



# **Automatic Solids Transfer System**

**Models W-300-AST-E,  
W-500-AST-E,  
W-750-AST-E,  
and W-1000-AST-E**

**Automatic Grease/Oils Removal System with  
Automatic Solids Transfer**

**INSTALLATION AND  
OPERATIONS MANUAL**



IPX1



LR110117-1

**Part # MNL-AST-E**



**BIG DIPPER<sup>®</sup> AST**

**Owner's Manual**

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# **BIG DIPPER<sup>®</sup> AST**

## **Automatic Solids Transfer System (AST) Overview**

### **DESCRIPTION**

Thermaco's Big Dipper with Automatic Solids Transfer System (AST) is designed for those facilities that want to take charge of their pretreatment system to meet wastewater discharge limits by reducing their risk exposure to escalating grease and oil disposal costs. As most food service managers already know, grease build-up within a building's plumbing drainage system is a major cause of drain line blockage. These problems jeopardize normal operations as well as create health and safety hazards within the facility. With the proper installation of the Big Dipper AST these problems can be eliminated.

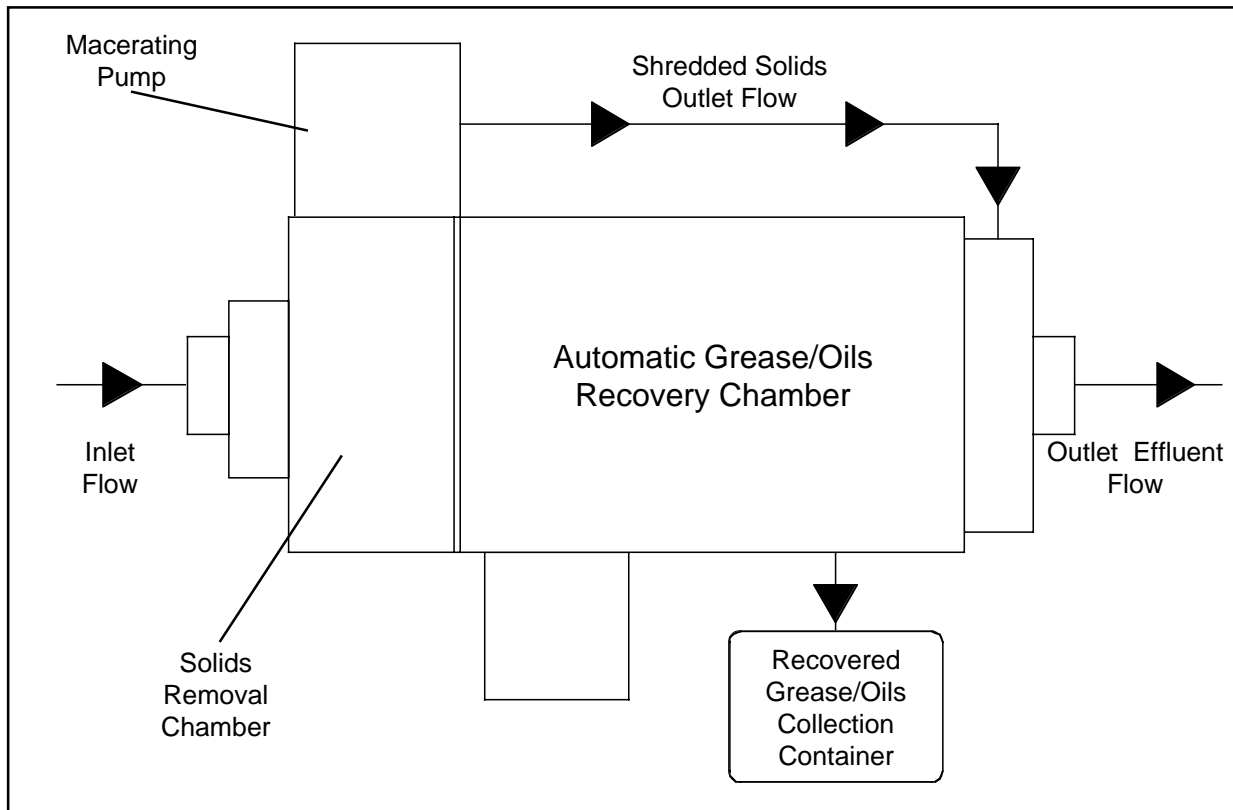
The Big Dipper AST traps grease, oils and solid food waste. The grease and oils are skimmed into a collection container while the solid food waste is macerated and passed down the line. The entire process is automated and controlled by a system timer. The recovered grease/oils are virtually water-free, so they can typically be sold to a rendering company.

### **FEATURES/ADVANTAGES**

- Automatically removes free-floating fats, oils and grease
- Helps reduce FOG levels and associated surcharges and fines
- Removed grease/oils are recycle ready for rendering disposal
- Handles solids without the necessity of emptying strainer baskets
- Reduces operation costs versus paying for pumping service
- Rugged stainless steel construction provides durable service
- Can save on investment for in-ground separators and traps

### **APPLICATIONS**

- RESTAURANTS • CASINOS • CAFETERIAS • HOSPITALS • SCHOOLS
- COMMISSARIES • BAKERIES • HOTELS • CORRECTIONAL FACILITIES
- SHOPPING CENTERS/MALLS • FOOD PROCESSING PLANTS • AIRPORTS
- MEAT PACKAGING PLANTS • CREAMERIES • RESORTS • UNIVERSITIES
- AND MANY OTHER HIGH VOLUME APPLICATIONS



- Kitchen, food-processing plant or other food waste bearing flows enter the solids removal chamber. Wastes immediately separate into floating and non-floating (heavier than water) components. While the solids are being collected in the solids removal chamber, the free-floating grease and oils are trapped in the grease/oil retention area of the Big Dipper AST's stainless steel tank. Clean water is allowed to exit the unit.
- Periodically, food scraps and other solid waste are macerated by a macerating pump and re-entered into the outlet flow just after the Big Dipper AST automatic grease/oils removal chamber.
- At a preset time of day the time controller activates the system to begin the automatic grease/oil skimming operation. At this time the heater(s) activate to liquefy any congealed grease/oil in the system. The Big Dipper motor begins to operate, skimming the grease & oils out and depositing them into the grease collection container.



**BIG DIPPER® AST**

## Maintenance Procedures

### **DAILY MAINTENANCE**

- (A) Empty the grease/oils collection container, which is located beside the Big Dipper AST, once each day (or more frequently, if necessary). This grease can typically be put in a rendering receptacle for pick-up by a local rendering company. The collection container should be washed periodically.
- (B) Check inside of the solids removal chamber for solids build-up. If excessive solids buildup is found on the filter baskets, remove the baskets and wash them out with hot water.

### **WEEKLY MAINTENANCE**

- (A) Remove the lid and check the collection trough, the wiper blades and the black rubber sump outlet hose for any solids build-up. Wipe off any accumulated deposits and assure that the wiper blades are clipped in place properly.
- (B) Check Timer for proper setting.

### **QUARTERLY MAINTENANCE**

- (A) Check for sludge build-up on the bottom of the Grease/Oils Retention area of the Big Dipper tank. When accumulation exceeds 25 mm use a long handled spatula to stir up the sediment while water is flowing through the tank. It may be necessary to drain the tank and clean the unit thoroughly. A wet vac works well for this purpose. Use hot water to clean the walls of the tank. **Only perform this process after the system has gone through its self-cleaning cycle.**
- (B) Check the wheel drive sprockets (Part # WDS-1) and skimming wheels (Part # PDA-1) for wear. If wheel drive sprockets slip on their axle, tighten the set screws or replace if necessary.
- (C) Check the motor drive coupling (Part # NSC-1) for slippage. If the NSC-1 slips on the shaft, tighten the set screws or replace if necessary.
- (D) Check the wheel wiper blade assemblies (Part # WWA-1). The wiper blades should rest against the skimmer wheel and provide an even wiping action on both wheel surfaces. Replace if they are cracked, excessively worn, or if they fail to skim oils/fats off the skimmer wheel.

**\*CAUTION! DISCONNECT POWER TO UNIT BEFORE CLEANING to prevent damage to the unit and personal injury**

**\*NOTE: Before turning on circuit after cleaning, make sure to fill tank with water to protect wipers and heater from damage**



**OBSERVATION**

**SOLUTION**

Unit overflows

(1) If the installation is new, check to ensure that the outlet pipe is not reduced to a smaller size, that the outlet piping is vented and is straight (with as few 90 degree turns as possible) and that no "P" trap is installed on the outlet. Re-plumb the piping, if necessary. Be sure that the outlet pipe is not clogged. Have a plumber clean the line, if necessary.

(2) Check the Solids Removal Chamber for excessive solids build-up. Make sure unit is receiving power. Be sure to check the filter baskets for solids build-up (refer to maintenance procedures).

(3) Use unjamming tool to manually turn macerating pump (see page 8).

(4) Check the bottom of the unit for excessive solids and silt build-up which may be blocking the outlet baffle. Disconnect the power and use a long handled spatula or similar instrument to stir the bottom until water flows through the unit. If necessary, drain and clean the sediment from the unit. To prevent recurrence, schedule this cleaning to be done on a regular basis. Use hot water to spray the inside of the system for cleaning the walls of the tanks. Be sure to fill tank with water before restarting the system. **Only perform this process after the system has gone through its separating cycle.**

(5) Assure the flow rate to the unit does not exceed the maximum flow rate, which is shown on the nameplate. If necessary, have a plumber install an additional approved flow control at the sink drain to restrict the inlet flow to the specified level.

Objectionable odour

(1) Assure grease / oil is being skimmed properly from the unit (see the section in this Troubleshooting Guide entitled "No grease is collected in the container").

(2) If excessive sediment has collected on the bottom of the unit, clean the unit as described in item 3 above.

(3) Have a plumber check to make sure the unit is properly vented.

(4) Check timer settings to make sure it is set to turn the unit "on" during a period of low or no flow.



**BIG DIPPER® AST**

## Troubleshooting Guide

### OBSERVATION

### SOLUTION

No grease is collected in the container

(1) Check C/B Fuse to ensure the power is on and the time control is set correctly. The Big Dipper "on" time should be no less than 30 minutes per day. The timer should be set to come on during a period of low or no drain water flow such as the hours when the facility is not in use.

(2) Remove the lid and clean away any build-up that may be present in the wiper blades, collection trough or outlet hose. Assure that the wiper blade(s) are clipped properly in place on the skimmer wheels. Replace wiper blades when worn.

(3) Set the time control to the "ON" position. While holding down the safety switch, make sure that the skimmer wheel turns. **[CAUTION: Keep your hands away from moving parts to avoid possible injury.]** If the skimmer motor does not come on, the motor assembly must be replaced. If the motor and skimmer wheel operate, check to be sure the safety switch is fully depressed when the lid is fastened on the unit.

(4) Check motor coupling to assure tightness

(5) If none of the above is a problem, then check the heater assembly. If the side of the Big Dipper tank does not begin to feel warm within 15 minutes, the heater element is burned out and must be replaced.

Excessive water is observed in the grease collection container

(1) Check the timer settings for excessive "on" time. The unit should not run extensively after the grease and oils have been skimmed. Reset as necessary, but not less than 30 minutes.

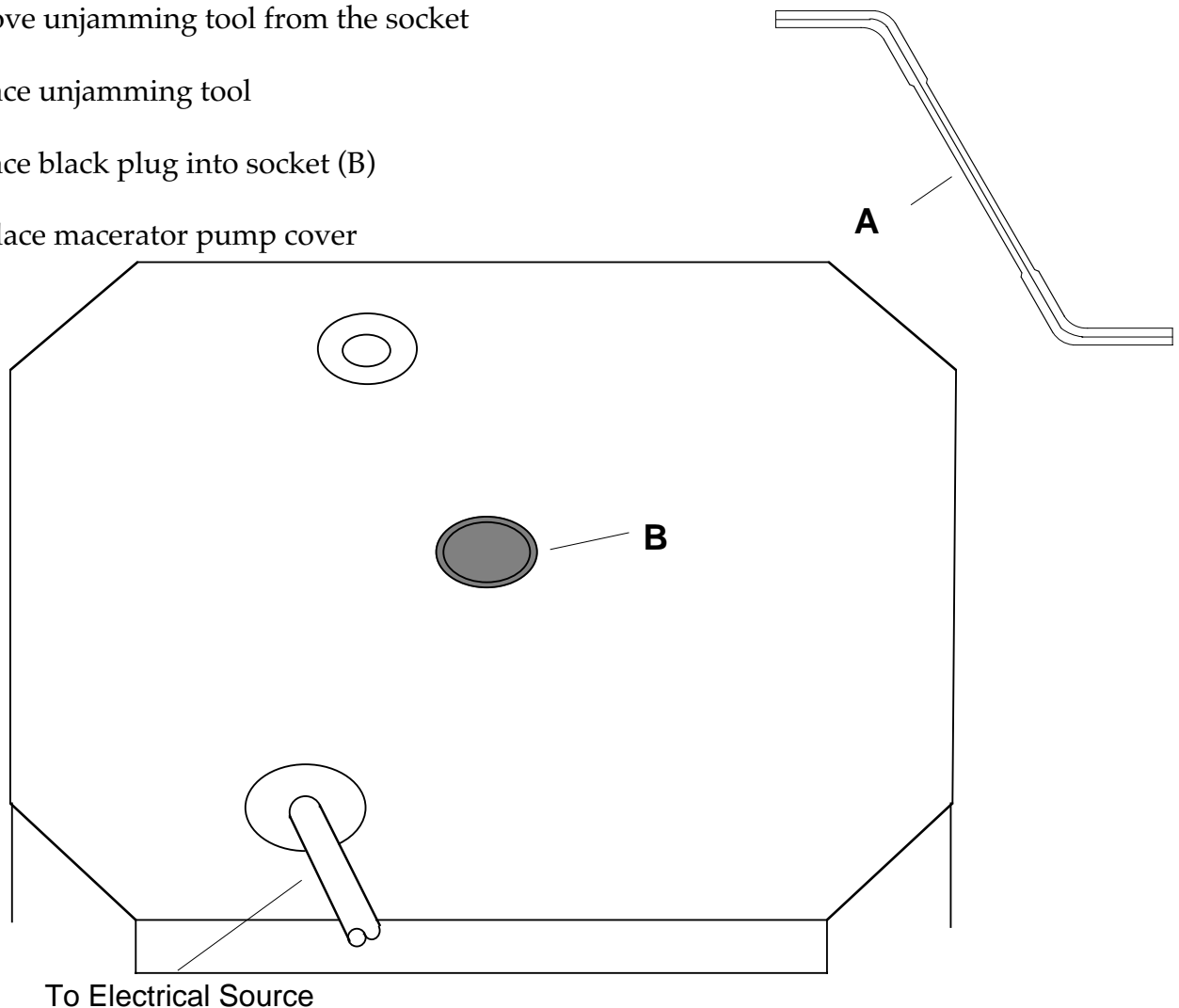
(2) Assure that the water flow to the unit does not exceed the rated flow and that there are no drain line clogs downstream from the unit (See plumbing installation section).

Excessive solids are observed in the solids collection chamber

(1) Check the macerating pump for free operation by removing the cover and inserting the unjamming tool (provided) into its mating hole in the top of the pump (See Page 8). This should turn freely. If it does not turn, move the unjamming tool back and forth until it frees the pump. **WARNING: BE SURE THAT POWER TO THE UNIT IS COMPLETELY DISCONNECTED BEFORE REMOVING THE PUMP COVER.**

**If Macerator Pump Jams,**

- 1 - Disconnect power to AST Unit
- 2 - Remove macerator pump cover
- 3 - Remove unjamming tool (A) attached to top of macerator pump
- 4 - Remove black plug covering socket (B) at the center of the pump
- 5 - Insert unjamming tool into socket at center of the pump (B)
- 6 - Turn unjamming tool in either direction to clear jam
- 7 - Remove unjamming tool from the socket
- 8 - Replace unjamming tool
- 9 - Replace black plug into socket (B)
- 10 - Replace macerator pump cover



**Macerator Pump Top**

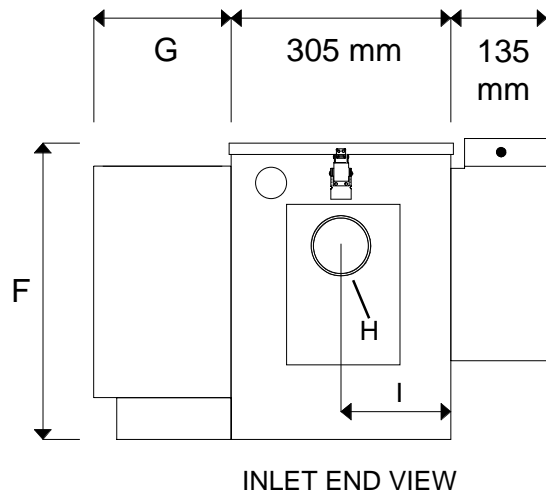
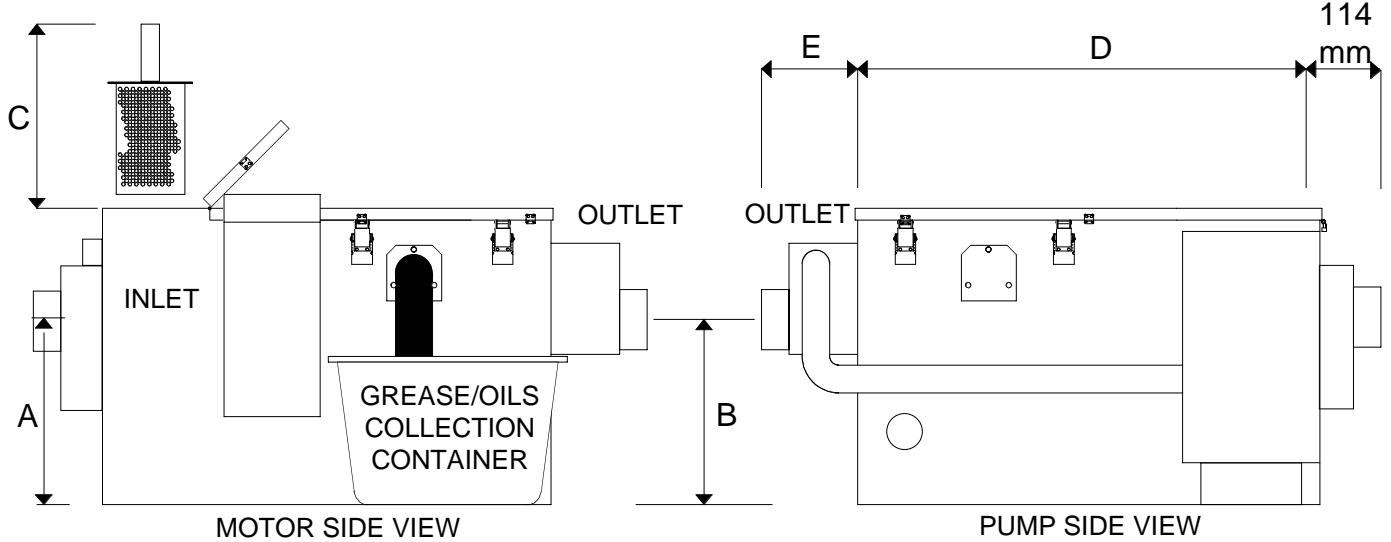




# BIG DIPPER® AST

Product Dimensions/Specifications  
Models W-300-AST-E & W-500-AST-E

HEIGHT REQUIRED FOR SERVICING  
SOLIDS SEPARATION STRAINER



SPECIFICATIONS		
Material: 16 Ga., 304 Stainless Steel, Bright Finish		
Model	W-300-AST-E	W-500-AST-E
Electrical:	220-240 V, 50Hz, 1500W, 7 Amps	220-240 V, 50Hz, 1500W, 7 Amps
No. Skimming Wheels:	2	2
Skimming Rate:	23.9 kg/hr	23.9 kg/hr
Retention Capacity:	27 kg	49.5 kg

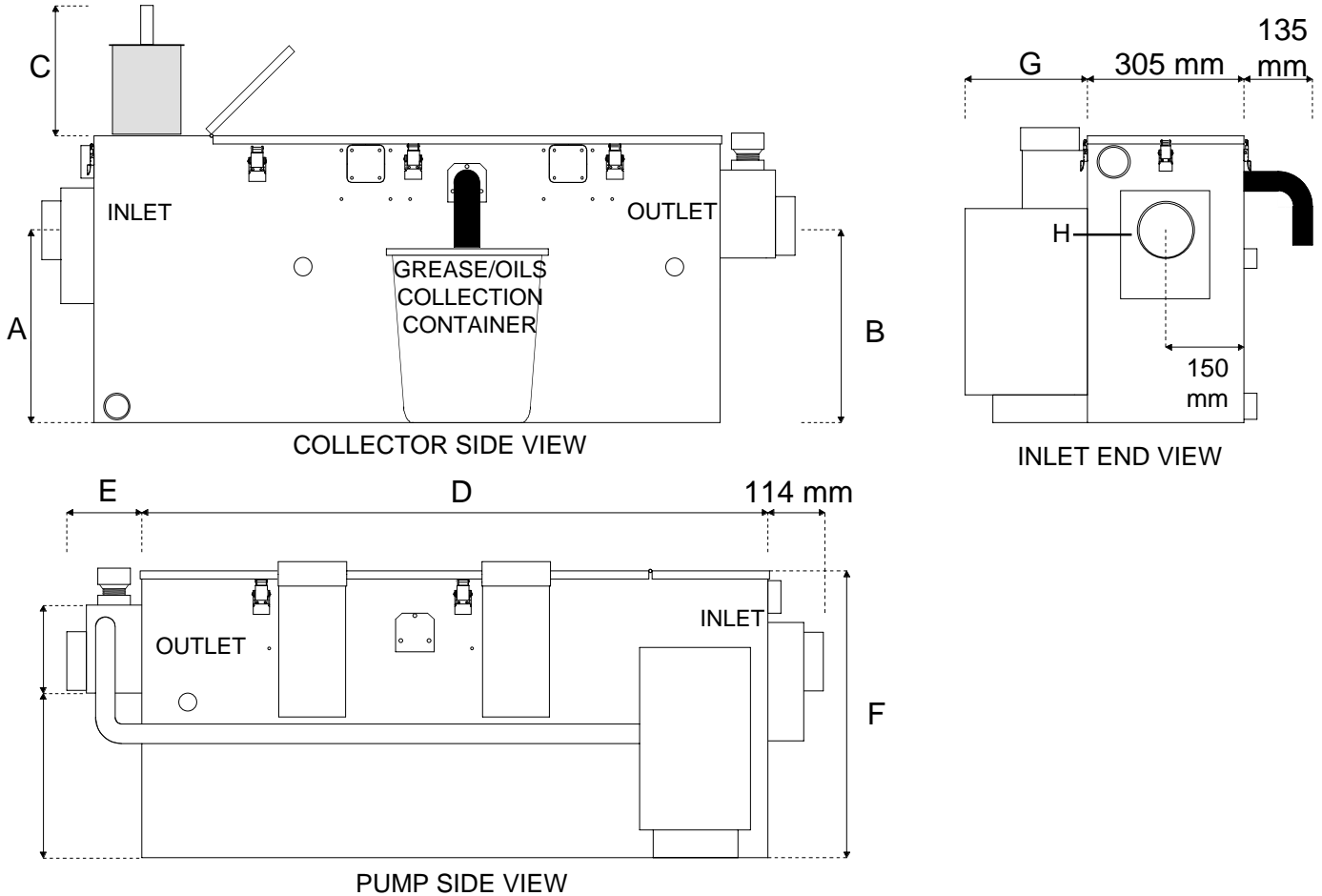
DIMENSIONS										
MODEL	Millimeters									Rated Flow l/s
	A	B	C	D	E	F	G	H	I	
W-300-AST-E	279	279	254	692	146	432	239	75 Dia.	150	1.89
W-500-AST-E	318	318	254	864	146	496	239	100 Dia.	150	3.15



**BIG DIPPER® AST**

**Product Dimensions/Specifications**  
Models W-750-AST-E & W-1000-AST-E

HEIGHT REQUIRED FOR SERVICING  
SOLIDS SEPARATION STRAINER



**SPECIFICATIONS**

Material: 16 Ga., 304 Stainless Steel, Bright Finish

Model	W-750-AST-E	W-1000-AST-E
Electrical	220-240 V, 50Hz, 3000W 13.6 Amps	220-240 V, 50Hz, 3000W 13.6 Amps
No. Skimming Wheels	6	6
Skimming Rate	31.5 kg/hr	31.5 kg/hr
Retention Capacity	218 lbs.	272 lbs.

**DIMENSIONS**

MODEL	Millimeters								Rated Flow l/s
	A	B	C	D	E	F	G	H	
W-750-AST-E	381	381	254	1220	146	559	239	100 Dia.	4.73
W-1000-AST-E	419	419	254	1524	173	597	239	100 Dia.	6.31

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**BIG DIPPER® AST**

## Plumbing Installation Instructions

**Note: This equipment must be installed to comply with all applicable national, state, and local plumbing codes for your area. Installation should only be performed by a qualified plumber.**

### LOCATING THE UNIT

To minimize grease build-up in piping, a BIG DIPPER system should be located as close as possible to the fixture it is serving. The system should be visible and easily accessible for maintenance and inspection. Make sure that adequate room is provided around the system to allow easy removal of the grease collection container and to access the electrical assembly. Make sure the height above the BIG DIPPER access covers is enough to properly service the system.

### INLET/OUTLET PIPING

The inlet and outlet piping connections require flexible sleeve pipe couplings. Keep outlet piping as straight as possible. Use only "sweep" connections. Do not reduce the pipe sizing on the outlet piping. Do not install "P" trap on outlet connection of system. (Note: the system already has a internal gas trap).

### FLOW CONTROLS

Big Dipper systems are equipped with an internal flow regulator located inside the inlet end of the system. Verify its location and placement prior to connecting the inlet piping. If your code requires a vertical type flow regulator, an approved control with a flow rating matching the systems flow rate should be used.

### FILL UNIT WITH WATER BEFORE APPLYING POWER

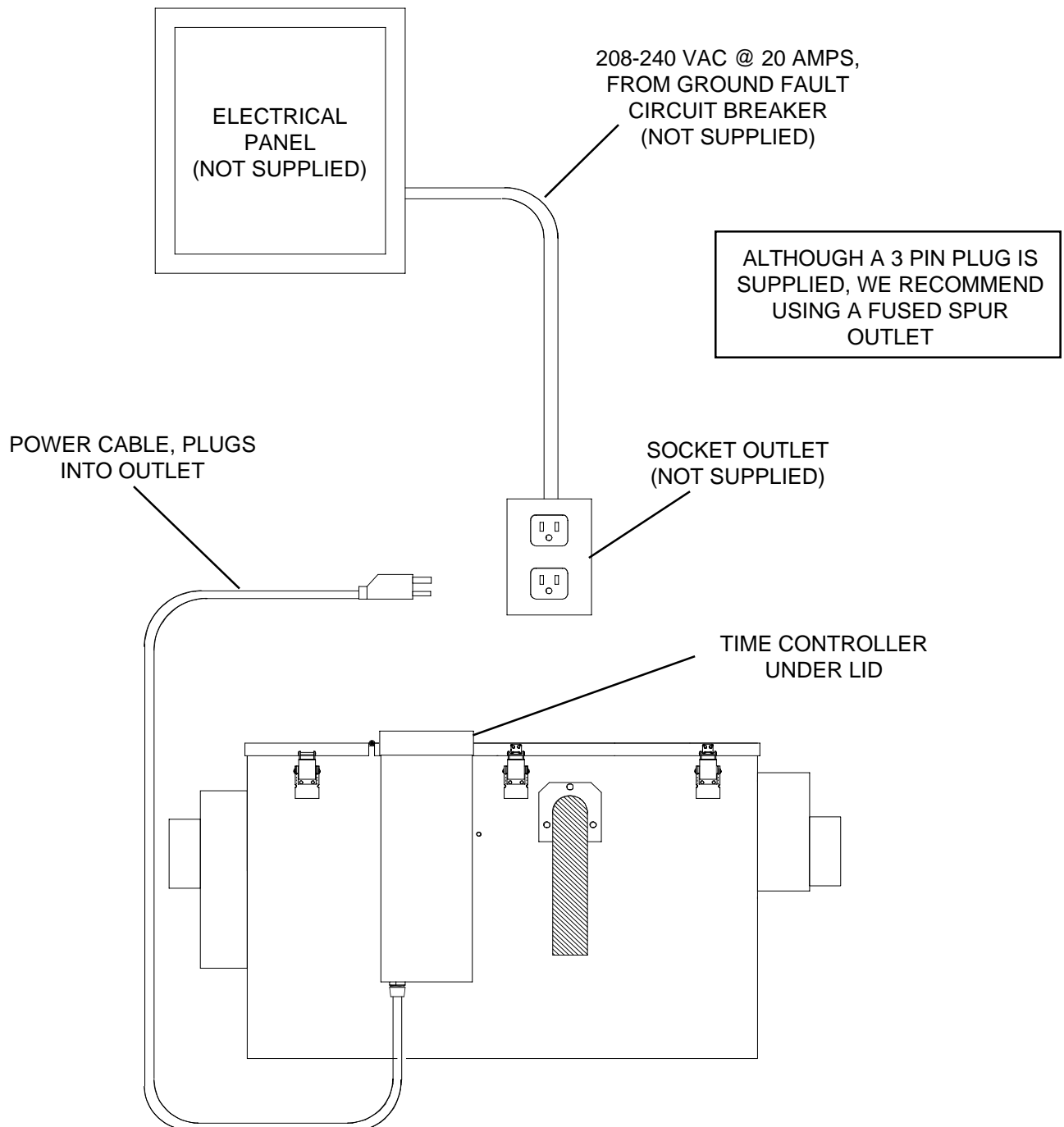
BIG DIPPER systems, equipped with an electric heating element, MUST be filled with water before energizing the power to the system. Failure to do so will result in the destruction of the electric heating element. These elements will NOT be replaced under Thermaco's Limited Warranty.

### VENTING THE OUTLET

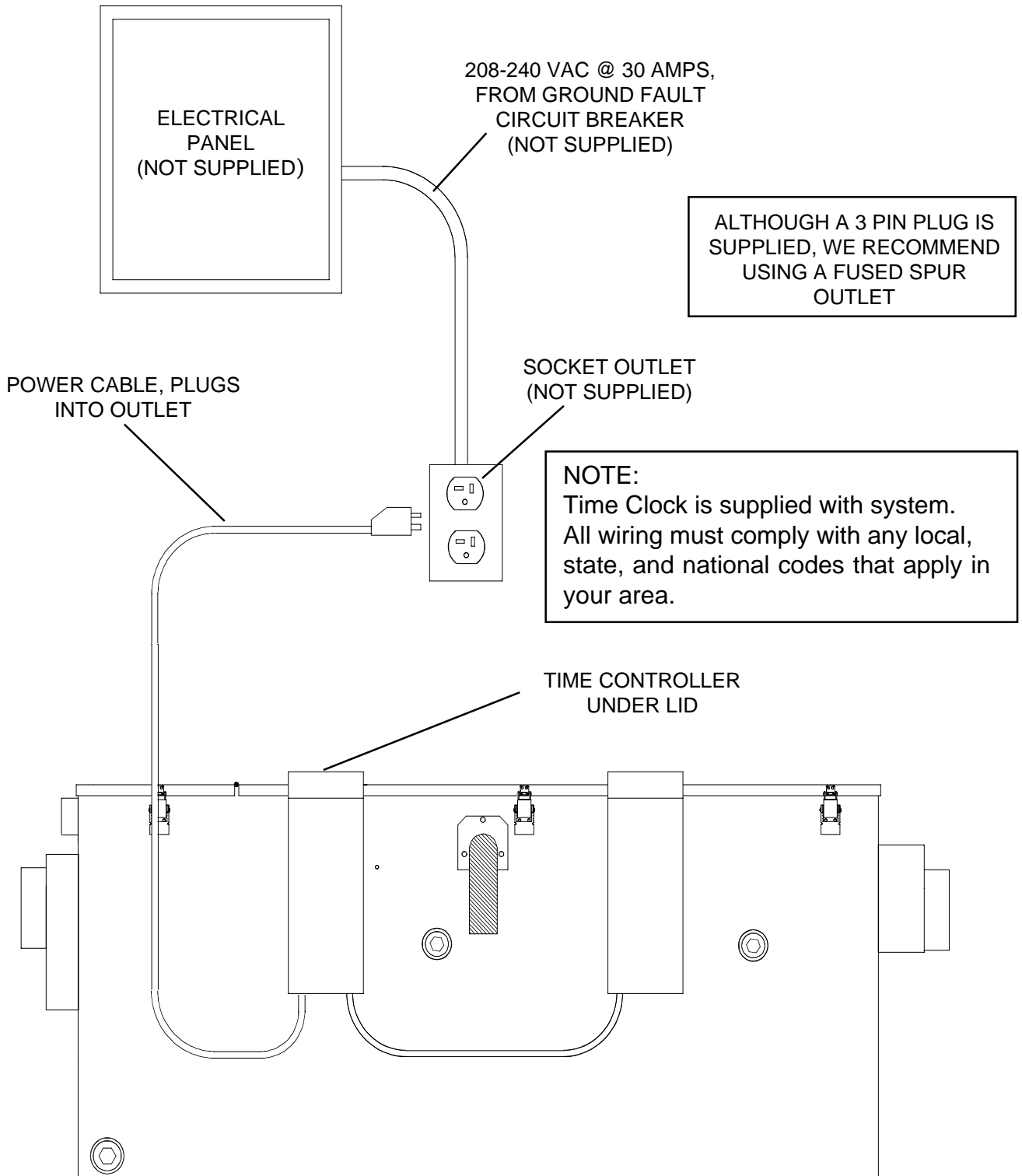
An outlet vent or approved vacuum breaker of at least 1/2 the diameter of the system's outlet connection must be present as close as possible to the BIG DIPPER outlet to prevent possible siphonage problems. Failure to provide a vent for the system voids Thermaco's Limited Warranty for the system.

### DO NOT USE WITH FOOD GRINDERS, POTATO PEELERS OR WASTE DISPOSAL UNITS

Installations where the internal solids strainer basket is not used or where the system is connected to a Waste Disposal Unit, Garbage Grinder or potato peeler will void Thermaco's Limited Warranty for the system.



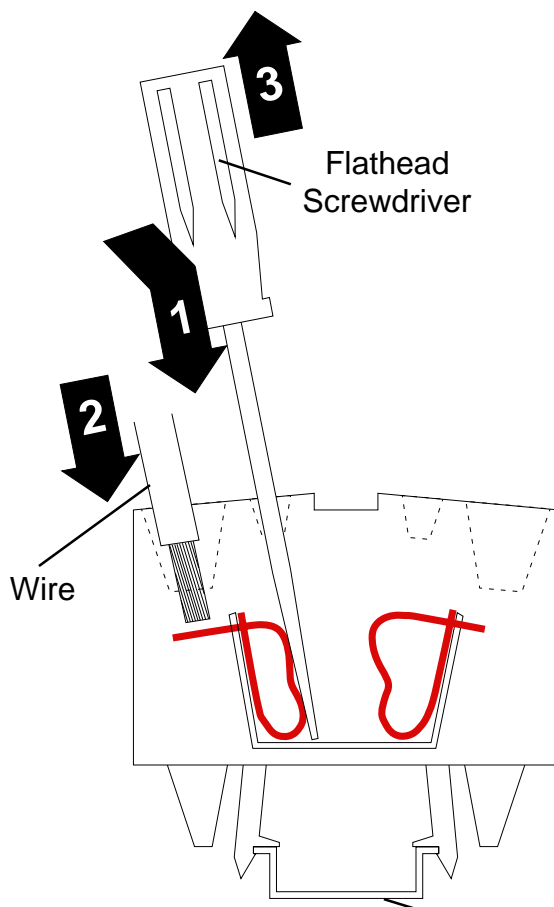
**NOTE:**  
Time Clock is supplied with system.  
All wiring must comply with any local, state, and national codes that apply in your area.



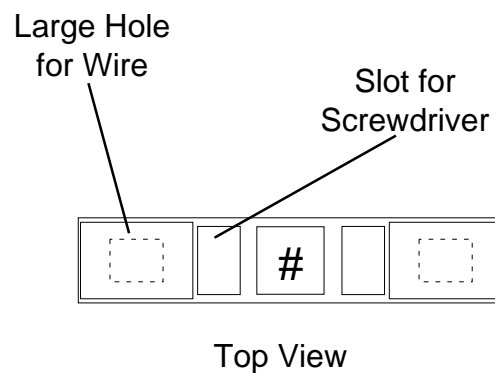
The connection of internal wiring is made easy for the New Generation Big Dipper through the use of a spring loaded terminal block. This block is located within the housing on the side of the Big Dipper. With a wiring diagram on the inside of the cover and each position clearly numbered, changes to the Big Dipper's operation or troubleshooting is quick and simple. The only tool required is a small flat-head screwdriver.

There are three steps to connecting or removing a wire to a position on the terminal block (See Diagram Below):

1. Insert a small screwdriver at a slight angle into the small slot immediately beside the numbers. Move the screwdriver to almost perpendicular in order to open the spring.
2. Insert or remove the wire into the large hole corresponding to the screwdriver's position. Twisting the strands of the wire will help prevent any stray strands from sticking out.
3. Remove the screwdriver and make sure the wire is secured.

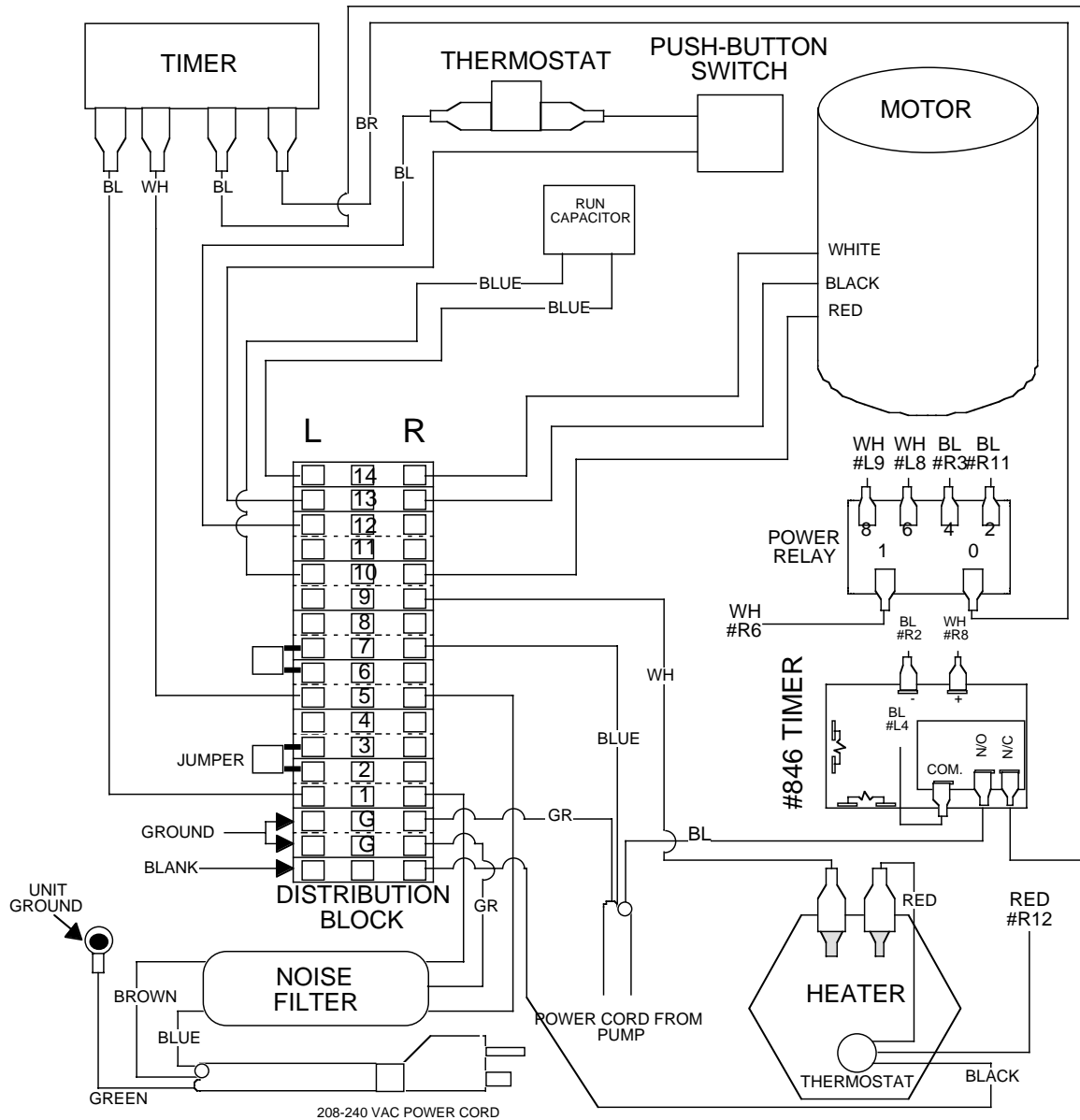


**WARNING: BEFORE CHANGING WIRES, UNPLUG (DISCONNECT) ELECTRICITY •FIRST•**



### WIRING DIAGRAM FOR BIG DIPPER MODEL W-300-AST-E AND W-500-AST-E SIMULTANEOUS OPERATION (AS SHIPPED FROM FACTORY)

(WHERE CONTINUOUS WIRES ARE NOT SHOWN REFER TO THE PLACEMENT CODE CORRESPONDING TO THE WIRE SEGMENT. FOR EXAMPLE, A SEGMENT LABELED #R4 WOULD GO TO POSITION #4 ON THE RIGHT SIDE OF THE DISTRIBUTION BLOCK.)

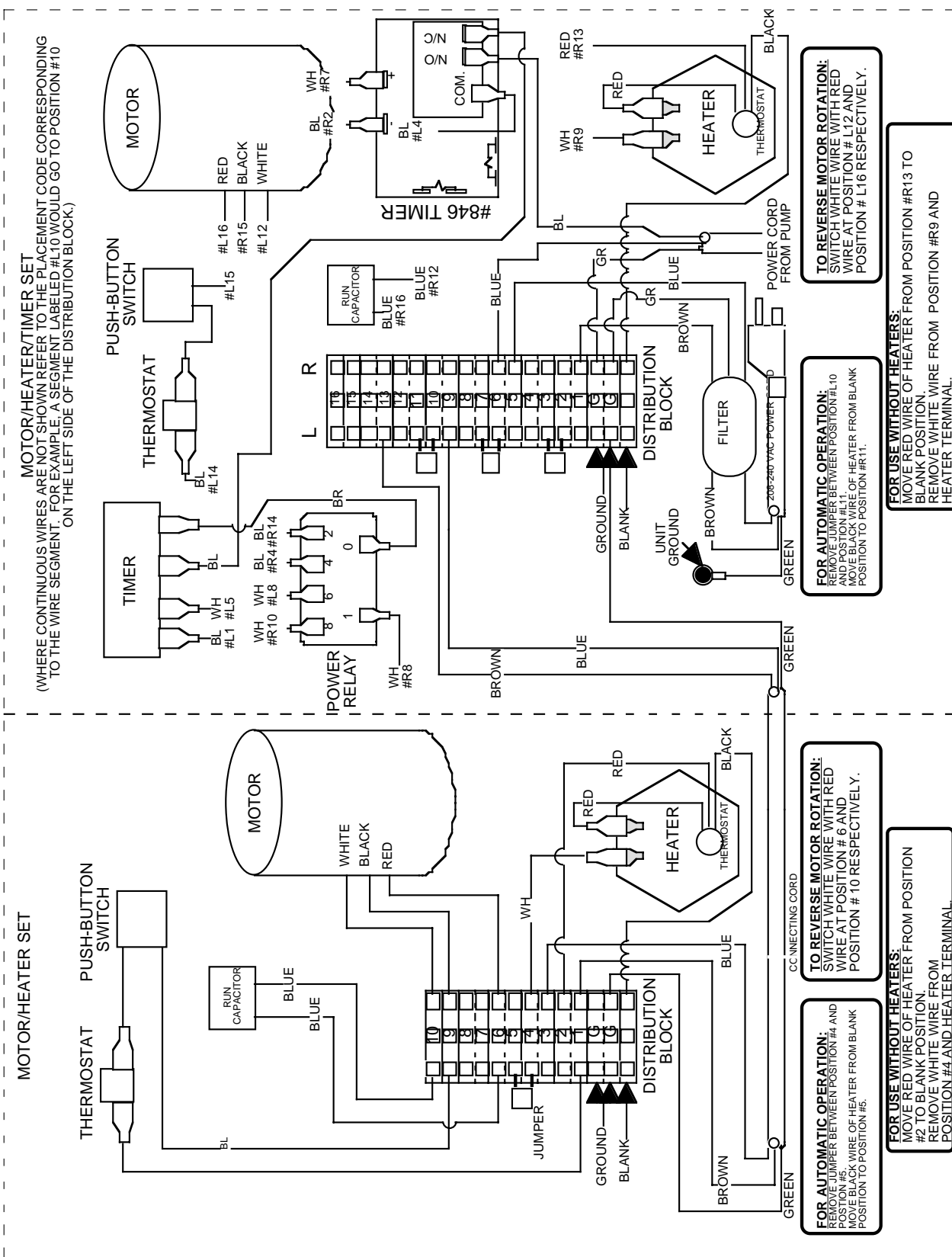


**FOR USE WITHOUT A HEATER:**  
MOVE RED WIRE OF HEATER FROM POSITION #R12 TO BLANK POSITION.  
REMOVE WHITE WIRE FROM POSITION #R9 AND HEATER TERMINAL.

**TO REVERSE MOTOR ROTATION:**  
SWITCH WHITE WIRE WITH RED WIRE AT POSITION #R14 AND POSITION #R10 RESPECTIVELY.

**FOR AUTOMATC OPERATION:**  
MOVE WHITE WIRE OF HEATER FROM POSITION #R9 TO POSITION # L BLANK.  
MOVE BLACK WIRE OF HEATER FROM BLANK POSITION TO POSITION #R9.  
MOVE WHITE WIRE FROM POSITION #L9 TO POSITION #R BLANK.

### WIRING DIAGRAM FOR BIG DIPPER MODELS W-750-AST-E AND W-1000-AST-E SIMULTANEOUS OPERATION (AS SHIPPED FROM FACTORY)



**TO REVERSE MOTOR ROTATION:**  
SWITCH WHITE WIRE WITH RED WIRE AT POSITION # L12 AND RED WIRE AT POSITION # L16 RESPECTIVELY.

**FOR AUTOMATIC OPERATION:**  
REMOVE JUMPER BETWEEN POSITION #L10 AND POSITION #L11.  
MOVE BLACK WIRE OF HEATER FROM BLANK POSITION TO POSITION #R11.

**FOR USE WITHOUT HEATERS:**  
MOVE RED WIRE OF HEATER FROM POSITION #R13 TO BLANK POSITION.  
REMOVE WHITE WIRE FROM POSITION #R9 AND HEATER TERMINAL.

**TO REVERSE MOTOR ROTATION:**  
SWITCH WHITE WIRE WITH RED WIRE AT POSITION # 6 AND RED WIRE AT POSITION # 10 RESPECTIVELY.

**FOR AUTOMATIC OPERATION:**  
REMOVE JUMPER BETWEEN POSITION #4 AND POSITION #5.  
MOVE BLACK WIRE OF HEATER FROM BLANK POSITION TO POSITION #5.

**FOR USE WITHOUT HEATERS:**  
MOVE RED WIRE OF HEATER FROM POSITION #2 TO BLANK POSITION.  
REMOVE WHITE WIRE FROM POSITION #4 AND HEATER TERMINAL.





**BIG DIPPER® AST**

## **Rotation And Operation Settings**

**BIG DIPPER** systems utilize an electric motor to drive the automatic skimming mechanism. The standard motor location (shipped from the factory) is on the right hand side of the tank when the tank is viewed from the inlet end. The motor wiring connections are located inside the enclosure located on the side of the Big Dipper.

### **MOTOR ROTATION**

When the motor is in its normal right hand location, the motor rotation is clockwise (as viewed from the shaft end). If the installation requires that the motor be reversed to the left hand location, the direction of rotation of the motor must be reversed.

### **AVAILABLE OPERATION SETTINGS**

#### **A. SIMULTANEOUS OPERATION** - (standard setting as shipped from factory)

Big Dipper units may be operated in three different configurations. The standard configuration as shipped from the factory is called SIMULTANEOUS OPERATION.

SIMULTANEOUS OPERATION is where the skimmer motor and tank heater operate at the same time and are electrically energized simultaneously whenever the 24 hour time control turns the Big Dipper "ON". SIMULTANEOUS OPERATION is the preferred operating arrangement for most applications.

#### **B. AUTOMATIC OPERATION**

Big Dipper units utilized in applications where heavy, congealing-type greases and fats (saturated fats) are being recovered can use the AUTOMATIC OPERATION setting to allow the Big Dipper's heater to raise the congealed grease/fats above their melting temperature. In the AUTOMATIC OPERATION setting, the heater begins operation and the skimmer motor waits to begin operation when the heater has reached its cut-off temperature (approximately 115 - 130 degrees F (46 - 54°C)). Note: The motor will cease operation every time the heater activates to maintain the tank's fluid temperature.

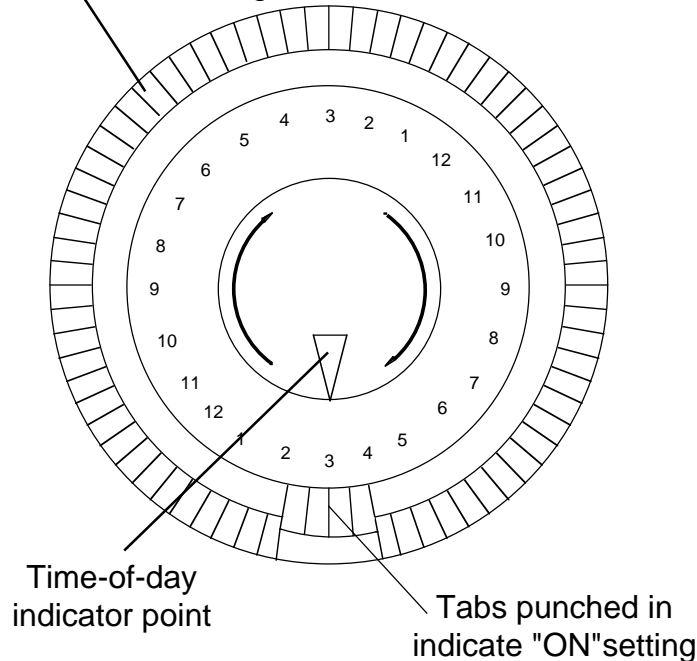
#### **C. APPLICATIONS NOT REQUIRING A HEATER**

Big Dipper units employed in applications such as petroleum removal, 100% unsaturated vegetable oils or other oils that are liquid at room temperature may be operated without the integral tank fluid heater.


***\* Instructions for converting these operation settings are located at the bottom of each respective wiring diagrams on pages 15 & 16.***

## Timer Set-Up Instructions

Tabs **NOT** punched in indicate "OFF" setting



### TO SET TIMER:

1. Push on/off tabs on the outer ring of timer inward into dial at desired "ON" times. 1 Tab = 15 minutes. Minimum of two (2) tabs (30 minutes) recommended.
2. Turn dial **CLOCKWISE**  one or more complete revolutions until the present time is aligned with the time-of-day indicator point.
3. Plug Big Dipper AST into grounded electrical outlet before applying power. Ensure the unit is filled with water.

**NOTE: IN CASE OF POWER FAILURE, RESET TIMER.** (See Step 2 above).

After the plumbing installation is complete, the Big Dipper AST needs to be set for the proper automatic self-cleaning operation for the facility. Models W-300-AST-E through W-1000-AST-E are equipped with a 24 Hour/96 Event time controller. This time controller is located under the lid of the motor housings mounted to the side of the Big Dipper AST tank (See Pages labeled "Electrical Connection Detail" sketches of this location).

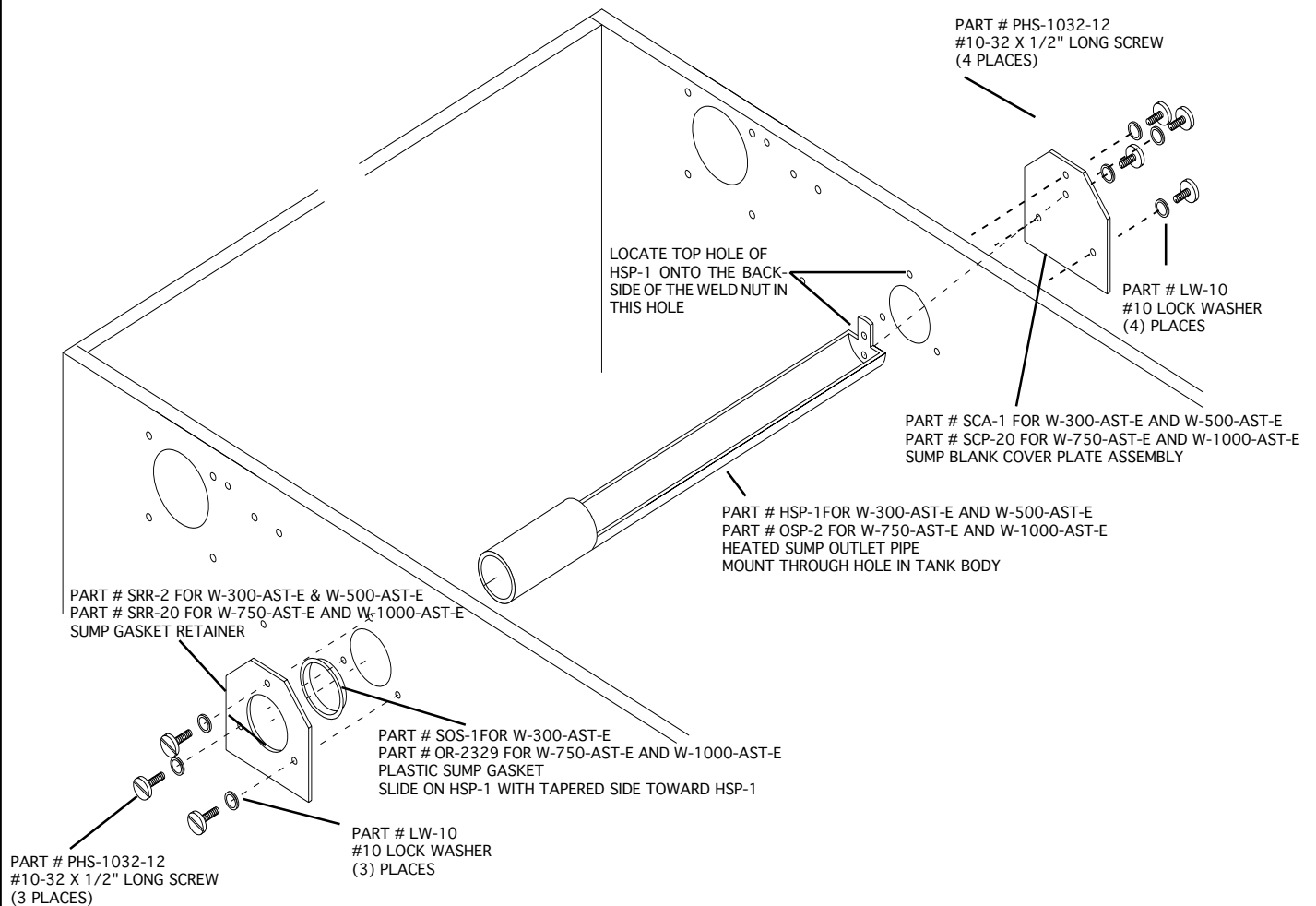
To allow the most efficient automatic cleaning cycle, the system should be set to operate during a time when there are no (or low) drainage flows passing through the system. The Big Dipper W-300-AST-E and W-500-AST-E are factory preset to operate the automatic cleaning cycle from 4:00 AM to 5:00 AM. The Big Dipper models W-750-AST-E and W-1000-AST-E are factory preset to operate the automatic cleaning cycle from 4:00 AM to 6:00 AM each day of the week.

Depending upon the amount of accumulated grease and oils, the system may need to be reset to operate more or less time to skim all separated grease and oils. This can be determined by removing the top cover and observing the depth of the separated grease layer shortly after a cleaning cycle is completed. This layer should not be more than 6 mm thick. If this layer is consistently thicker, increase the operating times of the W-300-AST-E through W-1000-AST-E by 30 minutes for each additional 25 mm of grease not to exceed 2 hours in a complete run cycle. If required, additional run cycles can be added throughout the day.

All **BIG DIPPER AST** models are designed to allow the Grease/Oils Sump Outlet Pipe to be located on either side of the stainless steel tank. The standard location (shipped from the factory) is right handed when viewed from the inlet end of the tank. If desired, the outlet pipe can easily be reversed to the opposite side of the unit. This change does not require any special modifications to the tank itself and can be accomplished in several minutes with just a screw driver.

Below, the outlet pipe is shown in its standard (right hand) location. To reverse the location to the optional left hand location, follow these simple procedures:

- 1) Remove the screws holding the Sump Blank Cover Plate (Part# SCA-1) and the Sump Gasket Retainer (Part# SRR-2).
- 2) Slip Plastic Sump Gasket (Part# SOS-1) off the Outlet Pipe ( Part# HSP-1) , and remove the Outlet Pipe from the tank.
- 3) Reverse Outlet Pipe ( Part# HSP-1) and reinstall in the tank. Place Plastic Sump Gasket (Part# SOS-1) on the outlet pipe as shown.
- 4) Reverse the locations of the Sump Blank Cover Plate (Part# SCA-1) and the Sump Gasket Retainer (Part# SRR-2) and reinstall using the screws and lockwashers.



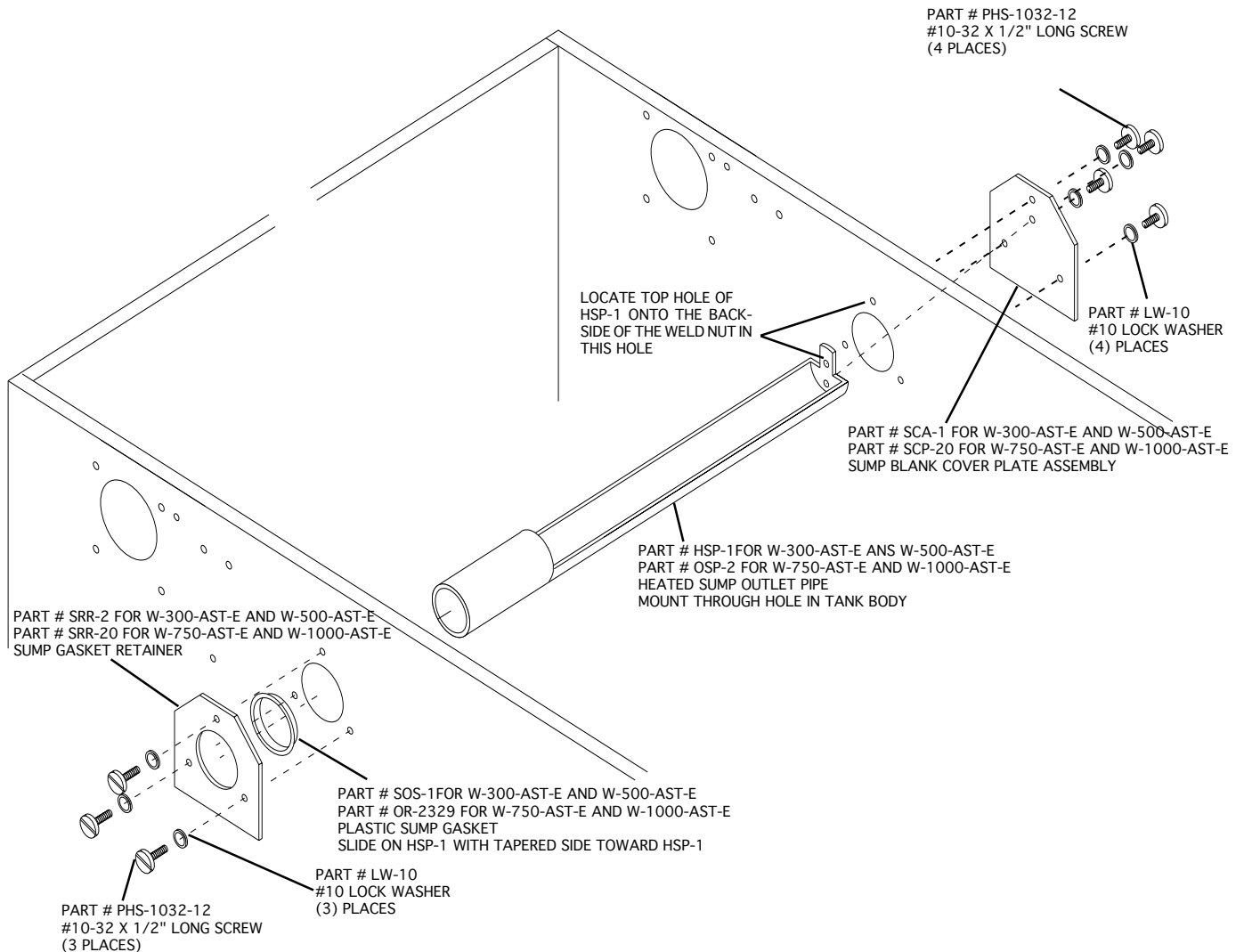


# BIG DIPPER<sup>®</sup> AST

## Replacement Parts List Outlet Sump Pipe Assembly

The Outlet Sump Pipe Assembly transfers the skimmed grease/oils from inside the systems tank to a collection container located outside of the tank.

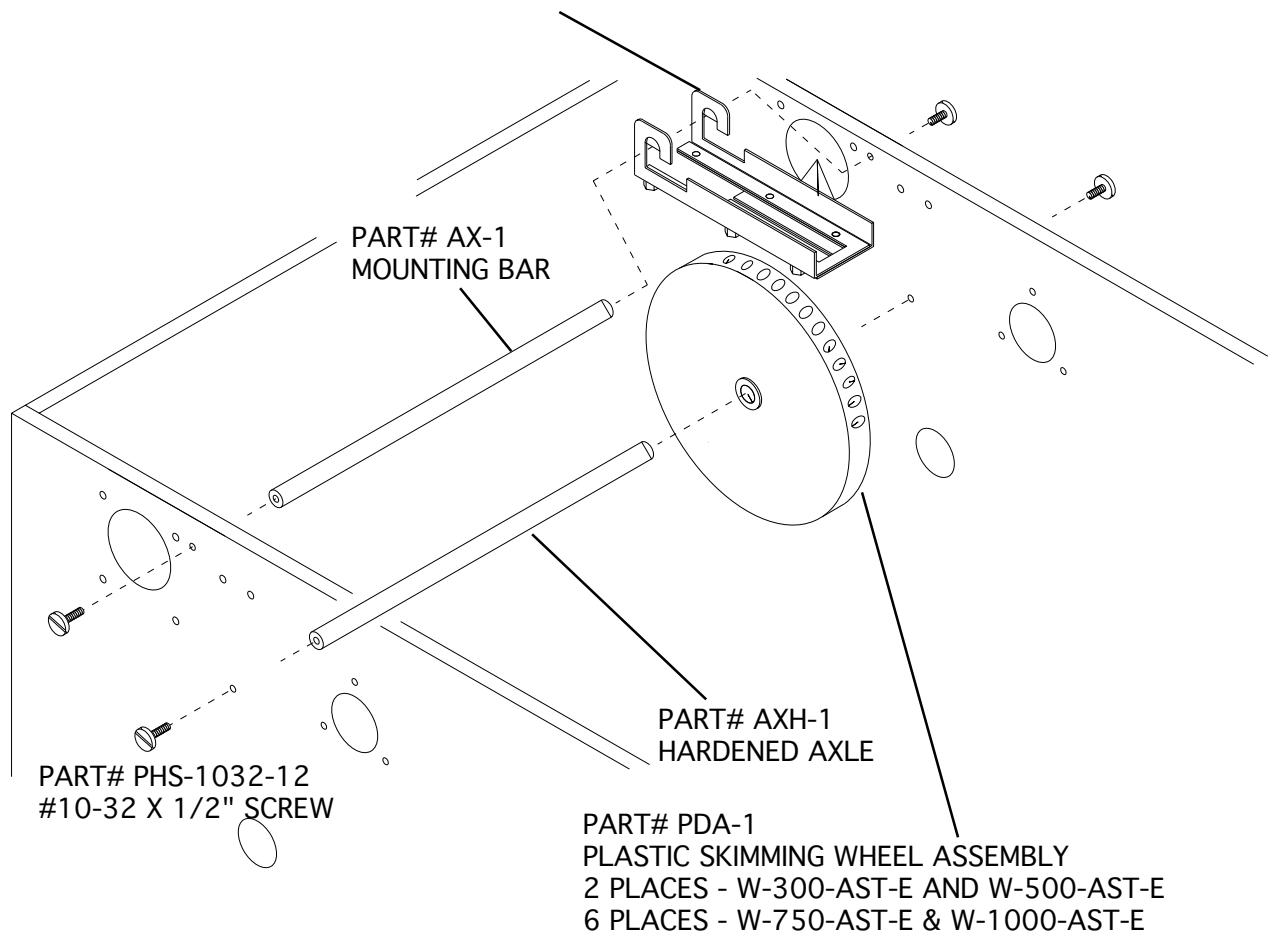
The Outlet Sump Pipe is completely reversible, and can be located on either side of the tank. Refer to the instruction sheet labeled *Reversing The Big Dipper Grease/Oils Sump Outlet Pipe* for information on how to perform the relocation. The diagram below shows the location in its normal position as shipped from the factory.



## Replacement Parts List Skimmer Assembly

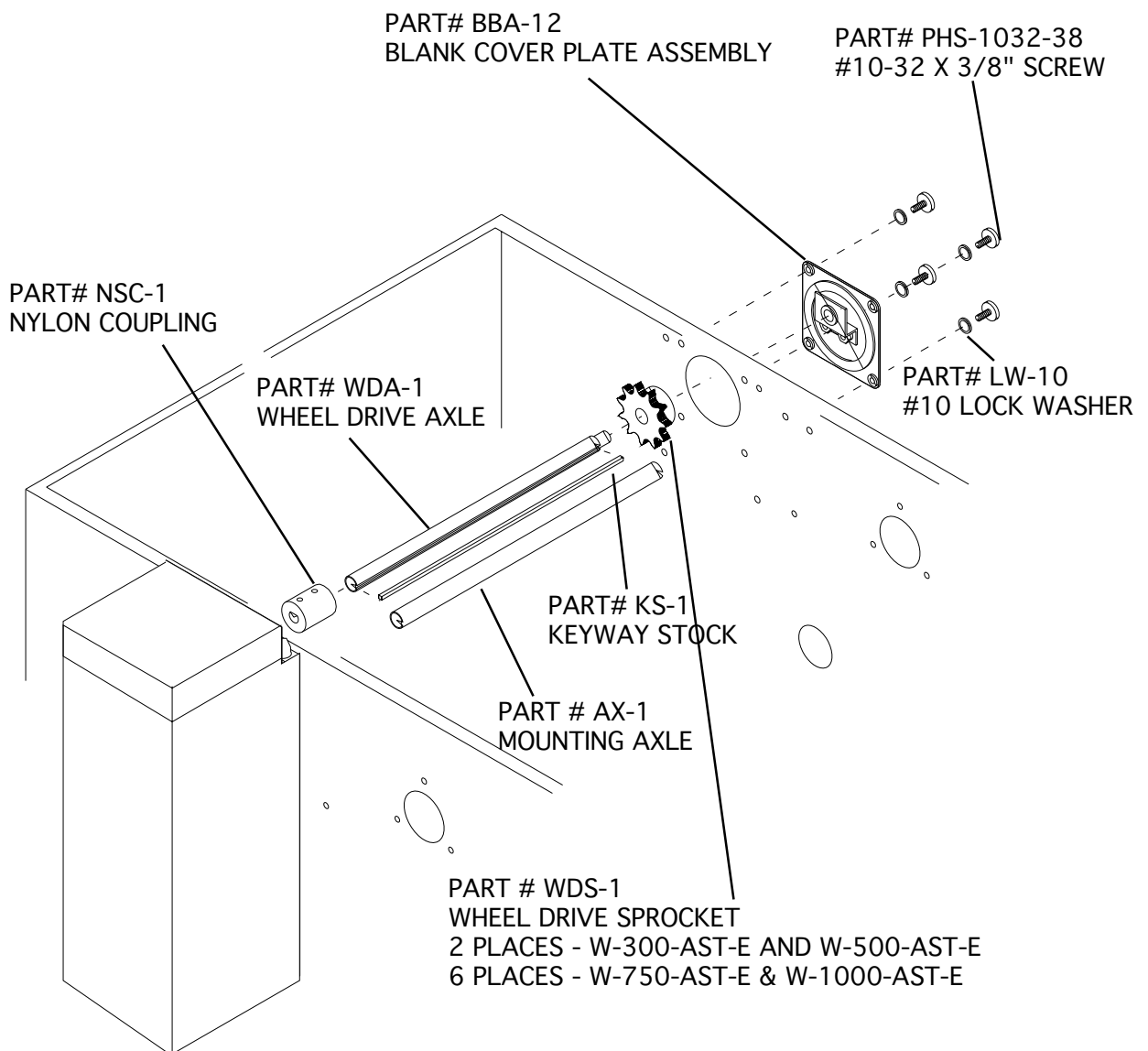
The Grease/Oils Skimmer Assembly performs the skimming process for the *BIG DIPPER* AST. The Wheel Wiper Blade Assembly (Part# WWA-1) slides down over the Plastic Skimming Wheel Assembly (Part# PDA-1). The lower half of the skimming wheel is submerged in the collected grease/oils layer within the tank. Small rubber Wiper Blades (Part# PB-3) within the Wheel Wiper Blade Assembly contact the sides of the Plastic Skimming Wheel Assembly and scrape off the grease and oils that have adhered to the sides of the skimming wheel, and route it to an outlet sump pipe.

PART# WWA-1  
WHEEL WIPER BLADE ASSEMBLY  
2 PLACES - W-300-AST-E AND W-500-AST-E  
6 PLACES - W-750-AST-E & W-1000-AST-E



## Replacement Parts List Motor/Gearbox Assembly

The Motor/Gearbox Assembly provides the power for the system. Big Dipper AST systems have one or two Motor Assemblies and two or six Wheel Drive Sprockets (Part# WDS-1) depending on the model.



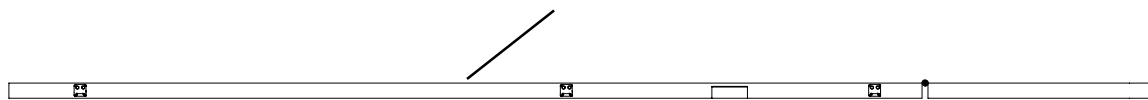


**BIG DIPPER<sup>®</sup> AST**

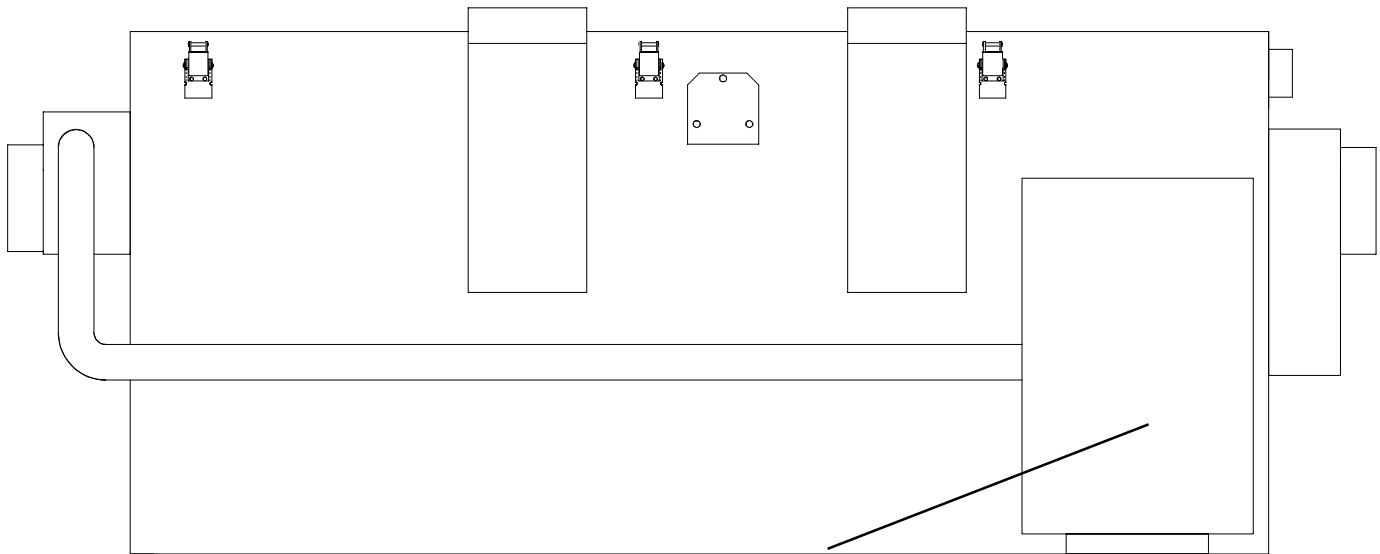
**Assorted Replacement Parts**

**NOTE: Filter Baskets, not shown, are Part # WWB-AST.  
Models W-300-AST-E through W-1000-AST-E require 1 WWB-AST.**

TOP LID  
PART #  
FOR W-300-AST-E, WL-300-AST  
W-500-AST-E, WL-500-AST  
W-750-AST-E, WL-750-AST  
W-1000-AST-E, WL-1000-AST



LID GASKET  
PART # RG-7



MACERATING PUMP (UNDER COVER)  
PART #  
FOR W-300-AST-E through W-1000-AST-E, MP-220-34

GREASE/OILS COLLECTION CONTAINER (NOT SHOWN)  
PART #  
FOR W-300-AST-E, GC-2  
FOR W-500-AST-E, GC-5  
FOR W-750-AST-E & W-1000-AST-E, GC-3



**BIG DIPPER® AST**

**Limited Warranty  
Terms & Remedy**

Thermaco, Inc. warrants, to the original user, that those products supplied by it and used in the service and in the manner for which they are intended shall be free from defects in materials and workmanship for a period of one year after installation, but not longer than 15 months from date of shipment from the factory. All replacement parts have a 30 day replacement warranty. Clean defective parts shall be returned, within the warranty period, with proof of purchase, to Thermaco's factory, 646 Greensboro Street, Asheboro, NC 27203, transportation charges prepaid, for warranty evaluation. At Thermaco's option, based on the determination of the warranty evaluation, Thermaco may repair or supply a replacement part from its factory. Any and all items which may be returned shall include the serial number from which the item was removed, and a return goods authorization number issued by Thermaco. This warranty is void if the product has been damaged by its customer prior to acceptance or as a result of unreasonable use, neglect, flooding, damage incurred by/during facility construction, alteration, improper installation, improper service, maintenance neglect, improper electrical service, installation and/or operation without timer controls, or other causes not arising out of defects in material or workmanship. Equipment must be installed according to manufacturer's guidelines. This warranty is void if equipment is used in excess of rated flow. Thermaco's products are intended to remove only free floating oils and grease. Thermaco's products do not remove emulsified fats and oils. Thermaco shall not be responsible for damage to equipment which results from vault flooding, sewer line back-up, pumping or lift station failure, ambient water flow or other sources of water damage. This warranty is void if the serial number on the product has been altered or defaced. Thermaco will not replace timers which have been installed in under-ground vaults. This warranty is void should use, installation and application be contrary to a written agreement between Thermaco and the user, Thermaco does not make any other representations or warranties, express or implied, including, but not limited to, any implied warranty of Merchantability and any implied warranty of fitness or performance for a particular purpose.

The sole and exclusive remedy with respect to the above limited warranty or with respect to any other claim relating to defects or any other condition or use of the product supplied by Thermaco, however caused, and whether such claim is based upon warranty, contract, negligence, strict liability or any other theory, is LIMITED to the repair or replacement of the part or product, excluding labor or any other cost to remove or install said part or product or, at Thermaco's option, to repayment of the purchase price. Notice of any such claim must be given in writing to Thermaco, Inc., PO Box 2548, 646 Greensboro Street, Asheboro, NC, USA 27204-2548 within 15 months after the first installation or use of the products. In no event shall Thermaco be liable for special, direct, indirect, incidental, personal, property or consequential damages, including, but not limited to, loss of use or profits or to interruption of business activity. Thermaco neither assumes nor authorizes any representative or any other person to assume any liability in connection with the sale of its products. Thermaco makes no warranties, express or implied, with respect to parts, accessories, components or other goods not manufactured by Thermaco. Alteration and/or substitution of Thermaco parts, assemblies, accessories including electrical and/or mechanical components voids Thermaco's warranty.

Thermaco Big Dipper® Automatic Grease/Oils Removal Units, Big Flipper® Automatic Liquid/Solids Separators, Superceptor® Packaged Pretreatment Systems and System parts are sold locally by Thermaco Sales Affiliates.

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