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## **SPECIFICATIONS & COMPONENTS**

### **1. WEIGHT & MEASURES**

- a. Framed Truck Mount Components

Length: 36" Width: 20" Height: 24"

- b. Recovery Tank

Length: 15.5" Width: 30.5" Height: 36.5"

### **2. COMPONENTS**

- a. Engine: Kohler 15HP
- b. Vacuum Blower: Roots 33, Positive Displacement Rotary Lube Blower
- c. High Pressure Pump: Hypro 3 Piston Pump
- d. Heat Exchanger, Dual Stainless Steel Rebuildable
- e. Fuel Pump – Kohler Diaphragm Vacuum Pump 4-5 feet capability.

### **3. GAUGES**

- a. Temperature
- b. Water Pressure
- c. Vacuum
- d. Hour Meter

### **4. HOOK UPS, DRAINS, & HOSES**

- a. Inlet, garden hose type
- b. Male Quick Connect & Female Quick Connect
- c. Ball Valves
- d. Balance Pressure Regulator
- e. Solution Injector
- f. Check Valve, Solution
- g. Engine Oil Drain Hose
- h. Pump Oil Drain Hose
- i. Watts Regulator
- j. Black High Pressure Water Hoses 6 – 51 inches
- k. Blue High Pressure Goodyear Hose
- l. Vacuum Gauge Hoses, Plastic Black

- m. 12 Volt Battery
- n. Recovery Tank Filter
- o. Recovery Tank Softer Switch Float
- p. Pump Drive Belt
- q. Silencer Dual (vacuum)
- r. Engine Exhaust Hose (black, wire reinforced)
- s. Clamps 1" (2)
- t. Clamps 5" (2)
- u. Clamps ½" (4)
- v. Solution Filter
- w. Solution Control

**5. COMPONENTS – ELECTRICAL**

- a. Ignition Switch (key type) Kohler
- b. Fuse Block
- c. Fuse (20 amp)
- d. Wire Harness
- e. Spark Plug
- f. Module
- g. Fuel Solenoid
- h. Sensor Hi – Low Switch
- i. Temperature Sensors - 160° - 200° - 280°
- j. Water Sensor Switch
- k. Skinner Valves
- l. 12 Volt DC Battery

## **INSTALLATION INSTRUCTIONS**

### **PRIOR TO STARTING THE INSTALLATION OF YOUR BLACK STALLION, READ THE INSTALLATION INSTRUCTIONS CAREFULLY.**

- a. The Black Stallion should not be mounted in any motor vehicle with less than ½ ton capacity.
- b. If mounting in a trailer, make certain the trailer is rated for the total weight of the full unit and trailer. Electronic or hydraulic brakes should be provided and a strict compliance to any and all State and Federal vehicle laws must be maintained. However, as noted in the warranty, trailer mounting will void all warranties and Chem-Tex will be relieved of any and all liabilities. The vehicle tires should have a load rating above the combined vehicle and unit weight when full.

### **LIFTING THE BLACK STALLION ONTO VEHICLE**

The Black Stallion weighs about 385 lbs. Therefore, we recommend a forklift be used to lift the unit into the vehicle. Position the forks under the unit from the front, making certain that the forks are spread to the width of the base and taking care not to spear unit.

### **POSITIONING THE BLACK STALLION IN VEHICLE**

Vehicles may vary in size and configurations; therefore individuals have their own preference as to where they want their units installed, therefore, we do not recommend any specific location for the Black Stallion. However, we strongly advise the following:

- A. The weight of the Black Stallion should be distributed evenly. Too far back in the vehicle may cause unnecessary tire and shock absorber wear and swerving.
- B. Location will also be determined by the structural design of the underside of the vehicle, (i.e. you must avoid beams, sub-flooring, heat shields, external fuel pumps, drive shafts, brake and fuel lines, and gas tank.
- C. Recommend traverse mount with exit outside door and tank mount towards back side of unit.

**PLACEMENT OF WASTE TANK**

When mounting in a truck, place waste tank against the cab wall. When mounting in a van, leave a gap of at least 1" (one inch) to allow removal of the lid and prevent chafing the tank while driving, due to the flexing of van walls. Again, check the undercarriage for placement.

**SAFE PROPER PLACEMENT**

Once you have determined an approximate placement of the waste tank and machine, free from obstacles, realign tank and machine to positions where you can drill through and install bolts.

- A. You cannot safely install bolts through sub-floors and heat shields, a slight accident or sudden stop could pull the bolts through the floor.

**BOLTING DOWN THE WASTE TANK**

After verifying your bolt pattern is clear and free of all obstacles drill one 11/32 hole through the van or truck floor, using the waste tank as your template.

After you drill the first hole, go under the van or truck and measure out where the other holes will come through to double check the placement. This will avoid having drilled several holes through the floor to find you cannot clear some obstacle or beam and having to relocate the waste tank and redrill.

**CAUTION: IT IS CRITICAL THAT YOU AVOID NICKING OR DRILLING  
THROUGH BRAKE LINES OR FUEL LINES.**

Drill remaining holes and insert 5/16 stainless steel bolts from above with stainless steel washers above the tank flange and stainless steel washers under the vehicle, accompanied by stainless steel lock nuts.

**LOCATING THE TRUCK MOUNT IN THE VEHICLE**

Place the Black Stallion truck mount in desired location, being careful that you avoid all obstacles under the vehicle when you drill through the floor.

**BOLTING DOWN THE BLACK STALLION TRUCK MOUNT**

Once a suitable, safe location is found, drill one 11/32 hole through the vehicle floor using the unit as your template.

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1. Now measure under the vehicle where the other holes will come through to insure avoiding obstacles.

**CAUTION: DO NOT USE SHEET METAL BOLTS TO MOUNT THE TRUCK MOUNT OR RECOVERY TANK THEY WILL PULL OUT IN AN ACCIDENT OR SUDDEN STOP.**

2. Now drill remaining 3 (three) holes.
3. Install stainless steel bolts from the top with washers on the bolts, accompanied by stainless steel washers and lock units beneath the vehicle.
4. Measure the distance between the PVC fitting on the front right corner and the fitting on the Blower. Add at least 6" to the measurement to determine the total length of hose you will need to connect the two. Use the 2" ID black wire reinforced hose, included with the unit, and cut to desired length with a hack saw. (Add enough to your measurement to assure clearing the heat exchangers upon connecting the two together.)
5. Install the 2" black wire reinforced hose on the blower and secure with #36 hose clamp. Place another hose clamp over the hose, but do not tighten. Slide the hose over the hose nipple fitting on the top right corner on the recovery tank. Now tighten both hose clamps over the hose ends.

## **ELECTRICAL**

Connect to two electrical leads from the waste tank to the leads coming from the rear of the truck mount, using the appropriate automotive crimp tool. Match the two leads.

## **FUEL INJECTED VEHICLES**

Because of the difficulty of connecting fuel systems we recommend you have this completed by a Qualified Service Center or mechanic, or the use of a fuel cell that is safety approved.

The Fuel Pump on the Black Stallion is only capable of pulling fuel 4-5 feet. If you have the Black Stallion hooked to the existing fuel supply it may be necessary to install an electric fuel pump to assist.

## **TRAILER INSTALLATION**

We do not recommend the installation of the Black Stallion in any light weight trailer. However, if you choose to install in a heavy commercial trailer, this will void your truck mount warranty. In any event, compliance to any and all Federal and State laws must be maintained.

## **SILENCER/VAUUM EXHAUST**

During operation, the recovery tank, due to malfunction or excessive foam, can overflow. If this should happen, water and/or foam will be expelled out of the system through the silencer.

Therefore, place nothing in front of the silencer that could be damaged by liquids. Use Chem-Tex Defoamer to prevent excess foam in the recovery tank.

## **ENGINE EXHAUST**

When operating a gasoline powered engine in an enclosed vehicle, i.e., van or truck with cover, the fumes must be properly vented at all times. In addition to leaving the doors open in a van or enclosed truck, we recommend venting the exhaust through the floor of the vehicle.

1. Remove the two clamps holding the 1" black wire reinforced hoses to each side of the unit.
2. Drill a 1 ½" hole on each side of the unit as close as possible to the Heat Exchangers being careful not to hit any obstructions under the vehicle, i.e., fuel or brake lines, frame, gas tank, etc.
3. Insert the 1" black wire reinforced hose through their respective holes.

**WARNING: ANY EXHAUST FUMES TRAPPED IN AN ENCLOSED AREA CAN CAUSE CARBON MONOXIDE POISONING WHICH COULD RESULT IN SICKNESS AND/OR DEATH.**

## **VACUUM RELEASE**

The vacuum release is located on the lid of the recovery tank. Do not sit the lid on the tank with the vacuum release on the same end as the recovery tank filter. After the truck mount has been properly installed following standard installation procedures. Start the Black Stallion following operating procedures and set your vacuum release as described below.

1. With the Black Stallion running, turn the throttle to full speed position.
2. Black off air inlet on recovery tank.
3. Check to be sure the dump valve is closed. Any vacuum leak will render an inaccurate reading.
4. Vacuum gauge should read 13 -17 HG. If gauge reading higher, loosen the ¼" nut using a 7/16" wrench, if gauge reading is lower, tighten the ¼" nut until the desired reading.
5. Improper vacuum release setting can result in either inadequate extraction or damage to the Dresser Blower.

## OPERATING PROCEDURES

**MOST IMPORTANT:** PUMP AND HOSES WILL BE SEVERELY DAMAGED IF RUN DRY – WATER FLOW THROUGH THE MACHINE AT ALL TIMES IS A MUST!

### STANDARD OPERATION

1. Inspect oil levels in engine and pump
2. Inspect screens, filters in the recovery tank, garden hose connection and chemical feed hose and wand tip assembly are installed and clean.
3. Check wiring connections. (Sometimes these can come unhooked during installation.)
4. Connect bleeder hose to bleeder connection on face plate of Black Stallion. Turn water on.
5. Open bleeder hose to bleed air from the Black Stallion. Close the bleeder.
6. Connect high pressure (blue) hose to water outlet on face place of Black Stallion.
7. Connect other end of high pressure solution hose to quick connect on carpet wand. Open the by-pass. (Crack it). **NOTE:** If you are ready to clean immediately, or if you need to stop to move furniture etc., please crack the by-pass on your wand, this will keep the temperature down and keep your Black Stallion from shutting off.
8. When doing water extraction you will not need any solution, turn the solution control to off. Connect the bleeder hose to the water outlet side using the male-male quick connect adapter and crack open the ball-valve to let water circulate through the Black Stallion. Use the vacuum hose on the wand to extract the water.
9. The foregoing procedure will relieve all pressure in the heat exchangers and hoses, and will save on using up unnecessary solution.

### SAFETY DEVICES

1. Water inlet sensor – senses the incoming water pressure – if the pressure should drop below 5 PSI, the Black Stallion will shut off. This switch is located behind the face plate on the left side on top of the Watts Regulator.
2. Oil sensor switch – located on top of the commander engine behind the carburetor. Will shut the engine off should oil pressure drop below 30 PSI.



3. Thermo-shut down: should your Black Stallion over heat, the 280° sensor will shut the Black Stallion off. You will need to check the water supply or the by-pass in the rear of the machine. Make sure the by-pass is always dripping inside of the recovery tank. This allows the temperature sensors to operate properly. Should this happen, allow the Black Stallion to cool down to 180° before re-starting and continuing to clean.
4. Tank fill switch – will shut the Black Stallion off once the recovery tank has reached its level. Drain the recovery tank.

**MAINTENANCE**

The following page contains the proper maintenance for the Black Stallion. Please follow it as closely as possible. Good maintenance is the key to a long-lasting machine.

If you will notice, there is also a descaling chart. Descaling the unit at proper intervals will keep the hoses and heat exchangers free of calcium, rust, soap build-up and foreign debris. Please follow this as close as possible. Build-up of these materials inside the unit can and will harm the hoses, heat exchangers, BPR, wand tips and pump. Cleaning will restore proper working conditions.

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CHANGE	HOURS	DAILY	WEEKLY	YEARLY	TYPE OF OIL
AIR FILTER	EVERY 100 HOURS (CHANGE)		CHECK		
BLOWER FITTINGS			GREASE. USE PAPER TOWEL TO CATCH OVER FILL UNDER BLOWER		
BLOWER OIL		CHECK LEVEL BEFORE EVERY JOB	FILL IF NEEDED	CHANGE	50 W GEAR OIL
COUPLER	EVERY 100 HOURS (CHECK)	CHECK TO BE SURE IT'S STRAIGHT AND TIGHT BEFORE EVERY JOB		CHANGE IF NEEDED	
DESCALER	BY U.S. CHEM-TEX DEALER		CHECK TO SEE IF MACHINE HAS SCALE IN FILTERS		
ENGINE OIL	EVERY 50 HRS. IF NEEDED EVERY 100 HRS CHANGE	CHECK LEVEL BEFORE EVERY JOB			10 W 30
GARDEN HOSE CONNECTOR SCREEN		CHECK AND MAKE SURE IT'S CLEANED AND SEALED BEFORE EVERY JOB			
HOSES		CHECK			
INLINE FILTER			CHECK AND CLEAN		
JET (RECOVERY TANK)	NOTE: THIS IS A MUST. PLEASE KEEP THE JET CLEANED AND WORKING PROPERLY.	CHECK BEFORE EVERY JOB. MUST BE SPRAYING. DO NOT START THE MACHINE WITH A DIRTY OR CLOGGED JET		CHANGE	
JET (WAND)		CHECK BEFORE EVERY JOB TO SEE IF THEY ARE SPRAYING PROPERLY.			
MACHINE	EVERY 50 HOURS CLEAN		CHECK AND CLEAN WITH WD40 AND SOFT RAGS		
NUTS AND BOLTS (ALL)	EVERY 100 HOURS CHECK		CHECK		
OIL FILTER	EVERY 50-100 HOURS (CHANGE WITH OIL CHANGE)				
PUMP BELT	EVERY 100 HOURS CHECK	CHECK AND MAKE SURE IT'S TIGHT BEFORE EVERY JOB		CHANGE IF NEEDED	
PUMP OIL	EVERY 100 HRS CHECK EVERY 500 HRS CHANGE	CHECK LEVEL BEFORE EVERY JOB			30 W ND
PUMP OIL FILL	EVERY 50 HRS CHANGE	CHECK			
PUMP VALVES				CHECK AND CHANGE IF NEEDED	
RECOVERY TANK		CHECK AND MAKE SURE THE INSIDE IS CLEANED.			
RECOVERY TANK FILTER		CLEAN		CHANGE IF NEEDED	
SOLUTION HOSE SCREEN		CHECK AND MAKE SURE IF CLEANED OF TRASH BEFORE EVERY JOB			
SPARK PLUGS	EVERY 100 HRS CHANGE				
WATER FILTERS (ALL 3)			CHECK AND CLEAN		

**DESCALING PROCEDURE**

The Black Stallion, like any other unit, has the inherent ability to collect calcium and other mineral deposits within tubes, hoses, and coils which will restrict the water flow within the machine. When this condition is noted or suspected, a very simple and inexpensive method of descaling has been established.

Items needed:

1. A five gallon plastic bucket
2. At least 2lb of Descaler
3. A solution hose
4. A high pressure hose or hoses, with the male connector removed from the end of the last hose

Procedure:

1. Mix 2lb of Descaler with 5 gallons of water in the plastic bucket.
2. Connect the high pressure hose or hoses to water outlet connection on the machine. (You may desire to descale all hoses during the procedure).
3. Connect the solution hose on left side of the machine with the other end in the bucket of descaling solution.
4. Start the engine and note that the solution is being drawn from the bucket. When approximately  $\frac{1}{2}$  of the solution has been drawn into the machine, put the high pressure hose into the bucket so that the bucket will not become empty.
5. After approximately 25 minutes, you should observe that the return flow rate back into the bucket has increased. This indicates that the procedure has been effective and the descaling procedure is almost complete. Stop the engine.
6. Not the descaling solution **MUST** be removed from the system. To accomplish this:
  - a. Remove the Descaler hose.
  - b. Reconnect to original configuration.
  - c. Reinsert the input water supply hose to "water inlet".
  - d. Start the engine and monitor the discharge coming out of the open high pressure hose (male end removed). When clean water is being discharged through the hose, the descaling procedure is complete.

**PRECAUTIONS WHEN USING DESCALER:**

**CAUTION: CORROSIVE. USE THE FOLLOWING PRECAUTIONS WHEN USING DESCALER.**

**HARMFUL OR FATAL IF SWALLOWED. CONTAINS HYDROCHLORIC ACID.** DO NOT MIX WITH OTHER CHEMICALS. DO NOT USE ON ALUMINUM PARTS. USE ONLY WITH ADEQUATE VENTILATION. WEAR RESPIRATOR, GOGGLES, AND GLOVES WHEN APPLYING. DISPOSE OF WASTES PROPERLY. APPLY ONLY IN WELL VENTILATED AREAS. AVOID BREATHING SPRAY MIST OR VAPORS. AVOID CONTACT WITH SKIN. KEEP OUT OF THE REACH OF CHILDREN AT ALL TIMES. AVOID EYE CONTACT. AS WITH ALL CHEMICALS, USE ONLY WITH ADEQUATE VENTILATION. PROFESSIONAL CHEMICALS SHOULD ALWAYS BE UNDER THE COMPLETE CONTROL OF THE TECHNICIAN AT ALL TIMES.

PLEASE READ MATERIAL SAFETY DATA SHEET BEFORE USING THIS PRODUCT.

**TROUBLE SHOOTING GUIDE**

The following pages contain a trouble shooting guide. Should the guide not solve the problem, please feel free to call the service department at Chem-Tex at 1-800-243-6839.

PROBLEM	CAUSE	SOLUTION
<p><b>ENGINE WILL NOT START</b>  <b>NOTE:</b> If fuel supply is more than 4' away from engine, the pump will not pump fuel. May need electric fuel pump</p>	<ol style="list-style-type: none"> <li>1. No fuel to engine</li> <li>2. No spark to engine</li> </ol>	<ol style="list-style-type: none"> <li>1. Check fuel supply</li> <li>2. Water not turned on</li> <li>3. Recovery tank full</li> <li>4. Oil level too low</li> <li>5. Over heated</li> <li>6. Blown fuse</li> </ol>
<p><b>Engine will not turn over</b></p>	<ol style="list-style-type: none"> <li>1. Blown main fuse</li> <li>2. Bad connection to battery</li> <li>3. Dead battery</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace fuse</li> <li>2. Check and tighten battery cables</li> <li>3. Check key to see if switch was left on</li> <li>4. Replace or charge battery</li> </ol>
<p><b>Engine keeps wanting to shut off or misfire</b></p>	<ol style="list-style-type: none"> <li>1. Water coming in too low. Not enough water.</li> <li>2. Pressure release valve open in back</li> <li>3. Honeywell solenoid valve stuck open</li> <li>4. Recovery tank almost full causing float to come on and off</li> </ol>	<ol style="list-style-type: none"> <li>1. Check water supply, increase if you can</li> <li>2. Pressure turned up too high. Back down to 550 PSI</li> <li>3. Clean solenoid</li> <li>4. Empty recovery tank</li> </ol>
<p><b>Machine shuts off</b></p>	<ol style="list-style-type: none"> <li>1. Recovery tank is full</li> <li>2. Machine over heated</li> <li>3. Water supply was interrupted</li> <li>4. Oil level too low. No oil pressure.</li> <li>5. Blown fuse</li> </ol>	<ol style="list-style-type: none"> <li>1. Empty recovery tank</li> <li>2. Let cool down. Re-start it. Check jet in tank.</li> <li>3. Check water supply. Restarted when corrected.</li> <li>4. Check oil level. Re-fill if needed. Check for oil leaks if way too low. <b>DO NOT</b> run if it has a leak.</li> <li>5. Check all fuses. Replace any that are blown. Look for a shorted wire or bad ground. Repair if needed.</li> </ol>
<p><b>Not enough or no pressure</b></p>	<ol style="list-style-type: none"> <li>1. Not enough water</li> <li>2. Leaking somewhere</li> <li>3. Pump valves damaged</li> <li>4. Pressure regulator no holding pressure</li> <li>5. Belt too loose.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check water supply</li> <li>2. Repair all leaks.</li> <li>3. Replace all pump valves.</li> <li>4. Repair or replace as needed.</li> <li>5. Tighten belt or replace it.</li> </ol>
<p><b>Water too hot</b>  <b>Note:</b> When using a hand wand (upholstery tool) it will be necessary to use the by-pass in the wand at all times, due to the small size of the jet. You also need to turn the throttle on the engine down to idle speed.</p>	<ol style="list-style-type: none"> <li>1. Clogged or dirty jet in recovery tank.</li> <li>2. Not enough water coming into machine.</li> <li>3. Jets in the wand are clogged or too small.</li> <li>4. Engine running too fast.</li> <li>5. By-pass on wand not being utilized.</li> </ol>	<ol style="list-style-type: none"> <li>1. Clean or replace jet.</li> <li>2. Check water supply. Increase if you can.</li> <li>3. Check wand jets should be 11002s. clean or replace if needed.</li> <li>4. Slow engine down to ¾ throttle.</li> <li>5. Crack open by-pass on wand. Allow to cool a little.</li> </ol>
<p><b>Water too cold and recovery tank fills too quickly.</b></p>	<ol style="list-style-type: none"> <li>1. Something is open in the back of the machine.</li> <li>2. Sometimes, it's because the</li> </ol>	<ol style="list-style-type: none"> <li>1. Remove the lid to the recovery tank. Turn on the water and without starting</li> </ol>

	pressure is up past the 550 PSI mark.	the engine look inside the tank. See if water is coming out of the three connectors. 2. If so, disconnect all three hoses from tank. 3. Follow the leaking hose to the source. 4. If so turn the pressure back down to 550 PSI.
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