

PLANT OPERATIONS PROCEDURE MANUAL

Building the Future



Operations of Equipment

SECTION 9

OPERATION OF EQUIPMENT

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CUSTODIAL EQUIPMENT

New – Replacement – Repairs

New Equipment – Each school has its own equipment allocation based upon the cleaning job that is required, the people available to use the equipment, and the money available for purchase of new equipment. Basically, the equipment machines referred to are: Wet/Dry vacuums, floor buffing machines, floor scrubbing machines, carpet vacuum cleaners, carpet extractor machines, lawn mowers, and snow removal equipment.

Should additional new or used equipment be required, the school principal should contact the assistant of Plant Operations and together the requirement will be established. A review of surplus and unused equipment will be made to see if this source can fulfill the need.

If not, then the budget will be reviewed to see if there is money available for purchase of the required equipment. If so, the supervisor of Plant Operations will establish the equipment specifications, and the supervisor of Plant Operations for the cost center after will requisition the requested new equipment item bids are received.

If money and priorities are not available, then the specifications and cost will be used to budget for subject equipment in the next fiscal year as an “additional minor piece of equipment.”

Replacement Equipment – When the school custodial equipment is worn out or beyond repair as determined by the principal and the assistant supervisor of Plant Operations jointly, it should be replaced in kind with an improved model of the same equipment.

First the assistant supervisor of Plant Operations will determine if surplus or unused equipment exists that can be transferred to fulfill the need. If not, then the budget will be reviewed to see if there is money for the purchase of the required replacement equipment. If so, the assistant supervisor of Plant Operations will establish the equipment specification and the supervisor of Plant Operations for the cost center will requisition the requested replacement equipment after the bids are received.

If money and priorities are not available, the specifications and cost will be used to budget for subject equipment in the next fiscal year as “equipment replacement of portable tools and equipment.”

Repairs of Equipment – All repair parts should be ordered on line using a custodial request. If repairs are beyond in-house capabilities, assistance should be requested from the assistant supervisor of Plant Operations via e-mail. Should the equipment be beyond repair or have an extensive repair record as determined by the assistant supervisor of Plant Operations, the principal will be so advised and together they will proceed as above to replace same.

CUSTODIAL MAINTENANCE EQUIPMENT

A major factor affecting the cost of maintaining a school facility involves the proper use of cleaning equipment. Labor costs can be reduced if consideration is given to the selection and proper use of equipment used in your maintenance program.

Labor saving equipment such as vacuums, buffers, extractors, automatic scrubbing machines, pressure washers and other labor saving devices must be used and maintained if an efficient and economical maintenance program is to be successful.

The custodial staff must have training for proper use and care of equipment used in the school system. When using any type of equipment, basic precautions must always be followed. Always read the operator's manual before attempting to operate any equipment. Failure to observe instructions can cause personal injury to the operator and/or bystanders.

Knowing when and where to use certain types of equipment is important if you are to reduce labor costs. Some examples are: when vacuuming large open areas use a large 3-motor vacuum 28 in. instead of a small 12 in. single motor vacuum; to scrub a large area such as hallways and dining rooms use an automatic scrubber 20 in - 30 in. instead of a 17 in. hand buffer. These types of equipment will greatly reduce labor in your school facility.

AUTOMATIC SCRUBBER, 20 INCH ELECTRIC

Always read the operators manual

The machine is capable of scrubbing a swath of 20 inches wide. This means it has one single brush or pad or two over lapping brushes or pads. The machine is also capable of sucking up water by means of a squeegee and vacuum motor. It also has a solution tank to supply water to the brushes or pads.

Safety Precautions

To reduce the risk of fire, electric shock, or injury:

1. Do not leave the machine unattended when it is plugged in. Unplug the unit from the outlet when not in use and before servicing.
2. To avoid electric shock, do not expose to rain. Store indoors.
3. Do not allow to be used as a toy. Close attention is necessary when used by or near children.
4. Use only as described in the manual. Use only manufacturer=s recommended attachments.
5. Do not use with damaged cord or plug. If appliance is not working as it should, has been dropped, damaged, left outdoors, or dropped into water, report this to the building supervisor.
6. Do not pull or carry by cord, use cord as a handle, close a door on a cord, or pull cord around sharp edges or corners. Do not run appliance over cord. Keep cord away from heated surfaces.
7. Do not unplug by pulling on cord. To unplug, grasp the plug, not the cord.
8. Do not handle plug or appliance with wet hands.
9. Do not put any object into openings. Do not use with any opening blocked; keep free of dust, lint, hair and anything that may reduce air flow.
10. Keep hair, loose clothing, fingers, and all parts of body away from openings and moving parts.
11. Do not pick up anything that is burning or smoking, such as cigarettes, matches, or hot ashes.
12. Turn off all controls before unplugging.

13. Use extra care when cleaning on stairs.
14. Do not use to pick up flammable or combustible liquids such as gasoline or use in areas where they may be present.
15. Connect to a properly grounded outlet only. See grounding instructions in owners manual.

Operation

1. Brush or pad installation - Make sure tanks are empty before tilting machine backwards to install or change a brush or to install, change or turn over a pad. On some machines to install brush or pad holders you align the slots on the brush or pad holder with the lugs on the drive hubs. Turn the brush or pad holder until it locks in place.

On some machines you have to hold the brush or pad holder into position so that three retaining springs line up with the elongated slots in the brush or pad holder locking plate. Mount brush by engaging parts and rotating the right brush clockwise and the left brush counter clockwise.

Removing brushes and pad holders are done by reversing these procedures.

When installing stripping, scrubbing or buffing pads, make sure you center all pads before using.

2. Fill solution tank - (Be careful not to overfill.) Fill tank with water and then add chemical. This will reduce foaming of solution.
3. Wet scrubbing - Fill tanks with solution, turn machine vacuum and brush motor on. Lower squeegee, turn on solution “only half way” to start with. Lower brush or pads.

CAUTION! To avoid damaging the floor keep the machine moving while the brush or pads are moving.

Adjust the solution flow so a thin, even layer of solution can be seen in front of the squeegee. For best results, move the machine at a slow walking speed. The recovery tank has an automatic float shut off to prevent water getting into the vacuum system when the recovery tank is full. When the float closes, the recovery tank must be emptied. The machine will not pick up water when float is closed. Always drain the recovery tank into a slop sink, bucket, or outdoors.

4. Dry buffing - Make sure the floor is clean, dry, and in good condition before polishing. Always install buffing pads. Make overlapping passes with the solution off and the squeegee in the up position.

Procedures/Daily

1. Do not overfill the clean water solution tank.
2. Use defoamer if the recovery tank is recovering foam.
3. Drain and thoroughly rinse the recovery tank.
4. Rinse and clean float housing.
5. Rinse and clean the recovery tank dome.
6. Make sure float is free to move up and down.
7. Remove hose from the recovery tank dome and run vacuum for 5 minutes.
8. Drain and rinse the solution tank.
9. Remove and clean brushes or the brush pad holder.
10. Rinse the squeegee.
11. Check cord for damage and report it if found.
12. Wipe all dirt off the machine with a clean cloth.

Procedures/Monthly

1. Clean the solution tank with 3 gallons of water and 3 quarts of vinegar. Discharge the entire solution.
2. Spray silicone on all pivot joints.
3. Tighten all nuts and bolts.
4. Grease wheels.

Procedures/Yearly

1. Check carbon brushes in the electric motor and replace if needed.
2. Replace filters and squeegee if needed.
3. Replace worn skirts.

AUTOMATIC SCRUBBER, 28 INCH TO 32 INCH BATTERY

Always read the operators manual

These machines are battery operated instead of electric operated “no cords.” They have six, six volt batteries with charger. These machines also have traction drive operation rather than pushing and pulling.

Safety Precautions

1. You must have training in the operation of this machine before using it. **READ THE INSTRUCTION BOOK.**
2. Operate this machine only from the rear of the machine. Do not ride on this machine or install attachments for riding behind the machine.
3. Be careful when operating the machine on ramps. Always move slowly on a ramp. Do not turn this machine on a ramp. Do not stop and leave this machine on a ramp.
4. Stop and leave this machine only on a level surface. When you stop the machine, put the A main switch in the “OFF” position. Engage the parking brake.
5. To prevent injury and damage to the machine, do not lift the machine or move it to an edge of a stair or loading dock.
6. Machines can cause an explosion when operated near flammable materials and vapors. Do not use this machine with or near fuels, grain dust, solvents, thinners, or other flammable materials.
7. Lead acid batteries generate gases which can cause an explosion. Make sure the timer knob on the charger is in the OFF position before connecting or disconnecting the charger. Keep sparks and flames away from batteries. **NO SMOKING.** Charge the batteries only in an area with good ventilation.
8. Always wear eye protection and protective clothing when working near batteries. Do not put tools or other metal objects across the battery terminals, or the tops of the batteries.
9. Maintenance and repairs must be done by authorized personnel only. Keep all fasteners tight. Keep adjustments according to the specifications given in the service manual for this machine.
10. Keep the electrical parts of the machine dry. For storage, keep the machine in a building.
11. Make sure all labels, decals, warnings, cautions and instructions are fastened to the machine. Get new labels and decals from the dealer.

12. Water solutions or cleaning materials used with this type of machine can leave wet areas on the floor surface. These areas can cause a dangerous condition for the operator or other persons. Always put CAUTION signs near the area you are cleaning.

Operation

Check these conditions before starting the Clarke machine.

1. Make sure the timer knob on the charger is off. Disconnect the connector on the battery charger from the connector on the machine.
2. Make sure the shut-off valve and foam filter are clean and in the correct position.
3. Close the valves to the drain hoses. Make sure the valves close tightly. Put the hoses in the slots on the back of the machine.
4. Make sure the brushes are in position on the brush head.
5. Make sure the apron is in position around the brush head. The apron prevents the solution from flowing out the sides of the brush assembly.
6. Make sure the squeegee is in the correct position and the hose is installed on the squeegee.

NOTE: If the machine is equipped with a key, turn it on before you start the machine. When you are done with the machine each night, remove the key.

How to move the machine:

1. Release the parking brake.
2. Put the main switch in the on position.
3. Put the lever for the brush or pads valve in the up position.
4. Put the lever for the squeegee valve in the up position.
5. Put the switches for the vacuum motor and the brush or pad drive motor in the off position.
6. To go forward, push the handles towards the machine until the machine starts to move forward.
7. To go forward faster, push the handles towards the machine all the way.
8. To stop the machine, put the handles in the center position.

9. To go backwards, pull the handles away from the machine.
10. To stop quickly when moving forward, pull the handles away from the machine. Put the handles in the center position when the machine stops.
11. To stop quickly when moving backwards, push the handles towards the machine. Put the handles in the center position when the machine stops.
12. To turn the machine, put the handles in the center position and push the rear of the machine to the side until you can run the machine in a straight line.
13. When you stop the machine, put the main switch in the “off” position and engage the parking brake.

This machine is equipped with the following for operations:

1. **The Lever for the Solution.** This control gives a variable flow of solution. Push the lever up for the “OFF” position. Pull the lever down for the “ON” position. Put the lever between these two positions to get the correct flow.
2. **The Lever for the Brush Pressure.** This control gives variable brush pressure. Push the lever up to raise the brushes and decrease the pressure. Pull the lever down to lower the brushes and increase the pressure.
3. **The Main Switch.** To start the machine, put the switch in the “ON” position. To stop the machine, put the switch in the “OFF” position.
4. **The Brush Pressure Ammeter.** Use this gauge to see the amount of pressure on the brush. If the ammeter shows in the red area of the gauge, decrease the pressure.
5. **The Indicator Light.** This light illuminates when the main switch is in the “ON” position and the machine has power.
6. **The Lever for the Squeegee Valve.** Put the lever up to raise the squeegee. Put the lever down to lower the squeegee.
7. **The Switch for the Vacuum Motor.** This control starts the vacuum motor. Put the switch in the “ON” position to start the vacuum motor. Put the switch in the “OFF” position to stop the vacuum motor.
8. **The Switch for the Brush Motors.** Put the switch in the “ON” position to start the motors that turn the brushes. Put the switch in the “OFF” position to stop the motors that turn the brushes.
9. **The Switch for the Light in the Battery Compartment.** To illuminate the battery compartment, put this switch in the “ON” position and put the main switch in the “ON” position. Engage the parking brake.

- 10. The Control Handles.** These handles control the speed and direction of the machine. To move the machine, follow the procedure under number 11.
- 11. The Switch for the Range of Drive Speeds.** Put the switch in the “HIGH” position to use the faster speeds of the machine. Put the switch in the “LOW” position to use only the slower speeds of the machine.
- 12. The Parking Brake.** This brake prevents accidental movement of the machine. The brake has a disc brake and an electrical interlock that prevents the motor from running.

Check these conditions before starting the Kent machine.

1. Make sure the timer knob on the charger is off. Disconnect the connector on the battery charger from the connector on the machine.
2. Make sure dump valves are in “OFF” position.
3. Make sure the brushes are in position on the brush head.
4. Make sure the apron is in position around the brush head. The apron prevents the solution from flowing out the sides of the brush assembly.
5. Make sure the squeegee is in the correct position and the hose is installed on the squeegee.

How to move the machine:

1. To move the machine forward or reverse, first push the drive switch “ON.” The forward motion of the machine is controlled by squeezing the control bar until the traction motor is engaged. Once engaged, the speed of the machine may be increased or decreased by turning the speed control knob on the instrument panel. To increase the speed, turn the knob clockwise. To reduce speed, turn the knob counter clockwise.
2. Reverse is controlled by pulling the control rod backwards until the motor is engaged in reverse. The machine is equipped with differential drive for easy turning in either direction.

This machine is equipped with the following for operations:

- 1. Battery Meter.** The needle must be within the “GREEN” area for efficient operations.
- 2. Water Flow Control Knob.** To control solution.
- 3. Main Drive On/Off Switch With Red Indicator Light.**
- 4. On/Off Switch for the Vacuum Motor.** Red light indicates a full recovery tank.

5. Variable Speed Control Knob. To control the speed of the machine.

Procedures/Daily

1. Do not overfill the clean water solution tank.
2. Use defoamer if the recovery tank is recovering foam.
3. Drain and thoroughly rinse the recovery tank.
4. Rinse and clean float housing.
5. Rinse and clean the recovery tank dome.
6. Make sure float is free to move up and down.
7. Remove hose from the recovery tank dome and run vacuum for 5 minutes.
8. Drain and rinse the solution tank.
9. Remove and clean brushes or the brush pad holder.
10. Remove and rinse the squeegee.
11. Check cord for damage and report it if found.
12. Wipe all dirt off the machine with a clean cloth.
13. Plug in charger and make sure the charger comes on.

Procedures/Weekly

1. Check each battery cell.
2. If water is below the cell plate, fill each battery cell with distilled water.
3. Do not over fill.
4. Coat machine with clear dressing.

Procedures/Monthly

1. Clean the solution tank with 3 gallons of water and disinfectant cleaner. Discharge the entire solution.
2. Check the battery tray for moisture. Remove water from the tray. Line the tray with baking soda to neutralize any acid.

3. Spray silicone on all pivot joints.
4. Tighten all nuts and bolts.
5. Grease wheels.
6. Clean battery terminals if necessary.

Procedures/Yearly

1. Check carbon brushes in the electric motor and replace if needed.
2. Replace filters and squeegee if needed.
3. Replace worn skirts.

BACK PACK VACUUM OPERATION

Always read the owners manual

Preparing the vacuum for operation

At the beginning of each shift, the filter bag should be checked. Empty or replace as necessary. Never use a paper filter alone; always use a paper filter inside the cloth filter bag.

Push the swivel cuff of the hose into the vacuum cap opening. Place the other cuff end over the wand. Make sure both are secure. Loosen the shoulder straps and hip belt. Lift the vacuum by one shoulder strap and slide your free arm into it. Then slip your other arm into the other shoulder opening. (If possible, you can set the vacuum on a desk or table to put it on.) Fasten the hip belt **SNUGLY** and make sure the weight is resting comfortably on your hips and distributed.

Place the extension cord between the hip belts strap and padded area to signal you if you run out of cord while vacuuming.

Proper vacuuming motion

1. Begin with the wand parallel to your body.
2. Draw the wand to your waist and turn the wand so that the carpet tool lays flat on the floor. When walking backwards or forwards, the wand should move in a side to side motion (similar to weed eating). This motion will keep the upper body and arms from tiring. There will be times that you will have to reach and use the back and forth motion, but you should use the side to side motion whenever you can.
3. Use the proper attachments for the job. The vacuum has attachments to perform most jobs without requiring that the operator bend over or get into difficult positions.

Adjustments

1. Adjustments can be made to the shoulder straps as well as the back plate. The back plate can be moved up or down by removing four screws that attach to the vacuum body.

Preventive Maintenance

Daily

1. Never stretch the cord tightly between the vacuum and the outlet.
2. Every time you finish vacuuming shake out the cloth and paper bag.

3. Every time you empty cloth and paper bags, check your dome top filter for cleanliness and check the inside walls for dirt. Wipe off with damp rag.
4. Check cord for damage. Unplug cord at both ends.
5. Wind the cord loosely.
6. Replace paper bag as needed.

Weekly

1. Rinse out, dry and replace the foam filter/diffuser at the bottom of the vacuum below the motor.
2. Remove dome filter (or more often if needed) and clean by washing and drying completely before replacing.

BUFFER OPERATION

Always read the owners manual.

Buffers come in several sizes: 15", 16", 17", 20", and 22." They come in belt drive or gear drive operation. Carroll County Public Schools buffers have a 175 R.P.M. brush speed. They all have adjustable handles.

When you operate a buffer for the first time, you want to get familiar with it. Check out the cord, the handle, and how to lock on pad holder or brush.

Operation of Machine

To assemble the brush or pad holder, tilt back the machine, line up the lugs on the gear unit with the openings on the brush or pad holder locking plate. Then turn the brush or pad holder in a clockwise direction. This will lock the brush or pad holder to the machine.

Looking down at the machine, loosen the locking cam at the lower part of the handle. Take extreme caution when beginning to operate. The machine will jolt quite aggressively.

The on and off switch is operated by means of levers under the handle grips. Compress either lever on the handle grip to turn the machine on and release the lever to turn off.

Lower the handle to the best operating position (or where it is comfortable for the operator, about waist high). Then tighten locking cam. In operating the machine it will have a tendency to travel to the right or left depending on whether pressure is exerted on the front or rear of the brush or pad. When an operator lifts the handle, the machine will go to the right. When an operator pulls back on the handle, the machine will go to the left. The movement of the machine is easily controlled by moving the handle up or down.

While the machine is in operation make sure the cord does not get close to the brush or pad. This could cause the machine and the cord to tangle. This will pull the machine and that could cause personal injury. If the cord starts to tangle, just leave go of the handle lever.

Procedures/Daily

1. Check cord for cracks or breaks, report if found.
2. Center pads properly when in use.
3. Change pad often.
4. Unplug cord from wall and wind cord neatly.
5. Wipe all dirt and stripper residue off machine with clean dry cloth.
6. Remove pad and pad holder when in storage.

Procedures/Weekly

1. Use mild stripping chemical and remove all grime and finish residue.

Procedures/Monthly

1. Spray silicone on all pivot joints.
2. Tighten all exposed nuts and bolts.
3. Tighten handle bolts.

Procedures/Yearly

1. Check carbon brushes in the electric motor and replace if needed.

PREPARATION OF CARPET BEFORE EXTRACTING

1. Vacuum thoroughly, remove any gum and/or debris.
2. Always read the labels of chemicals. Mix pre-spray 1-8 oz. of cleaner to 1 gallon of water in a pressure sprayer.
3. Spray entire area to be extracted. Let pre-spray work for about five minutes before extracting or shampooing.

EXTRACTOR ATTACHMENTS, OPERATIONS AND PROCEDURES

To use accessory tools, attach the accessory vacuum hose to the left tube on the recovery tank cover. Attach the accessory solution hose to the quick disconnect fitting on the lower left side of the machine. Connect the other end of the vacuum and solution hoses to the accessory tool. When using accessory tools, turn off the brush motor switch.

Attachment includes the following parts: extractor wand, extractor hose assembly and power head.

HAND SPRAYER (PRESSURIZED)

Pressure sprayers are available in sizes ranging from one (1) gallon up to five (5) gallons. They can be purchased made of plastic, tin, and stainless steel. Pressure is obtained by manually pumping the handle located on the top of the tank. Virtually any type of liquid chemicals can be used in this type of sprayer; i.e., pesticides, herbicides, and detergents. The pressure sprayer tank must have proper label to identify the chemicals being used. The use of separate sprayers should be used when using different types of chemicals.

Purpose

To spray chemical solutions with different applications, from a fine mist to a stream.

Safety Precautions

1. Always use proper labels on container.
2. Use separate sprayer for separate chemicals.
3. Check hose and trigger mechanism for damage before attempting to use sprayer.
4. Always clean out sprayer with water and let dry.
5. Always wear safety equipment when using chemicals in sprayer; i.e., rubber gloves, safety goggles, respirator.
6. When using chemicals, always read instructions printed on label for proper usage.
7. Do not overfill the container. Fill to proper level.

Procedures

1. Assemble all necessary equipment: sprayer, rubber gloves, respirator, chemical.
2. Open sprayer by turning cap counter clockwise and pull up on pump handle.
3. Mix chemical according to directions on container. Do not overfill. When you replace the cap and pump, the solution will rise. If too full, the solution will pour out all over the container.
4. Replace pump and cap by pushing down and turning clockwise.
5. Pump handle until you have light pressure. You can tell because it will get harder to pump.

6. Once the pump and cap is locked down and container is pressurized, the tank can now be carried by the pump handle.
7. Depending on which type of spray is required, adjust the flow by turning the nozzle located on the end of the sprayer tube. It can be adjusted from a fine spray to a stream.
8. Activate the spray by squeezing the hand mechanism located at sprayer hose and nozzle.
9. Clean sprayer with soap and water. Let air dry.

7-GAL. EXTRACTOR OPERATION AND PROCEDURES

Always read the owners manual.

Pre-spraying carpet

Pre-spray spots and traffic lanes before extracting. Use a hand held bottle sprayer or a pressurized type sprayer. Mix the pre-spray according to the chemical manufacturers directions.

Plan for cleaning

Before you begin extracting, look at the area to be cleaned and plan your work. Divide the space into sections. Work away from where you plug in the machines electrical cable. Overlap each pass two inches.

Safety Precautions

1. To avoid electric shock, do not expose to rain. Store indoors.
2. Do not allow to be used as a toy. Close attention is necessary when used by or near children.
3. Use only as described in this manual. Use only manufacturer=s recommended attachments.
4. Do not use with damaged cord or plug. If the appliance is not working as it should, has it been dropped, damaged, left outdoors, or dropped into water, report this to the building supervisor.
5. Do not pull or carry by cord, use cord as a handle, close a door on cord, or pull cord around sharp edges or corners. Do not run appliance over cord. Keep cord away from heated surfaces.
6. Do not unplug by pulling on cord. To unplug, grasp the plug, not the cord.
7. Do not handle plug or appliance with wet hands.
8. Do not put any object into openings. Do not use with any opening blocked; keep free of dust, lint, hair, and anything that may reduce air flow.
9. Keep hair, loose clothing, fingers, and all parts of body away from openings and moving parts.
10. Do not pick up anything that is burning or smoking, such as cigarettes, matches, or hot ashes.

11. Turn off all controls before unplugging.
12. Use extra care when cleaning on stairs.
13. Do not use to pick up flammable or combustible liquids such as gasoline or use in areas where they may be present.
14. Connect to a properly grounded outlet.

Operation

1. Fill the solution tank with proper dilution of warm water and extractor chemical.
2. Unwrap the power cable and plug it into a properly grounded outlet.
3. Turn on master switch. This will turn on the vacuum motor.
4. Turn on the brush switch.
5. Lower the handle.
6. Turn the brush height adjustment knob until the machine just begins to move backward. Do not set the brush too low as this will cause the circuit breaker to trip. If circuit breaker does trip, wait two minutes for it to cool, then push the button in to reset it.
7. Push down on the handle and move the machine (on its rear wheels) to its starting position.
8. Pull the machine back slowly, dispensing solution as you go. Pick up all of the solution on each pass.
9. Watch the fluid entering the recovery tank. If there is a large amount of suds in the recovery tank, add a defoamer chemical to the tank.

Preventive Maintenance

Daily

1. Unplug cord from the wall and wind cord on machine.
2. Do not overfill the solution tank.
3. Do not allow water to enter the vacuum motor.
4. Use defoamer if extraction chemical foams.
5. Adjust brush so machine is easy to pull.

6. Drain and rinse solution tank.
7. Drain and rinse the recovery tank.
8. Clean and rinse brush and brush chamber.
9. Remove hose from the recovery tank and run vacuum for 5 minutes.
10. Store hose in the recovery tank.
11. Check for damage and report it if found.
12. Wipe all dirt off the machine with a clean cloth.

Weekly

1. Remove all fibers, hair and carpet strands from the brush.
2. Rinse vacuum shoe.
3. Tighten nuts and bolts.
4. Wipe all dirt off the machine with a clean cloth.

Monthly

1. Check the cord for cracks.
2. Check the ground on the plug.
3. Clean solution tank and fill it with 1 gallon of water and some disinfectant detergent. Run pump until the tank is empty.
4. Spray silicone on all pivot joints.
5. Tighten all nuts and bolts.

Yearly

1. Replace belt, covers, gaskets and brush if necessary.

After each operation

Emptying solution and Recovery Tanks

Drain hoses for solution and recovery are located at the front of machine behind access panel. The left hose is for recovery drain, the right hose is for solution drain.

Solution tank - Drain unused solution and store in a separate container for future use.

Recovery tank - Drain contents and flush tank until clear water appears.

Vacuum filter screens - Check vacuum tube filter screens for dirt and debris. Remove screens and flush with water.

15-GAL. EXTRACTOR OPERATION AND PROCEDURES

Always read the owners manual.

Pre-spraying carpet

Pre-spray spots and traffic lanes before extracting. Use a hand held bottle sprayer or a pressurized type sprayer. Mix the pre-spray according to the chemical manufacturers directions.

Plan for cleaning

Before you begin extracting, look at the area to be cleaned and plan your work. Divide the space into sections. Work away from where you plug in the machines electrical cable. Overlap each pass two inches.

Safety Precautions

1. To avoid electric shock, do not expose to rain. Store indoors.
2. Do not allow to be used as a toy. Close attention is necessary when used by or near children.
3. Use only as described in this manual. Use only manufacturer=s recommended attachments.
4. Do not use with damaged cord or plug. If the appliance is not working as it should, has been dropped, damaged, left outdoors, or dropped into water, report this to the building supervisor.
5. Do not pull or carry by cord, use cord as a handle, close a door on cord, or pull cord around sharp edges or corners. Do not run appliance over cord. Keep cord away from heated surfaces.
6. Do not unplug by pulling on cord. To unplug, grasp the plug, not the cord.
7. Do not handle plug or appliance with wet hands.
8. Do not put any object into openings. Do not use with any opening blocked; keep free of dust, lint, hair, and anything that may reduce air flow.
9. Keep hair, loose clothing, fingers, and all parts of body away from openings and moving parts.
10. Do not pick up anything that is burning or smoking, such as cigarettes, matches, or hot ashes.

11. Turn off all controls before unplugging.
12. Use extra care when cleaning on stairs.
13. Do not use to pick up flammable or combustible liquids such as gasoline or use in areas where they may be present.
14. Connect to a properly grounded outlet.

Operation

1. Slide the plug lug halves together. Connect the power cord to the machine at the power cord connection, then plug the power cord into a properly grounded outlet.
2. Make sure the solution fill cover and the recovery tank cover are firmly in place and the solution valve lever is in the ON position.
3. Turn the main switch on. The solution button will light up to indicate that the solution is ON.
4. Put the brush pedal UP to lower the brush to the floor.
5. Step DOWN on the drive pedal and push the pedal to the right to engage the drive motor.
6. Pull and hold the drive levers UP to propel the machine. To adjust the travel speed, press the increase speed button or the decrease speed button. To move backward, hold down the reverse button while pulling the drive levers; release the reverse button to move forward again.
NOTE: There will be a slight pause between direction changes.
7. Solution is dispensed only while moving forward and automatically shuts off in reverse. Press the solution button to stop solution flow; the light will turn off.
8. Watch the fluid entering the recovery tank cover. If there is a large amount of suds in the recovery tank, add a defoamer chemical to the recovery tank.

CAUTION!

Empty the recovery tank before the fluid or foam enters the vacuum hose on the right side of the recovery tank cover.

If there is little or no fluid entering the recovery tank, look to the clear solution hose on the right side of the machine. If there is no fluid running through the solution hose, the solution tank may be empty. Refill the solution tank with water and the proper ration of cleaning chemical.

9. The recovery tank has an automatic float shut-off to block the vacuum system when the recovery tank is full. You can tell when the float closes by the sudden change in the sound of the vacuum motor. When the float closes, the recovery tank must be emptied. The machine will not pick up water with the float closed.

Preventive Maintenance

Daily

1. Unplug cord from the wall and wind cord on machine.
2. Do not overfill the solution tank.
3. Do not allow water to enter the vacuum motor.
4. Use defoamer if extraction chemical foams.
5. Adjust brush so machine is easy to pull.
6. Drain and rinse solution tank.
7. Drain and rinse the recovery tank.
8. Clean and rinse brush and brush chamber.
9. Remove hose from the recovery tank and run vacuum for 5 minutes.
10. Store hose in the recovery tank.
11. Check for damage and report it if found.
12. Wipe all dirt off the machine with a clean cloth.

Weekly

1. Remove all fibers, hair and carpet strands from the brush.
2. Rinse vacuum shoe.
3. Tighten nuts and bolts.
4. Wipe all dirt off the machine with a clean cloth.

Monthly

1. Check the cord for cracks.

2. Check the ground on the plug.
3. Clean solution tank and fill it with 1 gallon of water and some disinfectant detergent. Run pump until the tank is empty.
4. Spray silicone on all pivot joints.
5. Tighten all nuts and bolts.

Yearly

1. Replace belt, covers, gaskets and brush if necessary.

After each operation

Emptying solution and Recovery Tanks

Drain hoses for solution and recovery are located at the front of machine behind access panel. The left hose is for recovery drain, the right hose is for solution drain.

Solution tank - Drain unused solution and store in a separate container for future use.

Recovery tank - Drain contents and flush tank until clear water appears.

Vacuum filter screens - Check vacuum tube filter screens for dirt and debris. Remove screens and flush with water.

30-GAL. EXTRACTOR OPERATION AND PROCEDURES

Always read the owners manual.

Pre-spraying carpet

Pre-spray spots and traffic lanes before extracting. Use a hand held bottle sprayer or a pressurized type sprayer. Mix the pre-spray according to the chemical manufacturers directions.

Plan for cleaning

Before you begin extracting, look at the area to be cleaned and plan your work. Divide the space into sections. Work away from where you plug in the machines electrical cable. Overlap each pass two inches.

Safety Precautions

1. Do not use in flammable areas.
2. Do not store outdoors.
3. Do not run on uncarpeted surfaces with vacuum shoes down.
4. To prevent damage to vacuum shoes do not exceed seven degree inclines for loading, transporting or cleaning.
5. Do not tip solution tank forward unless empty.
6. Do not use cleaning solutions which are hazardous to the skin or which emits vapors that can cause a health hazard to eyes or respiratory system.
7. Use extreme caution when working with batteries. Sulfuric acid in batteries can cause severe injuries.
8. When servicing batteries, you should:
 - a. Remove all jewelry.
 - b. Do not smoke.
 - c. Wear safety glasses.
 - d. Work in a well ventilated area.
 - e. Do not allow tools to touch more than one battery terminal at a time.

This machine is equipped with

1. Master switch - turns power on/off for all components of the machine.
2. Solution direction knob - directs solution to the nozzle for extraction or to foam generation tank for foam application.
3. Foam/extraction switch - electronically switches machine from extraction mode to foam mode.
4. Travel speed switch - determines speed of machine. Three speeds forward and two speeds reverse.
5. Vacuum shoe lever - lowers vacuum shoes and turns on vacuum motors.
6. Brush lever raises and lowers brush assembly.
7. Solution control lever - controls pump to provide constant or intermittent, or no solution.
8. Control handle - activates drive motor, brush motor and controls direction of machine.
9. Defoamer knob - opens and closes valve permitting or stopping flow of defoamer into recovery tank.
10. Parking brake - safety brake for use on inclines and storage.
11. Battery meter - indicates charge level of battery during operation and while charging.

Operation of machine

1. Filling solution tank - extraction - fill solution tank, 33 gallon capacity with manufacturers dilution recommendation.
2. Filling defoamer tank - fill the defoamer tank (2 gallon capacity) with defoamer diluted 1 to 1 with water.
3. Turn solution direction knob to extraction and depress foam/extraction switch to extraction.
4. Turn the “master switch” to activate the controls and drive the machine to the work site.
5. Select speed by depressing the position rocker switch to either slow, medium or fast, depending upon condition of the carpet.
6. Lower the brush assembly by lowering the lever on the right side to Adown@ position.

Operating tips

1. Cleaning next to a wall is to be accomplished by working with the wall to the right of the machine. The machine will get two or three inches closer with the wall to the right.
2. Turns of 90 and 180 degrees can be made with less moisture in the carpet if the foam/solution control lever is turned off a couple of feet before the turn is begun. **DO NOT FORGET TO TURN IT BACK ON WHEN THE TURN IS COMPLETE.**
3. Pulling ramps or inclines may cause the machine to slow down. If this happens, move up in operation speed to the next highest. The higher the speed the greater the power to the drive system.
4. Reverse propelling during operation may be done without raising the pick up assembly.

Preventive Maintenance

Daily

1. Unplug cord from the wall and wind cord on machine.
2. Do not overfill the solution tank.
3. Do not allow water to enter the vacuum motor.
4. Use defoamer if extraction chemical foams.
5. Adjust brush so machine is easy to pull.
6. Drain and rinse solution tank.
7. Drain and rinse the recovery tank.
8. Clean and rinse brush and brush chamber.
9. Remove hose from the recovery tank and run vacuum for 5 minutes.
10. Store hose in the recovery tank.
11. Check for damage and report it if found.
12. Wipe all dirt off the machine with a clean cloth.

Weekly

1. Remove all fibers, hair and carpet strands from the brush.

2. Rinse vacuum shoe.
3. Tighten nuts and bolts.
4. Wipe all dirt off the machine with a clean cloth.

Monthly

1. Check the cord for cracks.
2. Check the ground on the plug.
3. Clean solution tank and fill it with 1 gallon of water and some disinfectant detergent. Run pump until the tank is empty.
4. Spray silicone on all pivot joints.
5. Tighten all nuts and bolts.

Yearly

1. Replace belt, covers, gaskets and brush if necessary.

After each operation

Emptying solution and Recovery Tanks

Drain hoses for solution and recovery are located at the front of machine behind access panel. The left hose is for recovery drain, the right hose is for solution drain.

Solution tank - Drain unused solution and store in a separate container for future use.

Recovery tank - Drain contents and flush tank until clear water appears.

Vacuum filter screens - Check vacuum tube filter screens for dirt and debris. Remove screens and flush with water.

12" UPRIGHT VACUUM

Commonly referred to as a (single motor) upright vacuum

Always read the owners manual

Purpose

To remove dirt and dust from carpets and walk off mats. Also to provide a clean, safe, and attractive environment.

Safety Precautions

1. Check equipment for proper electrical operation, cord and plug.
2. Do not stand in a wet area or do not try to vacuum up water or something that is wet.
3. Never leave machine running or plugged in when unattended.
4. Unplug cord using the plug, not by pulling on cord.
5. Always empty bag after the shift.
6. Do not run over cord.

Operation

Release the handle so that it tilts back towards the operator. Start the vacuum with your foot by stepping on the switch. Make sure the brush is adjusted properly. Push the vacuum back and forth, and if possible, go over the same area from a different angle.

Daily

1. Check belt and brush area for any obstructions or tangles.
2. Check the belt and look for cracks or excessive wear.
3. Check to see if the bag is more than half full.
4. Check for damage and report it if found.
5. Wipe all dirt off the machine with a clean cloth.
6. Check the cord for cracks.
7. Check the ground on the plug.

Monthly

1. Make sure the motor can turn freely.
2. Tighten all nuts and bolts.

Yearly

1. Check the fan chamber and fan for dirt and grease build up.
2. Replace filters if needed.
3. Replace the turbulator brush once the bristles are less than a quarter of the original length.

14", 16" UPRIGHT VACUUMS

Commonly referred to as a (two motor) upright vacuum

Always read the owners manual

Purpose

To remove dirt and dust from carpets, walk off mats, rugs. Some machines are equipped with flexible hoses and wands. This makes it easier to clean high surfaces and corners, and also provides a clean, safe, and attractive environment.

Safety Procedures

1. Do not allow to be used as a toy. Close attention is necessary when used by or near children.
2. Use only as described in the manual. Use only the manufacturer=s recommended attachments.
3. Do not use with damaged cord or plug. If the appliance is not working as it should be, has been dropped, damaged, left outdoors or dropped into water, report this to the building supervisor.
4. Do not pull or carry by the cord, use the cord as a handle, close a door on the cord, or pull the cord around sharp edges or corners. Do not run the appliance over the cord. Keep the cord away from heated surfaces.
5. Do not unplug by pulling on the cord. To unplug, grasp the plug, not the cord.
6. Do not handle the plug, cord or appliance with wet hands.
7. Do not put any object into openings. Do not use with any opening blocked; keep free of dust, lint, hair, and anything that may reduce air flow.
8. Keep loose clothing, hair, fingers, and all parts of body away from openings and moving parts.
9. Do not pick up anything that is burning or smoking, such as cigarettes, matches, or hot ashes, or any health endangering dusts.
10. Do not use without dust bag and/or filters in place.
11. Turn off all controls before unplugging.
12. Avoid vacuuming hard or sharp objects.

13. Use extra care when cleaning on stairs.
14. Do not use to pick up flammable or combustible liquids such as gasoline or use in areas where they may be present.

Operating Procedures

1. Begin with the bag in place and brush in the proper setting.
2. Turn on the machine. Some switches are on the handle, some switches are on the back of the canister and some switches are on the back of the brush housing that you turn on with your foot.
3. Step on the handle release button to lower the handle. This will also automatically start the brush motor.
4. Begin moving forward. A properly adjusted brush will allow the machine to virtually move itself on certain carpets. Walking behind your vacuum is less tiring than to stand in one spot and push and pull.
5. On some machines you have to step on the handle. Release button again to lower the handle further to get under lower furniture.

Using the wand

1. To use flexible vacuum hose and the wand, put the handle in the upright position. The brush motor will stop automatically. Remove the wand from its holder at the back of the machine.
2. Place the wand back into its holder after use to continue vacuuming.

Daily

1. Adjust brush to the highest setting that will assist in propelling the machine.
2. Unplug cord from the wall and wind cord on machine. Check for damage to cord and plug.
3. Use machine in a straight line.
4. Empty bag after use.
5. Dispose of paper bag when 3/4 full.
6. Check brush area for any obstructions or tangles.
7. Check for damage and report it if found.

8. Wipe all dirt off the machine with a clean cloth.

Weekly

1. Remove bag and turn it inside out to clean thoroughly.
2. Wipe all dirt off the machine with a clean cloth.
3. Remove and clean motor filters.

Monthly

1. Check the cord for cracks.
2. Check the ground on the plug.
3. Spray silicone on all pivot joints.
4. Tighten all nuts and bolts.

Yearly

1. Replace filters or as needed.
2. Replace the turbulator brush once the bristles are less than a quarter of the original length or as needed.
3. Replace carbon brushes or as needed.
4. Replace belt or as needed.
5. Replace cloth filter bag or as needed.

26", 28" UPRIGHT VACUUMS

Commonly referred to as a (three motor) upright vacuum

Always read the owners manual

Purpose

To remove dirt and dust from carpets in large areas; such as halls and corridors, and also provides a clean, safe, and attractive environment.

Safety Procedures

1. Do not allow to be used as a toy. Close attention is necessary when used by or near children.
2. Use only as described in the manual. Use only the manufacturer=s recommended attachments.
3. Do not use with damaged cord or plug. If the appliance is not working as it should be, has been dropped, damaged, left outdoors or dropped into water, report this to the building supervisor.
4. Do not pull or carry by the cord, use the cord as a handle, close a door on the cord, or pull the cord around sharp edges or corners. Do not run the appliance over the cord. Keep the cord away from heated surfaces.
5. Do not unplug by pulling on the cord. To unplug, grasp the plug, not the cord.
6. Do not handle the plug, cord or appliance with wet hands.
7. Do not put any object into openings. Do not use with any opening blocked; keep free of dust, lint, hair, and anything that may reduce air flow.
8. Keep loose clothing, hair, fingers, and all parts of body away from openings and moving parts.
9. Do not pick up anything that is burning or smoking, such as cigarettes, matches, or hot ashes, or any health endangering dusts.
10. Do not use without dust bag and/or filters in place.
11. Turn off all controls before unplugging.
12. Avoid vacuuming hard or sharp objects.
13. Use extra care when cleaning on stairs.

14. Do not use to pick up flammable or combustible liquids such as gasoline or use in areas where they may be present.

Operating Procedures

1. Start with brush all the way “up.” Twist operating handle to start brush motor.
2. Turn operating knob (lower) until brush begins to touch carpet. Stop when bristles touch carpet. Setting brush too low will cause undue bristle wear while not adding to cleaning ability.
3. Turn on vacuum motors. Twist operating handles and begin cleaning. If the brush adjustment is proper, the brush should tend to pull the machine forward. If the machine does not propel adequately, you may want to set the brush one or two notches lower.
4. When cleaning very dirty carpets or when picking up heavy debris such as sand, you should operate the machine in a forward and reverse motion keeping the brush and vacuum motor on during the reverse motion. When vacuuming, make a pass as far as you can go without stretching the cord. On the return pass overlap the prior pass. Do not run over the cord.

Daily

1. Adjust brush to the highest setting that will assist in propelling the machine.
2. Unplug cord from the wall and wind cord on machine. Check for damage to cord and plug.
3. Use machine in a straight line.
4. Empty bag after use.
5. Dispose of paper bag when 3/4 full.
6. Check brush area for any obstructions or tangles.
7. Check for damage and report it if found.
8. Wipe all dirt off the machine with a clean cloth.

Weekly

1. Remove bag and turn it inside out to clean thoroughly.
2. Wipe all dirt off the machine with a clean cloth.
3. Remove and clean motor filters.

Monthly

1. Check the cord for cracks.
2. Check the ground on the plug.
3. Spray silicone on all pivot joints.
4. Tighten all nuts and bolts.

Yearly

1. Replace filters or as needed.
2. Replace the turbulator brush once the bristles are less than a quarter of the original length or as needed.
3. Replace carbon brushes or as needed.
4. Replace belt or as needed.
5. Replace cloth filter bag or as needed.

WET AND DRY VACUUMING

Purpose

To remove dust, dirt and water, and to aid in reaching difficult to clean areas and for appearance. The operations may be performed on floors, walls, ceilings, walk off mats and carpeting.

Equipment and Materials Needed

A commercial tank type vacuum, hose, wand, carpet tool, wet pick up tool. (When dry vacuuming, you will need a filter.)

Safety Precautions

1. Check equipment for proper electrical operations - cord and plug. If frayed or broken, do not use.
2. Always remove filter before using vacuum to pick up water.
3. Always unplug machine from wall when not in use.
4. Do not stand in water when plugging into power outlet.
5. When unplugging machine, grasp by the plug. (Do not pull by the cord.)
6. When using vacuum accessories for vacuuming overhead, always wear safety glasses to protect eyes from falling particles.

Dry Vacuuming

1. Assemble proper equipment and attachments for the area to be vacuumed.
2. Remove furniture and other items that may interfere with vacuuming.
3. Start in the farthest corner of the room or the top of the item to be vacuumed. Vacuum in a back and forth motion.
4. Clean cloth filter daily. If your wet/dry has a paper bag in it, the bag should be changed when it is 3/4 full. This maintains maximum suction power.
5. Replace furniture or items.
6. Clean all equipment before putting into storage.

Wet Vacuuming

Purpose: Wet vacuuming is an effective method (with the proper type of vacuum) for picking up water or liquids in large areas after stripping, major scrubbing, minor flooding, shampooing, and in areas of large spills to speed up the work process and to save valuable man hours. Mopping in most areas will still have to be done after wet vacuuming has been completed. Wet vacuuming only accomplishes the quick removal of large amounts of water or various liquids.

1. Assemble all necessary equipment.
2. Take tools to area to be vacuumed.
3. Move all furniture out of area to be vacuumed.
4. Plug in machine. (Caution must be used when using electrical equipment in wet areas.) Always start from a dry area and work into the wet area in strips, keeping electrical cord out of water.
5. Use push and pull strokes with a 2' or 3' stroke and work forward, overlapping strokes.
6. Take extra caution with footing while working in wet areas to avoid falling.
7. Check water level in canister periodically to ensure float is operating.
8. Empty canister as required.
9. When using vacuum to pick up shampoo or soapy liquid, take extra caution as large amounts of suds will not activate float thus letting moisture get into fan assembly.
10. Empty all water out of canister when finished and wipe dry to eliminate any possibility of corrosion. This can also be done by running vacuum for approximately 5 minutes. This will dry out hose wand float of any moisture left.
11. Clean equipment and return to designated storage area.

Daily

1. Drain and thoroughly rinse the recovery tank.
2. Rinse and clean float housing
3. Make sure float is free to move up and down.
4. Wipe all dirt off the machine with a clean dry cloth.
5. Remove and rinse the squeegee.

6. Use defoamer if the solution recovery produces high foam.
7. Store machine with vac motor housing off center.
8. Let the vac motor run for 5 min. in off center position.
9. Check cord for damage and report it if found.

Weekly

1. Use mild stripping chemical to remove all grime and finish residue.
2. Check hose and attachments and report if damaged.

Monthly

1. Spray silicone on all pivot joints.
2. Tighten all nuts and bolts.

Yearly

1. Check carbon brushes in the electric motor and replace if needed.
2. Replace filter and squeegee if needed.