ALGAE-X International

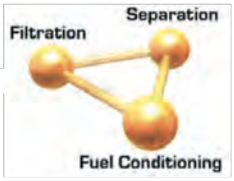
Installation, Operating and Maintenance Manual

STS 6000-SX

Automated Fuel Filtration System

- UL508a SMART Filtration Controller
- Unique Alarm & Remote Monitoring
- NEMA Certified Powder Coated Cabinet
- Continuous-Duty Pump with Viton Seals
- Stainless Steel Plumbing
- Stand Alone, Reliable & Turn-Key
- Multi-Stage Water Removal and Particulate Filtration

Optimal Fuel Quality • Reliable Power



INSTALLATION, OPERATING AND MAINTENANCE MANUAL

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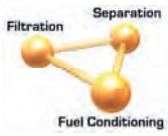
STS 6000-SX

Programmable Automated Fuel Filtration System



STS 6000-SX Programmable Automated Fuel Filtration Systems are self-contained, stand-alone systems that remove and prevent the buildup of water, sludge and contaminants in tanks. They stabilize diesel and bio-fuels, eliminate microbial contamination to optimize and maintain fuel quality. STS systems guarantee **Optimal Fuel Quality** for **Reliable Power at All Times**.

The **STS 6000 Series feature:**

- Multi-stage water removal and particulate filtration
- NEMA 12, 13, 4 Powder Coated or Stainless
- UL508A SMART Filtration Controller
- Unique Alarm Functions and Remote Monitoring
- Integrates with Building Management Systems
- Stainless Steel Plumbing
- **Stand-Alone, Reliable & Turn-Key**

For safe operation, the **STS 6000-SX** triggers automatic alarms and shuts down the pump when filters need service; a leak is detected; high separator water level, high filter vacuum, or high pump pressure occurs; or when the fuel flow is out of range.

Preventive Maintenance Plans for mission-critical power are essential. However, most service agreements do not cover fuel-related engine failures. Fuel has a limited shelf-life and even "fresh fuel" could contain water, sediment, microbes and bio-fuel components upon delivery.

Periodic generator tests-runs are too short to determine if fuel quality is adequate for the demands of continuous, full-load operation. In fact, generator test runs significantly accelerate the fuel polymerization and degradation process by returning fuel that has been compromised by heat and pressure back to the tank.

Potential liabilities can easily be avoided by implementing an **AXI Fuel Quality Maintenance Program** as part of every disaster recovery plan. An STS 6000-SX automatically maintains fuel quality and guarantees reliable emergency power whenever it is needed.

STS 6000-SX SPECIFICATIONS

Flow Rate	150 GPH
Primary Filter/Water Separator/Coalescer	10 or 30 µ Fine Filter or 60 µ SS Screen
Fuel Conditioner	LG-X 500
Smart Filtration Controller	SFC-50
Pump	Internal Gear Pump
Power	110V 60Hz 15A or 230V 50Hz 15A
Plumbing	Stainless Steel
Ports	In 3/4" NPT Out 1/2" NPT
Weatherproof Cabinet	NEMA 12, 13, 4 Powder Coat or Stainless
Dimensions	35" x 24" x 10" (89 x 61 x 25 cm)
Weight	≈135 lbs
Not for use with fluids that have a flash point below 100°F.	

ALGAE-X International

+1-239-690-9589
1-877-425-4239 Toll Free
www.AXIFuelConditioning.com

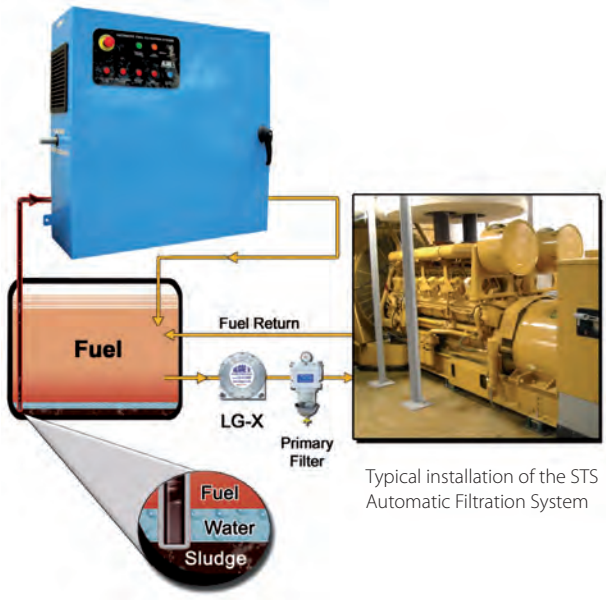
Wherever fuel is being used or stored

The system is automatically operated by the programmable UL508A **SMART Filtration Controller.** All components and control devices are contained within a fully enclosed, lockable, weatherproof, NEMA-rated cabinet.

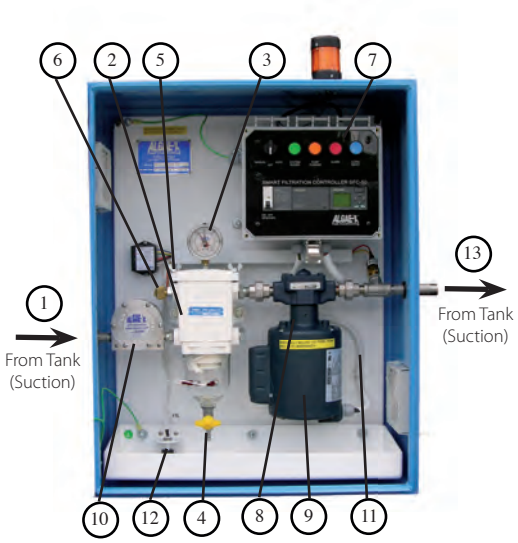
The **principal components** are a continuous-duty motor with coupled gear pump, a strainer/primary coalescing filter with vacuum sensor and gauge, an ALGAE-X Fuel Conditioner and a secondary water block fine filter with pressure gauge and sensor.

The **SEPAR primary filter** protects the pump, coalesces and removes water and particulate. The patented **ALGAE-X Fuel Conditioner** prevents and reverses fuel degradation, agglomerization and microbial contamination.

Implementing STS Fuel Quality Optimization & Maintenance Systems guarantee **Optimal Fuel Quality** for **Reliable Power At All Times**. STS 6000-SX System prevents downtime, periodic tank cleaning, replacing out-of-spec fuel and fuel-quality related injection system repairs.



Typical installation of the STS Automatic Filtration System



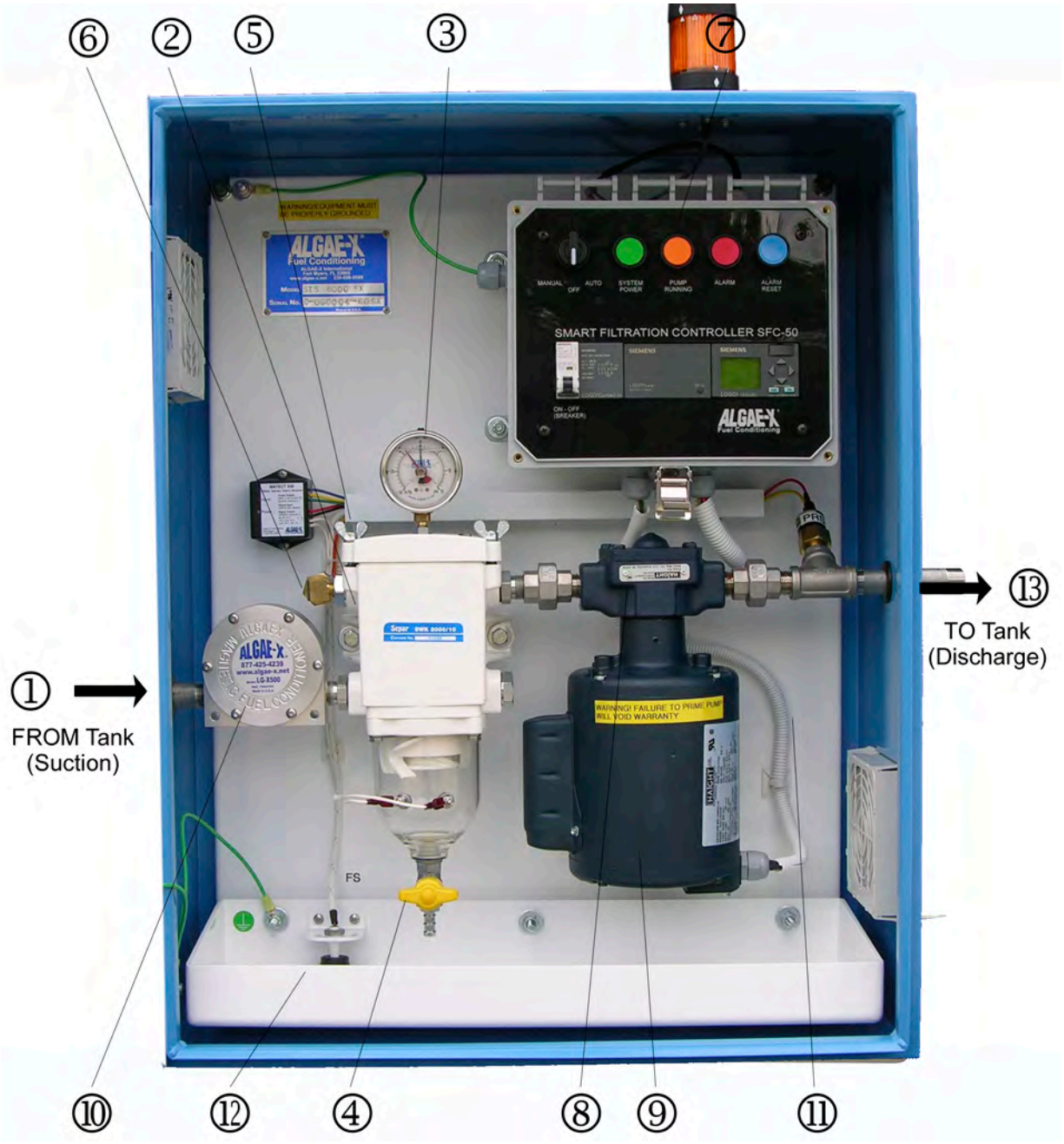
Inside the STS 6000-SX

1. Fuel Inlet (From Tank)
2. Separ Primary Filter / Water Separator
3. Vacuum Gauge
4. Drain Valve (push and turn open)
5. Man. Air Vent / Bleed Screw
6. Vacuum Switch
7. ALGAE-X® Smart Filtration Controller
8. Gear Pump
9. Motor
10. ALGAE-X® Magnetic Fuel Conditioner
11. Pressure Switch
12. Leak Detector (Float Switch) in Spill Tray
13. Fuel Outlet (To Tank)

STS 6000-SX Accessories:

- Multiple tank functions
- AFC-705 Fuel Catalyst
- Digital Flow Meter
- Foot Valve
- Wide range of filter elements

OVERVIEW – BASIC SYSTEM COMPONENTS



1) Fuel Inlet (From Tank)
2) Separ Primary Filter / Water Separator
3) Vacuum Gauge
4) Drain Valve (push and turn open)
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11) Pressure Switch
12) Leak Detector (Float Switch) in Spill Tray
13) Fuel Outlet (To Tank)

GENERAL SPECIFICATIONS

STS 6000-SX

Flow Rate	approx. 150 gph
Outline Dimensions (Enclosure)	30" x 24" x 10" (H x W x D)
System Weight	approx. 135 lbs
Operating Temperature	41 - 104° F; 5 - 40° C
Electrical	115 V / 60 Hz / single phase (standard) 230 V / 50 Hz / single phase also available
Pump	Gear Pump
Suction capability (primed)	15 ft vertical or 100 ft. horizontal lift (lines >3/4", primed)
Motor	1/3 hp single phase, continuous duty, thermally protected
Timer	Programmable Digital Timer
Inlet	3/4" NPT male port
Outlet	1/2" NPT male port
Max. Fluid Viscosity	5 cSt

Note: The STS 6000 is designed to meet environmental standards for safe operation.
(NOT for use with fluids that have a flash point below 100° F (38° C), e.g.: gasoline, alcohol, …)

SYSTEM COMPONENTS

CONTROL AND SAFETY DEVICES

- Algae-X "Smart Filtration Controller" in electrical sub enclosure – UL 508A listed Industrial Control Panel
- Programmable Digital Timer –Memory backup to retain program memory during power outages
- Pump control switch (Auto-Off-Manual)
- Alarm reset push button
- Power available indicator
- Pump running indicator
- Alarm indicator / Alarm Beacon light on outside of enclosure
- Automatic pump shut-down on leak detection (in cabinet), primary filter / water separator high vacuum or high water and high pump discharge pressure
- Pump motor starter with single-pole circuit breaker and contactor
- External remote shut-down feature
- Dry alarm contacts (N.O.) for leak detection and summary alarm

PUMP / MOTOR:

- Positive displacement gear pump
- Motor – UL listed, TEFC, Thermal overload protection with Manual Reset

PRIMARY FILTER / WATER SEPARATOR

- SEPAR fuel filter with water separator with drain valve on the bottom
- Analog vacuum gauge
- Back flushable 30-micron filter cartridge (other filter elements available)

FUEL CONDITIONER

- Inline Algae-X Fuel Conditioner eliminates and prevents microbial contamination and the formation of sediments that naturally occur in diesel fuel.

WEATHERPROOF SINGLE DOOR WALL-MOUNTED ENCLOSURE WITH LOCKABLE HANDLES / LATCHES

- 14-gauge steel construction with continuously welded seams and concealed hinges
- Finished in polyester powder coat inside and out
- Spill tray with leak detection
- Louvered side panels
- Brackets for wall mounting
- Literature pocket

STAINLESS STEEL PLUMBING

PRIMARY INSPECTION

Upon arrival, the STS 6000-SX Automated Fuel Filtration System and accessories must be visually inspected before installation. Improper handling during shipping may cause physical or electrical problems. Immediately report or note any damages (also concealed ones) to the shipper.

CHECKLIST:

- ☐ If the packing crate shows signs of damage inspect the STS-6000 cabinet for damage. Check the entire outside of the cabinet for damage that could indicate internal mechanical or electrical problems.
- ☐ Check locking handles, door and hinge operation.
- ☐ Check pump/motor hardware and all plumbing connections for tightness.
- ☐ Check all electrical terminals and connections for tightness.

INSTALLATION

! IMPORTANT ! It is recommended that only qualified, experienced personnel, familiar with this type of equipment, who have read and understood all the instructions in this manual should install, operate and maintain the system.

MOUNTING

The STS-6000 is a totally enclosed system and should be **permanently wall mounted on a hard, level surface**. Use provided **mounting feet for proper fastening**. This weatherproof unit is designed for well-ventilated indoor or outdoor use within specified temperature range and should be located as close to the tank as possible.
Please allow about 1 ft of space between the side louvers of the enclosure and nearby objects. This space is necessary to ensure sufficient ventilation of cooling air for the system and motor.

ELECTRICAL

! WARNING ! To avoid the risk of electric shock make sure that the power supply to the system is disconnected and ensure that the system is at zero volts, before working on any of the system's electrical parts.

Make sure that the systems power requirements and rated voltage / frequency match your electrical system (See wiring diagram). The STS 6000 may only be connected to properly grounded power sources for operator safety. Connect all components to the ground studs provided as shown on the electrical drawings.

! WARNING ! The whole system (Enclosure, doors, plumbing, motor, electric sub panel) must be properly grounded for operator safety.

Depending on length of run, use copper wiring according to specification in wiring diagram and connect system to a separate UL listed breaker (not included) appropriate for branch circuit protection.

Note: Wiring and electrical installation must be in accordance with all applicable Federal, State and Local rules, laws, standards and regulations.

Remote Pump Shut-Down Feature:
If required, connect the **"external pump shut down input terminal"** (see wiring diagram) and follow the specifications provided in the electrical wiring diagram to disable pump (e.g.: remote shut down, remote pump control, …). Please note that the contact needs to be supplied with +24V DC from the power supply of the STS 6000 Algae-X Smart Filtration Controller.

Remote Monitoring - Dry Contacts:
The SFC-50 provides two NO (normally open) dry contacts for remote alarm monitoring. Please see wiring diagram for contact rating, connection and location.

- "Summary Alarm" – dry alarm contact for high vacuum, high pressure or water detection
- "Leak Detection" – dry alarm contact for leak detection

PLUMBING

Use proper quality approved fuel line materials with at least 3/4" inner diameter on the suction side from the tank and at least 1/2" inner diameter on the return / discharge side back to the tank.

We recommend **installing full flow shut-off valves** on both **inlet and outlet side** as well as connect external plumbing with unions.

Note: Do not put any stress on plumbing of STS 6000 and use a backing wrench when connecting the external plumbing.

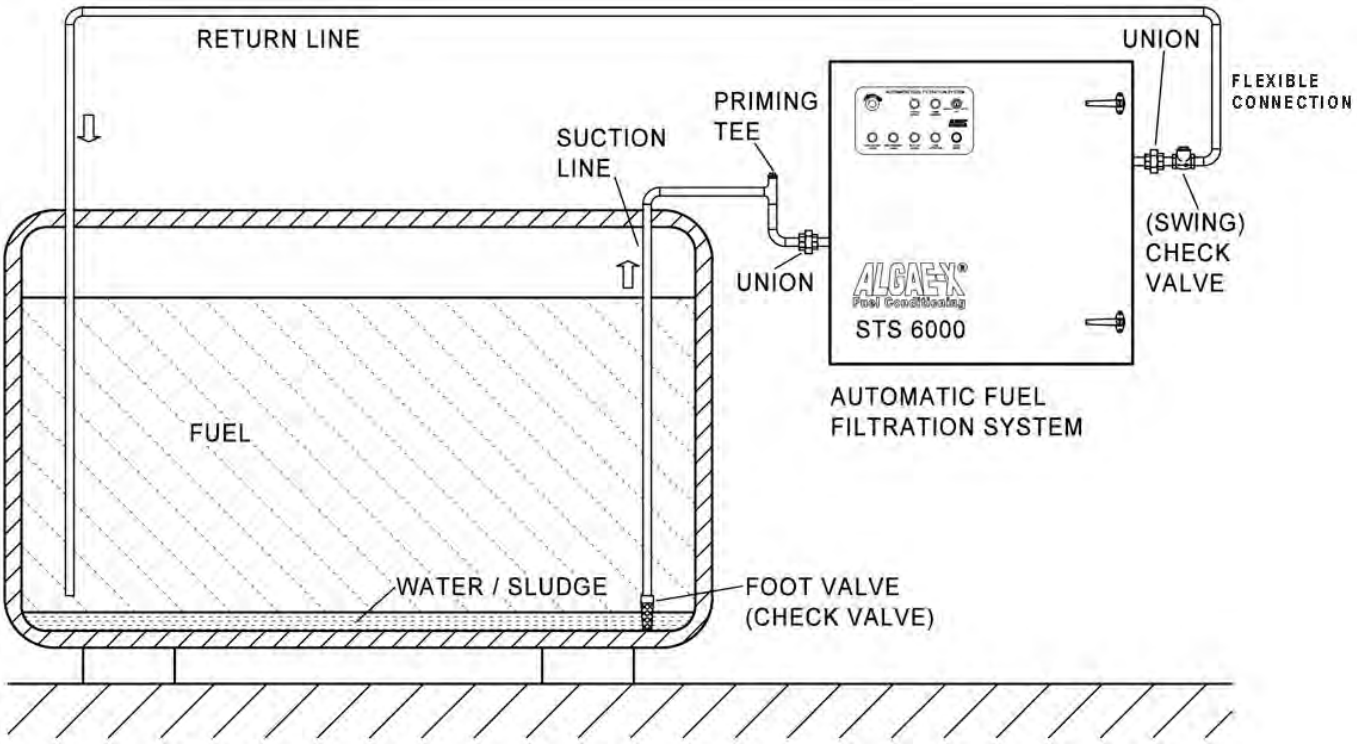
The **pick-up tube/line(s)** should originate from the **lowest point of the tank** (to remove all water), should be connected directly to the system's "PUMP INLET – SUPPLY FROM TANK" port located on the left hand side of the enclosure and **kept as short as possible**. It is recommended to install an **oversized, low restriction foot valve** to keep the system primed, especially if the "PUMP INLET – SUPPLY FROM TANK" port of the system is located above the lowest possible fuel level in the tank. A **priming tee should be installed on the highest point of the suction line** to be able to easily prime the lines and system.

The **return line(s)** should be plumbed to the "PUMP OUTLET – RETURN TO TANK" port (on the right side of the system) and enter the tank **as far as possible from the pick up tube** close to the tank bottom. A (swing) **check valve may be required on the return line(s)** on some installations to prevent back flow pressure.
Multiple suction and/or return lines may be connected to a manifold outside the STS-6000 (see options list).
Anti-Siphon or other external plumbing devices may be required – please check local regulations / code.

The system capabilities are 15 ft suction (vertical) or 100 ft horizontal lift, when connected to piping of 3/4" ID or more with no additional flow restrictions such as valves, 90-degree connectors or other plumbing accessories. For continuous optimal performance, make sure suction and discharge lines are free and that nothing is blocking the flow of fuel and that the **suction line always stays primed**.

Note: Plumbing and Installation must be in accordance with all applicable Federal, State and Local rules, laws, standards and regulations.

TYPICAL PLUMBING / ABOVE GROUND TANK INSTALLATION (SCHEMATICALLY)



IMPORTANT INSTALLATION PRECAUTIONS

The **suction line** of the system **should be independent** and **separate from the suction line of the engine**. If that is not possible, appropriate valves must be installed to completely separate the STS-6000 from the engine fuel system to prevent any possible interference with safe engine operation.

It is highly recommended to plumb the **discharge line** independent and separate of the engine's fuel return line back to the tank. If the return line from the engine and the discharge of the STS 6000 have to be combined in any way, adequate valves should be installed to prevent any possible interference with safe engine operation.

Note: If any of the STS 6000 system's fuel lines are used in combination with the engine's fuel system, the STS 6000 should be disabled during engine operation (use the provided "remote pump shut down" feature as shown in the electrical drawing and described above).

PRIMING THE SYSTEM

The **pump supplied with the STS 6000 is NOT automatically self-priming** and must not be run dry.

! WARNING ! If the pump is allowed to run without fuel, pump damage will occur.

The pump head of the STS 6000 unit is shipped from the factory filled with Diesel #2 to facilitate initial lubrication. This will not eliminate the necessity to prime the complete system. The STS 6000 is primed by using the externally installed priming tee (not provided) on the suction side of the system. Also the primary filter as well as the suction line has to be completely filled with fuel prior to the initial system start-up.

PRIMING PROCEDURE:

1. Ensure the pump is filled with #2 Diesel fuel.
2. Ensure that the inlet ball valve (not provided – externally mounted) is in the open and the outlet ball valve (not provided – externally mounted) is in the closed position.
3. Slightly open the manual air vent valve (bleed screw) located inside the STS 6000 (position #5 – page 5).
4. Open the externally installed priming tee (located at the highest point of the suction plumbing), fill the line with fuel until fuel escapes from bleed screw (manual air vent), close the manual air vent, continue filling until all air is bled from the plumbing lines and system, close the priming tee. (for tanks situated on a lower level than the STS 6000, it is recommended that a foot valve is installed at the fuel tank to hold the fuel column).
5. Make sure to completely fill suction line to its highest point with fuel (no trapped air), in particular when the suction line exits the tank top and the STS 6000 is located below that level.
6. Open the outlet ball valve and ensure the inlet ball valve is also in open position.
7. Switch on the pump and observe fuel flow.

SMART FILTRATION CONTROLLER - ALARM FEATURES

The STS 6000 is equipped with an **Algae-X Smart Filtration Controller**. System and alarm status are displayed on the industrial control panel via indicator lights and on the text display directly on the controller.

The system is equipped with a vacuum gauge on the input side of the pump. The gauge should read 0 to 9" HG vacuum maximum under normal conditions. Vacuum gauge readings reaching 12" HG vacuum indicate excessive debris in the primary filter/ water separator (or a flow restriction or too high suction height and therefore pressure drop in the suction line) and will result in pump shutdown and activate the high vacuum alarm.

Note: 12" HG vacuum = clogged primary filter or suction line flow restriction / excessive lift.

The system's discharge pressure should not exceed 22 PSI maximum under normal conditions (.433 PSI = 1' vertical head pressure). System pressure over 22 PSI indicates a high-pressure alarm and will automatically shut down the pump.

INITIAL START-UP / COMMISSIONING CHECKLIST

GAUGE VENTING / ACCURACY

After shipment, pointer of gauges may not rest at zero due to internal case pressure buildup caused by temperature variations. **Accuracy may be significantly reduced**. To restore **gauge to operating condition, move yellow lever of fill plug to the "open" position** or remove small plug from top of gauge and leave open.

INITIAL TEST PROCEDURE

- ☐ With breakers and power turned on and pump running **check all alarms** for proper operation:

1. Manually raise float switch located in drip/spill tray. Pump should immediately turn off and "FUEL LEAK" should be displayed as well as the red indicator light will turn on. Reset alarm by pushing the "RESET ALARM" button on the control panel.
2. Slowly partially close inlet ball valve (not provided – externally mounted). At 12"HG pump should turn off and "PLS. SERVICE PRIM. FILTER" should be displayed as well as the red indicator light will illuminate. Open inlet ball valve again. Reset alarm by pushing the "RESET ALARM" button.
3. Slowly partially close outlet ball valve (not provided – externally mounted). At 22 PSI pump should turn off (after a delay of about 0.25 second) and "HIGH PRESS. ALARM" should be displayed as well as the red indicator light will illuminate. Open outlet ball valve again. Reset alarm by pushing the "RESET ALARM" button.
4. Short the two water contacts with jumper on the bowl of the primary filter. Pump should turn off and "PLS. DRAIN WATER/BOWL" should be displayed as well as the red indicator light will illuminate. Reset alarm by pushing the "RESET ALARM" button on the control panel.

Note: If any of the above described alarm test procedures fail or if any alarm trip value deviates immediately contact Algae-X International.

OPERATION

! WARNING ! Do not use with gasoline. This System is not meant for use with gasoline nor with other flammable liquids having a flash point less than 100°F. Use with gasoline or use with any flammable liquids at a temperature exceeding their flash point, presents an immediate explosion and fire hazard.

! WARNING ! Never use the STS 6000 at a temperature exceeding the flash point of its contents.

PUMP OPERATION

Apply control power to unit. Place breakers in the Algae-X Smart Filtration Controller in the "ON" position.

Automatic:

Place the selector switch in the "AUTO" position. When the timer contacts close, the pump will start and run until the timer setting has expired.

Manual:

Place the selector switch in the "MANUAL" position. The pump motor will run until the switch is returned to the "OFF" or "AUTO" mode positions or till an alarm or overload has been tripped.

PROGRAMMING THE TIMER

The programmable timer is part of the Micro PLC settings of the Algae-X SFC-50 Smart Filtration Controller.

Note: The PLC uses military time – all times programmed must be in that format.

Please make sure the selector switch set to "OFF" and push the "ALARM RESET" button on the control panel.
When power is first applied to the system the display of the PLC will show (blinking) date and time.
We will now set current date and time (must be in military format):
Hit the "ESC" button
Select 'Stop' and press "OK"
Select 'Yes' (use down arrow key) and press "OK"
Select 'Setup' (use down arrow key)and press "OK"
Select 'Clock' and press "OK"
Select 'Set Clock' and press "OK"
Using the arrow keys set current day of the week, time and date as indicated in the display and press "OK"
(or to change value, or to change between week day, time and date).
When finished entering press "OK" to confirm
Press "ESC"
Select 'Start' and press "OK" – correct time and date should be displayed
We are now ready to program the timer (military time format must be used):
Hit the "ESC" button
Select 'Set Param' (use down arrow key) and press "OK"
Push down arrow key till 'Timer 1' is displayed
Press "OK"
Use left and right arrow keys to select the day/days of the week the system should automatically turn on and the up or down arrow key to activate the selected day.
Use arrow keys in same manner to program the 'On' time – when the system will switch on (on the selected day/days)
Use arrow keys in same manner to program the 'Off' time – when the system will switch off (on the selected day/days)
Press "OK" to confirm entry when finished
If required you can set up to 3 Timers by using the up and down arrow key
Press "ESC" twice to return back to the time and date display

Please call Algae-X International with any questions.

FUEL LINE LEAK

If fuel is detected in the spill / drip tray, the float switch will activate the fuel leak alarm. The pump motor will shut off and remain locked out of operation until the leak has been corrected and the "ALARM RESET" button has been pushed.
Before removing the spilled fuel from the basin, turn the selector switch to the "OFF" position.

Always make sure to find the cause of the leakage and correct it. After removing the spilled fuel, allowing the leak switch to return to its normal position, the selector switch can be returned to the "AUTO" or "MANUAL" mode.

Note: Disposal of fuel and associated waste should be done in accordance with Federal, State and Local regulations.

STABILIZING AND OPTIMIZING FUEL QUALITY

We recommend treating the fuel with the **ALGAE-X® Fuel Catalyst (AFC-705)**. This will enhance and accelerate the tank cleaning process by breaking down and dissolving existing tank sludge. AFC-705 will decontaminate compartments of the tank that are out of reach of the suction line. Depending on the condition of the fuel and the amount of sludge build-up, it is recommended to initially use a double dose of one to twenty-five hundred (1:2500) instead of one to five thousand (1:5000) This has proven to be essential in accelerating the tank cleaning process. AFC-705 contains detergent, surfactant, dispersant, corrosion inhibitor, lubricity enhancer and combustion catalyst. It does not contain biocides. AFC-705 should always be used periodically in particular to stabilize fuel that is stored for longer periods of time.

Note: In cases of severe tank contaminant build-up (sludge) and high water level in bottom, it is recommended to clean the tank (vacuum bottom) and polish the fuel before initial use of an STS system.

MAINTENANCE

! IMPORTANT ! It is recommended that only qualified, experienced personnel, familiar with this equipment, who have read and understood all the instructions in this manual should install, operate and maintain the system.

! IMPORTANT ! Always disconnect the system from the electric power supply before working or servicing it. Do not proceed with any maintenance unless the pressure or vacuum has been released, the system has been allowed to reach ambient temperature and all fluids have been drained.

PREVENTATIVE MAINTENANCE

The STS 6000 Automated Fuel Filtration System should be visually **inspected and tested a minimum of every six months according to the procedure below** during light duty cycles. Monthly inspections are recommended for systems that are being used in excess of an average of 8 hours day and five days a week.

- ☐ Prior to performing the maintenance procedure ensure that:
  1. The electrical sub-panel mounted main disconnect switch is operating properly,
  2. the user supplied remote circuit breaker is in the "Off" position, and
  3. that all sources of power are isolated from the unit.
  4. Proceed only after this has been verified and properly tagged.
- ☐ Drain visible water and sediment from primary filter / water separator (see Servicing Primary Filter / Water Separator below).
- ☐ Check all parts for corrosion and rust.
- ☐ Check mounting hardware. Tighten as necessary.
- ☐ Check pump/motor hardware for tightness. Pump/motor hardware will loosen after normal operation due to vibration. This hardware is lock nutted, check all bolts for secure nuts.
- ☐ Check all electrical terminals and connections for tightness.
- ☐ All motors are permanently lubricated and do not require any lubrication.
- ☐ All pumps are self-lubricating and do not require any maintenance.
- ☐ Check all plumbing joints for leaks. Tighten fittings and joints as necessary. Remove accumulated fuel in drip tray as necessary.
- ☐ Inspect all filters and separators. See section below on filter inspection and service.
- ☐ With breakers and power turned on again and pump running check all alarms for proper operation:
  5. Manually raise float switch located in drip/spill tray. Pump should immediately turn off and "FUEL LEAK" should be displayed as well as the red indicator light will turn on. Reset alarm by pushing the "RESET ALARM" button on the control panel.
  6. Slowly partially close inlet ball valve. At 12"HG pump should turn off and "PLS. SERVICE PRIM. FILTER" should be displayed as well as the red indicator light will illuminate. Open inlet ball valve again. Reset alarm by pushing the "RESET ALARM" button.
  7. Slowly partially close outlet ball valve. At 22 PSI pump should turn off (after a delay of about 0.25 second) and "HIGH PRESS. ALARM" should be displayed as well as the red indicator light will illuminate. Open outlet ball valve again. Reset alarm by pushing the "RESET ALARM" button.
  8. Short the two water contacts with jumper on the bowl of the primary filter. Pump should turn off and "PLS. DRAIN WATER/BOWL" should be displayed as well as the red indicator light will illuminate. Reset alarm by pushing the "RESET ALARM" button on the control panel.

Note: If any of the above described alarm test procedures fail or if any alarm trip value deviates immediately contact Algae-X International.

Note: All filter elements should be replaced at least every six months.

SERVICING PRIMARY FILTER

Set the telltale gauge pressure indicator (red pointer) to slightly above the black needle prior to operation. The gauge will indicate maximum vacuum pressure during system operation. Always keep the vent lever or plug on the gauge in the open position for accurate gauge reading.

Clogging filter elements restrict the flow of fuel and the system's vacuum gauge will indicate a pressure drop. The gauge is mounted on top of the primary filter. At a pressure drop of 12" HG, the pump will automatically shut off and activate the red indicator light and display "PLS. SERVICE PRIM. FILTER". The signal indicates that it is time to either back-flush (Separ only) or change the filter element.

Servicing and back-flushing (Separ only) primary filter:

1. Turn selector switch to the "OFF" position – make sure pump will not turn on
2. Close the inlet and outlet ball valve (not provided)
3. Open the brass colored bleed screw at the top of the filter cover
4. Place a fuel waste container below the drain valve on the bottom of the filter bowl
5. Open the drain valve (Psh & turn counter clockwise)
6. Close after visible sediment, particles and water have been drained from the bowl
7. Prime the filter by removing the cover and pouring clean diesel fuel into the filter body until the fuel level reaches the top of the filter body
8. Replace the lid. Note: Evenly tighten the wing bolts to ensure a good seal
9. Close bleed screw on top of the lid
10. Open the inlet and outlet ball valve
11. Push the "ALARM RESET" button on the control panel to acknowledge the alarm and reset it
12. Return the pump selector switch to "AUTO" or "MANUAL"
13. Check for leaks when re-starting and pressurizing the system. Your system is now ready to resume normal operation

Note: On Separ models the filter elements can be back-flushed up to 5 times before replacement is required

SERVICING WATER SEPARATOR

If the water level in the primary filter/water separator reaches a certain level in the bowl, the water sensor will trigger the high water alarm and shut off the pump. The signal indicates that it is time to drain the bowl on the water separator. Please follow procedures above – Service primary filter

Note: Disposal of fuel, associated waste and filters should be done in accordance with Federal, State and Local regulations.

! WARNING ! Some fuels may have been treated with biocides. Biocides are extremely toxic and may enter the body through the skin. It is recommended to use adequate protection and proper precautions if fuel contains biocide type products.

TROUBLESHOOTING

No fuel delivery
1. Pump does not run
2. Pump is not primed
3. Fuel supply line blocked / no fuel in tank
4. Excessive lift
5. Air leak in fuel supply to pump
6. Pump rotation direction incorrect
7. Intake or outlet valve closed
8. Check valve installed backwards

Insufficient fuel delivered
1. Air leak at inlet
2. Defective pressure relief valve or check valve
3. Excessive lift
4. Pump worn
5. Inoperative foot valve
6. Piping improperly installed or dimensioned
7. Primary filter/water separator plugged

Rapid pump wear
1. Worn pump/motor coupler
2. Pump has been run dry or with insufficient fuel
3. Plumbing on inlet side not appropriately dimensioned

Alarm "PLS. SERVICE PRIM. FILTER" comes on with clean or new filter element installed
1. Heavily contaminated fuel / excessive water in tank
2. Restriction in plumbing on inlet side too high
3. Excessive lift
4. Inoperative foot valve
5. Inlet ball valve not fully open
6. Suction line clogged

Alarm "HIGH PRESS. ALARM" comes on
1. Restriction in plumbing on discharge side too high
2. Head (lift) on discharge side too high
3. Check valve stuck or defective
4. Outlet ball valve not fully open
5. Discharge line clogged

Pump requires too much power
1. Air in plumbing lines
2. Liquid too viscous
3. Bent pump shaft, binding rotor

Noisy operation
1. Insufficient fuel supply
2. Air leaks in the inlet pipe
3. Air or gas in fuel on the suction side

Pump requires frequent re-priming

1. Inoperative foot valve
2. Inoperative check valve
3. Inoperative solenoid valve
4. Pump cavitations
5. Plumbing air leaks
6. Lift too high
7. Leaking pump seal

Motor does not turn or turns intermittently

1. No Power / power failure / low voltage or bad power connection
2. Motor thermal overload condition
3. Pump failed and seized
4. Motor failure

Pump leaks fuel

1. Loose pump plumbing fittings
2. Worn pump shaft seal
3. Pump pressure relief valve failure
4. Fuel leak elsewhere and fuel dripping or running towards the pump
5. Excessive head from overhead storage tank
6. Worn pump O-rings or seals

AUTOMATED FUEL FILTRATION SYSTEMS WARRANTY

LIMITED WARRANTY

ALGAE-X® International makes every effort to assure that its products meet high quality and durability standards and expressly warrants the products described herein, against defects in material and workmanship for a period of one (1) year from the date of purchase. This warranty is not intended to supplant normal inspection, care and service of the products covered by the user, and shall not obligate ALGAE-X® to provide free service during the warranty period to correct breakage, maladjustment or other difficulties arising out of abuse, misuse, or improper care and maintenance of such products. Our express warranty is subject to the following terms and conditions:

1. This warranty shall only extend to and is only for the benefit of original purchasers who use the products covered hereby

2. Any warranty claim received by ALGAE-X® after one (1) year from the date of purchase will not be honored even if it is claimed that the defect occurred prior to one (1) year from the date of purchase.

3. This warranty shall not apply to products (1) which have been tampered with, altered or repaired by anyone other than ALGAE-X® without the express prior written consent of ALGAE-X® (2) which have been installed improperly or subject to misuse, abuse, accident, negligence of others, improper operation or maintenance, neglect or modification, or (3) which have had the serial number altered, defaced or removed.

4. The liability of ALGAE-X® under this warranty is limited to the repair or replacement of the defective product. ALGAE-X® assumes NO LIABILITY for labor charges or other costs incurred by any purchaser incidental to the service, adjustment, repair, return, removal or replacement of products. ALGAE-X® ASSUMES NO LIABILITY FOR ANY GENERAL, SPECIAL, INCIDENTAL, CONSEQUENTIAL, CONTINGENT OR OTHER DAMAGES UNDER ANY WARRANTY, EXPRESS OR IMPLIED, AND ALL SUCH LIABILITY IS HEREBY EXPRESSLY EXCLUDED.

5. ALGAE-X® MAKES NO WARRANTIES, EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OTHERWISE, WITH RESPECT TO THE PRODUCTS COVERED BY THIS WARRANTY POLICY, EXCEPT AS EXPRESSLY PROVIDED FOR HEREIN. NO EMPLOYEE, AGENT, REPRESENTATIVE OR DISTRIBUTOR IS AUTHORIZED TO MAKE ANY WARRANTY ON BEHALF OF ALGAE-X® OTHER THAN THE EXPRESS WARRANTY PROVIDED FOR HEREIN.

6. ALGAE-X® reserves the right at any time to make changes in the design, material, function and specifications of its products. Any such changes shall not obligate ALGAE-X® to make similar changes in such products that were previously manufactured.

WARRANTY CLAIM PROCEDURE

To make a claim under this warranty, please call our ALGAE-X® at (239) 690 9589 or (877) 425-4239, and provide: Name and location where unit was purchased, the date and receipt of purchase, model number, serial number, and a detailed explanation of the problem you are experiencing. The Customer Service Representative may, at the discretion of ALGAE-X®, arrange for a Field Engineer to inspect your system. If the inspection discloses a defect covered by its limited warranty, ALGAE-X® will either repair or replace the defective parts or products. ALGAE-X® assumes no liability, if upon inspection, ALGAE-X® or its representative determines that there is no defect or that the damage to the system resulted from causes not within the scope of this limited warranty. For service and sales, please contact ALGAE-X®:

ALGAE-X® International
5400-1 Division Drive, Fort Myers, FL 33905 • 877-425-4239 • Fax: 239-690-1195
Internet: www.algae-x.net • Email: algae-x@algae-x.net

APPENDIX A - ABBREVIATIONS USED IN THIS MANUAL

Abbreviations of terms used with STS 6000 Automated Fuel Filtration Systems. When following a drawing utilize this guide to define abbreviated system and component names. This is a master list. The drawings and text pertaining to your equipment may not contain all these terms.

AC	Alternating Current
AHR	Alarm Horn Relay
AH	Alarm Horn
BPRV	Back Pressure Regulating Valve
BRK	Motor/Pump Bracket
BV	Ball Valve
C	Contactor
CB	Circuit Breaker
CSR	Check Strainer Relay
CV	Check Valve
DC	Direct Current
DPDT	Double Pole Double Throw
F	Fuse
FLWS	Flow switch
FS	Float switch
GA	Gauge
GAL	Gallons
GPM	Gallons Per Minute
HFL	High Fuel Level Relay
HG	Mercury
HP	Horsepower
HZ	Hertz
I.D.	Inside Diameter
JB	Junction Box
" HG	Inches of Mercury
L	Lamp
L.E.D.	Light Emitting Diode
LFF	Loss of Flow Relay
LFL	Low Fuel Level Relay
LPR	Low Pressure Relay
MDB	Main Distribution Block
MDS	Main Disconnect Switch
MOT	Motor
N.C.	Normally Closed
NEC	National Electric Code
NEMA	National Electric Manufacturers Assoc.
N.O.	Normally Open
NP	Nameplate
NPT	National Pipe Thread
O.D.	Outside Diameter
OLR	Over Load Relay
OPT	Option
PCB	Printed Circuit Board
PCRX	Pump Control Relays
PG	Pressure Gauge
PLR	Pipe Leak Relay
PRV	Pressure Relief Valve
PPS	Pressure Switch
PSI	Pounds Per Square Inch
PSR	Pressure Switch Relay
PS	Power Supply
PRR	Pump Running Relay
SC	Swing Check Valve
SOL	Solenoid
TB	Terminal Block
T	Control Transformer
TDR	Time Delay Relay
TEFC	Totally Enclosed, Fan Cooled
THR	Tank Heater Control Relay
TS	Transducer Pressure Switch
V	Voltage
VAC	Voltage, Alternating Current
VDC	Voltage, Direct Current
VG	Vacuum Gauge

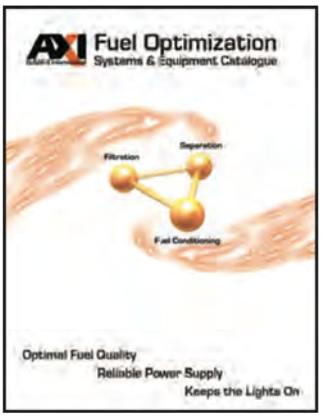
APPENDIX B – DRAWINGS

AXI designs and manufactures standardized and custom-engineered Automated Fuel Conditioning, Fuel Polishing and Transfer Systems, Tank Cleaning Equipment, Fuel Additives and In-line Fuel Conditioners to ensure optimal fuel quality at all times.

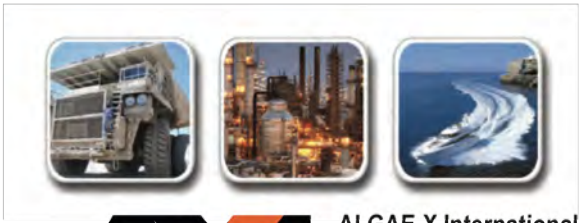
Our scope of expertise covers fuel storage and fuel supply systems from single engine installations to power plants. AXI is your single source for all fuel conditioning related equipment and support available world-wide.

- Peak Engine Performance
- Reliable Power Supply
- Lower Maintenance Costs
- Lower Exhaust Emissions

Read about the secret life of fuel and find solutions in the AXI Brochure, available at www.AXIFuelConditioning.net.



See the full product line in the AXI Systems and Equipment Catalogue, available at www.AXIFuelConditioning.net.



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