



Installation and Operation Manual

NOBLE™ **Commercial Door Dishwasher**

495HTDT51 / 495HTDT513
495LTDT51

High Temp
Low Temp

F41342

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Ver1.0

MACHINE INSTALLATION CHECKLIST

- ☐ Machine Serial Number _____
- ☐ Machine Contents Verified
 - Peg rack
 - Combination flat rack
 - Literature pack
 - Programming card
 - Operation and cleaning wall chart
 - 3Ph to 1Ph conversion pack (High Temp only)
 - 3Ph to 1Ph conversion instructions
 - Booster heater bridge bar gauge
 - Small parts pack
 - Chemical supply filters and weights (3x) (Low Temp only)
 - Nozzle cleaning tool
 - Rack guides and hardware (2x)
 - Machine legs (4x)
 - Table support brackets (2x)
 - Splash guard (2x)
 - Wiring diagram (behind front panel)
 - Drain hose (attached in machine base)
 - Water supply hose (attached in machine base)
- ☐ Machine legs installed and leveled (see section 5.5.2)
- ☐ Machine Installation (See section 5.5)
- ☐ Water Hookup (See section 5.5.5)
- ☐ Drain Hookup (See section 5.7)
- ☐ Electrical Hookup (See section 5.9)
 - Voltage supplied to machine _____ V / 60 Hz / ____ Ph
 - Machine adjusted for correct voltage (High Temp only) (See section 5.9.3)
 - Machine adjusted for correct phase (High Temp only) (See section 5.9.4)
- ☐ Vent Fan Control Connection (High Temp only) (See section 6.1)
- ☐ Chemical Hookups (See section 6.3)

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1 NOTES ON THE DOCUMENTATION

1.1 Application

This document contains important information for the installation and startup of the machine by qualified personnel, as well as the information required for day-to-day operation by the operator.

- Keep the operating instructions and all referenced documents in a safe and accessible place.



This Installation and Operations manual is subject to change. For the most up to date manual visit www.NobleProducts.biz.

1.2 Layout of the documentation

Referenced documents are all instructions that describe the installation, operation, maintenance, and repair of the device, as well as additional instructions for all accessories used.

For the operator:

- Operating instructions

For the qualified technician (available online):

- Installation instructions
- Circuit diagram
- Spare Parts Catalog

1.3 Representative convention

1.3.1 Symbols used

Symbol	Meaning
	Warning of hazardous electrical voltage
	Beware of hazardous substances
	Beware of hazard area
	Useful additional information and tips

1.3.2 Representation in the text

Representation	Meaning
NOTE	Important information on machine operation, not a warning notice
►	Step
↳	Outcome/result
–	Listing 1 st level
•	Listing 2 nd level


2 SAFETY INSTRUCTIONS AND REGULATIONS

2.1 Safety instructions and warning notices

- During machine operation, observe the general safety instructions and warning notices that precede each action.


2.1.1 Hazard levels

The hazard level is part of the safety instructions and is denoted by the signal word. Potential consequences are differentiated by the choice of signal word.

 WARNING	potentially hazardous situation: can cause serious physical injury
NOTICE	potentially harmful situation: can cause damage to the product or other objects

2.1.2 Layout of warning notices

Warning notices are depicted with warning symbols and signal word in the corresponding safety colors.


WARNING!

Nature and source of the hazard

Explanation on the nature and source of the hazard.

- Measures for averting the hazard
- Additional measures for averting the hazard, where applicable.

2.2 Basic safety instructions

2.2.1 Product safety

The machine conforms to state-of-the-art technology and the recognized safety regulations. Nonetheless, hazards may occur.

Operate the machine only if it is in good working order and in compliance with the operating instructions.

2.2.2 Personnel qualification

- ▶ Observe the regulations on occupational health and safety.
- ▶ Carefully read through the operation manual before use.

Activity	Qualification/training
Installation/Setup	Qualified electrician and plumber
Work on the electrical system	Qualified electrician
Maintenance, repair	Qualified service technician

2.2.3 Product-specific hazards

- ▶ Observe the instructions on the packaging for storage, lifting or transporting.

Avoid electric shock, risk of fire:

- ▶ Do not allow water to flow under live components.
 - Make sure the machine is correctly stored (see frost damage section 2.3).
 - Make sure that the machine does not overflow when being filled.
- ▶ Have the machine connected to the power supply by qualified personnel.
- ▶ Have all maintenance to the machine carried out by qualified personnel.

Avoid chemical burns, irritation of the skin, poisoning:

- ▶ Wear protective equipment (gloves, safety goggles, protective clothing) when handling chemicals.
- ▶ Use only suitable chemicals. Observe the manufacturer's instructions.
- ▶ Do not open the machine during operation, wait for the cycle to finish.
- ▶ For cleaning, wear protective equipment (gloves, safety goggles, protective clothing) when touching parts contaminated by detergent.

Avoid burns, scalds:

- ▶ Do not open the machine during operation, wait for the cycle to finish. Otherwise, hot water could spray out.

2.3 Property damage

Avoid frost damage:

Temperatures below 32°F (0°C) lead to functional damage.

- ▶ Before storing below 32°F (0°C), empty residual water in hoses, tank and booster.
- ▶ Prior to restart, store the machine at room temperature (min. 60°F / 15°C) for 24 hours.

3 PRODUCT DESCRIPTION

3.1 Intended purpose

The machine is an item of technical equipment intended solely for commercial dishwashing.

The machine is designed solely for cleaning ware (porcelain, glass, ceramic, temperature-resistant plastics, stainless steel or similar) from the food industry.

3.2 General

Models 495HTDT51, 495HTDT513, and 495LTDT51 dishwashers can be configured for both straight through or corner operation. The dishwashers are shipped from the factory in straight through configuration. Straight through machines can be easily converted to corner operation.

The 495HTDT51 and 495HTDT513 dishwashers are designed to operate in high temperature sanitizing mode only (Designated by the temperature requirements of 150°F Wash and 180°F Rinse. These temperatures can be found on the label located on the lower, left part of the front panel).

The 495LTDT51 dishwasher is designed to operate in chemical sanitizing mode only (Designated by the temperature requirements of 120°F Wash and 120°F Rinse. These temperatures can be found on the label located on the lower, left part of the front panel).

The serial number can be found on the machine data label located at the bottom of the right side of the machine.

Noble supplied chemical pumps ship standard with the 495LTDT51 model. Chemical pumps are available as an accessory kit (field installed) for the 495HTDT51 and 495HTDT513 models or contact your chemical representative for a chemical feeder system to be supplied and installed by others. This machine must be operated with an automatic detergent feeder, including a visual means to verify that detergents are delivered or a visual or audible alarm to signal if detergents are not available for delivery to the washing systems. See instructions for electrical and plumbing connections located in this manual and in the feeder equipment manual.

The wash pump motor has thermal overload protection.

The supply line incorporates an air gap on the 495HTDT51 and 495HTDT513 models and a vacuum breaker on the 495LTDT51 model to prevent any reverse flow of water from the dishwasher into the potable water supply. The unit, once turned on, fills the wash tank to the appropriate level and automatically stops filling once the level is reached. A pressure transducer reads the water level in the wash tank and shuts off the heat supply if the water level becomes too low. When the water returns to the proper level, the heating circuit becomes operational again.

An automatic pumped drain is standard on all models.

A pumped rinse system is standard on the 495HTDT51 and 495HTDT513 models.

A frame mounted 6.0kW electric booster water heater is equipped on the 495HTDT51 and 495HTDT513 high temperature sanitizing models. The booster water heater is designed to maintain a minimum final rinse temperature of 180°F provided the incoming water is at least 110°F.

High-temperature models typically require a hood or vent over the dishwasher to meet local codes. Low-temperature chemical sanitizing machines or low usage electric heat dishwashers may not require individual venting of the machine if the room is amply exhausted. Refer to section 0 for venting and hood requirements. Verify with local codes for final authority.

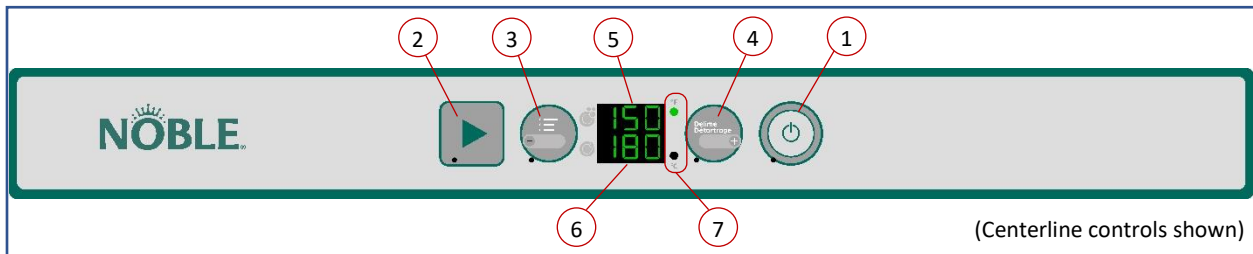
3.3 Designation

The rating label is located on the right side of the machine. If you have any questions regarding service and parts, use the serial number in all communications.

3.4 Technical specifications

Model	495HTDT513		495HTDT51		495LTD51
Dimensions (W x D)	28.504 x 32.079 in (72.4 x 81.5 cm)				28.714 x 32.079 in (72.9 x 81.5 cm)
Dimensions (H)	62.945 in (159.9 cm)				62.945 in (159.9 cm)
Water consumption per cycle	0.73 gal (2.8 L)				0.86 gal (3.3 L)
Hot water connection	110°F (43°C) min. 140°F (60°C) max.				120°F (49°C) min. 140°F (60°C) max.
Phase / Hz	3Ø / 60Hz		1Ø / 60Hz		1Ø / 60Hz
Voltage	208V	240V	208V	240V	120V
Total connected load	35.0 A	35.0 A	31.7 A	31.7 A	17.1 A
Fuse/breaker protection	40 A	40 A	40 A	40 A	20 A
Tank capacity	7.9 gal (30.0 L)				4.0 gal (15.0 L)
Loading height	34.938 in (88.7 cm)				34.938 in (88.7 cm)
Machine weight	210 lbs (95 kg)				199 lbs (90 kg)

4 CONTROLS (SEE OPERATIONS SECTION 8.4)



①	Power/Drain Button	Pressing this button switches the machine on, fills and heats the wash tank. Pressing and holding (3 seconds) activates self-cleaning cycle, drains machine, and then switches the machine off automatically.
②	Start Button	Pressing this button or closing the door starts the wash cycle. If button is pressed within 10 seconds after the cycle has started, the extended wash cycle is activated.
③	Menu Button	Pressing this button enters the configuration menu.
④	Delime Button	Pressing and holding this button (3 seconds) initiates the deliming cycle.
⑤	Temperature Display, Wash Tank	Displays wash tank temperature while machine is idle or in a wash cycle.
⑥	Temperature Display, Rinse	Displays rinse temperature only during rinse cycle.
⑦	Temperature Units	LED lights for °F or °C

5 INSTALLATION

5.1 Personnel qualification

Installation must only be carried out by qualified personnel.

5.2 Special safety instructions

⚠ WARNING!

Risk of electric shock, fire hazard



Water (frost damage, machine overflow) flowing over live components can cause injury from electric shock or fire.

- ▶ Do not allow water to flow under live components.
- ▶ Make sure the machine is correctly stored.
- ▶ Make sure that the machine does not overflow when being filled.

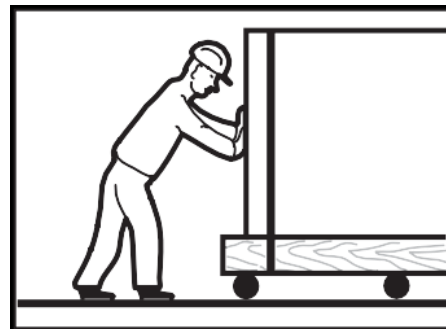
NOTICE!**Frost damage**

Temperatures below 32°F (0°C) during transport/storage cause function impairments.

- ▶ Prior to installation, store machine at room temperature (min. 60°F / 15°C) for 24 hours.

5.3 Transporting to the installation location

- ▶ Where possible transport packed on the pallet.
- ▶ Use suitable transport means (forklift or hand truck, etc.).



5.4 Unpacking

- ▶ Remove packaging materials and accessories from the machine.

Packaged in machine
<ul style="list-style-type: none"> • Peg rack • Combination flat rack • Literature pack <ul style="list-style-type: none"> ↳ Programming card ↳ Operation and cleaning wall chart • 3Ph to 1Ph conversion pack (CDH and EDH only) <ul style="list-style-type: none"> ↳ 3Ph to 1Ph instructions (CDH and EDH only) ↳ Booster heater bridge bar gauge • Small parts pack <ul style="list-style-type: none"> ↳ Chemical supply filters & weights (3x) (CDL and EDL only) ↳ Nozzle cleaning tool ↳ Rack guides and hardware (2x) • Machine legs (4x) • Table support brackets (2x) • Splash guard (2x) • Wiring diagram (behind front panel) • Drain hose (attached in machine base) • Water supply hose (attached in machine base)

- ▶ Immediately after unpacking the dishwasher, check for possible shipping damage. If this machine is found to be damaged, save packaging materials and contact the carrier within 5 days of delivery.

NOTICE!**Unpacking**

Use caution when using a forklift to remove machine from pallet. Do NOT use door lift handle to move machine, as it will cause door lift issues.

5.5 Installing the machine

Prior to installation, test the electrical supply to ensure it agrees with the specifications on the machine data label, which is located on the lower, right side of the machine.

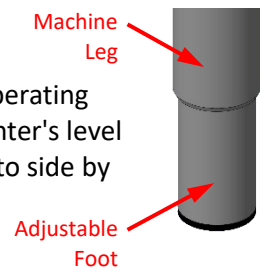
5.5.1 Installation Codes

Installation must be in accordance with state and local codes and the National Electrical Code ANSI/NFPA70 (latest edition). In Canada, the installation code is CSA 22.1 (latest edition).

5.5.2 Attaching legs

The machine is shipped without the legs attached.

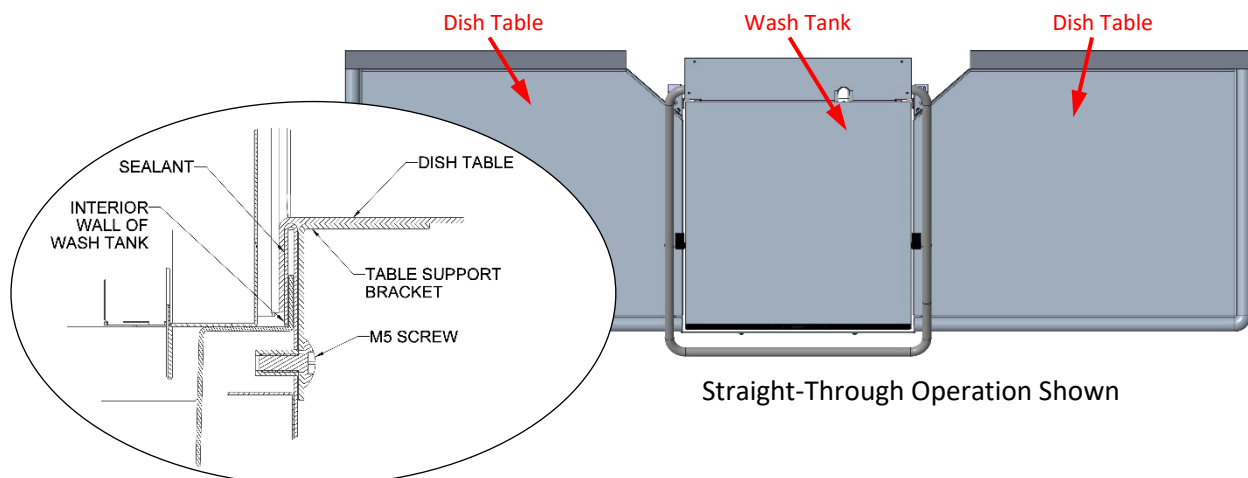
- ▶ Install the provided legs in each of the bottom corners of the machine.
- ▶ The machine must be level to operate properly. Place the dishwasher in its operating location. Level the machine before any connections are made. Using a carpenter's level placed diagonally on the rack tracks, level the machine front to back and side to side by turning the adjustable feet in or out.



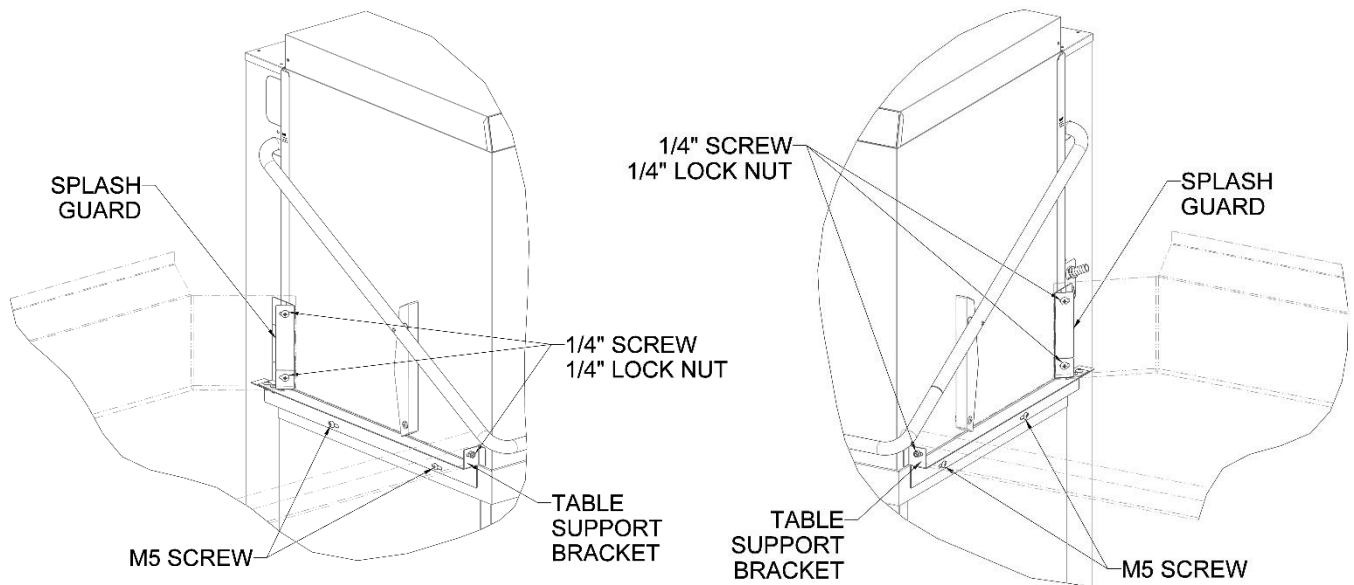
5.5.3 Location

Before finalizing the location, make sure that consideration has been given for the electrical conduit, water supply, drain connection, venting (if applicable), tabling (if needed), chemical feeder replenishment (if applicable) and adequate clearance for opening the door.

The edge of dish table that overhangs the machine wash tank should be turned down and fitted over the top of the dishwasher tank. Apply an NSF approved sealant between the overhang of the dish table and the interior wall of the wash tank to prevent leakage.



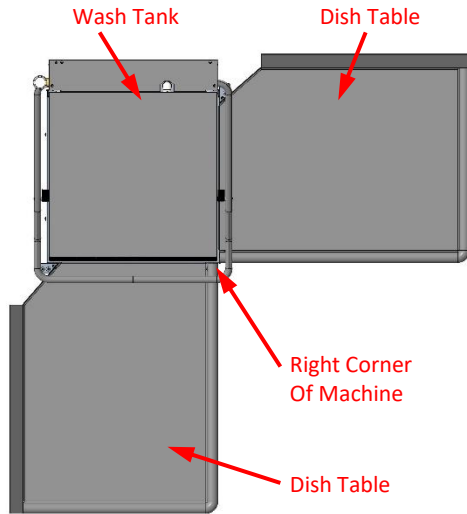
The dish tables are fastened to the machine using the included table support brackets. The support brackets mount underneath the tabling and fasten to the machine using M5 screws included with the machine. After the support bracket is aligned with the tabling, drill a locating hole and fasten using non-rusting 1/4" screws and locking nuts. Attach the included splash guards at the rear of the tabling using non-rusting 1/4" screws and locking nuts. The splash guards can be adjusted for fit depending on the width of the tabling.



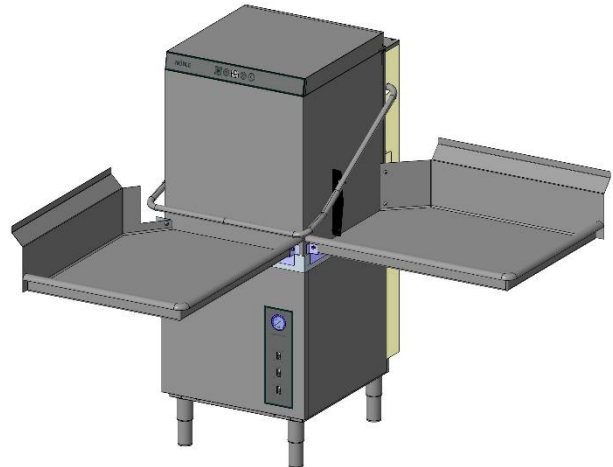
For straight-through installations, 30" clearance at the front and 15" clearance at the right side by 33-1/8" clearance above the finished floor must be provided for service.

5.5.4 Corner Installation

Before placing the dishwasher in its operating location, check machine configuration. If the machine is being installed in a corner, clearances of 30" out from the dishwasher under the left-hand tabling by 33-1/8" above the finished floor and 15" out from the dishwasher at the right side by 33-1/8" above the finished floor must be provided for servicing. For proper installation of a corner machine, the right corner of the machine should be positioned where the two tables meet so that the gauges (if equipped) are visible to the operator.



Corner Operation Shown

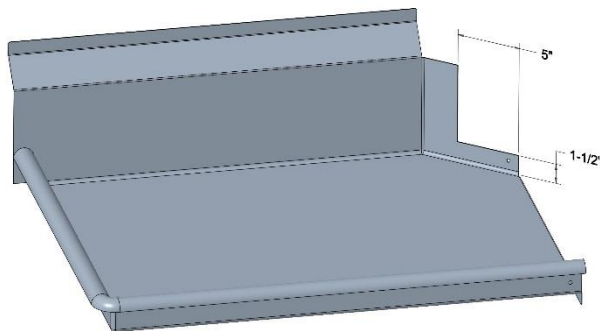


495LTDT51 Low Temp Shown

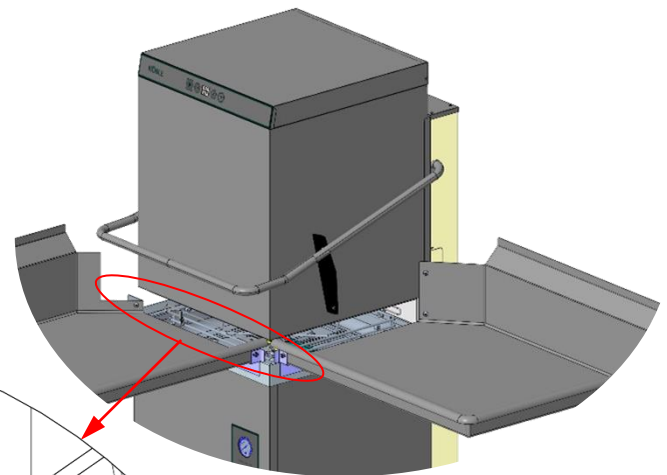
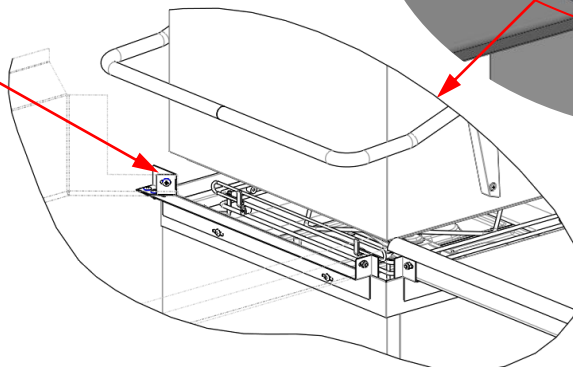
A splash shield kit is available (at extra cost) for corner installations to prevent excessive splashing on wall. **Order kit part number 00-563652.** For installation, refer to installation instructions supplied with kit.

For corner installations, a notch is required on the backsplash on the left tabling to prevent interference with the door mechanism.

The left side splash guard is designed to be easily modified to fit the notch.



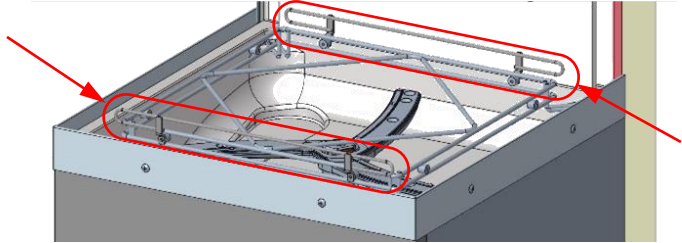
SPLASH
GUARD



5.5.5 Rack guide installation

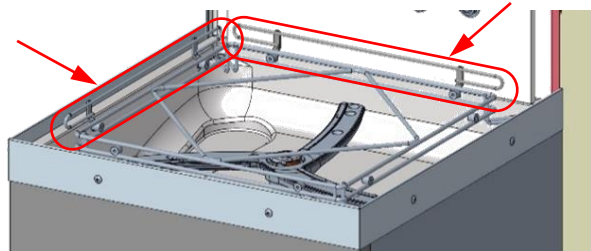
For straight-through installations,

- Position rack guides on front side and the back side of the rack track aligning holes in the rack guide to spacers on rack track.
- Secure using included hardware. Note: Nuts should be installed on the inside of the rack track.



For corner installations,

- Position rack guides on left side and the back side of the rack track aligning holes in rack guide to spacers on rack track.
- Secure using included hardware. Note: Nuts should be installed on the inside of the rack track.



5.6 Connecting the water

NOTE: The machine must be operated with potable water.

5.6.1 Water Requirements

Proper water quality can improve ware washing performance by reducing spotting, enhancing effectiveness of labor, and extending equipment life. Water conditions vary from one location to another. The recommended proper water treatment for effective and efficient use of this equipment will also vary depending on the local water conditions. Ask your municipal water supplier for details about your local water conditions prior to installation.

Recommended water hardness is 3 grains of hardness per gallon or less. Higher hardness may cause excessive formation of lime scale. Water hardness above 3 grains per gallon requires water treatment. Water treatment has been shown to reduce costs associated with machine cleaning, reduce deliming of the dishwasher, and reduce detergent usage in the dishwasher.

NOTICE!**Water quality**

High iron levels in the water supply can cause staining and may require an iron filter. High chloride levels in the water supply can cause pitting and may require a chloride removal system. Contact your local water treatment professional for proper water treatment.

Sediment may require a particulate filter. Dissolved solids may require water treatment such as a water softener, reverse osmosis system, etc. Contact your local water treatment professional for proper water treatment.

5.6.2 Water Connection

A water hammer arrestor (meeting ASSE-1010 Standard or equivalent) should be installed (supplied by others) in the common water supply line at the service connection.

The plumber connecting this machine is responsible for making certain that water lines are THOROUGHLY FLUSHED OUT BEFORE connecting to the dishwasher. This "flush-out" is necessary to remove all foreign matter, such as chips (resulting from cutting or threading of pipes), pipe joint compound from the lines; or, if soldered fittings are used, bits of solder or cuttings from the tubing. Debris, if not removed, may lodge in the dishwasher's plumbing components and render them inoperative. Solenoid valves fouled by foreign matter and any expenses resulting from this fouling are NOT the responsibility of the manufacturer and associated repair costs are not covered under warranty.

A manual shutoff valve (not supplied) should be installed upstream of the fill hose to accommodate servicing the machine. It is recommended that a line strainer (80 mesh) (not supplied) be installed in the supply line between the manual shutoff valve (not supplied) and the connection point on the machine. Make plumbing connections with ½" minimum copper piping OD (¾" recommended), with a ¾" male garden hose fitting (not supplied).

Connect to hot water

A water supply hose is provided.

Temperature:

Model	Sanitizing Mode	Connection	Water Supply		
			Minimum	Maximum	Recommended
495HTDT51 495HTDT513	High Temperature Sanitizing	Hot Water	110°F (43°C)	N/A	140°F (60°C)
495LTDT51	Chemical Sanitizing	Hot Water	120°F (49°C)	N/A	140°F (60°C)

Water hardness: max. 3 grains

Flowing pressure:

Model	Flowing Pressure	Note
495HTDT51 495HTDT513	15 psi – 65 psi (1 bar – 4.5 bar)	Recommended
	> 65 psi (4.5 bar)	Provide pressure regulating valve (not supplied)
	< 15 psi (1 bar)	Improper machine operation may result
	Pumped rinse system; Water pressure gauge is not required	

Model	Flowing Pressure	Note
495LTDT51	15 psi – 25 psi (1 bar – 1.7 bar)	Normal; 20 psi (1.4 bar) recommended
	> 25 psi (1.7 bar)	Provide pressure regulating valve (not supplied)
	< 15 psi (1 bar)	Improper machine operation may result
	Pressure rinse system; Water pressure gauge is supplied	

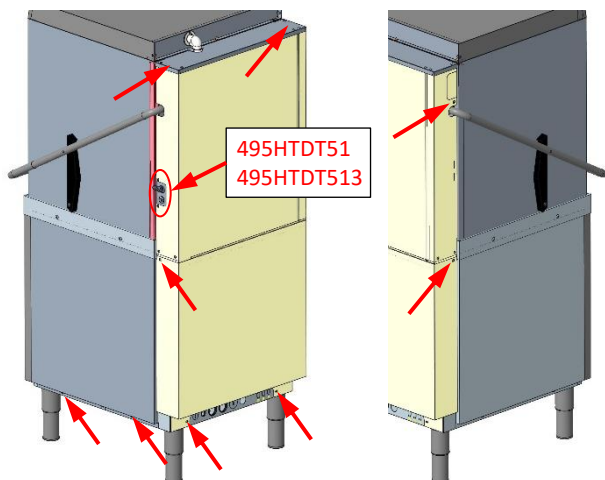
The supply hose, 110" long, is provided with the machine and is shipped already attached and coiled up inside the machine.



- ▶ Remove the screws holding the rear cover panel top to the machine and lift off panel.

Note that:

- The door will need to be opened to remove the rear cover panel top.
- ▶ Remove the screws holding the rear cover panel to the machine and lift off panel.
- ▶ Remove the screws holding the right, side cover panel to the machine and lift off panel.



- ▶ Uncoil the supply hose and route through the supplied bushing located on the back of the machine base.

Note that:

- The bushing might need to be removed to be able to fit the supply hose nut through it.

- ▶ Replace the right, side cover panel.

- ▶ Replace the rear cover panel.

- ▶ Replace the rear cover panel top.

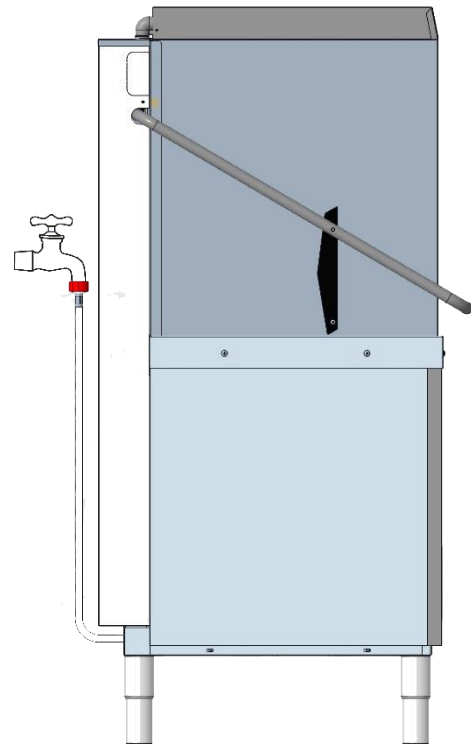


Bushing

- ▶ Connect the end of the water supply hose ($\frac{3}{4}$ " garden hose thread) to the building shut off valve.

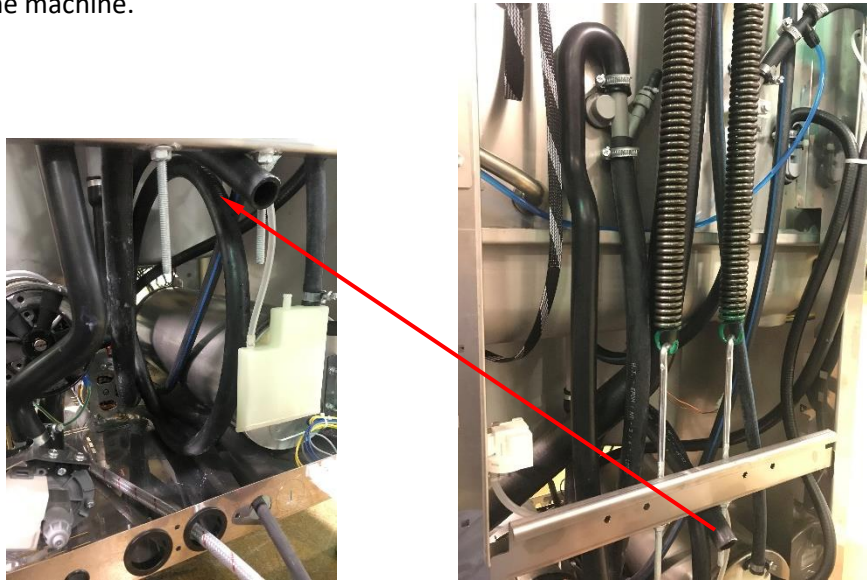
Note that:

- Use care not to kink or cut the water supply hose.
- Any required extension must be made using a suitable pressure hose.



5.7 Connecting the drain

A drain hose, 19mm inside diameter and 110" long, is provided with the machine and is shipped attached and coiled up inside the machine.



⚠ WARNING!

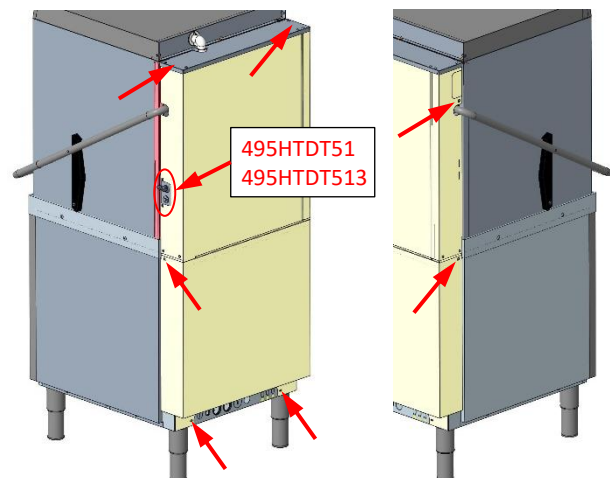
Plumbing connections

Plumbing connections must comply with applicable sanitary, safety, and plumbing codes.

- ▶ Remove the screws holding the rear cover panel top to the machine and lift off panel.

Note that:

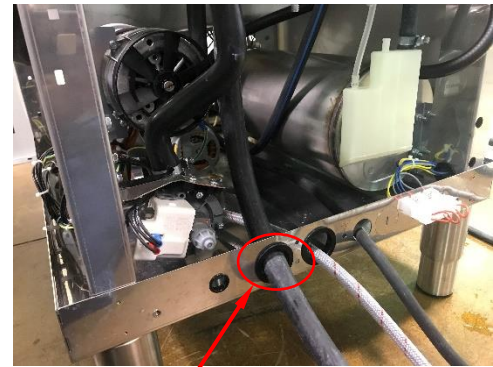
- The door will need to be opened to remove the rear cover panel top.
- ▶ Remove the screws holding the rear cover panel to the machine and lift off panel.



- Uncoil the drain hose and route through the supplied bushing located on the back of the machine base.

Note that:

- The connection between machine and building drain must not exceed a maximum height of 34" above finished floor.
- Drain must have a minimum flow capacity of 5 gallons per minute. If DWT is on the machine, the drain must have a minimum flow capacity of 15 gallons per minute.
- If a grease trap is required by code, it should have a minimum flow capacity of 15 gallons per minute.
- If machine is located directly above a floor drain, a knockout in the bottom of the dish machine is provided for the drain hose.
- Use care not to kink the drain hose.



- Replace the rear cover panel.
- Replace the rear cover panel top.

NOTICE!

Drain connection

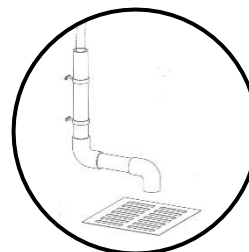
An improper drain connection or a kinked hose could result in reduced machine performance and errors. An air gap connection is the preferred connection method.



Incorrect



Acceptable



Preferred
(Meets Code Requirements)



5.8 Venting Requirements

NOTICE!

Exhaust Hood

Any commercial exhaust hood must be installed according to all local and national codes and the manufacturer's installation instructions, if applicable.

5.8.1 Rate of Exhaust Flow Calculations

Based on the 2018 International Mechanical Code.

The minimum net airflow for Type II hoods used for dishwashing appliances shall be 100 cfm per linear foot of hood length. The net quantity of exhaust air shall be calculated by subtracting any airflow supplied directly to a hood cavity from the total exhaust flow rate of a hood.

According to 507.3 of the 2018 IMC, Type II hoods are not required where the heat and moisture load is incorporated into the HVAC system design. See *Table A* for heat dissipation or heat gain to space.

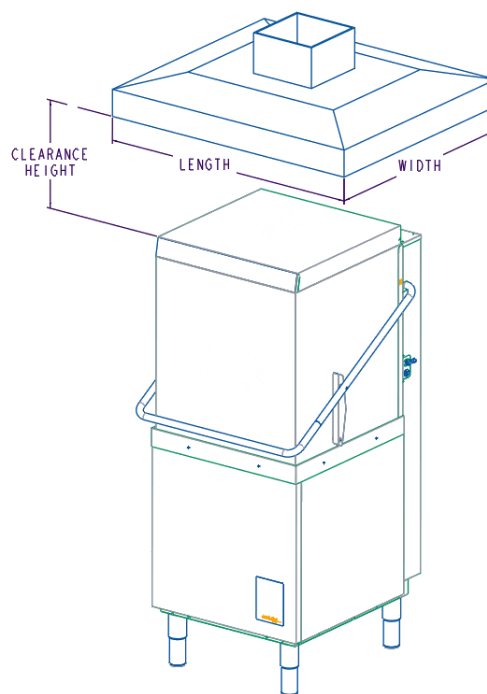


Table A: HEAT DISSIPATION

Model	Sanitizing Mode	Voltage	Phase	Electric Heat	Electric Booster	Latent Heat (BTU/Hr)	Sensible Heat (BTU/Hr)
495HTDT513	High Temperature	208V	3Ø	X	X	16,100	6,900
		240V		X	X	20,400	8,700
495HTDT51	High Temperature	208V	1Ø	X	X	9,300	4,000
		240V		X	X	12,000	5,200
495LTDT51	Chemical	120V	1Ø	X	--	2,300	1,000
Assumptions: <ol style="list-style-type: none"> 1. Machines operate 70% of each hour while in use. 2. Values shown are heat that enters room. 3. 70% of heat output is latent, 30% is sensible. 							

5.9 Connecting to the power supply

WARNING!



Risk of electric shock

Electrical and grounding connections must comply with the applicable portions of the National Electrical Code, NFPA 70 (latest edition) and/or other local electrical codes.

- ▶ Disconnect the electrical power to the machine and follow lockout/tagout procedures.

5.9.1 Electrical Data

Refer to the sizing diagram located inside the front trim panel and to the data label on the lower, right side of the machine for service size requirements when connecting the dishwasher. Also, refer to the Electrical Data, shown below.

NOTICE!

Supply connections

- ▶ For supply connections, use copper wire only rated at 90°C minimum.
- ▶ The dish machine is not provided with internal GFCI protection.
- ▶ A fused disconnect switch or circuit breaker (customer supplied) must be installed in the electrical service line supplying this dishwasher and should meet the requirements of your local electrical code.

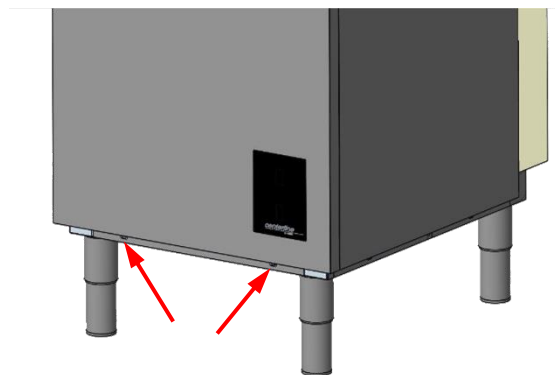
ELECTRICAL DATA

Model	Volts/Hertz	Phase	Rated Ampacity	Minimum Supply Circuit Conductor Ampacity	Maximum Protective Device Ampacity
495HTDT513	208/60	3Ø	35.0	40	40
	240/60		35.0	40	40
495HTDT51	208/60	1Ø	31.7	40	40
	240/60		31.7	40	40
495LTDT51	120/60	1Ø	17.1	20	20

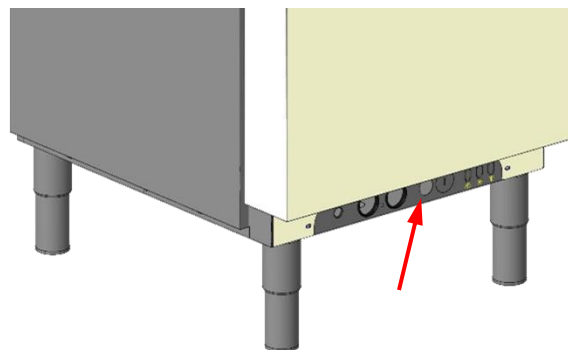
Compiled in accordance with the National Electrical Code NFPA-70 (latest addition).

5.9.2 Electrical Connection

- Remove the lower front panel by removing the two screws at the bottom of the panel.

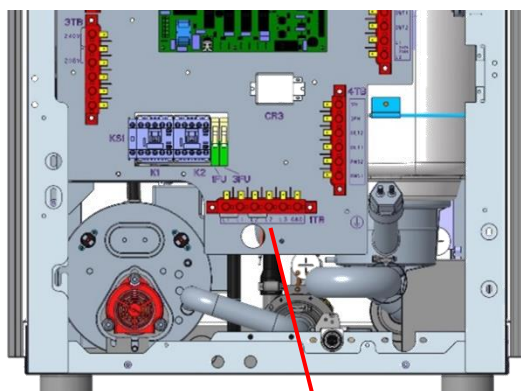


- A hole for 1" trade size conduit is supplied at the lower center in the back of the machine.

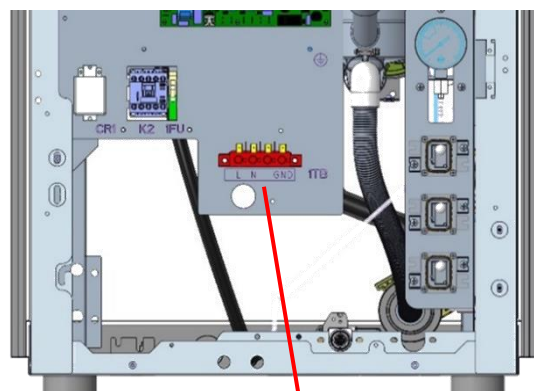
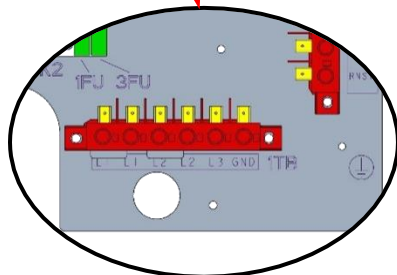


- Install 1" trade size conduit or cable and fitting.

- Make electrical connections at 1TB according to wiring diagram supplied with the machine and secure wires to the machine service connection. Keep excess wire in the base of the unit to a minimum. A cable support and hole for a strain relief are supplied to facilitate wire routing.

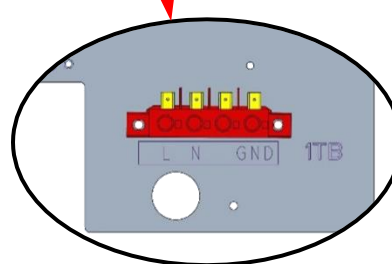


495HTDT51
495HTDT513



495LTDT51

1TB



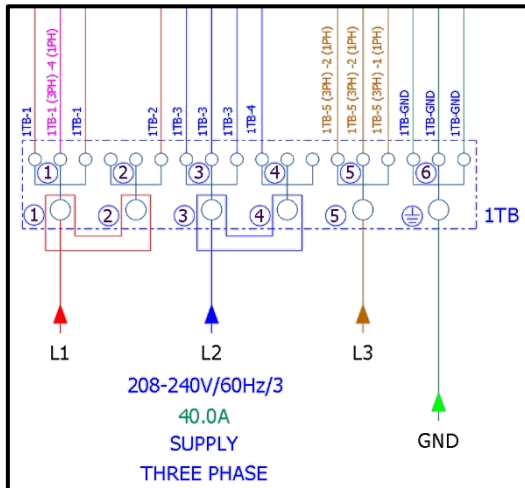
5.9.3 495HTDT51 and 495HTDT513 Electrical Connections

The 495HTDT51 high temperature sanitizing machine ships standard with 240V, 1-phase voltage supply and a single point electrical configuration.

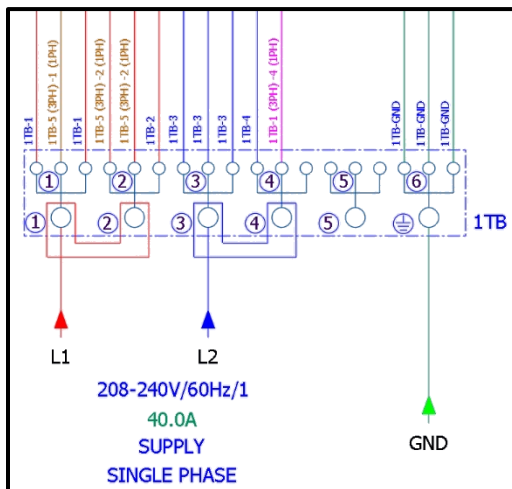
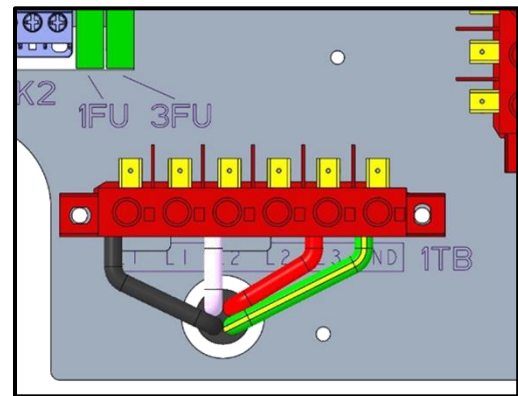
The 495HTDT513 high temperature sanitizing machine ships standard with 240V, 3-phase voltage supply and a single point electrical configuration.

The standard single point supply connects to the terminal block 1TB in the controls area.

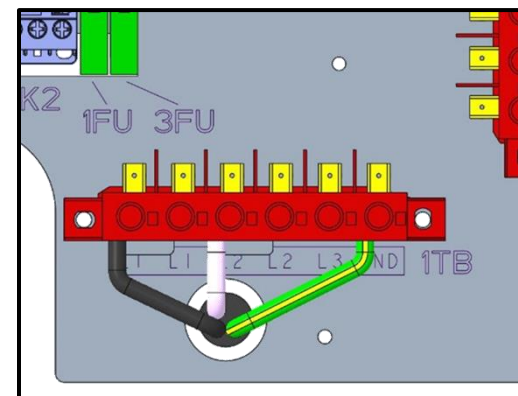
The machine must be grounded according to electrical code(s); A grounding terminal in 1TB is provided.



495HTDT513



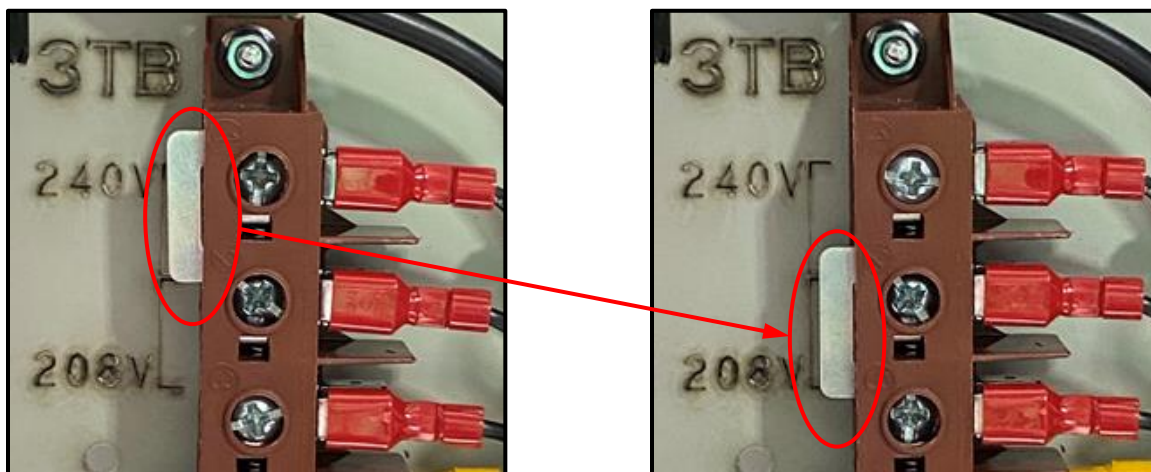
495HTDT51



NOTICE!**Transformer connections (495HTDT51 and 495HTDT513 Only)**

For the 495HTDT51 and 495HTDT513 high temperature sanitizing machines a control transformer is used to step the 208V or 240V incoming power to 120V for the control circuitry and drain pump. The transformer is factory-preset to 240V.

- For 208V incoming power, relocate the jumper bar connecting 3TB-1 and 3TB-2 (for 240V) to 3TB-2 and 3TB-3 (for 208V). Refer also to F45912 instructions and the wiring diagram supplied with the machine.



An incorrectly connected transformer can lead to machine draining issues.

5.9.4 495HTDT513 Conversion from 3-Phase to 1-Phase Configuration

The 495HTDT513 high temperature sanitizing machine ships standard in 3-phase voltage configuration. It can be changed to operate in a 1-phase configuration.

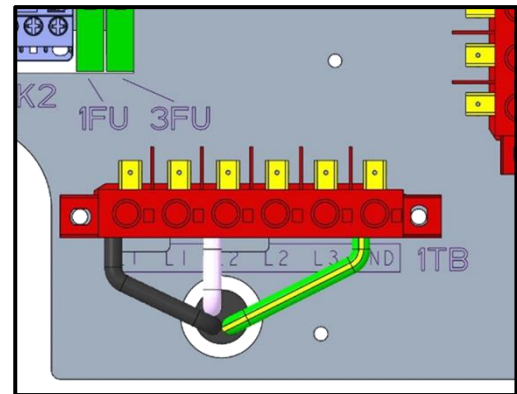
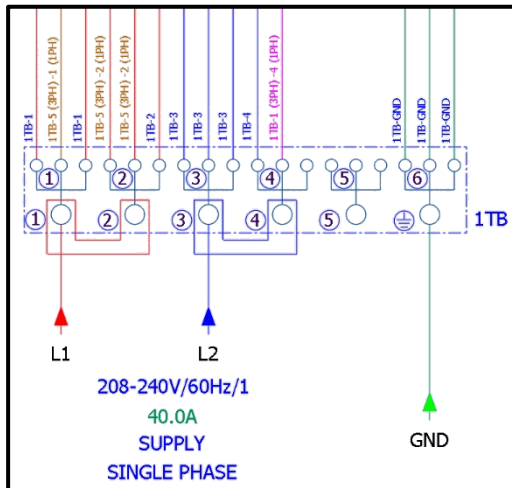
NOTICE!**1-Phase Conversion Procedure**

The conversion procedure must be done only by a qualified electrician.

- To change machine from 3-phase to 1-phase configuration, refer to F45912 instructions included in the literature shipped with the machine.

NOTICE!**208V or 240V electrical connections (495HTDT513, 1-Phase Only)**

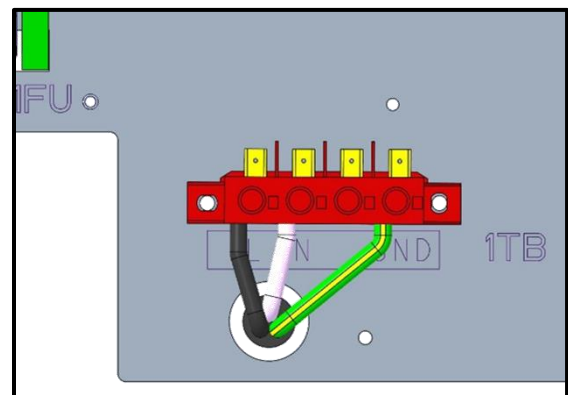
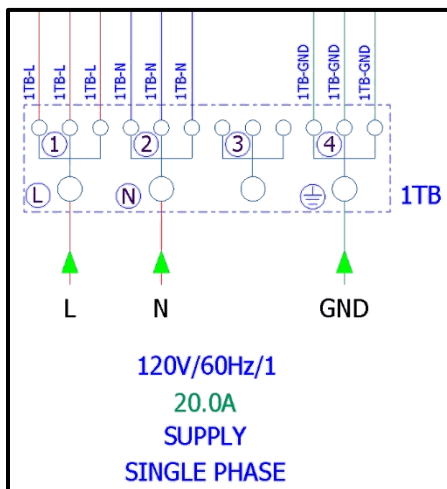
The 208V or 240V electrical connection for the 495HTDT51 high temperature sanitizing machine in 1-phase configuration requires two hot wires and a ground. There is no current carrying neutral used.



5.9.5 495LTDT51 Electrical Connections

The 495LTDT51 chemical sanitizing machine ships standard with 120V, 1-phase voltage supply and a single point electrical configuration. The supply connects to the terminal block 1TB in the controls area.

The machine must be grounded according to electrical code(s); A grounding terminal in 1TB is provided.



6 EQUIPMENT CONNECTIONS

WARNING!

Risk of electric shock



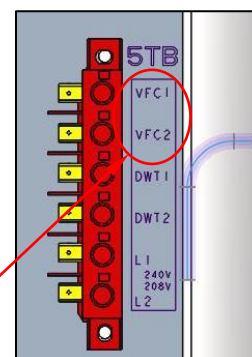
Electrical and grounding connections must comply with the applicable portions of the National Electrical Code, NFPA 70 (latest edition) and/or other local electrical codes.

- ▶ Disconnect the electrical power to the machine and follow lockout/tagout procedures. Be sure all circuits are disconnected.

6.1 Vent Fan Control

The vent fan control feature is standard on the 495HTDT51 and 495HTDT513 high temperature sanitizing models. The vent fan control relay provides switch contacts only and does not provide power to the vent fan motor. The rating for the vent fan control relay connected to terminals VFC1 and VFC2 on 5TB is 1.5 amps at nameplate supply voltage. When the dishwasher is connected to the vent fan, the vent fan is switched on when the dishwasher is on, and off when the dishwasher is off.

Vent Fan Control Terminals



6.2 Centerline Supplied Detergent and Rinse Aid Pump Installation

The 495LTDT51 chemical sanitizing model ships standard with chemical pumps. Onboard chemical pumps are available as an accessory kit for the 495HTDT51 and 495HTDT513 high temperature sanitizing models. **Order accessory kit 01-605918.** For installation refer to F45914 Installation Instructions shipped with the accessory kit.

6.3 Detergent and Rinse Agent Dispensers

(For chemical systems supplied by others)

(495HTDT51 and 495HTDT513 High Temperature Sanitizing models only)

Detergent and rinse agent dispensers not provided by Noble must have all connections sealed against leakage.

The 495HTDT51 and 495HTDT513 high temperature sanitizing models use 0.73 gallons [2.8 liters] of rinse water per rack at a flow rate of 2.75 gallons per minute [10.4 liters per minute]. This information is used when setting the detergent and rinse agent pumps.

NOTICE!

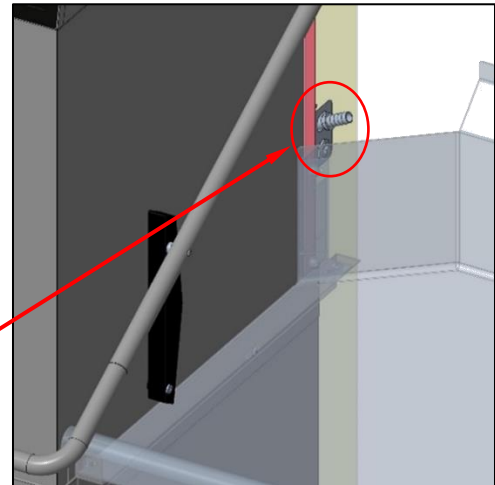
Pressure Gauge

The 495HTDT51 and 495HTDT513 high temperature sanitizing models utilize a pumped rinse system. A pressure gauge is not required.

6.3.1 Detergent Dispenser Tubing

The dishwasher has a 9/16" [15mm] diameter barbed fitting located on the rear, right chamber for installation of the detergent feeder tube.

Detergent Feeder Fitting

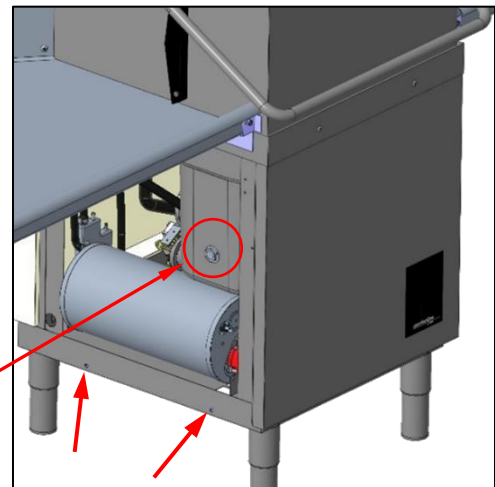


6.3.2 Detergent Sensor

The dishwasher has a 7/8" [22mm] diameter hole located on the lower, left side of the tank used for installation of the detergent sensor.

- ▶ Remove the lower left panel by removing the two screws at the bottom of the panel.
- ▶ Remove the detergent sensor plug.
- ▶ Install detergent sensor (*supplied by others*)

Detergent Sensor Plug

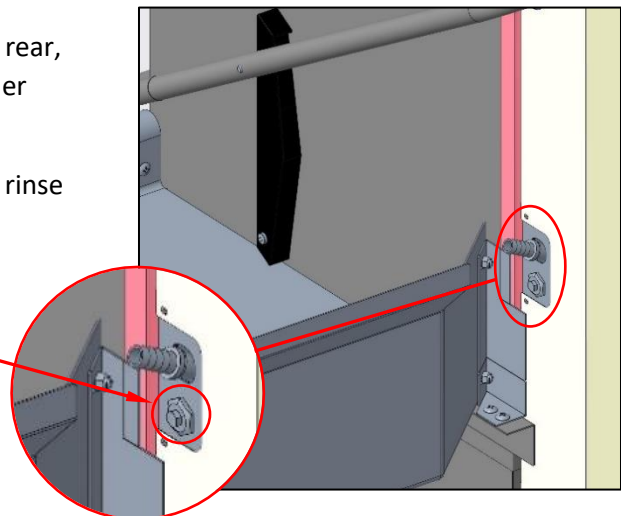


6.3.3 Rinse Agent Dispenser Tubing

The dishwasher has an 1/8" NPT port located on the rear, right chamber for installation of the rinse agent feeder tubing.

- ▶ Remove the 1/8" NPT plug for installation of the rinse agent dispenser tubing as needed.

Rinse Aid Port



6.3.4 Detergent and Rinse Agent Electrical Connections

WARNING!



Risk of electric shock

Electrical and grounding connections must comply with the applicable portions of the National Electrical Code, NFPA 70 (latest edition) and/or other local electrical codes.

- ▶ Disconnect the electrical power to the machine and follow lockout/tagout procedures. Be sure all circuits are disconnected.

This machine must be operated with an automatic detergent feeder, including a visual means to verify that detergents and sanitizers are delivered or a visual or audible alarm to signal if detergents and sanitizers are not available for delivery to the respective washing and sanitizing systems. Refer to the installation section of this manual and to the chemical feeder equipment manual(s).

Detergent Dispenser

Terminals DET1 and DET2 on 4TB are supplied with controlled 120V voltage. They are ON during the wash cycle and OFF between cycles, when machine is in delime cycle, or when the machine power supply is off.

Terminals L1 and L2 on 5TB are supplied with fused machine line voltage for convenience in powering detergent dispensing equipment. The maximum rating for any equipment connected to L1 and L2 is 2.0 amps at line voltage.

Rinse Agent Dispenser

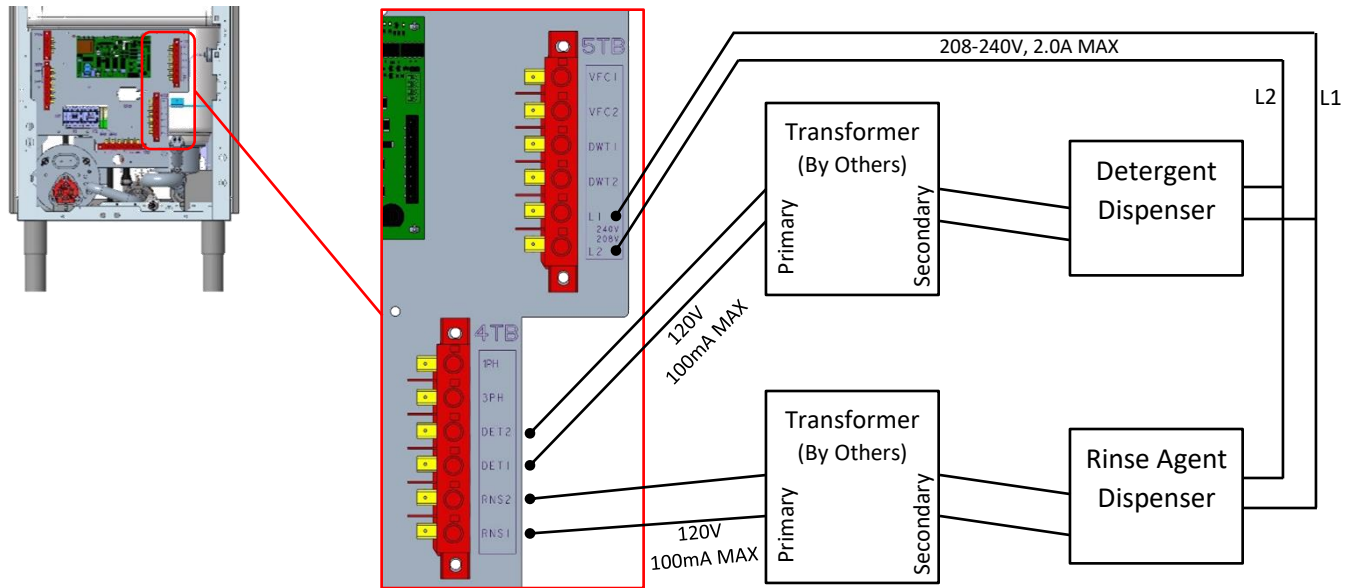
Terminals RNS1 and RNS2 on 4TB are supplied with controlled 120V voltage. They are ON during the rinse cycle and OFF between cycles, when machine is in delime cycle, or when the machine power supply is OFF.

Terminals L1 and L2 on 5TB are supplied with fused machine line voltage for convenience in powering rinse agent dispensing equipment. The maximum rating for any equipment connected to L1 and L2 is 2.0 amps at line voltage.

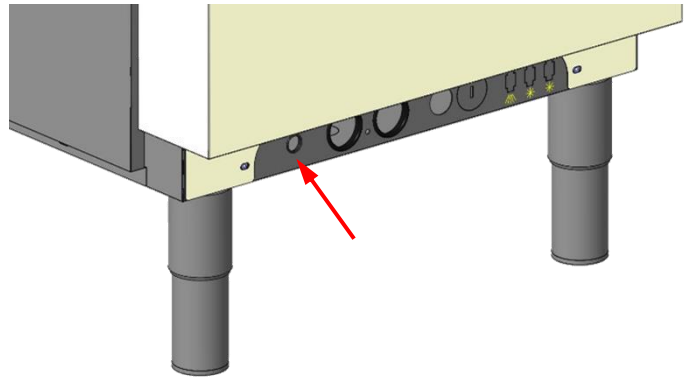
NOTICE!

DET1, DET2, RNS1, and RNS2 Connections

- ▶ The maximum rating for detergent or rinse agent dispenser control connected to DET1, DET2, RNS1, and RNS2 is 100 mA at 120V voltage.
- ▶ Use UL listed 600-volt minimum insulated wire for the connections.
- ▶ Splice connections, if required, must be made in the feeder transformer junction box (supplied by others) – not in the main controls enclosure.
- ▶ Strain relief fittings must be provided for all wiring.



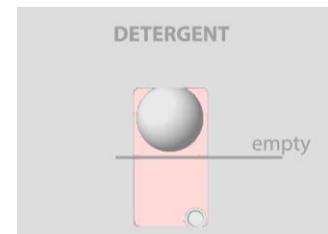
- Remove the bushing and use the 7/8" diameter knock out located underneath the machine on the back, right side for ½" trade size conduit fitting.



6.4 Liquid Chemical Bottle/Bucket Level Sensors (Optional)

The 495HTDT51 and 495HTDT513 high temperature sanitizing models do not come standard with chemical sensing. Detergent and rinse agent chemical level sensors with electronic notification are available as an accessory kit for the 495HTDT51 and 495HTDT513 high temperature sanitizing models. **Order sales accessory kit 00-562473. For installation refer to F45786 Installation Instructions shipped with the accessory kit.**

The 495LTDT51 chemical sanitizing model ship standard with visual chemical supply indicators. Detergent, rinse agent, and sanitizer chemical level sensors with electronic notification are available as accessory kits for the 495LTDT51 chemical sanitizing model. **Order sales accessory kits 00-562473 (detergent and rinse agent) and 00-562470-00002 (sanitizer).** For installation refer to F45786 Installation Instructions shipped with the accessory kits.



7 CHEMICAL SUPPLY SET UP

(For machines equipped with Noble internal chemical pumps)

7.1 Personnel qualification

Set up must only be carried out by qualified personnel (see section 2.2.2).

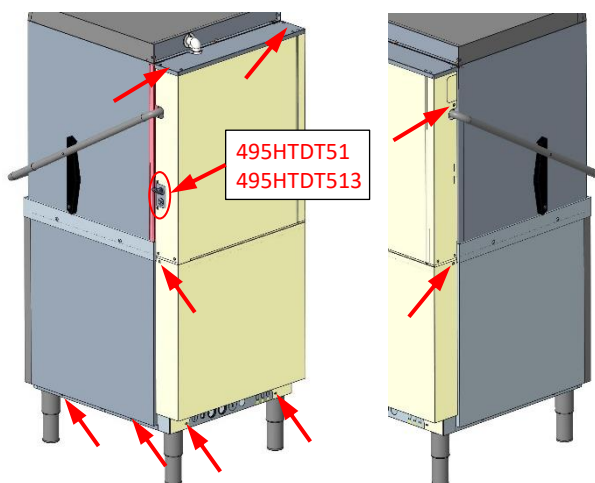
7.2 Preparing the chemical supply tubing

Preparing the chemical supply tubing:

- ▶ Remove the screws holding the rear cover panel top to the machine and lift off panel.

Note that:

- The door will need to be opened to remove the rear cover panel top.
- ▶ Remove the screws holding the rear cover panel to the machine and lift off panel.
- ▶ Remove the screws holding the right, side cover panel to the machine and lift off panel.
- ▶ Locate the chemical tubing in the base of the machine.
- ▶ Separate the tubing corresponding to the chemical labels:
 - ↳ The clear tubing – Detergent
 - ↳ The blue tubing – Rinse Aid
 - ↳ The clear tubing – Sanitizer (495LTDT51 chemical sanitizing Only)
- ▶ Route the chemical tubing through the supplied bushing located on the back of the machine base.



- ▶ Attach the weight and filters supplied in the small part bag to the ends of the tubing.
- ▶ Replace the right, side cover panel.
- ▶ Replace the rear cover panel.
- ▶ Replace the rear cover panel top.



7.3 Setup of external chemical bottles/buckets

Preparing the detergent, rinse aid

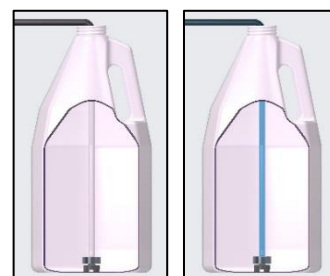
Preparing the sanitizer (495LTDT51 chemical sanitizing model only)

Suction height of detergent, rinse aid, and sanitizer pumps: max. 5 ft

7.3.1 Standard suction tubes

Standard suction tubes

- ▶ Place clear suction tubing marked for detergent at the bottom of the external detergent bottle/bucket.
- ▶ Place blue suction tubing marked for rinse aid at the bottom of the external rinse aid bottle/bucket.
- ▶ Place clear suction tubing marked for sanitizer at the bottom of the external sanitizer bottle/bucket.

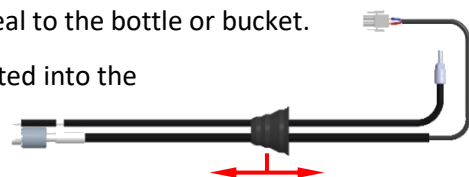
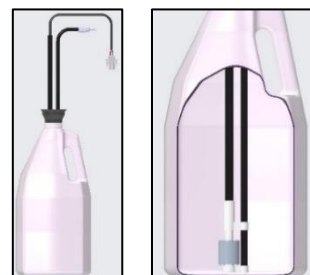


7.3.2 Optional detergent, rinse aid, and sanitizer chemical level sensors

Optional detergent, rinse aid, and sanitizer chemical level sensors

If the machine has installed the optional detergent, rinse aid, and sanitizer chemical level sensing wands (see section 6.4) then:

- ▶ Place the chemical level sensing wand into the external bottle or bucket so that the float end of the sensor touches the bottom of the container.
 - ↳ The detergent and rinse aid wands will have a black stopper and black electrical wire.
 - ↳ The sanitizer wand (495LTDT51 chemical sanitizing model) will have a blue stopper and blue electrical wire.
- ▶ Adjust the stopper on the chemical level sensing wands to seal to the bottle or bucket.
- ▶ Make sure the chemical level sensing wand is correctly inserted into the container with the float sensor at bottom of the container.



7.4 Filling chemical tubing (See Operator Menu for priming – section 9.1)

WARNING!



Chemical burns, irritation of the skin

Filling the chemical tubing with detergent, rinse aid or sanitizer for the first time incorrectly can cause serious injury.

- ▶ Wear protective equipment (gloves, safety goggles, protective clothing) when handling chemicals.
- ▶ Observe the manufacturer's application and safety instructions.

8 OPERATION

8.1 Personnel qualification

The machine must be operated by qualified personnel.

8.2 Special safety instructions

WARNING!



Chemical burns, irritation of the skin, scalding

If the door is opened during operation, wash water can spray out and cause injury.

- ▶ Do not open the door during operation, wait for the cycle to finish.

8.3 Notes for optimal washing result

The rinse result is significantly affected by the water quality. If the mineral content is high, the minerals dissolved become visible on the glasses in the form of spots and streaks during the drying process.



A qualified service technician can determine the water's mineral content by measuring the grains. Recommended water hardness is 3 grains of hardness per gallon or less. Higher hardness may cause excessive formation of lime scale. Water hardness above 3 grains per gallon requires water treatment.

If you have any questions, please contact your local water treatment professional.

8.4 Preparation for washing

8.4.1 Preparing the machine

- ▶ Check correct position of pump strainer and tank strainers and proper installation of upper and lower wash/rinse arms.

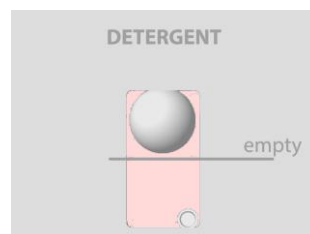


Low Temp



High Temp

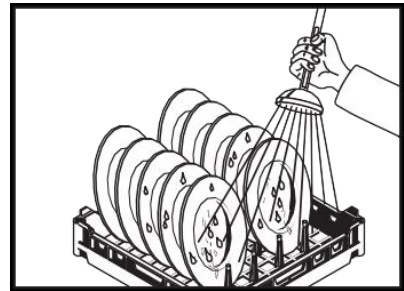
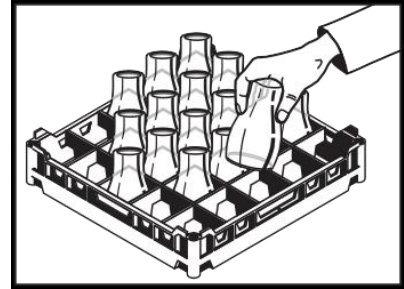
- ▶ Open building water shut-off valve.
- ▶ Turn on main switch or breaker.
- ▶ Check level of detergent and rinse aid in containers (See sections 9.5.3 and 9.5.4).
- ▶ For 495HTDT51 and 495HTDT513 high temperature sanitizing machines, check level of sanitizer in container (See section 9.5.5).
- ▶ For machines equipped with Noble internal chemical pumps, check that there are chemicals present.
- ▶ Close door.
- ▶ Press the Power/Drain button.



- ↳ During the filling and heating processes, the Power/Drain button LED flashes. This process can take several minutes.
- ↳ As soon as the LED is permanently lit on both the Power/Drain button LED and the Start button LED, the machine is ready for operation.

8.4.2 Preparing the ware for washing

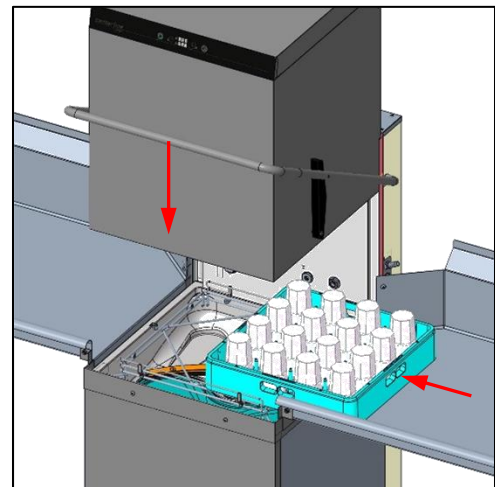
- ▶ Remove heavy food residue.
- ▶ Load ware into rack.
- ▶ Rinse off ware.

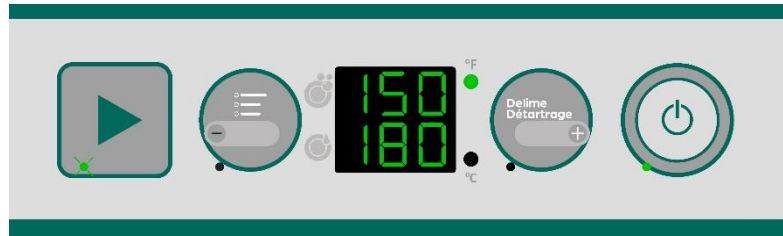


Never use steel wool on ware to be loaded into the dishwasher.

8.5 Washing

- ▶ Open door.
- ▶ Slide rack into the machine and close the door. The wash cycle will start automatically.





- ↳ While the washing cycle is running, the Start button LED flashes. As soon as the Start button LED lights up permanently, the rinsing process is complete, and cycle ends.
 - ↳ The wash temperature is shown in the upper display for the entire cycle.
 - ↳ The rinse temperature is shown on the lower display only during the rinsing portion of the cycle.
- ▶ Open the door and remove the rack.
 - ▶ Allow the ware enough time to dry.

8.5.1 Extending wash time

For heavier soiled ware, the wash cycle time can be extended by up to 4 minutes. (See section 7)

- ▶ To extend the washing time, start a normal washing cycle by closing the door and within the first 10 seconds of the cycle starting, press the Start button.



- ↳ While the extended washing cycle is running, both the Start button LED and the Menu button LED flashes. As soon as the Start button LED lights up permanently, the rinsing process is complete, and the cycle ends.

8.6 Auto shutdown

If the machine has had no activity for more than 6 hours, the machine will automatically drain and switch off.

8.7 Switch off machine

- ▶ Press and hold the Power/Drain button (3 seconds).



- ↳ During draining, the display will show “drA in”.
- ↳ During draining, the Power/Drain button LED flashes.



During draining, the machine interior is rinsed automatically, and the tank and booster are emptied. (495HTDT51 and 495HTDT513 high temperature sanitizing machines only)

- ↳ At the end of the draining cycle, the machine switches off automatically.

When the machine has switched off:

- ▶ Remove any heavy food residues.
- ▶ Turn off main switch or breaker.
- ▶ Close building water shut-off valve.

8.8 Daily cleaning or after each meal period

NOTICE!

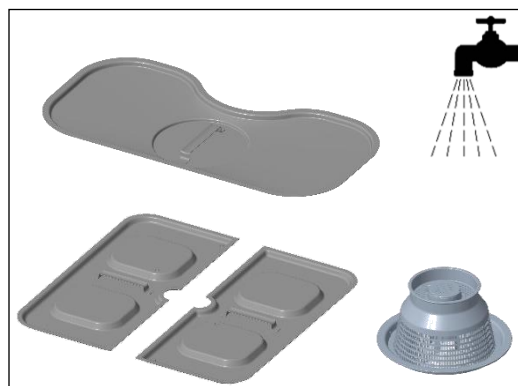
Property damage

The use of unsuitable agents can cause corrosion damage.

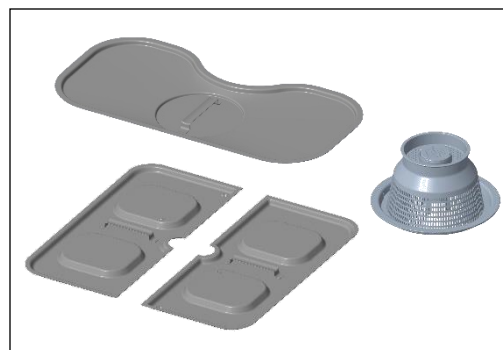
- ▶ Do not use any bleach, acids, or metal-containing additives to clean the machine.
- ▶ Do not use metal brushes.

- ▶ Open the door, remove tank and pump strainers. Rinse under running water. Make sure that food debris does not enter pump intake when the pump strainer is removed.

- ▶ Clean machine interior.

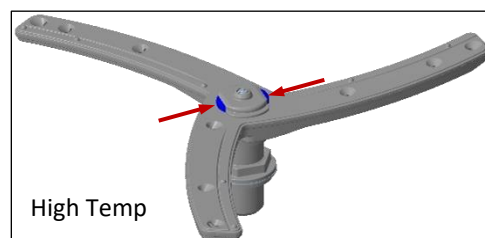
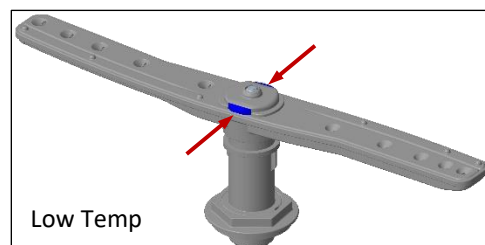


- ▶ Replace pump and tank strainers.
- ▶ Allow time for interior to dry.



8.9 Weekly cleaning

- ▶ Depress two buttons on side of lower combination wash and rinse arm.
- ▶ Remove and clean combination wash and rinse arm.
- ▶ Repeat for upper arm.
- ▶ Replace all parts.



8.10 Removing hard water deposits (Deliming)

The dishwasher should be delimed on a regular basis as required. How often depends on the mineral content of the water. Deliming should be done when you can see clear signs of lime deposits (a white chalky substance) on the inside walls, on the wash and rinse arms or tank heater. Inspect the machine interior for lime deposits. When deliming is necessary, a deliming agent (such as Lime-A-Way® or LSR®) should be used for best results.

⚠ WARNING!

Chemical mixing



Deliming solution must not come in contact with bleach or rinse solution containing bleach. Mixing may cause hazardous gas to form. This entire procedure must be followed step-by-step for safe and satisfactory results.

This machine is equipped with an automatic delime cycle reminder. It is recommended that deliming be done when the Delime button LED is flashing. Deliming can also be initiated at any other time if deemed necessary.

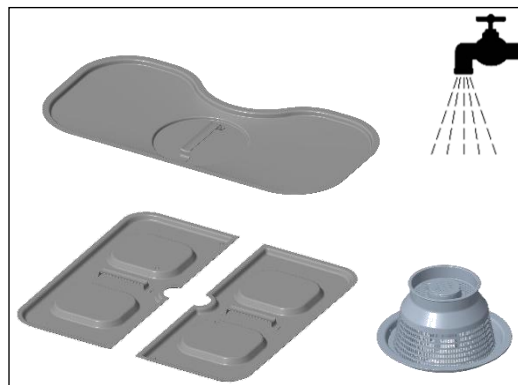
- ▶ Machine must be on and at a ready state (Power/Drain button LED lit permanently).

- ▶ Open the door, remove tank strainers. Rinse under running water.

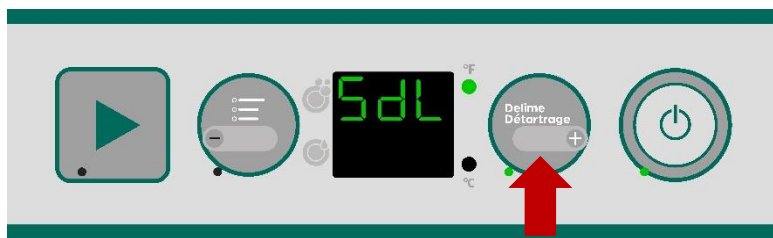
- ▶ Replace tank strainers.

- ▶ Close door.

- ↳ The machine will automatically enter a washing cycle.



- ▶ After the wash cycle has completed, press and hold the Delime button (minimum 3 seconds).



- ↳ The upper display will show “SdL” to show that the delime cycle has started.

- ↳ The machine will enter a drain and rinse phase. During this phase the delime button LED will be lit continuously.



The deliming cycle is extensive and can take 30 minutes or more to complete.

- ↳ When ready to add deliming agent, the upper display will show “Add”. The delime button LED will flash.



- ▶ Open the door.

- ▶ Add the correct amount of deliming agent to the tank according to the manufacturer's instructions (Refer to section 3.4 for tank volume).

⚠ WARNING!**Chemical burns, irritation of the skin.**

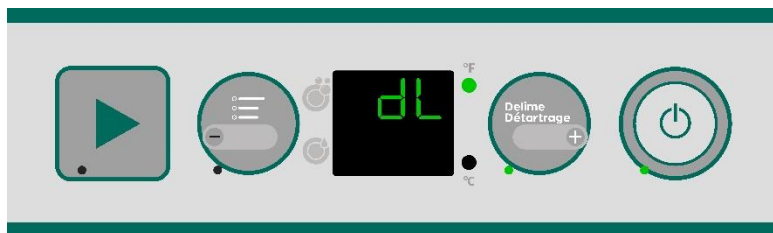
The use of unsuitable chemicals can cause injury.

- ▶ Use only commercial deliming agent.
- ▶ Observe the manufacturer's application and safety instructions.

- ▶ Close the door.

↳ The deliming process will continue. The delime button LED will be lit continuously.

↳ The upper display will show "dL".

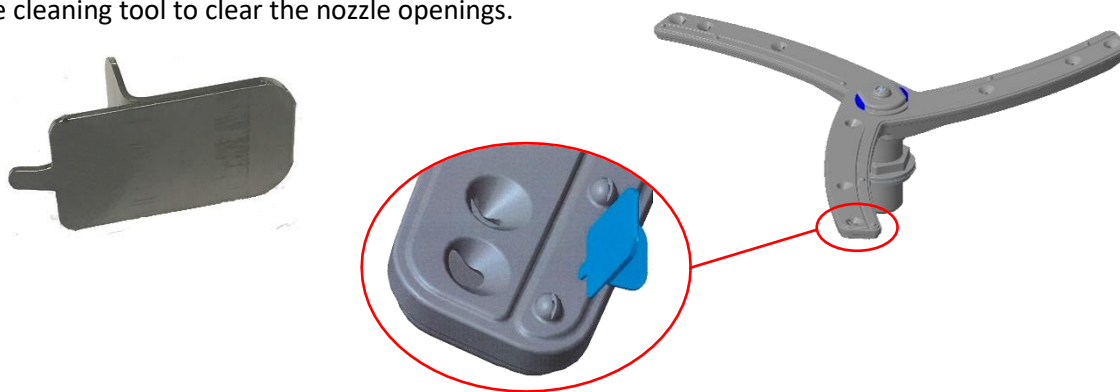


↳ When the deliming phase completes, the machine will enter a drain and rinse phase. During this phase the delime button LED will be lit continuously.

↳ After the deliming process is completed, the machine will drain and shut down.

8.11 Rinse Nozzle cleaning

- ▶ Should the rinse nozzles become clogged with hard water deposits or other debris, use the included nozzle cleaning tool to clear the nozzle openings.



If the nozzle cleaning tool is not available, a small, pointed object, such as a paperclip can be used.

9 SETTINGS

9.1 Overview of operator menu

495HTDT51 and 495HTDT513 (High Temperature Sanitizing Machine)

Item	Menu Function	Function
00	Extended Wash Time	Sets extended wash time
01	Cycle Count (Rinse)	Displays number of wash/rinse cycles completed
02	Detergent Setpoint	Setting of detergent concentration (g/l)
03	Detergent Pump Prime	Primes detergent pump
04	Rinse Aid Setpoint	Setting of rinse aid concentration (g/l)
05	Rinse Aid Pump Prime	Primes rinse aid pump
08	Temperature Units	Sets temperature display to °F or °C
09	Chemical Pump Control	Setting of chemical pump configuration
10	Aux Channel	Internal functions
11	Aux Channel	Internal functions
12	Aux Channel	Internal functions
13	Software	Software version / Machine type

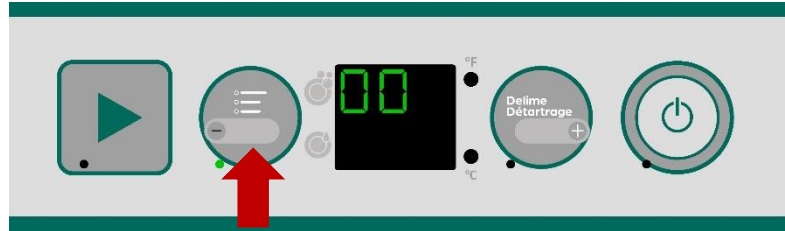
495LTDT51 (Chemical Sanitizing Machine)

Item	Menu Function	Function
00	Extended Wash Time	Sets extended wash time
01	Cycle Count (Rinse)	Displays number of wash/rinse cycles completed
02	Detergent Setpoint	Setting of detergent concentration (g/l)
03	Detergent Pump Prime	Primes detergent pump
04	Rinse Aid Setpoint	Setting of rinse aid concentration (g/l)
05	Rinse Aid Pump Prime	Primes rinse aid pump
06	Sanitizer Setpoint	Setting of sanitizer concentration (ppm)
07	Sanitizer Pump Prime	Primes sanitizer pump
08	Temperature Units	Sets temperature display to °F or °C
10	Aux Channel	Internal functions
11	Aux Channel	Internal functions
12	Aux Channel	Internal functions
13	Software	Software version / Machine type

9.2 Opening the operator menu

Note: Machine must be in ready (idle) state.

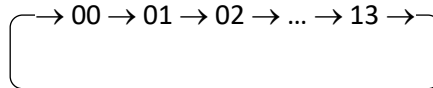
- ▶ Press the Menu button to access operator program settings.



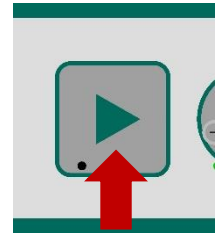
↳ The menu opens, and the Menu button LED illuminates.

↳ The upper display will show the first item "00".

- ▶ To scroll from one item to the next, press the Wash button. After the last item, the sequence will return to the first item.

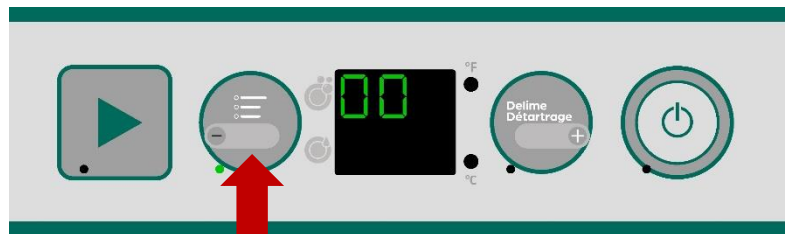


- ▶ To save and exit the operator menu at any time, open the machine door and then close it.



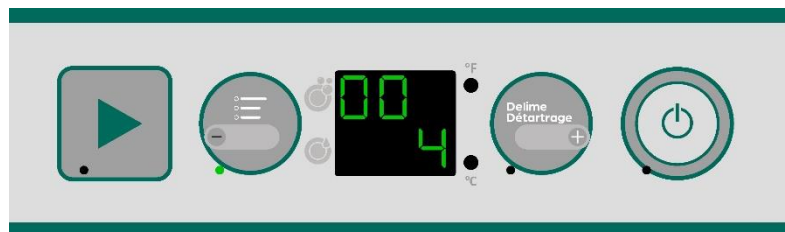
9.3 Extended wash time

- ▶ Top display shows "00"



- ▶ Press the Menu button to edit settings

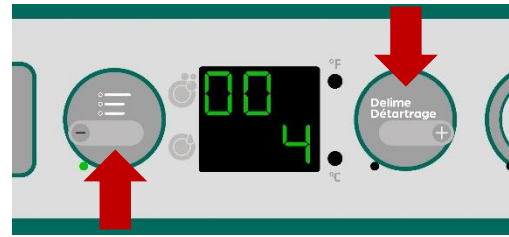
↳ Bottom display shows current extended wash setting (in minutes): (default = 4)



Extended Wash setting can be set from 3 minutes to 6 minutes total wash time in 1-minute intervals.

- ▶ To increase time, press the Menu button

- To decrease time, press the Delime button

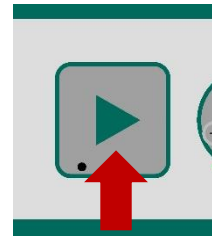


To save and exit the edit mode, either:

- Press Start Button to move to next item

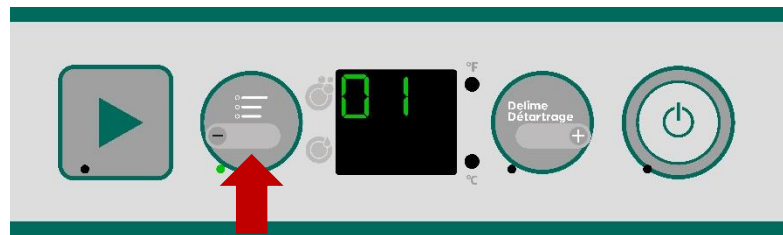
– Or –

- Open and close door (Will also exit operator menu)



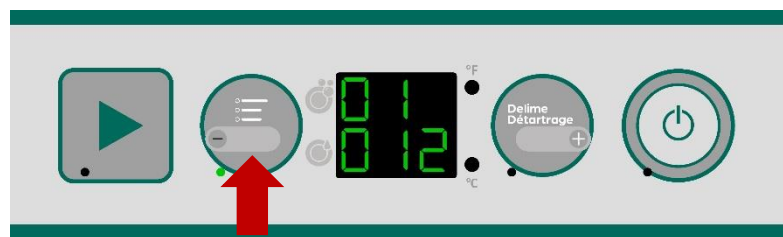
9.4 Cycle count

- Top display shows "01"



- Press the Menu button to display the cycle count
 - ↳ Bottom display shows first 3 digits of the 6-digit cycle count number (ex. 012345)

012345



- Press the Menu button a 2nd time

↳ Bottom display shows last 3 digits of the 6-digit cycle count number (ex. 012345)

0 12345

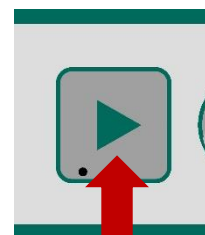


To exit the cycle count menu, either:

- ▶ Press Start Button to move to next item

– Or –

- ▶ Open and close door (Will also exit operator menu)



9.5 Detergent dispensing (Machines with Noble internal chemical pumps)

9.5.1 Setting detergent dispensing amount

- ▶ Top display shows "02"

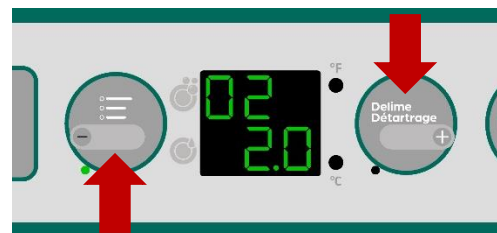
↳ Bottom display shows current detergent dispensing settings in g/L: (default = 2.0 g/L)

Note: 1.0 g/L \approx 0.1 % concentration (by vol.)



Detergent dispensing amount can be set from 0.0 g/L to 20.0 g/L in 0.1 g/L increments.

- ▶ To increase dosage by 0.1 g/L, press the Menu button
- ▶ To decrease dosage by 0.1 g/L, press the Delime button

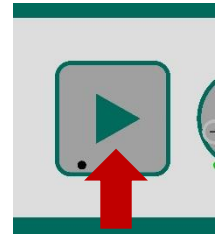


To save and exit, either:

- ▶ Press Start Button to move to next item

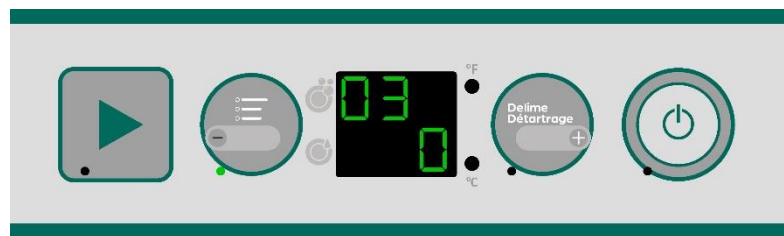
– Or –

- ▶ Open and close door (Will also exit operator menu)

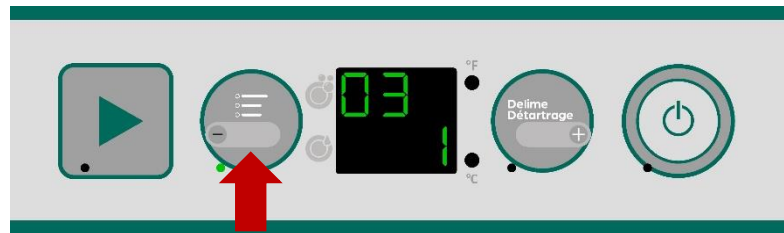


9.5.2 Priming detergent dispensing pump

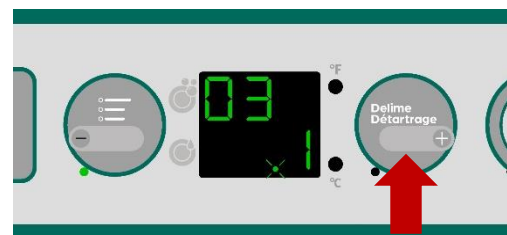
- ▶ Top display shows “03”
 - ↳ Bottom display shows “0”



- ▶ Press the Menu button to change bottom display value to “1”

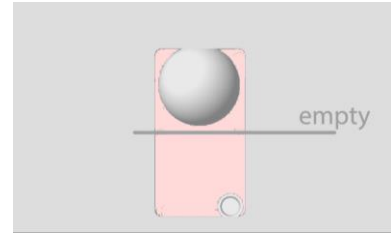


- ▶ Press delime button to begin detergent dispensing pump priming
 - ↳ The detergent dispensing pump will activate for 60 seconds
 - ↳ The decimal point in the bottom display will flash while the dispensing pump is on



- ▶ Verify the detergent is moving from the detergent bottle or container to the machine through the tubing and that there are no air bubbles in the tubing.

- ↳ When the ball in the detergent float sight has moved above the “EMPTY” line, the detergent has been fully primed and is ready.



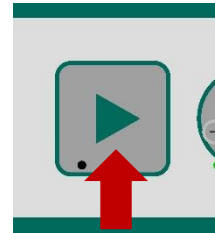
- ↳ Note: The priming process might need to be repeated at least 2 times to fully prime the machine.

To exit the priming menu, either:

- ▶ Press Start Button to move to next item

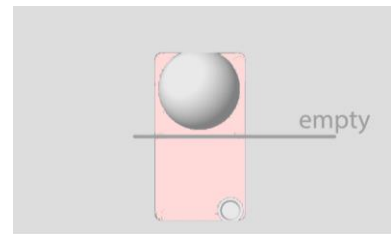
– Or –

- ▶ Open and close door (Will also exit operator menu and stop priming)

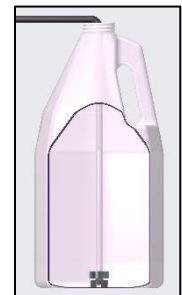


9.5.3 Inspecting detergent supply

- ▶ Verify that the ball in the detergent float sight is above the “EMPTY” line.
 - ↳ If the ball is below the “EMPTY” line, inspect the detergent container for chemical present.
 - ↳ Prime the detergent line if needed (refer to 9.5.2).



- ▶ Verify that the supply tube is correctly inserted with the suction filter at the bottom of the container.
 - ↳ If air bubbles (large gaps) are present in detergent line – prime (refer to 9.5.2)



9.5.4 Detergent supply level sensor (Optional)

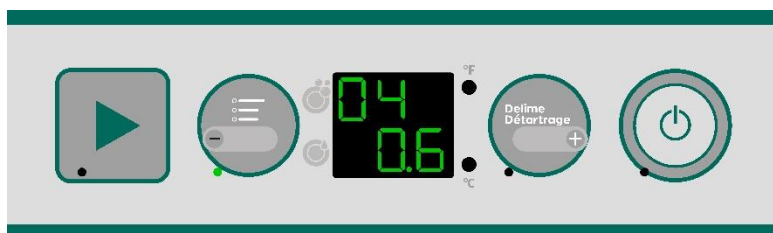
- ▶ Inspect detergent container for chemical present.
- ▶ Make sure the bottle level sensor is correctly inserted into container with float sensor at bottom of container.
 - ↳ If air bubbles (large gaps) are present in detergent line – prime (refer to 9.5.2)



9.6 Rinse agent dispensing (Machines with Noble internal chemical pumps)

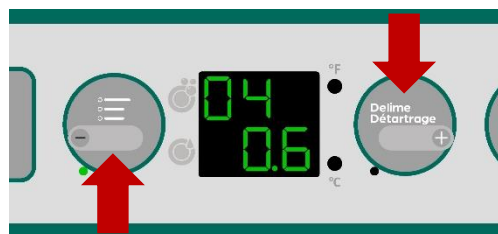
9.6.1 Setting rinse agent dispensing amount

- ▶ Top display shows “04”
 - ↳ Bottom display shows current rinse aid dispensing settings in g/L: (default = 0.6 g/L)
- Note: 0.1 g/L \approx 0.33 mL/cycle



Rinse aid dispensing amount can be set from 0.0 g/L to 2.0 g/L in 0.1 g/L increments.

- ▶ To increase dosage by 0.1 g/L, press the Menu button
- ▶ To decrease dosage by 0.1 g/L, press the Deline button

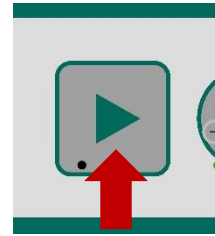


To save and exit, either:

- ▶ Press Start Button to move to next item

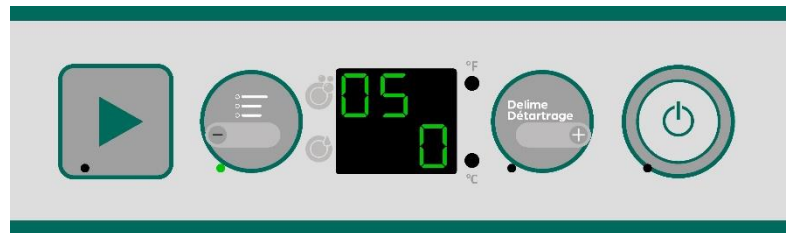
– Or –

- ▶ Open and close door (Will also exit operator menu)

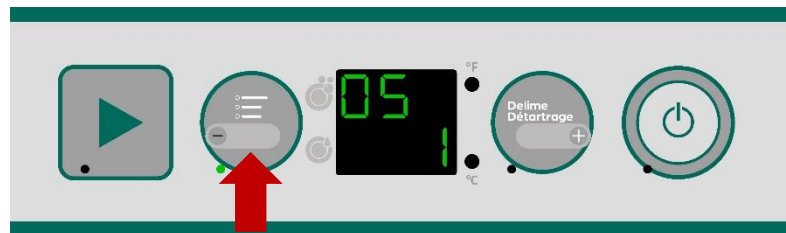


9.6.2 Priming rinse agent dispensing pump

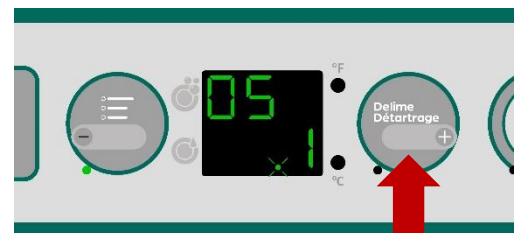
- ▶ Top display shows “05”
 - ↳ Bottom display shows “0”



- ▶ Press the Menu button to change bottom display value to “1”

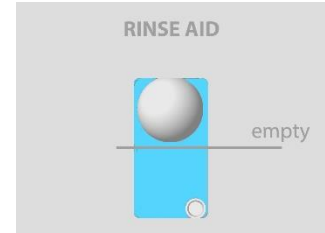


- ▶ Press delime button to begin rinse aid dispensing pump priming
 - ↳ The rinse aid dispensing pump will activate for 120 seconds
 - ↳ The decimal point in the bottom display will flash while the dispensing pump is on



- ▶ Verify the rinse aid is moving from the rinse aid bottle or container to the machine through the tubing and that there are no air bubbles in the tubing.

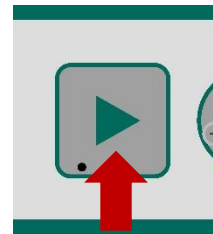
- ↳ When the ball in the rinse aid float sight has moved above the “EMPTY” line, the rinse aid has been fully primed and is ready.
- ↳ Note: The priming process might need to be repeated at least 2 times to fully prime the machine.



To exit the priming menu, either:

- ▶ Press Start Button to move to next item

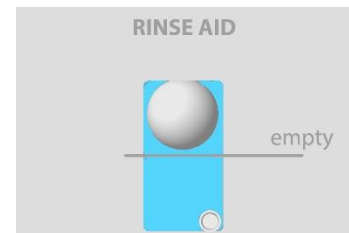
– Or –



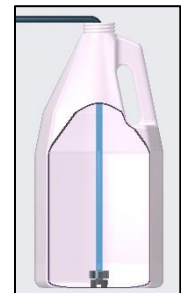
- ▶ Open and close door (Will also exit operator menu and stop priming)

9.6.3 Inspecting rinse aid supply

- ▶ Verify that the ball in the rinse aid float sight is above the “EMPTY” line.
 - ↳ If the ball is below the “EMPTY” line, inspect the rinse aid container for chemical present
 - ↳ Prime the rinse aid line if needed (refer to 7).



- ▶ Verify that the supply tube is correctly inserted with the suction filter at the bottom of the container.
 - ↳ If air bubbles (large gaps) are present in rinse aid line – prime (refer to 7)



9.6.4 Rinse aid supply level sensor (Optional)

- ▶ Inspect rinse aid container for chemical present.
- ▶ Make sure the bottle level sensor is correctly inserted into container with float sensor at bottom of container.
 - ↳ If air bubbles (large gaps) are present in rinse aid line – prime (refer to 7)

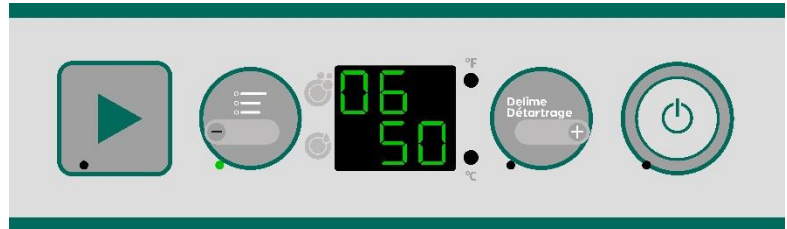


9.7 Sanitizer dispensing (495LTDT51 Chemical Sanitizing Machine only)

9.7.1 Setting sanitizer dispensing amount

- Top display shows “06”

↳ Bottom display shows current sanitizer dispensing setting in % concentration: (default = 50%)

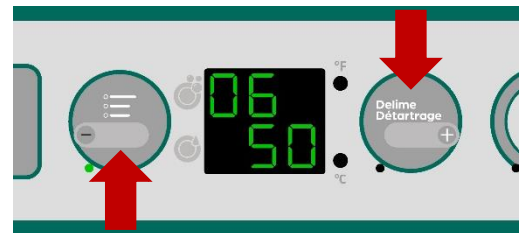


Sanitizer concentration dispensing amount can be set from 20% to 100% in 10% increments.

Sanitizer Dosing Setting

% Concentration	Sodium Hypochlorite Solution (Bleach)		
	5.25%	6.40%	8.40%
	Sanitizer Concentration PPM		
20	15	18	24
30	22	27	36
40	30	37	48
50	37	46	60
60	45	55	72
70	52	64	84
80	60	73	96
90	67	82	108
100	75	91	120

- To increase dosage, press the Menu button
- To decrease dosage, press the Delime button



To save and exit, either:

- ▶ Press Start Button to move to next item

– Or –

- ▶ Open and close door (Will also exit operator menu)



9.7.2 Priming sanitizer dispensing pump

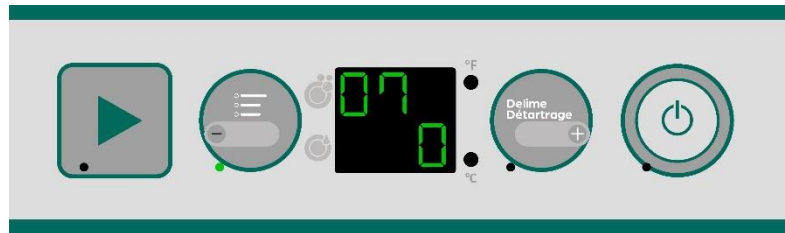


⚠ WARNING!

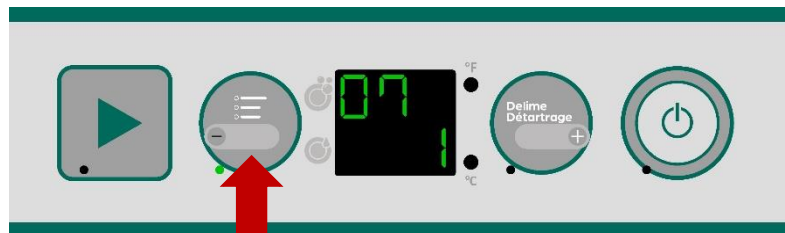
Chemical mixing

Delime solution must not come in contact with bleach. Mixing may cause hazardous gas to form. Do not prime sanitizer pump while in the delime process.

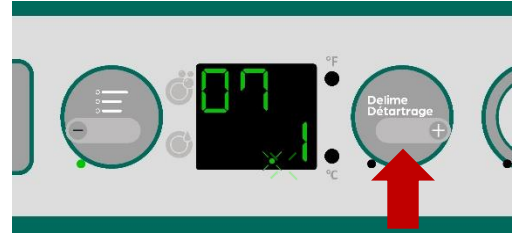
- ↳ Bottom display shows “0”



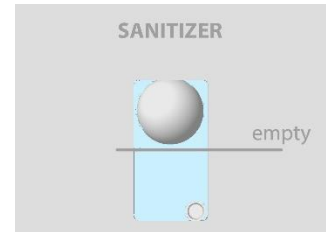
- ▶ Press the Menu button to change bottom display value to “1”



- ▶ Press delime button to begin sanitizer dispensing pump priming
 - ↳ The sanitizer dispensing pump will activate for 140 seconds
 - ↳ The decimal point in the bottom display will flash while the dispensing pump is on



- ▶ Verify the sanitizer is moving from the sanitizer bottle or container to the machine through the tubing and that there are no air bubbles in the tubing.
 - ↳ When the ball in the sanitizer float sight has moved above the “EMPTY” line, the sanitizer has been fully primed and is ready.
 - ↳ Note: The priming process might need to be repeated at least 2 times to fully prime the machine.

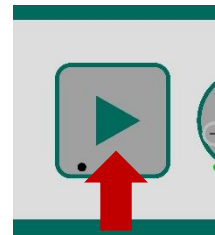


To exit the priming menu, either:

- ▶ Press Start Button to move to next item

– Or –

- ▶ Open and close door (Will also exit operator menu and stop priming)

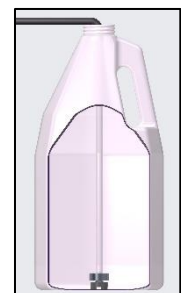


9.7.3 Inspecting sanitizer supply

- ▶ Verify that the ball in the sanitizer float sight is above the “EMPTY” line.
 - ↳ If the ball is below the “EMPTY” line, inspect the sanitizer container for chemical present.
 - ↳ Prime the sanitizer line if needed (refer to 9.7.2).

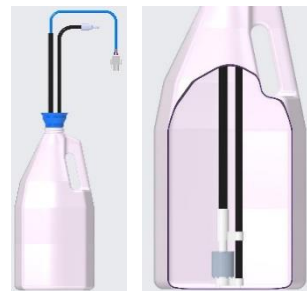


- ▶ Verify that the supply tube is correctly inserted with the suction filter at the bottom of the container.
 - ↳ If air bubbles (large gaps) are present in sanitizer line – prime (refer to 9.7.2)



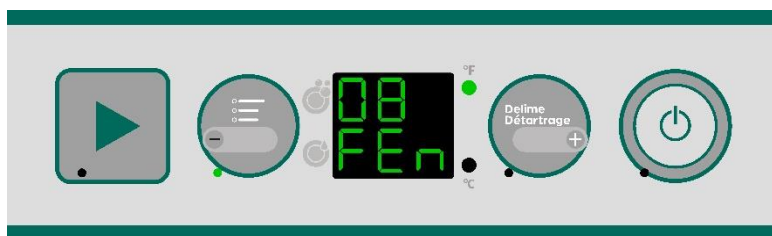
9.7.4 Sanitizer supply level sensor (Optional)

- ▶ Make sure the bottle level sensor is correctly inserted into bottle with float sensor at bottom of container.
 - ↳ If air bubbles (large gaps) are present in the sanitizer line – prime (refer to 9.7.2)

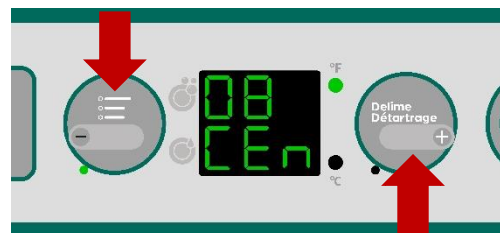


9.8 Temperature display units

- ▶ Top display shows “08”
 - ↳ Bottom display shows current temperature units: (Default is “0FE”)



- ▶ Press the Menu button or the Delime button to change temperature units



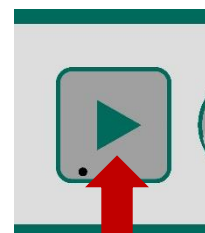
- ↳ “FEn” – Fahrenheit (Default)
- ↳ “CEn” – Celsius
- ↳ “FFr” – Fahrenheit (French) (*not used*)
- ↳ “CFr” – Celsius (French) (*not used*)

To exit the temperature units display menu, either:

- ▶ Press Start Button to move to next item

– Or –

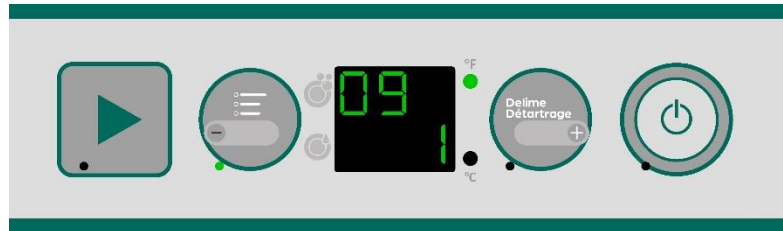
- ▶ Open and close door (Will also exit operator menu)



9.9 Chemical Pump Controls (495HTDT51 and 495HTDT513 High Temperature Sanitizing Machines Only)

- Information display shows “09”

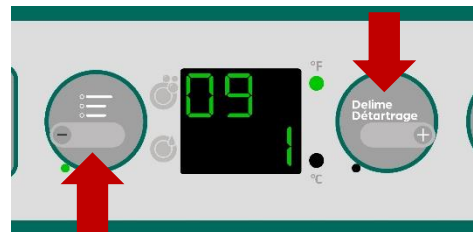
↳ Temperature display shows the current chemical pump control setting.



Chemical pump control can be set to 0, 1, or 2.

Setting	Chemical Pump Control Configuration
0	Internal chemical dosing pumps and external chemical signals disabled
1	Control of internal chemical dosing pumps enabled
2	Control signals for external chemical supply enabled

- Press the Menu button or the Delime button to change setting

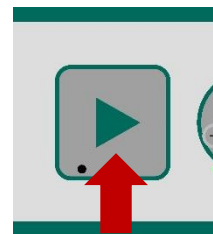


To exit the chemical pump control menu, either:

- Press Start Button to move to next item

– Or –

- Open and close door (Will also exit operator menu)



9.10 Aux Channels

– Reserved for Internal Functions –

9.11 Aux Channels

– Reserved for Internal Functions –

9.12 Aux Channels

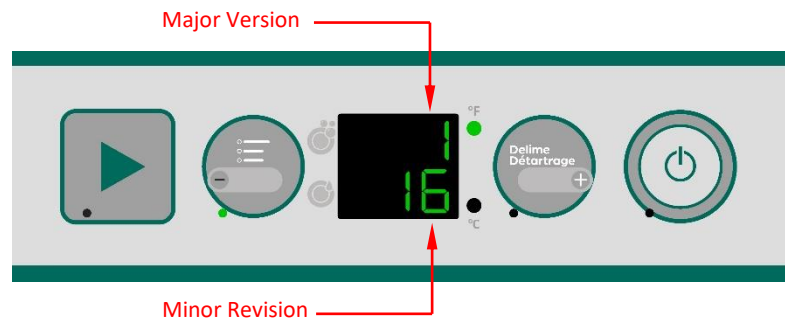
– Reserved for Internal Functions –

9.13 Software Version / Machine Program

Display shows the current control software version.

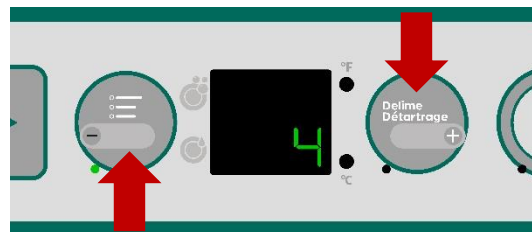
- ▶ Top display shows major version
- ▶ Bottom displays minor revision

Example: Software version 1.16



- ▶ Press and hold the Menu button or the Delime button to display the machine program

Example: Machine program 4

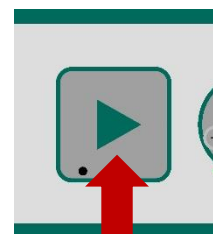


To exit the software version menu, either:

- ▶ Press Start Button to move to next item

– Or –

- ▶ Open and close door (Will also exit operator menu)



10 DISPLAY OF ERRORS AND INFORMATION

10.1 Error

- “Err” appears in the top display.



- The error code is shown in the bottom display (see table).

*If error code persists, contact Noble service provider

Error code	Symptom	Possible Solution*
01	Booster Temperature Temperature above upper limit	<ol style="list-style-type: none"> 1. Press the power button to power off (Provide 20 min to cool off). 2. Restart as normal. 3. If error continues to display, possible high limit trip or heating element malfunction – contact Noble service provider.
02	Booster Temperature Temperature below lower limit	<ol style="list-style-type: none"> 1. Press the power button to power off. 2. Restart as normal. 3. If error continues to display, possible high limit trip or heating element malfunction – contact Noble service provider.
03	Rinse Assurance Booster did not meet temperature or water level requirements	<ol style="list-style-type: none"> 1. When booster does not reach temperature or water level set point, a long wash cycle of 10 to 20 minutes will trigger. 2. If error continues to display on next cycle, possible high limit trip or heating element malfunction – contact Noble service provider.
05	Wash Tank Temperature Temperature above upper limit	<ol style="list-style-type: none"> 1. Press the power button to power off (Provide 20 min to cool off). 2. Restart as normal. 3. If error continues to display, possible high limit trip or heating element malfunction – contact Noble service provider.
06	Wash Tank Temperature Temperature below lower limit	<ol style="list-style-type: none"> 1. Press the power button to power off. 2. Restart as normal. 3. If error continues to display, possible high limit trip or heating element malfunction – contact Noble service provider.
07	Booster Pressure Level Sensor Voltage above upper limit	<ol style="list-style-type: none"> 1. Press the power button off then on to start the draining process. 2. Drain tank and refill (should reset the pressure level sensors). 3. If error continues to display – contact Noble service provider.
08	Booster Pressure Level Sensor Voltage below lower limit	
09	Wash Tank Pressure Level Sensor Voltage above upper limit	
10	Wash Tank Pressure Level Sensor Voltage below lower limit	
12	Drain Overflow Limit Wash tank water level exceeded limit	<ol style="list-style-type: none"> 1. Verify drain hose is not pinched or kinked. 2. Verify pump strainer is not clogged. 3. If error continues to display, possible drain pump malfunction – contact Noble service provider.

Error code	Symptom	Possible Solution*
13	Wash Tank Fill Time Exceeded	<ol style="list-style-type: none"> 1. Cycle power button off and then on to continue filling. 2. Check wash and rinse arms for clogged nozzles. 3. If error continues to display – contact Noble service provider.
14	Drain Error – Shutdown Machine took too long to drain	<ol style="list-style-type: none"> 1. Verify drain hose is not pinched, kinked or incorrect drain connection to building drain. 2. Check drain hose for any debris and drain again. 3. If error continue to display – contact Noble service provider.
18	Fill Error – Booster Booster took too long to fill	<ol style="list-style-type: none"> 1. Verify supply hose is not pinched or kinked. 2. Check that water is being supplied to machine. 3. Error will clear once water fills booster to setpoint within set time. 4. If error continues to display, possible fill valve malfunction – contact Noble service provider.
19	Chemical Deficiency Detergent / Rinse Aid / Sanitizer	<ol style="list-style-type: none"> 1. Low or no chemicals. 2. Float level on bottle level sensor below working condition. 3. If no bottle level sensor present, jumpers are missing from chemical level sensor connectors.
do or	Program Interrupted Fill, wash, or delime cycle	<ol style="list-style-type: none"> 1. Machine is in fill, wash or delime cycle. 2. Verify door is closed. 3. If cycle running, then there is a display updating delay.
22	Low Rinse Temperature	<ol style="list-style-type: none"> 1. Rinse temperature below setpoint on 3 consecutive cycles. 2. Error will clear if rinse temperature meets or exceeds setpoint. 3. If error continues to display – contact Noble service provider.
24	USB Drive Not Detected	<ol style="list-style-type: none"> 1. USB not properly configured or incorrect directory path. 2. Contact Noble service provider.
25	Communication Error	<ol style="list-style-type: none"> 1. Internal communication error 2. Contact Noble service provider.
FIL	Low Water Level at Start of Wash Cycle	<ol style="list-style-type: none"> 1. Check if item(s) from previous wash cycle removed large amount of water from dishwasher. 2. Check orientation of ware to ensure water is not collected. 3. Will automatically correct after starting of the next cycle. 4. Wash tank will fill to proper level and heat to temperature and then wash cycle will resume.
30	Booster or Wash Tank Heat Up Time Exceeded at Startup	<ol style="list-style-type: none"> 1. Press the power button to power off and drain tank. 2. Restart as normal. 3. If error continue to display, unplug the machine from the wall. If unit is hardwired, turn circuit breaker off then back on. 4. If error continues to display, possible tripped high limit or heating element malfunction – contact Noble service provider.
31	Fill Error	<ol style="list-style-type: none"> 1. System exceeded maximum fill time. 2. Press the power button to power off machine. 3. Verify supply hose is not pinched or kinked. 4. Check that water is being supplied to machine. 5. Restart as normal. 6. If error continues to display, possible fill valve malfunction – contact Noble service provider.

10.2 Information

► The following notes are displayed with a combination of letters in the display.



Display	Reason	Remedy
do or	Filling, washing draining or delime program interrupted	Close door

11 TROUBLESHOOTING GUIDE

11.1 Poor wash results

Fault Type	Possible Cause	Remedy
Ware not clean	Wash arm hard to turn (must rotate easily by hand).	<ul style="list-style-type: none"> Remove wash arms and clean them thoroughly. Also check that water manifold from machine to wash arm is clear.
	Wash arm nozzles are clogged (visual check).	<ul style="list-style-type: none"> Remove wash arm and rinse wash arm thoroughly until all soiling is removed.
	Rinse nozzles clogged (usually by lime deposit).	<ul style="list-style-type: none"> Remove rinse arms and delime them in separate container. Check building softening system for function. Delime machine if needed.
	Detergent concentration is too low or too high.	Check detergent concentration setting (See operating instructions).
	Tank strainers clogged.	Remove strainer pan(s), empty and clean strainer(s).
	Pump strainer clogged.	Remove, empty and clean strainer.
	Wrong program selected for heavily soiled wash ware.	Extend the wash program for longer wash cycle.
Ware or glasses dry poorly	Rinse aid concentration too low.	Increase concentration (see operating instructions)
	Wash ware still greasy.	Detergent concentration too low: increase (see operation instructions). Check if detergent is appropriate. If not,

Fault Type	Possible Cause	Remedy
		choose a stronger one. Drain contaminated water and refill machine. Ensure better pre-scrapping of the wash ware.
	Wash ware left in machine too long after the end of wash cycle.	Remove wash ware as soon as cycle is completed when ware is at its highest temperature to enable better drying.
Streaks and spots on ware or glasses	Rinse aid concentration too high (stripe or bubble formation)	Reduce rinse aid concentration (see operating instructions)
	Hard water or high mineral content.	Check water quality.
	Improper rinse aid	Consult your local chemical provider
	Inadequate rinse aid dispensing causes stains.	Increase rinse aid concentration (see operating instructions)

11.2 Other faults

Fault Type	Possible Causes	Remedy
Glasses are totally or partially cloudy.	Surface of glasses is rough and porous; this is called glass etching.	Use new glasses, this is not caused by a malfunction on the machine.
Glass/dish breakage.	Use of unsuitable dish or glass racks.	Use suitable racks.

12 MAINTENANCE

Genuine spare parts must be used for repairs and maintenance part replacements. Maintenance parts include chemical dispensing tubes, rinse arm bearings, etc.

Contact your Noble service provider for any repairs or adjustments needed on this equipment.

13 DISPOSAL

The machine operator is responsible for disposing of the machine and its operating materials correctly and in accordance with environmental regulations. Observe the national and local regulations.

14 PRODUCT DISCLAIMER

Installations and repairs carried out by non-authorized technicians or using non-genuine spare parts, and any technical alterations to the machine not approved by the manufacturer will invalidate the manufacturer's warranty.

Noble reserves the right to make changes or improvements to its products without prior notice.

15 NOTES