The Automatic Ultrasonic Series

Automatic Ultrasonic Washer - 18G

MODEL E889

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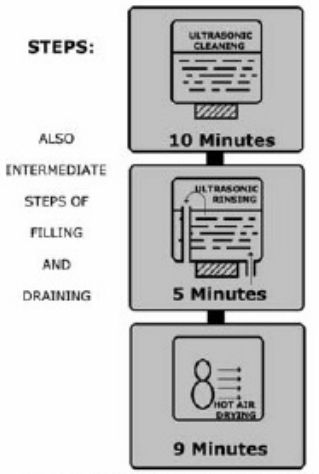
Features & Specs

A "Hands-off" Procedure



PLACE LOADED BASKET OR RACK INTO TANK, PUSH BUTTON; BUZZER WILL SIGNAL END OF CYCLE

The Esma E889 is an automated computer controlled system which runs a timed cycle of ultrasonic cleaning, ultrasonic rinsing, and hot air drying, all at the push of a button. The cycle time is approximately 30 minutes from start to finish and the 18 gallon tank can handle a large quantity of parts. The dimensions on the tanks are 24 x 14 x 12.

As an automated system, cleaning solution needs to be added for each wash cycle. An automated metering pump device can be added to the system which will meter in concentrated cleaning solution for each wash cycle, further automating the cleaning process and reducing opportunity for operator error . The unit is equipped with standard plumbing fittings allowing it to be easily installed and the casters make the whole unit mobile, conditional on the length of plumbing hoses which are used.

The ultrasonic system runs on standard 110 volt service due to the circuit board frequency and the hot air dryer runs on 230 volt service.

Some of the features of our equipment are as follows:

- All stainless steel construction
- Separate ultrasonic generators contained in console
- RFI filtered
- UL Listed
- **1800 watts, 110VAC**, 40 kHz piezoelectric ultrasonic power Square wave ultrasonic circuitry
- 3,000 watts, 230VAC hot air dryer
- Omron programmer can be used to connect to the computer (PLC) to monitor the "on-line" operation, modify the program or "force on" any step of the program.
- Indicator lights monitor the status of the program.
- Low level protection to shut off ultrasonics if water supply is interrupted.
- High level protection to shut off water input if the drain is blocked.
- End of cycle light and alarm for dryer

Automatic Ultrasonic Washers are designed to simplify the cleaning process. The preprogrammed cycles are very similar to that of a dishwasher but our process incorporates high-powered ultrasonic technology. Esma's ultrasonic washers create a hands-off procedure that includes all the steps; ultrasonic cleaning, ultrasonic rinsing and hot air drying. ***Load it and push a button! It's that simple.***

- Virtually eliminates hand scrubbing — risk to personnel is reduced as well as cross contamination that can result from multiple cleanings in the same ultrasonic tank.
- **No more rinsing in sink under running water** — ultrasonic rinsing eliminates the inefficiencies of tap rinsing where ragout contaminants from the cleaner are never fully flushed away.
- **No more open air towel drying** — The messy drip trails created from ultrasonic-to sink-to counter are eliminated and the infection control area of the office is streamlined.

Automatic Ultrasonic Washers create savings in many areas; time, space and aesthetics with the most significant savings being in direct labor dollars and all the hidden costs associated in this area. Payback of capital purchase is measured in months!

MODEL E889			
CABINET DIMENSIONS:	28"W x 22"L x 39"H	ULTRASONIC POWER:	1800 WATT
TANK DIMENSIONS:	24"W x 14"L x 12"D	UNIT POWER:	3500W 15A 120V 3000W 15A 230V
TANK VOLUME:	18 GALLON	CYCLE TIME:	30 MINUTES

√ **UNPRECEDENTED WARRANTY**

√ **SINGLE PUSH-BUTTON ACTIVATION**

√ **LONG-LASTING POTTED TRANSDUCERS**

√ **OVER 10 YEARS OF SUCCESSFUL IN-FIELD HISTORY**

√ **PLC CONTROLLED, CUSTOM PROGRAMMING AVAILABLE**

√ **ALL STAINLESS STEEL CONSTRUCTION**

√ **SQUARE WAVE ULTRASONIC CIRCUITRY**

√ **RFI FILTERED**

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Instructions for Model E889

Ultrasonic Washer (with metering pump)

Introduction

The E889 unit automatically performs a cleaning cycle, the major steps of which are:

1 - Ultrasonic cleaning
2 - Ultrasonic rinsing (hot tap water)
3 - Hot Air Drying

The result: a finished product ready for the next step (sterilizing, packaging, assembly, storage).

The unit is housed in a 304 stainless steel (SS) console. The tank is manufactured from SS 316 with 36 double potting transducers mounted on the bottom. The tank is fitted with a SS hinged cover, which houses the fans and heaters for air-drying.

Inside the console are power module boxes 1 and 2, and the pumps. The Power Modules contain self-tuning modular circuit boards, a programmable controller, high velocity fans to cool the electronics, and an RFI filters to eliminate any high frequency interference.

PLEASE READ THESE INSTRUCTIONS THOROUGHLY BEFORE INSTALLATION AND OPERATION. CALL (800) 276-2466 IF YOU HAVE ANY QUESTIONS.

Installation

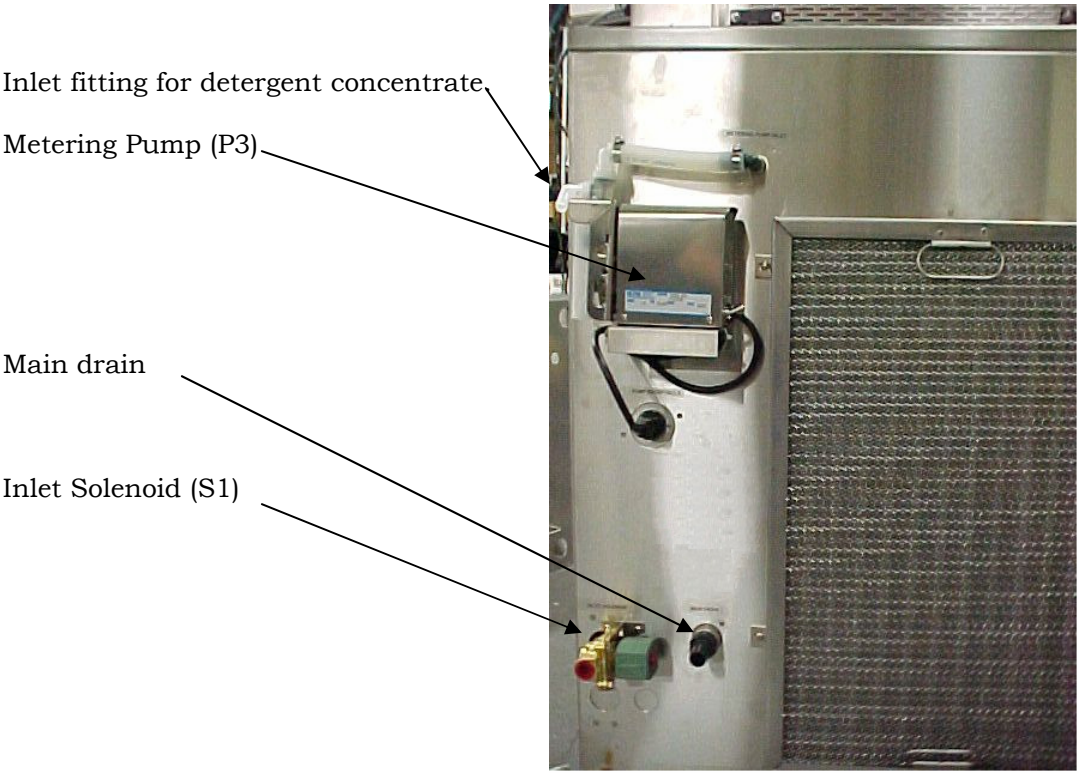
When unit is unpackaged, the supplied casters must be installed on bottom of unit. Place casters with locking brakes on front corners of unit.

The unit has been thoroughly bench-tested and is shipped to the customer ready to operate. Move the unit into position and lock Caster wheels. Once the position of the unit has been established, the user must complete the electrical and plumbing requirements.

The power modules inside the unit have been bolted to the bottom of chassis for shipping. They can remain bolted. However, if they have to be removed for any reason, the filter screen door on the back of the unit has to be opened. Once the filter is removed, the screws and bolts in hold-down brackets can be removed. These need not be replaced for normal use and movement of unit. Leave hold-down bracket fixed to power modules.

Plumbing Hook-Up

(Back of Unit)



1. Water Input

There is a solenoid mounted on the rear of the unit, (**S1),** which is an input from the fresh HOT water source. (See Photo Above) The hot water input solenoid (primary) has a ¾" NH male fitting (supplied) to be connected to your high pressure water source. Inside the unit there is a 5.0 GPM flow regulator. A valve for emergency shut off should be installed at the water source. This valve should not restrict the flow more than 5 gallons per minute.

Also, depending on local regulations, a back flow regulator should be attached to your water source. The valve and back flow regulator are not supplied.

CAUTION: MAKE SURE EXCESS TEFLON TAPE OR PIPE JOINT COMPOUND DOES NOT GET INTO SOLENOID.

2. Detergent Metering Pump

The Esma E889 is equipped with a chemical metering pump **(P3)** for the automatic metering of detergent concentrate during the program fill cycle. The metering pump mounted on the rear of the unit (see photo above), is hard plumbed into the system. There is an inlet fitting which needs to be hooked to a hose and inserted into the supply of detergent concentrate for your automatic metering of detergent per cycle. **It is important that you use Esma brand detergent concentrates which are formulated at the correct concentration ratios and are also non-foaming.** Contact your sales representative for the proper detergent for your specific application. The metering pump is factory preset to input 500ml of detergent during the fill cycle of the program. This is adjustable, however, with the set screw located on the piston of bellows pump. Consult Technical Support for assistance at 800-276-2466 if changes are needed.

3. Water Output

There are 2 internal pumps in the system, **P1** is for the main drain and **P2** is for the cascading overflow drain (see System Flow Diagram below). These pumps are teed together into the Main drain fitting on the rear of the unit. (see photo above). The Main drain needs to be fitted with tubing and run to the in-house vented drain.

Electrical

The unit is wired for both 120VAC and 230VAC lines. The ratings are 1875 watts, 120VAC, 50/60 HZ, and 3000 watts, 230VAC, 60 HZ, single phase.

The power cords are supplied for plugging in to your electricity source. The 230 volt line is supplied with an NEMA 6-15P plug. The 120-volt power cord is supplied with an NEMA 5-20P plug. DO NOT OPERATE UNIT WITHOUT PROPER GROUNDING.

The 230-volt line is fused at 15 AMP and the 120-volt line at 20 AMP. These fuses are located at rear of unit.

Control Function

1. Main Switch: When unit is ready for operation, turn the main switch to ON, and the indicator light will be ON.
2. Run Stop Switch: Located below the main switch, it must be in the RUN position for the programmable controller to operate. If during the program cycle you want to stop the process, turn switch to STOP position and then back to RUN, and the program will start over at the beginning of the cycle when START button is pushed. Use Run Stop switch only for emergency stopping of unit, or to STOP the program and begin at the beginning. Use the Main switch if you wish to stop the unit without changing the program.
3. Start Switch: With main switch ON and RUN STOP SWITCH set at RUN, push start button and the process will begin.

Preliminary Start-Up

After plumbing is completed, conduct the following test to determine if there are any leaks in the system.

A) Turn main power ON
B) RUN-STOP switch must be ON
C) Close cover

Push START button and hot water should enter the tank. The unit has a flow control valve, which allows 5.0 GPM, so it is important that the shutoff valve

does not restrict the flow to less than 5.0 GPM or the fill time will have to be increased.

After 165 seconds (or other programmed fill time), the fill solenoid will close, and the water will be up to the two overflow drain openings. At this time, shut main power off, disconnect electrical plugs from outlets, open cabinet, and check for leaks.

If no leaks are detected, connect power, turn main switch ON, the program will continue where it left off and the ultrasonic cleaning should begin.

After the ultrasonic cleaning step, the tank will drain (with pump). When the tank is empty (after 150 seconds) shut main off, disconnect power, and check for leaks in drain-pump line.

If no leaks are detected, connect power, turn main ON, and program will complete to finish. Check at each fill stage that water is coming into tank.

Operation

The basic principle of operation is the enhancement and acceleration of the cleaning action through ultrasonic cavitations. Instruments or parts to be cleaned are placed in the basket (or cassette racks) and lowered into the tank. NEVER PLACE PARTS DIRECTLY ON THE BOTTOM OF THE TANK.

The baskets and cassette racks, which can be purchased from ESMA Inc., have rubber supports to keep parts off bottom of tank.

Procedure

- Turn main power ON.
- Turn RUN-STOP switch to RUN. (Should remain in RUN position all times).
- Set selector switch to either correct program positions
- Lower basket with instruments or parts on support rack.
- Close cover.
- Push START button and the selected cleaning program will automatically proceed.

Details on selected program are given in Figure 1, depending on setting of selector switch.

Water Consumption

In the program for E889, 12.5 gallons are used on the initial fill cycle, with an additional 22.5 gallons used in the subsequent fill or rinse—for a total of 35 gallons of hot water used per cycle.

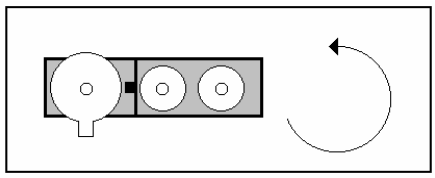
Drying

In the drying portion of the programs, the incoming air is heated in the tank cover to 160-180 degrees F. and forced by the fan through the tank cover. CAUTION: Do not touch the cover during the drying cycle because some areas of the cover will be hot.

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 closed on oven. Generally parts should be dry in 7-10 minutes.

NEVER place any towel or obstruction over the fan intake on cover. The air temperature during Hot Air Drying can be increased or decreased by adjusting two thermo-switches located in cover at hot air exit. The thermo-switches are adjusted as shown below.

1. Disconnect unit from 120VAC and 230VAC supplies.
2. Remove top plate of dryer cover.
3. Thermostat is located in front of heater.
4. See drawing . Turn control knob slightly counter-clockwise to decrease temperature.
5. Replace top plate and check air temperature. Repeat steps 1-4 if not satisfactory.



Cleaning Agent

It is important that you use an Esma brand liquid cleaning concentrates. Esma brand products have been formulated as non-foaming detergents and are

highly concentrated to match the setting of the metering pump. Use of other products may result in poor performance of the equipment. Esma has a complete line of cleaning agents, contact your sales associate for details. Use of non-Esma brand detergents may impact the warranty on the equipment.

Power Modules 1 and 2

The Power Modules contain the six circuit boards, programmable controller, fans, relays, RFI filters, etc. There are six lights, one per circuit board (two on PM1 and four on PM2), to indicate if circuit boards are operating. To check if all circuit boards are operating, open door slightly when unit is ultrasonically cleaning: all indicator lights must be ON. If a light is out, the corresponding circuit board will have to be repaired.

Programmable Controller

An Omron CPM 1 programmable controller is used to control the process. The unit has a flash memory backup without a battery. The controller has indicator lights for inputs and outputs, which are lit during process. The outputs are as follows:

Output	Controls
1000	Primary solenoid
1001	Ultrasonics
1002	Drain solenoid
1003	Dryer
1004	Overflow Pump
1005	Buzzer
1006	Drain Pump
1007	Dryer Fan

High and Low Level Controls

The Low Level control is located in the tank wall and will not allow the ultrasonics to come ON unless there is 3 inches of liquid in the tank.

The High Level control is used for the rinse solenoid. The sensor protrudes from the dryer cover and will shut off the rinse solenoid if the water gets within 1 inch from the top of the tank. The dryer must be closed for high-level protection.

Maintenance

Periodically the drain screen in tank will have to be removed and cleaned. Accumulated lint and debris could slow down the draining, resulting in the incomplete removal of cleaning solution before the rinse cycle starts.
A Y strainer is located in the drain line underneath the tank. Periodically the drain screen in this strainer will have to be removed and cleaned

The tank and modules are manufactured of 316 and 304 stainless steel. Clean with a commercially available cleaner for stainless kitchen appliances.

Cleaning of Solenoids

A periodic cleaning of all solenoid valves is desirable. The time between cleanings will vary, depending on media and service conditions. In general, if the voltage to the coil is correct, sluggish valve operation, excessive leakage, or noise indicates that cleaning is required. A bulletin with maintenance instructions is enclosed.

FOR ASSISTANCE CALL: 800-276-2466

WARRANTY: Unit has one-year guarantee, circuit boards two years and transducer bonds and tank weld seams a lifetime guarantee.

Figure 1 - Program times for E889 unit (Standard)

Select switch: Programmable

STEP	FUNCTION	TIME (SECONDS)
1.	Fill (with metering pump)	175
2.	Ultrasonic cleaning	600
3.	Drain	165
4.	Fill (hot water)	175
5.	Ultrasonic rinsing	60
6.	Ultrasonic rinsing (cascade)	60
7.	Ultrasonic rinsing	60
8.	Ultrasonic rinsing (cascade)	60
9.	Ultrasonic rinsing	60
10.	Drain	165
11.	Dryer, Fan, Drain	420
12.	Buzzer	5
	TOTAL:	2,005