

INSTALLATION INSTRUCTIONS

Model HT-25, HT-34

208v/240v, Single-Phase, 90amps (Dual 60a/30a), Neutral High Temp Dishmachine

Listed by UL #E68594, NSF/ANSI 3, ASSE 1004 #933, LA Test Labs File M-780089, Mass. License P3-0111-306





The electrical power supplied to this machine is an imminent hazard that could result in severe bodily injury or death if not properly installed or hooked up correctly. When working in the control box or on electrical parts, always disconnect power and tag-out before servicing. Replace cover to control box and other protective covers when finished servicing this equipment.

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Read manufacturer's manual before using this product. For your safety read and observe all cautions shown throughout these instructions. While performing installations described in this booklet, wear approved personal protective equipment, including safety eye-wear.

CHEMICALS—There are potentially hazardous situations when working with industrial cleaning chemicals for dishmachines. See chemical manufacturer's safe practices and SDS sheets for handling and installing chemicals and supply containers.

WARNING: Cancer and Reproductive Harm – www.P65Warnings.ca.gov

NOTICE

#1 BEFORE YOU BEGIN—American Dish Service provides this information as a service to our customers. Keep all instructions for future reference. ADS reserves the right to alter or update this information at any time. Should you desire to make sure that you have the most up-to-date information, we would direct you to the appropriate document on our web site: www.americandish.com. Set out below are the specifications and requirements that you must use and follow to properly install the type or types of equipment listed above. It is your obligation as the customer to ensure that the machine is installed safely and properly, and when completed, the machine is left in proper and safe working order. Electrical, Plumbing, and Chemical hookup should be performed by a qualified professional who will ensure that the equipment is installed in accordance with all applicable Codes, Ordinances, and Safety requirements. Failure to follow the installation instructions could void the warranty. ADS assumes no liability or control over the installation of the equipment. Product failure due to improper installation is not covered under the ADS Warranty.

#2 This equipment is considered an item of heavy use. It is not rated for outdoor use.

#3 SPRAY ARMS—Do not install spray arms until machine is flushed with water. When this machine is connected to power, it will normally fill with water and complete one cycle. Do this without the spray arms. Dump that water out before installing spray arms. Draining the water will flush installation debris from the tank and pump; this prevents damage to spray arm bearings. To drain, pull the pump filter out of the sump.

#4 IMPORTANT—Dishmachines must be installed to allow for servicing of motor and plumbing. Do not install chemical dispensers on the top of the control box or machine.

#5 WATER HEATERS OR BOILERS—Must provide the minimum temperature of 120°F required by the machine listed above, which has a minimum demand of 61.2 gallons per hour. These specifications are for the dishmachine only, which typically accounts for 70% of a restaurant's hot water demand.

FOR HOT WATER SANITIZING—An additional booster heater must be installed to reach 180°F minimum for the final rinse. This booster will require a rise of 70°F for 61.2 gallons per hour.

#6 INSPECT FOR DAMAGE—If you receive a damaged dishmachine, do not sign "Clear" but write "Damaged" on the documents.

ELECTRICAL SECTION



The electrical power supplied to this machine is an imminent hazard that could result in severe bodily injury or death if not properly installed or hooked up correctly

NOTICE

Before powering up the machine, CHECK ALL ELECTRICAL SCREW TERMINALS in the control box on top of the machine and the heater box. Screws can loosen in transit. Loose connections on high amp load terminals will result in both wire and component damage during operation and will not be covered under ADS warranty. The term "Clean Circuit" means the electrical circuit breaker supplies no other devices, motors, machines, or lights.



Showing HT-25, single-phase control box

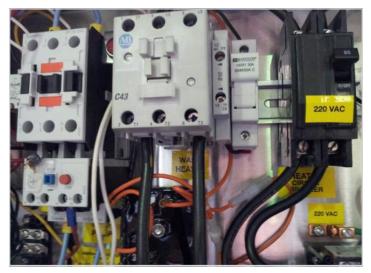


Main distribution blocks for two incoming circuits, 30/60a

Electrical: HT-25 208/240v, Single-Phase 90a (Dual Circuits of 60a & 30a Plus Neutral)

IT IS RECOMMENDED THAT THIS EQUIPMENT BE INSTALLED USING NEW CIRCUIT BREAKERS.

ORDERING INSTRUCTIONS—Machines with heaters are voltage specific, order according to the actual voltage available at the installation (see kW chart in the Appendix).



Motor contactor, heater contactor, fuse block, heater breaker



Cam timer with 3 fixed operational cams, 2 adjustable

FIRST CIRCUIT—The power supply of 208 volts, single-phase, for the 30-amp connection must consist of two 10-gauge wires for L1, L2, one Neutral and one suitable green ground wire. The 30-amp breaker or fuses must be a clean circuit to the machine. This circuit is for the motor and control circuit. Attach the 10-gauge wires to terminals marked L1, L2, Neu, and GND on the upper 4-terminal main distribution block in the control box.

SECOND CIRCUIT—This second circuit is for the tank sustainer heater, which uses the 60-amp circuit. The 60-amp breaker or fuses must be a clean circuit to the machine. Attach a minimum of 6-gauge wires to terminals marked L1, L2 on the lower 2-terminal main distribution block in the control box, then tighten all wires. ADS has provided two 1" conduit holes (1-3/8" actual size) for each electrical service in the back of the control box. This model has 120v control circuit and components.

FOR 240 VOLT—If power is 240v, see kW rating chart at the back of the manual for correct heater sizing and available ADS heater elements. Specifying the correct voltage should be done at the time of ordering.

EXCEPTIONS—HT-25/34 with booster combo is NOT AVAILABLE in single-phase, this model will use a standalone booster with its own electrical service for a minimum of 12 kW single-phase, requiring 90amps on 208v.

PLUMBING SECTION

#1 TANKLESS WATER HEATERS can be problematic for commercial dishmachines. The ADS model HT-25 dishmachine require heated water 61.2 gallons per hour at 20 psi as measured at the final rinse manifold, with a minimum temperature of 120°F. It has been the experience of ADS that tankless supply systems require multiple units plumbed in sequence with a recirculation loop to achieve proper pressure and temperature.

Check with the tankless water heater manufacturer, they may recommend a storage tank to guarantee proper flow and line pressure to the machine. Failure to provide adequate water quantity, pressure and temperature to the machine will cause the machine to function improperly and is not the responsibility of ADS. Improperly installing ADS equipment in this manner could void the warranty. All costs associated with providing an adequate water supply to the machine is the sole responsibility of the user.

#2 DRAIN SIZE—Gravity drain lines are 2" pipe size. Do not use reducing adapters for drain lines, always use same diameter pipe or larger. Close pump petcocks if equipped.

#3 A PRESSURE REDUCING valve with by-pass should be installed before the booster heater if the line pressure is 50 psi or above. This is according to booster manufacturer's instructions.

#4 A BURN HAZARD from hot water from pumped sprays or plumbing leaks.

#5 A ELECTRICAL SHOCK HAZARD on bare electrical terminals in the thermostat box or control box.

#6 HOODS—Follow all local plumbing and mechanical codes. IMC 2012, section 507.2.2 requires Type II hoods for all commercial dishwashers except where the heat and moisture loads are incorporated into the building's HVAC systems or dishwashing equipment designed with separate heat and moisture removal systems. A door-type, single-rack, hot-water sanitizing dishwasher is rated at 4770 Btu/h by table 5E, ASHRAE Research Project #1362, 8/5/2008. ADS DOES NOT SPECIFY BUILDING HVAC VALUES.



Showing final rinse mixing chamber, hot-water inlet to HT-25



Data plate information and listing marks

Hot Water Sanitizer Connection

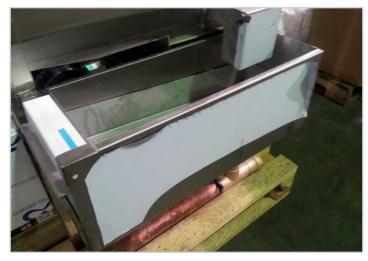
Flush the building's water lines before connecting to the dishmachine to avoid fouling the inlet water solenoid. For high temp sanitizing this inlet water line must come from a stand-alone booster heater. Connect 3/4" MPT water supply line to a 12kW booster and a 3/4" MPT line to the top of the dishmachine inlet manifold when using a stand-alone booster. The requirement at the dishmachine is 180°F minimum at 20 PSI during final rinse, with a demand of **61.2 GPH**. The pressure is measured at the pressure gauge mounted next to the pressure reducing valve in the inlet plumbing on top of the machine's hood. To adjust pressure, turn adjustment screw atop the valve counter-clockwise to decrease pressure.



Showing PRV, ASSE approved air-gap, final rinse gauge

Chemical Sanitizer Connection

For chemical sanitizing the hot water line will come directly from the building's water heater. Connect 3/4" MPT water supply line to the inlet manifold. The requirement at the dishmachine is 120°F minimum at 20 PSI during final rinse, with a demand of **61.2 GPH**. The pressure is measured at the pressure gauge mounted next to the pressure reducing valve in the inlet plumbing on top of the machine's hood. To adjust pressure, turn adjustment screw atop the valve counter-clockwise to decrease pressure. A chemical dispenser must be added that has a third pump for chlorine.



Scrap box and 2" drain manifold attached to pallet for shipping



Drain sump connection for copper drain, bottom of tank

Drain Requirements

ADS provides a 2" copper drain manifold for the tank and scrap box, the manifold is shipped strapped to the pallet of the dishmachine. After installation, attach the drain manifold using the rubber "no-hubs" on the manifold. To prevent clogging, run drain lines as straight as possible. Do not plumb with tight radius elbows or 180-degree bends. Use of floor sinks for drains can cause flooding. Do not use reducing adapters for drain lines, always use 2" diameter pipe or larger. Always run gravity drain lines downhill.



HT-25 drain manifold with "no-hub" connectors



Pump filter in drain sump

CHEMICAL FEEDERS SECTION



You must wear approved safety eye-wear before connecting chemicals equipment. Commercial cleaning chemicals are highly concentrated; they can cause damage to mechanical and electrical parts of the dishmachine. Do not mount dispensers on top of the control box or run chemical lines over controls or plumbing. Always secure chemical lines and check regularly for leaks. If not properly handled, chemicals can cause serious bodily injury. In the event of chemical contact to skin or eyes; wash immediately with fresh water and seek medical attention.

CONTAINERS: When a chemical delivery system is connected to the ADS high temp dishmachine using 5-gallon pails for industrial ware-washing chemical products, these must be equipped with Closed Loop containers. Always use chemical resistant safety gloves and safety goggles (indirect- vented or non-vented) when changing chemical buckets. Immediately report spills and refer to your chemical suppliers SDS safety data sheet or SDS material safety data sheet for information if chemical come in contact with skin or eyes.

Any modifications to the chemical delivery system for smaller containers must include **Closed Loop Chemical Containers** (spill proof bottles) in a secured racking system. It is the responsibility of the user of the machine to purchase chemicals in spill proof containers. **FAILURE CAN RESULT IN SERIOUS INJURY**. Never place chemicals in open containers or containers that can be easily tipped over when moving or changing product. Failure to do so will void your ADS warranty.

There is NO CHEMICAL DISPENSER included with this model. Chemical dispensers must be provided and installed prior to operation. The installation of the dispenser is typically provided by the chemical supplier.

DE-LIME SWITCH

The de-lime switch is placed inside of the control box to avoid unauthorized operations. Because of potential hazards resulting from the combination of chlorine with acid solution, only authorized trained individuals should be allowed to de-lime a commercial dishmachine.

INSTRUCTIONS FOR USING THE DE-LIME FEATURE ON A HT-25: First turn off the machine then empty all water out of the machine by removing the pump filter/drain plug. After all water has emptied out, replace the pump filter/drain plug and fill the machine with fresh water by turning on the master switch. After the tank is filled and fill water has shut off, add the de-lime acid to the tank water. Turn on the de-lime switch to operate the pump motor. **READ THE DIRECTIONS ON THE CONTAINER FOR CORRECT CONCENTRATION OF THE CHEMICAL. TYPICAL CONCENTRATION LEVELS 1:20 TO 1:60.**

Let the machine run long enough to return the inside of the machine to the appearance of shinny metal surfaces. Then empty and refill the tank with fresh water. It is best to de-lime more often with milder acid solutions than waiting until there is heavy build up of white minerals, then trying to remove the build up with very strong acid concentrations. Using too strong of an acid solution or running it for very long periods of time will erode the metal of the impeller because it is spinning in the acid solution. If the final rinse arms are clogged with mineral deposits, remove from the machine and soak them in a pan with lime remover.



De-lime switch in HT-25 control box

Warning decal about mixing chemicals

Impeller damaged from high acid solution



Mixing chamber with two 1/8" pipe threaded port



Showing 7/8" detergent probe hole behind pump motor

ADS provides two (2) ports, 1/8" IPS female threads in the final rinse mixing chamber for dispenser check valves. Probe hole (7/8") is provided in the wash tank for probe installations (install probe before operating the machine). Detergent hole (7/8") is provided for bulk-head fitting (install fitting before operating machine).



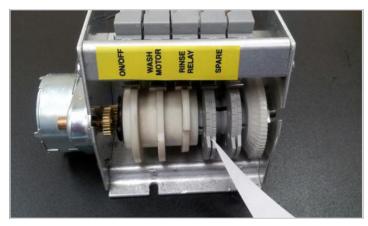
Showing back of tank, 7/8" detergent bulkhead fitting hole



Showing dispenser signal connection terminals

NOTE: Before turning on the water, if the chemical dispenser has not been installed, plug the probe and chemical delivery holes in the wash tank and plug the mixing chamber injection ports.

HT-25, single-phase provides 120v dispenser signals. Connect to chemical dispenser terminal blocks located on the left-hand side of the control box, look for yellow decal labeled detergent and rinse. The dispenser wash signal comes from the 4th cam on the cam timer. This cam can be adjusted so a signal for detergent can be set for a certain time or limit during the cycle. The rinse signal comes from the 3rd cam, it last for 10 seconds and is not adjustable. The 5th cam is a spare for future features.



Showing HT-25 cam timer, arrow points to deter cam



Cam adjusting tool

TESTING FOR TEMPERATURE—For high temp sanitizing, the measurement is taken at the manifold for a minimum of 180°F, NOT in or at the sprays. If tapes are used to verify temperature, then only 165°F labels should be used, this is the temperature required on the surface of the plates--NOT 180°F. This is according to the NSF/ANSI Standard 3 test protocol.

TYPE OF CHEMICALS—Use only commercial grade low-energy chemicals. For proper operation, use nonfoaming detergents and buffered sanitizers. Do not wash gold, pewter, silver, or silver-plate with chlorine based sanitizers. High concentrations of chlorine sanitizers and caustic detergents will cause damage to metals and welds. Do not exceed 50 parts-per-million (PPM) "free" or available chlorine, using higher than 50 ppm will be dependent on local health requirements, however, the increased chlorine will result in higher corrosion of metal parts. **The resulting damage from overusing chlorine is not covered under the ADS warranty**. Purpose-built ware-washing dispensers are needed to properly meter chemicals for wash and rinse. These dispensers are not included with this model but must be provided by the company that provides the ware-washing chemicals. Manually adding industrial chemicals to the dishmachine is unsafe and not approved.

HARD WATER—Water softeners should be used to correct hard water conditions. Treating hard water conditions with acid solutions in the machine is discouraged. Hard water is often treated with more expensive dishmachine chemicals, but it is more effective and less destructive to the metal when the water is softened before it is used by the dishmachine.

CHECK LIST PRIOR TO INITIAL START UP

Open doors and remove all packaging, including cardboard supports found under the wash tank heater. Do not dispose of packing material until you remove spray arms. Packing materials contain the installation manual, QC check sheets; upper and lower wash and rinse arms. Prior to connecting the main power supply, tighten all wire connections looking for those that loosened during shipping or moving. Before turning on the water, if the chemical dispenser has not been installed, plug the probe and chemical delivery holes in the wash tank and plug the mixing chamber injection ports. Turn on the water supply. Check and correct any leaks throughout the machine. After the first fill and completed cycle, drain the tank then install wash and rinse spray arms, both upper and lower. They are interchangeable top to bottom.



Showing spray arm base & transfer tube



Wash arm w/bearing installed on base



Final rinse arm twisted into transfer tube

Verify incoming water temperatures and final rinse pressure (20 psi during final rinse). Remove any of the white protective film from stainless surfaces such as doors or panels.

DISHMACHINE OPERATIONAL TESTS

WARNING

BURN HAZARD FROM HOT WATER Do not open doors while machine is in cycle. Doing so could result in serious bodily injury from spraying hot water and chemicals.

TO OPERATE-Connect the breaker for main power and turn "ON" the dishmachine master switch. Water will automatically fill to an operational level. After several cycles when final rinse water increases the tank water level, the tank water will overflow to the scrap box. Place a rack of dishes in the machine, close the door and the cycle will begin.



Showing thermostat and sustainer heater terminals*

Showing "float" switch that controls fill water & heater The wash temperature is maintained by a sustainer heater. Record tank temperature during the initial tests. There are two gauges mounted under the control box. Gauges are marked Wash/Final Rinse. Wash tank

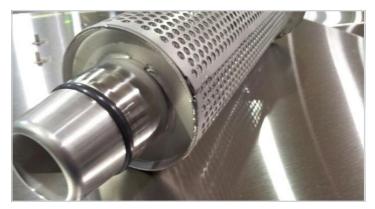
temperature should be 140°F for chemical sanitizing and 160°F for hot water sanitizing. If tank temperatures are low, increase by adjusting the heater thermostat located behind the wash motor.*

Increase temp by turning center rod of the thermostat counter clock-wise or turn to left. Adjust thermostat in small increments (1/4 turn). Heater is switched off when water levels are low and the fill has been activated. Final rinse temperatures are 120°F for chemical sanitizers, and 180°F for hot water sanitizing. To increase the final rinse temperatures turn up the thermostat on the booster heater or water heater respectively. Do not set a booster heater above 195°F. ADS DOES NOT SPECIFY BUILDING HVAC VALUES.

"FLOAT" AND SWITCH-The float will not actually float. It is heavier than water but it weighs less in water than in air. This difference allows the return spring in the float switch to push out against the lever, which raises the float in water. In air the float weight will overcome the switch spring tension and drop down. The float switch (#291-3014) is specifically made with this spring tension so the water control system will operate correctly. Do not replace with a timer switch even though they look the similar.



Wash tank float and tank overflow



Pump filter and drain plug, note O-ring seal

HT-25 WASH ARM BEARING REPLACEMENT OR CLEANING



Remove 4 screws and lift top shell



Remove top shell, exposing top bearing race



Top race removed, ball bearings for replacement



Races are interchangeable, capture shells are also

IMAGES BELOW—Showing repair of loose end cap when tab on the cap has been forced close or bent on material such as seeds or tooth picks.



Tab on endcap bent inward, causing loose fit



Straighten tab in line with the coin edge to tighten



089-9336---HT-25 Parts Manual 089-9452---Wire diagram 089-9405---Service Manual 089-9435---Brochure 089-9370---Wall Chart 089-9419---Spec Sheet 089-9376---Installation Manual HT-25 single phase

HT-25 SINGLE TANK HIGH TEMP

Voltage	Full Load	Amps
208v	1	52.7
240v	1	47.3

Heaters are voltage specific, meaning voltage makes a difference in the wattage output of the heater. The following chart will list the wattage (kW) output for various available 1-phase voltages. Also listed are the ADS tank heaters available to match those voltages.

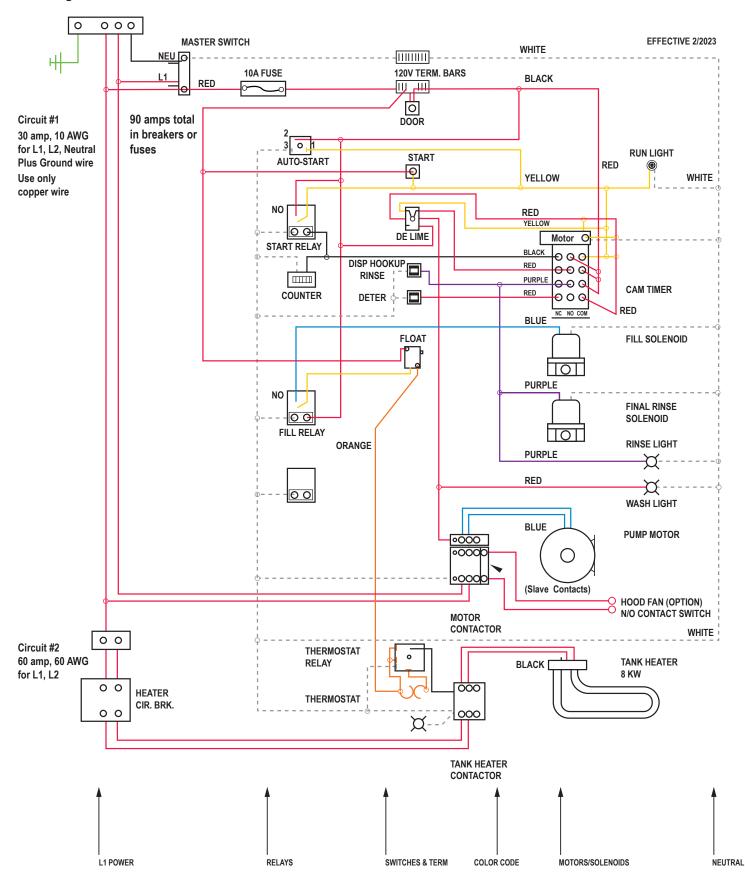
Heater Rated	Supplied Volts	Actual Output	Amp Draw	Phase
8kW 208v *	200 volts	7.4 kW	37.0a	1-ph
(391-9002)	208 volts	8.0 kW	38.5a	1-ph
	220 volts	8.95 kW	40.7a	1-ph
	240 volts	10.6 kW	44.4a	1-ph
8kw 240v	200 volts	5.56 kW	27.8a	1-ph
(391-9005)	208 volts	6.01 kW	28.9a	1-ph
	220 volts	6.72 kW	30.5a	1-ph
	240 volts	8.0 kW	33.3a	1-ph
	200 volts			
	208 volts			
	220 volts			
	240 volts			

Normal tank heater for HT-25. sinale-phase is 208v. 8kW*. 240v. 8kW is special order

ADS Wire Chart (Ladder)

Model: HT-25/34

For Single-Phase, 208v - 240v, Neutral





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WARNING!

This product is manufactured solely for **commercial** use. It is not to be used in residential installations of any kind. Doing so will immediately void all warranties. American Dish Service assumes no liability for such unintended uses.

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PRODUCTION FINAL INSPECTION

Model: HT-25, HT34



SER	IAL #:	MODEL #:		DATE:
🗌 1 .	Clean out all grit and shavings from inside, clea heater also. Level machine	an under tank	14.	Control box cover fits square and straight, no pits or burns
2.	Connect power source, leave heater c/b and m	notor contactor off		 a. Door will latch open and slide closed easily b. Front skirt of machine: straight
3. 4 .	Fill tank by turning on master switch Check tray track (no binding) a. Door moves easily and gently, up and dow b. Final rinse: clear jets, check for leaks at mo			No leaks from inlet plumbing, final rinse mixing chamber, or drain manifold Water control Weight are free moving, no contact
□ 5. □ 6. □ 7.	Check timer, finger movement and shut off or and rinse a. Check timer with order 45 sec or 60 sec Check all studs (should not deform metal by on torque) Turn on heater c/b, let tank equalize to temp.	f master, wash, c		 with retaining bracket a. Micro switch mounted flush to flipper lever b. Micro switch tested and marked: 6.5 oz c. Weights: 238 grams test d. Water cut off level is 3/8" from weight's top e. Weight's retaining bracket is installed and tightened (no contact with weight itself)
	 (Must maintain temp. through 5 operations) a. Adjust thermostats to: 120°F min. wash for Chemical Sanitizing 160°F min. wash for Hot Temp 180°F min. for booster heater b. Calibrate thermometers with thermocoup 	ble tester		 f. Operate flipper 10 or 15 times, should not stay on when tank is full Name plate with correct serial number Decals: electrical source, NSF data plate, wire diagram, temperatures, controls, safety, rotation,
□ 8. □ 9.	Check door for leaking when wash pump is ope Easy movement and rotation of spray arm as t or removed for cleaning	erated	19.	labels in control box. (all decals put on straight) General appearance and cleanliness (free of scratches or marks)
<u> </u>	Scrap trays fit without binding or excessive gap	DS.	20.	Check all wire connections: tight, no crimps on insulation
11.	Check screws on bearing shells, no cross thread	or slot deformation	21 .	Check door cut off switch adjustment
12.	Turn on heater circuit breaker a. Check amp draw on each leg: wash heater 21a-23.3a, 8kw, 3PH-208v 18.2a-20.1a, 8kw, 3PH-240v 36.6a-40.4a, 8kw, 1PH-208v	er:	22.	End caps welded correctly a. 4 point welds on casting b. All pins flash welded on only one side c. Latch holds without binding
	31.6a-34.9a, 8kw, 1PH-240v		23 .	Check cycle light operation
Amp dro	aw can vary 10% of rated draw at rated voltage. Current imbala Connect motor on contactor test window and o		24.	Final rinse arms alignment correct, rotation must be 55 min / 70 max rpm @ 20psi
 a. Check rotation b. Check for seal leaks c. Amp draw test: wash motor: 9 amps, (3F 8 amps, (3F 15 amps (1F 			High Potential test: 1700 volts @ 60 seconds Check all wires for loose connection	
	8 amps, (3PH-240v) 15 amps (1PH-208v) 14 amps (1PH-240v)	I-240v) I-208v)	Mal	Il Notes: ke sure door moves up and down smoothly and se jets are set to correct fan pattern
	 d. Pressure test: Wash pump 6min-7max psi lower 8min-9max psi upper base, rota 		🗌 End	caps close and open securely
	Upper 10 seconds final rinsesec. Final rinse 20 psi (adjust at pressure reg.) Rotat (visually check)	ion: 60 rpm		r the above items have been checked and meet xceed established American Dish Standards:
	 e. Check for leaks with machine running f. Overloads will operate in test mode 	-		Inspector's Name