

WRANGLER 24

IMPORTANT SAFETY INSTRUCTIONS



**READ AND UNDERSTAND ALL INSTRUCTIONS
BEFORE OPERATING OR SERVICING MACHINE**



DANGER!

**Failure to Observe These Instructions Can Cause Personal Injury to
Machine Operator, By-Standers or Possible Machine Damage.**

- **NEVER** attempt to operate this machine unless you have been trained in its operation.
- **NEVER** allow an untrained person to operate this machine.
- Use this machine **ONLY** as described in this manual.
- **NEVER** attempt to operate this machine if it is not working properly or has been damaged in any manner.
- **NEVER** disconnect or modify any switch or safety device (circuit breaker) on this machine.
- **ALWAYS** operate this machine from the rear control panel, not from the side.
- **NEVER** drop or insert any object into any machine opening.
- **ALWAYS** keep face, fingers, hair or any body part, or loose clothing away from any machine opening or moving part (revolving brush, pad driver or vacuum motor).
- **NEVER** operate machine with any air opening blocked. Keep all air openings free of dust, lint, hair etc.
- **NEVER** spray machine with water or any liquids.
- **NEVER** allow vacuum motor or battery charging plug to get wet. Vacuum motor and battery charging plug will short out if wet.
- **NEVER** operate machine when battery charger is plugged in.
- **NEVER** operate machine in an explosive atmosphere (grain dusts, flammable liquids or fumes).
- **NEVER** use flammable liquids (gas, kerosene, solvents or thinners) to clean floor.
- **ALWAYS** turn OFF brush switch when attaching pads or brushes.
- **NEVER** operate machine with splash skirt removed.
- **NEVER** leave machine unattended.
- **ALWAYS** store this machine indoors in a dry, cool area.

**PERSONAL INJURY AND PROPERTY DAMAGE FROM MACHINE OVERTURNING, BATTERIES
FALLING OUT OF MACHINE OR BATTERIES LEAKING ACID CAN OCCUR IF YOU DO NOT FOLLOW
THESE PRECAUTIONS:**

- ALWAYS** be sure ramp is secured to vehicle before attempting to load/unload.
- ALWAYS** use extreme caution when operating machine on a ramp or loading/unloading a machine into or out of a truck. Use extreme caution if ramp is wet, oily or covered with cleaning chemicals.
- NEVER** turn machine on an incline.
- NEVER** stop machine on a ramp.
- NEVER** attempt to climb a grade of more than 20 degrees.
- NEVER** park machine near a dock or on ramps.

ALL repair service must be performed by an NSS authorized distributor/service station. Use only NSS original equipment parts.

SAVE THESE INSTRUCTIONS



WRANGLER 24

OPERATION MANUAL

BASIC SAFETY PRECAUTIONS

- **Always** be sure to read and fully understand these safety, assembly, operating and maintenance instructions before attempting to operate this machine.
- **Never** allow anyone to operate this machine who has not been properly trained.
- Refer to the beginning of this book for the complete safety and electrical warnings.

MACHINE INSPECTION

- Carefully unpack the Wrangler 24 and recycle all packing materials.
- Inspect machine for damage or missing components. If damage is found, contact the local freight company to file a freight claim.

MACHINE COMPONENTS

Solution Tank

The solution tank is the lower part of the machine body. The tank has a capacity of **14 gallons** and is filled by pouring the water and cleaning chemicals through the square opening and filter at the corner of this lower tank.

Recovery Tank

The recovery tank is the upper part of the machine body. The tank has a capacity of **14 gallons**. The recovery tank is closed by a round, clearview lid assembly. The recovery tank is has a foam sensitive float shut-off assembly. As the water level rises, the float ball will rise into the tube and shut off the air flow of the vacuum. It does **not** shut off the vacuum motor.

Control Panel

The operator control panel is located at the upper rear area of the machine. This panel has components that control various machine functions. Starting on the *left* side:

- The battery meter shows the state of charge of the batteries during operation and recharge.
- The first switch turns on and off the brush motor.

- The second switch turns on and off the vacuum motor.
- The third switch selects the direction of travel, forward or reverse.
- The last switch selects the speed of travel, slow or fast.
- The top circuit breaker is for the brush motors and is rated at 25 amps.
- The bottom circuit breaker is for the drive motor and is rated at 10 amps.

Battery Package

The Wrangler 24 is a **24 volt system** and is available with one battery package:

- Four (4) 6 volt, 220 Amp Hour Batteries
- Consult your local NSS authorized distributor for application recommendations.

To install the batteries:

- Turn off all switches and place speed/direction switches in neutral. Lower brush motor to floor. Loosen black knob and raise recovery tank, hold tank up with support arm.
- For ease of installing the batteries you may wish to completely remove the recovery tank. Remove the two (2) hinge pins under the front of the recovery tank.
- Batteries are heavy - use two people to install.
- Refer to wiring diagram on back of control panel. Align batteries in compartment as shown on diagram.
- Install battery cables as shown on wiring diagram. Tighten bolts and hex nuts with a wrench.
- Loose or improper battery connections will cause battery or machine damage and possible personal injury.

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.

The Wrangler 24 may be also be equipped with an optional "curved" heavy duty squeegee assembly. Consult your local NSS authorized distributor for this accessory.

MACHINE OPERATION

General Information

Always sweep the floor before scrubbing. You may also need to **preclean** some spills or stains before scrubbing. Consult your local NSS authorized distributor for procedures and more complete chemical advise.

Caution - We recommend you always wear clean "tennis shoes" or "non-slip shoes" when working with an automatic scrubber. Leather sole shoes of any type will be extremely slippery when wet. Make sure you wipe your shoes dry before walking onto other areas of bare floor or carpet. Some floor cleaning chemicals **may** cause great damage to carpet.

DAILY USE

The Wrangler 24 is very maneuverable and is designed to clean as you drive the machine from behind.

To prepare the solution tank:

- **Never** use water over 140° F (60°C). Excessively hot water **may** damage components such as the tanks.
- Lower the brush motor on the floor, completely loosen the black knob securing the recovery tank and lift the recovery tank, hold in the up position with the support arm.
- Pour all liquids through the mesh filter at the left side of the solution tank. **Do not** splash liquids into the vacuum motor intake.
- Put 1 to 2 gallons of clean water into the solution tank first to help dilute the chemicals and prevent excess sudsing.
- Consult your local distributor for complete chemical advise. Dilute the cleaning chemicals according to the manufacturers instructions.
- Add the cleaning chemicals to the solution tank and fill with water as needed.
- Carefully close the recovery tank and secure the black knob. Do not damage threads.
- Raise the brush motor off of the floor.

To prepare the recovery tank:

- **Always** use a defoamer to protect the vacuum motor of this machine. **After each 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 recovery tank through the squeegee vac hose.

- Make sure the drain plug of the recovery tank hose is closed tightly and in its' holding clip.

To install a 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 authorized distributor for application recommendations.
- Turn the pad drivers upside down on the floor and remove the pad holding cup (split ring).
- Remove the center cutout of the 13" pad and place the 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.
- Raise the brush motors into the transport position.
- Align the lugs of the pad driver with the slots of the drive casting.
- Turn the lug of the pad driver toward the latch, close the latch around the lug to lock onto the drive casting.

To install a brush:

- Raise the brush motors into the transport position.
- Align the lugs of the brush with the slots of the drive casting.
- Turn the lug of the brush toward the latch, close the latch around the lug to lock onto the drive casting.

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 pliers to tighten 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 damage. Some adjustment may be needed.

- Squeegee blades should lay over slightly (like a window squeegee) when the machine is moving forward or reverse.
- Adjust the blade angle by turning the wingnut on the pivot arm clockwise or counter-clockwise.
- Do not add any weights or other pressure to the squeegee mechanism, it will not improve the performance and will shorten service life.

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.
- Empty and rinse clean the recovery tank.
- Remove and rinse clean squeegee assembly.
- Remove and rinse clean the pad drivers or brushes.
- Inspect machine components for wear or damage. Repair or replace as needed.

Weekly Maintenance

- Verify all daily maintenance has been performed.
- Inspect battery liquid level, adjust to proper level as needed.
- Check all battery terminal and cable connections. Tighten as needed. Clean any corrosion from battery terminals and cables.
- Check solution flow to pad drivers / brushes. Flush clean solution tank and hoses with a mixture of 8 oz. (250ml.) white vinegar to one gallon (4 liter) warm water.

Monthly Maintenance

- Verify all daily and weekly maintenance has been performed.
- Lubricate the caster axle and swivel bearing. Use a high grade of water resistant grease.

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 NSS authorized distributor or service center. Failure to perform this procedure may result in poor machine performance, machine component damage and failure.

After every **750 hours** of operation you must: Inspect drive motor (transaxle) carbon brushes for wear. Inspect brush drive motor(s) carbon brushes for wear. Inspect vacuum motor carbon brushes for wear.

Replace the *drive motor (transaxle)* carbon brushes when they are 3/8 in. (9mm) in length. Replace the *brush drive motor* carbon brushes when they are 1/2 in. (13mm) in length. Replace the *vacuum motor* carbon brushes when they are 7/16 in. (11mm) in length.

AUTHORIZED REPAIR SERVICE

Repair service for this machine must be performed by an NSS authorized service center. Repairs performed by an unauthorized company will void the machine warranty. If you require assistance finding an authorized service center, please contact:

NSS Factory Headquarters
Toledo, Ohio, USA
Telephone (419) 531 -2121
Fax (419) 531-3761

NSS European Distribution Center
Stapleford, Nottingham, U.K.
Telephone (44) 0115-939-1568
Fax (44) 0115-949-0615



WET STORAGE BATTERY

- Contains ACID, Avoid Contact.
- Antidote: EYES - Flush with water 15 min.,
- Internal - Drink water or milk. Follow with Milk of Magnesia, beaten egg or vegetable oil. Call Physician.



POISON/DANGER
CAUSES SEVERE BURNS

WARNING

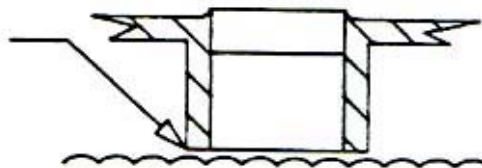
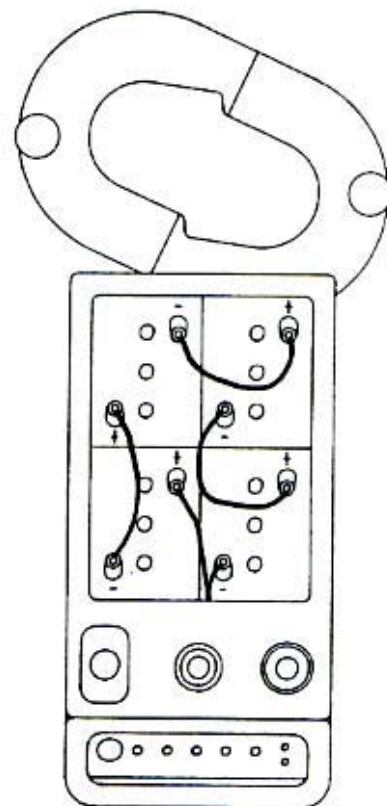
Read Service Manual before Installing batteries or Using Charger. Failure to observe the following instructions may result in damage to the machine or injury to operator or bystanders.

BATTERY INSTALLATION INSTRUCTIONS

- Remove Recovery Tank by pulling 2 pins front, both sides.
- Only trained personnel should install batteries.
- Batteries are heavy use 2 people to install.
- Wear eye protection and protective clothing.
- Turn OFF all machine switches.
- Connect batteries as shown.
- Do not lay anything on top of batteries.
- Connect batteries as shown.
- Disconnect batteries before performing any service or repairs.

CHARGING INSTRUCTIONS

- Read instructions on charger
- Use only 24 volt charger.
- BEFORE charging check to insure battery water level covers battery plates.
- Charge in well ventilated area.
- EXPLOSIVE GAS - DO NOT **SMOKE** - STRIKE A MATCH OR CAUSE A SPARK DURING CHARGING.
- AFTER charging - If needed - fill battery to bottom of fill hole with distilled water.
- DO NOT OVER FILL. Battery and machine damage may result. Wipe any acid from top of batteries clean with soap solution.



TROUBLE-SHOOTING FOR THE WRANGLER 24

| Problem | Cause | Solution |
|-------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| No solution flow | The solution valve is closed. Obstruction in the solution hose. Solution valve or linkage damaged. Solution tank is empty. | Open the solution valve. Remove the obstruction. Repair/replace the valve/linkage. Fill the tank. |
| Solution flow does not stop | The solution valve is open. Solution valve or linkage damage. Solution valve is dirty. Damaged seat & washer in valve. The valve stem is dirty. | Close the solution valve. Repair/replace the valve/linkage. Clean the solution valve. Replace seat & washer. Clean & lubricate valve stem. |
| Will not pick-up any water from floor. | Squeegee is up. Vac motor switch is "off." Recovery tank is full. Vacuum shut-off float is stuck. Obstruction/damage in the squeegee, squeegee hose. Vac motor is not running. | Lower squeegee. Turn vac motor switch "on." Empty tank. Clean/replace float assembly. Remove obstruction/repair damage. Have an authorized service person repair it. |
| Will not pick-up all water from floor. | Squeegee blade is worn/damaged. Obstruction/damage in the squeegee, squeegee hose. Squeegee blades need adjustment. Vacuum motor worn out. | Reverse/replace squeegee blade. Remove obstruction/repair damage. Adjust blade angle. Replace vacuum motor. |
| Batteries do not seem to run long enough. | Tops of batteries are dirty/wet. Battery terminals are dirty/damaged. Electrolyte level is too low. Batteries are not fully charged. Charger is damaged. Battery is defective. | 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 service person repair it. Check cell voltage while discharging. |
| Cleaning is not even. | Brushes/pads are worn. Damage to brush assembly, casters, or solution valve. Motors are not running. | Replace. Have an authorized service person repair it. Repair wiring, replace switch, replace carbon brushes. Push circuit breaker button. |
| Machine does not run. | The machine loses power. | Reset circuit breaker. Check battery connections. Check master switch. |

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



THE NATIONAL SUPER SERVICE COMPANY

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