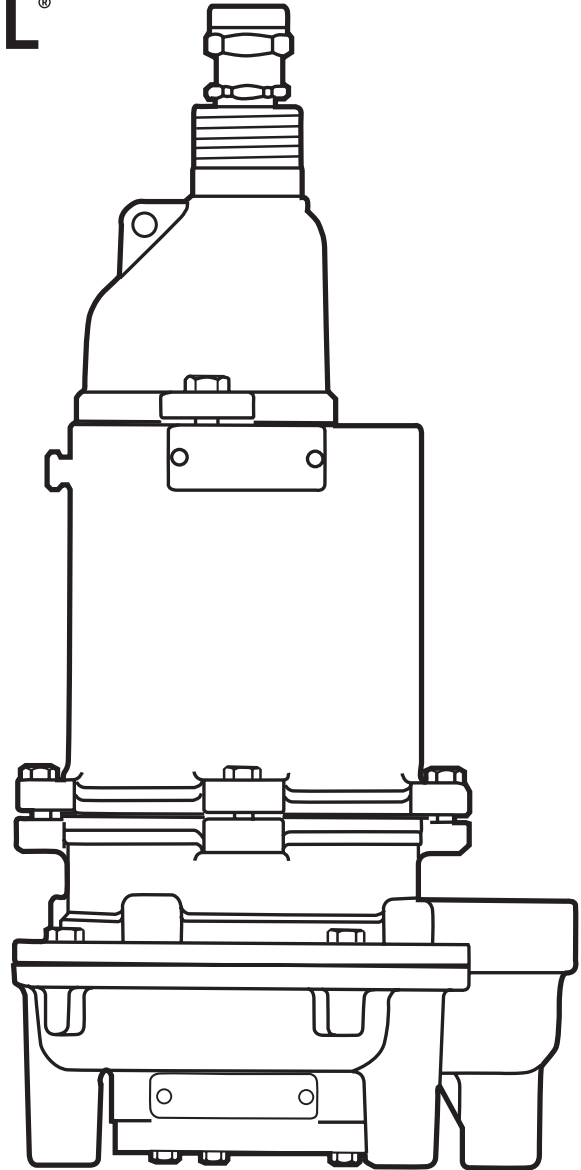




# DELTA ENVIRONMENTAL<sup>®</sup>



## D2C20 SERIES CENTRIFUGAL GRINDER PUMP

### SERVICE MANUAL AND PARTS LIST

D2C20-21 Single Phase and D2C20-23 Three Phase

(D2C20-21 only)



NOTE! To the installer: Please make sure you provide this manual to the owner of the equipment or to the responsible party who maintains the system.

## SAFETY CAUTIONS AND WARNINGS

**MUST BE INSTALLED BY EXPERIENCED PROFESSIONALS ONLY**

**CAUTION: READ THESE SAFETY WARNINGS FIRST BEFORE INSTALLATION, SERVICING OR OPERATING ANY PUMP. THESE INSTRUCTIONS ARE WRITTEN WITH THE UNDERSTANDING THAT THE INDIVIDUAL(S) HAVE EXPERIENCE IN BUILDING WET WELLS AND INSTALLING BASINS, GRINDER PUMPS AND PUMPING EQUIPMENT.**

**NOTE!**

MODELS WITH THIRD PARTY APPROVAL(S) ARE CLEARLY MARKED ON INDIVIDUAL PUMP NAMEPLATES.

**WARNING!**

RISK OF ELECTRICAL SHOCK. TO REDUCE RISK OF ELECTRICAL SHOCK, SEE INSTRUCTION MANUAL FOR INSTALLATION.

**DO NOT REMOVE CORD AND STRAIN RELIEF.**

ON THREE PHASE PUMPS ONLY "MOTOR PROTECTION" MUST BE PROVIDED BY THE INSTALLER. ALL THREE PHASE PUMPS MUST BE INSTALLED WITH MAGNETIC STARTERS HAVING THREE LEG OVERLOAD PROTECTION IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE. FOR DUPLEX INSTALLATIONS, BOTH PUMP MOTORS MUST HAVE SEPARATE OVERLOAD PROTECTION.

**WARNING!**

**ONLY QUALIFIED PERSONS SHALL CONDUCT SERVICES AND INSTALLATIONS OF THIS PUMP. THE PUMP MUST BE WIRED BY A QUALIFIED ELECTRICIAN, USING AN APPROVED STARTER BOX AND SWITCHING DEVICE.**

PUMPS WITH SEAL LEAK DETECTORS, MUST BE CONNECTED TO THE PROPER CONTROL CIRCUITRY. SEE INSTRUCTIONS MANUAL.

**DANGER!**

**HAZARDOUS MOVING PARTS.** TO REDUCE RISK OF INJURY DISCONNECT POWER BEFORE SERVICING. NEVER PUT FINGERS NEAR GRINDER IMPELLER OR IN PUMP INLET WHEN PUMP CORD IS CONNECTED OR PUMP IS OPERATING.

FOR USE WITH MAXIMUM 140°F LIQUID. ACCEPTABLE FOR OUTDOOR USE.

**DANGER!**

**IN THE INITIAL INSTALLATION, BEFORE SEWAGE IS ADMITTED TO THE BASIN, THERE IS NO DANGER ON ENTERING THE BASIN, BUT AFTER SEWAGE HAS BEEN IN THE BASIN THERE IS DANGER. SEWAGE WATER GIVES**

**OFF METHANE AND HYDROGEN SULFIDE GASSES, BOTH OF WHICH ARE HIGHLY POISONOUS. A BREATHING DEVICE MAY BE REQUIRED. NEVER ENTER BASIN UNLESS COVER IS OPEN AND AN OUTSIDE BLOWER IS USED TO FORCE FRESH AIR INTO THE BASIN. ALSO, THE WORKER IN THE BASIN MUST WEAR A HARNESS ATTACHED TO THE SURFACE SO THAT HE CAN BE PULLED OUT IN CASE OF ASPHYXIATION. NEVER WORK ALONE!**

**WARNING!**

DO NOT EXCEED WORKING LOAD LIMIT OF LIFTING ROPE OR CHAIN. DO NOT USE LIFTING ROPE OR CHAIN WHERE FAILURE COULD RESULT IN LOSS OF LIFE.

EXAMINE ALL LIFTING DEVICES, ROPE OR CHAIN FOR DAMAGE BEFORE AND AFTER EACH LIFT.

DO NOT USE ANY LIFTING DEVICES THAT ARE NOT RATED FOR AND DESIGNED TO LIFT THE WEIGHTS INVOLVED WITH THESE PUMPS.

DO NOT INSTALL OR REMOVE PUMP WITH PERSON(S) IN BASIN.

**GENERAL:**

1. Most accidents can be avoided by using **COMMON SENSE.**
2. Read the operation and maintenance instructions manual supplied with the pump.
3. **DO NOT** wear loose clothing that can become entangled in the impeller or other moving parts.
4. This pump is designed to handle materials which could cause illness or disease through direct exposure.

Wear and use protective clothing when working on the pump or piping.

**ELECTRICAL:**

1. To reduce the risk of electrical shock, pump must be properly grounded in accordance with the National Electric Code and all applicable state and local codes and ordinances.
2. To reduce risk of electrical shock, disconnect the pump from the power source before handling or servicing.
3. Any wiring to be done on pumps should be done by a qualified electrician.
4. **NEVER** operate a pump with a power cord that has frayed or brittle insulation.
5. **NEVER** let cords or plugs lay in water.
6. **NEVER** handle connected power cords with wet hands.

## PUMP CAUTIONS AND WARNINGS

1. Pump builds up heat and pressure during operation, allow time for pump to cool before handling or servicing.
2. Only qualified personnel should install, operate or repair pump.
3. Keep clear of suction and discharge openings. **DO NOT** insert fingers in pump with power connected.
4. **DO NOT** pump hazardous material not recommended for pump (flammable, caustic, etc.)
5. Make sure lifting devices are securely fastened each time before lifting pump.
6. **DO NOT** LIFT PUMP BY THE POWER CORD.
7. **DO NOT** exceed manufacturer's recommendation for maximum performance, as this could cause the motor to overheat.
8. Secure the pump in its operation position so it cannot tip over, fall or slide.
9. Keep hands and feet away from impeller when power is connected.
10. Submersible grinder pumps are not approved for use in swimming pools, recreational water installations, decorative fountains or any installation where human contact with the pumped fluid is common.
11. **DO NOT** pump without safety devices in place.
12. Basin must be vented in accordance with the local plumbing codes.

### IMPORTANT!

Manufacturer is not responsible for losses, injury or death resulting from failure to observe these safety precautions, misuse or abuse of pumps or equipment.

### Control Panels:

All control panels used on these grinders are UL listed and CSA certified. Control panels mounted directly to the basin used outdoors are UL listed and CSA certified waterproof.

### Pumps:

Model D2C20-21 is UL and CSA approved.

### Level Sensing Controls:

Intrinsically safe type float controls are recommended for all applications. An intrinsically safe control panel relay will limit the current and voltage to the level controls. A control panel can be supplied with this type circuitry.

The float level controls maintain the basin sewage water level by controlling pump turn-on and turn-off level.

1. The lower turn-off control should be set so that the pump stops at approximately the top of the pump.
2. The upper turn-on control should be set above the lower turn-off control. The exact height between the two controls is determined by the number of pump starts desired and the depth of the basin. A maximum of 10 starts per hour should not be exceeded.
3. The override control is set at a specified height above the upper turn-on control.
4. The alarm control is set about 6" to 12" above the override control.
5. No control should be set above the inlet invert.

**CAUTION** — No persons should be in the basin when pump is lowered into position! **DO NOT** lift pump in a manner where any failure could result in loss of life.

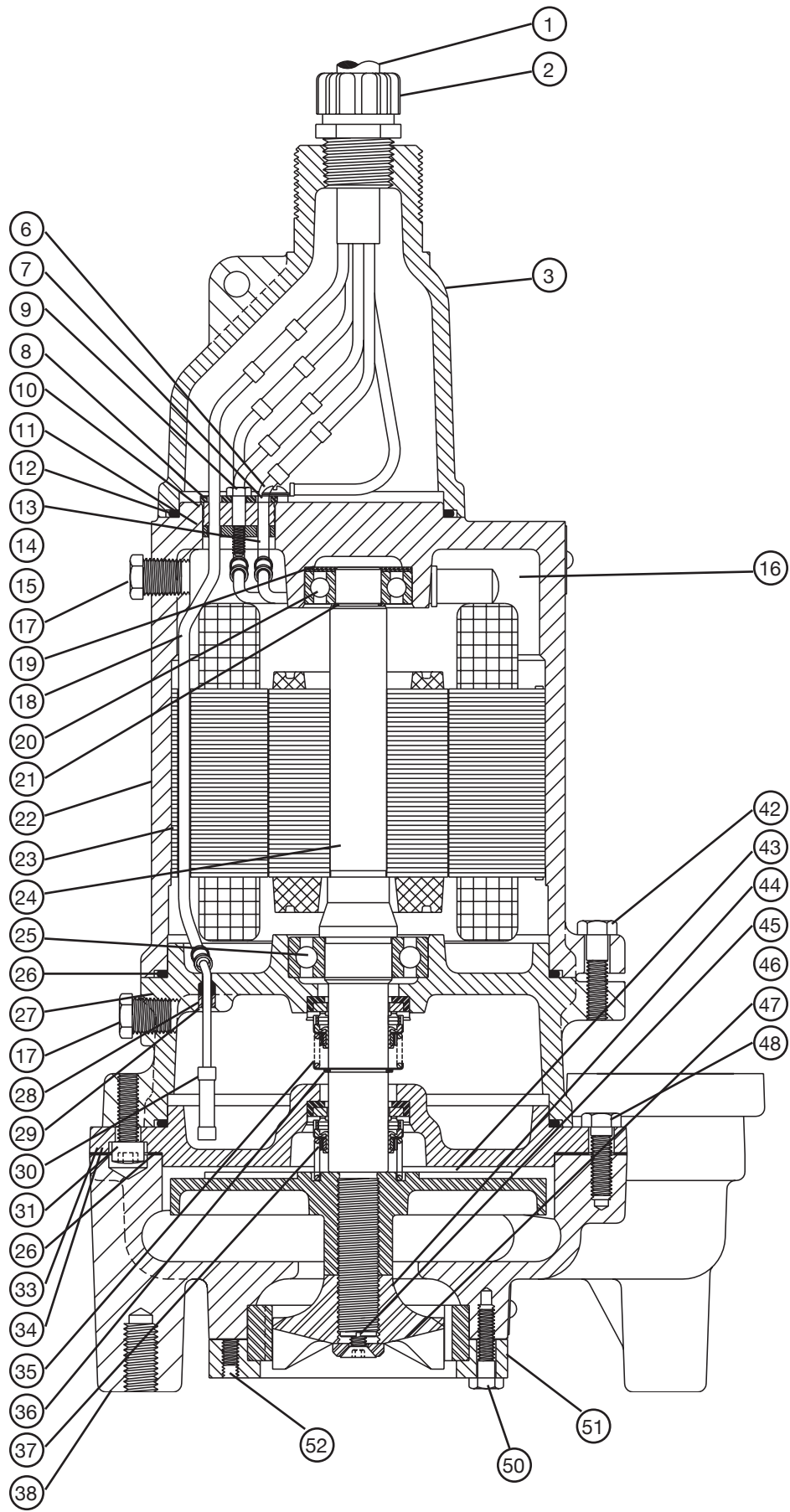
### Air Venting:

Air tends to trap in the pump volute when water raises in the sump or when the pump is lowered into water after service. To vent off this air, a small hole is drilled into the pump volute. Be sure this vent hole is clean after any service work on pump.

**USAGE** — The D2C20 series grinder pumps are for pumping domestic sewage. One pump can handle the sewage from a maximum of 2 homes. These pumps are not to be used for pumping commercial or industrial sewage such as from motels, schools, apartments, factories, etc.

### CALIFORNIA PROPOSITION 65 WARNING:

**▲ WARNING** This product and related accessories contain chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.



## PUMP PARTS LIST

Ref. No.	Description	No. Req'd	Part Number
1	Cable, 4 Cond. (length as specified, less detector)	as spec.	20-01-497-4400
1	Cable, 5 Cond. (length as specified, less detector)	as spec.	20-01-497-4750
2	Connector, 4 Cond. Cable	1	18696A012
	Connector, 5 Cond. Cable	1	18696A001
3	Cap, Cord	1	24320C000
6	Screw, Mach., #10 x 3/8" Lg.	2	05434A043
7	Lock Washer	1	06107A015
8	Plate, Upper	1	24321A000
9	Screw, Cap, #10 Special	1	24322A000
10	Grommet	1	24323A000
11	Plate, Lower	1	24324A000
12	Gasket, Tetraseal, 3-7/8" I.D. x 1/8"	1	05014A169
13	Wire, Red	1	22500A118
14	Wire, White	1	22500A119
15	Wire, Black	1	22500A120
16	Oil, Transformer (1 gal. can)	1 gal.	11009A003K
17	Plug, 1/4 Pipe	2	05022A054
18	Wire, Yellow w/detector	1	22500A117
19	Washer, Spring	2	19331A005
20	Bearing, Upper	1	08565A013
21	Ring, Retaining	1	11816A006
22	Housing, Motor	1	24325D000
23	Stator	1	See Chart
24	Rotor w/Shaft	1	See Chart
	Shaft Only	1	24331C000
	Housing w/Stator	1	See Chart
	Rotor Only	1	See Chart

Ref. No.	Description	No. Req'd	Part Number
25	Bearing, Lower	1	08565A018
26	Gasket, 5-1/2" I.D. x 1/8"	2	05014A171
27	Housing, Upper Seal	1	24328D000
28	Ferrule, Rubber	1	22754A000
29	Ferrule, Metal	1	22755A000
30	Electrode w/Detector	1	21792A002
31	Screw, Socket Hd., 5/16" x 1"	4	06106A008
33	Housing, Lower Seal	1	24329C000
34	Gasket	1	22581A001
35	Seal, 7/8" Shaft, Upper	1	21576A011
36	Ring, Retaining	1	12558A006
37	Seal, 7/8" Lower	1	21576A010
38	Case, Volute	1	21580D102
42	Screw, Cap, 5/16" x 1-1/4" Lg.	4	19100A012
43	Impeller, Pump, 5-1/2" O.D.	1	21581C102
44	Impeller, Grinding	1	21582B000
45	Screw, Flat Hd. 1/4" x 3/4"	1	07597A018
46	Sealant, Loctite Grade 271	1	14550A001
47	Retainer, Impeller	1	21583A000
48	Screw, Cap, 5/16" x 1" Lg.	4	19100A029
50	Screw, Cap, 1/4" x 1" Lg.	3	19099A012
51	Flange w/Shredding Ring	1	21584B002
52	Screw, Set, 1/4" x 3/8" Lg.	2	05013A039

PUMP CAT. NO.	24 ROTOR W/SHAFT	ROTOR ONLY	HOUSING W/STATOR	23 STATOR ONLY
D2C20-21 Series	24327C000	21572C200B	24325D020K	24326C101
D2C20-23 Series	24327C001	21572C201B	24325D025K	24326C103

## PUMP INSTALLATION

**PUMP MODELS** — The D2C20-21 pumps are 230 volt, single phase, 3450 rpm. The D2C20-23 pumps are 230 volt, three phase, 3450 rpm.

**PACKAGING** — Each pump is packaged with 10 feet of power cord in a carton that is marked with Model Number and Engineering Number. Longer cords are available, consult catalog.

**INSTRUCTIONS** — Instructions cover only the pump unit. Separate instructions for the electrical control panel and basin packaged system are included with these items. Complete disassembly instructions are furnished only to authorized service stations.

**CAUTION** — PUMP IS NOT TO BE DISASSEMBLED IN THE FIELD EXCEPT AT CERTIFIED SERVICE STATIONS OR AT FACTORY. WARRANTY IS VOID IF PUMP IS TAKEN APART FOR ANY REASON EXCEPT TO REPLACE GRINDER IMPELLER AND GRINDER RING WHICH IS COVERED IN THESE INSTRUCTIONS.

**DESCRIPTION OF PUMP** — Figure 1 shows cutaway of pump with parts called out. This pump is intended to grind and pump all normal sewage for home use. It will also handle reasonable quantities of disposable diapers, sanitary napkins, paper towels, rubber material, glass, wood, plastic, string, cigarette butts and other material not normally found in sewage.

Pump is of heavy duty construction, and submersible type for long life when pumping ground sewage. Motor is capacitor start, capacitor run for single phase. Capacitors and start relay are mounted in the electrical control box. All single phase motors must have special electrical control box furnished by Delta Manufacturing.

INSTALLING SINGLE PHASE MOTORS WITH CONTROLS OTHER THAN MANUFACTURERS VOIDS WARRANTY.

THREE PHASE MOTORS MUST HAVE PROPERLY SIZED OVERLOADS IN CONTROL PANEL OR WARRANTY IS VOID.

**INSPECTING PUMP** — Before making any piping or electrical connections check pump for any shipping damage and turn grinder impeller to be sure it is free. DO NOT TURN IMPELLER WITH FINGERS AS EDGES ARE SHARP. Use socket wrench in the impeller screw.

**CAUTION** — After pump is installed, NEVER WORK ON MOTOR OR GRINDER UNIT WITHOUT DISCONNECTING MOTOR LEAD WIRES FROM CONTROL PANEL. DON'T RELY ON OPENING CIRCUIT BREAKER ONLY.

Pump has two oil-filled chambers: 1) the motor and ball bearings and, 2) the seal chamber — for long life and best heat transfer.

The lower seal above the pump impeller acts as a buffer for upper seal that holds oil in the motor chamber. If lower seal leaks for any reason, water enters the seal chamber. If motor has the seal leak detector, the electrode will contact the water and close the circuit to the red seal light in the control panel indicating motor must be serviced before upper seal fails.

**MOTOR OVERLOAD PROTECTION** — The motor is provided with an on-winding overload switch. If motor overloads or overheats for any reason, the switch opens, stopping motor. As soon as the motor cools to normal temperature the switch closes and restarts the motor.

**MOTOR POWER CORDS** — Pump models with the seal leak detector use a 5 conductor #14 gauge cord. The three power conductors are BLACK, WHITE, RED, the BROWN conductor connects to the seal leak probe and GREEN conductor connects to the ground screw inside the cord cap.

With 14/5 cords the BLACK and WHITE are main winding leads and the RED is for start winding.

**CORD SEAL** — The lines from the motor chamber are sealed with a rubber sealing grommet that prevents oil from leaking into the cord cap compartment. If necessary to replace power cord, the sealing grommet must not be loosened. This wire seal is removed only for complete motor repair that must be done at an authorized motor repair shop.

**IMPORTANT** — Ground wires must be connected in the control box to grounding bar, which is connected to a good outside ground. **MOTOR IS NOT SAFE UNLESS GROUNDED.**

**INSTALLING PUMP IN SUMP BASIN** — Complete installation and piping instructions are included with the sump basin package.

**SINGLE PHASE CONTROL BOX** — Single phase pumps must use the Delta control box. Warranty is void if other than Delta single phase control box is used.

**THREE PHASE CONTROL BOX** — Any suitable three phase control equipment can be used for simplex or duplex operation. These control boxes are also available from Delta. If other than Delta box is used, overload heaters must be selected in accordance with full load amp ratings given in these instructions.



## MAXIMUM AMP & WINDING RESISTANCE VALUES

HP	SPEED	VOLTS	PHASE	WINDING RESISTANCE IN OHMS			MAX. AMPS
				BLACK TO WHITE	BLACK TO RED	RED TO WHITE	
2	3450	2089	1	1.27	6.25	7.52	15.0
2	3450	230	1	1.56	7.84	9.40	12.0
2	2875	380*	3	12.6	12.6	12.6	5.1
2	3450	208	3	2.91	2.91	2.91	9.5
2	3450	230	3	3.15	3.15	3.15	8.4
2	3450	460	3	12.6	12.6	12.6	4.2

If any amp readings are higher than listed, it indicates voltage may be higher or lower than normal, or that pump grinder may be clogged with trash causing extra load on motor.

## CHECK LIST IF PUMP DOES NOT OPERATE PROPERLY

**CHECKING FOR MOISTURE IN MOTOR** — Disconnect line leads from terminal strip. Use ohmmeter and set on highest scale. Readings on the large power cord between any of the conductors red, black, white to green or motor housing should be more than 500,000 ohms. Motor probably will run with a lower reading, but if pump is out of service and reading is below 500,000 ohms, the motor housing and stator should be removed and baked by an authorized service station.

**RESISTANCE OF WINDING** — Every motor winding has a fixed resistance and winding must check close to the values given in chart to operate properly. This winding resistance also shows if motor is connected for voltage being used. Use ohmmeter for this test and set on scale to read directly in ohms.

## TROUBLE CHECK LIST

Troubles listed below are generally not caused by the pump. Other trouble can occur from faulty control box operation. These will be listed with the control box instructions.

CONDITION	PROBABLE CAUSE
Pump runs but does not pump liquid from basin.	<ol style="list-style-type: none"> <li>1. Pump impeller may be air locked, this occasionally occurs on a new installation. Start and stop pump several times to purge air.</li> <li>2. Run additional water into basin so that pump will be submerged deeper to clear air.</li> <li>3. If air does not clear, it may be necessary to lift pumpout of sealing elbow and start motor to allow pump to pump for a few seconds. If discharge is piped in with union, slightly break union and start pump to clear air. Air vent hole is provided in pump case, so some water will flow from this hole when pump is operating. If vent hole gets clogged, clean out.</li> <li>4. If pump has been installed for some time and does not pump, it may be clogged at grinder inlet.</li> <li>5. Discharge gate valve may be closed.</li> <li>6. Discharge check valve may be clogged or have a broken clapper.</li> <li>7. Discharge head may be too high. Check elevation. Maximum pump head at zero flow is 70 feet. See pump curve.</li> <li>8. If above checks do not locate trouble, motor rotor may be loose on shaft which allows motor to run but will not turn impeller or only at low RPM.</li> </ol>
Red light comes on at control box	<ol style="list-style-type: none"> <li>1. This indicates some water has leaked past the lower seal and has entered the seal chamber and made contact with the electrode probe. Pump must be removed from basin within approximately two (2) weeks for replacement of lower seal. This preventative repair will save an expensive motor.</li> </ol>

CONDITION	PROBABLE CAUSE
Overload trips and alarm buzzer or flashing red light comes on due to high water level in basin	<ol style="list-style-type: none"> <li>1. Push in red reset button to reset overload. If overload trips again after short run, pump has some damage and must be removed from basin for checking.</li> <li>2. Trouble may be from clogged grinder causing motor to overload or could be from failed motor.</li> <li>3. Trouble may be from faulty component in control box. Always check control box before removing pump.</li> </ol>
Yellow run light stays on continuously	<ol style="list-style-type: none"> <li>1. Indicates H-O-A switch be in the hand position.</li> <li>2. Level control switch may have failed causing pump to continue to operate when water is below lower float.</li> <li>3. Grinder assembly may be partially clogged causing pump to operate at very reduced capacity.</li> <li>4. Check valve may be clogged causing low pump flow. Gate valve may be in off position.</li> <li>5. Pump may be air locked.</li> </ol>
Circuit breaker trips	<ol style="list-style-type: none"> <li>1. Reset breaker by pushing clear down on handle then back to on position. If breaker trips again in few seconds it indicates excessive load probably caused by a short in the motor or control box. Check out instructions given with control box before pulling pump.</li> <li>2. If this condition happens after an electrical storm, motor or control box may be damaged by lightning.</li> <li>3. Resistance reading of the motor with lead wires disconnected from the control box can determine if trouble is in motor or control box.</li> </ol>
Pump is noisy and pump rate is low	<ol style="list-style-type: none"> <li>1. Grinder assembly may be partially clogged with some foreign objects causing noise and overload on the motor.</li> <li>2. Grinder impeller may be rubbing on grinder ring due to bent shaft or misalignment.</li> </ol>
Grease and solids have accumulated around pump and will not pump out of basin	<ol style="list-style-type: none"> <li>1. Pump "ON" switch may be set too high.</li> <li>2. Run pump on hand operation for several minutes with small amount of water running into basin to clean out solids and grease. This allows pump to break suction and surge which will break up the solids.</li> <li>3. Trash may have accumulated around lower weight causing pump to turn off too soon. Clean trash from weight and suspension cable.</li> </ol>



## REPLACING GRINDER IMPELLER AND GRINDER SHREDDING RING

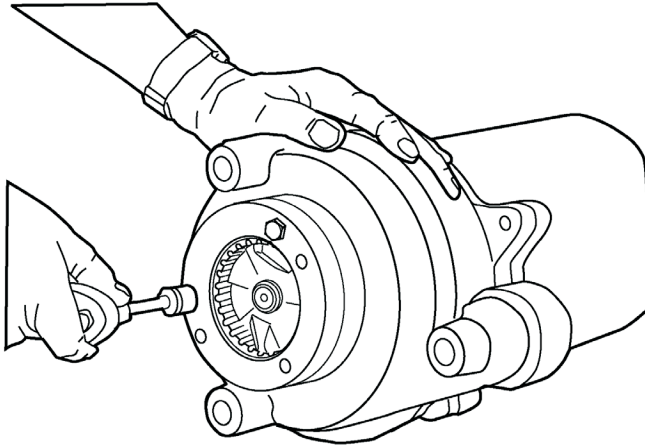


Fig. 1

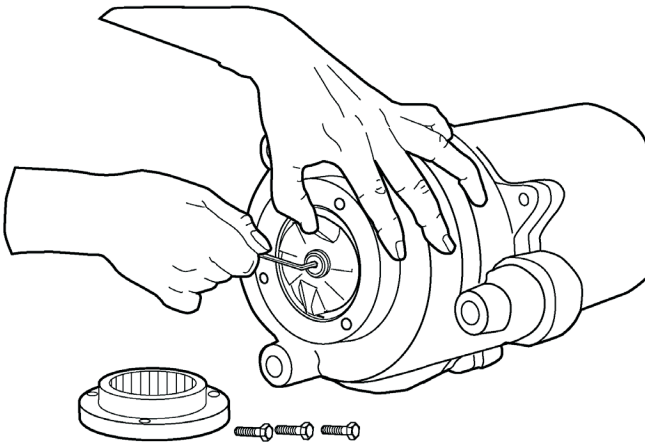


Fig. 2

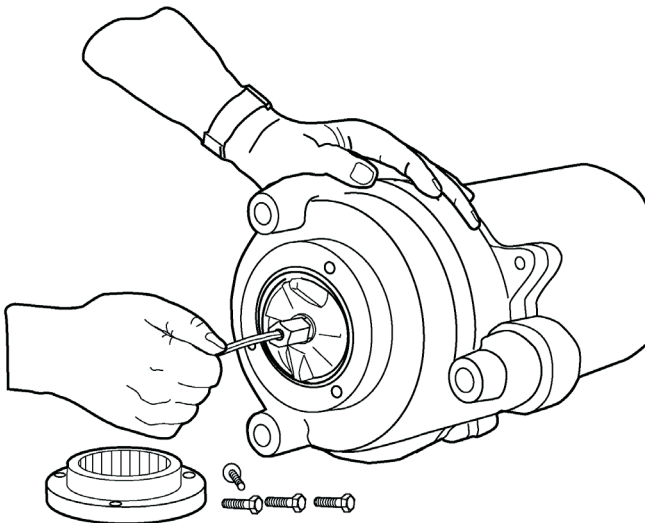


Fig. 3

This is the only disassembly operation allowed in the field. All other repair must be done at the factory or at an authorized service center.

### STANDARD

1. Allen head socket set
2. Standard socket wrench set
3. Set of open end wrenches.
4. Plastic hammer
5. Vise grip pliers
6. Large screwdriver with heavy handle
7. Wire brush
8. Three-cornered file

**IMPORTANT**— Pump should be thoroughly cleaned of trash and deposits before starting disassembly operations.

**CAUTION: DISCONNECT ALL POWER AND CONTROL WIRES TO MOTOR AT CONTROL PANEL BEFORE STARTING DISASSEMBLY OPERATIONS. NEVER RELY ON OPENING CIRCUIT BREAKER ONLY.**

### DISASSEMBLY OF SHREDDING RING AND GRINDER IMPELLER

1. Remove three screws from grinder ring flange. Grinder ring is pressed into flange for easy removal. See Fig. 1
2. Thread two screws into tapped back-off holes in flange and evenly tighten screws to back grinding ring out of pump housing. See Fig. 2
3. Hold grinder impeller by prying against impeller cutting bar and remove cap screw from end of shaft. See Fig. 3
4. Use large screwdriver in slot in end of shaft and bump on cutter vane with plastic hammer. Bump in counterclockwise direction as thread is right hand. It may take several bumps to loosen impeller. See Fig. 4
5. If impeller comes off easily clean up and replace if worn.

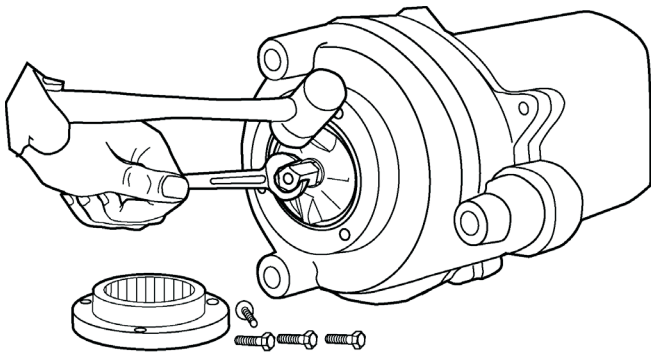


Fig. 4

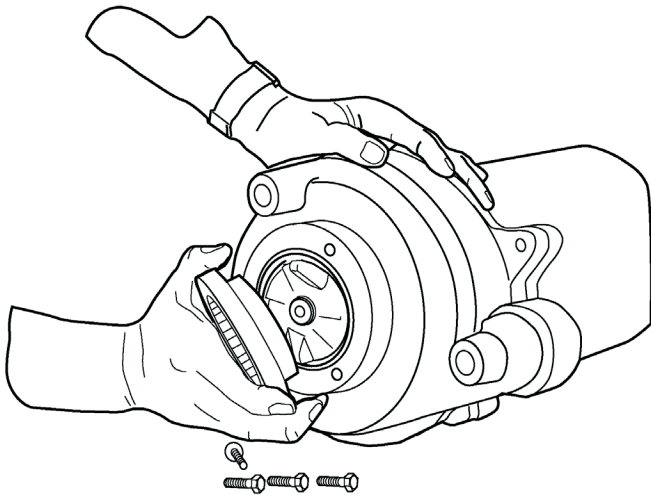


Fig. 5

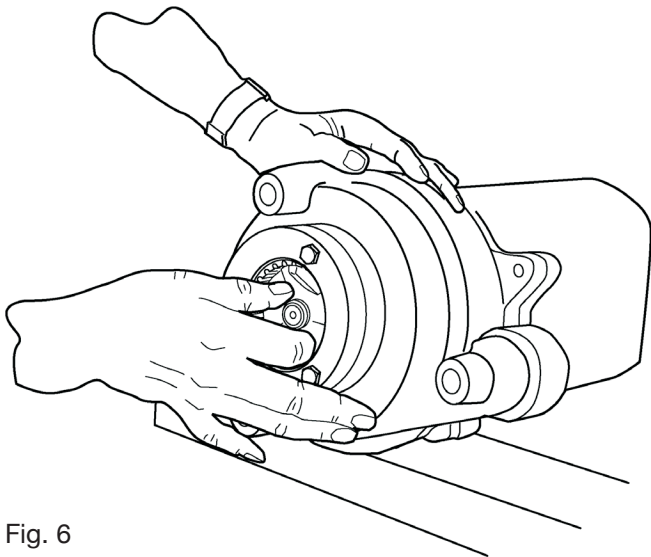


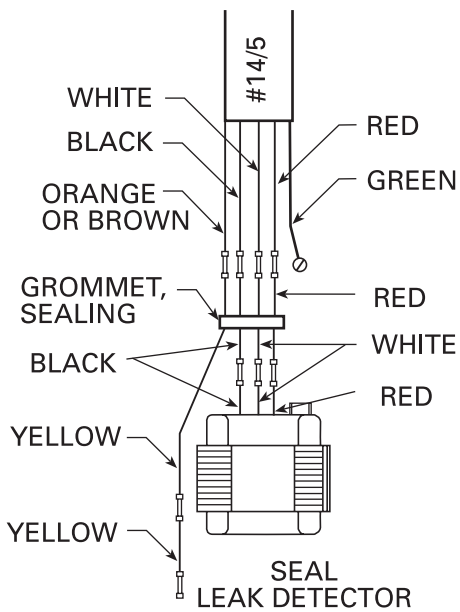
Fig. 6

6. Be sure pump impeller has not loosened when grinder impeller is removed. This can be checked on reassembly of grinder impeller and shredding ring. Tips of impeller cutter vanes should extend about 1/8" below bottom of shredding ring. If distance is more, it means the pump impeller has loosened, and if it is less, it means the shredding ring is not properly seated.

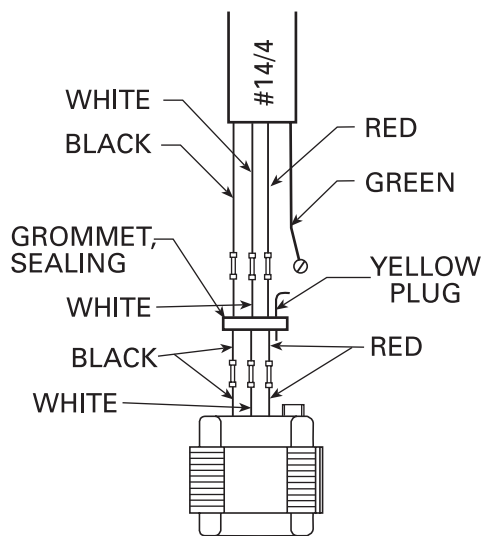
If the pump impeller has loosened, remove grinder impeller and shredding ring as described above and remove bolts from volute case and remove case. Plastic hammer can be used to bump on casing discharge to loosen. Place gasket in oil to prevent drying out. DO NOT loosen the pump impeller further - it is the seat for the lower seal spring.

7. After case is removed wrap emery paper around shaft and hold with vise grip pliers. Use cloth on impeller and screw up against shoulder. Now pump can be reassembled. See Fig. 5
8. Clean all threads with wire brush and file smooth any threads that may be nicked.
9. Use Never-Seeze or other graphite compound on threads before replacing grinder impeller.
10. Be sure cap screw in bottom of shaft is tight. Hold impeller with screwdriver between cutter bar and teeth of shredding ring while tightening cap screw.
11. Be sure impeller turns free by hand after reassembly. Some drag will occur due to the seals, but there should be no binding or tight spots when turning the grinder impeller. See Fig. 6
12. If impeller rubs or drags on shredding ring, loosen bolts in shredding ring plate and tap with plastic hammer to loosen, retighten screws. Be sure to pull screws down evenly, applying pressure on all three screws. DO NOT TIGHTEN ONE SCREW CLEAR DOWN BEFORE ADJUSTING OTHER SCREWS.
13. ALWAYS use a rag on the impeller when turning to prevent cutting hands on the sharp corners of shredding ring.

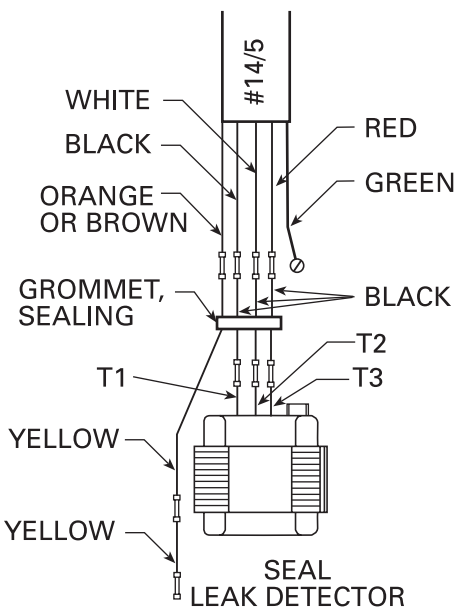
# MOTOR WIRING DIAGRAM



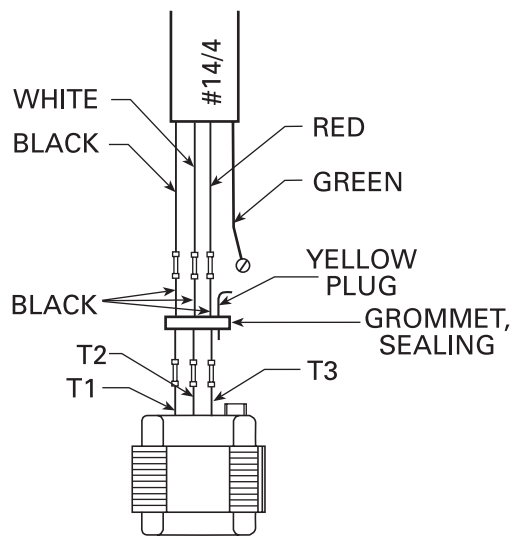
2 HP, 1 PH WITH  
SEAL LEAK DETECTOR  
& 14/5 COND. CORD



2 HP, 1 PH WITHOUT  
SEAL LEAK DETECTOR  
& 14/4 COND. CORD  
(L/D SERIES)

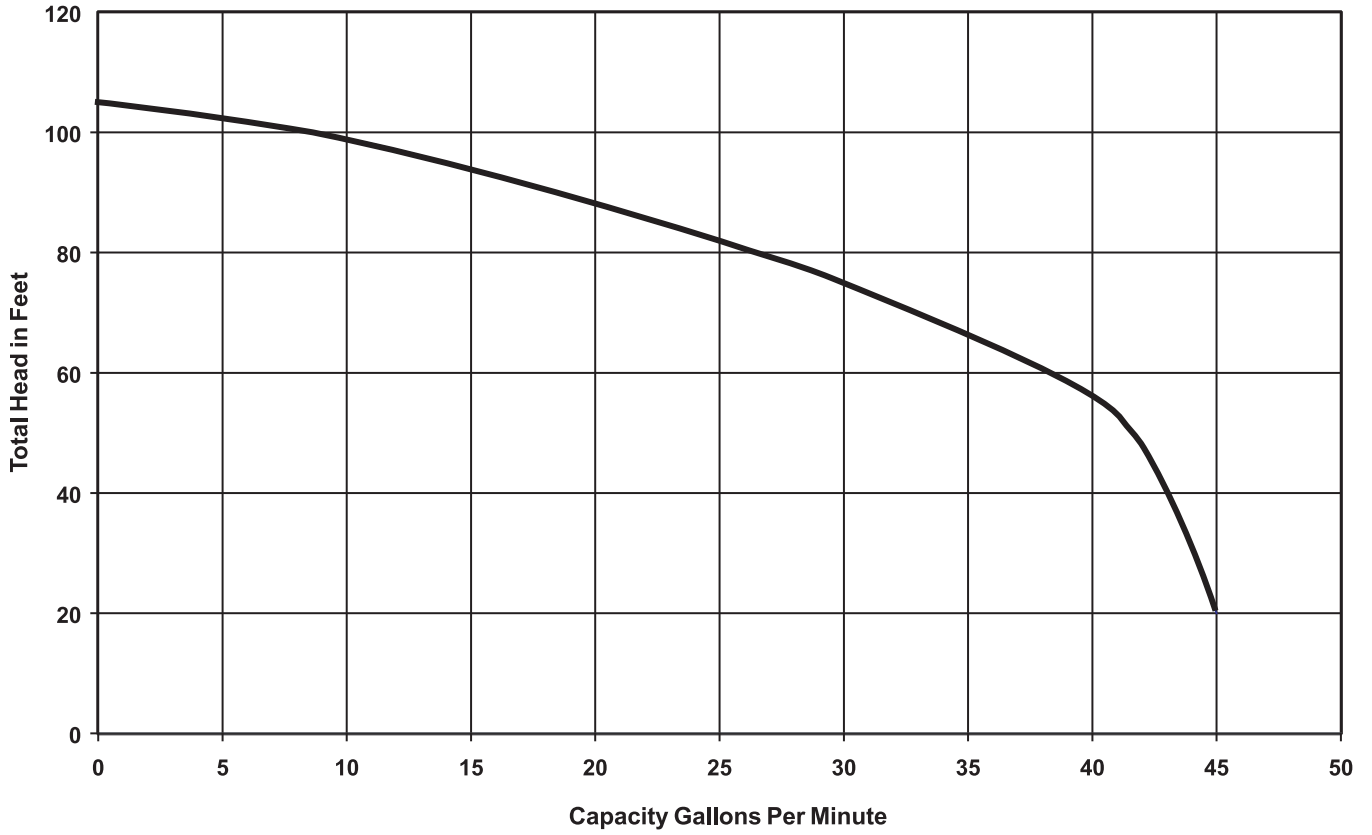


2 HP, 3 PH WITH  
SEAL LEAK DETECTOR  
& 14/5 COND. CORD

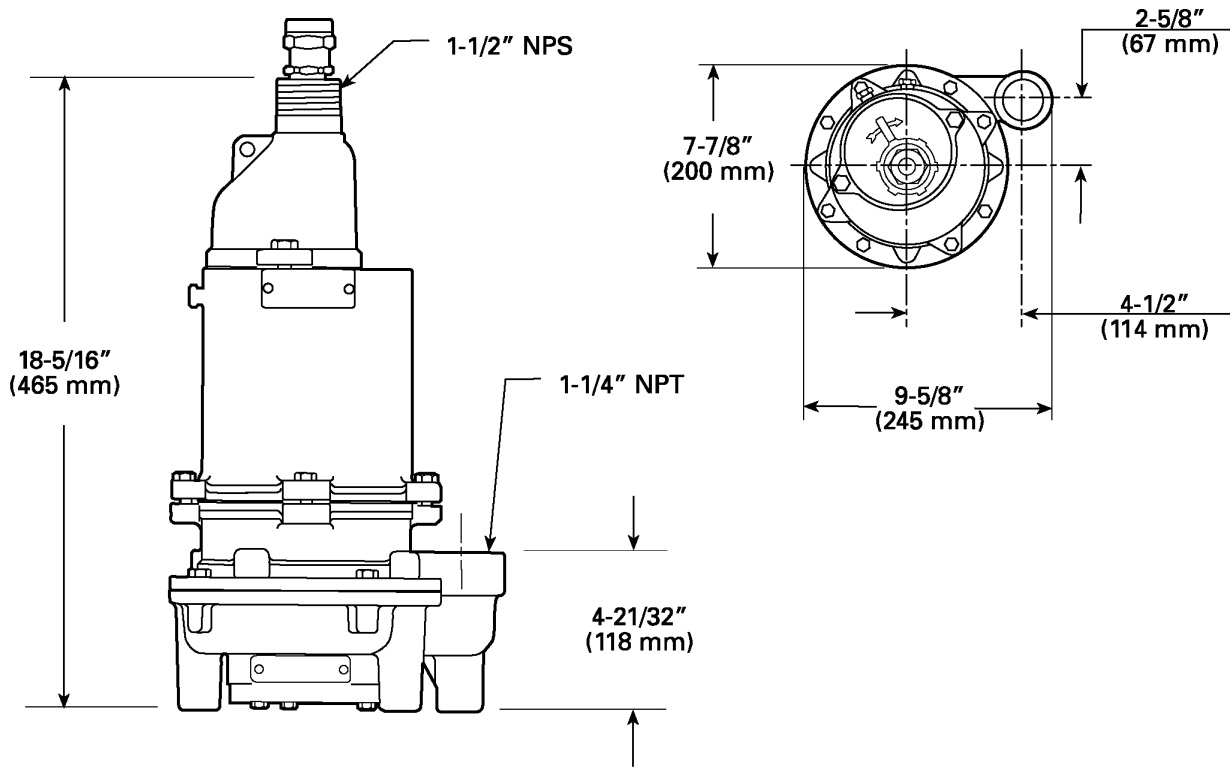


2 HP, 3 PH WITHOUT  
SEAL LEAK DETECTOR  
& 14/4 COND. CORD  
(L/D SERIES)

# PERFORMANCE CURVE



# PUMP DIMENSION



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# STANDARD LIMITED WARRANTY

Delta Environmental warrants its products against defects in material and workmanship for a period of 24 months from the date of shipment from Delta Environmental or 27 months from the manufacturing date, whichever occurs first – provided that such products are used in compliance with the requirements of the Delta Environmental catalog and technical manuals for use in pumping raw sewage, municipal wastewater or similar, abrasive free non-corrosive liquids.

During the warranty period and subject to the conditions set forth, Delta Environmental, at its discretion, will repair or replace to the original user, the parts which prove defective in materials and workmanship. Delta Environmental reserves the right to change or improve its products or any portions thereof without being obligated to provide such a change or improvement for prior sold and/or shipped units.

Start-up reports and electrical schematics may be required to support warranty claims. Warranty is effective only if Delta Environmental authorized control panels are used. All seal fail and heat sensing devices must be hooked up, functional and monitored or this warranty will be void. Delta Environmental will only cover the lower seal and labor thereof for all dual seal pumps. Under no circumstance will Delta Environmental be responsible for the cost of field labor, travel expenses, rented equipment, removal/reinstallation costs or freight expenses to and from the factory or an authorized Delta Environmental service facility.

This limited warranty will not apply: (a) to defects or malfunctions resulting from failure to properly install, operate or maintain the unit in accordance with the printed instructions provided; (b) to failures resulting from abuse, accident or negligence; (c) to normal maintenance services and parts used in connection with such service; (d) to units which are not installed in accordance with applicable local codes, ordinances and good trade practices; (e) if the unit is moved from its original installation location; (f) if unit is used for purposes other than for what it is designed and manufactured; (g) to any unit which has been repaired or altered by anyone other than Delta Environmental or an authorized Delta Environmental service provider; (h) to any unit which has been repaired using non factory specified/OEM parts.

**Warranty Exclusions:** DELTA ENVIRONMENTAL MAKES NO EXPRESS OR IMPLIED WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF. DELTA ENVIRONMENTAL SPECIFICALLY DISCLAIMS THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR ANY PARTICULAR PURPOSE.

**Liability Limitation:** IN NO EVENT SHALL DELTA ENVIRONMENTAL BE LIABLE OR RESPONSIBLE FOR CONSEQUENTIAL, INCIDENTAL OR SPECIAL DAMAGES RESULTING FROM OR RELATED IN ANY MANNER TO ANY DELTA ENVIRONMENTAL PRODUCT OR PARTS THEREOF. PERSONAL INJURY AND/OR PROPERTY DAMAGE MAY RESULT FROM IMPROPER INSTALLATION. DELTA ENVIRONMENTAL DISCLAIMS ALL LIABILITY, INCLUDING LIABILITY UNDER THIS WARRANTY, FOR IMPROPER INSTALLATION. DELTA ENVIRONMENTAL RECOMMENDS INSTALLATION BY PROFESSIONALS.

Some states do not permit some or all of the above warranty limitations or the exclusion or limitation of incidental or consequential damages and therefore such limitations may not apply to you. No warranties or representations at any time made by any representatives of Delta Environmental shall vary or expand the provision hereof.



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