



# The Betman Cleaning System (E782)



## APPLICATIONS

- Springs
- Precision machining
- Medical devices
- Drawn wire dies
- Clean room applications
- Gears and filters
- Screw machine parts
- Housings and fittings
- Optics
- Cutting tools

## REMOVES (Cleans)

- Grinding residues
- Lapping compounds
- Oils and lubricants
- Cutting compounds
- Buffing-polishing compounds
- Shop dirt
- Abrasives and waxes
- Loose burrs
- Particulars

## RESULTS

- Bright parts (original surface restored)
- Easy inspection of internal bores
- Easy overall inspection
- PERFECT CLEANING JOB
- No shadows in internal bores
- No debris in blind hole cavities
- Meets strict cleanup requirements: no particles, no oil, bright, dry parts

## Betman E782 Additions & Modifications

The Betman Cleaning Systems E782 comes with the tanks configured.

### ULTRASONIC CLEANING (X2) ■ ULTRASONIC RINSING ■ HOT AIR DRYING

This cleaning equipment can be tailored to fit your specific cleaning application. Below are some of the most common modifications.

#### Control Upgrades:

- A. Conversion of standard 15 minute mechanical timer to Omron H3CA electronic timer with push-button activation.
- B. Conversion of Dryer from standard internal variable thermo-switch control to Omron E5GN digital panel mount temperature controller.

#### Ultrasonic Frequency Options:

- A. Conversion of ultrasonic frequency to 80 khz

#### Heat Options:

- A. 200 watts with 120-130F internal thermo-disc and front panel on/off toggle switch.
- B. 400 watts with 85-180F internal adjustable thermo-switch and front panel mount on/off toggle switch. Tank is insulated and 190F high limit shutoff.
- C. 400 watts with Omron E5GN digital panel mount temperature controller with on/off toggle. Tank is insulated and 190F high limit shutoff.

#### Rinse & Pump/Filter Tank Options:

- A. Conversion of standard clean tank to rinse tank

\*Rinse tanks consists of timer activated solenoid input valve and standpipe overflow plumbed to back of unit

\*Two rinse tanks can be plumbed together to form a counter flow by pumping output of 2nd tank to input of 1st tank.

- B. Conversion of standard clean tank to pump/filter tank

\*Pump/filter tanks give input and output access to tank from back of unit. A 120V AC receptacle is located at the back of the unit for pump connection with on/off toggle switch control on front panel. (Pump/Filter System not included)

#### Unit Specifications:

##### Dimensions:

46"L x 18"W x 12"H

16"L x 7"W x 18"H

##### Tanks:

3.5 gallons, 12"L x 10"W x 8"H

##### Ultrasonic Power:

300 watts per tank

##### Warranty:

One / Two / Life

##### Power Requirements:

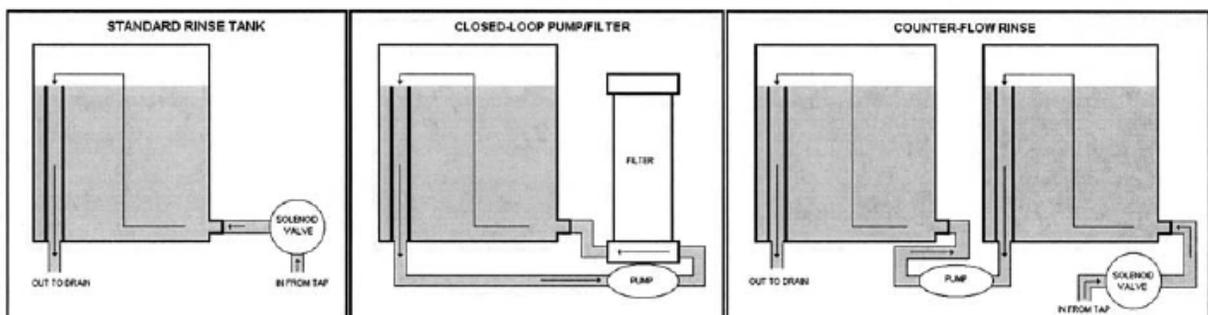
120V 60Hz 2.65KVA

#### Available pump/filter systems

- \* Little Giant 3MDHC pump, Serfilco 10" CPVC filter chambers with 5 micron polypro filters, and 20" CPVC chambers with activated carbon filters, CPVC Ball valves and piping
- \* P/F System with 10" Filter
- \* P/F System with 10" & 20" Chamber
- \* Replacement 5 micron 10" polypro filters
- \* Replacement 20" carbon filters



#### Rinse Cycle



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# **Instructions for Model E782 Betman Cleaning System (Cleaner/Rinser/Rinser/Dryer)**

## **Introduction**

The Model E782 Cleaning system contains an ultrasonic cleaning tank, two ultrasonic rinse tanks and a hot air drying chamber. Each ultrasonic tank and the drying tank have separate control timers. The ultrasonic tanks are supplied with heaters controlled with internal, adjustable thermostats.

The ultrasonic cleaning tank 1 is adapted for a pump filter system. Tanks 2 and 3 are both ultrasonic rinse tanks. Fresh rinse water can be introduced into the system with the excess cascading to drain.

The E782 unit consists of two components: the main cleaning unit containing the 316 Stainless Steel tanks housed in a 304 stainless cabinet and a stainless power module cabinet containing the bulk of the electronics.

Each tank has 6 potting transducers mounted on the bottom and is equipped with a ball valve for draining.

The Power Module contains self-tuning modular circuit boards, high velocity fans to cool the electronics, and an RFI filter to eliminate high frequency noise feedback.

PLEASE READ THESE INSTRUCTIONS BEFORE INSTALLATION AND OPERATION. If there are any questions, call (800) 276-2466.

## **INSTALLATION**

Place unit on a bench close to a sink or drain. The power module can be placed up to 8 feet away from tank, either on a shelf or in a cabinet.

The power module should not be positioned where it can be splashed with liquids, where it can attract dirt or abrasives, or where the air

cooling by the fan can be restricted because of tight enclosures. Clearance of 1" is necessary both at the air intake and exhaust.

## **PLUMBING**

A number of valves and connectors have been supplied with unit. With the PVC and plastic fittings and valves, add Teflon tape to the threads and HAND tighten. (DON'T OVERTIGHTEN)

1. Three ball valves are supplied. Add Teflon tape and thread a ball valve into the drain port of each tank. A ¼" NPT x ½" hose connector is to be added to the outlet of each ball valve.
2. Tank 1 has input and output for a pump filter system.
3. Connect the water sources to the rinse inlet of tank 2 and 3. A needle valve is supplied to regulate the water flow into the tank. An internal solenoid starts or stops the flow in conjunction with the timer. Connect your water supply to the ¼" compression input of the needle valve.
4. Add ¼" NPT x ½" hose connector to the rinse outlet port of tank 2 and 3 and connect a hose to drain. When operating, turn timer 2 or 3 ON and water comes in tank and cascades out to drain.
5. Tanks 2 and 3 have high level sensors. If the water level becomes too high in tank because of a blockage in the drain line, the sensor will shut off this solenoid preventing any water overflow of tank.

Before starting, add water manually to tanks 2 and 3 so that the ultrasonics do not run on an empty tank.

## **Pump Filter System**

The cleaning tank 1 is equipped with electrical and plumbing outlets to hook up the pump filter system. When the pump filter system is turned ON the solution in tank 1 will recycle independent of timer. The standpipe in the tank is the discharge to the pump. The tank level will have to be higher than the standpipe or the standpipe can be removed and the discharge will be at the bottom of the tank.

## **Initial Start Up Of Pump Filter**

1. The initial start up works best if the pump filter system is on the floor or lower than the tank.
2. Add liquid to the tank and allow liquid to flow into filter chamber. Make sure ball valve on the pump filter is open.
3. Open the plug on top of filter chamber to bleed the trapped air in chamber. Close this plug when liquid comes out.
4. If necessary, cycle pump on and off a few times to get trapped air out of lines.
5. When maximum flow is achieved, use the ball valve on the pump filter system to decrease the flow through tank. Excessive flow through tank does decrease the ultrasonic action (Cavitation).

When all the air is removed from the system it may be more convenient to place pump filter system on bench next to the cleaning tank. If the top of the filter chamber is higher than the liquid level in tank, a filter cartridge can be easily changed without draining any solution.

### **Electrical**

The unit has two power cords that are plugged into the 120VAC, 50/60HZ source. The POWER MODULE is rated at 2550 watts, 120vac. Two plug and cord assemblies from tank cabinet are plugged into power module. A fuse, 25amp-125V, is located on the power module cabinet.

A separate power cord from tank cabinet is rated at 1550 watts, 120VAC 50/60HZ. The power cord supplies power to the tank heaters. A 15amp-125V fuse is located on the front of the tank cabinet.

### **Operation**

The MAIN switch on power module is left ON during daily operation.

Parts to be cleaned are placed in rack (basket) and rack is positioned into the tanks. Never place parts directly on bottom tank (tank could eventually be perforated). The basic principle of operation is the enhancement and acceleration of the chemical cleaning by ultrasonic action.

1. Heater – The tanks are supplied with 400 watts of heat controlled by an adjustable, internal thermo switch. The thermo switch has

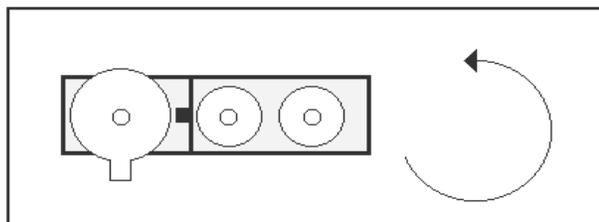
been adjusted to control the bath temperature at 160degrees F when tank covers are on. If temperature needs to be changed, there is a port at the rear of each tank module where a screwdriver can be used to adjust the control knob of thermostat. The thermostat is the same as used in the drying chamber mentioned below. Use the same procedure for adjusting the temperature but use caution that the bath temperature does not exceed 180 degrees F. **CAUTION** – Before adjusting thermostat turn power OFF.

2. Timer – Turn timer knob clockwise to desired time, to start ultrasonic action. When set time expires, the ultrasonic action is terminated. Green indicator light is ON during operation.
3. Drying Chamber – The drying chamber uses forced hot air thermostatically controlled at 160 degrees-180 degrees F. (set by the manufacturer) Drying time will vary depending on the number of parts to be dried, if hot or cold water was used to rinse parts before drying and if the cover is on oven. Generally parts should be dry in 10 minutes. **CAUTION: Parts after drying will be hot (170 degrees F) and should be cooled before touching.**

Timer – Turn timer clockwise to desired drying time.

The air temperature of the dryer has been set at the factory to reach 170degrees F with cover on the oven. If you want to change the temperature, there is a thermostat mounted above blower in closed chamber behind oven. The temperature can be changed as follows:

1. Disconnect unit from 120V outlet.
2. There is a port at rear of dryer module where a screw driver can be inserted to adjust the temperature.
3. Move control knob of thermostat slightly in clockwise direction to increase temperature and counter-clockwise to decrease temperature. Make only slight changes because a 30 degree angle change corresponds to an approximate 20 degrees F temperature change. Replace top plate on chamber.



## **Maintenance**

Periodically, the liquid in tanks must be changed:

- Unplug the unit from 120VAC outlet.
- Open ball valve at back of tank chamber to drain.
- Flush out tank with clean water and wipe dry.
- Close ball valve and add fresh solution.

Keep top of unit dry. Unit is manufactured from 304 stainless and can be restored to the original finish with a stainless polish used for kitchen appliances.

## **Modular Circuit Board**

Unit E782 is equipped with three modular circuit boards that are easily replaced if a problem occurs. Three small indicator lights on the power module indicate that circuit boards are working. If the indicator light goes out, a replacement circuit board can be shipped immediately. This way the need for shipping the unit back for repairs is eliminated and the disruption is minimal.

## **Warranty**

The unit has a one year warranty, two year warranty on circuit boards and lifetime warranty on tank weld seams and transducer bonds.

CALL 1-800-276-2466 FOR TECHNICAL SERVICE.