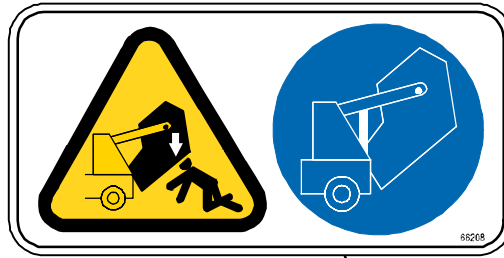
**HOPPER LIFT ARMS LABEL - Located on both hopper lift arms.**

354590

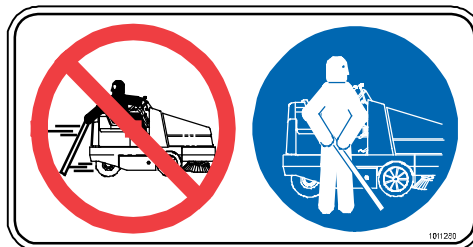
**HOT SURFACE LABEL -**  
Located on the exhaust  
shield.



**RAISED HOPPER LABEL -** Located on  
the hopper support bar.



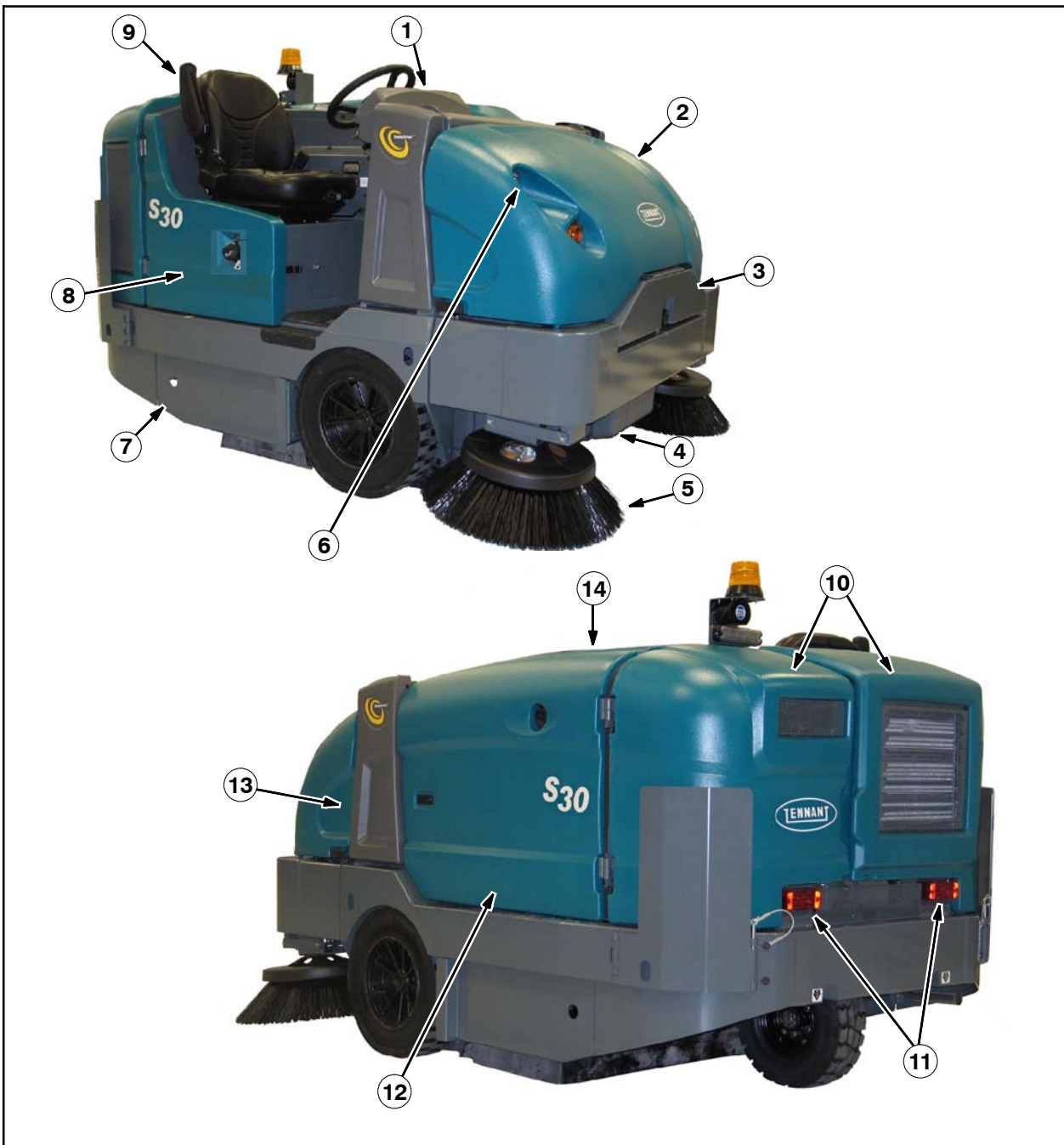
**RAISED HOPPER LABEL -** Located on  
the hopper lift arm.



**VACUUM / BLOWER WAND LABEL -**  
Located on the optional vacuum or  
blower wand door.

354590

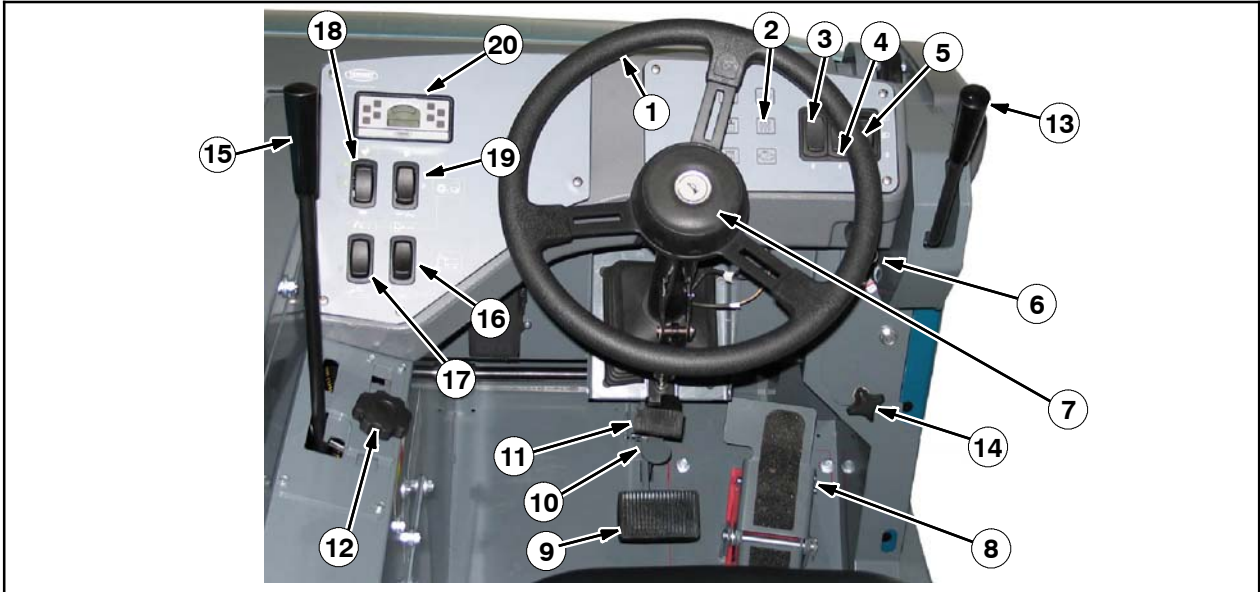
MACHINE COMPONENTS



- |                           |                        |
|---------------------------|------------------------|
| 1. Instrument panel       | 8. Fuel tank           |
| 2. Front shroud           | 9. Operator seat       |
| 3. Hopper access door     | 10. Rear engine shroud |
| 4. Hopper                 | 11. Taillights         |
| 5. Side brush             | 12. Side shroud        |
| 6. Headlights             | 13. Hopper support bar |
| 7. Main brush access door | 14. Top cover          |



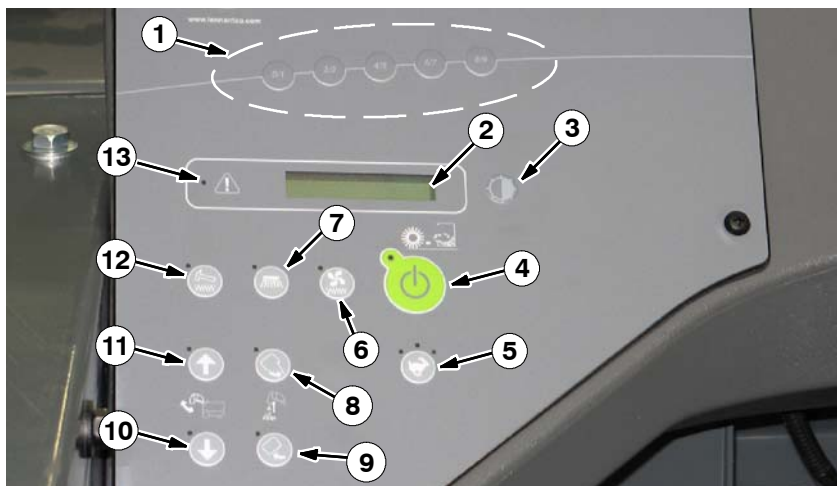
CONTROLS AND INSTRUMENTS



(All models)

- |  |   |
|--|---|
| <ul style="list-style-type: none"> <li>1. Steering wheel</li> <li>2. Dash Fault Indicator lights</li> <li>3. Wand switch (option)</li> <li>4. Side brush light switch (option)</li> <li>5. Operating / hazard light switch</li> <li>6. Ignition switch</li> <li>7. Horn button</li> <li>8. Directional pedal</li> <li>9. Brake pedal</li> <li>10. Parking brake pedal</li> </ul> | <ul style="list-style-type: none"> <li>11. Steering column tilt pedal</li> <li>12. Main brush adjustment knob (S30 only)</li> <li>13. Side brush lever</li> <li>14. Side brush adjustment knob</li> <li>15. Main brush lever</li> <li>16. Hopper door switch</li> <li>17. Hopper raise / lower switch</li> <li>18. Engine speed switch</li> <li>19. Vacuum fan / filter shaker switch</li> <li>20. Indicator panel</li> </ul> |
|--|---|






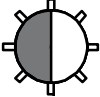























TOUCH PANEL (S30 XP and X4)



- |  |  |
|--|--|
| <ul style="list-style-type: none"> <li>1. Supervisor control buttons</li> <li>2. Hour meter / fuel indicator / fault code indicator</li> <li>3. Contrast control button</li> <li>4. 1-STEP sweep button</li> <li>5. Engine speed button</li> <li>6. Vacuum fan button</li> </ul> | <ul style="list-style-type: none"> <li>7. Side brush button</li> <li>8. Hopper door open button</li> <li>9. Hopper door close button</li> <li>10. Hopper lower button</li> <li>11. Hopper raise button</li> <li>12. Filter shaker button</li> <li>13. Fault indicator light</li> </ul> |
|--|--|

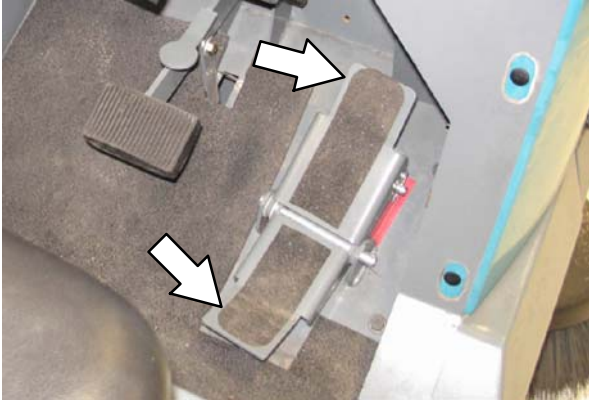
## SYMBOL DEFINITIONS

These symbols are used on the machine to identify controls, displays, and features. See also *Display Module Fault Indicators (S30)* and *Dash Fault Indicators*.

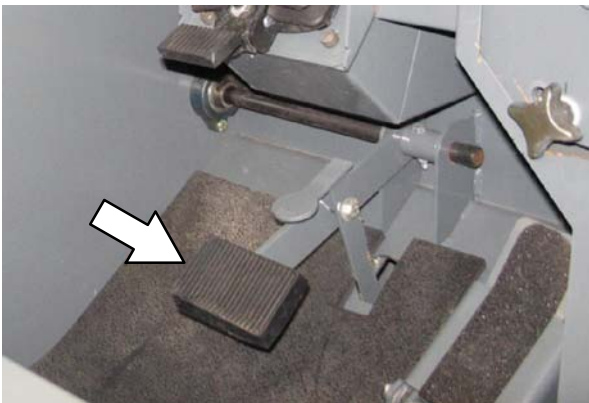
	Sweep (S30)		Jack point
	Vacuum fan (S30)		Fault indicator (S30 XP and X4)
	Filter Shaker (S30)		Contrast Control (S30 XP and X4)
	Engine Idle Speed (S30)		1-STEP Sweep (S30 XP and X4)
	Engine High speed (S30)		Engine speed (S30 XP and X4)
	Empty Hopper (S30)		Vacuum fan (S30 XP and X4)
	Hopper Door Automatic (S30)		Side brush (S30 XP and X4)
	Hopper Door Manual Open (S30)		Filter shaker (S30 XP and X4)
	Hopper Lower (S30)		Hopper Up / Down (S30 XP and X4)
	Hopper Raise (S30)		Hopper raise (S30 XP and X4)
	Wand		Hopper lower (S30 XP and X4)
	Operating lights		Open/Close Hopper Door (S30 XP, X4)
	Hazard light		Hopper door open (S30 XP and X4)
	Horn		Hopper door close (S30 XP and X4)
	Diesel fuel only		

**OPERATION OF CONTROLS****DIRECTIONAL PEDAL**

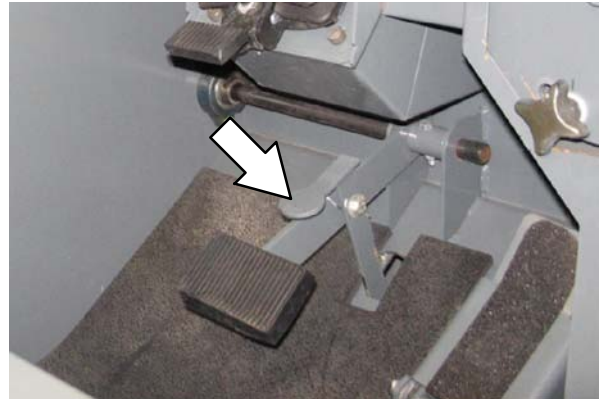
Press the top of the *Directional pedal* to move forward and the bottom of the pedal to move backward. The pedal returns to the neutral position when it is released.

**BRAKE PEDAL**

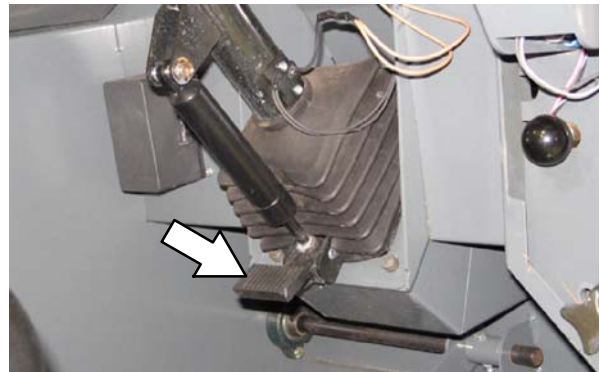
Press the *Brake pedal* to stop the machine.

**PARKING BRAKE PEDAL**

Press the *Brake pedal* down as far as possible and use toe to lock the *Parking brake pedal* into place. Press the *Brake pedal* to release the parking brake. The *Parking brake pedal* will return to the unlocked position.

**STEERING COLUMN TILT PEDAL**

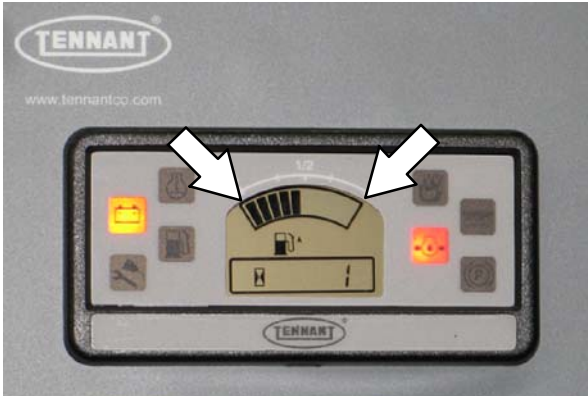
1. Step on the *Steering column tilt pedal* and adjust the steering column to the desired position.
2. Release the *Steering column tilt pedal* to lock in place.



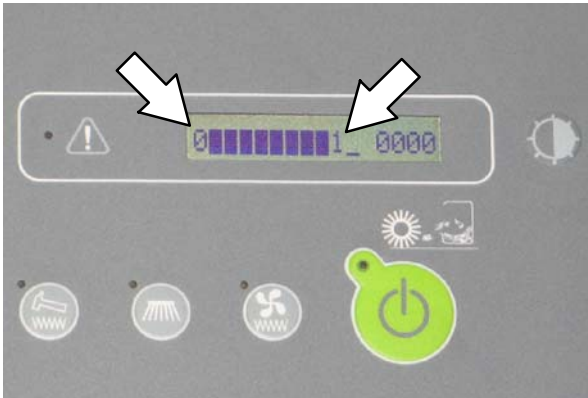
## OPERATION

### FUEL GAUGE

The *Fuel indicator* displays the amount of fuel left in the tank. The fuel level fault indicator will illuminate when the fuel tank is near empty. Refer to *DISPLAY MODULE FAULT INDICATOR(S)*.



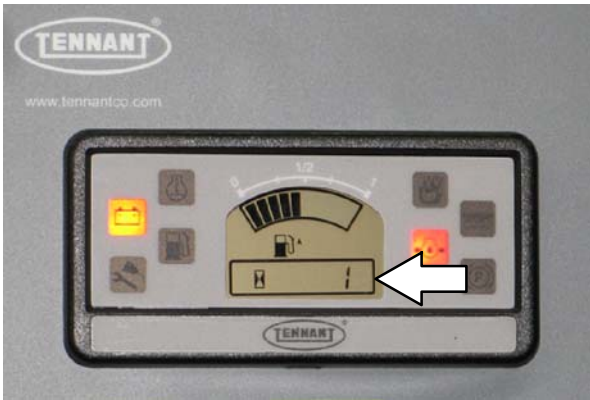
**S30**



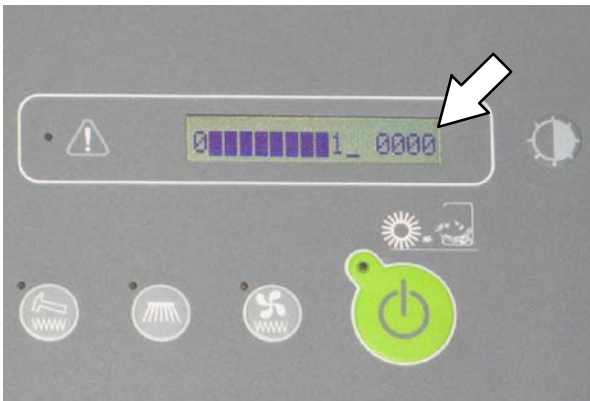
**S30 XP and X4**

**HOUR METER**

The *Hour meter* records the hours the machine was operated. Use this information to determine machine service intervals.



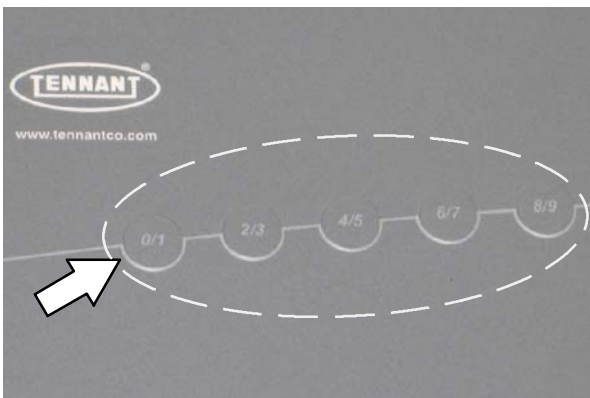
**S30**



**S30 XP and X4**

**SUPERVISOR CONTROL BUTTONS (S30 XP and X4)**

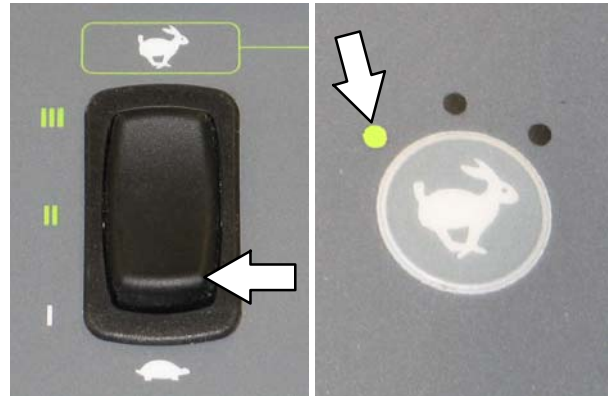
The *Supervisor Control buttons* are for accessing the configuration and diagnostic modes. Only properly trained service personnel and TENNANT representatives should access these modes.



**ENGINE SPEED CONTROLS**

Idle Speed: This speed is for starting the machine.

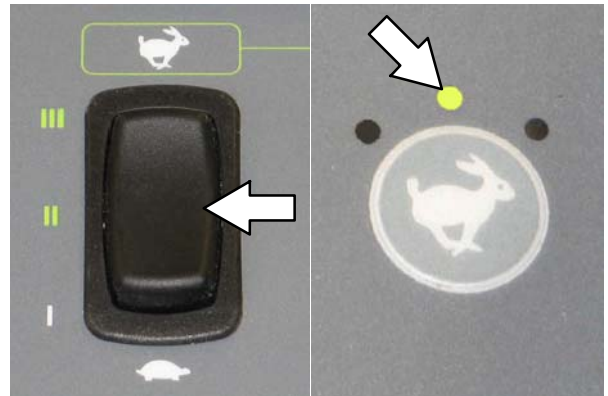
*NOTE: S30 XP and X4 machines automatically start in idle speed.*



**S30**

**S30 XP and X4**

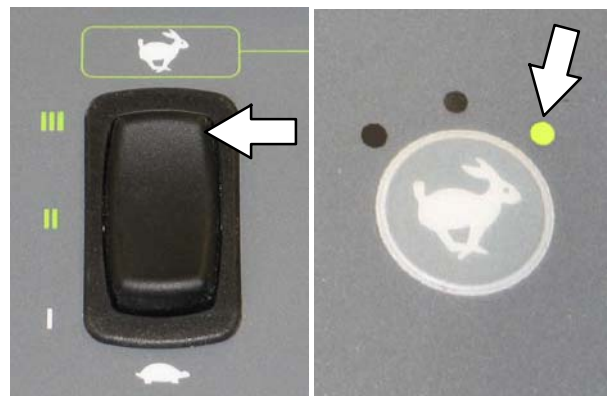
Medium (Fast 1) Speed: This speed is for general sweeping.



**S30**

**S30 XP and X4**

High (Fast 2) Speed: This speed is for sweeping light litter or moving quickly between areas.



**S30**

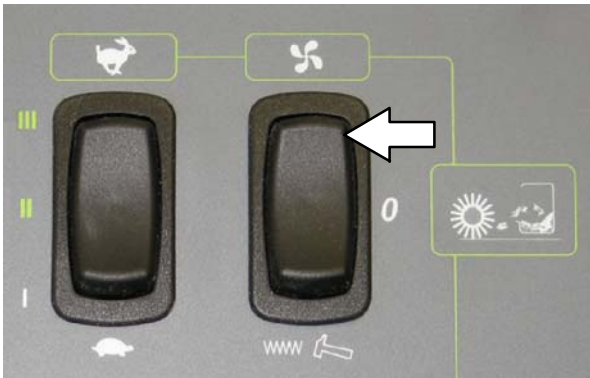
**S30 XP and X4**



## OPERATION

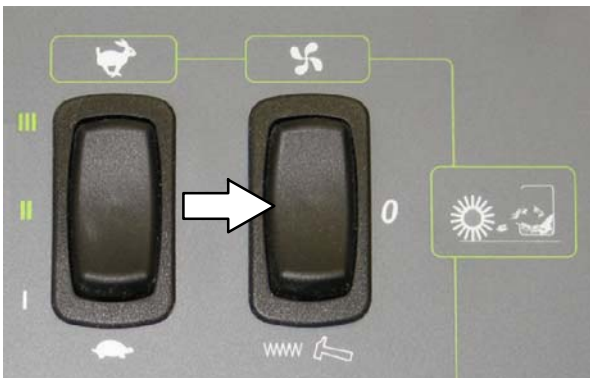
### VACUUM FAN CONTROLS (S30)

The vacuum fan automatically comes on when the main brush is lowered with the *Vacuum fan switch* in the automatic/on position.



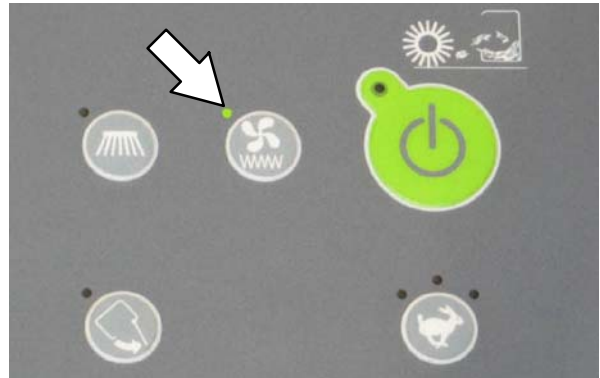
**NOTE:** Turn off the vacuum fan when sweeping over large wet areas or standing water. This prevents the dust filter from getting wet while sweeping.

Press the *Vacuum fan switch* to the middle position to shut off the vacuum fan.



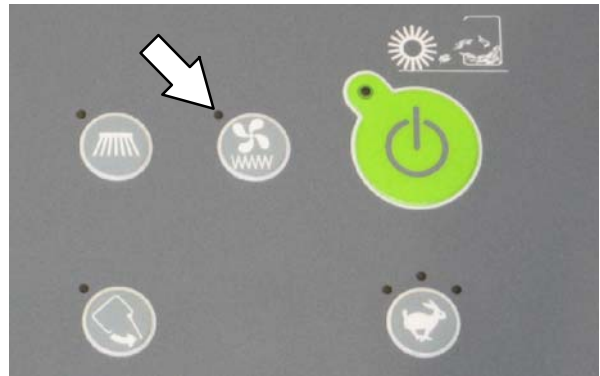
### VACUUM FAN CONTROLS (S30 XP and X4)

The vacuum fan automatically comes on when the *1-STEP Sweep button* is activated. The light next to the *Vacuum fan button* will come on.



**NOTE:** Turn off the vacuum fan when sweeping over large wet areas or standing water. This prevents the dust filter from getting wet while sweeping.

Press the *Vacuum fan button* to shut off the vacuum fan. The light next to the button will go out.



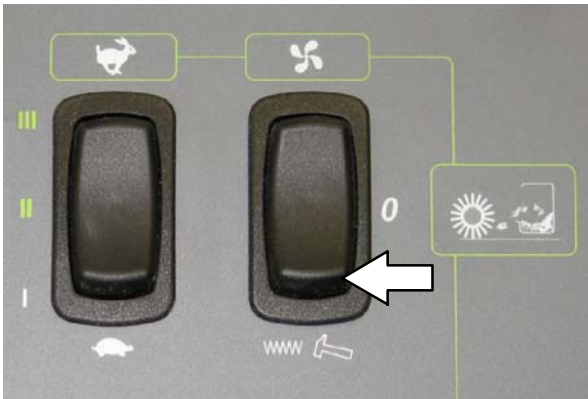
### CONTRAST CONTROL BUTTON (S30 XP and X4)

Press and hold the *Contrast control button* to darken/lighten the LCD display.



**FILTER SHAKER CONTROL (S30)**

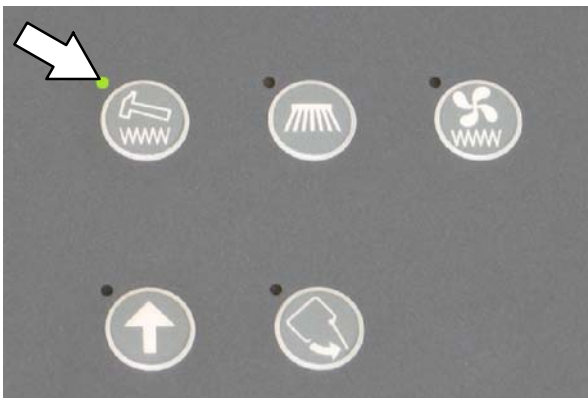
Press the *Filter shaker switch*. The filter shaker will operate for 30 seconds.



**FILTER SHAKER CONTROL (S30 XP and X4)**

The filter shaker automatically activates for about 30 seconds when the *1-STEP Sweep button* is turned off.

Press the filter shaker switch to manually start the 30 second shaker cycle or to stop the shaker cycle.

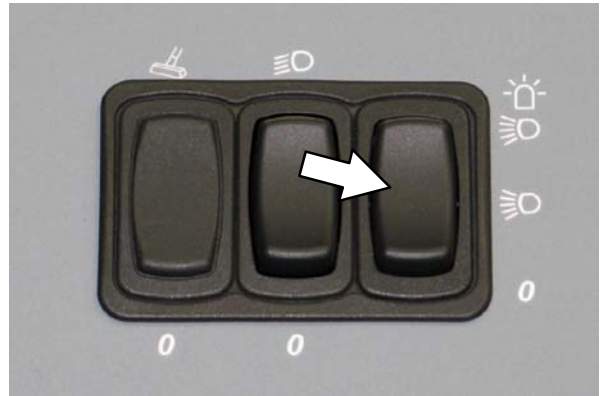


**OPERATING / HAZARD LIGHT SWITCH**

Operating and Hazard Lights On: Press the top of the *Operating / hazard light switch*.

Operating Lights On: Press the *Operating / hazard light switch* to the middle position.

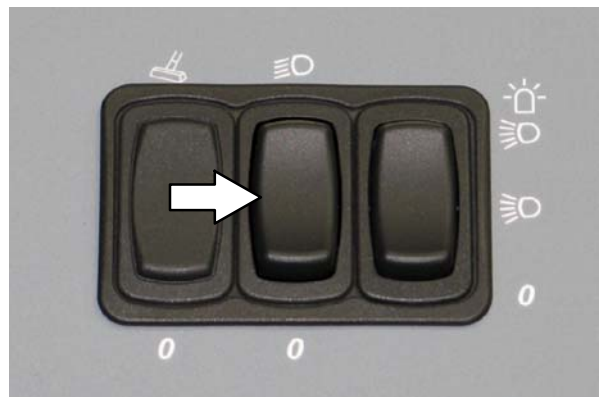
All Lights Off: Press the bottom of the *Operating / hazard light switch*.



**SIDE BRUSH LIGHT SWITCH (OPTION)**

Side Brush Lights On: Press the top of the *Side brush light switch* to turn the side brush light on.

Side Brush Lights Off: Press the bottom of the *Side brush light switch* to turn the side brush light off.



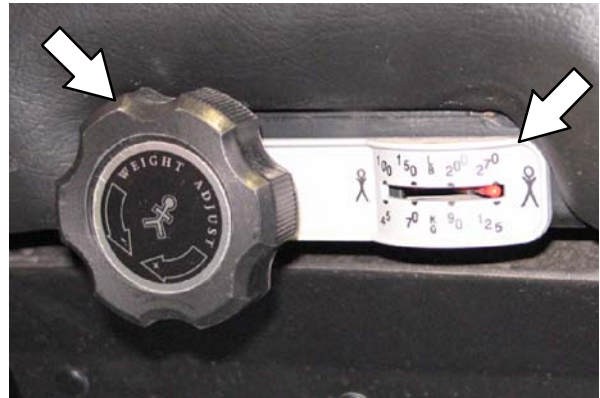
## OPERATION

### OPERATOR SEAT

The front-to-back adjustment lever adjusts the seat position.



The weight adjustment knob controls the firmness of the operator seat. Use the gauge next to the weight adjustment knob to help determine seat firmness.



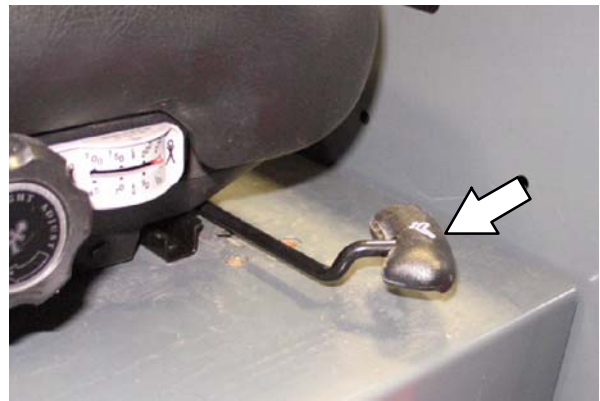
### DELUXE SUSPENSION SEAT

The operator seat has three adjustments: backrest angle, operator weight, and front to back.

The backrest adjustment knob adjusts the angle of the backrest.



The front-to-back adjustment lever adjusts the seat position.



### SEAT BELTS

**FOR SAFETY:** Before starting machine, adjust seat and fasten seat belt (if equipped).





---

**BRUSH INFORMATION**


---

For best results, use the correct brush type for the cleaning application.

*NOTE: The amount and type of soilage play an important role in determining the type of brushes to use. Contact a Tennant representative for specific recommendations.*

**Polypropylene Sand Wedge Main Brush** – Recommended for heavy accumulation of sand and other fine particles.

**Polypropylene Window Main Brush** – Recommended for light litter, especially on smooth floors.

**Polypropylene 8-double row Main Brush** – Recommended for general sweeping applications.

**Polypropylene and Wire 8-double row Main Brush** – Recommended for general sweeping and slightly impacted debris.

**Nylon 8-double row Main Brush** – Recommended for general sweeping, especially on rough or irregular surfaces. Nylon has a long wear life.

**Nylon Full Fill Main Brush** – Recommended for accumulation of sand and other fine particles. Nylon has a long wear life.

**Nylon Patrol Main Brush** – Recommended for bulky debris swept at faster speeds.

**Wire 8-double row Main Brush** – Recommended for general sweeping and slightly impacted debris.

**Natural Fiber and Full Fill Main Brush** – Recommended for accumulation of sand and other very fine particles.

**Polypropylene Side Brush** – Recommended for general sweeping of light to medium debris.

**Nylon Side Brush** – Recommended for general sweeping of rough or irregular surfaces. Nylon has a long wear life.

**Flat Wire Side Brush** – Recommended for outdoor curb-side sweeping where dirt is heavy or compacted.

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**HOW THE MACHINE WORKS**


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The steering wheel controls the direction of machine travel. The directional pedal controls the speed and forward/reverse direction. The brake pedal slows and stops the machine.

The side brush sweeps debris into the path of the main brush. The main brush sweeps debris from the floor into the hopper. The vacuum system pulls dust and air through the hopper and the dust control system.

When sweeping is finished, shake the dust filter and empty the hopper.

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**PRE-OPERATION CHECKLIST**


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- Check the fuel level.
- Check the condition of the main brushes. Remove string, banding, plastic wrap, or other debris wrapped around the brushes.
- Check the main brush compartment right skirts and seals for damage and wear.
- Right Side Brush: Check the condition of the brush. Remove string, banding, plastic wrap, or other debris wrapped around the brush.
- Check the condition of the debris deflection skirts.
- Check the hydraulic fluid level.
- Check the main brush compartment left skirts and seals for damage and wear.
- Check the engine coolant level.
- Check the engine oil level.
- Check the radiator and hydraulic cooler fins for debris.
- Check the headlights, taillights, and safety lights.
- Check the brakes and steering for proper operation.
- Check the service records to determine maintenance requirements.

# OPERATION

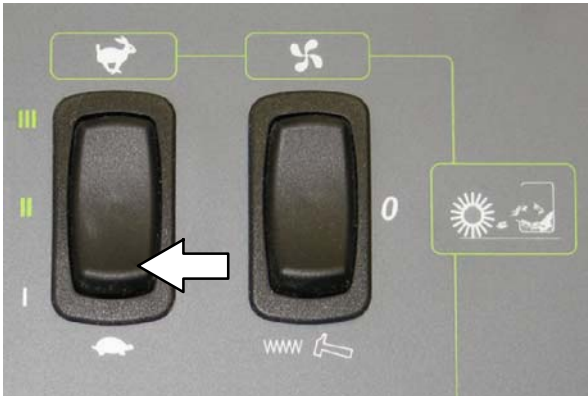
## STARTING THE MACHINE

1. Sit in the operator seat and press the brake pedal or set the parking brake.

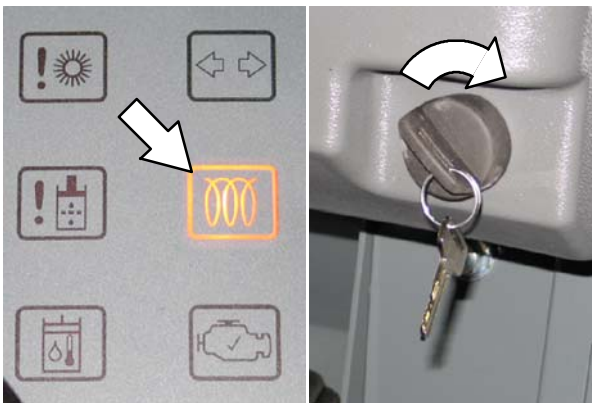
**FOR SAFETY: When starting machine, keep foot on brake and directional pedal in neutral.**

2. **S30:** Place the *Engine speed switch* into the idle position.

**S30 XP and X4:** The engine will automatically start in the idle speed.



3. Turn the key clockwise until the *glow plug light* comes on, but not far enough to start the engine. Hold the key in this position for 15 to 30 seconds, depending on temperature. Colder temperatures require longer time.



4. Turn the key further clockwise to start the engine.

**NOTE:** Do not operate the starter motor for more than 10 seconds at a time or after the engine has started. Allow the starter to cool 15-20 seconds between starting attempts or damage to the starter motor may occur.

5. Allow the engine and hydraulic system to warm up for three to five minutes.



**WARNING: Machine emits toxic gases. Severe respiratory damage or asphyxiation can result. Provide adequate ventilation. Consult with your regulatory authorities for exposure limits. Keep engine properly tuned.**

## TURNING OFF THE MACHINE

1. Stop the machine and turn off all sweeping functions.
2. Turn the ignition switch key counter clockwise to turn off the machine. Remain in the operator seat until the engine is off.

**FOR SAFETY: Before leaving or servicing machine, stop on level surface, set parking brake, and turn off machine.**

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**WHILE OPERATING THE MACHINE**

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Pick up oversized debris before sweeping. Pick up wire, string, twine, large pieces of wood, or any other debris that could become wrapped around or tangled in the brushes.

Drive as straight a path as possible. Avoid bumping into posts or scraping the sides of the machine. Overlap the sweep paths by several centimeters (a few inches).

Avoid turning the steering wheel too sharply when the machine is in motion. The machine is very responsive to the movement of the steering wheel. Avoid sudden turns, except in emergencies.

Adjust the machine speed and brush pressure. Use the lowest brush pressure for best performance.

Keep the machine moving to prevent damaging floor finishes.

If poor cleaning performance is observed, stop cleaning and refer to *MACHINE TROUBLESHOOTING* in this manual.

Perform the Daily Maintenance Procedures after each use (see *MACHINE MAINTENANCE* in this manual).

Drive the machine slowly on inclines. Use the brake pedal to control machine speed on descending inclines. Allow more braking distance when traveling at faster speeds. Sweep with the machine up inclines rather than down inclines.

**FOR SAFETY: When using machine, go slow on inclines and slippery surfaces.**

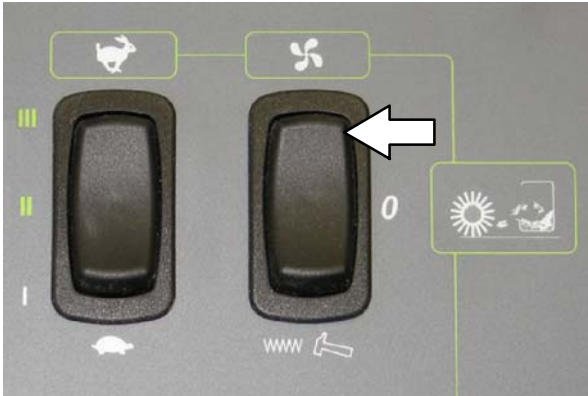
Maximum rated climb and descent for a full hopper is 10°/18%. Maximum rated climb and descent for an empty hopper is 14°/25%.

## OPERATION

### SWEEPING (S30)

**FOR SAFETY: Do not operate machine, unless operator manual is read and understood.**

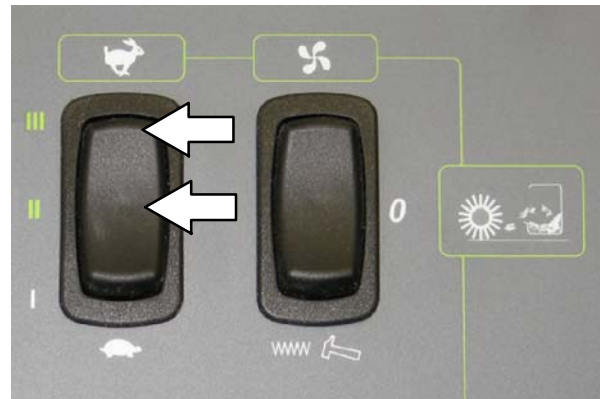
1. Start the machine.
2. Ensure the hopper is completely lowered.
3. Ensure the *vacuum fan switch* is in the automatic/on position.



4. Ensure the *hopper door switch* is in the upper automatic position.

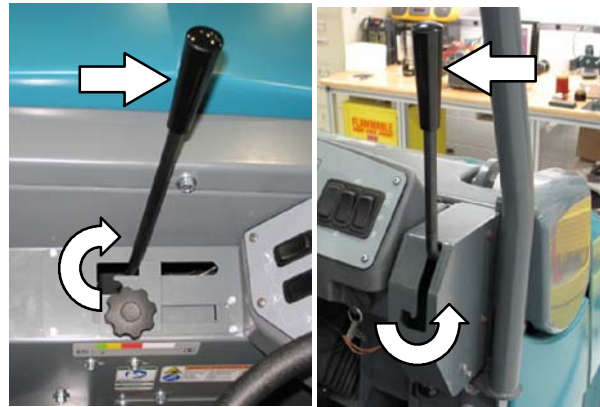


5. Select an engine speed. Use medium speed for general sweeping and high speed for sweeping light litter.



6. Lower the brushes.

**NOTE: The brushes will rotate, the hopper door will open, and the vacuum fan will come on.**

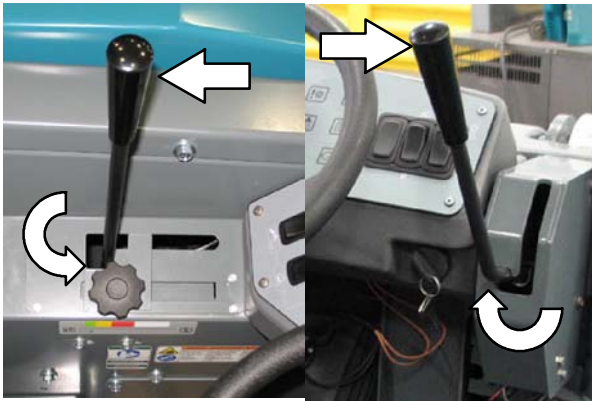


7. Release the *parking brake*, then press the *Directional pedal* to begin sweeping.

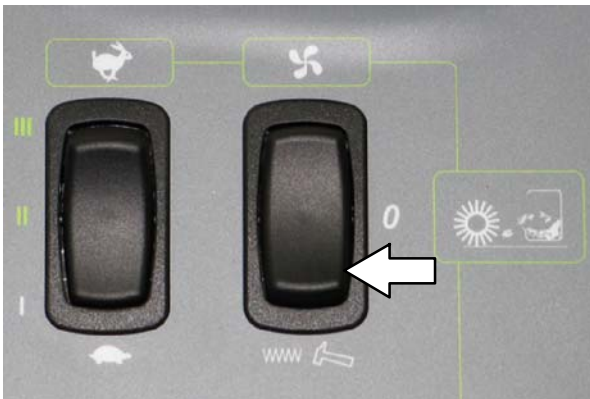
**FOR SAFETY: When using machine, go slow on inclines and slippery surfaces.**

**NOTE: Turn off the vacuum fan when sweeping over large wet areas or standing water. This prevents the dust filter from getting wet while sweeping.**

8. To stop sweeping, press the *Brake pedal* to stop the machine.
9. Raise the brushes.



10. Press the *filter shaker switch* to activate the hopper filter shaker. It will operate for about 30 seconds.



11. Empty the debris hopper at the end of each shift or as needed. See *EMPTYING THE HOPPER* section of this manual.

## SWEEPING (S30 XP and X4)

**FOR SAFETY: Do not operate machine, unless operator manual is read and understood.**

1. Start the machine.

*NOTE: Make sure the sweep modes / settings are set before sweeping.*

2. Press the *1-STEP Sweep button*. All the preset sweeping functions will turn on. The light on the button will come on.

*NOTE: The engine idle speed will increase, the brushes will rotate, the hopper door will open, and the vacuum fan will come on. Adjust the engine idle speed as needed.*



3. Release the parking brake, then press the *Directional pedal* to begin sweeping.

**FOR SAFETY: When using machine, go slow on inclines and slippery surfaces.**

*NOTE: Turn off the vacuum fan when sweeping over large wet areas or standing water. This prevents the hopper dust filter from getting wet while sweeping.*

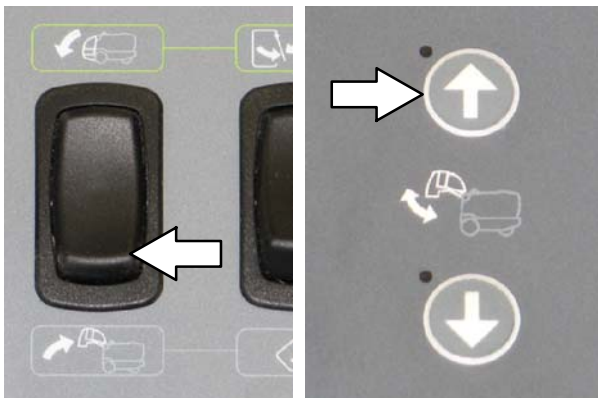
4. To stop sweeping, press the *Brake pedal* to stop the machine.
5. Press the *1-STEP Sweep button*. The light on the button will turn off. All the preset sweeping functions will turn off and the automatic filter shaker will operate for about 30 seconds.
6. Empty the debris hopper at the end of each shift or as needed. See *EMPTYING THE HOPPER* section of this manual.



## OPERATION

### EMPTYING THE HOPPER

1. Slowly drive the machine to the debris site or debris container.
2. Stop the sweeping functions.
3. Press and hold the *Hopper raise switch or button* to raise the hopper.



S30

S30 XP and X4

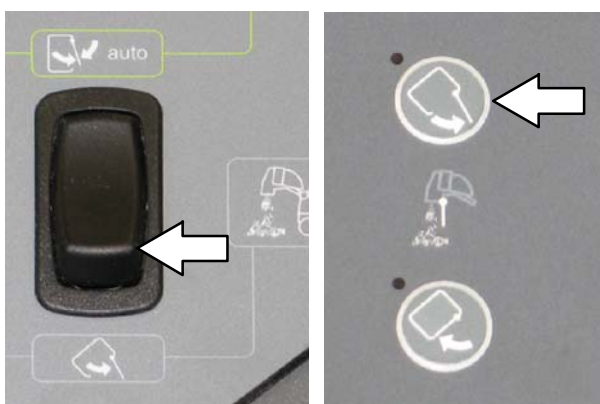
**FOR SAFETY: When using machine, make sure adequate clearance is available before raising hopper.**

*NOTE: Be aware the minimum ceiling height needed to raise the hopper is 2500 mm (98 in).*

4. Slowly drive the machine up to the debris container.
5. Lower the hopper into the debris container to control dust.

*NOTE: To prevent damaging the machine, DO NOT hit the debris container with the machine.*

6. Open the hopper door to empty the hopper.

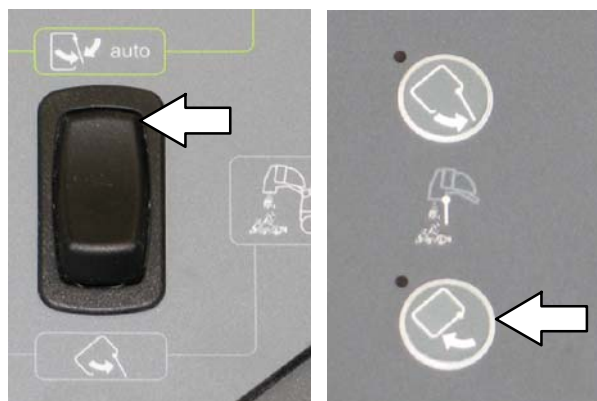


S30

S30 XP and X4

7. **S30:** Place the *Hopper door switch* in the automatic position to close the hopper door.

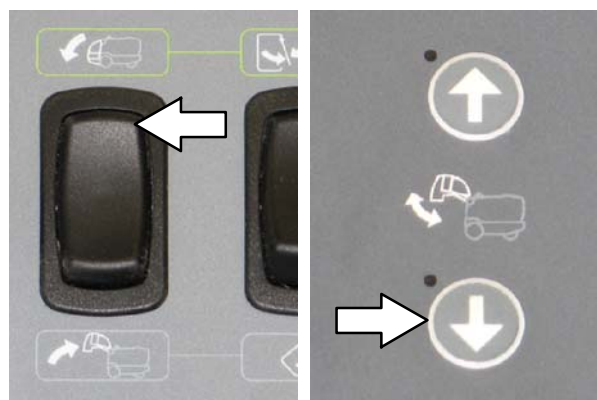
**S30 XP and X4:** Press the *Hopper door close button* to close the hopper door.



S30

S30 XP and X4

8. Raise the hopper enough to clear the top of the debris container.
9. Slowly back the machine away from the debris site or debris container.
10. Press and hold the *Hopper lower switch or button* to completely lower the hopper.



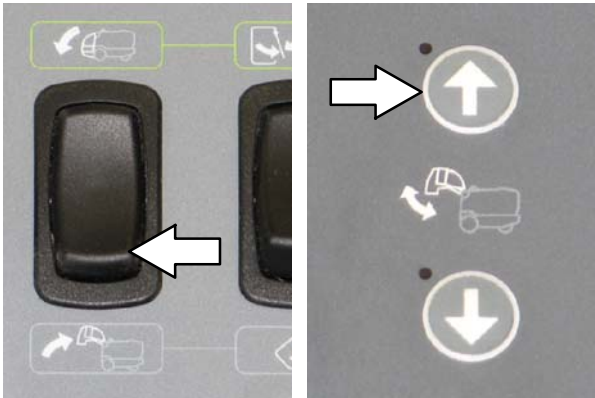
S30

S30 XP and X4

**ENGAGING THE HOPPER SUPPORT BAR**

The hopper support bar prevents the raised hopper from falling. Always engage the hopper support bar whenever leaving the hopper in the raised position.

1. Set the parking brake.
2. Start the machine.
3. Completely raise the hopper.



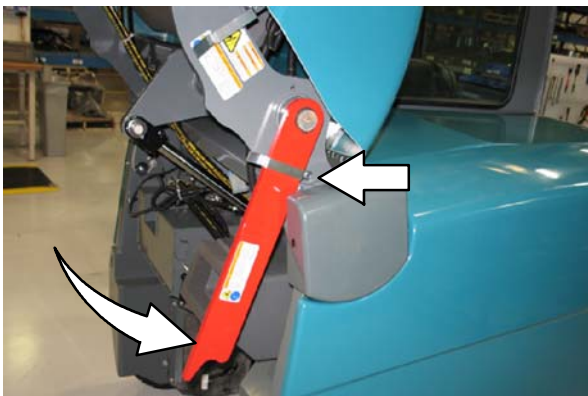
S30

S30 XP and X4

**WARNING:** Lift arm pinch point. Stay clear of hopper lift arms.

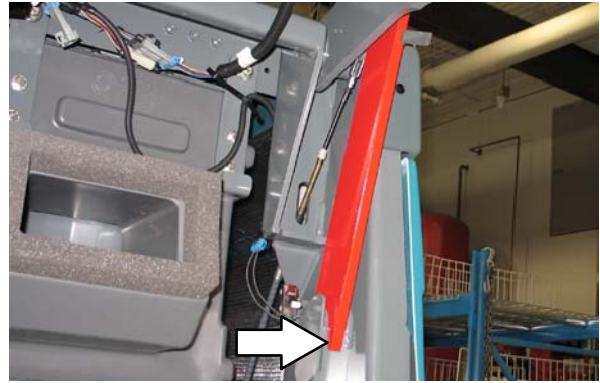
**FOR SAFETY:** When using machine, make sure adequate clearance is available before raising hopper.

4. Rotate the support bar down into the hopper support clip.



**WARNING:** Raised hopper may fall. Engage hopper support bar.

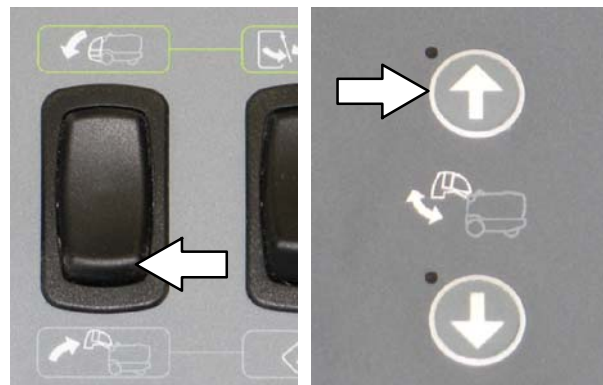
5. Lower the hopper to lower the hopper support bar onto the bracket.



6. Turn off the machine.

**DISENGAGING THE HOPPER SUPPORT BAR**

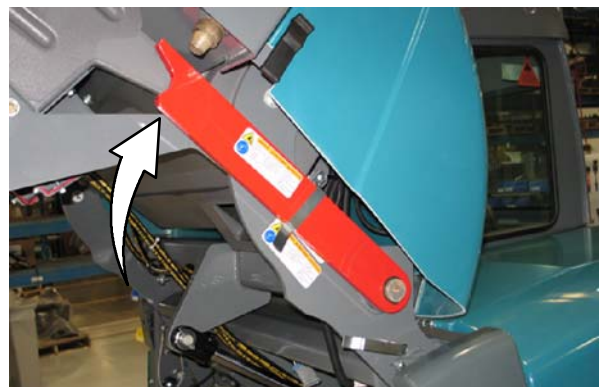
1. Start the machine.
2. Completely raise the hopper.



S30

S30 XP and X4

3. Set the parking brake.
4. Rotate the hopper support bar up into the storage clip.



5. Completely lower the hopper.

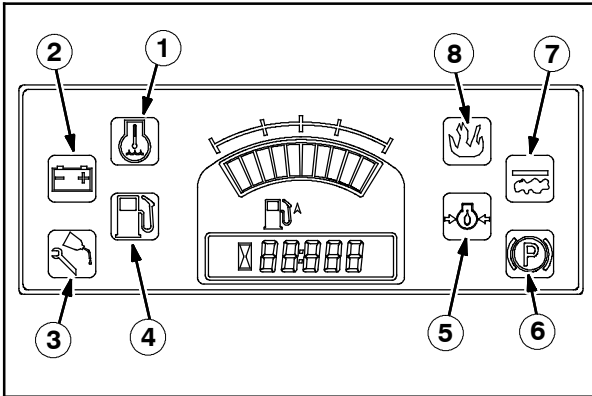
**WARNING:** Lift arm pinch point. Stay clear of hopper lift arms.

# OPERATION

## DISPLAY MODULE FAULT INDICATORS (S30)

The *fault indicator lights* illuminate when a fault has occurred. Stop the machine immediately and correct the problem if these indicators come on.

Refer to the table below to determine the cause and remedy for the fault.



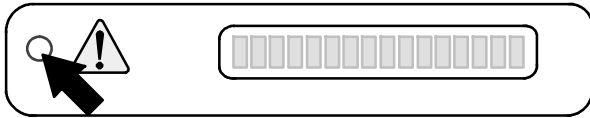
Fault Indicators	Cause(s)	Remedy
1: Water Temperature (Red)	Engine coolant is too hot to safely operate the machine	Shut off machine. Contact TENNANT service representative.
2: Charging System (Amber)	Alternator is not charging the battery.	Shut off machine. Contact TENNANT service representative.
3: Maintenance (Amber)	Not Used	Not Used
4: Fuel Level (Red)	Fuel level is low.	Refuel / Change fuel tank
5: Engine Oil Pressure (Red)	Oil pressure is below the normal operating pressure	Shut off machine. Contact TENNANT service representative.
6: Parking Brake (Amber)	Not Used	Not Used
7: Clogged Dust Filter (Amber)	Dust filter is clogged	Activate the filter shaker.
8: Hopper Fire (Red)	Fire in the hopper	Shut off machine. Extinguish fire. If necessary, call emergency personnel.



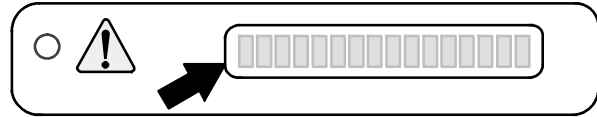
**FAULT INDICATOR(S) (S30 XP and X4)**

This machine is equipped with two visual indicators, a red indicator light and an LCD (liquid crystal display).

The red indicator light will blink continuously indicating that a fault has occurred.



The LCD will display a fault code. If there is more than one fault, each fault will alternately display.



All faults are also accompanied by an audible alarm to alert the operator a fault has occurred.

Refer to the table below to determine the cause and remedy for the fault.

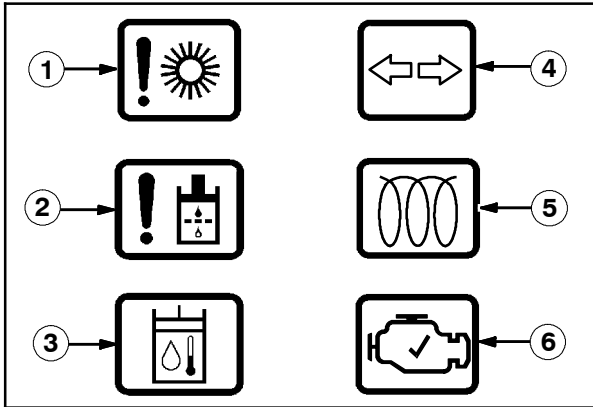
<b>Fault Code (Displayed in LCD)</b>	<b>Cause(s)</b>	<b>Result</b>	<b>Remedy</b>
F3: CLOGGED HYD FILTER	Hydraulic filter is clogged	-	Shut off machine. Contact TENNANT service representative.
F4: SHAKER FILTER	Hopper dust filter is clogged	-	Activate filter shaker to unclog hopper dust filter.
F5: HOPPER FIRE	Fire in the hopper	Terminates sweeping functions and closes hopper door	Shut off machine. Extinguish fire. If necessary, call emergency personnel.
F6: ALTERNATOR	Alternator not charging		Contact TENNANT service representative.
F7: LOW OIL PRESS	Engine oil pressure is low	Shuts down engine	Contact TENNANT service representative.
F8: HIGH ENG TEMP	Engine temperature is high	Shuts down engine	Shut off machine. Contact TENNANT service representative.
F9: HIGH HYD TEMP	Hydraulic fluid temperature is high	Cancels 1-Step sweep functions	Shut off machine. Contact TENNANT service representative.
F10: LOW FUEL	Low fuel	-	Fill fuel tank.
F18: HOPPER UP	Hopper is up	Terminates sweeping functions-	Lower hopper completely.
F20: UP KEY ERR	Hopper up button failure	Prevents all panel operations	Shut off machine. Contact TENNANT service representative.
F21: DN KEY ERR	Hopper down button failure	Prevents all panel operations	Shut off machine. Contact TENNANT service representative.
F22: OPN KEY ERR	Hopper door open button failure	Prevents all panel operations	Shut off machine. Contact TENNANT service representative.
F23: CL KEY ERR	Hopper door close button failure	Prevents all panel operations	Shut off machine. Contact TENNANT service representative.
F24: SEAT SWITCH (Option)	Operator not in the seat while engine is running and parking brake not engaged	Engine will shut off	Engage parking brake before leaving the machine.

# OPERATION

## DASH FAULT INDICATORS

The *dash fault indicators* illuminate when a fault has occurred. Stop the machine immediately and correct the problem if these indicators come on.

Refer to the table below to determine the cause and remedy for the fault.



Warning Light	Cause(s)	Remedy
1: Stalled Brush	One of the brushes is stalled	Shut off machine and remove obstructions preventing brushes from operating
2: Hydraulic Filter	Hydraulic filter is clogged	Shut off machine. Contact TENNANT service representative
3: Hydraulic Temperature	Hydraulic system is too hot to safely operate the machine	Shut off machine. Contact TENNANT service representative
4: Hazard Flasher	Not Used	Not Used
5: Glow Plug - Preheat	This comes on when the ignition switch is turned to the preheat position	This goes out immediately after engine is started
6: Check Engine	Engine control system detects a fault during machine operation	Shut off machine. Contact TENNANT service representative

**OPTIONS**

**WAND (OPTION)**

The *vacuum wand* allows the operator to pick-up debris that is out of reach of the machine's sweeping path. The *blower wand* allows the operator to blow debris out from areas that are out of reach of the machine's sweeping path.

**! WARNING: Accident may occur. Do not operate vacuum or blower wand while driving.**

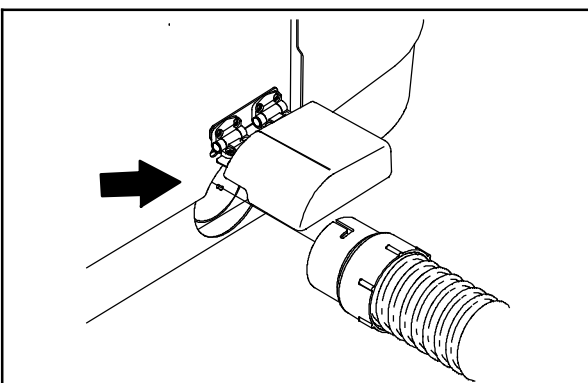
1. Raise the brushes.
2. Stop the machine and turn off the engine.

**FOR SAFETY: Before leaving or servicing machine, stop on level surface, set parking brake, and turn off machine.**

3. Connect the hose assembly to the wand.
4. Attach the *vacuum wand* hose to the machine under the vacuum wand door located on the front of the hopper. Make sure the hopper door is closed when operating the vacuum wand.



5. Attach the *blower wand* hose to the machine under the blower wand door located on the left side of the machine. Make sure the hopper door is open when operating the blower wand.

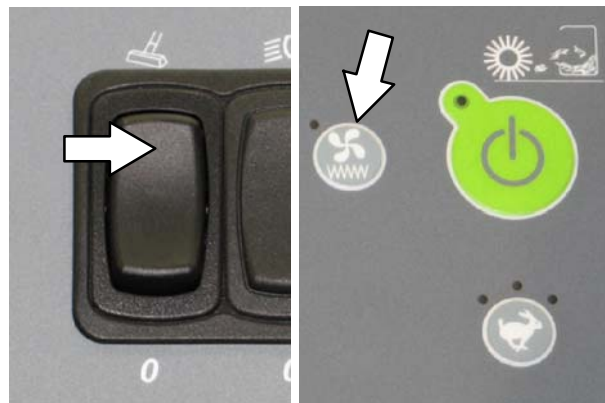


6. Start the machine.

**! WARNING: Machine emits toxic gases. Severe respiratory damage or asphyxiation can result. Provide adequate ventilation. Consult with your regulatory authorities for exposure limits. Keep engine properly tuned.**

7. **S30:** Press the *Wand switch* to start the vacuum fan. Then set the engine to high speed.

**S30 XP and X4:** Press the *Vacuum fan button* to start the vacuum fan. The engine will automatically set to the high speed.



**S30**

**S30 XP and X4**

8. Clean the area as needed.
9. **S30:** Press the *Wand switch* to shut off the vacuum fan. Then set the engine to idle speed.

**S30 XP and X4:** Press the *Vacuum fan button* to shut off the vacuum fan. Then set the engine to idle speed.

10. Shut the machine off.
11. Disconnect the wand from the machine and return it to the storage location.

## OPERATION

### HEATER / AIR CONDITIONER CONTROLS (OPTION)

Use the *Heater / Air conditioner switch* to turn on the heater or air conditioner.

Top position: Air conditioner

Middle position: Off

Bottom position: Heater



Use the *Temperature knob* to control the cab heater temperature. Use the *Fan knob* to control the air conditioner temperature.



Use the *Fan knob* to control the fan speed. This knob affects the heater and air conditioner.



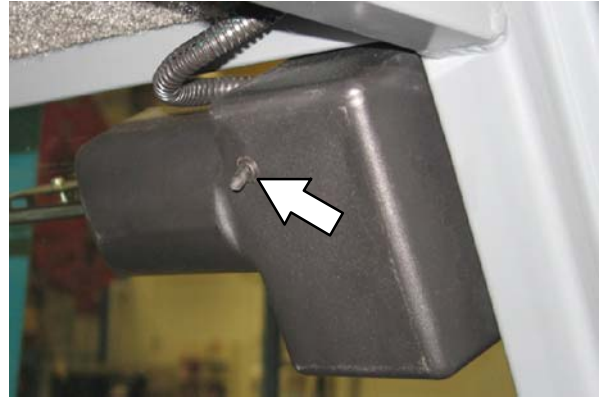
### WINDSHIELD WIPER SWITCH (OPTION)

Use the *Windshield wiper switch* to turn on and adjust the windshield wiper speed.

Top position: High

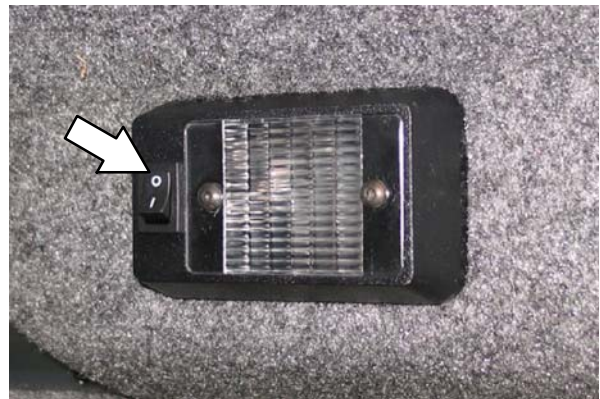
Middle position: Low

Bottom position: Off



### CAB LIGHT SWITCH (OPTION)

Press the *Cab light switch* to operate the cab light.



**TOWER BUMPERS (OPTION)**

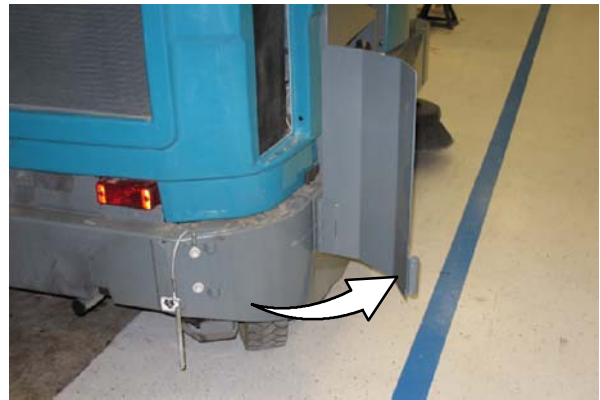
The tower bumpers help protect the rear engine cover from being damaged if the machine is backed into an obstruction. Open the tower bumpers before opening rear engine shroud.

To open the bumpers:

1. Pull the pin from the bracket and the bumper.



2. Open the bumper.



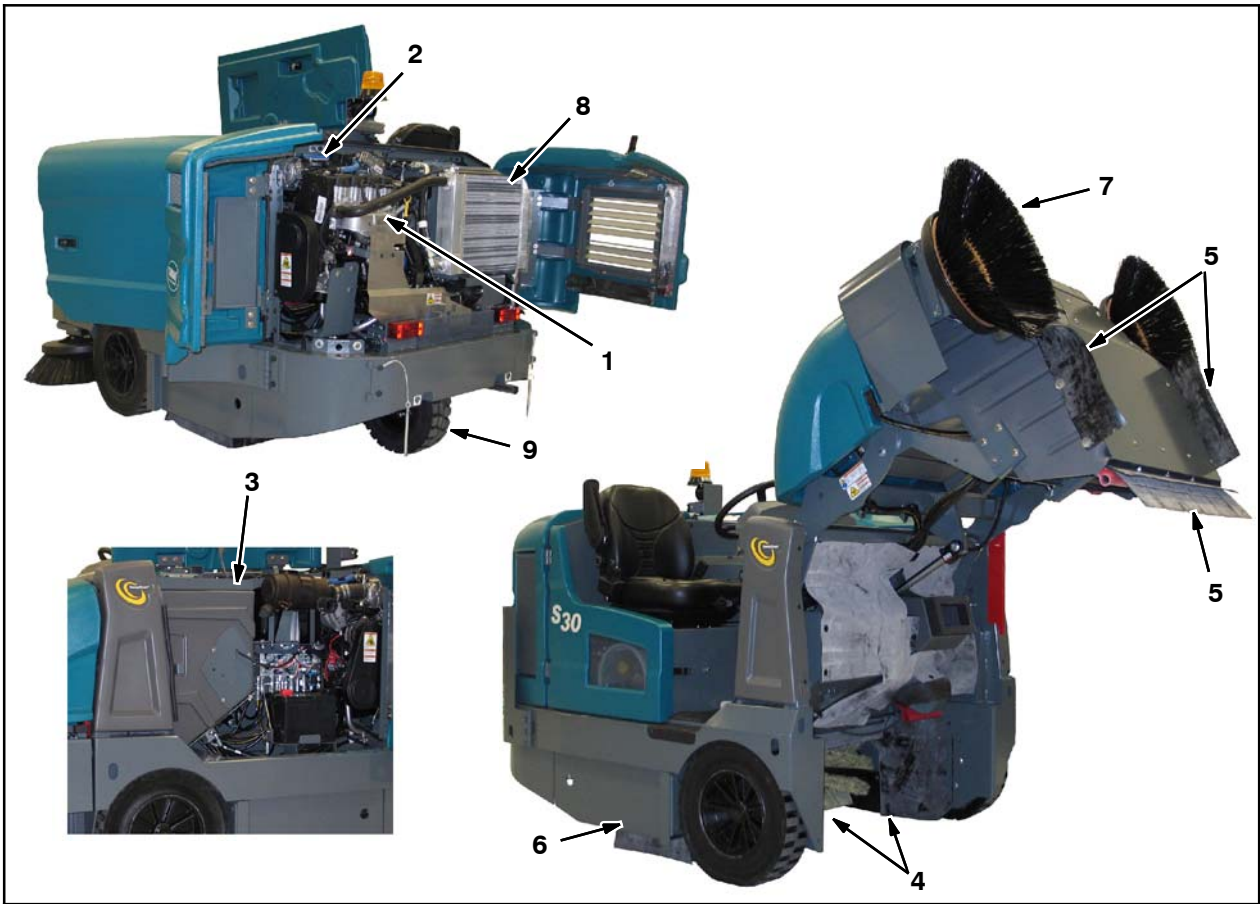
3. Close and secure the tower bumpers before operating the machine.

**MACHINE TROUBLESHOOTING**

Problem	Cause	Remedy
Excessive dusting	Brush skirts and dust seals worn, damaged, out of adjustment	Replace or adjust brush skirts or dust seals
	Dust filter clogged	Shake and/or replace dust filter
	Vacuum hose damaged	Replace vacuum hose
	Vacuum fan seal damaged	Replace vacuum fan seal
	Vacuum fan failure	Call Tennant service representative
Poor sweeping performance	Worn brush bristles	Replace brushes
	Brush pressure set too light	Increase brush pressure
	Main brush not properly adjusted	Adjust brush
	Debris caught in main brush drive mechanism	Remove debris from main brush drive mechanism
	Main and/or side brush drive failure	Call Tennant service representative
	Hopper is full	Empty hopper
	Hopper lip skirts worn or damaged	Replace lip skirts
	Improper brushes	Refer to <i>Brush Information</i> or call Tennant service representative
	Engine speed set wrong	Set engine speed correctly
Sweeping functions do not turn on	Hopper is up	Completely lower hopper
	Fire in the hopper	Shut off machine. Extinguish fire. If necessary, call emergency personnel
	S30 XP and X4: Hydraulic fluid too hot	Call Tennant service representative



**MAINTENANCE**



**MAINTENANCE CHART**

Interval	Key	Description	Procedure	Lubricant/Fluid	No. of Service Points
Daily	1	Engine	Check oil level	EO	1
			Check coolant level in reservoir	WG	1
			Check air filter indicator	-	1
Daily	2	Hydraulic fluid reservoir	Check fluid level	HYDO	1
	3	Dust filter	Shake to clean	-	1
	4	Main brush compartment skirts	Check for damage, wear, and adjustment	-	All
	5	Hopper skirts	Check for damage, wear, and adjustment	-	All
	6	Main brush	Check for damage and wear	-	1
	7	Side brush	Check for damage and wear	-	1
50 Hours	6	Main brush	Rotate end-for-end and check pattern	-	1
100 Hours	8	Hydraulic cooler	Clean core exterior	-	1
	9	Rear tire	Check pressure 790 ± 35 kPa (115 ± 5 psi)	-	1
	-	Seals	Check for damage or wear	-	All

**LUBRICANT/FLUID**

EO . . . . 10W-30, 10W-40, or 15W-40 Engine oil, API diesel classification CF or better.

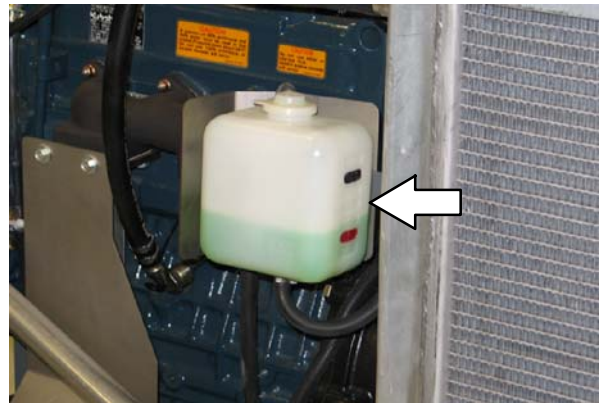
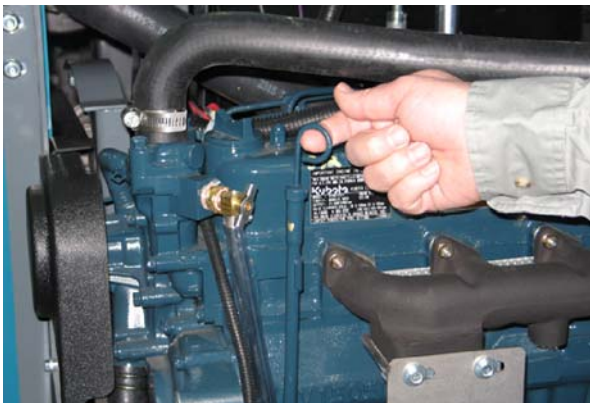
HYDO . **TennantTrue** premium hydraulic fluid or equivalent

WG . . . Water and ethylene glycol anti-freeze, -34° C (-30° F)

**ENGINE**

**ENGINE OIL**

Check the engine oil level daily.



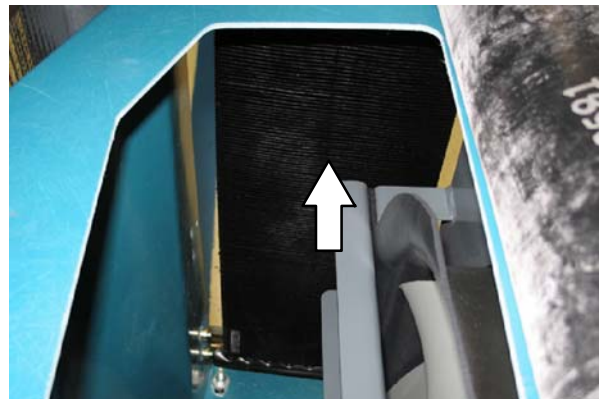
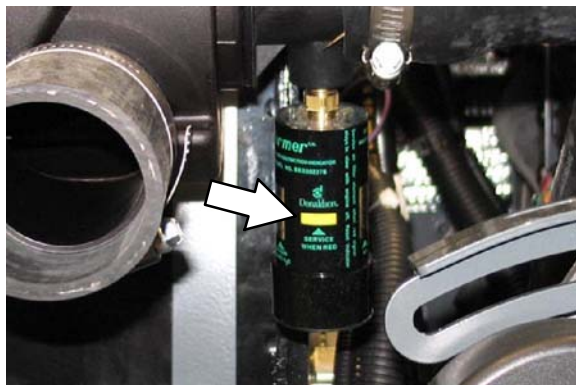
**FOR SAFETY: When servicing machine, do not remove cap from radiator when engine is hot. Allow engine to cool.**

Check the radiator core exterior and hydraulic cooler fins for debris after every 100 hours of operation. Blow or rinse (with low pressure air or water) all dust through the grille and radiator fins, in the opposite direction of the normal air flow. Be careful not to bend the cooling fins when cleaning. Clean thoroughly to prevent the fins from becoming encrusted with dust. To avoid cracking the radiator, allow the radiator and cooler fins to cool before cleaning.

**AIR FILTER INDICATOR**

Check the indicator daily. The indicator red line will move as the air filter element fills with dirt. Do not replace the air filter element until the red line reaches 5 kPa (20 in H<sub>2</sub>O) and the "SERVICE WHEN RED" window is filled with red. The engine must be running to get an accurate air indicator reading.

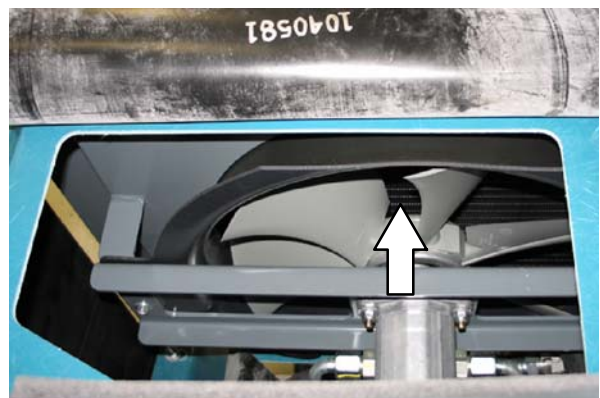
**FOR SAFETY: When servicing machine, avoid moving parts. Do not wear loose clothing or jewelry.**



**COOLING SYSTEM**

**FOR SAFETY: When servicing machine, avoid contact with hot engine coolant.**

Check the coolant level in the reservoir daily. The coolant level must be between the indicator marks when the engine is cold.



**FOR SAFETY: When servicing machine, wear eye and ear protection when using pressurized air or water.**

# MAINTENANCE

## HYDRAULICS

Check the hydraulic fluid level at operating temperature daily. The hopper must be down when checking hydraulic fluid level.



**ATTENTION! Do not overfill the hydraulic fluid reservoir or operate the machine with a low level of hydraulic fluid in the reservoir. Damage to the machine hydraulic system may result.**

If using a locally-available hydraulic fluid, be sure the specifications match Tennant hydraulic fluid specifications. Substitute fluids can cause premature failure of hydraulic components.

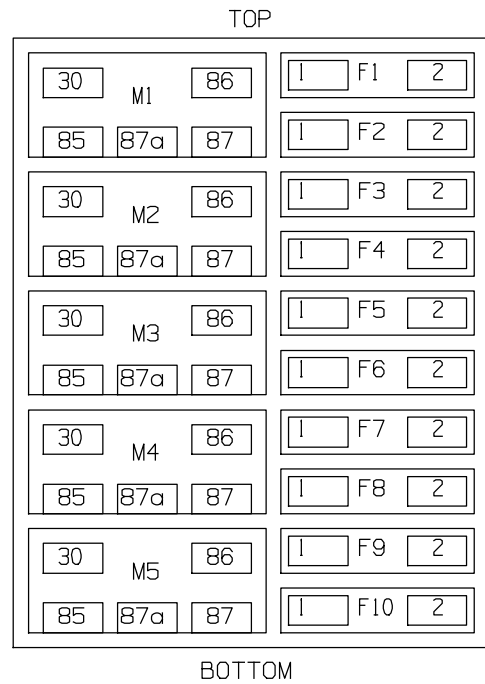
**ATTENTION! Hydraulic components depend on system hydraulic fluid for internal lubrication. Malfunctions, accelerated wear, and damage will result if dirt or other contaminants enter the hydraulic system.**

## FUSES

Remove the relay panel cover to access fuses and relays. Always replace a fuse with a fuse of the same amperage. Extra 15 Amp fuses are provided inside the relay panel drawer on the relay panel.



Refer to the diagram below for locations of the fuses on the relay panel.





Refer to the tables below for the *fuses* and circuits protected.

<b>S30</b>		
<b>Fuse</b>	<b>Rating</b>	<b>Circuit Protected</b>
FU1	15 A	Horn
FU2	15 A	Key Switch, Engine, Instrumentation
FU3	15 A	Turn Signals, 4-Way Flashers
FU4	15 A	Extra Fused, Switched B+
FU5	15 A	Main Brush Valves, Side Brush Valves
FU6	15 A	Hopper Valves
FU7	15 A	Lights, Backup Alarm
FU8	15 A	Extra Fused B+
FU9	15 A	Shaker, Vacuum Fan Valve
FU10	25 A	Starter Solenoid
FU11	60 A	Main Power Fuse, In Line, In Main Harness
FU12	60 A	Cab Power (Optional)
FU13	40 A	Diesel Glow Plugs (In Engine Harness)
FU14	60 A	Cab Power (Optional)

<b>S30 XP and X4</b>		
<b>Fuse</b>	<b>Rating</b>	<b>Circuit Protected</b>
FU1	15 A	Horn
FU2	15 A	Key Switch, Engine, Instrumentation
FU3	15 A	Turn Signals, 4-Way Flashers, Shaker
FU4	15 A	Control Board
FU5	15 A	Main Brush Valves, Side Brush Valves
FU6	15 A	Hopper Valves, Vacuum Fan Valves
FU7	15 A	Lights, Backup Alarm
FU8	15 A	Extra Fused B+
FU9	15 A	Extra Switched, Fused B+
FU10	25 A	Starter Solenoid
FU11	60 A	Main Power Fuse, In Line, In Main Harness
FU12	60 A	Cab Power (Optional)
FU13	40 A	Diesel Glow Plugs (In Engine Harness)
FU14	60 A	Cab Power (Optional)

**NOTE:** Always replace a fuse with a fuse of the same amperage.

**CAB FUSES (CAB OPTION)**

The *cab fuses* are located in the fuse box inside the cab. Remove the fuse cover to access the fuses.



Refer to the table below for the *fuses* and circuits controlled.

<b>Fuse</b>	<b>Rating</b>	<b>Circuit Protected</b>
FU1	5 A	Lights
FU2	5 A	Wiper
FU3	20 A	Air Conditioner
FU4	2 A	Heat

**NOTE:** Always replace a fuse with a fuse of the same amperage.

## MAIN BRUSH

Check the brush daily for wear or damage. Remove any string or wire tangled on the main brush, main brush drive hub, or main brush idler hub.



Replace the main brush when it no longer cleans effectively.

## REPLACING OR ROTATING THE MAIN BRUSH

1. Raise the brush head.

**FOR SAFETY: Before leaving or servicing machine, stop on level surface, set parking brake, and turn off machine.**

2. Open the right side main brush access door.



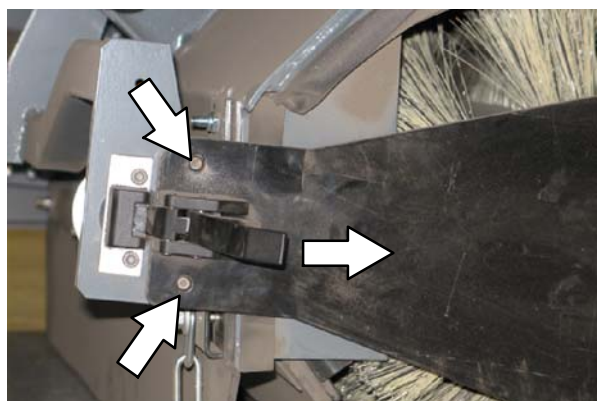
3. Unlatch and remove the brush idler plate.



4. Pull the main brush from the main brush compartment.



5. Replace or rotate the main brush end-for-end.
6. Slide the brush into the brush compartment and all the way onto the drive plug.
7. Reinstall the brush idler plate.

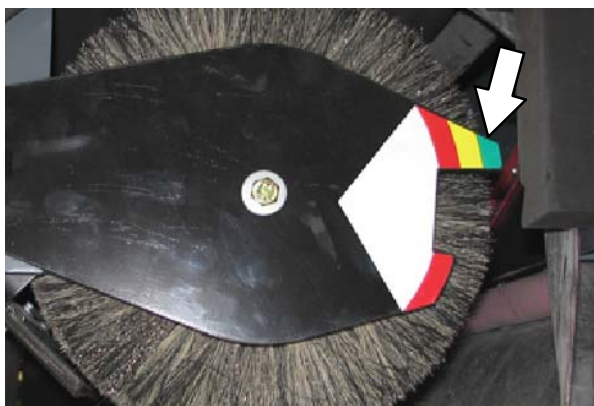


8. Close the right side main brush access door.

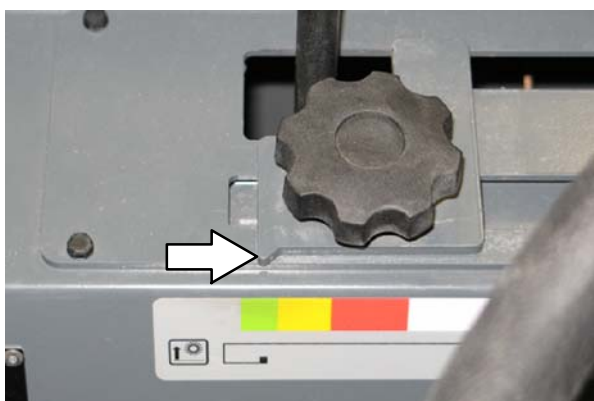
**ADJUSTING THE MAIN BRUSH WIDTH**

**FOR SAFETY:** Before leaving or servicing machine, stop on level surface, set parking brake, and turn off machine.

1. Compare the length of the main brush bristles with the color band on the brush idler plate.



2. Loosen the main brush adjustment knob and slide the pointer so it matches the color band on the brush idler plate. Retighten the knob.



3. Recheck the pattern. Readjust if necessary.

## SIDE BRUSH

Check the side brush daily for wear or damage. Remove any tangled string or wire from the side brush or side brush drive hub.

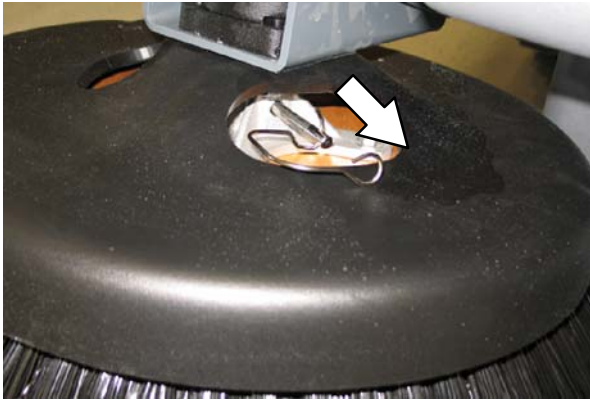
### REPLACING THE SIDE BRUSH

Replace the brush(es) when it no longer cleans effectively.

1. Raise the side brush.

**FOR SAFETY: Before leaving or servicing machine, stop on level surface, set parking brake, and turn off machine.**

2. Remove the side brush retaining pin and then remove the side brush.

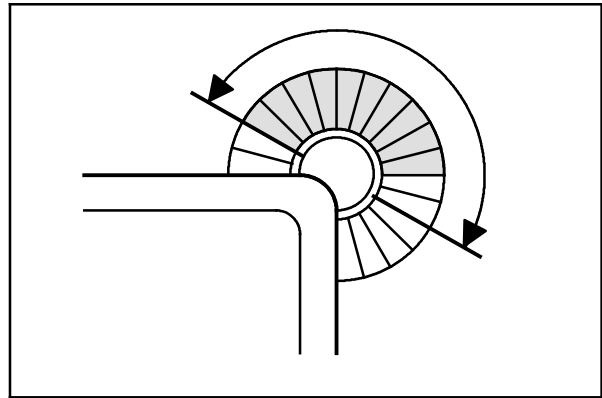


**NOTE:** Remove the drive hub and put it on the new brush if one is not installed.

3. Slide the new side brush onto the side brush drive shaft and reinstall the retaining pin.
4. Adjust the side brush pattern. Refer to *ADJUSTING THE SIDE BRUSH PATTERN*.

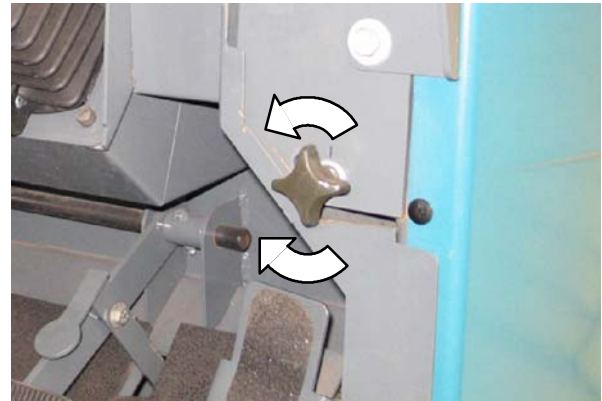
### ADJUSTING THE SIDE BRUSH PATTERN

The side brush bristles should touch the floor between 10 o'clock and 4 o'clock when the brush is in motion.



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**S30:** Turn the *side brush adjustment knob* counterclockwise to increase the brush pattern and clockwise to decrease the brush pattern.



**S30 XP and X4:** Tighten the *side brush adjustment knob* into the side brush bracket to increase the brush pattern and loosen the knob to decrease the brush pattern.





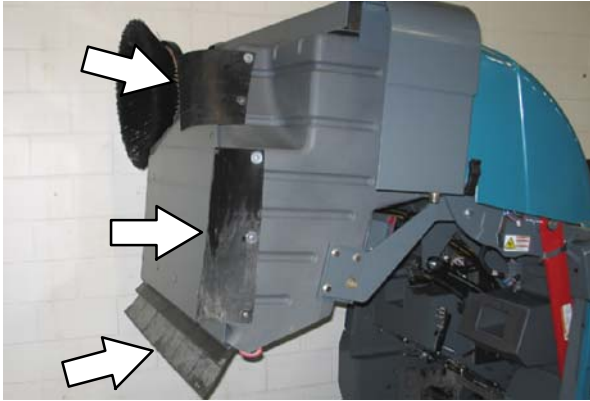
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**SKIRTS AND FLAPS**

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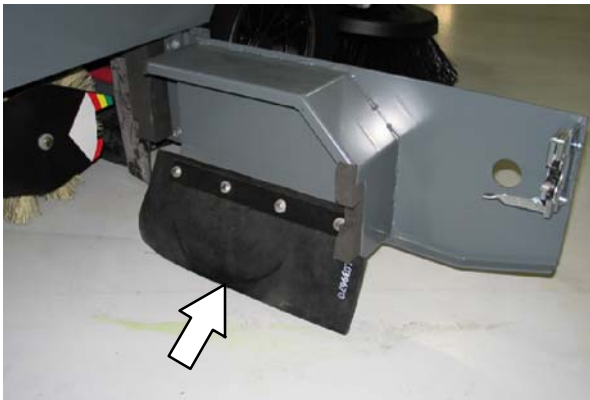
**HOPPER SKIRTS**

Check the hopper skirts for wear or damage daily. Replace the hopper skirts when they no longer touch the floor.

**BRUSH DOOR SKIRTS**

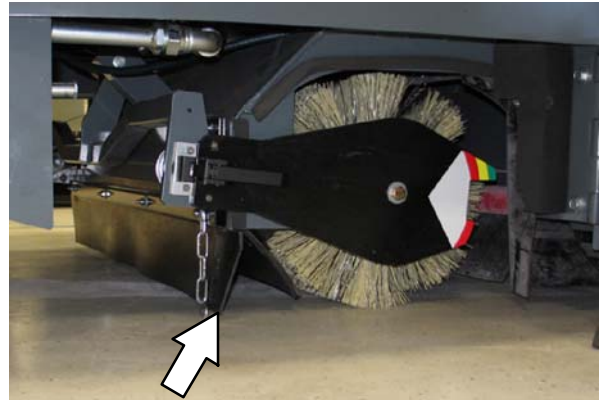
*NOTE: Be sure the rear tire is properly inflated before checking skirt clearances.*

The brush door skirts should clear the floor by 3 to 6 mm (0.12 to 0.25 in). Check the skirts for wear or damage and adjustment daily.

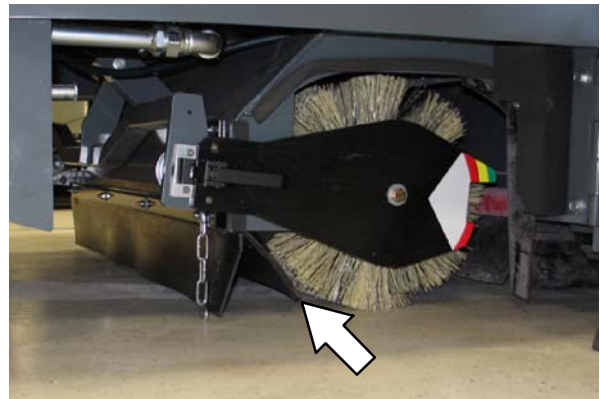
**REAR SKIRT**

*NOTE: Be sure the rear tire is properly inflated before checking skirt clearances.*

The rear brush skirt should clear the floor by 3 to 6 mm (0.12 to 0.25 in). Check the skirt for wear or damage and adjustment daily.

**RECIRCULATION FLAP**

The recirculation flap is self-adjusting. Check the flap for wear or damage daily.

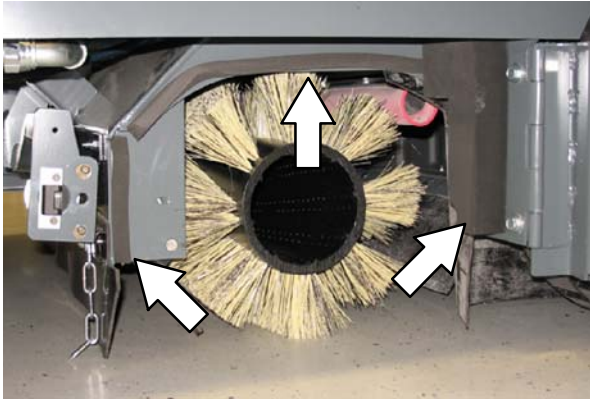


# MAINTENANCE

## SEALS

### BRUSH DOOR SEALS

Check the brush door seals for wear or damage every 100 hours of operation.



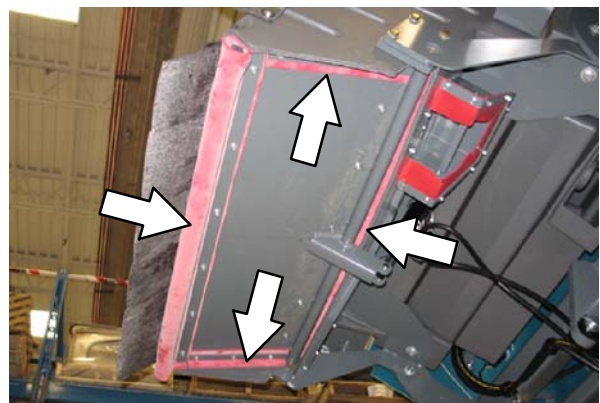
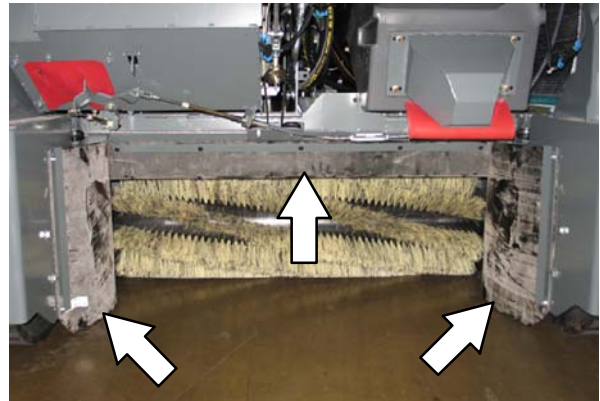
### HOPPER INSPECTION DOOR SEALS

Check the hopper inspection door seal for wear or damage every 100 hours of operation.



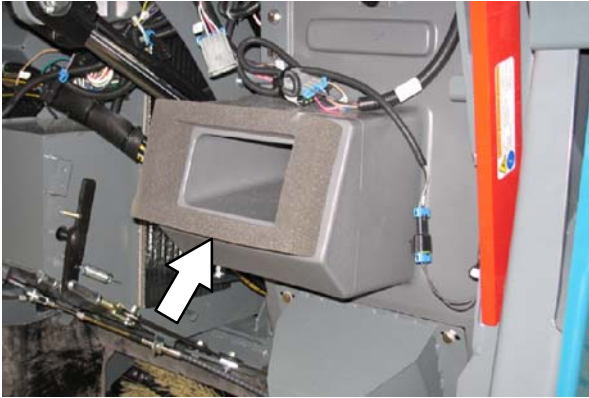
### HOPPER SEALS

Check the hopper door seals for wear or damage every 100 hours of operation.

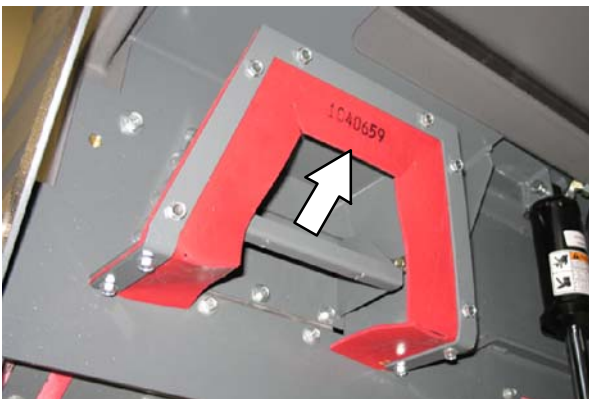
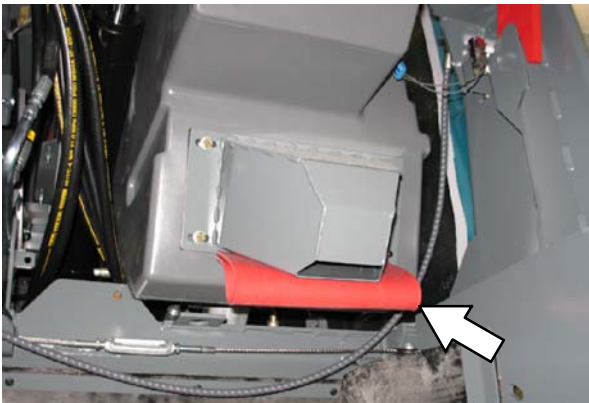


**FILTER CHAMBER INLET SEAL**

Check the filter chamber inlet seal for wear or damage every 100 hours of operation.

**DUST RETURN SEALS**

Check the dust return seals for wear or damage every 100 hours of operation.

**VACUUM WAND DOOR SEALS (OPTION)**

Check the vacuum wand door seal for wear or damage every 100 hours of operation.

**CYCLONIC PRE-FILTER SEALS**

Check the cyclonic pre-filter seals for wear or damage every 100 hours of operation.





## PUSHING, TOWING, AND TRANSPORTING THE MACHINE

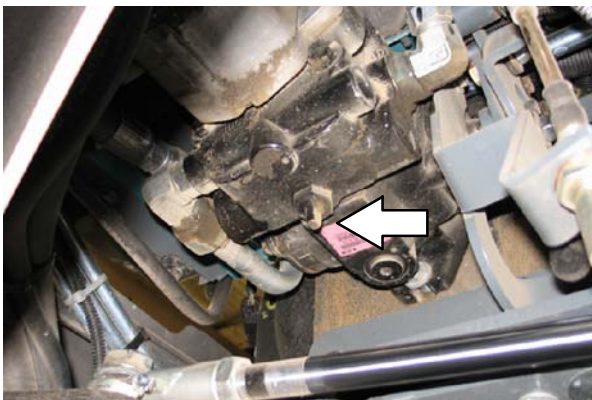
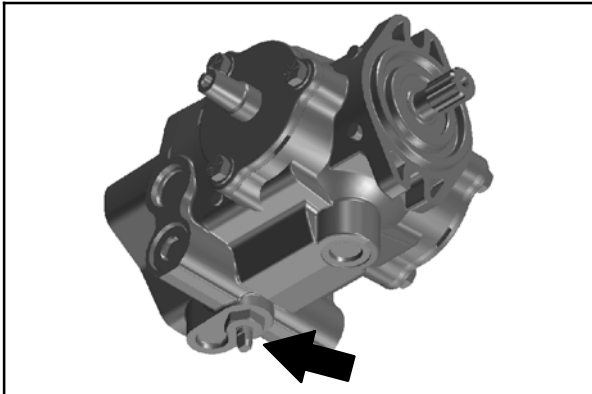
### PUSHING OR TOWING THE MACHINE

If the machine becomes disabled, it can be pushed from the front or rear, but only towed from the rear.

Use the *bypass valve* to prevent damaging the hydraulic system when pushing or towing the machine. This valve allows a disabled machine to be moved for a *very short distance* and at a speed to not exceed 1.6 kp/h (1 mph). The machine is NOT intended to be pushed or towed a long distance or at a high speed.

**ATTENTION! Do not push or tow machine for a long distance or damage may occur to the propelling system.**

Turn the *bypass valve* located on the bottom of the propelling pump 90° (either direction) from the normal position before pushing or towing the machine. Return the bypass valve to the normal position when finished pushing or towing the machine. **Do Not** use the bypass valve during normal machine operation.



### TRANSPORTING THE MACHINE

**FOR SAFETY:** When loading/unloading machine onto/off truck or trailer, turn off machine. Use truck or trailer that will support the weight of the machine. Set parking brake after machine is loaded. Block machine tires. Tie machine down to truck or trailer.

Route the tie-downs to the opposite ends of the machine and hook them to the brackets on the floor of the trailer or truck. Tighten the tie-down straps.

*NOTE: It may be necessary to install tie-down brackets to the floor of the trailer or truck.*





## MACHINE JACKING

Empty the hopper before jacking up the machine. Jack up the machine at the designated locations. Use a hoist or jack capable of supporting the weight of the machine. Use jack stands to support the machine.

**FOR SAFETY: Before leaving or servicing machine, stop on level surface, set parking brake, and turn off machine.**

**FOR SAFETY: When servicing machine, block machine tires before jacking machine up. Use a hoist or jack that will support the weight of the machine. Jack machine up at designated locations only. Support machine with jack stands.**

Rear jacking locations are located directly behind the rear tire on each side of the machine.



Front jacking locations are located on the frame directly in front of the front tire.



## STORAGE INFORMATION

The following steps should be taken prior to storing the machine for extended periods.

1. Park the machine in a cool, dry area. Do not expose the machine to rain or snow. Store indoors.
2. Remove the battery, or charge battery every three months.

# SPECIFICATIONS

## SPECIFICATIONS

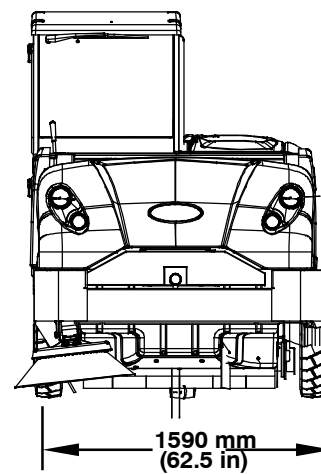
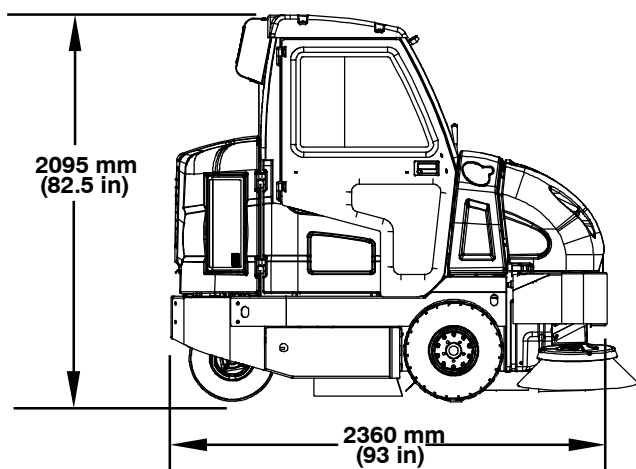
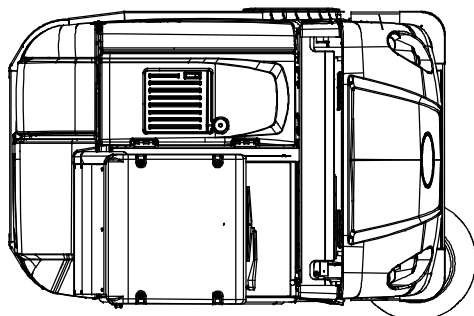
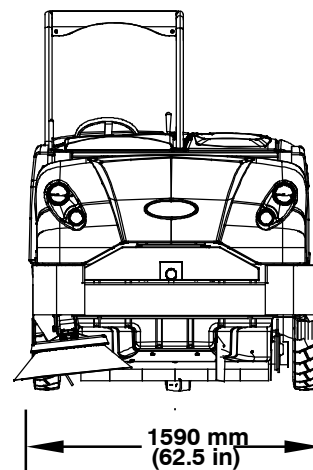
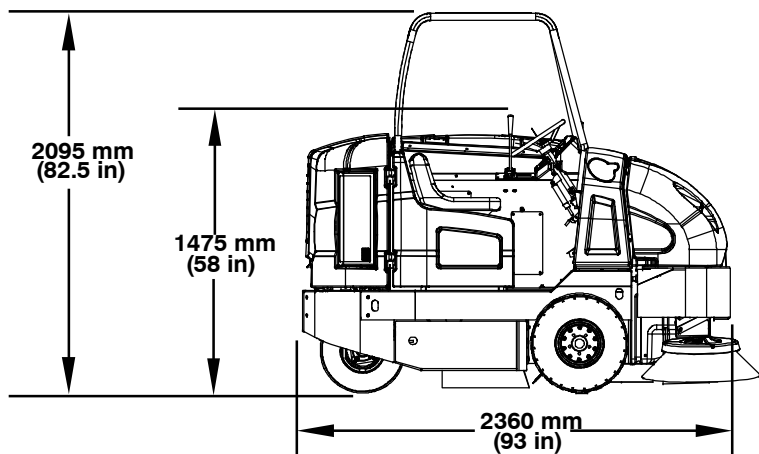
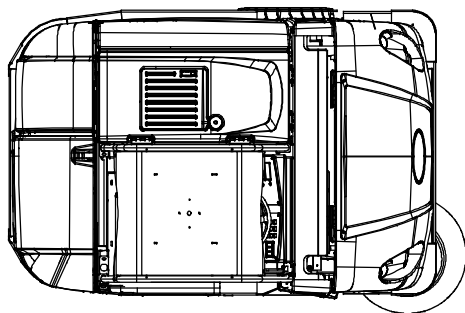
### GENERAL MACHINE DIMENSIONS/CAPACITIES

Item	Dimension/capacity
Length	2360 mm (93 in)
Height	1475 mm (58 in)
Height (with overhead guard)	2095 mm (82.5 in)
Width/frame	1590 mm (62.5 in)
Cleaning path width (Single side brush)	1590 mm (62.5 in)
Cleaning path width (Dual side brushes)	2030 mm (80 in)
Debris hopper volume capacity (Plastic and Steel)	395 L (14 ft <sup>3</sup> )
Debris hopper weight capacity (Plastic)	490 kg (1080 lbs)
Debris hopper weight capacity (Steel)	545 kg (1200 lbs)
Dump height (variable to)	1525 mm (60 in)
Minimum ceiling dump height	2500 mm (98 in)
Weight - empty	1595 Kg (3520 lbs)
GVWR	2585 Kg (5700 lbs)
Transport ground clearance	100 mm (4 in)
Operating Sound Level At Operator Ear	80 ±1.5 dBA
Vibration level at steering wheel does not exceed	2.5 m/s <sup>2</sup>
Vibration level at operator seat does not exceed	0.5 m/s <sup>2</sup>

### GENERAL MACHINE PERFORMANCE

Item	Measure
Minimum aisle turn (S30 and S30 XP)	2870 mm (113 in)
Minimum aisle turn (S30 X4)	5000 mm (196.75 in)
Travel speed forward (maximum) (S30 and S30 XP)	13.0 Km/h (8 mph)
Travel speed forward (maximum) (S30 X4)	24.0 Km/h (15 mph)
Maximum rated climb and descent (full hopper)	10°/18%
Maximum rated climb and descent (empty hopper)	14°/25%

**MACHINE DIMENSIONS**



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