STS 6000 SX-F INSTRUCTION, OPERATING, & MAINTENANCE MANUAL

Enclosed Programmable Automated Fuel Polishing System

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REV0301SXF010218

STS 6000 SX-F

Enclosed Automated Fuel Maintenance System

The STS 6000 SX-F Programmable Automated Fuel Maintenance System is designed to optimize and maintain diesel fuel indefinitely. Adding an STS 6000 SX-F system will remove particulate, separate water, and condition stored fuel. This innovative process stabilizes diesel and bio-fuels, eliminates microbial contamination, and ensures clean reliable fuel at all times. Generators and pumps operating in remote locations are ideal applications for STS 6000 SX-F systems.

STS 6000 SX-F SPECIFICATIONS

Flow Rate (@60Hz)	2.5 GPM/150 GPH (9.5 LPM/568 LPH)
Primary Filter/Water Separator	10 or 30µ Particulate or 60µ Stainless Steel Screen with Centrifugal Water Separator
Secondary Filter/ Water Block	1, 3, 10, 25µ Particulate or 3, 10µ Water Block
Fuel Conditioner	LG-X 500 Inline Conditioner
Pump	1/3 HP Gear Pump
System Controller	Programmable, Fully Automated UL 508A SMART Filtration Controller with BMS/BAS Interface and Digital Text Readout
Power	120V/60Hz/15A or 230V/50Hz/15A
Plumbing	Stainless Steel
Ports	1/2” NPT In 1/2” NPT Out
Enclosure Cabinet	NEMA 12 (IP55), 13 (IP65), 4 (IP66), and 4X (IP66) Powder Coat or Stainless Steel
Dimensions	30” x 24” x 10” (H x W x D) (76 x 61 x 25 cm)
Weight	≈ 190 lbs (86.2 kgs)

Not for use with fluids that have a flash point below 100°F (37.8°C).

STS 6000 SERIES SAFETY FEATURES:

- Automatic Alerts
- Pump Shut Down When Filters Need Service
- Leak Detection
- Water Detection
- High Filter Vacuum
- High Pump Pressure
- Low Fuel Flow Alert

STS 6000 SX-F SERIES FEATURE:

- SMART Filtration Controller
- Fully Automated and Programmable Operation
- Integration with Vessel Monitoring Systems
- Unique Saftey & Alarm Features
- Continuous-Duty Pumps, Viton Seals

For safe operation, the STS 6000-SX-F is equipped with an automatic pump shut-down and indicators when filter elements require service. Also included are indicators for high pump vacuum, high filter pressure, and leaks.

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STS 6000 SX-F

Enclosed Automated Fuel Maintenance System

1. SMART Filtration Controller
2. Alarm Light
3. Vacuum Gauge
4. Pre Filter/Water Separator
5. Fuel Inlet
6. AXI Inline LG-X 500 Conditioner
7. Water Detection Probes
8. Primary Filter Drain
9. Watect Water Sensor
10. Gear Pump
11. Leak Detection Switch
12. Fine Filter
13. Fuel Outlet
14. Pressure Gauge

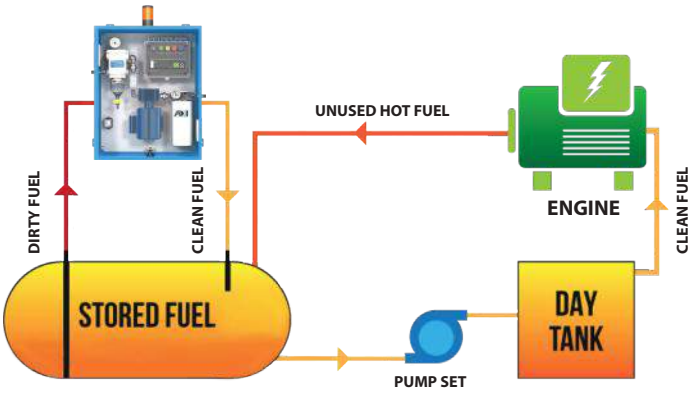
STS 6000 SX-F OPTIONS:

- Fuel Contamination Test Kit
- Fuel Sampling Kit
- AFC 705/710 Fuel Additive

REPLACEMENT FILTER OPTIONS:

Pre Filter	Part No.	Fine Filter	Part No.
10μ Filter Element	01010	3μ Water Block Filter	WB-3
30μ Filter Element	01030	10μ Water Block Filter	WB-10
60μ Strainer	01060SS	1μ Fine Filter	FF-1
		3μ Fine Filter	FFZ-3
		10μ Fine Filter	FF-10

STS SYSTEM INTEGRATION:



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General Overview

STS 6000 SX-F Specifications

Flow Rate	2.5 GPM/150 GPH (9.5 LPM/568 LPH) 1,200 gallons (7,268 liters) per 8 hour shift 3,600 gallons (21,804 liters) per 24 hours
Outline Dimensions (Enclosure)	30” x 24” x 10” (76 x 61 x 25 cm) (H x W x D)
System Weight	≈ 190 lbs (86.2 kg)
Operating Temperature	41 - 104°F (5 - 40°C)
Electrical	120V/50Hz/15A or 230V/60Hz/15A
Pump	Gear pump
Suction Capability (Primed)	15’ (4.57 m) suction vertical lift or 100’ (30.48 m) horizontal run (lines > 1/2”, primed)
Motor	1/3 HP single phase, continuous duty, thermally protected
Timer	Programmable digital timer
Inlet	1/2” NPT male port
Outlet	1/2” NPT male port
Maximum Fluid Viscosity	5 cSt

Note: The system is designed to meet environmental standards for safe operation. (Not for use with fluids that have a flash point below 100°F (37.8°C), e.g. gasoline, alcohol, etc.)

System Components

Control and Safety Devices

- AXI International "Smart Filtration Controller" in electrical sub enclosure is a modular "Plug & Play" system Programmable Digital Timer – Memory backup to retain program memory during power outages
- Pump control switch (Auto/Off/Manual), weatherproof, key operated
- Alarm Reset - weatherproof push button
- Power available indicator
- Pump running indicator
- Leak sensor and alarm indicator (system shutdown)
- Primary filter/water separator high vacuum alarm indicator and system shutdown (vacuum sensor)
- Primary filter/water separator high water alarm indicator and system shutdown (water sensor)
- Secondary filter high pressure alarm indicator and system shutdown (pressure sensor)
- Pump motor starter with single-pole circuit breaker and contactor

Pump/Motor

- Positive displacement gear pump
- Motor – UL listed with thermal overload protection
- Service Factor (1.00)

Pre-Filter/Water Separator

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

Final Filter(s)

- 1μ nominal, 3μ absolute, or 3μ water blocking spin-on filter
- Absolute pressure gauge and switch (Stainless steel, liquid filled)

Fuel Conditioner

- Inline Magnetic Fuel Conditioner eliminates and prevents the formation of sediments that naturally occur in diesel fuel and bio-blends

Stainless Steel Plumbing

System Enclosure

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

Remote Monitoring Module (Option)

- System status and alarm monitored from remote location

System Operation

!WARNING! This system is not meant for use with gasoline or any other flammable liquids having a flash point less than 100°F (37.8° C). Use with gasoline or any flammable liquids at a temperature exceeding their flash point presents an immediate explosion and fire hazard.

Pump Operation

Apply control power to unit. Place breakers for the Smart Filtration Controller in the “ON” position.

Automatic:

Place the switch in the “AUTO” position. When the timer contacts close, the pump will start and run until the timer setting has expired. See the Controller section for setting run times.

Manual (Override):

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

Alarms

The system is equipped with an AXI International Smart Filtration Controller. System and alarm status are displayed on the controller via indicator lights, and on the text box on the electronic controller.

Alarms featured on the system include:

- Leak Detection
- Primary filter/water separator high vacuum alarm indicator and system shutdown (vacuum sensor)
- Primary filter/water separator high water alarm indicator and system shutdown (water sensor)
- Secondary filter high pressure alarm indicator and system shutdown (pressure sensor)

Once triggered and alarms are addressed, each alarm can be reset by pressing the “ALARM RESET” push button located on the controller.

Primary Inspection

Upon arrival, the 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 enclosure for damage.
- ❑ Check the entire outside of the enclosure 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 unit 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' (30.5 cm) 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 system's power requirements and rated voltage/frequency match the electrical system (see wiring diagram). The system 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 Shutdown Feature:

If required, connect the "external pump shut down input terminal" (see wiring diagram) per specification on electric 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 Smart Filtration Controller.

Remote Monitoring - Dry Contacts:

The Smart Filtration Controller provides two Normally Open (N.O.) dry contacts for remote alarm monitoring. Please see wiring diagram for contact rating, connection, and location.

1. "Summary Alarm" – dry alarm contact for high vacuum, high pressure, no flow, or water detection (as well as emergency stop and overload relay triggered)
2. "Leak Detection" – dry alarm contact for leak detection

Plumbing

Use proper quality approved fuel line materials with at least 1/2" (1.3 cm) inner diameter on the suction side from the tank and at least 1/2" (1.3 cm) inner diameter on the return/discharge side back to the tank. For long suction side plumbing runs, it is recommended to install oversized pipe, or 3/4" - 1" in diameter.

Note: Do not put any stress on plumbing of the system, 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 ensure all water is removed, 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) for some installations to prevent back flow pressure.

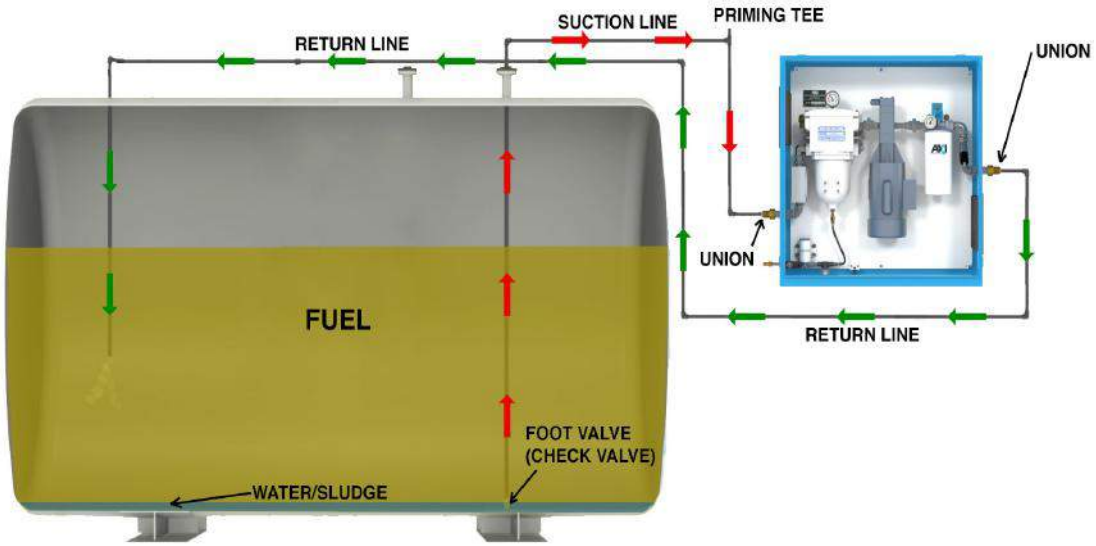
Multiple suction and/or return lines may be connected to a manifold outside the system.

Note: Anti-Siphon or other external plumbing devices may be required – please check local regulations/code.

The system capabilities are 15' (4.57 m) suction (vertical) or 100' (30.48 m) horizontal, when connected to piping of 1/2" 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 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 system 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 system must be combined in any way, adequate valves should be installed to prevent any possible interference with safe engine operation.

Note: If any of the system's fuel lines are used in combination with the engine's fuel system, the system should be disabled during engine operation (use the provided "Remote Pump Shut Down" feature as shown in the electrical drawing and described above).

Controller (SFC-50 or SFC-55)

Programming the Timer

1. Please make sure the switch is set to “OFF” and press the “ALARM RESET” button on the control panel.
2. When power is first applied to the system, the display of the PLC will show (blinking) date and time.
3. We will now set current date and time (must be in military format):
4. Hit the “ESC” button
5. Select ‘Stop’ and press “OK”
6. Select ‘Yes’ (use down arrow key) and press “OK”
7. Select ‘Setup’ (use down arrow key) and press “OK”
8. Select ‘Clock’ and press “OK”
9. Select ‘Set Clock’ and press “OK”
10. Using the arrow keys set current day of the week, time and date as indicated in the display and press “OK” or (use up and down arrow key) to change value, or (use left and right arrow keys) to change between week, day, time, and date
11. When finished entering press “OK” to confirm
12. Press “ESC” until you reach the base menu
13. Select ‘Start’ and press “OK” – correct time and date should be displayed (if asked, select “YES” to proceed)
14. We are now ready to program the run timer (military time format must be used):
15. Hit the “ESC” button
16. Select ‘Program’ and press “OK”
17. Select ‘Set Param’ (use arrow keys) and press “OK”
18. Use arrow key to select ‘Timer’ or ‘Timer 1’
19. Press “OK”
20. Use arrow keys to select the desired field and press “OK” to edit
21. 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
22. Use arrow keys in same manner to program the ‘On’ time – when the system will switch on (on the selected day/days)
23. Use arrow keys in same manner to program the ‘Off’ time – when the system will switch off (on the selected day/days)
24. Press “OK” to confirm entry when finished setting all desired parameters
25. If required you can set up to 3 Timers by using the up and down arrow key
26. Press “ESC” until you return back to the time and date display

Priming the System

The pump supplied with the system 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 system is shipped from the factory filled with #2 Diesel to facilitate initial lubrication. This will not eliminate the necessity to prime the complete system. The system is primed by using the externally installed priming tee (not provided) on the suction side of the system. Also, the pre-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 is in the open and the outlet ball valve is in the closed position
3. Slightly open the manual air vent valve (bleed screw) located on top of the pre-filter/water separator
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), located on the pre-filter
5. 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 elevation than the system, it is recommended that a foot valve is installed, on the bottom of the suction line, at the fuel tank to hold the fuel column
6. Make sure to completely fill the suction line to its highest point with fuel (no trapped air). This is particularly important in cases where the system is located at a lower elevation than the suction line exiting the tank
7. Open the outlet ball valve and ensure the inlet ball valve is also in open position
8. Switch on the pump

The system is equipped with a vacuum gauge on the suction side of the pump. The gauge should read 0 to 15" HG vacuum maximum under normal conditions. Vacuum gauge readings reaching 16" HG vacuum indicate excessive debris in the pre-filter/water separator, flow restriction, or too high of a suction height (and therefore pressure drop in the suction line), activating the "HIGH VACUUM ALARM" and pump shutdown.

Note: 16" HG vacuum = clogged primary filter or suction line flow restriction/excessive lift.

The system's pressure gauge on the secondary filter should show 22 PSI maximum pressure under normal conditions (.433 PSI = 1' vertical head pressure). Pressure gauge readings in excess of 22 PSI pressure indicate excessive filter, or fuel line restrictions and/or friction.

System pressure over 22 PSI indicates a high-pressure failure ("HIGH PRESSURE ALARM" indicator) and will automatically shut down the pump.

Commissioning/Initial Start-Up

Gauge Venting & Accuracy

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

Initial Test Procedures

With breakers and power turned on, and pump running, check all alarms for proper operation:

- **Leak Detection** - Manually raise the float switch located at the bottom of the enclosure. Pump should immediately turn off, and “LEAK DETECTION” should illuminate. Reset the alarm by pushing the “ALARM RESET” button on the control panel.
- **High Vacuum Alarm** - Slowly, partially close inlet ball valve. At 16” HG, the pump should turn off and “HIGH VACUUM ALARM” should illuminate. Open inlet ball valve again. Reset the alarm by pushing the “ALARM RESET” button.
- **High Pressure Alarm** - Slowly, partially close outlet ball valve. At 22 PSI, the pump should turn off (after a delay of about 1 second) and “HIGH PRESSURE ALARM” should illuminate. Open outlet ball valve again. Reset the alarm by pushing “ALARM RESET” button.
- **Water Sensor** - Jump the WATECT water sensor probes by placing a piece of conductive metal across the two horizontal contacts. The pump should turn off and the “HIGH WATER ALARM” should illuminate. Remove the metal, and reset the alarm by pushing the “ALARM RESET” 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 AXI International.

Maintenance

The system should be visually inspected and tested a minimum of every six (6) 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 eight (8) hours day and five (5) days a week.

Preventative Maintenance

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
3. All sources of power are isolated from the unit

Note: Proceed only after this has been verified and properly tagged.

- Drain visible water and sediment from pre-filter/water separator (see Servicing Pre-Filter/Water Separator)
- Check enclosure and all parts for corrosion and rust
- Check locking latches, door, and hinge operation
- Check cabinet mounting hardware - tighten as necessary
- Check pump/motor hardware for tightness, as pump/motor hardware will loosen after normal operation due to vibration
- The hardware uses lock nuts - 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, and remove accumulated fuel in drip tray as necessary
- Inspect all filters and separators

Note: All filter elements should be replaced at least every six (6) months.

With breakers and power turned on, and pump running, check all alarms for proper operation:

- **Leak Detection** - Manually raise the float switch located at the bottom of the enclosure. Pump should immediately turn off, and "LEAK DETECTION" should illuminate. Reset the alarm by pushing the "ALARM RESET" button on the control panel.
- **High Vacuum Alarm** - Slowly, partially close inlet ball valve. At 16" HG, the pump should turn off and "HIGH VACUUM ALARM" should illuminate. Open inlet ball valve again. Reset the alarm by pushing the "ALARM RESET" button.
- **High Pressure Alarm** - Slowly, partially close outlet ball valve. At 22 PSI, the pump should turn off (after a delay of about 1 second) and "HIGH PRESSURE ALARM" should illuminate. Open outlet ball valve again. Reset the alarm by pushing "ALARM RESET" button.
- **Water Sensor** - Jump the WATECT water sensor probes by placing a piece of conductive metal across the two horizontal contacts. The pump should turn off and the "HIGH WATER ALARM" should illuminate. Remove the metal, and reset the alarm by pushing the "ALARM RESET" button on the control panel.

Servicing the Pre-Filter/Water Separator

Clogged filter elements restrict the flow of fuel, resulting in the system's vacuum gauge indicating a pressure drop. The gauge is mounted between the pre-filter and the pump. At a pressure drop of 16" HG, the pump will automatically shut off and activate the "HIGH VACUUM ALARM" indicator light. The signal indicates that it is time to either back-flush or change the filter element.

Servicing and back-flushing pre-filter:

1. Turn switch to the "OFF" position – making sure the pump will not turn on
2. Close the inlet and outlet ball valve
3. Open the bleed screw at the top of the pre-filter cover
4. Place a fuel waste container below the yellow safety drain valve on the bottom of the filter bowl (unless system is equipped with optional Automatic Water Drain)
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 (allows water to settle out of the fuel)
8. Close after visible sediment, particles, and water have been drained from the bowl

   Note: At this point, if the filter requires changing, remove the filter from the housing by removing the four bolts that hold the top plate in place. Remove the spring-loaded cartridge, and replace the filter.

9. Prime the filter by following the instructions found in the Priming section of this manual
10. Replace the lid. Note: Evenly tighten the bolts to ensure a good seal
11. Close bleed screw on top of the lid
12. Open the inlet and outlet ball valve of the system
13. Push the "ALARM RESET" button on the control panel to acknowledge the alarm and reset it
14. Return the pump selector switch to "AUTO" or "MANUAL"
15. Check for leaks when re-starting and pressurizing the system. Your system is now ready to resume normal operation

Servicing the Fine Filter

Clogged filter elements restrict the flow of fuel, resulting in the system's pressure gauge indicating a pressure spike. The gauge is mounted between the pump and the fine filter. At a pressure of 22 PSI, the pump will automatically shut off and activate the "HIGH PRESSURE ALARM" indicator light. The signal indicates that it is time to change the filter element.

Changing the fine filter(s):

1. Turn switch to the "OFF" position – making sure the pump will not turn on
2. Close the inlet and outlet ball valve
3. Place an appropriate container underneath the filter
4. Remove old spin on filter with a filter wrench
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 inlet and outlet ball valve
7. Push the "ALARM RESET" button on the control panel to acknowledge the alarm and reset it
8. Return the pump selector switch to "AUTO" or "MANUAL"
9. Check for leaks when re-starting and pressurizing the system
10. Your system is now ready to resume normal operation

Note: Disposal of fuel, associated waste, and filters must be in accordance with all applicable federal, state, and local rules, laws, standards, and 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
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. 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 "HIGH VACUUM ALARM" 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 PRESSURE ALARM" comes on with clean or new filter element installed
1. Heavily contaminated fuel/excessive water in tank
2. Restriction in plumbing on discharge side too high
3. Head (lift) on discharge side too high
4. Check valve stuck or defective
5. Outlet ball valve not fully open
6. 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 in fuel on the suction side
4. Pump and motor out of alignment
5. Worn out spider coupling
6. Pump coupler out of balance

Alarm " NO FLOW ALARM" comes on or pump requires frequent re-priming
1. Inoperative foot valve
2. Inoperative check valve
3. Inoperative solenoid valve (optional)
4. Pump cavitation
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
5. Emergency Button depressed

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

Replacement Filter Chart

STS SERIES FILTERS

ALL FILTERS ARE ABSOLUTE, UNLESS OTHERWISE NOTED | WB: WATERBLOCK | SS: STAINLESS STEEL SCREEN

CARTRIDGE FILTERS

	10µ	30µ WB	60µ SS
STS 6000-SX-F	01010	01030	01060S
STS 6004/7004/8004	01810	01830	01860S
STS 6010/7010	04010	04030	04060S
STS 6020/7020			
STS 6040/7040			

SPIN-ON FILTERS

	1µ B100/B10	3µ	3µ WB	10µ	10µ WB	25µ	3µ X-GLASS
STS 6000-SX-F	FF-1	FF-3	WB-3	FF-10	WB-10	FF-25	FFZ-3
STS 6004/7004/8004	FF-1	FF-3	WB-3	FF-10	WB-10	FF-25	FFZ-3
STS 6010/7010	FF-1*	FF-3*	WB-3*	FF-10*	WB-10*	FF-25*	FFZ-3*
STS 6020/7020	FF-1*	FF-3*	WB-3*	FF-10*	WB-10*	FF-25*	FFZ-3*
STS 6040/7040	FF-1*	FF-3*	WB-3*	FF-10*	WB-10*	FF-25*	FFZ-3*

STS 6030**/7030**	1µ	5µ	10µ	25µ
	FBO-60339 MICRO FILTER	FBO-60340 MICRO FILTER	FBO-60357 MICRO FILTER	FBO-60341 MICRO FILTER
	FBO-60342 WATER BLOCK	FBO-60343 WATER BLOCK	FBO-60358 WATER BLOCK	FBO-60344 WATER BLOCK
	FBO-60336 COALESCING	FBO-60337 COALESCING	FBO-60356 COALESCING	FBO-60338 COALESCING

**30 GPM SYSTEMS REQUIRE TWO DIFFERENT FILTERS. STANDARD: PRIMARY FILTER IS MICROFILTER, SECONDARY IS COALESCING

	FF-1	FF-3	FF-10	FF-25	FFZ-3	FFZ-10	WB-3	WB-10	WBS-3
EFFICIENCY (@MICRON)	NOMINAL	97.30%	98.70%	97.80%	99.30%	98.70%	99.3% @ 10µ	98.3% @ 10µ	98.70%
BETA (@MICRON)	N/A	37.0	76.9	45.5	142.9	76.9	142.9	58.8	76.9
HOLDING CAPACITY							21 OZ.	21 OZ.	

AXI INTERNATIONAL WARRANTY – LIMITED WARRANTY

AXI 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 AXI International to provide free service during the warranty period to correct breakage, maladjustment, or other dif culties arising out of abuse, misuse, or improper care and maintenance of such products. Our express warranty is subject to the following terms and conditions:

This warranty shall only extend to and is only for the benefit of original purchaser(s), or end customer(s) who use the products covered hereby and subject to the terms and conditions herein. This warranty is not an on-site warranty. Travel requests will be at the discretion of AXI International. Defective systems and ancillary products will require a return authorization number and shipping to AXI International's factory in Fort Myers, FL. Any warranty claim received by AXI International 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. Claims outside of this one (1) year period, and for claims not listed within, payment, repair, or service will be awarded at the sole and exclusive discretion of AXI International.

This Warranty shall NOT apply to the following:

1. Damage or deterioration caused by normal wear and tear.
2. Failures caused by any external cause or act of God, such as accident, collision, theft, vandalism, riots, wars, re, freezing, lightning, earth-quakes, windstorms, hail, volcanic eruptions, oods, tornados or hurricanes.
3. Failures due to alterations, adjustments, unauthorized changes to the product(s), neglect or improper storage, repair and/or maintenance.
4. Failures due to abuse or application of the product(s) for uses other than for which it/they are designed or intended by AXI International, including but not limited to, improper installation or location in a harsh, corrosive or saltwater environment.
5. Failures resulting from attachments, accessory items, and parts not sold by AXI International.
6. Repairs by any party other than those authorized by AXI International.
7. Failures resulting from user's delay in making the product available for inspection by AXI International after notifying AXI International of a potential product problem.
8. Cosmetic damage, discoloration, rusting, corrosion or scratches from applied paint.
9. Replacement of consumables such as, but not limited to, fuses, lamps, lters, etc.
10. Additional expenses for repair after normal business hours, i.e., overtime or holiday labor rates.
11. Expenses for rental of equipment during downtime and/or performance of warranty repairs.
12. Expenses related to investigating performance complaints and/or troubleshooting where no manufacturing defect is found.

In addition to the limitations above, this warranty shall not apply to products (1) which have been tampered with, altered or repaired by anyone other than AXI International without the express prior written consent of AXI International (2) which have been installed improperly or subject to misuse, abuse, accident, negligence of others, improper operation or maintenance, neglect or modi cation, or (3) which have had the serial number altered, defaced or removed.
The liability of AXI International under this warranty is limited to the repair or replacement of the defective product. AXI International 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. AXI INTERNATIONAL ASSUMES NO LIABILITY FOR ANY GENERAL , SPECIAL, INCIDENTAL, CONSEQUENTIAL, CONTINGENT OR OTHER DAMAGES UNDER ANY WARRANTY, EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OTHERWISE, WITH THE RESPECT TO THE PRODUCTS COVERED BY THIS WARRANTY POLICY, EXCEPT AS EXPRESSLY PROVIDED FOR HEREIN. AXI INTERNATIONAL ASSUMES NO LIABILITY FOR ANY GENERAL, SPECIAL, INCIDENTAL, CONSEQUENTIAL, CONTINGENT OR OTHER DAMAGES EVEN IF SUCH DAMAGES ARE A DIRECT RESULT OF AXI INTERNATIONAL'S NEGLIGENCE. NO EMPLOYEE, AGENT, REPRESENTATIVE OR DISTRIBUTOR IS AUTHORIZED TO MAKE ANY WARRANTY ON BEHALF OF AXI INTERNATIONAL OTHER THAN THE EXPRESS WARRANTY PROVIDED FOR HEREIN.

AXI International 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 AXI International to make similar changes in such products that were previously manufactured.

To the fullest extent permitted by law, any claims against AXI International are limited to the remedies as expressly set forth in this warranty and any other further claims, such as but not limited to, compensation for any damage incurred other than to the AXI International product, are hereby excluded.

Warranty Claim Procedure

To make a claim under this warranty, please call AXI International at +1-239-690-9589 or 1-877-425-4239, 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 AXI International, arrange for a Field Engineer to inspect your system. If the inspection reveals a defect covered by its limited warranty, AXI International will either repair or replace the defective parts or products. AXI International assumes no liability, if upon inspection, AXI International 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 and customer shall be responsible standard rates incurred by AXI International, as established from time to time by AXI International.

For service and sales, please contact AXI International:

AXI International | 5400 Division Drive Fort Myers, FL 33905
Tel: +1-239-690-9589 | Toll Free: +1-877-425-4239 | Fax: +1-239-690-1195
Email: info@axi-international.com | Internet: www.axi-international.com

TECHNICAL ASSISTANCE AND ORDERING

Please write, fax, email or call:

AXI International
5400 Division Drive
Fort Myers, FL 33905
Tel: +1-239-690-9589
Fax: +1-239-690-1195
Email: info@axi-international.com
Internet: www.axi-international.com

Please provide the following information:
Serial Number of your STS 6000 SX-F, the required part numbers and quantity. The drawings/parts list included in this manual are the most accurate source of part numbers for your STS 6000 SX-F.

Replacement Filter Elements

Pre-Filter/Water Separator:
01060S - 60*µ* Stainless steel re-usable, cleanable filter element
01030 - 30*µ* replacement filter element
01010 - 10*µ* replacement filter element
10362 - Lid Gasket

Secondary Filter:
FF-1 - 1*µ* spin-on filter cartridge (not water blocking)
FF-3 - 3*µ* spin-on filter cartridge (not water blocking)
FF-10 - 10*µ* spin-on filter cartridge (not water blocking)
FF-25 - 25*µ* spin-on filter cartridge (not water blocking)
FFZ-3 - X-Glass 3*µ* Absolute spin-on filter cartridge (not water blocking)
WB-3 - 3*µ* water blocking
WB-10 - 10*µ* water blocking

Also available:
• Larger or smaller capacity, custom designed systems for higher or lower flow rates
• Digital Flow Meter
• Foot Valves
• Rotor Sight Glass

STS 6000 SX-F SYSTEM IDENTIFICATION

Serial Number: _____ (e.g. B070010-SXF)

Voltage:
❑ 120V/50Hz/15A
❑ 230V/60Hz/15A

Fine Filter(s):
❑ FF-1 - 1*µ* spin-on filter cartridge (not water blocking)
❑ FF-3 - 3*µ* spin-on filter cartridge (not water blocking)
❑ FF-10 - 10*µ* spin-on filter cartridge (not water blocking)
❑ FF-25 - 25*µ* spin-on filter cartridge (not water blocking)
❑ FFZ-3 - X-Glass 3*µ* Absolute spin-on filter cartridge (not water blocking)
❑ WB-3 - 3*µ* water blocking
❑ WB-10 - 10*µ* water blocking

Inspected By: _____ Date:_____

AXI International, industry leaders in Intelligent Fuel Management Solutions, has specialized in complete fuel system management and control technologies for over twenty years. Our growth and continued success rides on our ability to adapt to the needs of our customers, opening up opportunities to expand our product offering. To the benefit of our customers and the AXI network, we've become very efficient at doing so - faster than any other company in the industry.

Mission Critical

Fuel Storage

Marine

Government

Military

Mining

Agriculture

Power Gen

Railway

On-Road

Our current line of solutions include enclosed, mobile, and compact fuel management systems, partial and fully enclosed day tanks, pump sets, fill stations, Tier 4 fuel additives, centralized system monitoring, and other total fuel system management solutions. These high quality, innovative solutions are engineered to exceed industry standards for customers worldwide.

AXI also designs, engineers, and manufactures custom built complete fuel management systems– working side by side with customers, architects, engineering firms, and facility management companies to create innovative solutions that meet the highest of standards and specifications. From concept and design consultation, to specification review, development, and start-up, our in-house engineering professionals excel in transforming challenging projects into innovation opportunities.

AXI International Intelligent Fuel Management Systems – experience the power of ultra clean fuel.

AXI INTERNATIONAL
1.239.690.9589
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AXI.International AXInternational AXIFuel AXIFuel