

# SALCOR INC.

P.O. BOX 1090, FALLBROOK, CA 92088

PHONE: 760 731 0745      FAX: 760 731 2405

## SPECIFICATIONS FOR THE SALCOR MODEL 3G UV WASTEWATER DISINFECTION UNIT

### 1.0 DESCRIPTION

The Salcor 3G disinfection chamber couples directly to the aerobic plant discharge pipe and is permanently installed below grade. The design details of the Salcor 3G unit are shown in section 4.0.

The ultraviolet light source for disinfection is mounted in a sub-assembly which can be inserted or removed through the top of the riser pipe for periodic servicing. The light source is mounted in the center of an anodized aluminum frame which divides the disinfection chamber in half. The frame seals against the inner surface of the disinfection chamber to prevent flow bypass.

When fully inserted, the disinfection sub-assembly is properly located by two pins mounted near the top of the disinfection chamber. The disinfection sub-assembly causes the wastewater entering one side of the unit to flow vertically downward, make a 180 degree turn, and then flow vertically upward and out the other side of the unit. This well-defined flow path is designed to give the fluid proper exposure time and no short circuiting.

The ultraviolet light source is surrounded by a clear fused quartz tube to control the lamp surface temperature. A clear Teflon™ film covers the quartz tube to minimize surface fouling. This design feature incorporates the beneficial attributes of both quartz and Teflon™.

When the disinfection chamber is filled with water, the ultraviolet light source can operate continuously, whether or not water is flowing. Continuous operation with a lamp surface temperature range of between 105 and 120 degrees Fahrenheit provides optimum ultraviolet light output and long lamp life.

The Salcor Model 3G alarm relay circuit triggers an external alarm to warn the user when the UV lamp is not operating properly.

Electronic components in the circuit sense changes in the UV lamp operation which correlate with the germicidal ultraviolet output. *The normally energized*

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*relay has contacts that allow actuation of an external alarm indicating low UV output or lamp outage.*

The alarm relay circuit has been designed to be compatible with a wide variety of alarms used on upstream aerobic treatment plants, and is compatible with either 120 VAC or DC power.

The disinfection sub-assembly, which may extend approximately one foot above grade, is water tight throughout its length, which protects the electrical connections inside the junction box from any fluid backup.

When the UV lamp is producing ultraviolet germicidal light at a safe level, a green LED indicator light, located on the outside of the electrical junction box, glows indicating proper UV lamp operation. The light stops glowing when the light output from the UV lamp falls below a safe level.

## **2.0 DESIGN PARAMETERS**

2.1 Flow Rate. Maximum flow at 3 gpm (4320 gpd) for waste water effluents for suspended solids less than 30 mg/liter and BODs less than 30 mg/liter.

Maximum flow rate of 6 gpm (8640 gpd) for waste water effluents of suspended solids less than 10 mg/liter and BODs less than 10 mg/liter.

2.2 Fecal coliform reduction at lamp end-of –life (2 years) greater than 99.9 percent.

2.3 Inlet and outlet pipe is 4 inch schedule 40 ABS.

2.4 Pressure drop is less than 0.5 inches of water at maximum flow rate.

2.5 Power use is 30 Watts.

2.6 Energy use is 0.72 kW-hr/day.

2.7 UV lamp is low pressure mercury, 90 percent of output at 253.7 nanometers. Minimum arc length is 30 inches, and the UV intensity is greater than 190 microwatts/cm<sup>2</sup> at one meter. The lamp life is greater than two years.

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2.8 UV dose is greater than 55 mj/cm (55,000 microwatt-seconds/cm<sup>2</sup>).

2.9 UV Lamp Ballast. Ninety Percent efficient, high frequency (50 kilohertz) with thermal link protection. Input Voltage, 120 VAC, 50 or 60 Hz. Input current, up to 0.5 amps.

## 3.0 THIRD PARTY TESTING

3.1 University of Rhode Island. George Loomis 1999 - 2005

- **FAST** Unit effluent
- Annual Service
- Lamp replacement every two years
- Geometric mean fecal coliform count 9.4/100 ml

3.2 Washington State Testing

- Advanced Treatment Unit & UV
- NSF Standard 40 & WA State Fecal Coliform Reduction Protocol
- Duration 26 weeks
- Seventeen tests have been completed.
- 3G UV Effluent Fecal Coliform ranged from 2 – 35 per 100 ml (Geometric Mean)
- Demonstrates that the 3 G UV unit operates reliably without maintenance over 6 months

3.3 Manufacturers Who Have Tested With the Salcor 3G Unit Using the Washington State Protocol

- Consolidated Treatment, Enviroguard .75.
- Consolidated Treatment, Multiflo.
- Consolidated Treatment, Nyadic.
- Delta Whitewater, DF 60.
- Delta Whitewater, Ecopod.
- Orenco, AX 20N.

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- Bio Microbics, Microfast 0.5.
- Quanics, ATS-CSAT-8-AC-C500.
- Hoot Aerobics.
- Jet Inc.
- Enviro Flo.
- Bord na Mona.
- Norweco – Singulair.
- AK Industries, Hydro Action.
- Aero Tech.
- Clearstream.
- Aqua Klear.

### **4.0 DRAWINGS**

# SALCOR UV DISINFECTION UNIT

ELECTRICAL JUNCTION  
BOX WITH INDICATOR  
AND ALARM CONTACTS

DISINFECTION  
SUB - ASSEMBLY

GROUND LEVEL

ABS  
SCHEDULE 40  
4" PIPE

26"  
(ADJUSTABLE  
AT INSTALLATION)

1" PVC PIPE  
HANDLE  
FOR  
REMOVAL

ABS  
SCHEDULE 40  
4" PIPE

ANODIZED  
ALUMINUM  
SUPPORT  
FRAME &  
GASKET

TREATMENT  
PLANT  
EFFLUENT

DISINFECTED  
EFFLUENT

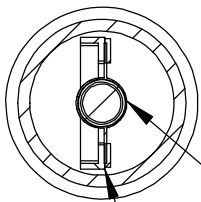
ABS  
SCHEDULE 40  
3" PIPE

UV LAMP,  
QUARTZ TUBE &  
TEFLON COVER

31.5"

A A

SECTION A-A



UV LAMP  
QUARTZ TUBE &  
TEFLON COVER

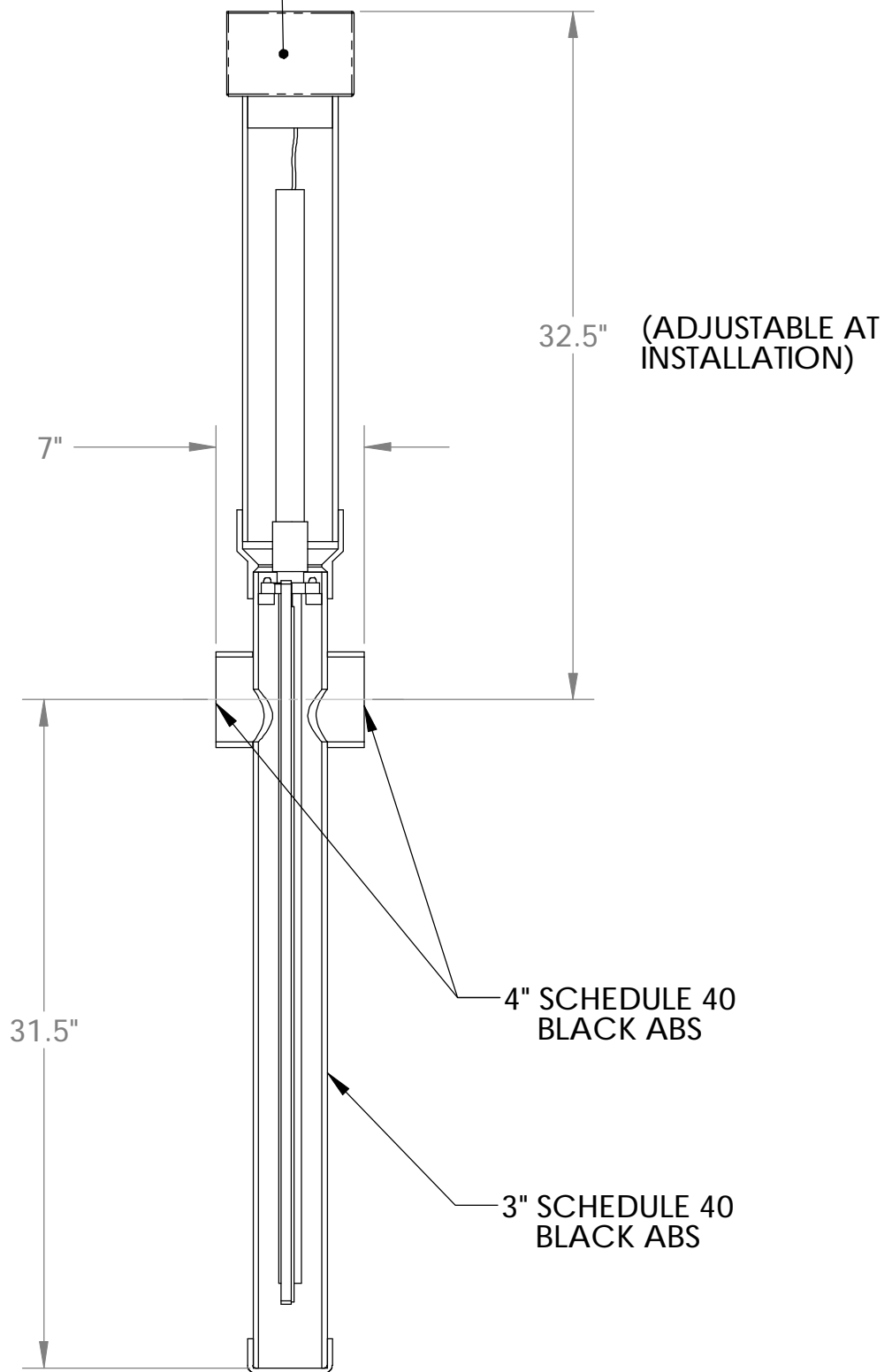
SUPPORT FRAME  
AND GASKET

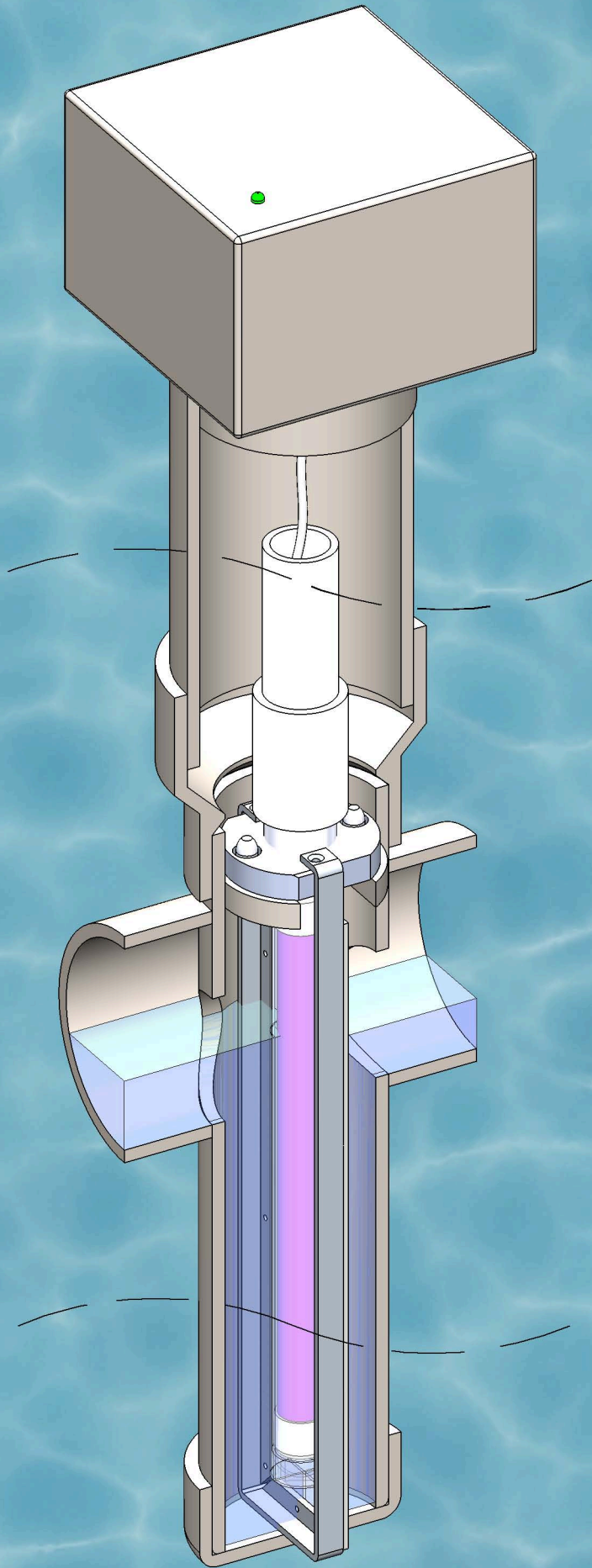
March 2010

NOTE: NOT ALL DIMENSIONS TO SCALE  
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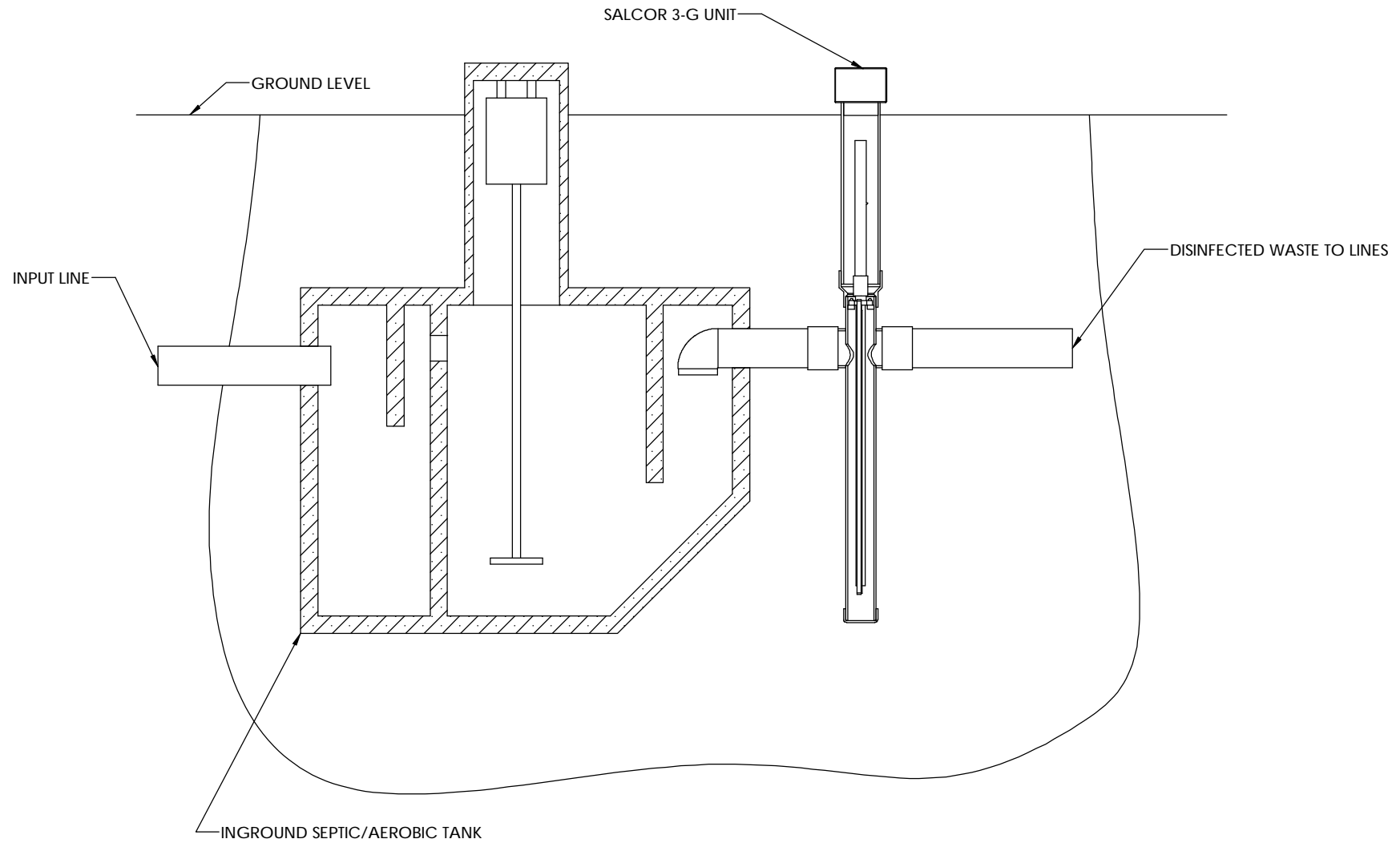
# SALCOR UV DISINFECTION UNIT

JUNCTION BOX: CONNECTION FOR  
120VAC LINE AND EXTERNAL ALARM



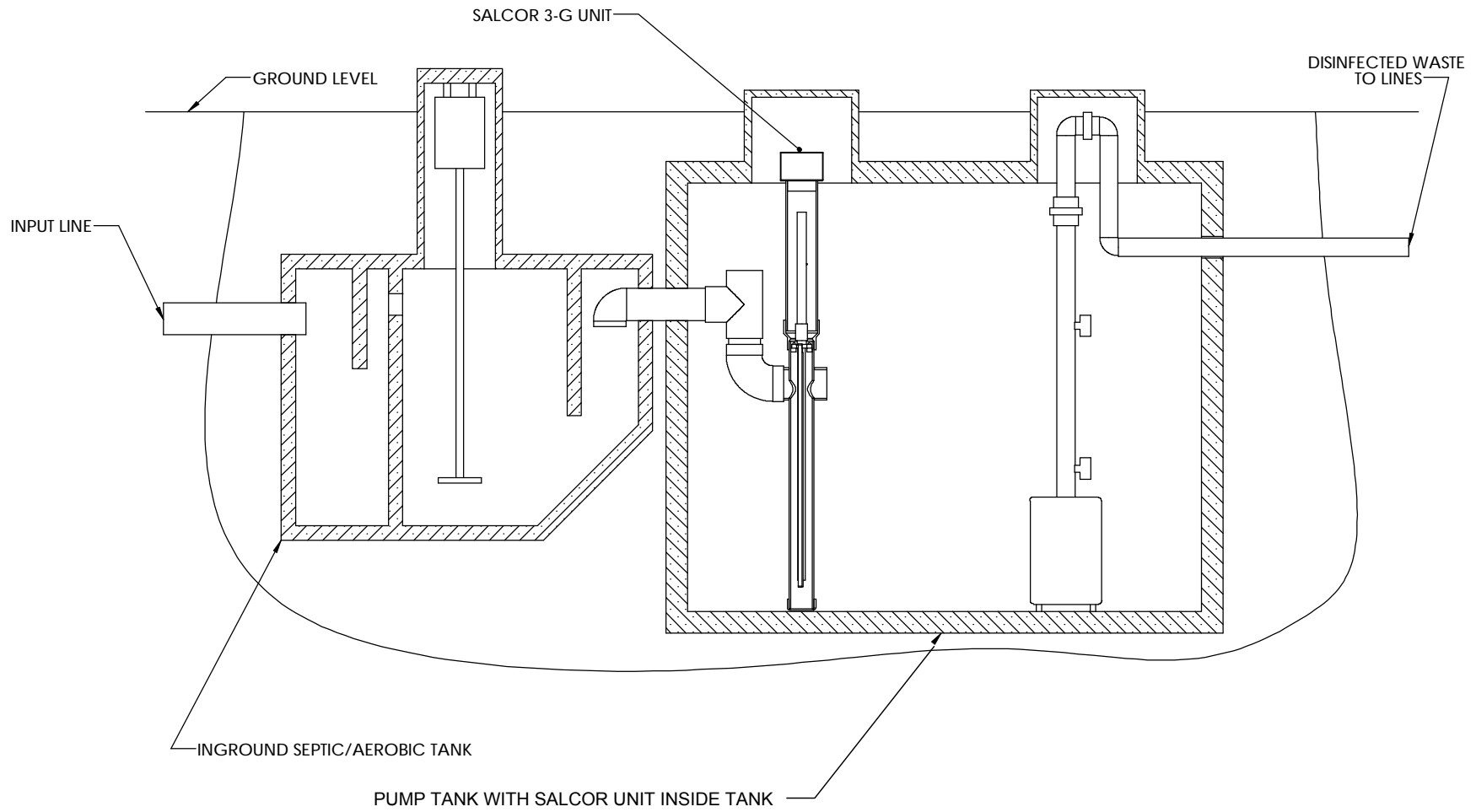


# In Ground Installation

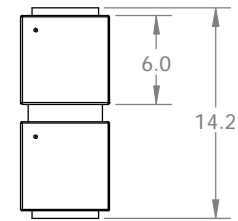
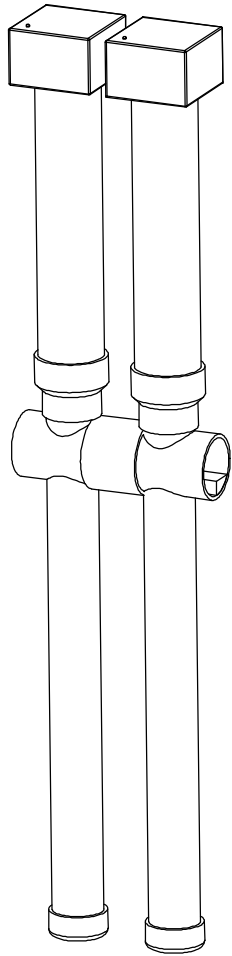




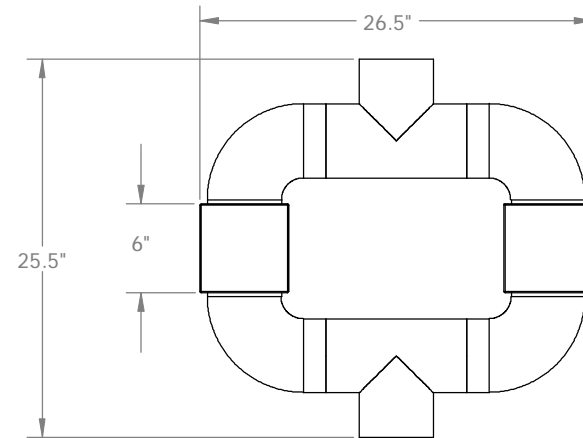
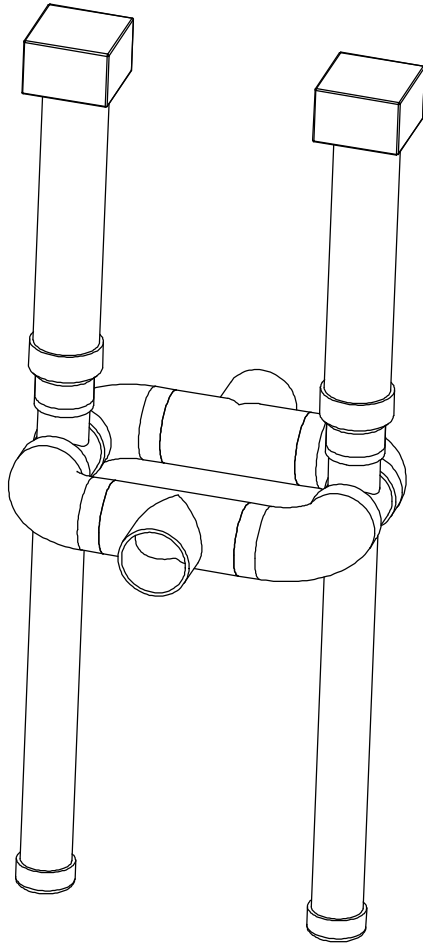
# In Tank Installation



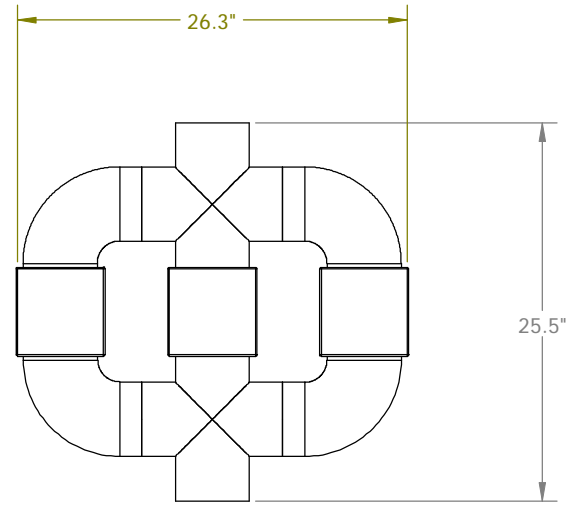
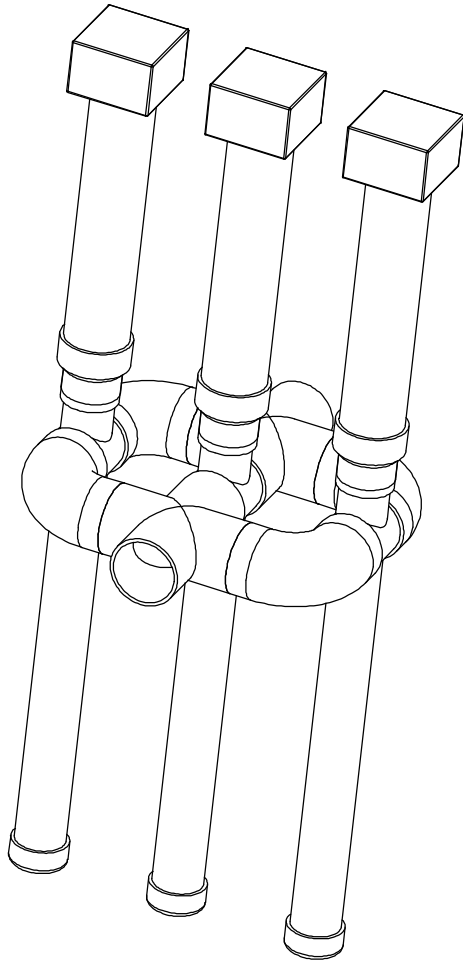
## 2 Units in Series



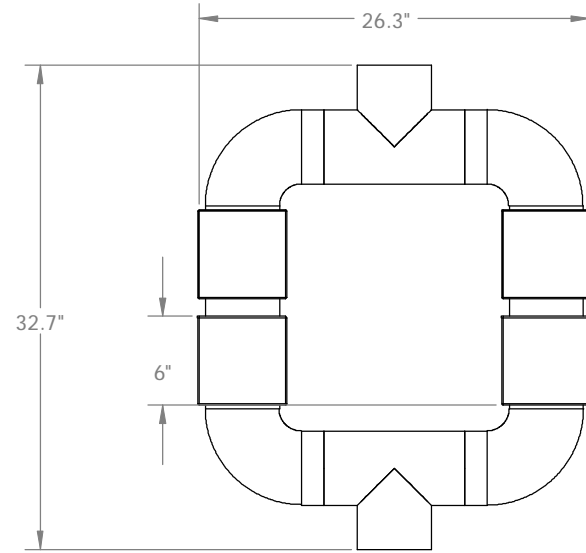
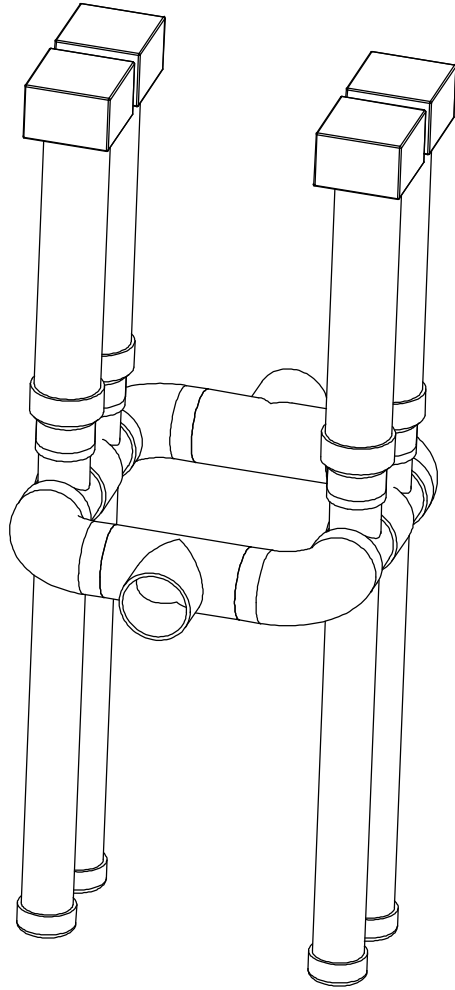
## 2 Units in Parallel



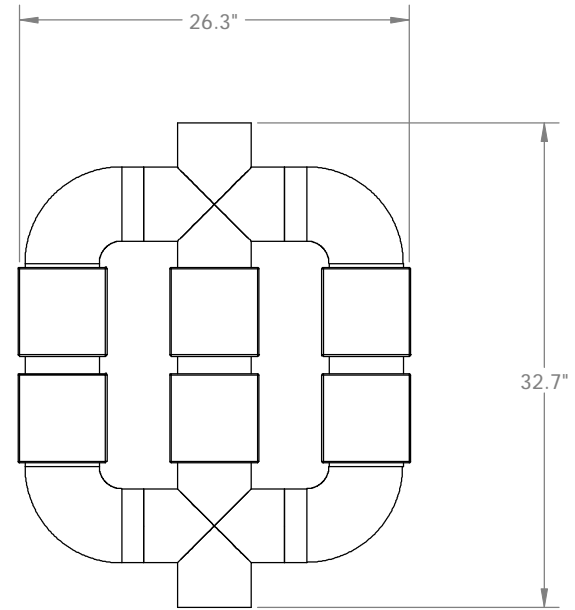
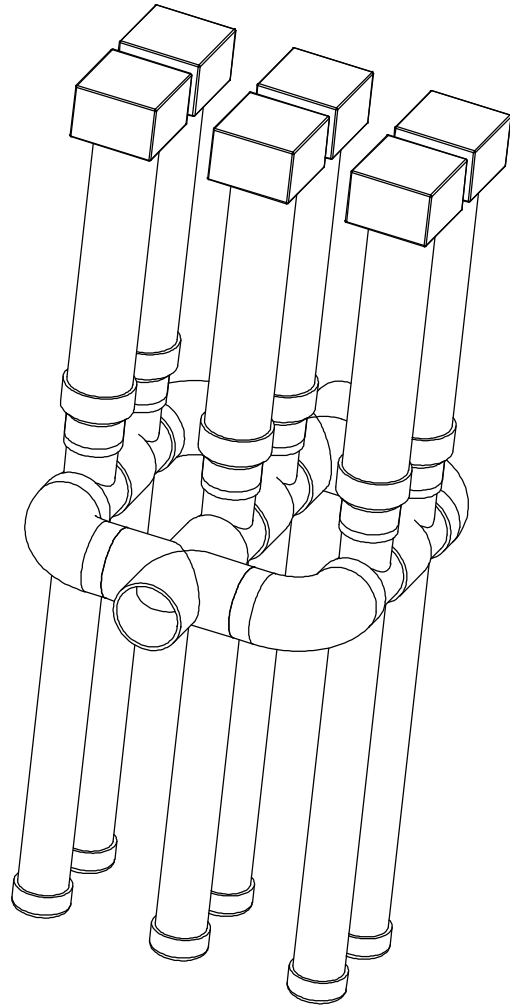
# 3 Units in Parallel



# 4 Units in Parallel & Series



# 6 Units in Parallel & Series



# 8 Units in Parallel & Series

