INSTRUCTION MANUAL AND PARTS LIST

INSPECTION
Carefully unpack and inspect your extractor cabinet for shipping damage. Each unit is tested and thoroughly inspected before shipment, and any damage is the responsibility of the delivering carrier who should be notified immediately.

ELECTRICAL
The ENSIGN hot water soil extraction machine is designed to operate on a standard 15 amp., 115 volt 60 hz A.C. household current. Voltages below 105 volts or above 125 volts could cause serious damage to vac and pump motors.

GROUNDING INSTRUCTIONS
To protect the operator from electric shock, this machine must be grounded with an approved three-conductor power cord and three-prong grounding type plug to fit the proper grounding receptacle.

WARNING: To reduce risk of electrical shock do not expose to rain—store indoors.

EXTENSION CORDS
If an extension cord is used, the wire size must be at least one size larger than the power cord from the machine and should be limited to 75 feet in length. Extension cord must be three-wire grounded.

EQUIPMENT SETUP
1. Set 3.5 gallon recovery bucket in tank well and put vac dome in place, centered, to insure a good seal.
2. Plug power cable from machine into properly grounded wall outlet.
3. Turn vacuum motor switch on and off to make sure you have electric power at machine.
4. Connect vac hose to hose inlet on dome. Connect solution hose to outlet nipple on machine by sliding back knurled collar on female coupler and installing coupler over nipple. Release collar to lock them together. Make sure coupler is secured to avoid leaks.

5. Using a clean container, fill solution tank with hot water. The maximum capacity of the ENSIGN is 8 gallons. Mix in a nonfoaming cleaning concentrate for use in hot water extraction machines at the proportions noted on the container for various carpet soil conditions.

NOTE: When using a powder cleaner, premix with hot water in clean container before adding to solution tank.

CARPET INSPECTION
Determine precisely what areas you are going to clean. Note problem areas in the carpet or tack strip. Look for loose carpet, heavily damaged areas, discolored stains, or grease spots that will require prespotting. Note the carpet type. Check the availability of hot water, drains, suitable electrical outlets. If the carpet is loose or torn, have it repaired before you start to clean it.

Plan your cleaning route, working from the most remote area toward the exit. Try not to travel over the cleaned areas for water or to dump waste. Furniture should be moved out away from walls before cleaning. If replaced on damp carpet, use foil or plastic protectors under the legs to prevent possible carpet staining. If possible, open all windows and doors to speed carpet drying.

OPERATION
1. Connect vacuum and solution hoses to wand, floor tool, or powered brush floor tool.
2. Turn on pump and vacuum switches.
3. Start in one corner, depress solution valve lever fully and move backward at a steady pace 25 to 30 feet per minute, cleaning a path at least half the length of the room. Release solution valve lever approximately 6 inches before reaching the end of the pass to insure that cleaning solution is extracted from carpet.
4. Make the next cleaning pass beside the first, overlapping about 1 inch. Continue cleaning until entire width of area has been cleaned.
5. Reverse direction and clean balance of room.

On heavily soiled carpets or on areas of high foot traffic, it may be necessary to use a prespray or traffic lane cleaner applied with a separate sprayer. Do not add presprays to the machine solution tank. If you use a spotter, follow label directions exactly. Remove the spotter with the floor tool when done. Never leave any spotter in a carpet — it may bleach or brown it permanently.

Shag carpets may require several passes from different directions, but be careful not to oversaturate. In these cases, make several vacuum passes without spray to extract as much moisture as possible.

As you work, check to see if there is foam buildup in the recovery bucket. If there is, remove the vacuum hose from the floor tool and add a little defoaming compound while the vacuum is running. Defoamer can be added to the recovery bucket, but never to the solution tank.

WARNING: An overflow of foam into the vacuum motor can cause it to fail! Constantly monitor the level of waste water in the recovery bucket. When about three-quarters full, shut off the machine, remove the dome, take out bucket and empty. Keep the exterior of the bucket dry so no moisture gets into the vacuum chamber. Replace the bucket, center and seal the dome, and continue cleaning.

PROTECT FROM FREEZING
If it becomes necessary to store in temperatures that could drop below 45°F, the pumping system, hoses and valves must be protected from freezing with a methyl hydrate window washer anti-freeze solution. Do not use ethylene glycol or cooling system antifreezes.

1. Add a gallon or two of window washer antifreeze to the supply tank, hook up hoses to the machine and floor tool and turn the power switch on. Spray until the antifreeze solution fills the solution lines.
2. Disconnect solution supply hoses and vacuum out the leftover antifreeze from the supply tank. Always allow the unit to reach room temperatures before filling with hot water or operating.
### ENSIGN WIRING DIAGRAM

**VACUUM MOTOR**

- **WIRE NUT**
- **WHITE**
- **GREEN**
- **BLACK**

**PUMP MOTOR**

- **WIRE NUT**
- **WHITE**
- **GREEN**
- **BLACK**

**PUMPSWITCH**

- **VACUUM SWITCH**

### ENSIGN PARTS LIST

<table>
<thead>
<tr>
<th>PUMP PARTS LIST</th>
<th>KEY PART NO.</th>
<th>DESCRIPTION</th>
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</thead>
<tbody>
<tr>
<td>24-152</td>
<td>3</td>
<td>Pump &amp; Motor</td>
</tr>
<tr>
<td>24-157</td>
<td>1</td>
<td>Motor, 115V Volt</td>
</tr>
<tr>
<td>24-181</td>
<td>2</td>
<td>Rectifier</td>
</tr>
<tr>
<td>24-200</td>
<td>3</td>
<td>Plate, Motor Housing</td>
</tr>
<tr>
<td>24-201</td>
<td>4</td>
<td>Grommet (set of 4)</td>
</tr>
<tr>
<td>5-7-9-9-24-232</td>
<td>5</td>
<td>Kit, Pump Repair (2000-549Pump)</td>
</tr>
<tr>
<td>24-231</td>
<td>10</td>
<td>Bearing Cover</td>
</tr>
<tr>
<td>24-202</td>
<td>11</td>
<td>Pump Housing</td>
</tr>
<tr>
<td>33-038</td>
<td>12</td>
<td>Pipe Plug, 1/4&quot; Brass</td>
</tr>
<tr>
<td>24-200</td>
<td>13</td>
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DAILY MAINTENANCE
1. Vacuum surplus solution from solution tank into recovery bucket.
2. At the end of every working day, flush entire pumping system, including floor tool, hand tools, etc. with 1 to 3 gallons of clean hot water.
3. Check vacuum intake screens in recovery tank well. Remove any lint buildup.
4. Inspect solution filter in solution tank. Filter screen can be cleaned by washing with hot water and detergent.
5. Lubricate quick disconnect hose fitting with silicone lubricant. Do not use petroleum based lubricants as they will cause damage to the "O" rings.
6. Check spray nozzles frequently. If they become clogged, remove them, wash thoroughly and blow dry. Do not use pins, wire, etc. to clean nozzles as this could destroy spray pattern.
7. Periodically inspect hoses, electrical cables, filters and connections on your machine. Frayed or cracked hoses should be repaired or replaced to eliminate vacuum or solution pressure loss. Because the electrical cable will lie on wet carpet at times, the cable must be well insulated and cable connector screws kept tight. If the cable insulation is broken or frayed, repair or replace it immediately. Don’t take chances with an electrical fire or shock.

6 MONTHS OR 750 OPERATING HOURS
Removing Cabinet Assembly From Base:

CAUTION: Always disconnect the machine from power source before attempting any maintenance or repairs. Do not remove the four screws from the bottom of the recovery tank. Remove will break the seal between the solution and recovery tanks and will require major repairs.

1. Lay the machine on its side. Remove two \( \frac{1}{4} \) " hex nuts located about two-thirds of the way back from front in a recessed well on the bottom side of the base assembly.
2. Turn machine upright on its wheels.
3. Lift cabinet assembly by its handles to separate solution cabinet from the base. Use a screwdriver to pry the sections apart, if necessary.
4. Lay cabinet assembly on its side. Use a box or carton the height of the base assembly to rest the top section on.

VACUUM MOTOR
1. To remove vacuum motor, disconnect wires and the cord tie-down.
2. Lift out vacuum motor, being careful not to damage seals.
3. To inspect brushes, remove brush holder and replace when they reach \( \frac{3}{8} \) " length, or after 750 operating hours.
4. Inspect vacuum intake opening for lint. If there are large accumulations, the fan section should be disassembled and cleaned.

NOTE: Vacuum motors can usually be repaired, but such repairs should always be done by a qualified vacuum repair shop.

PUMP
To remove pump, disconnect wires, hoses and cord tie-down. and remove four screws holding pump to base.

To Inspect Or Repair Pump:
Refer to pump parts drawing in manual.

CAUTION: The pump suction cover is a nylon material and care should be taken when installing brass fittings not to cross-thread the fittings as this will result in leaking connections.

ELECTRIC BOX
To gain access to electrical components, four screws must be removed; two each on each side of the electrical box cover. Remove box to expose switches and electrical connections.

IMPORTANT: Ground wires are attached to the electrical box with ground screw.

CHEMICALS
The ABS plastic used in the tank is suitable for use with most carpet cleaning chemicals. But it is susceptible to chemical attack from some cleaning substances, such as hydrocarbon solvents and chlorinated bleaches. These noncompatible materials are not of the type normally used for carpet cleaning.

SUITABLE CHEMICALS
Alkalis
Clorox
Defoaming Agents
Detergents
Ethylene Glycol
Hydroxides
Oxygen Bleaches
Soaps
Vinegar
White Monday Bleach

NONCOMPATIBLE CHEMICALS
Aldehydes
Aromatic Hydrocarbons
Butyls
Carbon Tetrachloride
Clorox®
Chlorinated Bleaches
Chlorinated Hydrocarbons
Lysol®
MethyIs (MEK)
Perchloroethylene (perc)
Phenols
Trichlorethylene

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