SS High Flow Air Stripper

Installation, Operation, & Maintenance Manual

Part # 16140073 REV 6/27/2019

Table of Contents

DOCUMENTATION CONVENTIONS

This uses the following conventions to present information:

An exclamation point icon indicates a **WARNING** of a situation or condition that could lead to personal injury or death. You should not proceed until you read and thoroughly understand the **WARNING** message.

WARNING

A raised hand icon indicates **CAUTION** information that relates to a situation or condition that could lead to equipment malfunction or damage. You should not proceed until you read and thoroughly understand the **CAUTION** message.

CAUTION

A note icon indicates **NOTE** information. Notes provide additional or supplementary information about an activity or concept.

NOTE

Section 1: SS High Flow Air Stripper Process

The SS High Flow Air Stripper Treatment Process

The purpose of air stripping is to remove dissolved volatiles from liquids. Such dissolved volatiles include radon and carbon dioxide removed from potable well water, volatile organic compounds (VOCs) removed from contaminated groundwater plumes, and VOCs removed from industrial process and wastewater treatment streams.

The stripping mechanism of the proprietary SS High Flow Air Stripper is dependent on the flow of an influent liquid through a long, narrow channel on a discrete number of trays while subject to a countercurrent flow of ambient air at a fixed flowrate.

The intense formation and rupture of billions of bubbles in the confined narrow path of water flowing counter-current to multiple fresh air vents is a dynamic process that provides a mass transfer mechanism that displaces the dissolved volatiles from the aqueous stream into the vapor stream.

The SS High Flow Air Stripper mechanism is a proprietary process protected under U.S. Patent # 5045,215 and 5,240,595.

The SS High Flow Air Stripper Basic System

SS High Flow Air Stripper systems are fabricated from 304L stainless steel, 316L stainless steel, or rotationally molded polyethylene, and are provided with components to facilitate the requirements of the process, including the following:

<u>Forced Draft Versus Induced Draft</u>

Forced Draft (F.D.) System: The blower is installed so that the air is fed under positive pressure into the stripper sump below the stripper trays. This arrangement is used when the maximum total blower discharge pressure (air stripper plus other downstream pressure losses) does not exceed 26” (56 cm) water column (w.c.) pressure for plastic strippers, or 32” (82cm) w.c. for stainless steel strippers.

Induced Draft (I.D.) System: The blower is installed such that it pulls air into the stripper sump, up through the trays, and into the blower inlet, thus subjecting the stripper interior to a slight vacuum. Removal efficiency is not changed by this arrangement. The blower is therefore sized to provide the pressure drop required for the SS High Flow Air Stripper, plus the pressure drop required by downstream off gas treatment devices.

<u>High Water Flow Versus Low Water Flow</u>

Due to increased froth heights on the trays at higher flowrates, two water flow ranges are considered in the design of the basic system, Low Flow and High Flow. The high flow system requires a blower that produces an additional 4” (10.2 cm) w.c. pressure drop across the stripper as compared to the low flow system blower. The Low and High water flow ranges for each SS High Flow Air Stripper series are listed in Table 1-1 below:

SS High Flow Air Stripper Series	Low Water Flow Range	High Water Flow Range
1300P	0.5 - 15 gpm	N/A
1300	0.5 - 15 gpm	16 - 22.5 gpm
2300P	1 – 30 gpm	31 - 50 gpm
2300	1 - 30 gpm	31 - 45 gpm
2600	2 - 60 gpm	61 - 115 gpm
3600	3 - 90 gpm	91 - 160 gpm
31200	4 - 150 gpm	151 - 425 gpm
41200	6 - 200 gpm	201 - 550 gpm
61200	12 - 350 gpm	351 - 1000 gpm
81200	16 - 540 gpm	541-1300 gpm

Table 1-1: Low and High Water Flow Ranges for SS High Flow Air Stripper Series

Basic System Components

Components information sheets ("cut sheets") can be found in *Section 5: Components List, Drawings, & Cutsheets.*

Blower

The blower supplied with the SS High Flow Air Stripper unit is typically type B spark resistant with a cast aluminum wheel, direct driven @ 3450 rpm, with motor options of Totally Enclosed Fan Cooled (TEFC) or Explosion Proof (EXP), as determined by the power available and electrical code classification of the site.

Each blower is selected to provide air flow that exceeds the minimum standard cubic feet per minute (SCFM) air flow required at the required working pressure (inches of w.c.) of the system. It is important that the blower damper be set to provide the unit with the required fresh air flow.

It is also important that water not enter the blower housing while the blower is in operation; this will damage the blower and void the warranty. During normal operation, the high water level alarm switch prevents this from happening. Confirm that this switch is installed properly.

The installed motor horsepower is selected to provide an operating range with a significant safety margin. However, there is the potential for the blower motor to overload if it is not working against sufficient pressure drop. Therefore, the blower must be protected with a thermal overload switch.

The blower damper should be set so that the blower produces the minimum stripper air flow requirement (see Table 1-2 below), and at the same time the motor does not exceed its nameplate amperage maximum.

Air Flow Damper

The stripper blower is fitted with an adjustable damper, used to make air flow rate (SCFM) adjustments to the stripper. Open the damper to increase air flow rate, and close the damper to decrease air flow rate. Note that air pressure may vary as the air flow rate is changed. To get an accurate air flow measurement, install an air flow meter in the air duct.

If air flow meter installation is not possible, an estimated air flow can be obtained by measuring the stripper pressure drop. At initial start-up, adjust the damper until the air pressure is at the minimum required for the system. (Refer to the pressure gauge description for minimum pressure readings).

Be aware that when making damper adjustments after the system has been operating, fouling may occur in the system, which may reduce the air flow rate and may increase the air pressure reading.

Table 1-2 gives the minimum and maximum airflow rate for each SS High Flow Air Stripper series:

SS High Flow Air Stripper Series	Air Flow Minimum	Air Flow Maximum
1300 & 1300P	150 SCFM (255 m3/hr)	180 SCFM (305 m3/hr)
2300 & 2300P	300 SCFM (510 m3/hr)	360 SCFM (610 m3/hr)
2600	600 SCFM (1020 m3/hr)	720 SCFM (1220 m3/hr)
3600	900 SCFM (1530m3hr)	1080 SCFM (1830 m3/hr)
31200	1800 SCFM (3060 m3/hr)	2160 SCFM (3670 m3/hr)
41200	2400 SCFM (4080 m3/hr)	2880 SCFM (4900 m3/hr)
61200	3600 SCFM (6120 m3/hr)	4320 SCFM (7340 m3/hr)
81200	4800 SCFM (8155 m3/hr)	5760 SCFM (9785 m3/hr)

Table 1-2: Min and Max Airflow Rate for SS High Flow Air Stripper series

Mist Eliminator

A wire mesh mist eliminator is installed beneath the air exhaust port, located on the top cover of the SS High Flow Air Stripper. The purpose of the mist eliminator is to remove water droplets that would have blown through the vent line. It is possible, though unlikely, that the mist eliminator may become plugged or fouled. If this occurs, the mist eliminator is easily removed for cleaning. Disconnect the vent line, take off the top cover, and remove the retaining plates on the bottom of the cover. The mist eliminator can be cleaned with a pressure washer, or replaced with a new one.

Gasket

A black nitrile (or neoprene on the 2300-P) sponge is used to form an airtight/watertight seal between the sump tank, cover, and stripper trays. A replacement gasket can be glued to the sealing flange using an industrial contact adhesive. Please contact Geotech prior to making any gasket repairs or adjustments.

Sight Tube

The sight tube provides a means of visually monitoring the water level in the sump tank. Make sure the valve to the sight tube is open during stripper operation.

Inlet Dip Tube / Spray Nozzle

An inlet spray nozzle is only installed upon request. The dip tube directs the influent water to the top tray inlet chamber.

System performance is based on SS High Flow Air Stripper operation without a nozzle, and the performance warranty is valid whether a nozzle is installed or not.

SS High Flow Air Stripper Accessory Options

SS High Flow Air Stripper System Options

SS High Flow Air Strippers are custom built to meet site and project specifications. Please refer to *Section 5: Components List, Drawings, & Cutsheets* to see which options were selected for this system.

Air Blower Silencer

An air blower silencer can reduce the noise level of the blower. The size of the silencer and the type of connection used to mount it are dictated by the size of the blower, and whether the silencer is mounted horizontally or vertically. Silencers should be supported to avoid over-stressing the connections, and should be secured if exposed to high wind loads.

Air Flow Meter

An air flow meter measures the amount of air flowing through the system. It consists of a pitot tube mounted in the air duct and connected via two (2) lengths of tubing to a differential pressure gauge. The measured velocity pressure can be converted to an airflow velocity. The pitot tube must be located at least 8 1/2 pipe diameters downstream of any pipe fitting or transition, and at least 1 1/2 diameters of straight pipe upstream of the end of the duct or any elbow. The best pitot tube location is before the stripper because the air is less humid and the gauge tubing is less likely to fill with condensate.

The air flow meter typically gives readings in inches of water column, (w.c.), which is converted to feet per minute (FPM) using the provided chart or the gauge scale calibrated for the specific duct inside diameter. As stated in the damper section, the air flow meter in conjunction with the pressure gauge provides the most accurate damper adjustments, especially after initial start-up.

Table 1-3 lists the minimum vapor exhaust duct diameters.

Stripper Series	Minimum Exhaust Duct Diameter
1300	6 “Ø (16 cm)
2300	6 “Ø (16 cm)
2600	8 “Ø (20 cm)
3600	10 “Ø (25 cm)
31200	16 “Ø (40cm)
41200	18 “Ø (45cm)
61200	18 “Ø (45cm)
81200	18 “Ø (45cm)

Table 1-3: Minimum Exhaust Duct Diameter

Restricted airflow is the most common cause of poor removal efficiencies. An airflow meter is highly recommended to help ensure adequate air flow.

Air Pressure Gauge

The air pressure gauge reads the pressure differential across the stripper trays in inches of water column (w.c.). The gauge is connected to the system via tubing that attaches to a pressure port on the system. Instructions to connect the gauge for the types of systems are as follows:

Forced Draft System

Using tubing, connect the “High” pressure port on the gauge to the 1/8”Ø (3mm) shutoff valve/hose barb located on the air stripper sump. The “Low” pressure port on the gauge is left open to the atmosphere. The highest pressure drop is between the sump tank and the surrounding atmosphere.

Induced Draft System

Using tubing, connect the “Low” pressure port on the gauge to the hose barb located on the exhaust vent line on the air stripper. The “High” pressure port on the gauge is left open to the atmosphere. The highest pressure drop (vacuum) is between the cover exhaust and the surrounding atmosphere.

There are two pairs of pressure ports on the gauge, one pair for side entry, the other pair for rear entry. One pair should be used to measure the differential pressure, and the other unused pair must be sealed with a plug.

At initial start-up, the pressure gauge can be used to measure blower damper adjustments. Adjustments should be made according to the following nominal differential air pressure table:

Nominal Differential Air Pressure

Number of trays	Low Water Flow Sys	High Water Flow System
1 tray system	4-6 in. w.c. (10-15 cm.)	7-10 in. w.c. (18-25 cm.)
2 tray system	7-10 in. w.c. (18-25 cm.)	11-14 in. w.c. (28-36 cm.)
3 tray system	11-14 in. w.c. (28-36 cm.)	16-18 in. w.c. (40-46 cm.)
4 tray system	16-18 in. w.c.(40-46 cm.)	20-22 in. w.c. (50-56 cm.)
5 tray system	20-22 in. w.c. (50-56 cm.)	24-26 in. w.c. (60-66 cm.)
6 tray system	24-26 in. w.c. (60-66 cm.)	28-30 in. w.c. (71-76 cm.)

Table 1-4: Nominal Differential Air Pressure

The nominal differential pressures shown are for the air stripper pressure drop only, and do not include additional air stream equipment pressure requirements.

After initial start-up, fouling may occur in the system, which may increase the nominal air pressure reading, and may decrease the airflow rate.

Control Panel

The control panel serves two basic functions for operation of the system. The first is to provide the necessary starting and circuit protection components for each motor load, consistent with NEC electrical code. These components include fuses, circuit breakers, motor starter contactors, overload relays, and lock-out/tag-out (LOTO) features.

The second function is to provide process control and alarm status/interlock components. Alarm circuit monitors several conditions, most basically the low air pressure alarm switch and the high water level alarm switch. If either of these alarms occurs, the alarm interlock will provide shut off signal to the incoming water source (feed or well pumps), if the appropriate interconnects have been made. Other alarm options are also available.

Control Panel: Intrinsically-Safe (I.S.) Components

SS High Flow Air Stripper systems that operate in or near potentially explosive concentrations of vapors will require special hardware to meet code requirements for power wiring and for instrument and switch connections. In such cases, intrinsically safe (I.S.) isolation of signals to and from switches and instruments is employed to limit the energy to a level lower than the energy required to generate a spark. Typical components that need I.S. protected signals are float switches and well probes. Determination of when I.S. signals are required is the responsibility of the design engineer with knowledge of the site-specific code requirements.

Digital Water Flow Indicator/Totalizer

Water flow meters with totalization are often supplied as part of the SS High Flow Air Stripper. Available in several designs and sizes, flowmeters are typically installed in the water feed piping to the stripper, and usually provide a local readout of flowrate (gpm) and the totalized flow (gallons). Refer to the components list insert *Section 5: Components List, Drawings, & Cutsheets* to see which flowmeter was provided with this system.

Flowmeters are sensitive mechanisms that require proper care and maintenance for reliable service. It is prudent to install a strainer or bag filter upstream of the flowmeter to protect it from mechanical damage from debris in the pipeline. If the strainer and/or flowmeter become plugged, disassemble and clean in accordance with the manufacturer's instructions.

Feed and Discharge Pumps

If pump(s) are included by Geotech as part of your system, they have been selected to meet the required flow and pressure requirements. The pumps are typically end suction, flooded inlet, direct coupled, centrifugal pumps, with either EXP or TEFC motors. The pumps are not self- priming. Prior to initial start-up, the pumps must be primed by filling the pump impeller housing with clean water. Throttling valves are typically installed on the effluent pump discharge. If the pump is running wide open and it is not pumping against the required head, the pump may cavitate. This is the nature of centrifugal pumps; they must be throttled back if they are not pumping against the required head. The valve should be throttled until the motor amperage is less than the nameplate motor amps rating.

Before system start-up, it is important to check for proper rotation of the impeller. A pump rotating in the wrong direction could cause the pump impeller to spin off, causing serious damage to the pump.

Systems using discharge pumps must have the flow rates balanced so that the discharge flow rate is greater than the inlet flow rate.

Refer to the components list insert (*Section 5: Components List, Drawings, & Cutsheets*) to see which pump(s) were provided with this system.

High Water Level Alarm Float Switch

The high water level alarm float switch is one of the alarm sensors that must be connected prior to system start-up. The purpose of the high water level alarm float switch is to sense an excessively high level of water in the stripper sump, and provide a signal to communicate to the upstream water source to shut off the incoming water. The high water level float switch is a normally closed micro-switch that opens when the float rises approximately 3 1/2" (9 cm) above its coupling's centerline.

Component information cut sheets for the float switch are included in *Section 5: Components List, Drawings, & Cutsheets* of this manual.

Line Sampling Ports

Line sampling port(s) (when included) are provided to take water samples of incoming contaminated water and outgoing clean water. The sampling ports are typically 1/2" (1 cm) ball valves.

When taking a water sample, open the valve and let the water flow for at least 1 minute prior to bottling the sample. This purges the sample port of any stagnant water.

When purging the sample ports be sure to capture the water and properly dispose of it. When starting the unit for the first time double check that the valves on the sample ports are closed.

Low Air Pressure/Vacuum Alarm Switch

The low air pressure/Vacuum alarm switch monitors the blower for continuous water treatment. This switch is one of the alarm interlocks that must be properly connected by a licensed electrician prior to the system's initial start-up. Please see *"Special Precautions"* at the beginning of *Section 2: Operating Instructions* for more information.

Should the blower fail, the low air pressure switch is wired to shutoff all incoming water. Using tubing, connect the switch to the hose barb on the tank (pressure system) or the hose barb in the cover exhaust duct (vacuum system).

Pressure system

The air hose is connected from the sump rank 1/8 " (3 mm) hose barb (without valve) to the "high" pressure port on the switch using the provided hose barb. The "low" pressure port must be open to the atmosphere. The switch measures the differential pressure between the sump tank and the atmosphere.

Vacuum system

The air hose is connected from the exhaust piping 1/8" (3 mm) hose barb to the "low" pressure port on the switch using the provided hose barb. The "high" pressure port must be open to the atmosphere. The switch measures the differential pressure between the top tray and the atmosphere.

Periodically inspect the air hose for water build-up, which will affect the switch's operation. The tubing must remain open at all times.

Test the switch at initial start-up by removing the air hose from the hose barb on the sump tank or exhaust pipe once the system is in full operation. This should set the system into an alarm condition and shut off the incoming contaminated water.

High Air Pressure/Vacuum Alarm Switch

The high air pressure/vacuum alarm switch prevents the system from exceeding its highest rated pressure/vacuum value. If the blower has the ability to produce pressure/vacuum higher than 32" (82 cm) W.C, for stainless units or 26" (56 cm) W.C. for plastic units then it should have a high pressure/vacuum alarm switch. Be sure to check that the set point for alarm shutdown is at the proper setting for the system.

Panel Disconnect Switch

The panel disconnects switch removes power from the SS High Flow Air Stripper control panel. Make sure a qualified licensed electrician installs the power supply into the disconnect switch. Be sure to ground the switch to the main service ground.

Water Temperature Gauge

Water temperature gauges can be installed on both the inlet and outlet piping. Influent water temperature is an important variable affecting the system's removal efficiency.

Water Pressure Gauge

Water pressure gauges can be installed on both the inlet and outlet water piping. Excessively high readings could signal that something in the piping system is plugged. Large pressure fluctuation could be a sign that the water flow rate is varying.

Section 2: Operating Instructions

Special Precautions

It is important that a qualified licensed electrician perform these installations.

The following operations must be carried out prior to initial system start-up:

1. Connect the Interlock switches.
    - High Water level Interlock
        - If the water level in the sump tank rises beyond the maximum level, it could flood the blower.
        - This may damage the blower and void the warranty.
        - The high water level interlock switch is used to shut off the feed water pump in an emergency situation.

    - Low Air Pressure/Vacuum Interlock
        - If the blower fails, untreated water could be discharged. The low air pressure/vacuum interlock switch will shut off the feed water pump to prevent additional water from entering the stripper.

    - High Air Pressure/ Vacuum Interlock
        - If the system has a blower capable of producing more than 32” (82 cm) of water column (w.c.) for a stainless stripper or more than 26” (56 cm) w.c. for a polyethylene stripper, then the system requires a high pressure/vacuum switch.
        - If a unit fouls or pressure increases due to off-gas treatment, it may exceed the maximum pressure rating of the system and cause damage to the gaskets, sump, or trays.

2. Fill the Sump Tank and each tray’s inlet Chamber.
    - On initial start-up the sump tank must be filled with clean water to a height of about 5” (13 cm).
    - Make sure the valve to the sight tube is open.
    - The sump tank can be filled via the clean-out ports on the end of the stainless units, or through the inlet water port located on the cover.
    - The inlet chamber on each tray (referred to as seal pots) can be filled manually by pouring clean water through the 1” (3 cm) inlet chamber filling ports, or the 4” (10 cm) clean out ports located on the ends of the stainless units, or by disassembling the plastic units and filling the seal pots as you reassemble.
    - The seal pots on both the plastic and stainless systems can also be filled at initial start-up by connecting a clean water line to the inlet water port and running the system for ten minutes with the blower on and the damper 1/4 open.
    - For complete instructions on this method, please follow initial Start-up procedures later in this section.

Do Not Run Free-Product Through the SS High Flow Air Stripper Air Stripper.

Free product contaminates the unit by coating the side walls with a film of free-product. SS High Flow Air Stripper units are designed to remove dissolved VOC’s only.

Fresh air is required for the system air intake. Air that is heavily contaminated with VOC’s will significantly reduce the SS High Flow Air Stripper’s performance.

Equipment Set-Up

- Drawings.
    - Drawings referred to in the following sections are located in *Section 5: Components List, Drawings, & Cutsheets*.

- Follow codes.

- The plumbing and electrical installations must be performed by qualified personnel, and must be done in accordance with local, state, and national codes.

- Protect critical items from the environment.
  - In areas that could be below freezing, the stripper should be installed in a heated building. Plastic units, control panels, and motors should be protected from direct sun.
  - Explosion-proof motors should be protected from rain due to the absence of motor gaskets.

- Install adequate supports.
  - Since none of the external piping associated with the SS High Flow Air Stripper unit is designed to support process water lines or air piping, adequate supports must be installed.

- Assemble Unit.
  - All SS High Flow Air Stripper units are assembled and hydraulically tested at the factory. However, to safeguard the units from shipping damage, some components are removed prior to shipping and will require reassembly.
  - Follow all relevant steps in this section to set-up the SS High Flow Air Stripper system.

- Check for loose fittings.
  - Shipping the system to the site may have caused pipe joints or assembly hardware to loosen.
  - Re-tighten as necessary.

- Bolt unit together.
  - For shipping purposes, the SS High Flow Air Stripper unit may come in two sections; the blower skid assembly and the sump and tray skid assembly.
  - Bolt the base frames together using the bolts and spacers provided.
    - This step is done at the factory for the 1300 and 2300 series.

- Connect Blower.
  - For forced draft (F.D., or positive pressure) systems, install the provided rubber coupling to connect the blower outlet to the air inlet on the sump tank. (See *Section 5: Components List, Drawings, & Cutsheets* coupling layout drawing for air inlet location.)
  - For induced draft (I.D., or vacuum) systems, install an exhaust duct from the stripper air exhaust located on the top cover to the blower intake.
  - Make sure the pipe diameter is large enough to maintain the required airflow without adding a pressure drop.
  - Also, be sure the pipe has a suitable vacuum rating to prevent collapse.

Blower must draw air. Do not vent storage tanks that contain substances that will contaminate the air in the same room the blower draws air from. Do not duct intake air from an area that has contaminated air. Contaminated air will contaminate the water

- Assemble trays and level the SS High Flow Air Stripper unit.
  - Large SS High Flow Air Strippers may have the top tray and cover shipped separately.
  - Install trays shipped separately by lining up the match-marked arrows and numbers on the trays and cover.
    - To prevent damaging the gasket, do not drag the trays or cover across the gasket during assembly.
  - Fasten all latches properly.
    - The tray being installed must have the downcomers from each upper tray line up with the sealpots on the tray below.
  - Check all the trays to make sure they are installed correctly, and not backwards.
    - If the system is not set up properly, the water could bypass a tray allowing water to miss

a large portion of the treatment path.
    - Refer to the “basic subassembly” exploded view drawing in *Section 5: Components List, Drawings, & Cutsheets*.
    - Level the SS High Flow Air Stripper.
        - This is a critical step in the proper assembly of the equipment.
        - If not level, the water depth on the trays will be uneven, causing the water to weep through the tray holes untreated.

- For a gravity discharge unit (no discharge pump): Install the outlet pipe.
    - The plumbing components are typically shipped in a separate box.
    - Refer to *Section 5: Components List, Drawings, & Cutsheets* for outlet piping drawings to assemble.

F.D. systems require a riser pipe (inverted U-trap) to compensate for the pressure generated by the blower. It is important that the riser pipe height be adjusted to create a 5” (13 cm) water depth in the sump tank during normal operating conditions. The provided anti-siphon valve must be installed in the high point of the riser pipe to prevent the sump from siphoning to below the 5” (13 cm) depth. It is essential that the riser pipe be properly supported. Use proper pipe sealant and PVC cement for the riser pipe. We recommend running the system and adjusting the riser pipe before permanently bonding the fitting.

The purpose of having the 5” (13 cm) water depth in the sump tank is twofold. First, it is to keep the downcomer (from the bottom tray) and the water discharge port (which elbows down internally) submerged. Both are set to a height of 2” (5 cm) from the bottom of the sump. Keeping them submerged forms a water seal, which prevents air from escaping up the downcomer pipe or out the discharge trap.

Second, the 5” (13 cm) depth is low enough to allow our high water level switch to reset. The switch, located in its typical position, has an approximate reset deadband of 6” (15 cm) meaning the water level must drop 6” (15 cm) below the alarm trip point before it resets. Consult Geotech for additional options or questions about float switch location or normal operating water depth.

- For a unit with a discharge pump: Install the outlet pipe.
    - For a pumped discharge unit: Refer to the *Section 5: Components List, Drawings, & Cutsheets* outlet piping drawing to assemble the water line from the sump tank to the pump suction, using components delivered in a separate box. Install downstream piping to the pump discharge port. A ball valve is typically provided and should be used to adjust flow. Use proper pipe sealant or PVC cement as required. If a check valve is required, install on discharge side of pump. To reduce pressure losses, it is recommended that the connected pipe size remain at least as large as the pump discharge fitting.

- Prime the pump.
    - Pour clean water in the pump’s inlet port until it has filled the entire pump chamber.
    - Remove the top air bleed plug on the pump housing to let air bleed out, then replace plug.

- Install the inlet piping manifold (typically shipped in a separate box).
    - Follow the *Section 5: Components List, Drawings, & Cutsheets* inlet piping diagram for proper installation.

For systems other than 31200 , 41200, 61200 and 81200, there are two inlet port couplings on the cover; one is over the discharge side of the tray and cannot be used, so it is plugged. The other coupling is the active inlet, and has the dip tube inside the top cover. The 31200, 41200, 61200 and 81200 series have 3, 4, 6 and 8 ports respectively, and all are used. The feed must enter the inlet located above the sealpot of the top tray. Otherwise contaminated water will bypass the treatment path of the first tray and fall directly into the downcomer to the next tray. This will result in poor removal efficiency.

- Install the sump drain valve and the sight tube.
    - Refer to the *Section 5: Components List, Drawings, & Cutsheets* coupling layout drawing for port locations.
    - Be sure to open the valve to the sight tube during start-up and operation. The valve should be closed only to replace a damaged sight tube.

- Connect the water lines.
    - If the seal pots have not yet been filled with clean water, connect a clean water line to the inlet port or piping manifold and fill the seal pots according to the steps outlined in the initial start-up section above.
        - If the seal pots are filled with clean water, connect the process water line to the inlet piping manifold.
    - Connect the discharge water line.
    - Firmly support the process water lines to prevent stress on the piping and ports.
        - The system is not designed to support the weight of the process water lines.

- Connect the air pressure tubing.
    - Connect the tubing from the SS High Flow Air Stripper to the low air pressure/vacuum switch (if provided), and/or the high air pressure/vacuum gauge (if provided).
    - Read the component description on each for detailed connection information, and also refer to the *Section 5: Components List, Drawings, & Cutsheets*.
    - For the air pressure gauge, be sure to install the tubing to the 1/8" (3 mm) shutoff valve.
        - Open the valve only when a reading is required. This will reduce condensation build-up in the gauge.
        - The air pressure switch tubing should always be open for continuous sensing.
        - The switch is designed to drain excess condensation.

- Connect the air discharge line.
    - Connect an air exhaust duct to the air outlet, either on the top of the unit for F.D. installations, or at the blower discharge for I.D. installations.
        - Do not use an exhaust duct with a smaller diameter that the discharge port.
        - A smaller diameter may cause a pressure drop larger than the blower was designed for, resulting in low air flow and poor removal efficiency.
    - Support the vent line independently of the air stripper so that it can be easily disconnected for maintenance purposes.

- Wire the electrical components.
    - Have a qualified licensed electrician wire the electrical components in compliance with local, state, and national codes.
    - Make sure the safety interlocks, described in the Special Precautions section, are connected properly.
        - If Geotech supplied the control panel, see *Section 5: Components List, Drawings, & Cut sheets*.

<u>Install optional items</u>

Air flow meter

Mount the pitot tube on the vent line per Dwyer bulletin # H-11 (located in the separate shipping box) or per the *Section 5: Components List, Drawings, & Cutsheets* "air flow meter assembly" drawings using the mounting hardware provided. Connect pitot tube to the 0-0.5 or 0-1.0" w.c.. air pressure gauge using the tubing provided. (See pitot tube mounting diagram in *Section 5: Components List, Drawings, & Cutsheets*.) There are two air hoses required, one connects to the high pressure port on the gauge and on the pitot tube, and measures

internal static pressure plus velocity pressure. The other connects to the low pressure ports on the gauge and on the pitot tube, and measures the internal static pressure only. The optimum pitot tube location is before the stripper, because the air is less humid and the tubing will be less prone to filling with condensation.

Blower Silencer

Forced Draft system – Install the silencer on the inlet side of the blower. If the silencer is to be in the vertical position, install the piping and elbow as shown in *Section 5: Components List, Drawings, & Cutsheets* silencer diagram. If the silencer is in the horizontal position, attach it directly to the blower inlet using a rubber coupling.

Induced Draft system – Install the silencer on the blower. The standard silencer's maximum pressure/vacuum rating is 20" (50 cm) w.c. Be sure not to exceed the silencer's limit

Water flow meter

Install the water flow meter into the inlet piping per *Section 5: Components List, Drawings, & Cutsheets* water inlet piping diagrams. The flow meter owner's manual was sent with the unit. Be sure to refer to it when installing the meter. It is prudent to install a strainer in the incoming process water line prior to the water flow meter. This will prevent rotor jamming.

There may be other optional equipment that requires installation or assembly. Please refer to *Section 5: Components List, Drawings, & Cutsheets* specification sheet and drawings for more information.

Initial System Start Up

Upon completion of the equipment set-up and mechanical/electrical installation, proceed with the following steps:

1. Check all connections and close drain and sample valves.
   - Double check that all electrical, water, and vent connections are properly made.
   - Close drain port and sample valves. Be sure that the sight valve is open.

2. Power up.
   - Turn all panel control switches to the 'OFF' position, then turn 'ON' the panel disconnect switch.
   - Systems with intermittent operation feature will show an alarm condition (low air pressure) five seconds after power is applied because the blower is not operating.
   - Once the blower is supplying proper pressure, the alarm low air pressure condition will reset.
   - Some systems may require pushing an 'Alarm Reset' button.

3. Check the blower rotation.
   - Check the blower rotation by momentarily switching 'ON' (bumping) the blower switch and observing whether the blades turn in the direction of the arrow on the blower casing.
   - You can also observe the motor's cooling fan blades for proper rotation.
   - If system panel has the intermittent operation feature, the blower motor must be bumped in the 'Hand" position.
   - Refer to *Section 2: Operating Instructions* "Routine Operation" for a description of "intermittent operation".
   - If blower rotates in the wrong direction, turn the main disconnect off and have an electrician make wiring changes to correct the rotation.

4. Attach clean water line to the inlet.
   - If you did not fill the seal pots on each tray manually, fill them now by attaching a (clean) water line to the water inlet piping manifold or port, and then follow Step 5.
   - If you have already filled the seal pots manually, skip Step 5 and go to Step 6.

5. Fill the seal pots (inlet chamber) with clean water.
   - Use clean water when filling the seal pots.
   - If contaminated water is used it will go through the system untreated.

To fill the seal pots (inlet chambers), set the blower damper to 1/4 open, and start the blower and the clean water flow to the unit. Let the blower and clean water run for about five to ten minutes, then shut them off. Setting the damper at 1/4 open reduces the air flow enough to allow the water to flow through the downcomers and into the seal pots.

If the system has the intermittent operation feature, the blower must be started in the 'Hand" position for this procedure. If you have trouble filling the seal pots by this method you can fill them manually, either by using the one inch sealpot filling ports (stainless units only), or by spraying a stream of clean water through the clean-out ports (stainless units only). The stream of water must be directed into the sealpots on the opposite side of the unit, until the sealpot is full. For plastic units you must remove the trays and fill the sealpots manually.

6. Connect contaminated feed water line.
   - Connect contaminated feed line.
   - Install all piping allowing provision for future removal for maintenance or repair.
   - Make sure piping is supported independently of the SS High Flow Air Stripper.
   - Start system with the blower damper 1/2 open.
     - For systems with intermittent operation, you must turn 'OFF' the power at the panel disconnect,

turn all control switches to the auto position, and then reapply panel disconnect power.
    - All motors will start automatically based on control function. Each control panel is custom designed for each site.
- Become familiar with the panel logic and proper operation before attempting to start the system.

7. Check the air pressure reading and set damper.
    - Run the unit for 5 minutes, and then adjust the blower damper setting to produce the required air pressure/vacuum reading on the pressure gauge.
    - Since the blowers provided by Geotech are selected and tested to exceed the minimum flow requirements of the system, you can use Table 1-3 in *Section 1: SS High Flow Air Stripper Process* to set the damper during initial start-up.

Double check pressure reading after system has been running for about 1/2 hour. Adjust damper again if needed. Also check the airflow meter for proper airflow rate. Pressure readings may vary somewhat depending on your venting system.

The System is ready for operation.

It is not necessary to perform initial start-up procedures each time the system is shut down. However, note that anytime water is completely removed from the seal pots or sump tank, the initial start-up procedure must be done again. For example, after the system has been taken apart for cleaning, or after an extended shutdown where the water have may evaporated from the tank or seal pots.

Routine Operation

Use Table 1-2 and 1-3 to adjust the airflow to within the required operating range in SCFM. The airflow must be a least the minimum shown for proper stripping efficiency.

Adjust water flow rate by setting the water throttle valves. Now that the system has been primed per the initial start-up procedures, it is ready for fine tuning. Adjust throttle valves on inlet and outlet piping to obtain the desired water flow rates and minimum pump cycles, if applicable. Refer to *Section 5: Components List, Drawings, & Cutsheets* specification sheet for your systems design and maximum water flow rates. To prevent a high water level alarm, it is critical that the discharge pump flow rate exceed the influent water flow rate.

Pumps provided by Geotech have throttle valves on the discharge side of the pump. Once the desired water flow rate is achieved, check the amp draw of the motor. It must not exceed the pump nameplate amp draw.

High water level alarm switch: The switch is typically installed in the middle of three half inch switch ports located on the front of the unit (refer to *Section 5: Components List, Drawings, & Cutsheets* coupling layout drawings). If the float is moved to the highest port and the discharge line plugs or the discharge pump fails, the water level could rise above the air inlet port, allowing water to drain into the F.D. blower housing or onto the floor. The blower may become damaged if it is running while water is in the blower housing. Be sure to check that the 1/8”Ø (3 mm) coupling in the bottom of the blower housing is open to allow for drainage of water that may get into the housing.

Section 3: Cleaning Procedures

Minerals dissolved in high concentrations tend to precipitate out of groundwater during air stripping processes. These minerals form insoluble deposits commonly referred to as 'fouling.' Although the SS High Flow Air Stripper system is designed to be fouling resistant, proper steps must be taken when treating water with high mineral concentrations. Deposits from iron-rich feed water can be reduced by pretreating the feed stream with sequestering agents. The recommended cleaning procedure for deposits is pressure washing with detailed instructions as follows:

Equipment Required

- Pressure Washer: 2 gpm minimum flow at 900 psig (minimum). Equipment rental companies can usually supply electric or gasoline driven units on a daily rental basis.

- Washer Wand: Washer wand with spray nozzle, (obtainable from Geotech as an option) and an adapter to connect the wand to the pressure washer hose end. All washer connections are 1/4" (6 mm) NPT.

- Clean Water Supply: Clean water supply with a capacity of at least 2 gpm at 20 psig. Connect to the pressure washer using an ordinary garden hose.

System Shut Down

1. Shut feed water off.
2. Shut off the water feed to the system.
3. Wait 5 minutes to allow the water in the stripper trays to be completely treated, then shut off the blower. Treated water in the trays will drain into the sump tank, so it is important to keep the outlet pump in "auto" to remove this extra water.
4. Shut off the power at the main disconnect switch if the shutdown is more than temporary.

If proper shut down procedures are not followed, contaminated water will drain into the sump tank. This will contaminate the water that has been collected in the tank. Therefore, always allow the blower to run an additional 5 minutes after the feed water is shut-off.

Cleaning the Unit:

1. Turn off equipment.
   - Turn off the feed water to the stripper.

2. Provide for Waste Disposal.
   - Make provisions for disposing of the sludge and waste generated during cleaning.
   - A wet/dry vacuum may be required, or possibly the outlet pump (if provided) can pump out to a storage tank.
   - Be aware that large pieces of debris might possibly clog the outlet pump or check valve.

3. Remove cleanout port covers.
   - Remove all cleanout port covers.

4. Turn on water and pressure washer.
   - Turn on the water supply to the pressure washer. Then, turn on the pressure washer.
   - Wear protective goggles or face shield while spraying.

5. Insert wand and start pressure washer water flow.
   - Insert the wand all the way through the 8” (20 cm) cleanout port on the sump tank.
   - Have the spray nozzle pointed up toward the bottom of the bottom tray.
   - Holding the wand tightly, pull the trigger to start the pressurized water flow.
   - Expect the wand to kick back as flow starts.

6. Move wand side to side.
   - Move the wand side to side at a rate of about 1” (3 cm) per second. Be sure to cover the entire tray bottom area. Recommended cleaning times for one side of one tray are given below:

Model 1300	2 min
Model 2300	4 min
Model 2600	8 min
Model 3600	12 min
Model 31200	23 min
Model 41200	32 min
Model 61200	48 min
Model 81200	64 min

Table 3-1: Recommended Cleaning Times

7. Inspect cleaned area.
   - Periodically stop the cleaning operation and inspect the cleaned area by shining a light into the unit.
   - The area is clean when there are no deposits in or around the stripper tray holes.

8. Clean top side of tray.
   - When the bottom surface appears clean, move the wand to the top side of the same tray by inserting it in the next highest cleanout port.
   - Continue spraying with the nozzle pointed down onto the top surface of the tray.
   - Remove all visible deposits from the tray baffles and the walls of the unit.

9. Repeat for all trays.
   - Repeat the procedure for the bottom of the next higher tray, etc., working up to the top tray.

10. Rinse.
    - After the cleaning operation is finished, rinse the trays, baffles, and walls with the pressure sprayer.
    - Work down from the top tray to the sump tank.
    - Make sure the surfaces are clean and the holes are not blocked by loosened debris.

11. Clean cover.
    - Remove the top cover.
    - Flip it over, and wash the bottom side.
    - Inspect spray nozzle and the wire mesh mist eliminator pad for fouling.
    - Clean the spray nozzle and the mist eliminator pad.

12. Replace the mist eliminator pad.
    - Mist eliminator pads that are excessively plugged should be replaced.
    - The old pad is removed by loosening the retainer plates on the corners of the pad.
    - Reinstall the new pad in the same orientation as the old one.

Section 4: Trouble Shooting

A competent electrician should perform any work inside the electrical control panel. Do not perform troubleshooting if you are not familiar with the procedures or the equipment.

Problem: Blower won't start or run

- No power to blower
  - Check that all switches are in "ON" or "AUTO" position.
  - Position main disconnect switch to "ON" position. Turn control switches to" on" or "AUTO".

- Blown Fuse
  - Check to see if fuses are ok.
  - Check fuses in main disconnect switch and in control panel. If blown, replace with fuse of the same size and rating to avoid the risk of fire or electrical shock.

- Overload relay Trips
  - Locate reset button on blower overload relay.
  - Push reset button in. Reasons for tripping; incorrect line voltage, motor wired incorrectly, inadequate ventilation, worn bearings.

- Tubing to air pressure switch plugged
  - Remove tubing from air pressure switch and blow into it towards tank. Clean or replace tubing if plugged or kinked.

- Blower dose not rotate freely.
  - **TURN OFF ALL POWER to the system.** Try to spin wheel by hand. Wheel should rotate freely. If not, call Geotech 800-833-7958 or (303) 320-4764 for assistance.

Problem: Outlet pump won't shut off

- Suction or Discharge piping to pump is clogged.
  - Check water flow from discharge pipe. Piping should be clean inside. Look for narrowing caused by scale or iron accumulation. Remove piping. Inspect, clean, or replace as necessary.

- Float switch in tank is stuck in down position.
  - Remove 8"Ø (20 cm) or 12"Ø (30 cm) inspection cap and check that all floats are floating on the water. Clean all deposits from float. Replace float if necessary.

Normal Operation: Water level in sump is OK. Pump will stop when water level reaches pre- determined height in tank. Allow water level to decrease until pump turns off. Let water level reach predetermined lower level, which will cause outlet pump to turn off. Water level may be just below the bottom of clear sight tube before pump shuts off – this is normal.

Problem: Outlet pump won't run or pump water

- No power to Pump
  - Check that all switches are in "ON' or "AUTO" position.
  - Position panel disconnect switch to "ON position. Turn control switches to "ON" or "AUTO."

- Blown fuse
  - Check to see if fuses are ok.

- Check fuses in main disconnect Switch and in control panel. If blown, replace with fuse of the sane size and rating to avoid the risk of fire or electrical shock.

- Overload relay trips
  - Locate reset button on pump overload relay.
  - Push reset button in. Reasons for tripping; incorrect line voltage, motor wired incorrectly, inadequate ventilation, worn bearings.

Normal operation: Water level in sump is OK. Pump will start when water level reaches predetermined height in tank. Allow water level to increase until pump turns on. Be sure pump switch is in "AUTO" position. Let water level reach predetermined upper level, which will cause outlet pump to turn on.

- Level switch in tank is wired incorrectly in control panel
  - Check wiring circuit against diagram. See that all connections are tight and no short circuits exist because of worn insulation, crossed wires, etc. Rewire any incorrect circuits. Tighten connections, replace defective wires.

- Pump does not rotate freely
  - **TURN OFF ALL POWER TO THE SYSTEM.** Try to turn impeller by hand. If impeller won't turn, remove housing and locate source of binding. It could be due to impeller, seal, or bearing damage, or excessive fouling.

- Impeller or check valve is fouled.
  - **TURN OFF POWER.** Remove pump outer housing and inspect impeller for blocked openings. Be sure to have a new housing gasket kit available before removing housing. Remove check valve from line and inspect for stuck or fouled valve. Clean or replace impeller or check valve as necessary.

Problem: Low Air Pressure/Vacuum in StripperTank.

- Blower damper closed.
  - Visually check position of damper on inlet of blower. Open damper to get proper reading on pressure gauge. Firmly tighten damper set screw

- Motor rotation backwards
  - Watch rotation of blower wheel at slow speed. It must match direction of the rotation arrow on the blower housing. Have electrician reconnect wiring for proper rotation as per motor diagram.

- Gravity discharge trap installed incorrectly
  - Trap should be positioned vertically, as an "upside down U." Install discharge trap per outlet plumbing drawings located in *Section 5: Components List, Drawings, & Cutsheets*.

- Inlet chamber (sealpot) in each tray not full of water.
  - Remove 4"Ø (10 cm) rubber caps, or slide tray aside and look at water level in chambers. Remove 4" (10 cm) rubber caps on end of trays. Fill up inlet chambers with a hose, or follow the sealpot fill procedure as described in *Section 2: Operating Instructions* "Initial System Start Up".

- Rubber clean out caps not in place.
  - All cleanout ports must have a rubber cap installed. Tighten clamps on all rubber caps.

- Tubing to pressure gauge
  - Remove tubing from pressure gauge and blow into it towards tank. Clean or replace tubing if plugged or kinked.

- Gravity feed not flowing
    - Unit has gravity feed and inlet pipe on inside of SS High Flow Air Stripper cover is not submerged in inlet chamber water. Remove cover and measure length of piping hanging from inside of cover. Length is to be about 10 1/2" (27 cm) from cover surface. Adjust length of inlet pipe on inside of cover until total length is about 10 1/2" (27 cm). DO NOT INSTALL NOZZLE ON A GRAVITY FEED UNIT.

- Blocked blower intake
    - Look at blower intake screen. Remove debris from screen.

Normal operation: When inlet pump starts, the blower will start and air pressure will increase to required operational level. No action necessary.

Problem: High Pressure/Vacuum in Stripper

- Air exhaust is restricted
    - Check vent piping for bird nest or other obstructions. Check that vent pipe diameter does not decrease. Intake or exhaust air pipe diameter must be at least as big as the cover vent or blower intake diameters.

- Air holes in trays plugged
    - Remove inspection and cleanout caps and visually inspect holes. For iron fouling, clean out the unit with a pressure washer. For scaling, scrape or bang the scale from all surfaces, then use a pressure washer to open the 3/16” (5 mm) diameter holes. Consider using a sequestering agent to prevent scaling.

- Mist eliminator is plugged
    - Remove cover from SS High Flow Air Stripper and inspect the bottom of the mist eliminator pad in the cover. Remove mist eliminator pad from cover and clean. If fouled, replace with a new mist eliminator.

Problem: Water won’t flow into unit

- Inlet/well pump function
    - Allow water level to rise in well pump, which will turn on the inlet pump and start water flow to system. No action necessary.

- Stripper air pressure in low alarm condition
    - Read sump tank air pressure from pressure gauge. System should be in alarm condition if pressure is below about 2” (5 cm) w.c.
    - Check that blower is operating properly, and has correct rotation. Check that all rubber caps are in place on end of trays.

- Inlet piping plugged
    - Remove cover and inspect nozzle and piping for debris and buildup. Clean or replace clogged parts.

Problem: Iron fouling is a problem

- Iron build-up
    - Iron precipitates out of water when treated with an air stripper, causing iron build up in unit. Remove cleanout caps and inspect inside of tray for buildup/fouling. Clean out unit with pressure washer on a routine basis. Pretreat incoming water to reduce fouling problems in stripper. Meter a sequestering agent into the water.

Problem: VOC removal is less than expected

There are many possible reasons for poor stripper efficiency. Review the following list of questions to troubleshoot what the problem might be.

1. Have the trays been taken apart? Are they put back together as supplied from the factory, i.e., dip tube over sealpot, downcomers from each tray underwater in the sealpot of the tray below?

2. What is the sump tank air pressure reading? Is it steady, slowly changing over time, or rapidly fluctuating?

3. What is the flow rate through the stripper? How is it measured? Where is the sensor mounted?

4. What is the air intake and exhaust piping design (size of ducts, number of elbows, length of pipe run, GAC, heaters, other restrictions)? Are sample ports installed on each tray to verify pre-tray removal efficiency?

5. Is sump tank contaminated? Where are effluent samples taken from?

6. Are sample ports purged for 30 seconds-1 minute before taking sample?

7. Are samples being taken, stored, and tested per approved methods?

8. Are seal pots on each tray full of water?

9. Dose the sump tank have at least 4” (10 cm) of water at all times?

10. Is the water suction elbow in the tank pointing down and always underwater?

11. What is the inlet water temperature?

12. What else is in the water besides the contaminates in question?

13. Are there occasional slugs of free product, or much higher than normal contaminant concentrations that could enter the stripper?

14. Is inlet water supplied as a continuous stream (as from an electric pump.)? Or is the flow pulsed (as from a pneumatic pump)?

15. Are their surfactants, detergents, greases, fats, etc. in the water that are causing foaming in the stripper?

16. Is there equipment near the blower intake that could be contaminating the air?

17. Has the air entering the blower been tested for VOCs?

18. How far away from each other are the air intake and air exhaust points? Is the air intake downwind of upwind from the exhaust? Is it possible for contaminated air to be sucked back into the stripper air intake?

19. Is the blower spinning in the correct direction (top of blower wheel spinning towards tank)? Watch wheel when it is almost stopped.

20. Is there air coming out of the discharge pipe?

21. Is outlet piping siphoning all water out of the sump tank, until it sucks air from tank?

22. What is the outlet plumbing design (gravity discharge, pumped discharge, uphill, downhill, other equipment in-line, size of piping. etc.)?

23. What do the bubbles look like in each tray? Install view ports to see.

24. Are the undersides of the trays free of drips and drizzles?

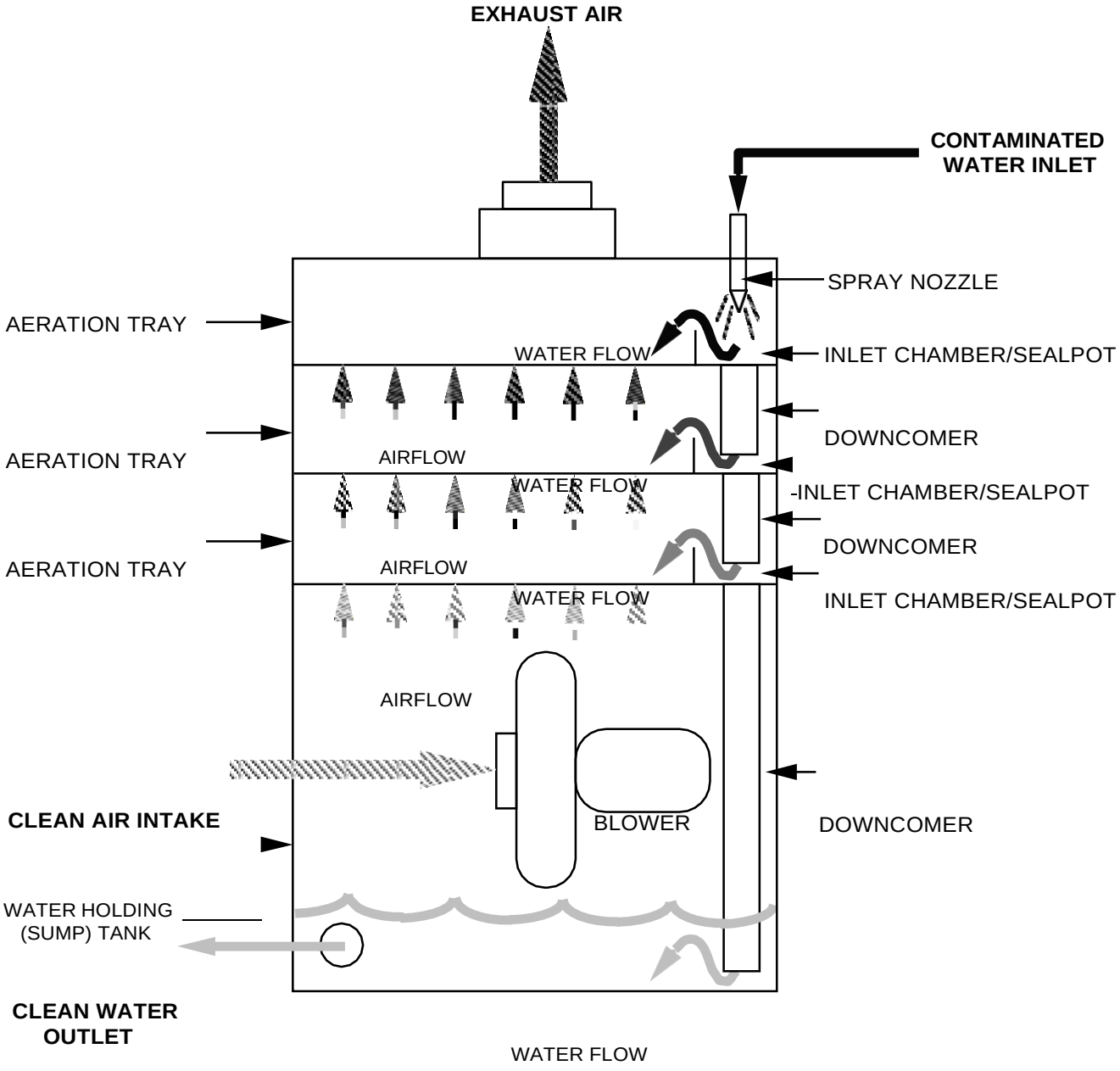
25. Are tray holes closed or plugged? Is there any scaling or fouling on the trays?

26. Is the system level and plumb?

27. When shutting system down, is inlet water shut off, blower allowed to operate for an additional 5 minutes, then blower shut off?

Section 5: Components List, Drawings, & Cutsheets

AERATION PROCESS, COUNTER-CURRENT AIR AND WATER FLOW



FOR REFERENCE ONLY !

DO NOT ASSEMBLE PER THIS DRAWING. SEE DRAWINGS THAT ARE SPECIFIC TO THIS UNIT.

Troubleshooting Guide for Poor Removal

WATER ISSUES

1. What is the water flow rate through the stripper?

2. Is there foam in the air stripper caused by surfactants, greases, fats, etc.?

3. What else is in the water besides the contaminates in question?

4. Are there occasional slugs of free product that could contaminate the sump of the air stripper?

5. Does the sump tank have at least 4" (10 cm) of water at all times?

6. Are the seal pots on each tray full of water?

7. Are the samples being taken, stored, and tested per approved methods?

AIR ISSUES

1. What is the air flow rate through the stripper?
   - How is it measured?
   - How does it compare with the shop tests?

2. Is there water blowing out the exhaust stack?

3. Is there air blowing out the water discharge piping?

4. What is the design of the air intake and exhaust?
   - Is there any constriction of the flow of air?

14. is there any way contaminated air can get into the blower intake?

MECHANICAL AND OTHER ISSUES

1. Is the blower spinning in the correct direction? i.e. Top of blower wheel spinning towards blower outlet. (The blower will blow air even if running backwards.)

2. Is the system level?

3. When system shuts down, does blower continue to run for 5 minutes after influent water stops?

4. Have there been any power outages that would cause untreated water to fall into the sump?

5. Are trays properly stacked so that the downcomers are in seal pots?

FOULING ISSUES

1. Is there any scaling or fouling on the trays? The holes in the trays should be 3/16 of an inch in diameter.

2. What is the sump tank pressure reading? Has it changed over time?

TYPICAL VENT LINE INSTALLATION

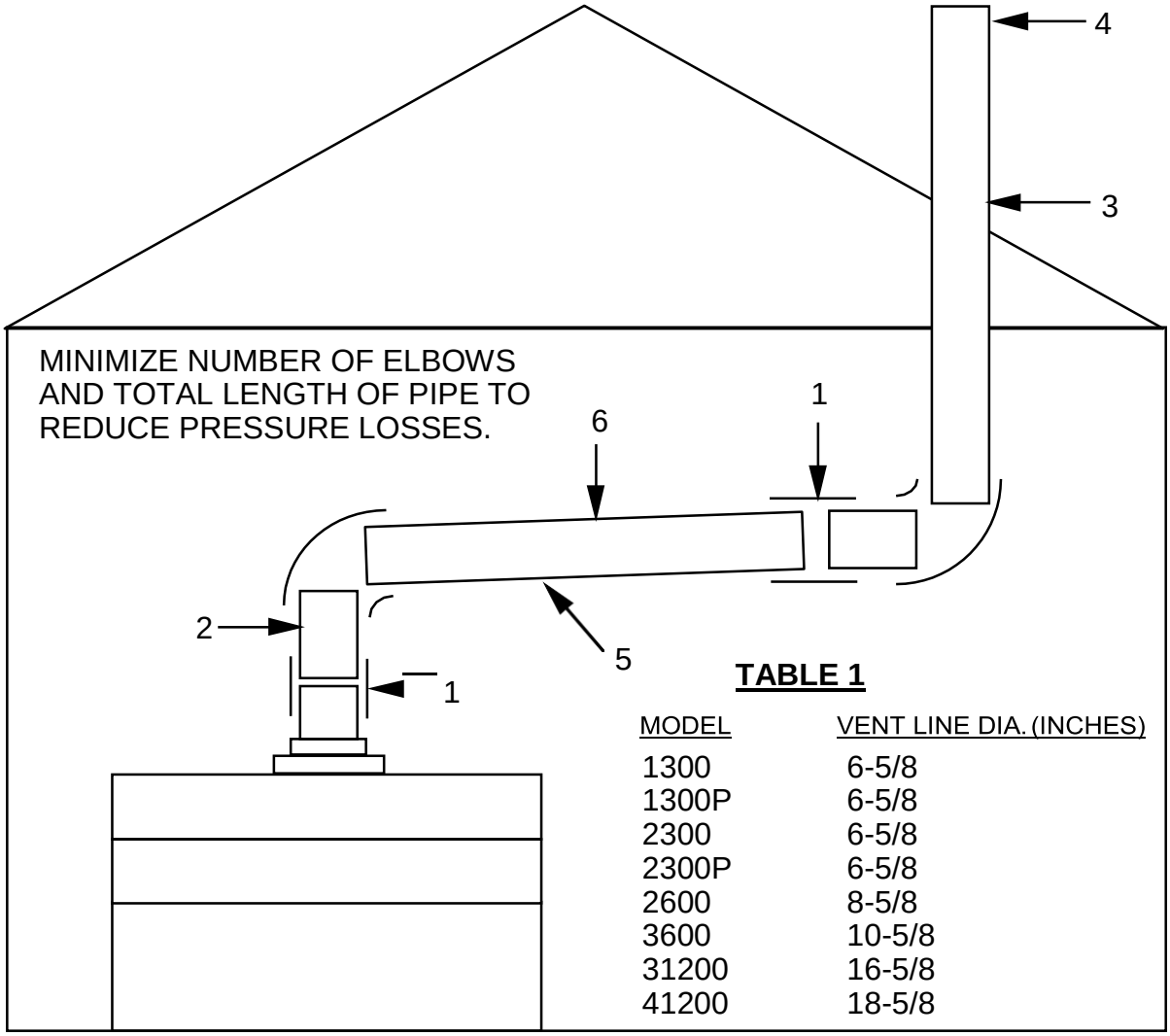


TABLE 1

MODEL	VENT LINE DIA. (INCHES)
1300	6-5/8
1300P	6-5/8
2300	6-5/8
2300P	6-5/8
2600	8-5/8
3600	10-5/8
31200	16-5/8
41200	18-5/8

NOTES:

1. RUBBER COUPLING WITH STAINLESS STEEL RING CLAMPS.

2. VENT LINE PIPE DIAMETER MUST BE EQUAL TO OR GREATER THAN THE AIR EXHAUST VENT DIAMETER ON THE AIR STRIPPER COVER.

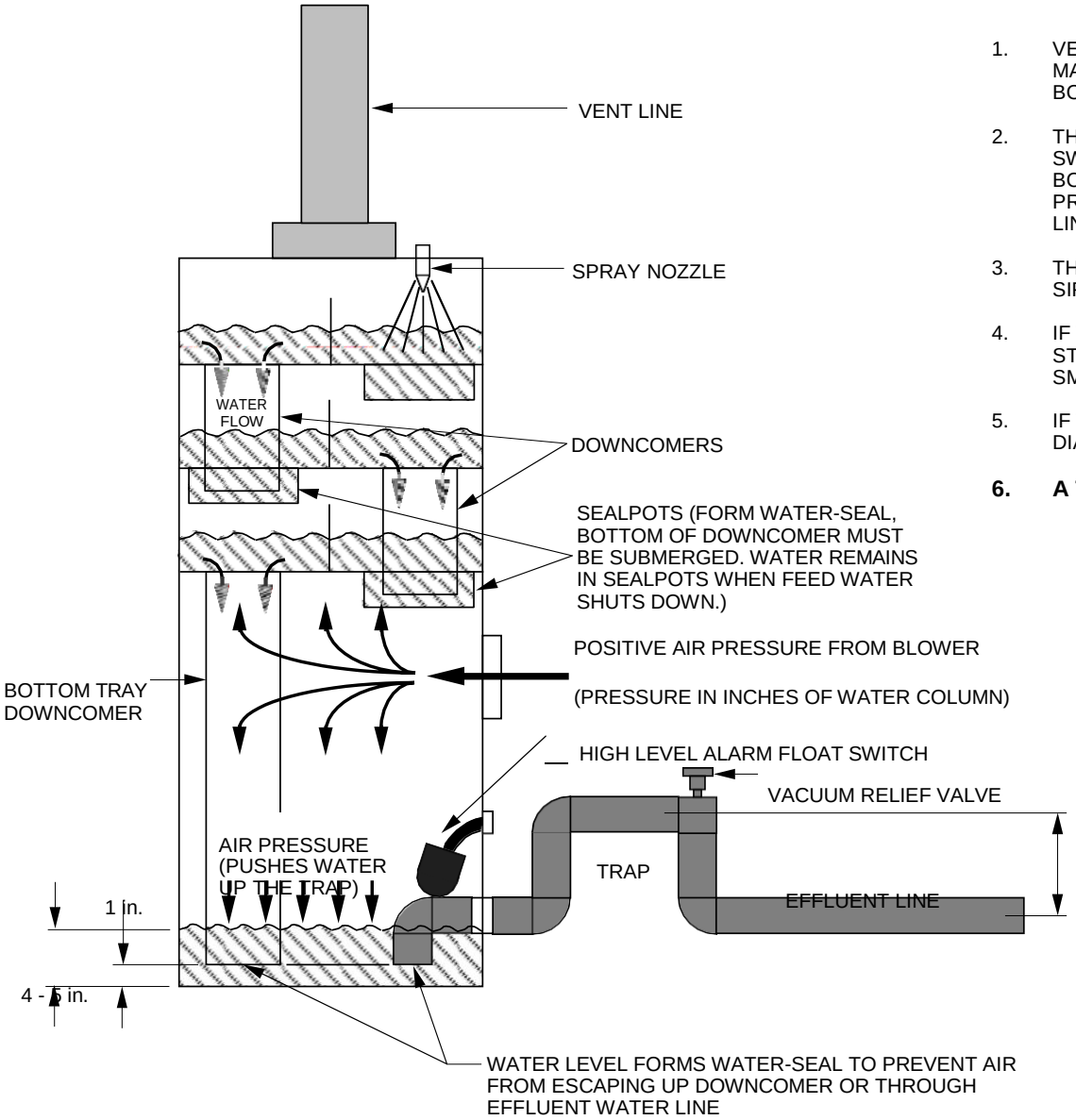
3. FIRMLY SUPPORT PIPE AT ROOF PENETRATION.

4. FOR INTERMITTENT OPERATION, INSTALL WIRE MESH OF 1/4" (OR LARGER). FOR DRINKING WATER SUPPLY, INSTALL ELBOW WITH WIRE MESH.

5. ALLOW CLEARANCE FOR REMOVING SECTION OF VENT LINE FOR EASY ACCESS TO AERATION TRAYS.

6. PITCH VENT LINE TOWARD SS HIGH FLOW AIR STRIPPER UNIT.

7. USE PIPING THAT HAS ADEQUATE STRENGTH (PRESSURE OR VACUUM) SPECIFICATIONS, AND THAT IS OF SUITABLE MATERIAL.



GRAVITY DISCHARGE TRAP SET-UP (SEE NOTE 6)

1. VERTICAL TRAP HEIGHT SHOULD BE SET SO THAT THE SYSTEM MAINTAINS A SUMP TANK WATER LEVEL OF 4-5" (FROM THE BOTTOM OF THE SUMP TANK) DURING NORMAL OPERATION.
2. THE 4-5 INCH WATER LEVEL ALLOWS THE HIGH LEVEL ALARM SWITCH TO RESET AND ALSO FORMS A WATER SEAL AROUND THE BOTTOM TRAY DOWNCOMER AND THE EFFLUENT WATER LINE. THIS PREVENTS AIR FROM ESCAPING THROUGH THE EFFLUENT WATER LINE AND BOTTOM TRAY DOWNCOMER.
3. THE VACUUM RELIEF VALVE PREVENTS THE WATER FROM SIPHONING OUT THE EFFLUENT WATER LINE.
4. IF THE SUMP TANK WATER IS DEEPER THAN 4-5" WHEN THE STRIPPER IS IN OPERATION, THEN EITHER THE LINE SIZE IS TOO SMALL OR THERE IS SOME TYPE OF RESTRICTION IN THE LINE.
5. IF THE EFFLUENT LINE BECOMES FOULED, IT WILL REDUCE THE DIAMETER OF THE LINE AND CAUSE THE WATER LEVEL TO RISE.
6. **A TRAP IS NOT NEEDED IF THERE IS A DISCHARGE PUMP.**

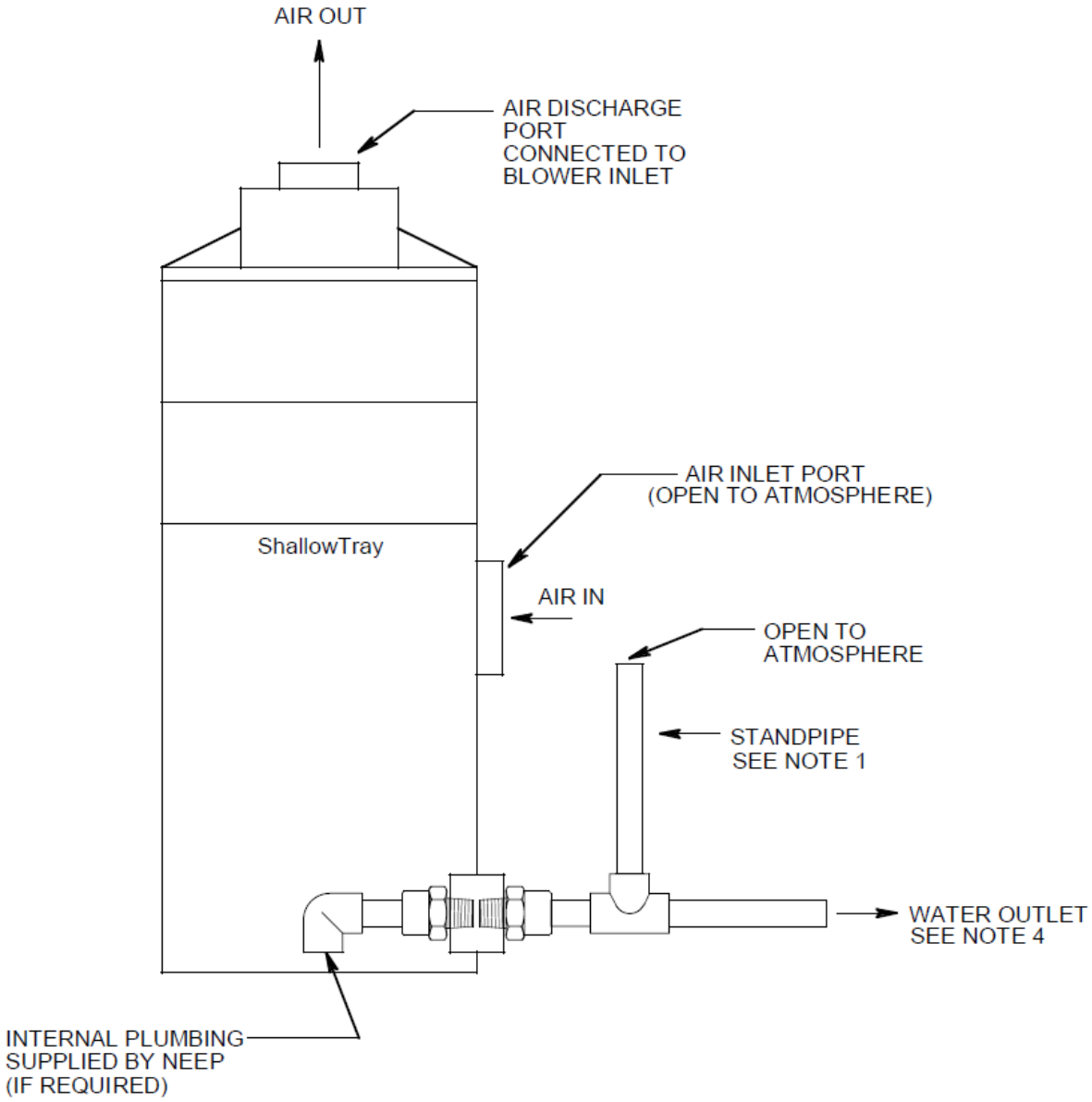
FOR REFERENCE ONLY !

DO NOT ASSEMBLE PER THIS

DRAWING. SEE DRAWINGS THAT ARE SPECIFIC TO THIS UNIT.

SET HEIGHT OF INVERTED U-TRAP TO MAINTAIN 4-5 in. WATER LEVEL IN SUMP TANK DURING STRIPPER OPERATION

SIDE VIEW:
DO NOT USE THIS TRAP WHEN PUMPING OUT OF SS HIGH FLOW AIR STRIPPER OR WITH INDUCED DRAFT SYSTEMS

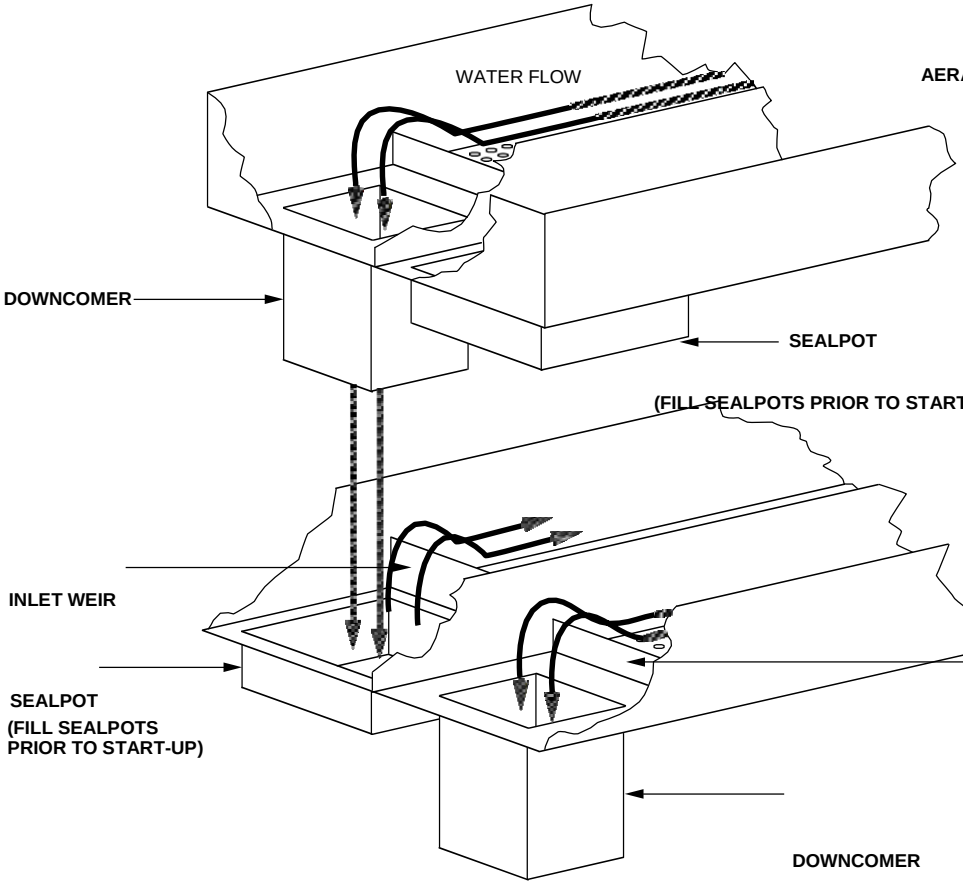


NOTES

1. HEIGHT TO TOP OF STANDPIPE SHOULD BE 1" HIGHER THAN LOWEST POINT ON AIR INLET PORT.
2. DO NOT USE THIS SETUP IF PUMPING OUT OF SS HIGH FLOW AIR STRIPPER.
3. DISHARGE PIPING SHALL BE GREATER THAN OR SAME SIZE AS WATER DISCHARGE PORT.
4. PIPING RUN MUST PITCH AWAY FROM STRIPPER.

DRAWING FOR REFERENCE ONLY
DO NOT ASSEMBLY PER THIS DRAWING.
SEE DRAWINGS THAT ARE SPECIFIC TO THIS UNIT.

SEALPOT FUNCTION - WATER SEAL

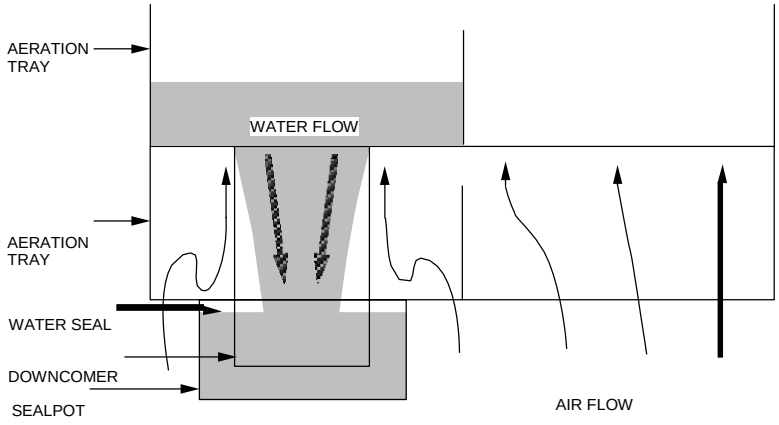


FOR REFERENCE ONLY !

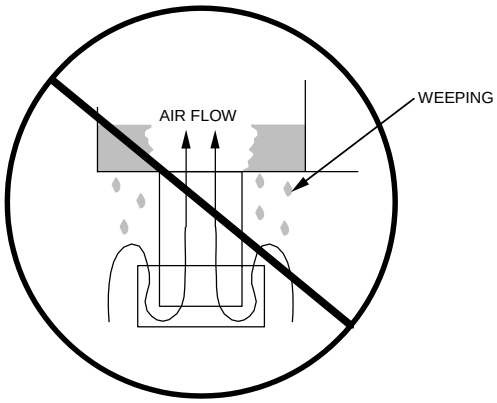
DO NOT ASSEMBLE PER THIS DRAWING. SEE DRAWINGS THAT ARE SPECIFIC TO THIS UNIT.

CAUTION!

SEALPOT MUST BE FILLED WITH WATER TO CREATE WATER SEAL.

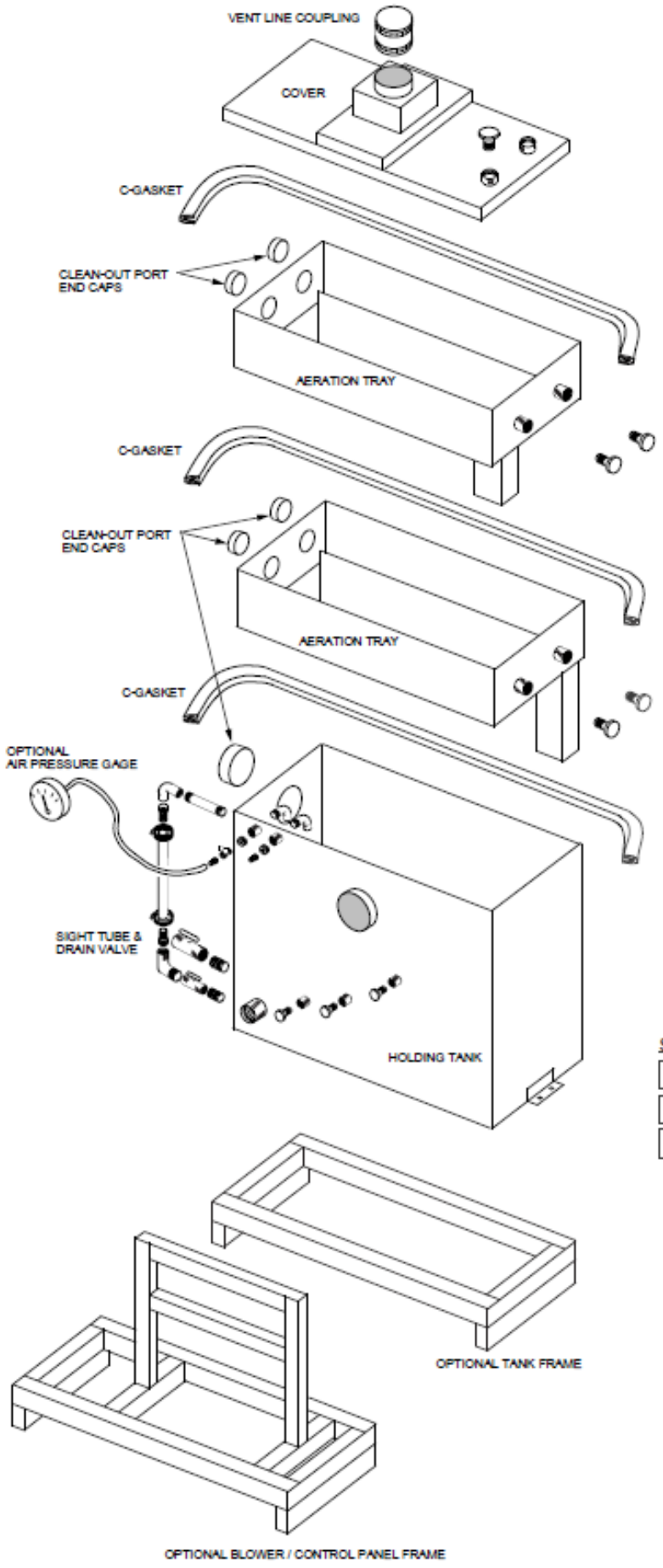


FILLED SEALPOT



UNFILLED SEALPOT

1. EACH AERATION TRAY CONTAINS A SEALPOT. ALL SEALPOTS MUST BE FILLED WITH WATER TO FORM A WATER SEAL AROUND THE DOWNCOMERS.
2. IF SEALPOTS ARE NOT FILLED, AIR WILL TRAVEL UP THE DOWNCOMER AND PREVENT WATER FROM FLOWING DOWN THEM. THIS WILL CAUSE THE WATER TO WEEP THROUGH THE 3/16" AERATION HOLES ON THE BOTTOM OF EACH TRAY, RESULTING IN POOR REMOVAL EFFICIENCY.
3. THE SUMP TANK WATER LEVEL ACTS AS A WATER SEAL FOR THE BOTTOM TRAY DOWNCOMER. MAINTAIN AT LEAST 3" OF WATER IN THE SUMP TANK AT ALL TIMES.
4. SEALPOTS CAN BE FILLED MANUALLY, OR BY FOLLOWING THE PROCEDURES LISTED IN THE OPERATION AND MAINTENANCE MANUAL.



2621 BASE SUBASSEMBLY

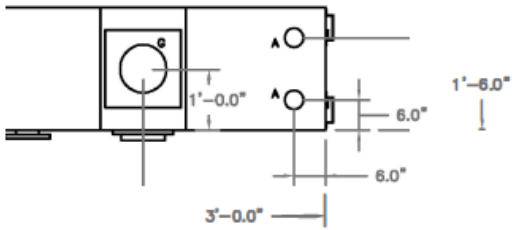
1 - (200-160-00040), COVER ASSEMBLY
2 - (200-160-00050), AERATION TRAY ASSEMBLY
1 - (200-160-00060), HOLDING TANK ASSEMBLY
1 - (200-140-00010), SIGHT TUBE ASSEMBLY
1 - (200-140-00142), DRAIN VALVE ASSEMBLY
1 - (500-160-01210), DOWNCOMER, 33"
1 - (500-160-01200), DOWNCOMER, 12"
2 - (500-160-01220), SEALPOT
2 - (500-160-01170), WEIR, 2"
2 - (500-160-01190), WEIR, 4"
4 - (500-150-00290), GASKET, SEALPOT & DC
1 - (500-160-00060), DEMISTER PAD, 2600
1 - (500-150-00160), FERNCO RUB. COUPLING 1056-88
4 - (500-150-00220), CAP, RUBBER 4"
1 - (500-150-00200), CAP, RUBBER 8"
4 - (500-140-02020), 1" PLUG M T
1 - (500-140-02050), 2" PLUG MT, PVC80
2 - (500-140-02880), 1/8" HOSE BARB
2 - (500-140-02520), 1/2"Mx1/2"F STREET EL, BRASS
2 - (500-140-02205), 1/2"Mx1/8"F BUSHING, BRASS
1 - (500-140-02735), 1/8"Mx1/8"F VALVE, BRASS
48 ft. - (500-150-00230), C-SHAPED GASKET
1- (500-160-01065), FLATNESS BRACKET

SELECT OPTIONAL FRAME COMPONENTS AS REQUIRED:

- ☐ 1 - (500-170-00051) TANK FRAME, 2600
- ☐ 1 - (500-170-00061), BLOWER FRAME, 2600
- ☐ 1 - (500-170-00045), PANEL MOUNT, 2600

	PORT DESCRIPTION	SIZE
A	WATER INLET PORTS	2" FEMALE NPT FULL COUPLING
B	WATER OUTLET PORT	3" FEMALE NPT FULL COUPLING
C	AIR INLET PORT	8" SLIP FIT RING FOR RUBBER COUPLING
D	SUMP DRAIN/TRAY SAMPLE PORTS	1" FEMALE NPT HALF COUPLING
E	FLOAT SWITCH PORTS	1/2" FEMALE NPT HALF COUPLING
F	SIGHT TUBE PORTS	1/2" FEMALE NPT FULL COUPLING
G	AIR EXHAUST PORT	8" SLIP FIT RING FOR RUBBER COUPLING
H	SUMP TANK VIEW PORT	8" SLIP FIT RING FOR RUBBER COUPLING
J	AERATION TRAY VIEW PORT	4" SLIP FIT RING FOR RUBBER COUPLING
K	PRESSURE PORTS	1/2" FEMALE NPT FULL COUPLING

TOP

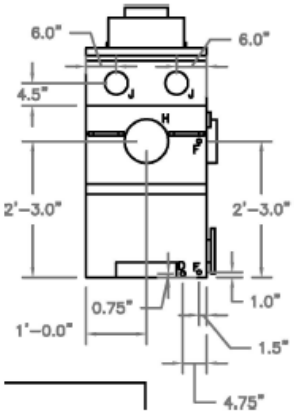


DIMENSION CHART (INCHES)

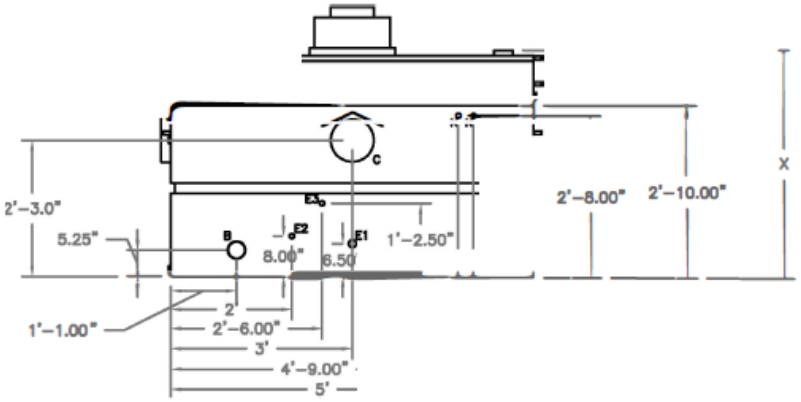
	X	Y	Z
2611	44.25	43.25	52.5
2621	53.5	52.5	61.75
2631	62.75	61.75	71.0
2641	72.0	71.0	80.25
2651	81.25	80.25	89.5

NOTE:
INCLUDES ADDITIONAL HEIGHT OF GASKET BETWEEN TRAYS AND COVER.

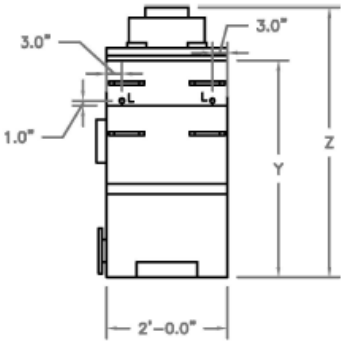
LEFT



FRONT



RIGHT



SWITCH LOCATION

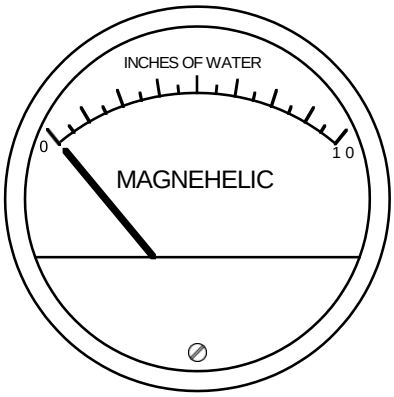
E1 E2 E3

FLOAT SWITCH, NO

FLOAT SWITCH, NC

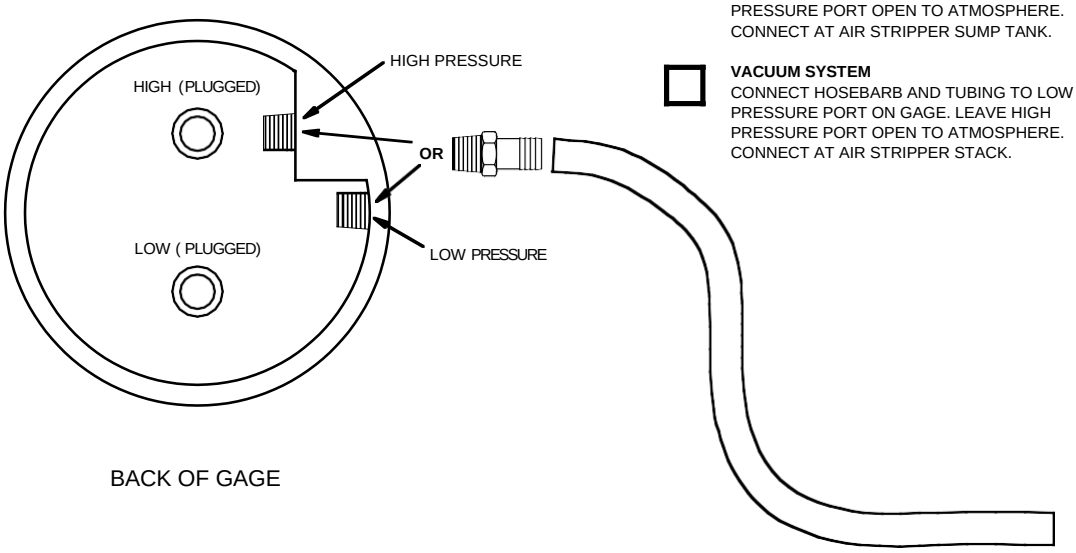
0.5" NPT PLUG

AIR PRESSURE GAGE



NOTES

1 PRESSURE LINE SHUT-OFF VALVE SHOULD BE CLOSED UNTIL A READING IS NEEDED. THIS WILL PREVENT CONDENSATION FROM BUILDING UP AND FLOODING THE GAGE.



BACK OF GAGE

☑ **PRESSURE SYSTEM**
CONNECT HOSEBARB AND TUBING TO HIGH PRESSURE PORT ON GAGE. LEAVE LOW PRESSURE PORT OPEN TO ATMOSPHERE. CONNECT AT AIR STRIPPER SUMP TANK.

☐ **VACUUM SYSTEM**
CONNECT HOSEBARB AND TUBING TO LOW PRESSURE PORT ON GAGE. LEAVE HIGH PRESSURE PORT OPEN TO ATMOSPHERE. CONNECT AT AIR STRIPPER STACK.

☐ **20 0- 1 30- 00 209 Ai r pressure gauge SUB 0 -5"wc**
• 1 500 -130- 00035 Gauge Air Pressure, 0-5"WC
• 4' 500- 200- 00145 Tubing Air 3/ 1 6IDx5/ 16OD

☐ **20 0- 1 30- 00 210 Ai r pressure gauge SUB 0 -10"wc**
• 1 500 -130 -00040 Gauge Air Pressure, 0- 10"WC
• 4' 500- 200- 00145 Tubing Air 3/ 1 6IDx5/ 16OD

☐ **20 0- 1 30- 00 211 Ai r pressure gauge SUB 0 -15"wc**
• 1 500 -130 -00050 Gauge Air Pressure 0 -15"WC
• 4' 500- 200- 00145 Tubing Air 3/ 1 6IDx5/ 16OD

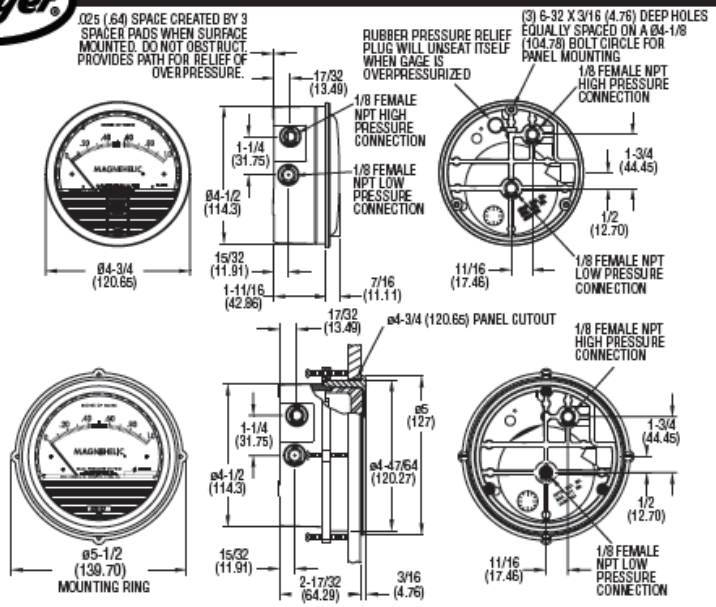
☐ **20 0- 1 30- 00 212 Ai r pressure gauge SUB 0 -20"wc**
• 1 500 -130 -00060 Gauge Air Pressure 0 -20"WC
• 4' 500- 200- 00145 Tubing Air 3/ 1 6IDx5/ 16OD

☐ **20 0- 1 30- 00 213 Ai r pressure gauge SUB 0 -30"wc**
• 1 500 -130 -00065 Gauge Air Pressure o-30"
• 4' 500- 200- 00145 Tubing Air 3/ 1 6IDx5/ 16OD

☑ **20 0- 1 30- 00 214 Ai r pressure gauge SUB 0 -40"wc**
• 1 500 -130 -000 66 Gauge, Air Pressure, 0- 40 "WC
• 4' 500- 200- 00145 Tubing Air 3/ 1 6IDx5/ 16OD

☐ **20 0- 1 30- 00 215 Ai r pressure gauge SUB 0 -60"wc**
• 1 500 -130- 00068 Gauge Air Pressure, 0-60"wc
• 4' 500- 200 -00145 Hose, 3/ 16id x 5/16od, Tygon, cle

Magnehelic® Differential Pressure Gage



**The blowout plug is not used on models above 180 inches of water pressure, medium or high pressure models, or on gages which require an elastomer other than silicone for the diaphragm.*

STANDARD GAGE ACCESSORIES: Two 1/8" NPT plugs for duplicate pressure taps, two 1/8" pipe thread to rubber tubing adapters and three flush mounting adapters with screws.

MP AND HP GAGE ACCESSORIES: Mounting ring and snap ring retainer substituted for 3 adaptors, 1/4" compression fittings replace 1/8" pipe thread to rubber tubing adaptors.

OVERPRESSURE PROTECTION: Standard Magnehelic® Differential Pressure Gages are rated for a maximum pressure of 15 psig and should not be used where that limit could be exceeded. Models employ a rubber plug on the rear which functions as a relief valve by unseating and venting the gage interior when over pressure reaches approximately 25 psig (excludes MP and HP models). To provide a free path for pressure relief, there are four spacer pads which maintain .023" clearance when gage is surface mounted. Do not obstruct the gap created by these pads.

SPECIFICATIONS

Service: Air and non-combustible, compatible gases. (Natural Gas option available.)
Wetted Materials: Consult factory.
Housing: Die cast aluminum case and bezel, with acrylic cover. (MP model has polycarbonate cover).
Accuracy: 2% of full scale (±3% on -0, -100PA, -125PA, -10MM and ±4% on -00, -60PA, -6MM), throughout range at 70°F (21.1°C); High accuracy version: ±1% on full scale (±1.5% on -0, -100PA, -125PA, -10MM and ±2% on -00, -60PA, -6MM).
Pressure Limits: -20" Hg to 15 psig.† (-0.677 bar to 1.034 bar); MP option: 35 psig (2.41 bar), HP option: 80 psig (5.52 bar).
Enclosure Rating: IP67.
Overpressure: Relief plug opens at approximately 25 psig (1.72 bar), standard gages only. The blowout plug is not used on models above 180 inches of water pressure, medium or high pressure models, or on gages which require an elastomer other than silicone for the diaphragm.
Temperature Limits: 20 to 140°F (-6.67 to 60°C). *Low temperature models available as special option.
Size: 4" (101.6 mm) diameter dial face.
Mounting Orientation: Diaphragm in vertical position. Consult factory for other position orientations.
Process Connections: 1/8" female NPT duplicate high and low pressure taps - one pair side and one pair back.
Weight: 1 lb 2 oz (510 g), MP & HP 2 lb 2 oz (963 g).
Agency Approvals: RoHS.

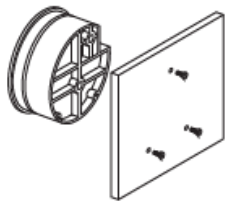
†For applications with high cycle rate within gage total pressure rating, next higher rating is recommended. See Medium and High pressure options.

Note: May be used with hydrogen when ordering Buna-N diaphragm. Pressure must be less than 35 psi.

INSTALLATION

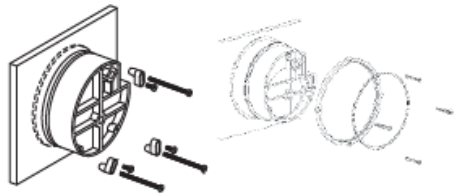
Select a location free from excessive vibration and where the ambient temperature will not exceed 140°F (60°C). Also, avoid direct sunlight which accelerates discoloration of the clear plastic cover. Sensing lines may be run any necessary distance. Long tubing lengths will not affect accuracy but will increase response time slightly. Do not restrict lines. If pulsating pressures or vibration cause excessive pointer oscillation, consult the factory for ways to provide additional damping.
All standard Magnehelic® Differential Pressure Gages are calibrated with the diaphragm vertical and should be used in that position for maximum accuracy. If gages are to be used in other than vertical position, this should be specified on the order. Many higher range gages will perform within tolerance in other positions with only rezeroing. Low range models of 0.5" w.c. plus 0.25" w.c. and metric equivalents must be used in the vertical position only.

SURFACE MOUNTING



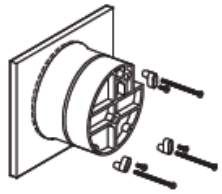
Locate mounting holes, 120° apart on a 4-1/8" dia. circle. Use No. 6-32 machine screws of appropriate length.

FLUSH MOUNTING



Provide a 4-9/16" dia. (116 mm) opening in panel. Provide a 4-3/4" dia. (120 mm) opening for MP and HP models. Insert gage and secure in place with No. 6-32 machine screws of appropriate length, with adapters, firmly secured in place.

FOR -SS BEZEL INSTALLATION



Provide a 4-9/16" opening in panel. Insert gage and secure with supplied mounting hardware.

PIPE MOUNTING

To mount gage on 1-1/4" - 2" pipe, order optional A-610 pipe mounting kit.

TO ZERO GAGE AFTER INSTALLATION

Set the indicating pointer exactly on the zero mark, using the external zero adjust screw on the cover at the bottom. Note that the zero check or adjustment can only be made with the high and low pressure taps both open to atmosphere.

OPERATION

Positive Pressure: Connect tubing from source of pressure to either of the two high pressure ports. Plug the port not used. Vent one or both low pressure ports to atmosphere.
Negative Pressure: Connect tubing from source of vacuum or negative pressure to either of the two low pressure ports. Plug the port not used. Vent one or both high pressure ports to atmosphere.
Differential Pressure: Connect tubing from the greater of two pressure sources to either high pressure port and the lower to either low pressure port. Plug both unused ports.
When one side of the gage is vented in dirty, dusty atmosphere, we suggest an A-331 Filter Vent Plug be installed in the open port to keep inside of gage clean.

A. For portable use of temporary installation use 1/8" pipe thread to rubber tubing adapter and connect to source of pressure with flexible rubber or vinyl tubing.
B. For permanent installation, 1/4" O.D., or larger, copper or aluminum tubing is recommended.

MAINTENANCE

No lubrication or periodic servicing is required. Keep case exterior and cover clean. Occasionally disconnect pressure lines to vent both sides of gage to atmosphere and re-zero. Optional vent valves should be used in permanent installations. The Series 2000 is not field serviceable and should be returned if repair is needed (field repair should not be attempted and may void warranty). Be sure to include a brief description of the problem plus any relevant application notes. Contact customer service to receive a return goods authorization number before shipping.

WARNING

Attempted field repair may void your warranty. Recalibration or repair by the user is not recommended.

TROUBLE SHOOTING TIPS

Gage won't indicate or is sluggish.

1. Duplicate pressure port not plugged.
2. Diaphragm ruptured due to overpressure.
3. Fittings or sensing lines blocked, pinched, or leaking.
4. Cover loose or "O" ring damaged, missing.
5. Pressure sensor, (static tips, Pitot tube, etc.) improperly located.
6. Ambient temperature too low. For operation below 20°F (-7°C), order gage with low temperature, (LT) option.

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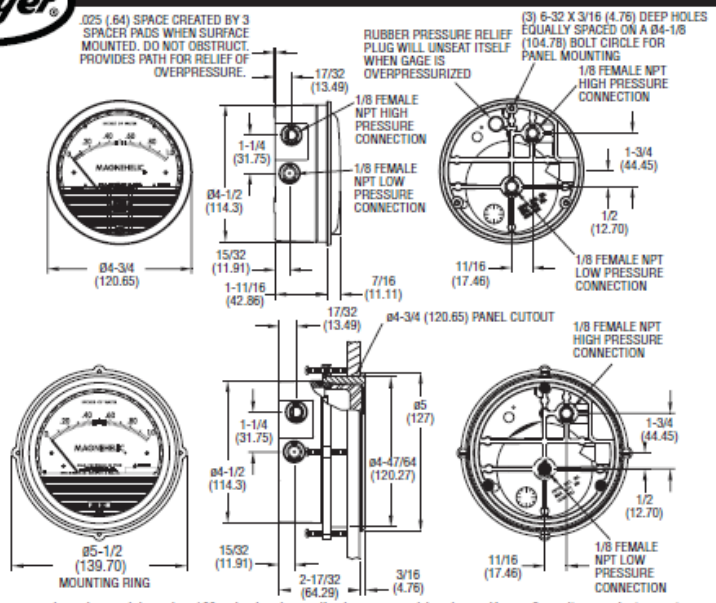
Magnehelic® Differential Pressure Gage
INSTRUCCIONES Y LISTA DE PARTES



(El tapón de goma no es usado en los modelos sobre 180 pulgadas de presión de agua, modelos de presión media o alta, o en instrumentos que requieren un elastizado en cualquier otro material que no sea silicona para el diafragma.)

Accesorios: Tapones 1/8" NPT para las conexiones duplicadas, dos adaptadores de rosca 1/8" NPT a tubo de goma; y tres adaptadores para montaje al ras y tornillos.

Accesorios para Los Modelos MP y HP: El anillo de montaje y el retensor del anillo de presión son substituidos por 3 adaptadores, acoesorios de compresión de 1/4" remplazan a los adaptadores de rosca 1/8" a tubo de goma.

Protección Para Sobrepresión: Los Manómetros Diferenciales Magnehelic Estándar están clasificados para una presión máxima de 15 psi y no se deberían de usar donde el límite puede exoederse. Los modelos emplean un tapón de goma en el trasero que funciona como una válvula de alivio desmontándose y ventilando el interior del instrumento cuando la sobrepresión alcanza aproximadamente 25 psig. (Los modelos MP y HP son excluidos) Para proveer un camino libre para el alivio de presión, el instrumento viene con rodilleras que mantienen un espacio de .023" cuando el instrumento es montado en superficie. No bloque el espacio creado por estas rodilleras.

† Para aplicaciones con alto ciclo de velocidad dentro de la clasificación de presión total del instrumento, la próxima clasificación mas alta es recomendada. Vea las opciones de media y alta presión.

El instrumento puede ser usado con hidrogeno cuando se ordena con diafragma de Buna-N. La presion tiene que ser menos de 35 psi.

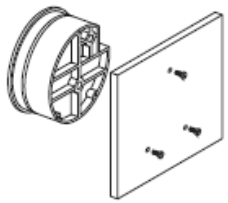
ESPECIFICACIONES

Servicio: aire y gases no combustibles, gases compatibles. (opcion disponible para uso con gas natural).
Materiales Mojados: Consulte con la fábrica.
Carcasa: Caja y anillo de retención de aluminio fundido a presión con tapadera de acrílico. (El modelo MP tiene la tapadera de policarbonato.)
Exactitud: ±2% de la escala completa (±3% en los márgenes de -0, -100PA, -125PA y -10MM y ±4 % en los márgenes de -00, -60PA y -6MM), en todo el margen a 21.1 °C (70 °F); Versión de alta precisión: ±1% de la escala completa (±1.5% en los márgenes de -0, -100PA, -125PA, -10MM y ±2% en los márgenes de -00, -60PA, -6MM).
Límite de Presión: -20 Hg. a 15 psig. † (-0.677 bar a 1,034 bar); opción MP: 35 psig (2.41 bar), opción HP: 80 psig (5.52 bar).
Clasificación de gabinete: IP67.
Sobrepresión: El tapón de alivio se abre aproximadamente a los 25 psig, modelos estandard únicamente. El tapón de goma no es usado en los modelos sobre 180 pulgadas de presión de agua, modelos de presión media o alta, o en instrumentos que requieren un elastizado en cualquier otro material que no sea silicio para el diafragma.
Límite de Temperatura: -6.67 a 60ºC. * Modelos de baja temperatura disponibles como opción especial.
Dimensiones: diám. 120,65 mm x 55,6 prof.
Orientación de Montaje: El diafragma debe ser usado solo en posición vertical. Consulte con la fábrica para otras orientaciones de posición.
Conexiones: 1/8" NPT para alta y baja presión, duplicadas (atrás, a los lados).
Peso: 510 g, MP y HP 963 g.
Aprobación de la agencia: RoHS.

Instalacion

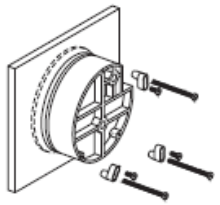
Seleccione un lugar libe de exceso de vibraciones, y donde la temperatura ambiente no supere los 60°C. Evite luz solar directa, para evitar decoloración de la cubierta plástica. Las conexiones de proceso pueden tener cualquier longitud sin afectar la exactitud, pero pueden extender el tiempo de respuesta del instrumento. Si hay pulsación de presión o vibración, consulte a fábrica sobre medios de amortiguación. Los MAGNEHELIC han sido calibrados con el diafragma vertical, y deben ser usados en esas condiciones. Para otras posiciones, se debe especificar en la orden de provisión. Los de rango elevado pueden ser usados en diversas posiciones, pero se debe reajustar el cero. Los modelos de la serie 2000-00 y equivalentes métricos deben ser usados solo verticalmente.

Montaje en Superficie



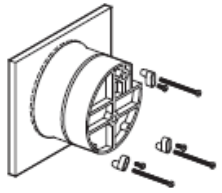
Perfore tres orificios separados 120° sobre una circunferencia de 105 mm de diám. y sostenga el instrumento con tres tornillos 6-32 de long. apropiada.

Montaje alineado



Perfore un circulo de 115 mm de diám. en el panel, y sostenga el instrumento mediante los.

Para instalar el bisel de acero inoxidable



Haga una apertura de 4-9/16 pulgadas en el panel. Inserte el medidor y asegure con los herrajes de montaje provistos.

Montaje Sobre Pipa

Para montar el instrumento sobre pipas de 32 a 50 mm de diám., ordene el adaptador opcional A-610.

Puesta a Cero Después de Instalar

Deje las conexiones de presión abiertas a atmósfera y ajuste a cero desde tornillo del panel frontal.

Operacion

Presión Positiva: Conecte la tubería desde la fuente de presión a cualquiera de las dos conexiones de alta presión (HIGH), bloqueando la no usada; Las conexiones de baja (LOW) presión pueden dejarse uno o los dos abiertos a la atmósfera.
Presión Negativa: Repita el procedimiento anterior, conectado en este caso las conexiones de baja presión (LOW). Deje las otras conexiones abiertas.
Presión diferencial: Conecte el tubo correspondiente a la presión más positiva al cualquiera de los conectores de alta presión (HIGH) bloqueando el no usado, y la más baja presión o presión negativa (vacío) al conector de baja presión (LOW). Puede usarse cualquier conector de cada par, dejando siempre uno bloqueado. Si se deja una conexión abierta a la atmósfera, se recomienda el uso de un filtro tipo A-331 en el lugar correspondiente para mantener limpio el interior del instrumento. Para uso portable, o instalación temporaria, uso adapta dores para rosca de tubo de 1/89 a tubo flexible, y conecte a proceso mediante una tubería de goma, o equivalente. Para instalación permanente, se recomienda el uso de tubo de cobre o aluminio de por lo menos 1/4" de diám. exterior.

No se requiere mantenimiento especifico alguno, ni lubricación. Periódicamente, desconecte el instrumento, ventee la presión acumulada, y reajuste el cero. Para instalaciones permanentes, se debe usar un juego de válvulas de montaje permanente para el venteo.
El instrumento de Serie 2000 no puede ser re parado en el campo y debería de ser regresado si reparos son necesarios (Reparos en el campo no deben de ser intentados y pueden cancelar la garantía.). Asegurarse de incluir una descripción breve del problema más cualquier notas pertinentes a la aplicación para devolución de productos antes de enviar el instrumento.

Cuidado! : La recalibración en campo puede invalidar la garantía. No se recomienda la recalibracion por parte del usuario. En caso necesario envie el instrumento con transporte pago a:

Localización De Fallas

• El instrumento no indica, o es lento en reacción.
1. Conexión duplicada abierta.
2. Diafragma roto por sobrepresión.
3. Tubería de conexión perforada, con pérdidas o pinchazos.
4. Anillo de retención flojo, u "O" ring dañado.
5. Conexión a proceso indebida o inadecuada.
6. Temperatura muy baja. Para este caso ordene tipos LT (baja temperatura).

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Section 6: Replacement Parts

BASE SS HIGH FLOW AIR STRIPPER (INCLUDES LEVEL SWITCHES) 2-115GPM 600 CFM

STRIPPER,LOW PROFILE,1 TRAY 2-115GPM,600CFM	16140021
STRIPPER,LOW PROFILE,2 TRAY 2-115GPM,600CFM	16140017
STRIPPER,LOW PROFILE,3 TRAY 2-115GPM,600CFM	16140022
STRIPPER,LOW PROFILE,4 TRAY 2-115GPM,600CFM	16140023
STRIPPER,LOW PROFILE,5 TRAY 2-115GPM,600CFM	16140008
STRIPPER,LOW PROFILE,6 TRAY 2-115GPM,600CFM	16140024

3-160GPM 900CFM

STRIPPER,LOW PROFILE,1 TRAY 3-160GPM,900CFM	16140025
STRIPPER,LOW PROFILE,2 TRAY 3-160GPM,900CFM	16140026
STRIPPER,LOW PROFILE,3 TRAY 3-160GPM,900CFM	16140027
STRIPPER,LOW PROFILE,4 TRAY 3-160GPM,900CFM	16140028
STRIPPER,LOW PROFILE,5 TRAY 3-160GPM,900CFM	16140029
STRIPPER,LOW PROFILE,6 TRAY 3-160GPM,900CFM	16140030

6-425GPM 1800CFM

STRIPPER,LOW PROFILE,1 TRAY 6-425GPM,1800CFM	16140031
STRIPPER,LOW PROFILE,2 TRAY 6-425GPM,1800CFM	16140032
STRIPPER,LOW PROFILE,3 TRAY 6-425GPM,1800CFM	16140033
STRIPPER,LOW PROFILE,4 TRAY 6-425GPM,1800CFM	16140034
STRIPPER,LOW PROFILE,5 TRAY 6-425GPM,1800CFM	16140035
STRIPPER,LOW PROFILE,6 TRAY 6-425GPM,1800CFM	16140036

8-550GPM 2400CFM

STRIPPER,LOW PROFILE,1 TRAY 8-550GPM,2400CFM	16140037
STRIPPER,LOW PROFILE,2 TRAY 8-550GPM,2400CFM	16140038
STRIPPER,LOW PROFILE,3 TRAY 8-550GPM,2400CFM	16140039
STRIPPER,LOW PROFILE,4 TRAY 8-550GPM,2400CFM	16140040
STRIPPER,LOW PROFILE,5 TRAY 8-550GPM,2400CFM	16140041
STRIPPER,LOW PROFILE,6 TRAY 8-550GPM,2400CFM	16140042

12-1000GPM 3600CFM

STRIPPER,LOW PROFILE,1 TRAY 12-1000GPM,3600CFM	16140043
STRIPPER,LOW PROFILE,2 TRAY 12-1000GPM,3600CFM	16140044
STRIPPER,LOW PROFILE,3 TRAY 12-1000GPM,3600CFM	16140045
STRIPPER,LOW PROFILE,4 TRAY 12-1000GPM,3600CFM	16140046
STRIPPER,LOW PROFILE,5 TRAY 12-1000GPM,3600CFM	16140047
STRIPPER,LOW PROFILE,6 TRAY 12-1000GPM,3600CFM	16140048

BLOWER OPTIONS 3-PHASE TEFC

2-115GPM

BLOWER,3HP,600CFM,10PSI TEFC	16140049
BLOWER,10HP,460V,3PH,60HZ,TEFC FORCED DRAFT	16140018
BLOWER,5HP,600CFM,18PSI TEFC,900CFM,14PSI	16140050
BLOWER,7.5HP,600CFM,22PSI TEFC	16140051
BLOWER,10HP,230V,3PH,TEFC FORECED DRAFT	16140010
BLOWER,10HP,600CFM,30PSI TEFC	16140052

3-160GPM

BLOWER,5HP,900CFM,10PSI TEFC, 230V/460V	16140053
BLOWER,5HP,600CFM,18PSI TEFC,900CFM,14PSI, 230V/460V	16140050
BLOWER,7.5HP,900CFM,18PSI TEFC, 230V/460V	16140054
BLOWER,7.5HP,900CFM,22PSI XP, 230V/460V	16140055
BLOWER,10HP,900CFM,26PSI TEFC, 230V/460V	16140056
BLOWER,15HP,900CFM,30PSI TEFC,1800CFM,18PSI, 230V/460V	16140057

6-425GPM

BLOWER,7.5HP,1800CFM,10PSI TEFC, 230V/460V	16140058
BLOWER,10HP,1800CFM,14PSI TEFC, 230V/460V	16140059
BLOWER,15HP,900CFM,30PSI TEFC,1800CFM,18PSI, 230V/460V	16140057
BLOWER,15HP,1800CFM,22PSI TEFC, 230V/460V	16140060
BLOWER,20HP,1800CFM,26PSI TEFC, 460V	16140061
BLOWER,25HP,1800CFM,30PSI TEFC, 460V	16140062

8-550GPM

BLOWER,20HP,2400CFM,10PSI TEFC, 460V	16140063
BLOWER,25HP,2400CFM,14-18PSI TEFC, 460V	16140064
BLOWER,25HP,2400CFM,22-26PSI TEFC, 460V	16140065
BLOWER,40HP,2400CFM,30PSI TEFC, 460V	16140066

12-1000GPM

BLOWER,30HP,3600CFM,10PSI TEFC, 460V	16140067
BLOWER,30HP,3600CFM,14PSI TEFC, 460V	16140068
BLOWER,40HP,3600CFM,18PSI TEFC, 460V	16140069
BLOWER,50HP,3600CFM,22PSI TEFC, 460V	16140070
BLOWER,50HP,3600CFM,26PSI TEFC, 460V	16140071
BLOWER,50HP,3600CFM,30PSI TEFC, 460V	16140072

MOTOR STARTER

MOTOR STARTER, 40-57A, 25HP 460V,3PH,115V COIL	16110073
MOTOR STARTER, 145-175A, 40HP, 460V, 3PH, 115V COIL	16140080
MOTOR STARTER, 145-175A, 50HP, 460V, 3PH, 115V COIL	16140081

SST AIR STRIPPER ACCESSORIES

PUMP,TRANSFER,2HP,3/60/230-46 TEFC, 4.38NPE,3ST1G9C4, GOULDS	16140012
ASSY,SHUT DOWN,HIGH PRESSURE	2100075
LO PRESS. SHUT DOWN ASSY:	2100074
JUNCTION BOX,SIGNAL	2390065
CFM GAUGE ASSY,0-1000CFM	2459011
GECM, AIR STRIPPER	86110011
SKID 74” X 65”	16140074
SKID 72" X 74”	16140075
SKID 76" X 150"	16140076
SKID 88" X 150"	16140077
SKID 118" X 150"	16140078
SKID 146" X 150"	16140079
PANEL,WITH LEGS, LOPRO IIS, MOUNTING, GECM	56080003
TELEMETRY MODULE,GECM/SIPPER	86200003
DATA PLAN,VZCOM,1YEAR CONTRACTCBDP-2,2MB DATA,25 SMS ALARMS	12106135
MANUAL, SST HIGHFLOW AIR STR	16140073

REVISION HISTORY		
Project #	**Description**	**Date**
1655	Manual release – StellaR	6/27/2019

The Warranty

For a period of one (1) year from date of first sale, product is warranted to be free from defects in materials and workmanship. Geotech agrees to repair or replace, at Geotech's option, the portion proving defective, or at our option to refund the purchase price thereof. Geotech will have no warranty obligation if the product is subjected to abnormal operating conditions, accident, abuse, misuse, unauthorized modification, alteration, repair, or replacement of wear parts. User assumes all other risk, if any, including the risk of injury, loss, or damage, direct or consequential, arising out of the use, misuse, or inability to use this product. User agrees to use, maintain and install product in accordance with recommendations and instructions. User is responsible for transportation charges connected to the repair or replacement of product under this warranty.

Equipment Return Policy

A Return Material Authorization number (RMA #) is required prior to return of any equipment to our facilities, please call our 800 number for appropriate location. An RMA # will be issued upon receipt of your request to return equipment, which should include reasons for the return. Your return shipment to us must have this RMA # clearly marked on the outside of the package. Proof of date of purchase is required for processing of all warranty requests.

This policy applies to both equipment sales and repair orders.

FOR A RETURN MATERIAL AUTHORIZATION,
PLEASE CALL OUR SERVICE DEPARTMENT AT 1-800-833-7958

Model Number: _____

Serial Number: _____

Date of Purchase: _____

Equipment Decontamination

Prior to return, all equipment must be thoroughly cleaned and decontaminated. Please make note on RMA form, the use of equipment, contaminants equipment was exposed to, and decontamination solutions/methods used.

Geotech reserves the right to refuse any equipment not properly decontaminated. Geotech may also choose to decontaminate equipment for a fee, which will be applied to the repair order invoice.

Geotech Environmental Equipment, Inc
2650 East 40th Avenue Denver, Colorado 80205
(303) 320-4764 ●(**800) 833-7958** ● FAX (303) 322-7242
email: sales@geotechenv.com website: www.geotechenv.com