



WARRIOR

Truckmounted Carpet Cleaning System Complete Users Guide and Troubleshooting Manual

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Machine Specifications: Kohler Warrior

**Engine: Kohler 19EFI
Blower: 3L Sutorbilt (288 CFM)
Pump: TX1810 General Pump
Recovery: 65 Gallon Aluminum
Heater: 3HT Little Giant 120,000 BTU
Propane tank: 12 Gallon
Fresh Water Tank: 55 Gallon**

Reels:

**150' Vacuum Hose Reel
150' Solution Hose Reel Live
100' Supply Hose Reel Live
Stack Bracket**

Hoses:

**150' 2" Vacuum Hose
150' 1/4" Solution HP Hose
100' 3/8" Supply hose**

Instruments & Gauges:

**Balanced Pressure Regulator
Secondary Solution Port (for mixing chemical/dyes)
Liquid filled Pressure and Vacuum Gauges
Chemical Injection Meter
Tiny Tach/Hour Meter
Large Industrial Silencer
Low Oil Shutoff Switch
Recovery Tank Overflow Shutoff Switch
Vacuum Relief Valve
12" 2-Jet Double Bend Stainless Steel Wand**

Operator Safety

The safety alert symbol is used to identify safety information about hazards that can result in personal injury. A signal word (DANGER, WARNING, or CAUTION) is used with the alert symbol to indicate the likelihood and the potential severity of injury. In addition, a hazard symbol may be used to represent the type of hazard.



DANGER indicates a hazard which, if not avoided, **will result in death or serious injury.**



WARNING indicates a hazard which, if not avoided, could result in death or serious injury.



CAUTION indicates a hazard which, if not avoided, could result in minor or moderate injury.



NOTICE indicates a situation that could result in damage to the product.



General Operation

Before attempting to start or operate your system, (or when the unit is shutdown for servicing), a pre-operational check of the unit should be conducted. Should this inspection uncover a need for maintenance, the unit should not be started until the problem(s) has been corrected.

Pre-Operational Checklist:

Gasoline: Make sure that you have enough fuel to complete the job.

Propane: Make sure that you have enough gas to complete the job. On newly filled propane tanks, be sure the tank on your truck has not been overfilled*.

Oil: Check engine crankcase oil level. Add oil as needed. 10W30 oil is recommended.



Hoses: Before starting your machine, inspect all hoses and connections for leaks, loose fits, or worn areas. Repair or replace as needed.

Water Supply: Connect water to system to prevent heater or pump damage.

Heater Setup: Connect the water supply hose to convenient cold-water source or confirm that you freshwater tank has enough water for the job. Turn the water source on.

Fill your chemical supply container with the appropriate chemical mixture, and submerge the end of the clear chemical supply line inside. The chemical check valve located at the end of the chemical line should not lie at the bottom of the container. Adjust so the check valve is just touching the bottom of the container.



*To check for overfilling: Be sure that no sparks, flames, or other sources of ignition are near the tank. Open the overflow vent valve slightly to allow some contents to escape through the vent. If you hear and smell gas, your tank is NOT overfull.

If you see a fog or smoke escape, YOUR TANK IS OVER FULL. Continue to vent it until the vapor is not visible. Running your machine with an overfilled LP tank can damage the LP regulator and affect the operation of the heater.

General Operation

Start Up



HEATER MUST BE FULL OF WATER BEFORE STARTUP. Dry firing will cause the heater coil to burst.

Heater Start Up:

Turn selector knob on thermostat housing from “OFF” to “Pilot”.

Hold red pilot control button down and push the striker down a few times until the pilot light comes on.

Hold pilot control button for 10-30 seconds. Pilot must remain lit when the button is released. The pilot light may go out a few times when starting up a new system. This is not uncommon and is nothing to be concerned about, just do the following:

Turn control knob to the “OFF” position.

Wait two minutes, and then follow steps B-D again.

Turn selector knob from “PILOT” to “ON”.

Set temperature control knob on the face of the thermostat to the desired setting.

Pull off enough vacuum hose for the job and connect the 2” end to the end of the vacuum intake.

Connect the pressure hose to the cleaning wand.

Connect fresh water supply to unit and/or check water reservoir for assurance there is enough water to complete the job.

Turn the key switch to “ON” position. You should hear fuel pump clicking.

Turn STARTER to start the engine. Pull out CHOKE if needed and push in CHOKE as soon as possible. Allow engine to warm up before placing under load. Adjust throttle as needed. Choke must be completely open (pushed in) to run machine. Engine must be run at full throttle to avoid overheating.



DO NOT USE ENGINE SPEED TO ADJUST VACUUM OR PRESSURE. THE ENGINE R.P.M. HAS BEEN FACTORY SET FOR OPTIMUM PERFORMANCE OF THE SYSTEM COMPONENTS AND FOR PROPER COOLING AIR FLOW TO ENHANCE ENGINE LIFE. RUN AT FULL THROTTLE.

General Operation

Start Up Continued

Activate valve on wand, to allow the solution to purge any air out of the line. (Allow 30 seconds per 50ft. of solution hose for lines to purge).

Set the system pressure to the desired level from 300 to 600 PSI is normal for most carpet cleaning applications using pressure regulator on console.

Activate wand and adjust the chemical mixture ratio to desired level using the chemical flow meter on the front of the console. (Typical flow rates are 2-4 G.P.H)

Activate wand to be sure the heater is firing properly. The heater should come on about 5 seconds after the wand is activated, and go off about 5 seconds after the wand is released.

To check vacuum, place the palm of your hand over the vacuum input tube. (You will need another person to help with this). The vacuum gauge will increase to about 15"HG as VACUUM RELIEF VALVE on the blower opens. Vacuum relief valve is factory set and should not be adjusted.

Shutdown of Unit

Throttle down unit and allow to idle approximately 30 seconds.

Disconnect all hoses making sure to release pressure in system by keying wand beforehand.

Turn off engine key switch.

Turn off water heater. Set selector to "OFF"

Turn off LP gas supply at tank.

End of the day

Spray penetrating lubricant into the vacuum blower lobes for 10-20 seconds, via the blower port on face plate, before shutting the system off. This helps to prevent the blower from rusting internally and locking up.

Wash off recovery tank filter.

Dump and rinse recovery tank. Leave lid off to dry.

Maintenance

Your TCS carpet cleaning system needs periodic maintenance just like any other fine piece of machinery. With proper care you can avoid downtime and premature component failure. Therefore, we strongly recommend that you initiate a preventative maintenance program. The following information and chart is supplied to assist you.

Maintenance Schedule and Servicing Chart

Engine: Kohler



Please refer to the **Engine Operating and Maintenance** Instructions enclosed with this manual.

Check oil	Daily (Before 1st start up)
Inspect air filter	Daily (Before 1st start up)
Change oil*	50 hours *Engine oil –10W30
Change oil filter	50 hours
Change air filter	500 hours (as needed)
Replace /clean spark plugs (Tune-Up)	500 hours (as needed)

Vacuum Blower System: Sutorbuilt

Please refer to the **Sutorbuilt Blower Instructions** enclosed with this manual.

Clean recovery tank filter	daily
Spray lubricant in blower	daily (end of day via blower port)
Rinse out recovery tank	daily
Check blower oil	25 hours
Change tank filter	300 hours
Change blower oil*	500 hours (First time)

*Blower oil – Aeon Positive Displacement (PD) Synthetic Lubricant.

Solution Pump: General Pump

Please refer to the **General Pump Service Manual** enclosed with this manual.

*General Pump oil

Heater: Little Giant 3HT HP Propane-Fired Heater

Please refer to the Little Giant information enclosed with this manual.

Clean burner and pilot jets Every 500 hours or as needed

Maintenance

General:

Visual inspection for leaks	Daily
Wipe Down Machine	Weekly
Check for loose or cracked belts	Weekly
Replace all belts	Yearly
Tighten bolts, nuts, & screws	Monthly (100 hrs)

Freeze Protection

NOTICE

Water freezes at 32° F. When water freezes, it expands and can cause major damage to a truckmount system, such as:

1. Broken heater coil (might be re-welded)
2. Broken wand valves (must be replaced)
3. Cracked water pump manifolds (must be replaced)
4. Cracked & punctured Hoses (must be repaired or replaced)

Either KEEP UNIT ABOVE 32° F. Park truck in a heated garage or place a kerosene, propane, or U.L. rated electric heater inside.

Or pour 3.5 gallons of marine RV antifreeze into a 5 gallon bucket. Pour the other ½ gallon into your chemical headpack. Take the hose from your fresh water tank and put it into the bucket.

Turn on the truckmount, hook up your wand and engage the pump.

Open your chemical meter 2 full turns and begin to spray with the wand until anti-freeze is observed coming out of the wand. Turn off the truckmount.

After this process it is still a good idea to bring your wand(s) inside. Pressure lines may also be taken inside or the fittings removed from the end to allow for water expansion. Before working, flush the marine anti-freeze back into the bucket so it can be reused.

Waste Water Disposal

There are laws that prohibit the dumping of soiled water from carpet cleaning equipment in any place but a sanitary treatment system. The water recovered into your unit's recovery tank contains materials such as detergents and soil. These materials must be processed properly before they are safe to re-enter our streams, rivers, and reservoirs. Always check with State, County, City ordinances before dumping waste water.

TROUBLESHOOTING GUIDE

Insufficient Pressure:

CAUSE	SOLUTION
Insufficient or no incoming water	Check reservoir and fill as needed
Not adjusted properly	Readjust to desired pressure
Air in lines to pump	Check lines for leaks and purge air from system
Crack in chemical flow meter	Replace meter
Hole in chemical line	Replace line
No chemical in reservoir	Add appropriate chemical
Uncoupled hose	Shut down machine & Re-couple
Engine running weak	Tune-up
Engine RPM too low	Adjust throttle

Insufficient Chemical:

CAUSE	SOLUTION
Not adjusted properly	Adjust to desired flow
Clogged chemical check valve	Flush with water or replace
Lack of chemical feed	Air in line, purge system
"Frozen" indicator pellet	Remove meter knob and shoot burst of pressurized air or water into gauge

Insufficient Vacuum:

CAUSE	SOLUTION
Poor seal on recovery tank lid	Replace seal
Loose vac hose connection	Reconnect hose
Collapsed/damaged vac hose	Replace or splice
Insufficient engine speed	Adjust throttle/tune-up
Belt Worn	Replace Belt
Leak on recovery tank	Weld
Dump valve open	Close
No airflow (i.e. Clogged Hose)	Obstruction in hose, clear hose

TROUBLESHOOTING GUIDE

Insufficient Heat:

CAUSE	SOLUTION
Not adjusted properly	Readjust Unitrol
Insufficient gas supply	Fill tank and check Regulator
Pilot going out	Check thermocouple *Replace if necessary
Insufficient manifold pressure	*Adjust pressure
Dirty Burner Ring	Clean jets on burner ring
	*Refer to an authorized L.P. service center

Engine shutting off:

CAUSE	SOLUTION
Insufficient fuel supply	Fill tank
Faulty fuel pump	Replace pump
Needs tune-up	Tune-up
Recovery tank full	Empty tank via dump valve
Insufficient oil in engine	Check dipstick and add oil to appropriate level

Wand won't shut off completely:

CAUSE	SOLUTION
Worn valve stem	Replace stem
Worn valve	Replace valve

Blower will not turn:

CAUSE	SOLUTION
Moisture or residue in blower	Turn blower pulley a ¼" after treating with lubricating
	* See Blower maintenance.

Engine will not start:

CAUSE	SOLUTION
Recovery tank shutoff switch	Replace damaged switch
Recovery tank full	Empty
Fuel pump defective	Replace
Insufficient fuel supply	Check fuel line for leaks, Fill gas tank if at ¼ tank or less.

