

Graymills

TURBO-ACTION PARTS CLEANERS

INSTRUCTIONS for OPERATION and MAINTENANCE

NOTE BEFORE USING: *If you have purchased a heated unit with a carbon steel tank: Water-based cleaning materials will generate steam and water vapors. Surfaces above the liquid level will be subject rusting, (this will exist with any manufacturer's unit). This is primarily surface rust and does not appreciably affect the serviceability of the unit. However, if your cleaning requirements can not tolerate any rust or contamination, please contact the factory for information on stainless steel version before putting the unit into service. Also, be sure your cleaning material contains a rust inhibitor. (Check with your cleaning fluid supplier). Graymills warranty does not cover rusting of carbon steel units used with water-based material.*

WARNINGS & PRECAUTIONS

CAUTION: Before using this machine for the first time, read and understand this instruction manual thoroughly. Observe all cautions and warnings. Failure to use this equipment properly can result in mechanical damage or personal injury. If you have any questions regarding the safe and proper use of this machine, contact your Graymills distributor, area representative, or the factory directly.

HEATED MACHINES ONLY

- Use only nonflammable non-combustible, water-based alkaline cleaning compounds. Graymills recommends Aquatene 330, Aquatene 581, Aquatene 571, or Super Aquatene 360.
- Do not fill or contaminate cleaning compounds with any flammable or combustible material such as gasoline, alcohol, mineral spirits, etc. Drain parts to be cleaned of any flammable or combustible material before placing inside cleaning tank. Even small quantities, can create a dangerous fire hazard.
- Maximum operating temperature is 180°F. Higher temperatures may damage pump impeller.

UNHEATED MACHINES ONLY

- Do NOT use solvents with a flash point lower than 110° F. Additions of even small amounts of flammable materials (gasoline, alcohol, lacquer thinner, etc.) can create a dangerous condition.
- Inspect fusible safety link monthly. Should link break, do not operate machine until it has been replaced. (See Operation section)

WARNINGS & PRECAUTIONS, Cont'd.

HEATED AND UNHEATED MACHINES

- If any cleaning solutions are splashed on clothing, remove wet clothing promptly and thoroughly wash body areas that have been in contact with the solution. Do NOT permit saturated clothing to remain in contact with skin.
- Cleaning solutions are mildly irritating to skin and eyes, wash thoroughly if you come in contact. If splashed in eyes, flush thoroughly with water. Always wear gloves and safety glasses when using.
- Unit must be properly grounded to prevent electric shock hazard. Connect only to grounded three prong outlet.
- Since operator safety at all times is a priority, we strongly recommend that, whether or not required by local code this equipment be connected only into a power supply equipped with a "Ground Fault Interrupter" (GFI). All electrical wiring and connection should be to national and local electrical code.
- Inspect pump and all electrical cords and plugs each time unit is cleaned. Do NOT use if any wear or damage is noticed until impaired components are repaired or replaced.
- Pump intake is above heater coil. If solution does not circulate, liquid level is too low. Turn heater and pump off immediately. Failure to keep coil immersed can cause heater to burn out.
- Fill tank to recommended operating capacity range before plugging in power cord. (See page 5)
- Turn heater off when unit is to be idle for extended periods (overnight or week ends). Liquid could evaporate enough to damage heater coil.
- Before performing any maintenance on this unit be sure to disconnect all sources of power. Follow federal lock-out rules and local codes.

INTRODUCTION

The Graymills Turbo-Action Parts Cleaners are heavy duty, multi-function, units for production and automotive service or maintenance. The unique Turbo action provides vigorous 10,000 GPH tank agitation.

A number of optional features are available to tailor the unit to a specific cleaning application.

These include:

- a) Filtration system for the cleaning solution
- b) Crane with hand winch
- c) Parts baskets

The pump motor and horsepower and electrical characteristics are : 1-1/2 HP., 230/460 V., 60/50 Hz. and 230 V., 1 Phase, 60 Hz., Capacitor start, are standard.

Check your unit for voltage characteristics before hooking up. Other motors are available.

OPTIONAL EQUIPMENT DESCRIPTION

(May be added in field)

ELECTRIC CONTROLS

Electric controls are required on all units which have a pump and/or electric heat. The Superflo pump assembly comes equipped with a pump on/off switch. Heated models are furnished with one or two stainless steel 4.5 KW electric, immersion type heaters, a thermostat, and a contactor. Refer to Fig. 2 for an electrical system schematic of a heated Turbo-Action Cleaner model. These controls are protected by a steel enclosure with removable cover.

FILTRATION SYSTEM

This filter package consists of a barrier type filter contained in a housing which is mounted to the rear of the pump compartment. All necessary plumbing to connect the filter to the pumping assembly is part of this unit. The filter cartridge is a stainless steel, fine wire mesh, pleated construction type. The standard filter has a 100 micron particle size dirt retention capability. Other ratings are available, both finer and coarser. Since the cartridge is made of stainless steel wire cloth, it is cleanable and reusable. To clean it, the four screws securing the canister to the mounting manifold assembly need to be loosened and removed, the canister is pulled downward, and the filter cartridge is pulled out of the canister. The filter can now be washed under a faucet or in some cleaning solvent. The process is reversed for re-assembly. Approximately 10% of the pump flow is diverted to the filter and the remainder is still utilized to agitate the cleaning tank. Flow through the filter will be 1,000 gallons per hour.

HEATING CYCLE TIMER

This unit is a 7-day timer which has a date skip feature. The on-off times for each day of operation can be set starting with a Sunday and proceeding to Saturday. For example, the unit can be set to go on at 5:00 A.M. on Monday morning, turn off at 4:00 P.M. Then, go on once again at 4:00 A.M. Tuesday, go off at 4:00 P.M. on Tuesday, etc. On Friday, it can be set to go off at 4:00 P.M. and then not be turned on again until Sunday at 4:00 A.M. or any other time. The timer does not control the temperature of the tank nor does it control when the heaters go on and off in response to temperature. It is strictly an on-off device which cuts out the thermostat. That is, during the off periods regardless of whether or not the thermostat asks the heater to go on, they will not do so. The unit mounts directly above the main electrical control box. All connections to the timer are pre-wired at the factory. Installation in the field can readily be accomplished by following the instructions furnished with the unit.

CRANE WITH HAND WINCH

This mechanism is a boom type crane which can be mounted to the corner of the T4330 Turbo-Action Parts Cleaner. The boom is extendable with a maximum extended length of 28 inches. The winch is a manually operated drum type with a cable supporting the load. The lifting capacity of the unit is 500 lbs. Longer boom extension lengths are available on special order.

PARTS BASKETS

Model L10-L heavy duty basket is for use with Model T4330. Special handle permits basket to be raised by chain or cable. Basket can be supported above liquid level for draining by support rods. A lifter bar is furnished for use with a hoist. Dimensions are: 34" long x 21" wide x 5" high constructed with 12 gauge steel frame, expanded metal (3/4" openings) sides and bottom. Model L-10 is the same as above except no lifter bar.

Larger parts baskets are available on special order. Construction details and features will be the same as the heavy duty Model L-10 basket.

INSTALLATION

Uncrating and Assembly

- 1) Remove pump from shipping board and unscrew the jet-nozzle. Place pump in pump compartment at end of machine (the hooked portion of the pump lid will fit over the end of the tank).
- 2) Screw back on the jet-nozzle snugly. Be sure they are in the position desired for agitation .
- 3) Before setting up your Turbo-Action Parts Cleaner, check voltage of pump motor (this information can be found on the metal plate affixed to the motor housing). Be sure it is the same cycle (hertz), phase, and voltage as your electric power source. Page 8 lists the current (amperage) requirements for heated units. Use these values to determine the wiring necessary to hook-up the unit.
- 4) When electrical hook-up is complete, check rotation of pump as indicated by the rotational arrow on motor. Rotation must be counterclockwise (don't worry about running the motor with the tank dry; this will not harm pump or motor). If the motor is connected to 3-phase power and is turning in the wrong direction, reverse any two of the three leads.
- 5) The hinged grill in front of the pump compartment is designed to prevent large objects (rags, etc.) from being sucked into the pump. It should be checked periodically to make sure it's clear.
- 6) The Turbo-Action Parts Cleaner must be grounded.
- 7) Check the electrical specifications on the nameplates to assure appropriate connections.

Drain

2" FPT drain connections are provided in each Turbo -Action Parts Cleaner located on the bottom of the tank assembly. A plug is installed at the factory. To make connections to the drain, remove the plug and install appropriate plumbing. It is suggested that a shut-off valve be installed.

OPERATION

Unheated-Models T4330, T5430, T6430, T7430 & T8430.

- 1) Open cover of the tank. You will notice as part of the cover support mechanism, a "fusible" link, which is designed to melt at 165°F.
This removes support from the cover and allows it to close automatically in case of fire. Be sure the cover remains in a slightly forward position and that there are no obstructions to prevent its closing.
Fill the tank to within 10" to 12" from the top with Agitene®, Super Agitene or similiar cleaning fluid with at least 110° flash point.
- 2) Remove all excess dirt, chips, or ink possible from parts to be cleaned. This will extend the life of the cleaning fluid and speed cleaning.
- 3) Load parts so that the maximum area and cavities will be exposed to the blast of cleaning solution from the Turbo jet-nozzle.
- 4) After required cleaning time (which depends on size of parts, amount and type of cleaning; experience will determine this quickly), turn off pumping unit, open lid, and remove clean parts.

Note: *Maximum recommended weight of parts which can be placed in bottom is 700-800 lbs.*

Heated-Models TH4330, TH5430, TH6430, TH7430 and TH8430.

- 1) Open cover of the tank. Fill the tank with water base cleaning solution to within 10" to 12" of the top of the tank.
Best cleaning results are obtained when solution is kept at about 180°F. Set the thermostat at the desired temperature and leave it in position. The unit will maintain the desired heat.
- 2) Scrape or flush off all loose dirt and debris from the parts to be cleaned. This will extend the life of the cleaning solution.
- 3) In loading parts, place so that the maximum area and cavities will be exposed to the blast of cleaning solution from the Turbo jet nozzle.
- 4) Close cover, turn on pump.
- 5) After required cleaning time, turn off pump, open lid, and remove clean parts.
- 6) To operate the heater and to prepare the cleaning solution, the following precautions should be taken.

WARNING: Follow all approved safe practices when using heated alkaline solution!

Add compound to the water carefully **in limited amounts**. **Do not dump large amounts of compound in at one time** as this can cause a violent eruption. During use, add additional compound **very slowly** when water is hot. Consult your compound manufacturer's instructions for recommended mixtures, how to mix, and cautions if in doubt, consult compound manufacturer. Never turn the heating elements on until they are covered completely by liquid. The elements will burn out if not **completely** covered with liquid. It is not necessary to turn the temperature down at night, but it is recommended to turn down the thermostat to 100° over weekends.

The optional heating cycle timer is used to turn the power to the heaters on and off during the non-operating periods such as at night and weekends. The thermostat should not be turned down when a timer is used.

OPERATION, Cont'd.

All Models Superflo Pump Discharge Direction Adjustment

On the Superflo Pump unit, the discharge nozzle from the pump can be adjusted to provide various liquid motions. The nozzle is set at the factory to provide maximum turbulence - a combination of horizontal and vertical fluid movement. To obtain primarily horizontal movement of the fluid, rotate the nozzle so that its discharge is parallel to the back of the tank and the bottom. Never adjust nozzle so that force of jet is directed above liquid level or causes splashing. Use caution when turning pump on for the first time if nozzle has been adjusted.

MAINTENANCE

Cleaning Out Tank

- 1) If cleaning solution is still usable, but it is desired to remove accumulated sludge, the fluid can be pumped into appropriate containers. (A Graymills LTP Liquid Transfer Pump can be used for this purpose).
- 2) Open the pipe drain (located in bottom right corner of tank) and allow remaining fluid to drain.
- 3) Flush or scrape out sludge and residue. Check under pump and in corners for build-up of dirt and clean out.
- 4) Close drain securely and refill tank with used or new fluid.

Note: *The tank should be cleaned regularly or when sludge and contamination collect to several inches on the bottom of the tank. The sludge trays should be emptied.*

On heated units, clean any accumulated dirt or sludge from the heating elements using a brush to loosen the coating.

Servicing Pump

- 1) The centrifugal type pumps used on the Turbo-Action Parts Cleaner will handle relatively large amounts of foreign material without causing damage to the pump.
- 2) The pump, because of its long length, has an outboard guide bushing at the bottom thru which the shaft extends, for added stability. When wear occurs, this bushing is easily replaced.
- 3) Graymills centrifugal pumps do not need lubrication.

Disassembly of Pump

- 1) Remove cap screws and lower volute.
- 2) Remove cotter pin, impeller nut, and impeller. (Some impellers are secured to the shaft by a set screw instead of an impeller nut). Remove nuts holding the pump body to the motor and carefully slip the pump body away from the motor and shaft.
- 3) Inspect all parts for wear and damage.

Reassembly of Pump

- 1) Assemble the pump body to the motor.

MAINTENANCE, Cont'd.

Reassembly of Pump, Cont'd.

- 2) Place the impeller spring on the end of the shaft; then follow with the washer and impeller. Impellers have "top" and "bottom" embossed in the mold. The top of the impeller should go towards the motor. Looking at the bottom of the impeller towards the bottom of the motor, the impeller will be turning in a clockwise position with the blades trailing.
- 3) Now, screw on the impeller nut until the impeller touches the upper part of the pump casting. Then, back off the nut slightly until there is clearance. The impeller should not rub on any metal surface. The fit need not be precise. Under no conditions force the impeller against the casting, nor permit the spring to push it against the lower part of the casting. There should be clearance at both top and bottom.
- 4) Replace the gasket and the bottom volute. Turn the impeller with your finger to make sure it is running freely, not binding or rubbing. If it runs freely, replace the cotter pins to secure the impeller nut and then bolt the lower volute to the pump body.

Replacing Lower Guide Busing and Sleeve

- 1) Remove bushing casting.
- 2) To replace bushing, push-out bushing from casting. Press in new bushing.
- 3) To replace sleeve, remove castle nut. Sleeve can be pulled-off and new sleeve pressed-on.

To order replacement parts: Bushing (Part No. 760-03347)
Sleeve (Part No. 570-21453-88).

How to Order Parts

- 1) Give model number of pump. If model number cannot be determined, the motor serial number, horsepower, speed and type will help. Approximate date of purchase will also help.
- 2) Give serial or lot number of pump and Turbo -Action Parts Cleaner.

TROUBLE SHOOTING GUIDE

Following is a listing of causes and corrections for the pump failing to deliver fluid and provide the Turbo action.

- a) Check pump intake to make sure nothing is blocking the entry of liquid into the pump.
- b) Check plumbing and jet nozzles to make sure there are no blockages or restrictions.
- c) Check motor voltage and cycles.
- d) Check rotation of motor.
- e) Make sure pump impeller is below liquid level-check liquid level in tank.
- f) Check for binding within the body caused by rags, strings, chips or scale.
- g) Make sure the pump intake is not in the sludge or slurry which collects on bottom of tank which will restrict the intake.

ELECTRICAL CURRENT REQUIREMENTS for Heated Turbo-Action Parts Cleaners

VOLTAGE/PHASE	HEATER AMPERAGE	
	1 Heater (4500 W)	2 Heaters (9000 W)
230 V, 1 PH.	18.8	37.5
230 V, 3 PH.	10.8	21.7
460 V, 3 PH.	5.4	10.8
575 V, 3 PH.	4.5	9.0

Note: Add the corresponding motor amps (below) to the above amps. to find the full load amperage.

VOLTAGE/PHASE	MOTOR AMPERAGE - (1-1/2 HP Motor, 1725 R.P.M.)
240 V, 1 PH (370-06061)	10.5*
240 V, 3 PH (370-03918)	5.0 A
480 V, 3 PH (370-03918)	2.5 A
575 V, 3 PH (370-06149)	2.0 A

* 2 HP- Would be approximately 8.0 for 1-1/2 HP.

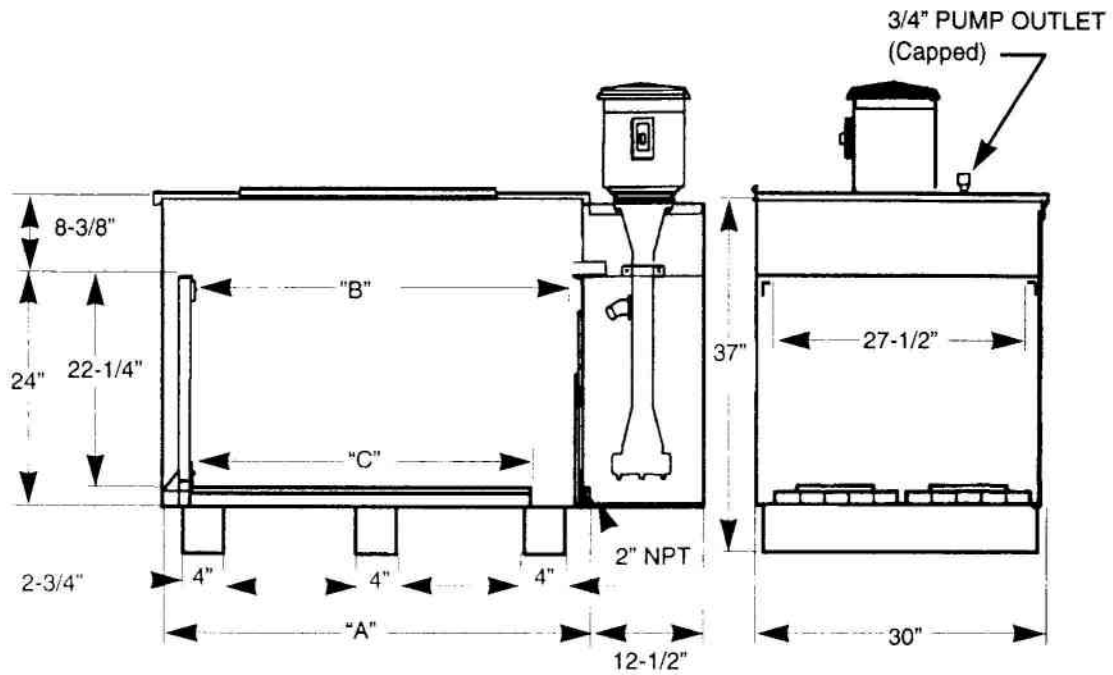


Figure 1. Model T-4330 & larger

MODEL NO	DIM "A"	DIM. "B"	DIM. "C"	WORKING SOLVENT GAL.
T4330 & TH4330	44	39-1/2	36	142
T5430 & TH5430	54	49-1/2	46	175
T6430 & TH6430	64	59-1/2	56	206
T7430 & TH7430	74	69-1/2	66	238
T8430 & TH8430	84	79-1/2	76	270

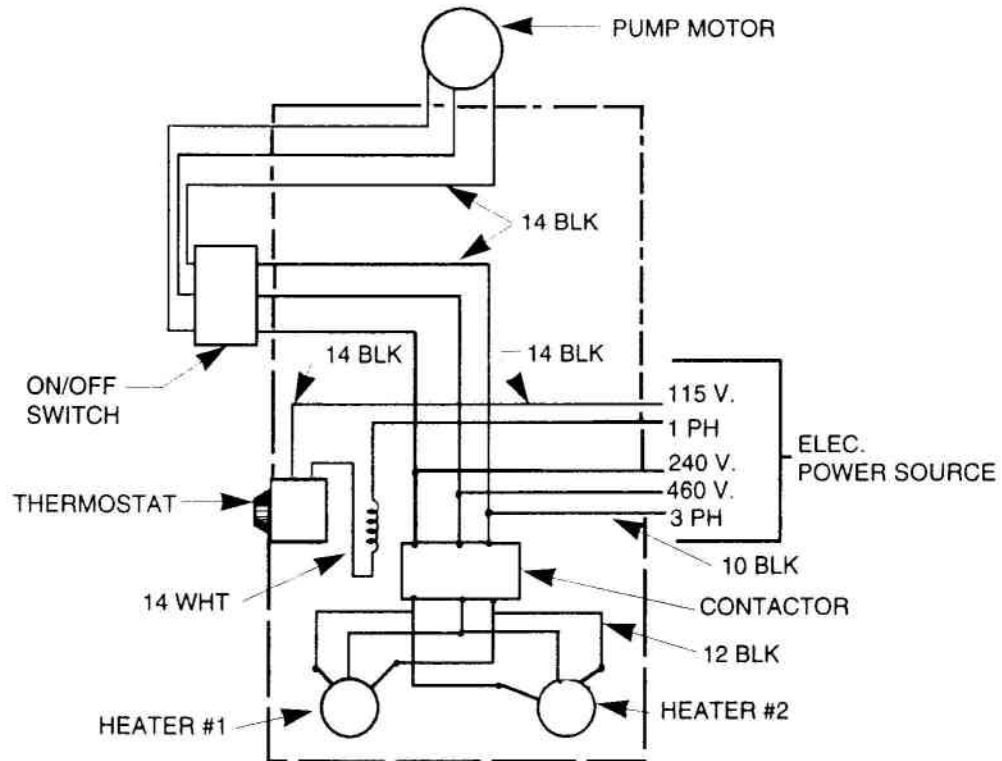


Figure 2. Electrical System Schematic-Heated Models

