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ALGAE-X® Fuel Conditioning

STS 5000-10GPM

Fuel Conditioning and Filtration System

Installation, Operating and Maintenance Manual

- **Improves Engine Reliability**
- **Removes Water & Sludge**
- **Prevents Tank Sediments**
- **Optimizes Fuel Quality**
- **Stabilizes Fuel**

Optimal Fuel Quality Provides Peak Engine Performance

More Power • Less Smoke • Saves Fuel

INSTALLATION, OPERATING AND MAINTENANCE MANUAL

CONTENT

Fuel Conditioning & Filtration System

STS 5000

ALGAE-X® Fuel Conditioning and Filtration Systems for emergency generators, stored fuel, oil and hydraulic fluids.

The **STS** is a **Four Stage Fuel Treatment System**:

Stage 1: The centrifugal water separation system removes free water.

Stage 2: The primary filter removes large particulate and protects the pump.

Stage 3: The ALGAE-X® Fuel Conditioner reverses the process of fuel/oil deterioration, extends its shelf life and improves system reliability.

Stage 4: The secondary filter removes emulsified water and inorganic debris down to 3 Micron.

The **STS 5000-10GPM** is a totally enclosed, stand-alone, wall or pad mounted, Fuel Conditioning and Filtration System providing **Optimal Fuel Quality for Peak Engine Performance**. Since fuel is inherently unstable, solids begin to form and the accumulating tank sludge will eventually clog your filters and damage your injectors. It will cause engines to be un-reliable, smoke, lose power and ultimately break down.

				STS 5000
Flow rates	**2GPM**	**4GPM**	**7GPM**	**10GPM**
Tank Size	< 1,500 gal	1,500-5,000 gal	5,000-10,000 gal	10,000-20,000 gal
Port Size	1/2” NPT	3/4” NPT	1” NPT	1” NPT
LG-X Model	500	1500	3000	3000
Power	110V / 60Hz 230V / 50Hz	110V / 60Hz 230V / 50Hz	110V / 60Hz 230V / 50Hz	110V / 60Hz 230V / 50Hz

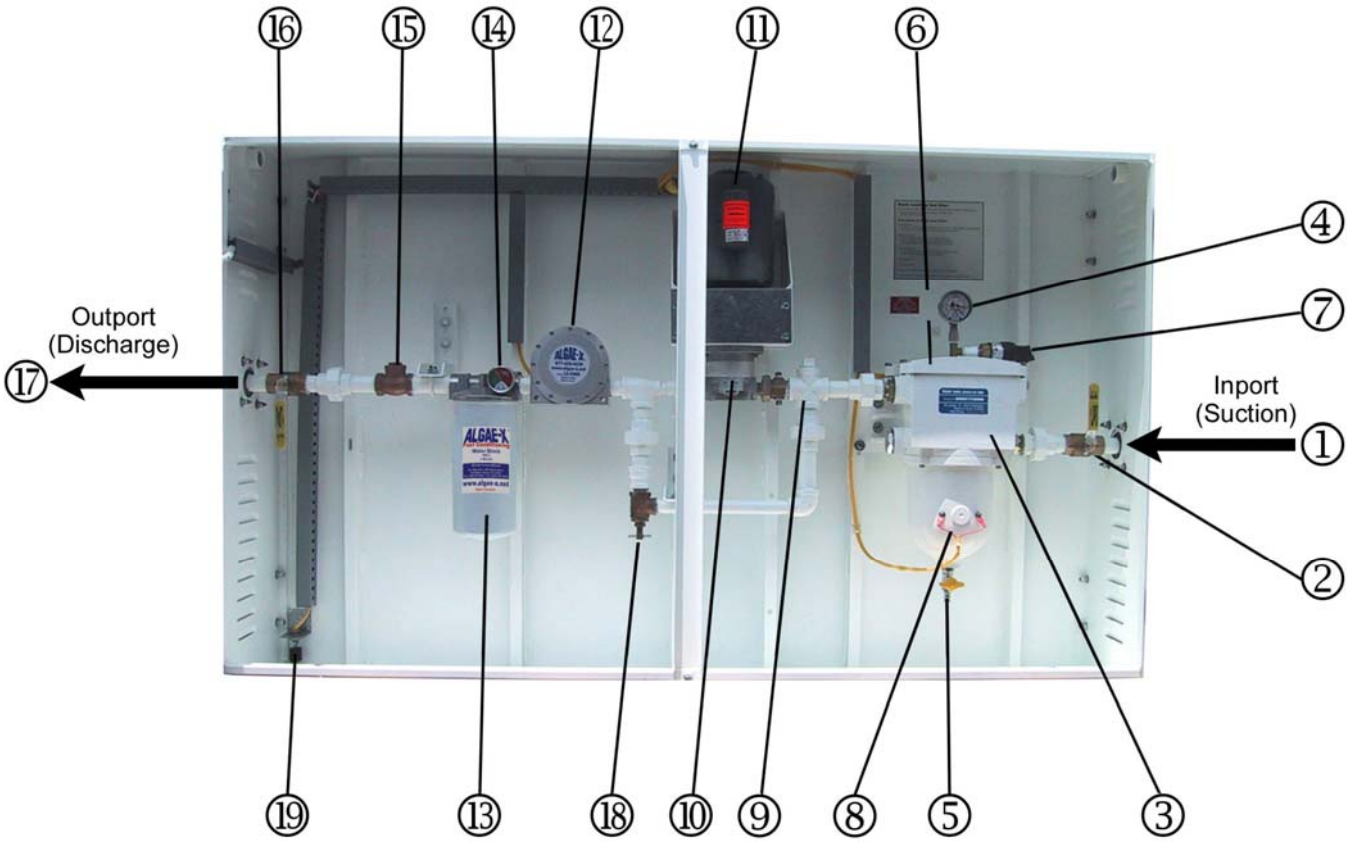
The **STS 5000** conditions and stabilizes the fuel, eliminates microbial contamination, removes water, tank sludge and contaminants from the tanks. The principal mechanical components of the system are an **LG-X Fuel Conditioner**, a continuous duty motor with coupled gear pump, a primary filter water separator/coalescer with a vacuum gauge and a secondary filter with a pressure gauge. All safety and control devices for remote operation are implemented in an isolated compartment inside the fully enclosed, weatherproof system cabinet.

The **LG-X Fuel Conditioner** decreases the size and mass of fuel droplets which leads to better filtration and water separation, clear and bright fuel, optimal combustion and clean tanks. The **ALGAE-X®** unit is self-cleaning, has no moving parts, no electrical hookup, and requires zero maintenance. The primary filter/water separator unit removes water and particulate from the fuel. It can be easily drained, by opening the valve on the bottom. The filter element can be back-flushed several times before replacing. The secondary filter is an easy to change spin-on filter designed to remove emulsified water and inorganic debris down to 3 Micron.

For safe remote operation the **STS 5000** is equipped with a leak proof cabinet that has a sufficient retention area along with a leak detector. Other safety elements are alarms followed by a pump shut-off, if the filter elements have to be serviced or the water separator needs to be drained.

ALGAE-X® Total Fuel Management Systems

OVERVIEW – BASIC SYSTEM COMPONENTS



1) Fuel Inlet
2) Inlet Ball Valve
3) Primary Filter / Water Separator
4) Vacuum Gauge
5) Drain Valve (push and turn to open)
6) Lid for Primary Filter Replacement
7) Vacuum Switch
8) Water Sensor
9) Priming Tee
10) Gear Pump
11) Motor
12) ALGAE-X® Magnetic Fuel Conditioner
13) Secondary Filter
14) Pressure Gauge and Pressure Switch
15) Check Valve
16) Outlet Ball Valve
17) Fuel Outlet
18) Pressure Relief Valve
19) Leak Detector in Catch Basin

GENERAL SPECIFICATIONS

STS 5000-10GPM

Flow Rate	10 gpm / 600 gph 4800 Gallons per 8 hour shift 14,400 Gallons per 24 hours
Outline Dimensions (Enclosure)	42” x 68” x 14” (H x W x D)
System Weight	approx. 450 lbs
Operating Temperature	32 - 104° F; 0 - 40° C
Electrical	115 V / 60 Hz / 14 AMPS / single phase (standard) 230 V / 50 Hz also available
Pump	Gear Pump
Suction capability (primed)	15 ft vertical / 200 ft. horizontal lift (lines >1”)
Motor	1 hp single phase, continuous duty, thermally protected
Timer	Mechanical timer – 7 day schedule (standard) Digital Timer (optional)
Inlet	1” NPT male port
Outlet	1” NPT male port
Max. Fluid Viscosity	29 cSt

Note: The STS 5000 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

- Mechanical Timer (Digital Timer available)
- Pump control switch (Auto-Off-Manual), weatherproof, key operated
- Power available indicator
- Pump running indicator
- Inlet and outlet shut off ball valves

- Pressure relieve valve
- Swing type check valve on the discharge line
- Cabinet leak sensor and alarm (pump shutoff)
- Primary filter water indicator and pump shutoff
- Primary filter high vacuum indicator and pump shutoff
- Secondary filter high pressure indicator and pump shutoff
- Control power fuses
- Pump motor starter with 20A single-pole circuit breaker and 30A DP contactor

Pump / Motor / Coupling:

- Positive displacement gear pump
  - Aluminum housing
  - Steel gears
  - Hardened steel shaft
  - Mechanical shaft seal
  - Priming tee
- Motor
  - 1HP / 115 VAC / 60Hz single-phase
  - Open drip proof construction
  - Integral overload protection
- Flexible, self-aligning shaft coupler

Magnetic Fuel Conditioner

- Magnetic Fuel Conditioner, Model LG-X 3000

Primary Filter / Water Separator

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

Secondary Filter

- Spin on filter for choice of 3–25 micron water block and cellulose filter elements
- Pressure gauge

Weatherproof enclosure with hinged/latch accessible double front doors

- 16-gauge steel construction with welded seams and flanged doors
- Gasketed window in door for observation of indicator lights
- Containment basin in bottom
- Louvered side panels
- Lockable latches
- Bottom and side flanges for pad or wall mounting
- Finished in white industrial enamel coating

PRIMARY INSPECTION

Upon arrival, the STS 5000-10GPM Fuel Conditioning and Filtration System and accessories must be visually inspected before installation. Shipping and handling may cause physical or electrical problems.

Checklist:

- ❑ If the packing crate shows signs of damage inspect the STS-5000 cabinet for damage. Check the entire outside of the cabinet for damage that could indicate internal mechanical or electrical problems.
- ❑ Check main locking handle, door and hinge operation.
- ❑ Check pump/motor hardware for tightness. Rotate motor shaft by hand and check for smooth operation.
- ❑ Check pump/motor coupler for proper alignment and spacing. The coupler should have approximately 1/8" clearance between coupler halves. If this clearance is reduced or the pump and motor are not properly aligned excessive noise and pump/motor wear will occur.
- ❑ 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-5000 is a totally enclosed system and should be wall or pad mounted on a hard, level surface, supported by a suitable skid. Use provided mounting holes/feet for proper fastening. This weatherproof unit is designed for well-ventilated indoor or outdoor use 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 match your electrical system (See wiring diagram) The STS 5000 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 system must be properly grounded for operator safety.

Depending on length of run, use #12 AWG or larger copper wiring and connect system to a separate 20A breaker (not included in shipment).
If required, connect the dry contacts "pump shut down" (Terminals 8 and 9 on Terminal Block "B" – see wiring diagram) for customers use per specification on electric diagram to disable pump (e.g.: remote shut down, emergency stop button)
If required, connect the dry alarm contacts to external customer equipment as specified in the wiring drawing.

PLUMBING

Use proper quality approved fuel line materials with at least 1" inner diameter. The pick-up tube/line(s) should originate from the lowest point of the tank and should be connected directly to the system's "PUMP INLET" port located on the right hand side of the enclosure. It is recommended to install a foot valve to keep the system primed, especially if the "PUMP INLET" port of the system is located above the lowest possible fuel level in the tank. If the STS 5000 is mounted below tank top level, a priming tee should be installed on the highest point of the suction line to be able to easily prime the system.

The return line(s) should be plumbed to the "PUMP OUTLET" port (on the left side of the system) and enter the tank as far as possible from the pick up tube close to the tank bottom. Multiple suction and/or return lines may be connected to a manifold outside the STS-5000.

The system capabilities are 15 ft suction (vertical) and 200 ft horizontal lift, when connected to piping of 1" 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.

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-5000 from the engine fuel system to prevent any possible interference with safe engine operation.

The discharge should also be 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 5000 have to be combined in any way, adequate valves should be installed to prevent any possible interference with safe engine operation. (Many engines are already equipped with a check valve – check with engine manufacturer).

Note: If any of the STS 5000 system's fuel lines are used in combination with the engine's fuel system, the STS 5000 should be disabled during engine operation (use the provided dry contacts "pump shut down" as shown in the electrical drawing).

PRIMING THE SYSTEM

The pump supplied with the STS 5000 is NOT automatically self-priming.

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

The pump head of the STS 5000 unit is shipped from the factory filled with Diesel #2 to facilitate system priming. This will not eliminate the necessity to prime the system at the pump and at the primary filter/water separator. The STS 5000 is primed by using the priming tee on the inlet side of the pump. 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 all ball valves are in the open position.
3. If the "PUMP INLET" port of the STS 5000 is located below the fuel level in the tank close the inlet ball valve.
4. Open the priming tee, fill the line with fuel, close the tee (for tanks situated on a lower level than the STS 5000, it is recommended that a foot valve is installed at the fuel tank to hold the fuel column).
5. Open the bleed screw located on top of the primary filter / water separator and fill by inserting a funnel.
6. Fill the primary filter / water separator to the top of the lid and close the bleed screw.
7. Make sure to completely fill suction line to its highest point with fuel, in particular when the suction line exits the tank top and the STS 5000 is located below that level.
8. Switch on the pump and observe fuel flow.

The system is equipped with a vacuum gauge on the input side of the pump on the primary filter. The gauge should read 0-9" HG vacuum maximum under normal conditions. Vacuum gauge readings reaching 10" 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 alarm "SERVICE PRIMARY FILTER".

Note: 10" HG vacuum = clogged primary filter or suction line flow restriction.

The system's pressure gauge on the secondary filter should show 25 PSI maximum pressure under normal conditions (.433 PSI = 1' vertical head pressure). Pressure gauge readings in excess of 25 PSI pressure indicate excessive filter, or fuel line restrictions and/or friction.
System pressure over 25 PSI indicates a high-pressure failure ("SERVICE SECONDARY FILTER" indicator) and will automatically shut down the pump.

The pressure relief valve has a 30 PSI set point. System pressure in excess of 30 PSI will cause the pressure relief valve to open and vent fuel back to the fuel transfer pump inlet side.

OPERATION

! WARNING ! Do not fill 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 ! Do not use the STS 5000 at a temperature exceeding the flash point of its contents.

PUMP OPERATION

Apply control power to unit. Place the main disconnect breaker switch in the “ON” position.

Automatic:
Place the “PUMP 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 “PUMP SELECTOR SWITCH” in the “RUN” mode. 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.

FUEL LINE LEAK

If fuel is detected in the system retention area, the float switch will activate the fuel leak alarm illuminating the leak indicator. The pump motor will shut off and remain locked out of operation until the leak has been corrected. Before removing the spilled fuel from the basin, turn the key 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 key switch can be returned to the “AUTO” or “RUN” mode.

Note: Disposal of fuel 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 very helpful 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 and high water level in bottom, it is recommended to 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-5000 Fuel Filtration and Conditioning System should be visually inspected for maintenance purposes every six months 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.
- Check main locking latch, door and hinge operation.
- Check cabinet mounting hardware at feet and wall mounting flange. Tighten as necessary.
- Check pump/motor hardware for tightness. Pump/motor hardware will loosen after normal operation due to vibration. This hardware is double nutted, check all bolts for double nuts.
- Rotate shaft by hand and check for smooth operation. Check pump/motor coupler for proper alignment and spacing. The coupler should have approximately 1/8" clearance between coupler halves. If this clearance is reduced or the pump and motor are not properly aligned, excessive noise and pump/motor wear will occur. Loosen pump motor mounting hardware to realign motor/coupler. Loosen one end of pump coupler to adjust for necessary coupler clearance.
- 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. Drain accumulated fuel in catch basin as necessary by removing retention basin plug.
- Inspect all filters and separators. See section below on filter inspection and service.

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.

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 10” HG, the pump will automatically shut off and activate the “SERVICE PRIMARY FILTER” indicator light. The signal indicates that it is time to either back-flush or change the filter element.

Servicing and back-flushing primary filter:

1. Disconnect motor power by switching off the circuit breaker inside the STS 5000 system
2. Close the inlet ball valve
3. Open the brass colored bleed screw at the top of the filter cover
4. Place a fuel waste container below the yellow safety drain valve on the bottom of the filter bowl
5. Open the yellow safety drain valve (push & turn counter clockwise)
6. Close after approximately 2 seconds
7. After approximately 10 seconds reopen the drain valve
8. Close after visible sediment, particles and water have been drained from the bowl
9. Prime the filter by removing the cover (4 wing bolts) and pouring clean diesel fuel into the filter body until the fuel level reaches the top of the filter body
10. Replace the lid. Note: Evenly tighten the wing bolts to ensure a good seal
11. Close bleed screw on top of the lid
12. Open the inlet ball valve
13. Put circuit breaker back in the ON position
14. Turn the PUMP SELECTOR SWITCH (key switch) to the “OFF” position to reset the alarm
15. Return the pump selector switch to “AUTO” or “RUN”

Your system is now ready to resume normal operation

Note: Elements can be back-flushed up to 5 times before replacement is required

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

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 alarm “SERVICE WATER SEPARATOR (DRAIN BOWL)” and shut off the pump. The signal indicates that it is time to drain the bowl on the water separator.

Draining water from the primary filter/water separator:

1. Disconnect motor power by switching off the circuit breaker inside the STS 5000 system
2. Close the inlet ball valve
3. Open the brass colored bleed screw on the top of the filter cover
4. Place a fuel waste container below the yellow safety drain valve on the bottom of the filter bowl
5. Open the yellow safety drain valve (push & turn counter clockwise)
6. Close after approximately 2 seconds
7. After approximately 10 seconds, reopen the drain valve
8. Close after visible sediment, particles and water have been drained from the separator
9. Prime the filter by removing the cover (4 wing bolts) and pouring clean diesel fuel into the filter body until the fuel level reaches the top of the filter body
10. Replace the lid. Note: Evenly tighten the wing bolts to ensure a good seal
11. Close bleed screw on top of the lid
12. Open the inlet ball valve
13. Put circuit breaker back into ON position
14. Turn the PUMP SELECTOR SWITCH (key switch) to the “OFF” position to reset the alarm
15. Return the pump selector switch to “AUTO” or “RUN”

Your system is now ready to resume normal operation

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

SERVICING SECONDARY FILTER

Clogging filter elements and saturation of water block filter restrict the flow of fuel and the system's pressure gauge will indicate a pressure drop. The gauge is mounted on top of the secondary filter. At a pressure drop of 25 PSI (red dial area of the gauge) the pump will automatically shut off and activate the "SERVICE SECONDARY FILTER" indicator light. The signal indicates that it is time to change the filter element.

There are two types of Algae-X spin on fine filters available:

1. The standard 3, 10 and 25 micron fine filter, and
2. The special 3 and 10 micron water block fine filter

The Algae-X Water Block incorporates polymer technology to remove in-trained and emulsified water from fuel.

Changing the secondary filter:

1. Disconnect motor power by switching off the circuit breaker inside the STS 5000 system
2. Close the outlet ball valve
3. Place an appropriate container underneath the filter.
4. Remove old spin on filter by turning the cartridge counter clock wise seen from the bottom of the cartridge.
5. Apply a film of lubricating oil to the gasket of the new filter. Screw the new filter canister to the filter head until the gasket is tight and secure (an additional ½ to one turn after the filter makes contact with the gasket).
6. Open the outlet ball valve
7. Put circuit breaker back into "ON" position
8. Turn the PUMP SELECTOR SWITCH (key switch) to the "OFF" position to reset the alarm
9. Return the pump selector switch to "AUTO" or "RUN"
10. Check for leaks when re-starting and pressurizing the system.

Your system is now ready to resume normal operation

Note: Disposal of fuel 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 avoid skin contact with biocide-treated fuels.

TROUBLESHOOTING

No fuel delivery

1. Pump does not run
2. Pump is not primed
3. Fuel supply line blocked
4. Lift is too high
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. Lift too high
4. Pump worn
5. Inoperative foot valve
6. Piping improperly installed or dimensioned
7. Primary filter/water separator plugged

Rapid pump wear

1. Pipe strain on pump causing bind
2. Worn pump/motor coupler
3. Pump has been run dry or with insufficient fuel
4. Plumbing on inlet side not appropriately dimensioned

Alarm “SERVICE PRIMARY FILTER” comes on with clean or new filter element installed

1. Restriction in plumbing on inlet side too high
2. Lift too high
3. Inoperative foot valve
4. Inlet ball valve not fully open
5. Suction line clogged

Alarm “SERVICE SECONDARY FILTER” comes on with clean or new filter element installed

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
4. Misalignment of pump/motor coupler

Noisy operation

1. Insufficient fuel supply
2. Air leaks in the inlet pipe
3. Air or gas on the suction side
4. Pump and motor out of alignment
5. Worn out spider coupling
6. Pump coupler out of balance

Pump requires frequent re-priming

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

Motor does not turn or turns intermittently

1. Control power not available
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

FUEL CONDITIONING AND 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) 463 0607 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
P.O. Box 4011 Fort Myers Beach, FL 33932 ▪ 877-425-4239 ▪ Fax: 239-463-7855
Internet: www.algae-x.net ▪ Email: algae-x@algae-x.net

TECHNICAL ASSISTANCE AND ORDERING

Please write to, fax, email or call:
ALGAE-X® International
P.O. Box 4011, 1661 Estero Blvd. #18
Fort Myers Beach, FL 33932

Tel: 239-463-0607
Fax: 239-463-7855

Email: algae-x@algae-x.net
Internet: www.algae-x.net

Please provide the following information:
Serial Number of your STS 5000, the required part numbers and quantity.
The drawings included in this manual are the most accurate source of part numbers for your STS 5000. When ordering replacement parts, always consult the parts legend drawing.

REPLACEMENT FILTER ELEMENTS

Primary Filter:

04010	10 Micron filter element
04030	30 Micron filter element
04060S	60 Micron Stainless Steel re-usable filter element

Secondary Filter:

FF-3	3 Micron fine filter cartridge
FF-10	10 Micron fine filter cartridge
FF-25	25 Micron fine filter cartridge
WB-3AZ	3 Micron Water Block filter cartridge
WB-10AZ	10 Micron Water Block filter cartridge

Also available:

- Larger or smaller capacity, custom designed systems for higher or lower flow rates
- Digital Flow Meter
- Digital Timer
- Rotor Sight Glass

STS 5000 SYSTEM IDENTIFICATION

Serial Number: _____ (e.g. B 030010 – 5100)

System Specification:

Voltage:

- ☐ 120V AC / 60 Hz
- ☐ 230 V AC / 50 Hz

Timer:

- ☐ Mechanical Timer
- ☐ Digital Timer

Primary Filter Element:

- ☐ 30 Micron
- ☐ 10 Micron
- ☐ 60 Micron Stainless Steel

Secondary Filter Element:

- ☐ 3 Micron Water Block
- ☐ 10 Micron Water Block
- ☐ 3 Micron Fine Filter
- ☐ 10 Micron Fine Filter
- ☐ 25 Micron Fine Filter

Inspected by: _____ Date: _____

APPENDIX A - ABBREVIATIONS USED IN THIS MANUAL

Abbreviations of terms used with STS 5000 Fuel Conditioning and 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
FLS	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
PS	Pressure Switch
PSI	Pounds Per Square Inch
PSR	Pressure Switch Relay
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

Drawing # 130794B	Outline drawing
Drawing # 130795B	Plumbing detail
Drawing # 130796B	Wiring diagram (electrical drawing)
Drawing # 130797D	Parts legend