

WRANGLER 1708CB/2008CB

IMPORTANT SAFETY INSTRUCTIONS



WARNING: Failure to observe these instructions can cause personal injury to machine operator or bystanders.



WARNING: Fire or explosion hazard. **NEVER** operate this machine in an explosive atmosphere (grain dust, flammable liquids or fumes, etc.).



WARNING: Fire or explosion hazard. **NEVER** attempt to pick up flammable or combustible materials or use such materials in tank.

INTENDED USE

This machine is designed for scrubbing floors in an indoor environment. NSS does not recommend using this machine for any other purpose.

FOR SAFETY:

- **ALWAYS** read and understand all instructions before operating or servicing machine.
- **ALWAYS** use this machine **ONLY** as described in this manual.
- **NEVER** attempt to operate this machine unless you have been trained in its operation.
- **NEVER** allow an untrained person to operate this machine.
- **NEVER** attempt to operate this machine if it is not working properly or has been damaged in any manner.
- **NEVER** disconnect or modify any switches or safety devices (circuit breaker).
- **NEVER** drop or insert any object into any machine opening.
- **NEVER** operate this machine with any air opening blocked. Keep all air openings free of dust, lint, hair, etc.
- **NEVER** pick up anything that is burning or smoking, such as cigarettes, matches or hot ashes.
- **NEVER** spray this machine with water or any liquids.
- **NEVER** allow the vacuum motor or battery charging plug to get wet or a short may occur.
- **NEVER** operate this machine when the battery charger is plugged in.
- **NEVER** operate this machine with the side skirt removed.
- **NEVER** allow this machine to be used as a toy. Close attention is necessary when used by or near children.
- **ALWAYS** wear clean tennis shoes or "non-slip" shoes. Leather soled shoes will become extremely slippery when wet.
- **ALWAYS** keep face, fingers, hair or any other body part or loose clothing away from any machine opening or moving part (revolving brush, pad driver, or vacuum motor).
- **ALWAYS** turn the machine off when attaching pads or brushes.
- **ALWAYS** remove keys when this machine is left unattended.
- **ALWAYS** be sure that the ramp is secured to the vehicle before attempting to load/unload.
- **ALWAYS** use extreme caution when operating the machine on a ramp or loading/unloading this machine into or out of a truck/trailer. Use extreme caution if the ramp is wet, oily, or covered with cleaning chemicals.
- **NEVER** stop or turn the machine on a ramp or incline.
- **NEVER** attempt to climb a grade or operate this machine on a ramp or incline of more than 8 degrees.
- **NEVER** park or store the machine near a dock, on ramps, near a furnace, boiler, open flame, or other high heat source.
- **NEVER** allow this machine to freeze.
- **NEVER** expose the machine to rain, snow, or extreme temperatures.
- **NEVER** store any items on this machine.
- **ALWAYS** store this machine indoors in a dry, cool area.

ALL REPAIR SERVICE MUST BE PERFORMED BY AN NSS AUTHORIZED DISTRIBUTOR/ SERVICE STATION USING ONLY NSS ORIGINAL EQUIPMENT PARTS.

SAVE THESE INSTRUCTIONS

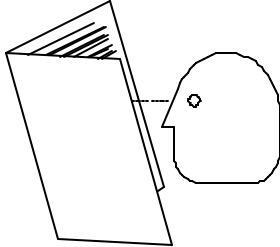


IMPORTANT SAFETY INSTRUCTIONS

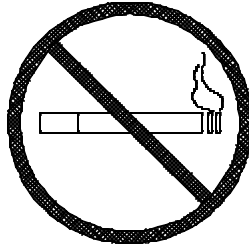
BATTERY POWERED EQUIPMENT



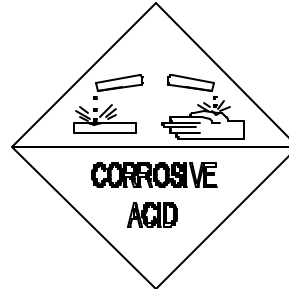
WARNING: Failure to observe these instructions can cause personal injury to machine operator or bystanders.



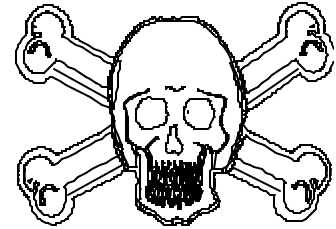
Read and understand all instructions before installing or charging batteries.



No smoking, open flames, or sparks while working with batteries.



Contains acid. Avoid contact.



Poison. Causes severe burns. Avoid contact.



WARNING: Batteries emit hydrogen, which can cause fire or explosion. **NEVER** smoke, light a match, or cause a spark during operation or charging. **ALWAYS** charge in a well-ventilated area away from open flame.

GENERAL

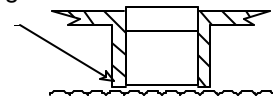
- **ALWAYS** read and understand all instructions before installing or charging batteries.
- **NEVER** attempt to install or charge batteries unless you have been trained to do so.
- **NEVER** allow an untrained person to install or charge batteries.
- **ALWAYS** remove all jewelry when working on or near the batteries.
- **ALWAYS** turn off all switches during installation and service.
- **ALWAYS** disconnect the battery leads before performing any service or repair.
- **ALWAYS** wear eye protection and protective clothing to avoid contact with battery acid.
- **NEVER** lay anything on top of batteries as arcing may occur.
- **IF CONTACT WITH BATTERY ACID OCCURS**, follow these instructions:
 - SKIN – rinse area with water.
 - EYES – Flush with water for 15 minutes.
 - INTERNAL – Drink water or milk. Follow with Milk of Magnesia, beaten egg or vegetable oil. Call a physician immediately.

BATTERY INSTALLATION

- **ALWAYS** use two people to install, as batteries are heavy.
- **ALWAYS** turn off all machine switches.
- **ALWAYS** position batteries as shown on the machine installation decal to maintain machine balance.
- **ALWAYS** connect batteries as shown on the machine installation decal to avoid shorting out the batteries and the electrical system.

BATTERY CHARGING

- **ALWAYS** read instructions on charger carefully.
- **ALWAYS** use the NSS supplied charger with proper voltage rating.
- **ALWAYS** check to ensure the battery water level covers the battery plates before charging.
- **ALWAYS** check water level after charging and add water if necessary to bring level to the bottom of the fill hole.
- **NEVER** overfill batteries as battery and machine damage may result.
- **ALWAYS** wipe any acid from the top of batteries using a soap solution.



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SAVE THESE INSTRUCTIONS



MACHINE INSPECTION

- Carefully unpack the Wrangler 1708/2008 and recycle all packing materials.
- Inspect machine for damage or missing components. If damage is found, contact the local freight company and file a freight claim.

DAILY USE

The Wrangler 1708/2008 is very maneuverable and is designed to scrub floors as you operate the machine from behind. **Always** dust mop the floor before scrubbing. You may also need to **preclean** some types of spills or stains before scrubbing. Plan your work so that you make long, straight paths with the fewest amount of turns possible. Remove as many obstacles as possible from the area to be scrubbed. The Wrangler 1708/2008 is designed for light to medium scrubbing. Consult your local NSS distributor for more complete procedures and chemical advice.

MACHINE COMPONENTS AND OPERATION

Battery Package (see safety instructions)

The Wrangler 1708/2008 is a **24 volt system** with two (2) 12 volt, 115 amp hour batteries. Consult your local NSS authorized distributor for application recommendations.

To install the batteries:

- Batteries are heavy, use two people to install.
- Turn off all the switches.
- Empty all liquids from recovery tank.
- Step on foot pedal at front of machine to release tanks. Lift tanks up and tilt back to rest on handles.
- Refer to wiring diagram on bottom of tanks. Align batteries in compartment as shown on diagram.
- Install battery cables as shown on wiring diagram. Tighten all bolts and hex nuts with a wrench.
- **CAUTION:** Do not touch two terminals with a wrench.
- Loose or improper battery connections will cause battery or machine damage and possible personal injury.

To charge the batteries:

- Charge machine after every shift or whenever batteries are 75% expended.
- Turn off all the switches.
- Disconnect battery connectors below user control panel.
- Connect lower connector from batteries to connector from automatic battery charger.
- Needle on charger gauge should jump within 30 seconds to working level.
- Needle on machine battery gauge should not move when machine is plugged into charger – batteries will not be charged.
- NSS supplied battery chargers are automatic and will shut off when charging cycle is complete.

Solution Tank

The solution tank is the lower part of the machine body. The tank has a capacity of **8 gallons (30 liters)** and is filled by pouring the water and cleaning chemicals through the mesh covered opening and filter at the front of the machine. Drain the solution tank through the solution valve or the sight hose at the rear of the machine.

To prepare the solution tank:

- **Never** use water over 140°F (60°C). Excessively hot water **may** damage components such as the tanks.
- Pour all liquids through mesh filter at the front of the solution tank.
- Put 1 to 2 gallons of clean water into the solution tank first to help dilute the chemicals and prevent excess sudsing.
- Do not put strip solution in solution tank. Apply with mop and bucket and rinse with clean water in solution tank.
- Consult your local NSS distributor for complete chemical advice. Dilute the cleaning chemicals according to the manufacturer's instructions.
- Add the cleaning chemicals to the solution tank and fill with water as needed.

Recovery Tank

The recovery tank is the upper part of the machine body. The tank has a capacity of **10 gallons (38 liters)**. The recovery tank is closed by a rectangular, clearview lid assembly. The recovery tank has a foam-sensitive float shut-off assembly. As the water or foam level rises, the float ball will rise and shut off the air flow of the vacuum motor to the squeegee. It does **not** shut off the vacuum motor. Drain the recovery tank through the black hose at the rear of the machine.

To prepare the recovery tank:

- **Always** use a defoamer to protect the vacuum motor of this machine. **Every time** you empty the recovery tank, we recommend that you add at least 4 to 6 ounces of defoamer chemical into the recovery tank before resuming work. Vacuum the defoamer into the empty recovery tank through the squeegee vac hose.
- Make sure the recovery tank drain hose is tight on the plug.

Squeegee Assembly

The squeegee assembly is packed in a box inside of the main shipping carton. Remove the squeegee assembly from the box and inspect for concealed damage. The squeegee assembly has a wide, flat frame to help prevent damage, two (2) mounting knobs, and two (2) small wheels to prevent “rollover” in reverse.

To install the squeegee assembly:

- Place the squeegee lift arm in the storage (up) position.
- Loosen the two mounting knobs and slide the squeegee assembly onto the mounting plate. The roller wheels must face the operator.
- Hand tighten the mounting knobs. Do **not** use tools to tighten the knobs as this will defeat the “breakaway” design.

To adjust the squeegee assembly:

As the machine is used, the squeegee blades will wear or need to be replaced due to damage. Some adjustment may be needed.

- Squeegee blades should lay over slightly (like a window squeegee) when the machine is moving forward or in reverse.
- Adjust the blade angle by turning the wing nut on the pivot arm clockwise/counterclockwise.
- Do not add any weights or other pressure to the squeegee mechanism. It will not improve the performance or service life.

To install a brush or pad driver and pad:

There are a wide range of pads or brushes available for the many cleaning applications of this machine. Consult your local NSS distributor for application recommendations.

- Turn off all switches and empty all liquids from the recovery and solution tank.
- Raise the brush motor into the “up” position. The foot pedal is at the rear left of the machine. Step on the pedal and slide it to the right into the notch.
- Step on the foot pedal latch at the *front* of the machine chassis.
- Lift the machine body by the opening for the solution tank. Tilt the machine body backward until the handles rest on the floor.

For BRUSH Attachment:

- Align the notches of the brush with the lugs of the drive casting.
- Turn the brush clockwise to lock onto the drive casting.
- Turn the brush counter-clockwise to remove.

For PAD DRIVER and PAD Attachment:

- Remove pad driver assembly from drive casting on end of brush motor shaft by turning the driver counter-clockwise.
- Turn the pad driver upside down on the floor. Remove the pad holding cup.
- Remove the center cutout of the 17” (43cm) or 17” (43cm) pad if present and place pad on the face of the pad driver. The pad *must be centered* on the driver to prevent wobbling or bouncing.
- Install and secure the pad holding cup to the pad driver. Turn the pad driver over so that the pad faces the floor.
- Align the notches of the pad driver with the lugs of the drive casting.
- Turn the pad driver clockwise to lock onto the drive casting.

Control Panel

The operator control panel is located at the rear area of the machine. This panel has components that control various machine functions.

Starting from the *left* side:

- The circuit breaker is for both the brush motor and the vacuum motor.
- The first switch turns the brush motor on and off .
- The next switch turns the vacuum motor on and off.
- The battery meter shows the state of charge of the batteries during operation.

ROUTINE MAINTENANCE

At the completion of every use you must perform these simple procedures to ensure proper machine operation and cleaning performance.

Daily Maintenance

- Recharge batteries at end of every shift or when 75% expended.
- Empty and rinse clean the recovery tank.
- Leave lid off recovery tank to prevent moisture from building up.
- Remove and rinse clean the squeegee assembly.
- Remove and rinse clean the pad driver or brush.
- Inspect machine components for wear or damage. Repair or replace as needed.

Weekly Maintenance

- Verify all daily maintenance has been performed.
- Inspect all battery liquid levels. Adjust to proper level as needed. Add only water.
- Check all battery terminals and cable connections. Tighten as needed.
- Clean any corrosion from battery terminals and cables.
- Check solution flow to pad driver/brush. Flush clean solution tank and hose with a mixture of 8oz. (250ml) vinegar to one gallon (4 liters) warm water.
- Inspect squeegee hose for clogs and holes. Be sure red access cap inside tank is in position.

Monthly Maintenance

- Verify all daily and weekly maintenance has been performed.
- Lubricate the axle bearings of the two large 8" (20cm) wheels. Use a high grade water-resistant grease.
- Lubricate the caster with moisture resistant foaming-type spray.

MANDATORY Periodic Maintenance

It is important for you to maintain a record of the amount of machine operating hours in order to perform this machine maintenance. It is **mandatory** that the following maintenance procedure be performed at the described interval. This procedure should be performed by an authorized NSS distributor or service center. Failure to perform this procedure may result in poor machine performance, machine component damage and failure.

- Inspect brush drive motor and vacuum motor carbon brushes for wear at 750 hours.
- Replace brush drive motor carbon brushes when they are 1/2" (13mm) in length.
- Replace the vacuum motor carbon brushes when they are 7/16" (11mm) in length. This can be done one time and then the vacuum motor must be replaced.

TROUBLE-SHOOTING

<u>PROBLEM</u>	<u>CAUSE</u>	<u>SOLUTION</u>
No solution flow.	Clogged filter. Low battery charge. The solution valve is closed. Obstruction in the solution hose. Solution valve or linkage damaged. Solution hose kinked. Solution tank is empty.	Clean filter. Charge the batteries. Open the solution valve. Remove the obstruction. Repair/replace the valve linkage. Check for kinks at valve and remove. Fill the tank.
Solution flow does not stop.	The solution valve is open. Solution valve or linkage damage. Solution valve is dirty. Damaged seat and washer in valve. The valve stem is dirty. Hose disconnected or damaged between sol. tank & valve.	Close the solution valve. Repair/replace the valve linkage. Clean the solution valve. Replace valve. Clean and lubricate valve stem. Reinstall or replace hose.
Will not pick up any water from floor.	Squeegee is up. Squeegee hose is off. Vac motor switch is off. Recovery tank is full. Vacuum shut-off float is stuck. Obstruction/damage in the squeegee, squeegee hose or standpipe. Leaking over gasket. Vac motor is not running. Recovery drain hose not plugged properly.	Lower squeegee. Reinstall hose. Turn vac motor switch "on". Empty tank. Open float valve/remove obstruction. Remove obstruction/repair damage. Remove old gasket/replace. Have an authorized serviceman repair. Install drain hose plug properly.
Will not pick up all of the water from the floor.	Debris on squeegee blades. Squeegee blade is worn/damaged. Obstruction/damage in the squeegee, squeegee hose, or standpipe. Squeegee angle needs adjustment. Vacuum motor worn out. Recovery tank drain hose damaged.	Clean squeegee Reverse/replace squeegee blade. Remove obstruction/repair damage. Adjust angle. Repair/replace vac motor. Repair/replace recovery drain hose.
Batteries do not seem to run long enough.	Overcharging batteries. Tops of batteries are dirty/wet. Battery terminals are dirty, damaged, or loose. Electrolyte level is too low. Batteries are not fully charged. Charger is damaged. Battery is defective or worn out.	Monitor run time and adjust charging frequency accordingly. Clean/dry, charge batteries. Clean terminals and connectors, replace damaged cables. Charge. Add distilled water and charge. Charge batteries for 8 hours. Have an authorized serviceman repair. Check cell voltage while discharging.
Cleaning is not even.	Brush/pad is worn. Damage to brush assembly, casters or solution valve.	Replace brush/pads. Have an authorized serviceman repair.
Machine does not run.	Circuit breaker tripped. Loose battery connection.	Reset circuit breaker. Tighten battery connection.

NOTE: If any problems remain after taking the above steps, contact your local authorized distributor/service station for further evaluation and repair.

NOTES:



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