



Operation Manual for Eco-Logic Pond & Lake Restoration System

- 1) Overview of System Operation
- 2) Safety Precautions
- 3) Eco-Logic Unit Specifications / Equipment Installation Recommendations
- 4) Recommended System Maintenance
- 5) Aeration Tubing Installation Guidelines
- 6) Vane Replacement
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System Overview

The Eco-Logic Pond and Lake Restoration Systems are designed to aerate a body of water with a controlled combination of air and ozone.

Ozone, a natural occurring form of oxygen, sometimes known as activated oxygen, is a powerful short-lived oxidant, which is primarily used to disinfect drinking water.

Ozone and air are diffused into the lake bottom by means of a patented sinkable hose consisting of hundreds of openings, which release the aeration mixture into the lake bottom. This process begins to circulate stagnant, decaying matter on the bottom of the lakebed and begins breaking up the stratification of the lake's surface water while increasing the lake's concentration of dissolved oxygen.

Safety:

Ultraviolet rays produced inside the ozone cell of this unit are harmful to eyes and skin. Never operate this unit with the ultraviolet lamp exposed or removed from the ozone chamber.

The ozone generator should be installed in a properly ventilated equipment area with accessibility restricted to authorized personnel only.

The ozone gas produced by this system is very corrosive; therefore it is advisable to check for any possible leaks in the hoses, which inject this gas into your pond to insure ozone gas is only exiting under water.



Eco-Logic Unit Specifications / Equipment Installation Recommendations:

Model 4:

a) CFM of Unit:	4 CFM
b) Maximum PSI of Unit:	15 PSI
c) Maximum Depth of Pond:	34 Feet Deep
d) Maximum Surface Area Size:	1 Acre or 43,560 Square Feet
e) Physical Sizes of Unit:	36 1/4" x 12 1/8" x 18"
f) Recommended Accessories:	100 ft. of feeder tubing (270008) 250 ft. of 3" aeration tubing (270009) (2) Plug connector (271525) (1) Tee connector (271538) (6) Hose clamps (271542)

Equipment Installation Recommendations:

- 1) Electrical Power Required:
Model 4: 700 Watts or 6 Amps
- 2) Location Selection:
 - a) Units should be installed in a properly ventilated area.
 - b) The unit's front panel should be accessible as well as the lamp access cover for lamp removal.
 - c) Air intakes on the bottom of unit should be a minimum of 12" off the floor.
 - d) For wall mounting, select a vertical structure, which will support the unit.
 - e) Floor mounts should be bolted to a cement pad.
 - f) For outside installations, if possible, locate the unit out of direct sunlight, keep the unit away from any sprinkler path and away from the green.
- 3) Installer:
 - a) Follow all local and state electrical codes to choose the correct wire size for length of run and wire protection.
 - b) Review Guidelines of Aeration Tubing Installation located in this manual.



Recommended System Maintenance:

Maintenance recommendations listed below are based upon a normal installation. Maintenance requirements may vary from site to site depending upon unit used and installation environment.

1) Compressors:

We recommend compressor vanes be replaced at least once per year of operation. (See Price Schedule for specific part number and cost for the Compressor Vane Kits).

2) Aeration Tubing:

Aeration tubing should be cleaned off with a rag if flow ever appears non-uniformed on the Pond's surface. This can be done by removing the tubing from the pond and wiping off the tubing. This task can be performed from either on shore or on board a boat.

3) Ozone Cell Lamp:

We recommend that the lamp be replaced every 10,000 hours of operation. (See Price Schedule for specific part number and cost for the Ozone Cell Lamp).

4) Electrostatic Air In-Take Filter:

We recommend the filter be inspected once every 30 days for dirt build-up. The filter can be cleaned using soap and water. Replacement is necessary when cleaning the filter can no longer be achieved or the filter material breaks down. (See Price Schedule for specific part number and cost for the In-Take Air Filter).

INSTALLATION INSTRUCTIONS FOR YOUR AERATION TUBING

Your Eco-Logic Pond Bubbler has been supplied with carefully engineered tubing to provide maximum efficiency and long life. As with all engineered products, **INSTALLATION INSTRUCTIONS** must be carefully followed for proper results.

While the installation instructions for your Aeration Tubing are simple and straight-forward, attention to detail will insure many years of trouble free service and operation.

TUBING PROFILE

The Aeration Tubing and the Feeder Tubing provided with your Eco-Logic Pond Bubbler are specifically designed products that are formed with a lead weight cord inside its dual tube profile to provide a means of preventing it from floating.

The tubing and the lead weight can both kink easily so care must be taken when handling to prevent the tube from being damaged. The tubing is easily crushed as well. **DO NOT** step or walk on these products.

GENERAL INSTRUCTIONS:

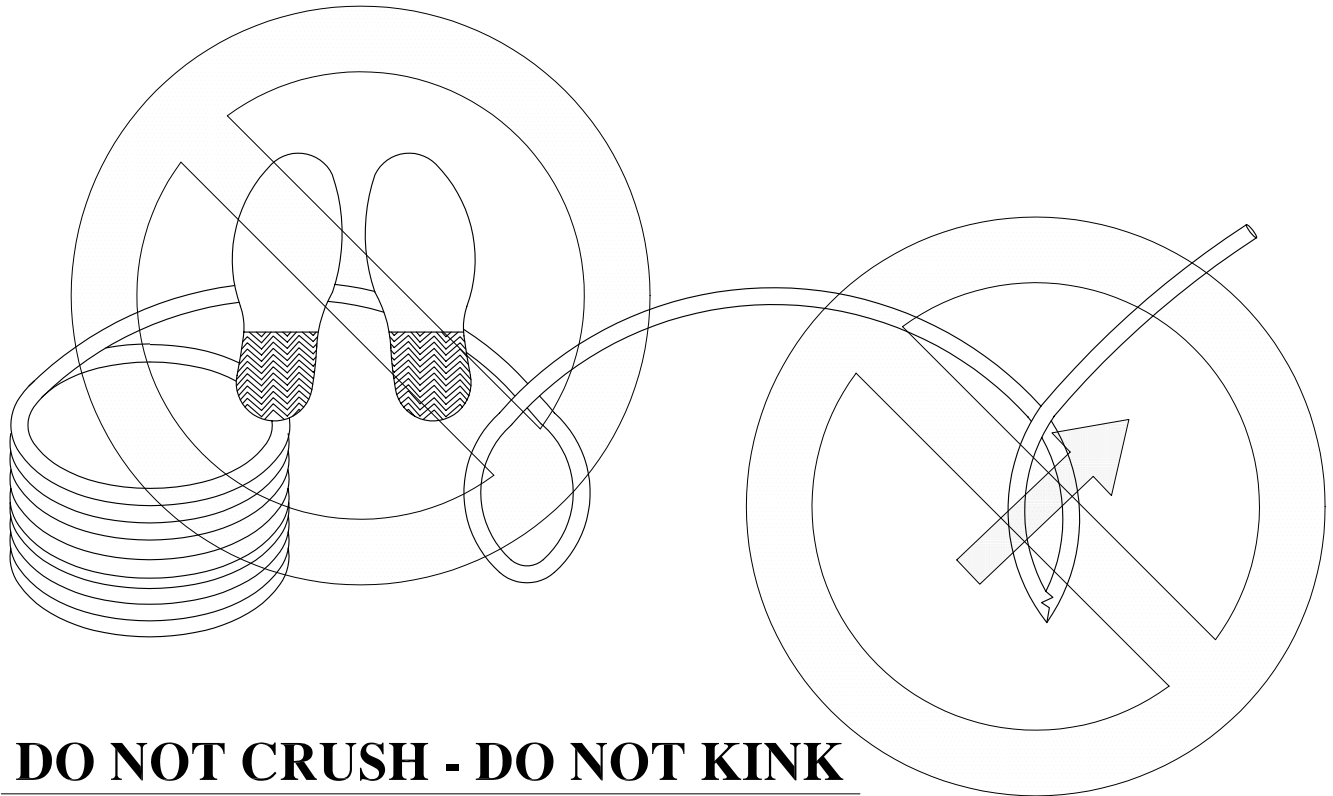
- 1) When handling the tubing **DO NOT PULL** the Aeration or Feeder Tubing from the roll. This will cause twists or kinks in the lead keel. Instead unroll the tubing as if it were wound on a spool having an assistant lead the end away from you as you allow the roll to pay off from the outside of the bundle.
- 2) While assembling the Aeration system avoid allowing dirt or dirty water to enter the tubing or its components.
- 3) The fittings should slip into the aeration tubing with very little effort. If insertion of the fittings is difficult, allow the tubing to sit in a warm area for several hours before starting your assembly.

ASSEMBLY

- 1) A. Unroll The Feeder Tubing. Use the method described in the general instructions, DO NOT PULL TUBING FROM THE TOP OF THE COIL. Pulling the tubing from the top of the coil will cause kinking.
- B. Cut the end of the tubing evenly, so that you have a square end.
- C. Remove one half an inch of the lead keel section from the square cut end.
- D. Attach this first end to the output fitting located on the bottom panel of the Eco-Logic enclosure. Secure the tube onto the fitting with the clamp provided.
- E. Cut the tubing to the desired length for your installation. Factory recommendations are to form a "T", the Feeder Tube being the leg of the "T" and the Aeration tubing creating the top cross of the "T"
- F. Remember to remove one half an inch of the keel segment at each finished end of these tubes to provide clearance for the tubing clamps.
- 2) A. Unroll the Aeration Tubing following the same procedure as described in item 1 above and in the general instructions.
- B. When Forming a "T" layout for the Feeder Tube and Aeration tube cut the Aeration Tube in half and prepare each end by removing one half an inch of the lead keel. Remember to cut each end of the tubing evenly, so that you have a flat end.
- C. Slide a tubing clamp over each finished tube end and insert the tubing ends into the Tee Connector. Tighten each clamp to secure the tubes to the Tee.

ASSEMBLY (continued)

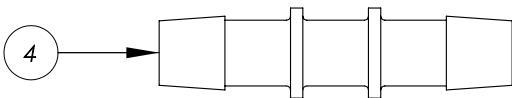
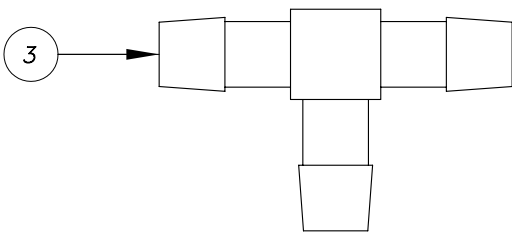
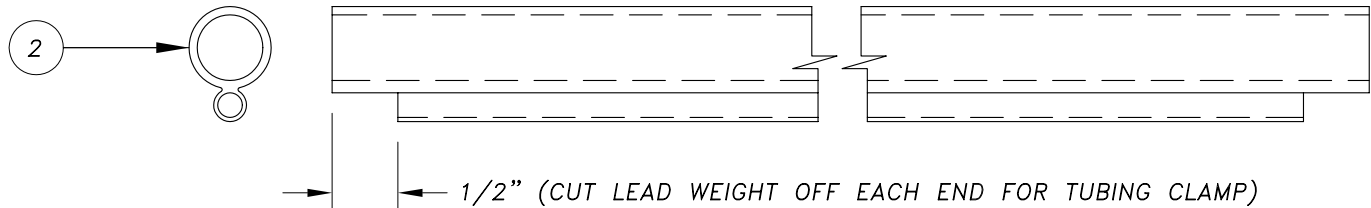
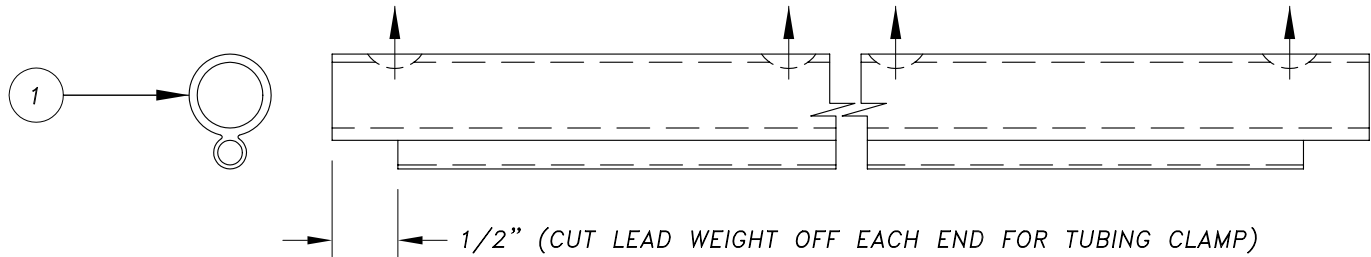
- D. Insert the end plugs into each half of the Aeration Tube to cap the open ends and secure the plug with the tubing clamps provided.
- E. After the assembly of the Feeder Tube and Aeration Tube has been completed it can be laid into your pond or lake.
- F. Carefully stretch out the Tubing assembly across the pond taking precautions not to kink, bend or crush the assembly. The Feeder Tube should be laid out first to bring your Aeration branches nearer to the center of the pond. The Aeration branches can then be laid out to span the greatest distance their lengths will allow.
- G. The use of a small boat is quite helpful when arranging your Aeration assembly in your pond.



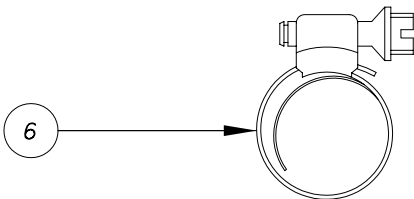
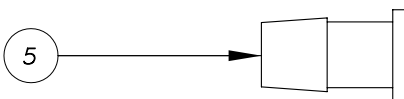
DO NOT CRUSH - DO NOT KINK

ECO-LOGIC AERATION TUBING INSTALLATION GUIDELINES

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AERATION ASSEMBLY COMPONENTS

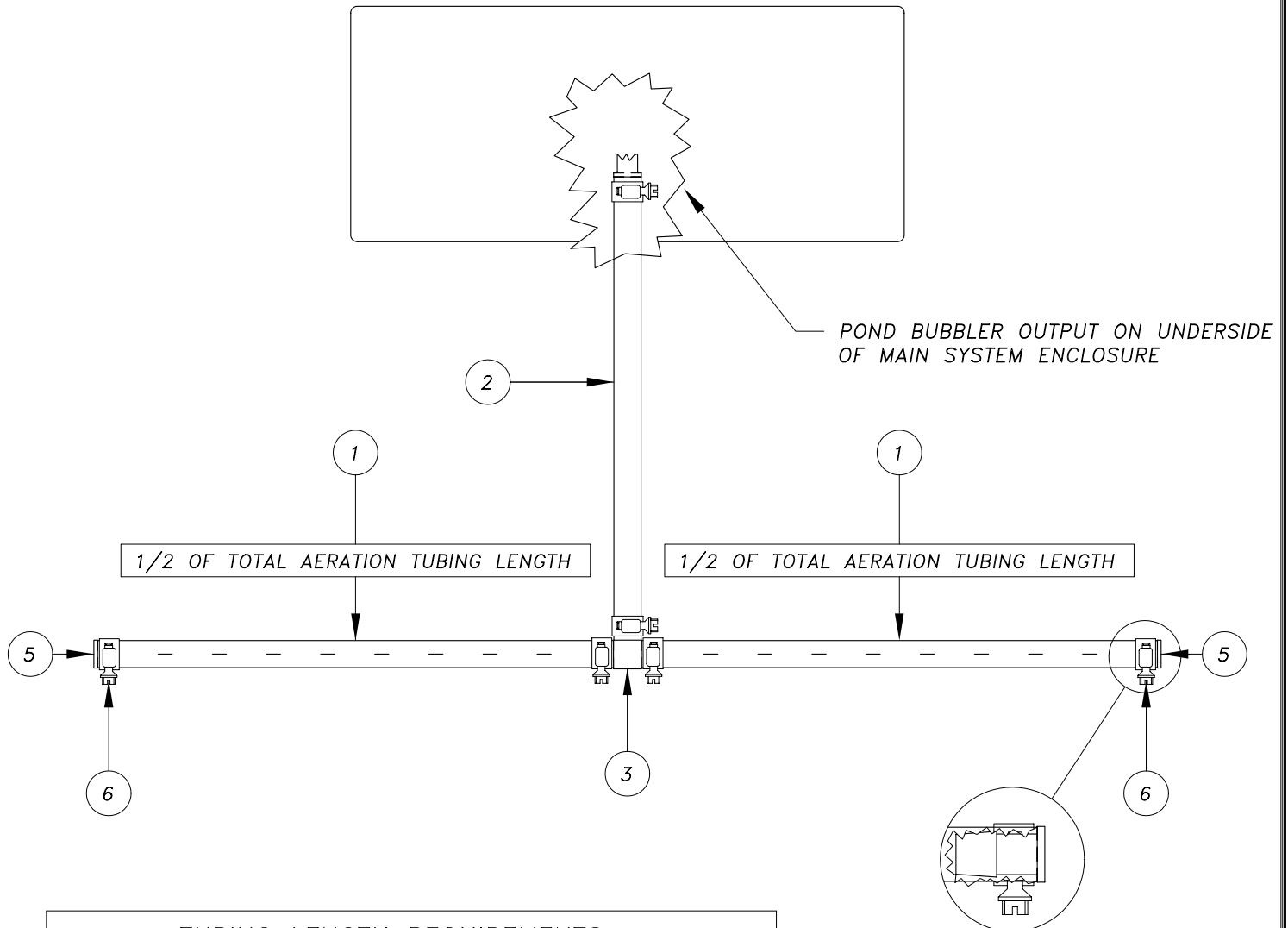


ITEM NO.	ITEM DESCRIPTION	PART NUMBER
1	Aeration Tubing	270009
2	Feeder Tubing	270008
3	Tee Connector	271538
4	Straight Connector	271541
5	Tubing End Plug	271525
6	Tubing Clamp	271542

ECO-LOGIC AERATION TUBING
INSTALLATION GUIDELINES

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ECO-LOGIC POND BUBBLER SYSTEM



TYPICAL HOSE BARB
DETAIL AT ALL CONNECTIONS

TUBING LENGTH REQUIREMENTS

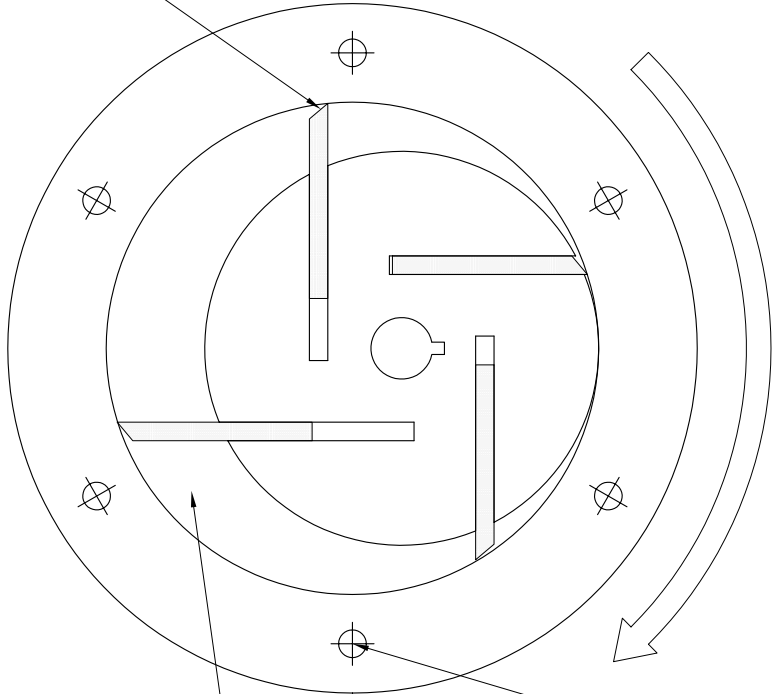
MODEL	FEEDER TUBING (2)	AERATION TUBING (1)
4	100 FT.	250 FT.
10	100 FT.	500 FT.
17	100 FT.	1000 FT.

SUGGESTED TUBING LENGTHS AND ASSEMBLY FOR OPTIMUM EFFICIENCY.
(REFER TO COMPONENTS LISTING ON PAGE 4 FOR PART DESCRIPTIONS.)

Consult the factory for optional tubing layouts and Eco-Logic accessories or replacement parts.

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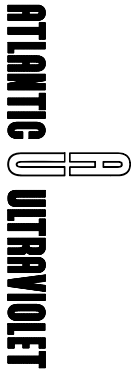
ROTATION OF VANES



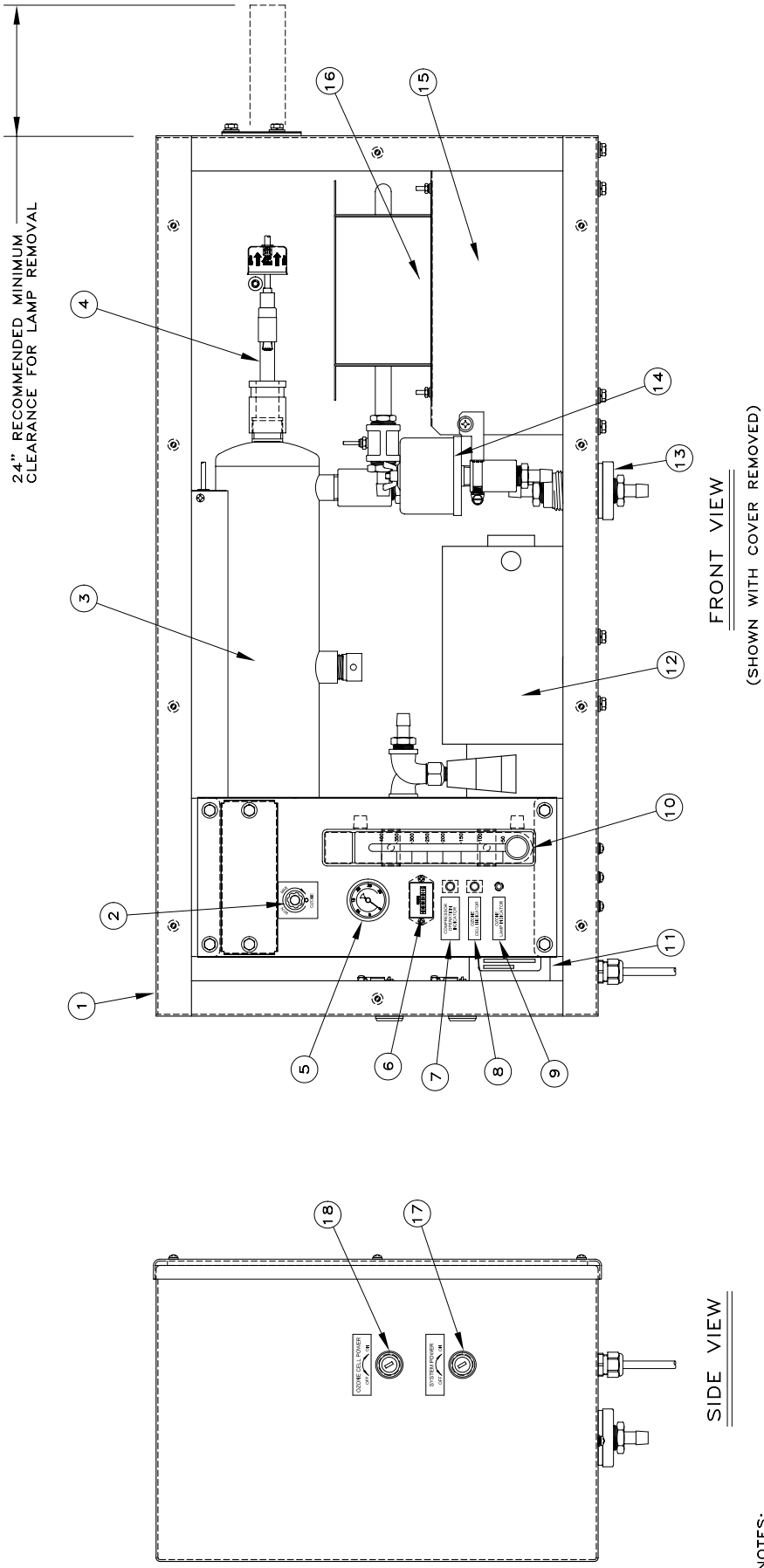
ECO-LOGIC MODEL #	PUMP MODEL #	PUMP VOLTAGE (REF)	REPLACEMENT VANE KIT #	QTY REQ'D
4	401172	118 VOLTS, 50/60HZ	400015	1
4	401315	220 VOLTS, 50HZ	400015	1
10	401173	118/230 VOLTS, 60HZ	400016	1
10	401314	220 VOLTS, 50HZ	400016	1

NOTES:

- 1) THE VANES INSTALLED IN THESE PUMPS ARE MADE FROM CARBON, HANDLE WITH CARE AND AVOID CHIPPING OR DAMAGING THE EDGES.
- 2) BE ABSOLUTELY CERTAIN TO INSTALL VANES IN PROPER ORIENTATION RELATED TO MOTOR ROTATION.
- 3) CLEAN ALL PREFILTERS AND THE PUMP CHAMBER WHEN REPLACING THE PUMP VANES.



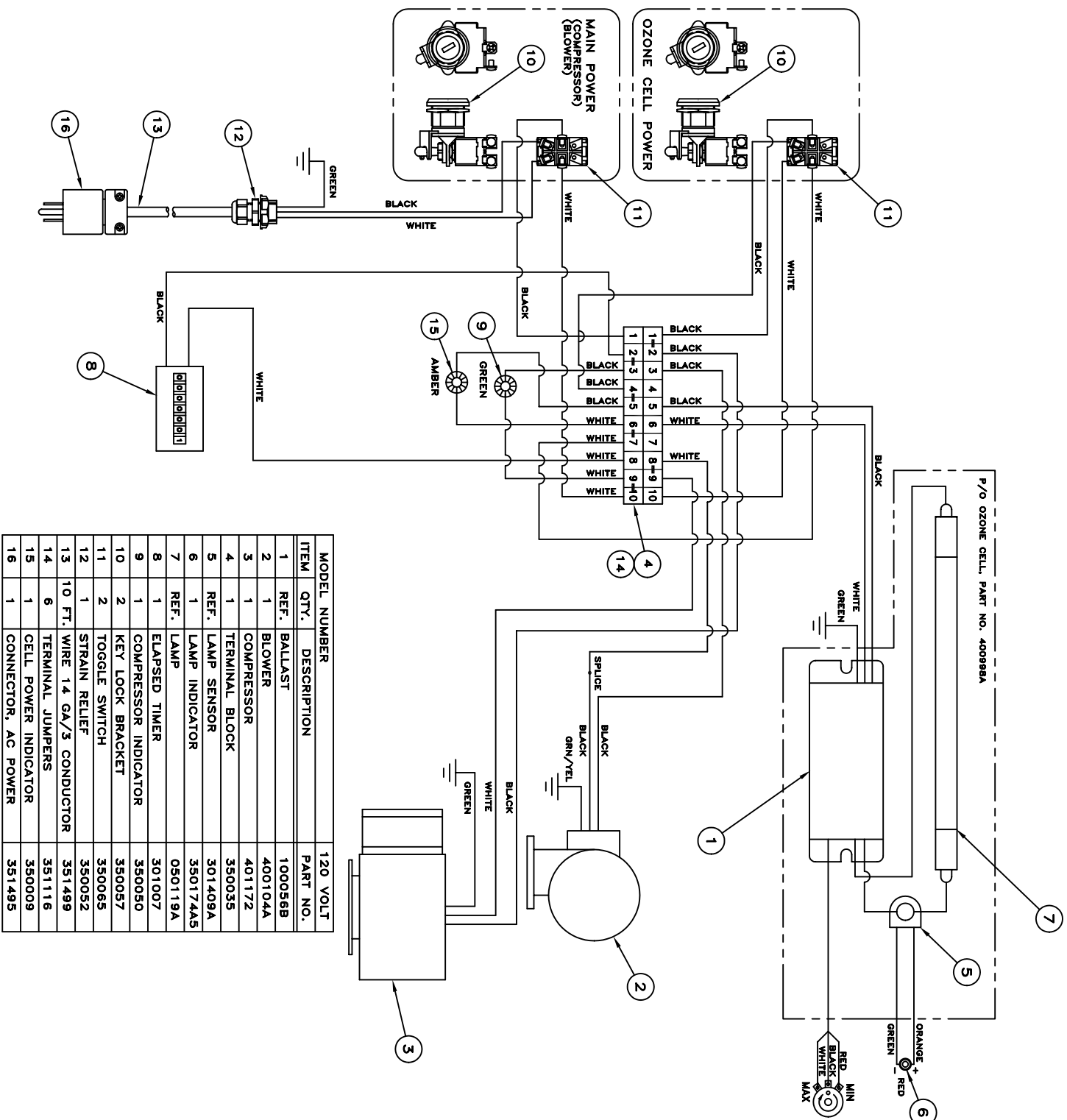
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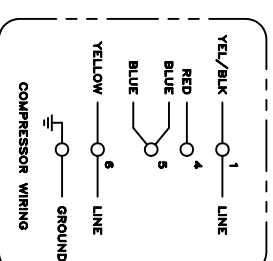
- NOTES:
- A) ENCLOSURE AND COVER ARE CONSTRUCTED OF STAINLESS STEEL TYPE 304. COVER IS SECURED TO ENCLOSURE WITH #8-32 SCREWS. TAMPERPROOF SCREWS ARE AVAILABLE AS AN OPTION.
 - B) UNIT UTILIZES (1) GERMICIDAL OZONE PRODUCING LAMP, INSTANT START, WITH A RATED EFFECTIVE LIFE OF 10,000 HOURS.
 - C) UNIT EMPLOYS KEY LOCK SWITCHES TO INSURE TAMPERPROOF OPERATION FOR EITHER AERATION ALONE OR AERATION WITH OZONE.
 - D) ELAPSED TIME INDICATOR PROVIDES A VISUAL INDICATION IN HOURS OF TIME THAT UNIT IS IN SERVICE.
 - E) CONTINUOUS DUTY COMPRESSOR PRODUCES UP TO 4 CUBIC FEET PER MINUTE OF AIR FLOW.
 - F) A DIMMABLE ELECTRONIC BALLAST IS USED TO CONTROL THE INTENSITY OF THE OZONE LAMP, IF REDUCED OZONE OUTPUT IS REQUIRED.
 - G) PERMANENT, WASHABLE, ELECTROSTATIC AIR FILTER PREVENTS PARTICULATE MATTER FROM ENTERING INTO INTERIOR OF UNIT.
 - H) UNIT IS CONSTRUCTED WITH (4)-5/16" MOUNTING HOLES ON REAR WALL OF ENCLOSURE FOR WALL MOUNTING. AN OPTIONAL FLOOR MOUNTING BRACKET IS ALSO AVAILABLE FROM THE FACTORY. (PN# 401181A)

ITEM #	DESCRIPTION	PART NO.
1	ENCLOSURE (STAINLESS STEEL)	401141A
2	DIMMABLE BALLAST CONTROL	100056B
3	OZONE CELL (STAINLESS STEEL)	400998A
4	OZONE LAMP	050119A
5	PRESSURE GAUGE	271466
6	ELAPSED TIME INDICATOR	301004
7	COMPRESSOR INDICATOR (GREEN)	350050
8	OZONE CELL INDICATOR (AMBER)	350009
9	OZONE LAMP INDICATOR (RED)	301402
10	OZONE FLOW METER	271503
11	SYSTEM COOLING BLOWER	400104A
12	COMPRESSOR	401172
13	3/4" FEMALE NPT OUTLET PORT	271487
14	COMPRESSOR AIR INTAKE FILTER	270030
15	PERMANENT WASHABLE AIR FILTER	401264A
16	HEAT EXCHANGER	271504
17	SYSTEM POWER KEY LOCK SWITCH	350065
18	OZONE CELL KEY LOCK SWITCH	350065

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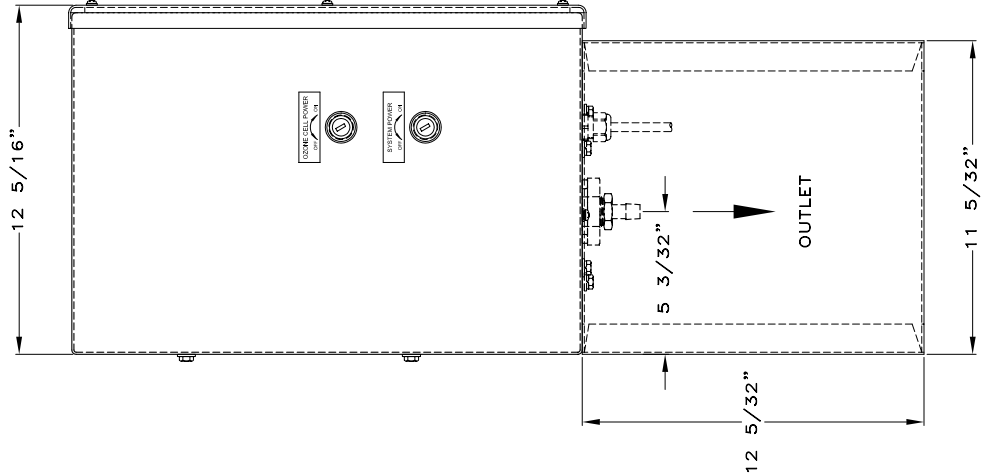


MODEL NUMBER			120 VOLT
ITEM	QTY.	DESCRIPTION	PART NO.
1	REF.	BALLAST	1000568
2	1	BLOWER	400104A
3	1	COMPRESSOR	401172
4	1	TERMINAL BLOCK	350035
5	REF.	LAMP SENSOR	301409A
6	1	LAMP INDICATOR	350174A&B
7	REF.	LAMP	050119A
8	1	ELAPSED TIMER	301007
9	1	COMPRESSOR INDICATOR	350050
10	2	KEY LOCK BRACKET	350057
11	2	TOGGLE SWITCH	350065
12	1	STRAIN RELIEF	350052
13	10 FT.	WIRE 14 GA./3 CONDUCTOR	351499
14	6	TERMINAL JUMPERS	351116
15	1	CELL POWER INDICATOR	350009
16	1	CONNECTOR, AC POWER	351495

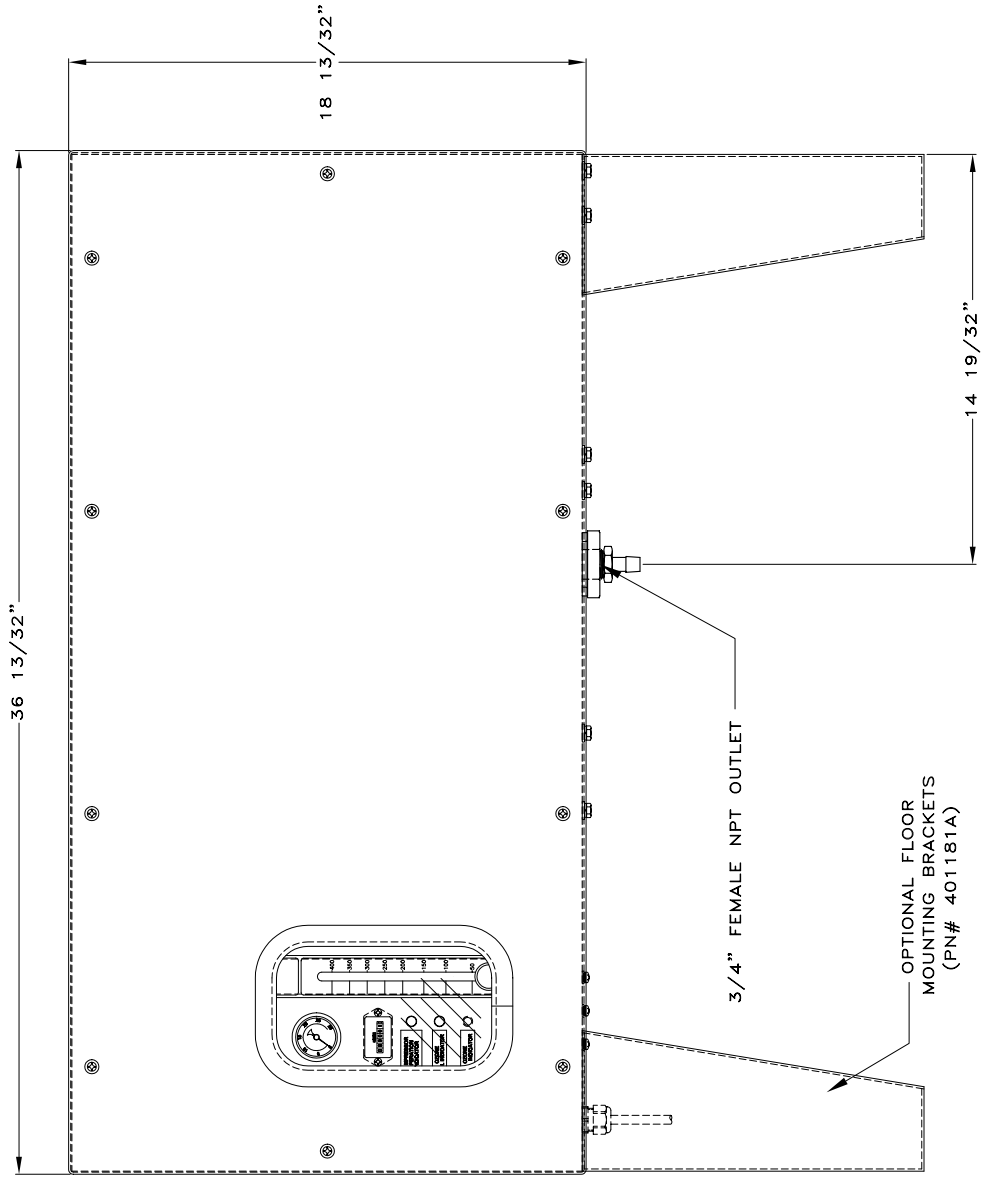


DRAWING NO: 401176A TITLE: ECO-LOGIC OZONE GENERATOR MODEL 4 DIMENSIONAL DATA

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SIDE VIEW



FRONT VIEW

NOTES:

- 1) UNIT IS CONSTRUCTED WITH (4) 5/16" DIA. HOLES ON REAR WALL OF ENCLOSURE FOR WALL MOUNTING. (HOLE PATTERN MEASURES 24" WIDE X 8" HIGH)



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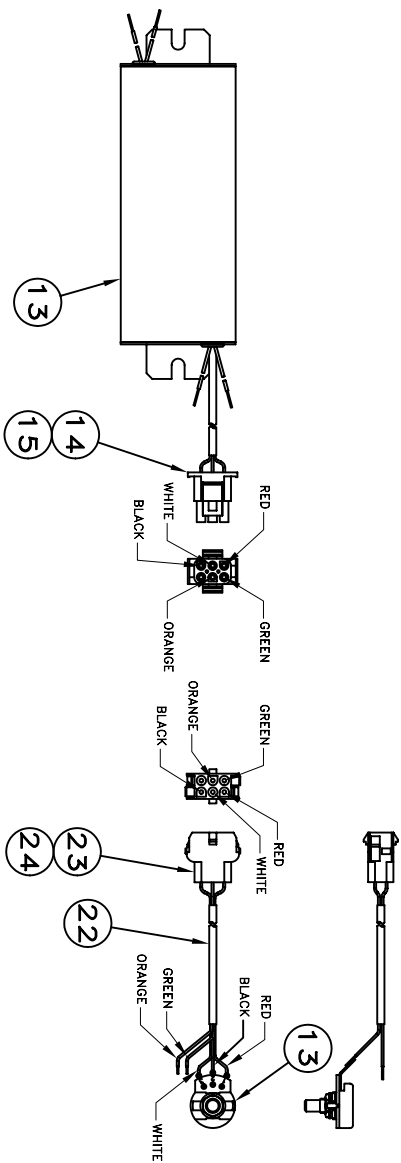
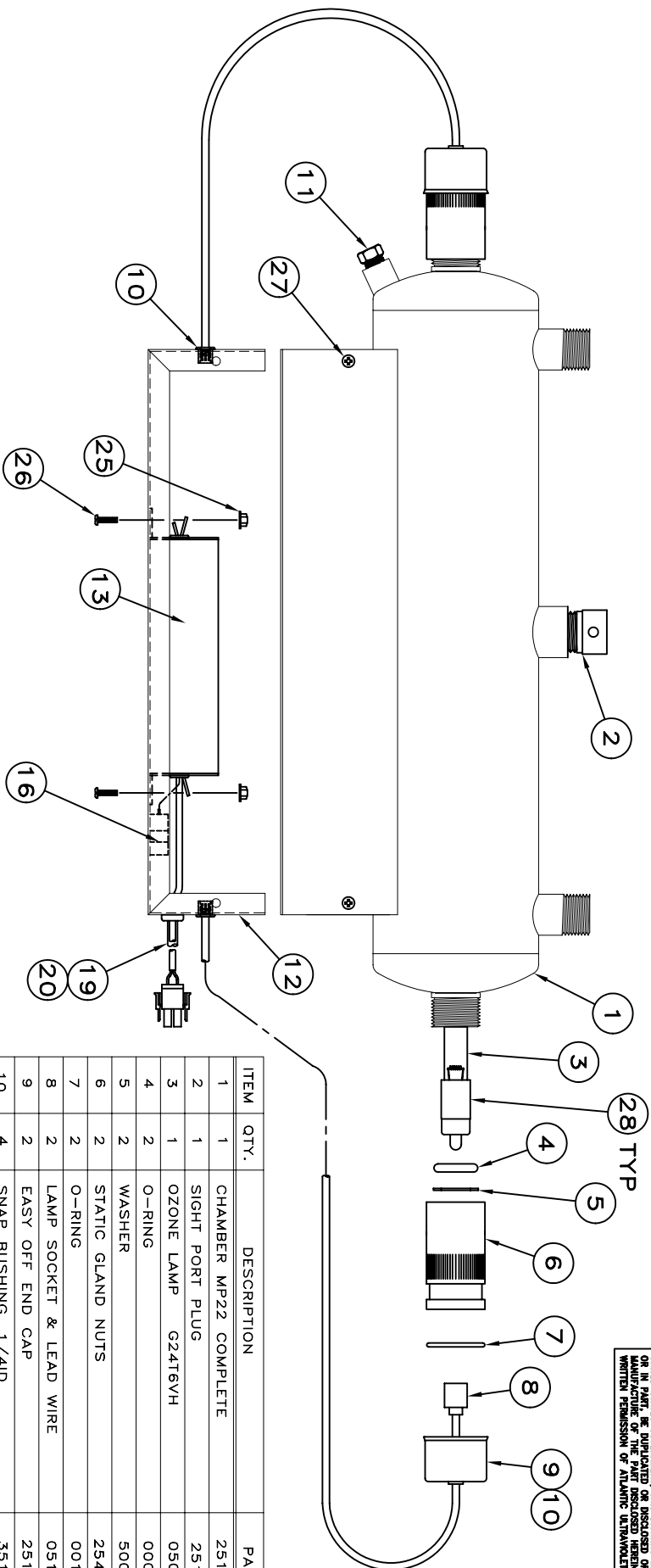
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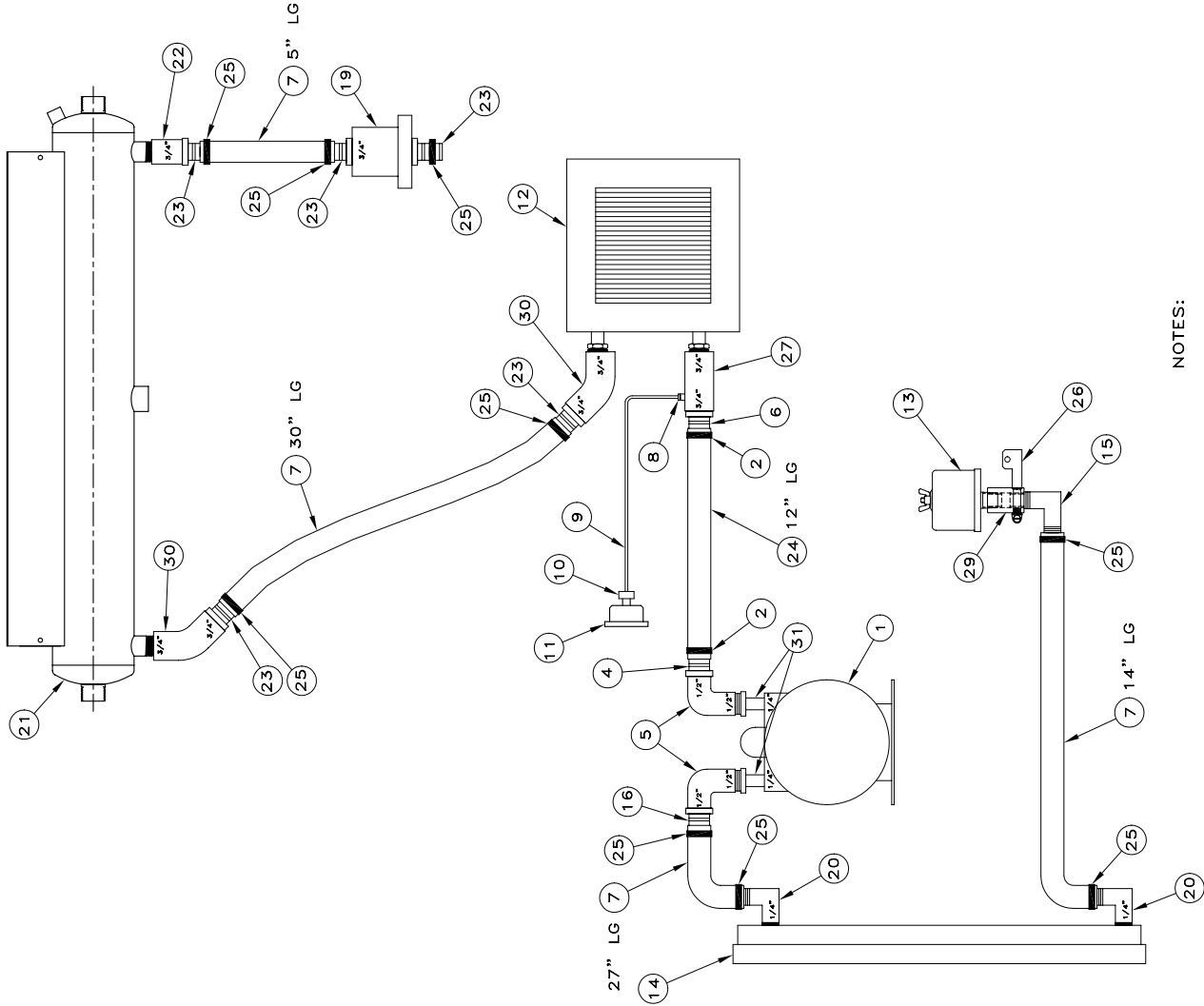


ITEM	QTY.	DESCRIPTION	PART NO.
1	1	CHAMBER MP22 COMPLETE	251465D3
2	1	SIGHT PORT PLUG	251237A
3	1	OZONE LAMP G246VH	050119A
4	2	O-RING	000037B
5	2	WASHER	500999
6	2	STATIC GLAND NUTS	254039A
7	2	O-RING	001108B
8	2	LAMP SOCKET & LEAD WIRE	051218A1
9	2	EASY OFF END CAP	251499A1
10	4	SNAP BUSHING, 1/4ID	351341
11	1	DRAIN PLUG	271216
12	1	BALLAST HOUSING	251544B1
13	1	BALLAST	100056B
14	1	CONNECTOR, PLUG, 6 PIN	351739
15	5	CONNECTOR, CONTACT, PIN	351741
16	1	LAMP SENSOR	301409A
17			
18	5	WIRE NUT, GRAY	351337
19	1	LINE CORD & PLUG	351100
20	1	STRAIN RELIEF	351043
21	4	WIRE NUT, BLUE	351336
22	4.2'	WIRE, CABLE, 5 COND, 22AWG	350023
23	1	CONNECTOR, SOCKET 6 POS	351740
24	5	CONNECTOR, CONTACT, SOCKET	351742
25	2	BALLAST NUT	501314
26	2	BALLAST SCREW	501325
27	4	BALLAST HOUSING SCREW	501323
28	7/8"	TAPE: ALUMINUM FOIL, 1" WIDE	001319

NOTES:
1. SEE DRAWING 411149A FOR UNIT WIRING INFORMATION.

DETAIL A
MODIFICATIONS TO BALLAST, 100056B

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ITEM	QTY.	DESCRIPTION	PN#
1	1	1/3 HP ROTARY VANE COMPRESSOR	40135 OR 401172
2	2	HOSE CLAMP / STAINLESS STEEL (7/8" TO 1 1/4" DIA.)	271530
3	-	-	-
4	1	TUBE FITTING 3/4" ID TUBE BARB TO 1/2" NPT KYNAR	271520
5	2	ELBOW: 1/2" NPT BRASS STREET ELBOW 90 DEGREE	271450
6	1	3/4" NPT TO 3/4" TUBE BARBED FITTING / KYNAR	271517
7	76"	1/2 I.D. BRAIDED SILICONE TUBING	271533
8	1	1/8" MALE NPT TO 1/8" O.D. TUBE QUICK LOCK FITTING (BRASS)	551214
9	18"	1/8" O.D. TUBING (POLYETHYLENE)	551211
10	1	1/8" FEMALE NPT TO 1/8" O.D. TUBE QUICK LOCK FITTING (BRASS)	271479
11	1	0-30 PSI PRESURE GAUGE	271466
12	1	HEATCOIL / 6" X 6" COOLING AREA / COPPER	271504
13	1	INTAKE FILTER	270030
14	1	FLOW METER / 0-400 SCFH / 1/4" NPT PORTS / (SST. & LEXAN)	271503
15	1	1/2" TUBE TO 1/2" NPT ELBOW / KYNAR	271544
16	1	1/2" NPT TO 1/2" TUBE BARBED FITTING / KYNAR	271510
17	-	-	-
18	-	-	-
19	1	3/4" BULK HEAD FITTING (PVC)	271487
20	2	1/4 NPT TO 1/2" TUBE BARBED 90° ELBOW	271511
21	1	OZONE CELL / MP22	40098A OR 40098A
22	1	3/4" NPT PIPE COUPLING (PVC)	271485
23	5	3/4" NPT TO 1/2" TUBE ADAPTOR / KYNAR	271539
24	12"	3/4" ID. X 1-1/16" OD. SBR BLACK RUBBER HOSE	271529
25	8	HOSE CLAMP / STAINLESS STEEL (5/8" TO 1" DIA.)	271542
26	1	INTAKE FILTER BRACKET ASSEMBLY	401204A
27	1	3/4" NPT PIPE COUPLING (BRASS) WITH 1/8" NPT SIDE PORT	271453A
28	-	-	-
29	1	1/2" NPT PIPE COUPLING (PVC)	271477
30	2	3/4" NPT 45° ELBOW (PVC)	271492
31	2	1/2" FEMALE NPT TO 1/4" MALE NPT ADAPTER (BRASS)	270042

NOTES:

- 1) USE PIPE SEALANT PN# 271535 ON THREADED ENDS OF EACH FITTING USED.
- 2) COMPRESSOR 401315 IS USE ON APPLICATION REQUIRING 110/220/240/50/1 VOLTAGES AND COMPRESSOR 401172 IS USED ON APPLICATIONS REQUIRING 115/60/50/1 VOLTAGES.

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