

\$30<sup>00</sup>



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# SSC1-5Q

## Conveying Systems

### 1-Pump 5-Station Controller

Operation, Installation, and Service Manual



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Part No. A0

Bulletin No. SM2-615  
11/7/03

Write down your unit serial number(s)  
here for future reference

**Model #**

**Serial #**

_____	_____
_____	_____
_____	_____
_____	_____

Performance figures stated in this manual are based on a standard atmosphere of 59°F (15°C) at 29.92" Hg (1,014 millibars) at sea level, using 60 Hz power. Altitude is an important consideration when specifying vacuum conveying components. Sterling can advise you on proper selection and sizing of systems for your operating environment.

Sterling is committed to a continuing program of product improvement. Specifications, appearance, and dimensions described in this manual are subject to change without notice.

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Effective 11/7/2003  
Bulletin No. SM2-615

## Please note that our address and phone information has changed. Please reference this page for updated contact information.



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# ***Safety Considerations***

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Sterling conveying systems are designed to provide safe and reliable operation when installed and operated within design specifications, following national and local safety codes.

To avoid possible personnel injury or equipment damage when installing or operating this equipment, always use good judgment and follow these safe practices:

- Follow all SAFETY CODES.
- Wear SAFETY GLASSES and WORK GLOVES.
- Use care when LOADING, UNLOADING, RIGGING, or MOVING this equipment.
- OPEN, TAG, and LOCK ALL DISCONNECTS before working on equipment. It is a good idea to remove the fuses and carry them with you.
- GROUND your conveying system properly before applying power.
- Use extreme caution when working with your Sterling conveying system. HIGH VACUUM can be dangerous. Keep body parts, tools, clothing, and debris away from vacuum inlets.
- Do not jump or bypass any electrical safety control.
- Do not restore power until you remove all tools, test equipment, etc.
- Only PROPERLY TRAINED personnel familiar with the information in this manual should work on this equipment.

# **Sterling**

## **“SSC1-5Q” Conveying Systems**

### **1-Pump 5-Station Controller**

This controller is manufactured by ACS, Inc. at the ACS-Wood Dale facility:

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The equipment is distributed in Europe by our European Facility:

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Daniels Industrial Estate  
BATH ROAD  
Stroud, Gloucestershire, England  
GL5 3TJ

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## 1-1 Equipment Function

Sterling systems create vacuum for conveying pelletized or granular material in a central material handling system.

A typical use is an in-plant distribution system for plastic processing plants.

## 1-2 Necessary Documents

The documents below are necessary for proper installation, operation and maintenance of conveying systems. You can obtain additional copies from the Service Department at Sterling. **Make sure that the appropriate personnel are familiar with these documents:**

- This product manual.
- The Sterling SPD/SPC Series product manual.
- Electrical schematic and connection diagrams.
- Blower and electric motor information sheets.
- Operation and Installation manuals for all electrical components.

## 1-3 System Capabilities

Sterling central vacuum systems are as varied as the applications they service. The tubing and equipment furnished in a Sterling system are designed to convey the material(s) specified at the time of purchase at specific rates and distances.

Sterling can advise you on your system capabilities based on system makeup, distance, material, and conveying rates you want.

**System capacity is directly affected by the pressure drop in the overall system, such as number of material line bends, pipe length, Y-tubes, T-tubes, etc.**

Use the minimum effective amount of vinyl flex hose to maximize material line efficiency. Keep material lines as straight as possible. Refer to the Sterling SPD/SPC Series Product Manual (Sterling Part No. A0571050) for installation recommendations.

***Important!*** Vacuum leaks occurring anywhere in your system reduce capacity.



## **1-4 Equipment Cycle**

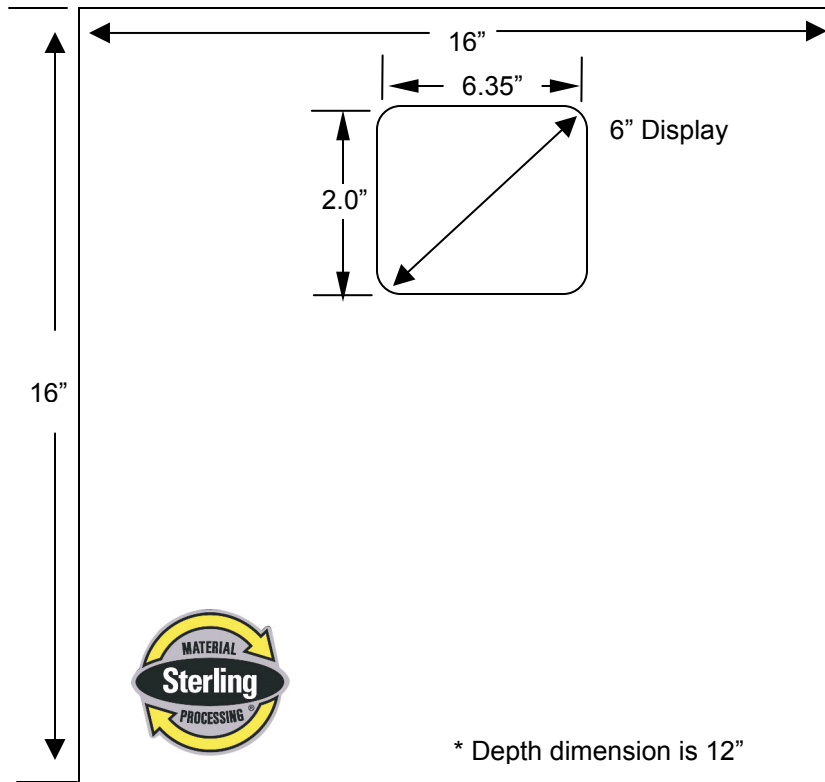
Sterling material conveying systems are used for automatic pneumatic handling of most free-flowing, dry, pelletized, or granular materials. Material characteristics determine the type of equipment needed to convey the material.

## **1-5 Models Covered by this Manual**

### **SSC1-5Q 5-Station Controller**

- Programmable Logic Controller.
- 24 VDC control circuits.
- Easy-to-use operator interface.
- Audible/visual alarm.

**Figure 1: SSC1-5Q Controller**



## 2-1 Work Rules

The installation, operation, and maintenance of this equipment must be conducted in accordance with all applicable work and safety codes for the installation location. This may include, but is not limited to OSHA, NEC, CSA, SPI, and any other local, national, and international regulations.

- Read and follow these operating instructions when installing, operating, and maintaining this equipment. If the instructions become damaged or unreadable, additional copies are available from Sterling.
- Only qualified personnel familiar with this equipment should work with this system.
- Work only with approved tools and devices.
- Disconnect and lock out power while working on this equipment.

## 2-2 Tools and Equipment Needed

These tools and equipment are necessary for installation:

- Hand tools.
- Wire, conduit, and fittings for wiring runs.
- Anchor bolts with nuts and washers or red head-type anchors.

## 2-3 Safety Considerations

The terms NOTICE, CAUTION, WARNING, and DANGER have specific meanings in this manual.

NOTICE is used to indicate a statement of company policy directly or indirectly related to the safety of personnel or protection of property.

CAUTION indicates a potentially hazardous situation which, if not avoided, may result in minor injury.

WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

DANGER indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury. This word will be limited to the most serious situations.



The term IMPORTANT emphasizes areas where equipment damage could result, or provides additional information to make a step or procedure easier to understand. Disregarding information marked IMPORTANT would not be likely to cause personal injury.

### **2-3-1 Reporting a Safety Defect**

If you believe that your equipment has a defect that could cause injury, you should immediately discontinue its use and inform Sterling.

The principle factors that can result in injury are failure to follow proper operating procedures (i.e. lockout/tagout), or failure to maintain a clean and safe working environment.

## **2-4 General Responsibility**

No matter who you are, safety is important. Owners, operators and maintenance personnel must realize that every day, safety is a vital part of their jobs.

If your main concern is loss of productivity, remember that production is always affected in a negative way following an accident. The following are some of the ways that accidents can affect your production:

- Loss of a skilled operator (temporarily or permanently)
- Breakdown of shop morale
- Costly damage to equipment
- Downtime

An effective safety program is responsible and economically sound.

Organize a safety committee or group, and hold regular meetings. Promote this group from the management level. Through this group, the safety program can be continually reviewed, maintained, and improved. Keep minutes or a record of the meetings.

Hold daily equipment inspections in addition to regular maintenance checks. You will keep your equipment safe for production and exhibit your commitment to safety.

Please read and use this manual as a guide to equipment safety. This manual contains safety warnings throughout, specific to each function and point of operation.

## **2-5 Operator Responsibility**

The operator's responsibility does not end with efficient production. The operator usually has the most daily contact with the equipment and intimately knows its capabilities and limitations.

Plant and personnel safety is sometimes forgotten in the desire to meet incentive rates, or through a casual attitude toward machinery formed over a period of months or years. Your employer probably has established a set of safety rules in your workplace. Those rules, this manual, or any other safety information will not keep you from being injured while operating your equipment.

Learn and always use safe operation. Cooperate with co-workers to promote safe practices. Immediately report any potentially dangerous situation to your supervisor or appropriate person.

## **2-6 Maintenance Responsibility**

Proper maintenance is essential to safety. If you are a maintenance worker, you must make safety a priority to effectively repair and maintain equipment.

Before removing, adjusting, or replacing parts on a machine, remember to turn off all electric supplies and all accessory equipment at the machine, and disconnect and lockout electrical power. Attach warning tags to the disconnect switch.

Be sure that all non-current carrying parts are correctly connected to earth ground with an electrical conductor that complies with current codes. Install in accordance with national and local codes.

When you have completed the repair or maintenance procedure, check your work, remove your tools, rigging, and handling equipment.

## 2-7 Safety Devices

This section includes information on safety devices and procedures that are inherent to the SSC1-5Q Controller. This manual is not intended to supersede or alter safety standards established by the user of this equipment. Instead, the material contained in this section is recommended to supplement these procedures in order to provide a safer working environment.

At the completion of this section, the operator and maintenance personnel will be able to do the following:

- Identify and locate specific safety devices.
- Understand the proper use of the safety devices provided.
- Describe the function of the safety device.

### 2-7-1 Safety Circuit Standards

Safety circuits used in industrial systems protect the operator and maintenance personnel from dangerous energy. They also provide a means of locking out or isolating the energy for servicing equipment.

Various agencies have contributed to the establishment of safety standards that apply to the design and manufacture of automated equipment. The Occupational Safety and Health Administration (OSHA) and the Joint Industrial Council (JIC) are just a few of the organizations that have joined with the plastics industry to develop safety standards.

Every effort has been made to incorporate these standards into the design of the SPD/SPC system; however, it is the responsibility of the personnel operating and maintaining the equipment to familiarize themselves with the safety procedures and the proper use of any safety devices.

### 2-7-2 Fail Safe Operation

If a safety device or circuit should fail, the design must be such that the failure causes a "Safe" condition. As an example, a safety switch must be a normally open switch. The switch must be held closed with the device it is to protect. If the switch fails, it will go to the open condition, tripping out the safety circuit.

At no time should the safety device fail and allow the operation to continue for example, if a safety switch is

guarding a motor, and the safety switch fails, the motor should not be able to run.

### 2-7-3 Safety Device Lock-Outs

Some safety devices disconnect electrical energy from a circuit. The safety devices that are used in the SSC1-5Q Controller are primarily concerned with electrical power disconnection.

**WARNING!** Always disconnect and lockout all electrical power and pneumatic (i.e. compressed air) sources prior to servicing the SSC1-5Q Controller. Failure to do so may result in serious injury. No one but the person who installed the lockout may remove it.





**-Notes-**

## 3-1 Unpacking and Inspection

You should inspect your Sterling SSC1-5Q 5-station controller for any possible shipping damage. If the container and packing materials are in re-usable condition, save them for reshipment if necessary.

Thoroughly check the equipment for any damage that might have occurred in transit, such as broken or loose wiring and components, loose hardware and mounting screws, etc. In case of breakage, damage, shortage, or incorrect shipment, refer to the following sections.

## 3-2 In the Event of Shipping Damages

**Important!** According to the contract terms and conditions of the Carrier, the responsibility of the Shipper ends at the time and place of shipment.



- Notify the transportation company's local agent if you discover damage.
- Hold the damaged goods and packing material for the examining agent's inspection. Do not return any goods to Sterling before the transportation company inspection and authorization.
- File a claim against the transportation company. Substantiate the claim by referring to the agent's report. A certified copy of our invoice is available upon request. The original Bill of Lading is attached to our original invoice. If the shipment was prepaid, write us for a receipted transportation bill.
- Advise Sterling regarding your wish for assistance and to obtain an RMA (return material authorization) number.

## 3-3 Parcel Post Shipment

Notify Sterling at once in writing, giving details of the loss or damage. This information is required for filing a claim with our insurance company.

Hold the damaged goods with the container and packing materials for possible inspection by postal authorities.

### 3-4 United Parcel Service Shipment

- Contact your local UPS office regarding damage and insurance claims.
- Retain the container and packing.
- Notify Sterling at once.

### 3-5 If the Shipment is Not Complete

Check the packing list. The apparent shortage may be intentional. Back-ordered items are noted on the packing list. You should have:

- Sterling SSC1-5Q 5-station controller
- Bill of Lading
- Packing list
- Operating and Installation packet
- Electrical schematic and panel layout drawings
- Component instruction manuals

Re-inspect the container and packing material to see if you missed any smaller items during unpacking. Determine that the item was not inadvertently taken from the area before you checked in the shipment. Notify Sterling immediately of the shortage.

### 3-6 If the Shipment is Not Correct

If the shipment is not what you ordered, **contact Sterling immediately**. For shipments in the United States and Canada, call 1 (414) 354-0970; for all other countries, call 001 (414) 354-0970. Include the order number and item. *Hold the items until you receive shipping instructions.*

### 3-7 Returns

**Important!** Do not return any damaged or incorrect items until you receive shipping instructions from Sterling.



## 4-1 Installing the SCC1-5Q Control Panel

**Note:** Before you mount the panel, consider how you run wiring to the vacuum receivers, the filter chamber atmospheric valve (if so equipped) and the pump motor starter(s), vacuum switch(es), and vent valve(s).

Mount the panel on a flat, vertical area. It should be a visible area that gives your operator access to the control. The panel requires a low voltage power drop as listed on the serial tag.

## 4-2 Making Electrical Connections

Refer to local electrical codes, the schematic and connection diagrams supplied with this unit and the serial tag for wiring considerations. Run all wiring in conduit if codes require it.

## 4-3 Making SSC1-5Q Control Panel Power Drop Wiring Connections

Hardwire the input power at 110/1/50-60 VAC or 230V/1/50-60 VAC, depending on the specifications, which are located on the SSC1-5Q Control Panel Serial Tag. The main power switch is located on the right side of the enclosure.

**Important!** Sterling recommends that you protect PLC memory by providing the control panel with a dedicated circuit, a true earth ground, and a spike/surge protector.



## 4-4 Connecting the Control Panel to Vacuum Receivers

1. On 24 VDC control voltage systems, run a common +24 VDC wire and a common 0 (zero) VDC wire from the controller to each vacuum receiver in the SSC system.
2. On all systems, run two wires to each vacuum receiver: one each from the controller to the Bin-Full switch (LS) and to the Atmospheric/Sequence-T solenoid (SOL) valve.
3. Make sure that the solenoid and the proximity switch (if supplied) on vacuum receivers are the same voltage (24

VDC) as the SSC control panel voltage. Consult the control panel serial tag and the solenoid valve nameplates.

4. Wire size depends on control voltage, distance, number of vacuum receivers, and the number of wires in each raceway. *Consult a qualified electrician.*
5. Properly ground each receiver to reduce static build up generated by material conveying.

## 4-5 Connecting the Control Panel to the Pump Package

1. Wire the pump package motor starter coil (**M**) to the terminal provided in the SSC control panel enclosure.
2. Wire the pump package vacuum relief valve solenoid (**SOL A**) to the terminal provided in the SSC control panel enclosure.
3. Wire the pump package vacuum switch (**VS**) to the terminal located in the SSC control panel enclosure (**if provided**).
4. On SPDB pumps, wire the pump package blowback solenoid (**SOL B**) to the terminal located in the SSC control panel enclosure.

Wire the pump package motor overload to the terminal provided in the SSC control panel enclosure.

5. On 24 VDC control voltage systems, run a common +24 VDC wire and a common 0 (zero) VDC wire from the controller to each pump package in the conveying system.

## 4-6 Special Timed Convey

Connect +24 VDC to inputs 11-15, corresponding to Stations 1-5, to enable the Special Timed Convey feature.

## 5-1 Introduction

This chapter gives the procedures for configuring your SSC1-5Q controller.

Configuration of your SSC1-50Q controller includes setting the number of stations, setting variables such as convey time and blow-back interval. Sterling recommends that you carry out these procedures in the order given here.

## 5-2 Setup

**Important!** Before carrying out these procedures, install all equipment as described in Chapter 4: "Installation", and in the manual *SPD/SPC Series Conveying Systems*.



### 5-2-1 Setting Up the System

This section provides an overview of the controller screens used in configuring the system. Section 6 provides a detailed explanation of the features listed on each screen.

#### 5-2-1-1 Basic Menus and Setup of Controller

Once power has been applied to a properly installed system, turn the disconnect switch to the **ON** position. The alpha controller will display the screen for receiver 1 (**Hopper 1**).



This screen allows the operator to adjust the convey time (**CONVEY**), dump delay (**DUMP**), and the number of tries before the no convey alarm activates (**NO CONVEY**).

To disable a station, set the convey time to **0** (zero).

**Important!**



**DO NOT** set the **Dump** delay or **No Convey** to **0** (zero).

To set the parameters for each receiver, use the left (◀) or right (▶) arrow keys to scroll through the settings for the next (▶) or previous (◀) receiver.

#### **5-2-1-1-1 Setting Pump Parameters**

To access the pump screen, press the right arrow key (▶) when in the station 5 screen or press the left arrow key (◀) when in the blowback screen.

This screen allows the operator to adjust the pump motor ramp up/ramp down time (**RAMP**) and the amount of time the pump runs unloaded before shutting off (**IDLE**).

**Important!**



**DO NOT** set the **Idle Time** or **Ramp time** to **0** (Zero).

#### **5-2-1-1-2 Setting Blowback Parameters**

Once the pump parameters have been set, the blowback parameters will need to be configured. This screen can be accessed for each station, by pressing the right arrow key (▶) when in the pump parameters screen (**RAMP** and **IDLE** times are displayed).

This screen allows the operator to adjust all those settings related to cleaning the filter chamber: the number of conveys before blowback (**CNV>BB**), the duration between blowback pulses (**BB OFF**), the duration of the pulse (**BB ON**), and the number of cleaning pulses (**BB CYC**).

## **Important!**



Setting either the **CNV>BB** or **BB CYC** parameters to “0” will disable the blowback feature. **DO NOT** set other blowback parameters to “0.”

### **5-2-1-1-3 Input and Output Screen Features**

To access the I/O screen, press the right arrow key (▶) when the Blowback Parameter screen is displayed or the left arrow key (◀) when the Convey/Dump/No Convey screen is displayed.

The I/O screen allows a service technician to view the status of the controller’s inputs and outputs during operation.

### **5-2-1-1-4 Changing Parameters**

To change the settings in the Conveying, Pump Parameters, or Blowback screens {To access the required screen, press the right (▶) or the left arrow key (◀)}, the following operations will need to be performed:

1. When the controller is in the menu screen of the feature you wish to configure, press the up (▲) and down (▼) arrow keys to select the value you wish to change. (The parameter value will flash when selected.)
2. Use the Plus (+) key to increase the value or the Minus (-) key to decrease the value.
3. Press the **OK** key to update and accept the new value entered.
4. Press the **ESC** key to cancel the parameters you entered and return the values to the previous settings.

## **5-2-2 Starting the System**

Once you have finished the setup procedures described on the previous pages, you are now ready to start the system. To start your system, complete the following steps.



1. Press the **green START pushbutton in**. The controller will display “\*\*\*” in the lower right corner of station and pump setup screens.

Once the system has been started, each active station is polled in sequence for a demand signal. The convey sequence upon initiation, will continue until the set convey time has elapsed or the demand signal stops, whichever happens first. If the Special Timed Convey feature is enabled, conveying will continue until the convey time has elapsed. (Once station dump delay has been initiated during the convey sequence, a new demand signal will be ignored.) If the blowback sequence begins immediately following the convey sequence, the sequence valve will remain open throughout the blowback sequence.

2. If during operation, a station conveys the specified number of consecutive times without clearing the demand signal, the **NO CONVEY alarm** will activate. Press the **ALARM SILENCE** pushbutton and hold it in to clear the alarm. The no convey **alarm will sound in LONG TONES**.
3. Should the high vacuum pressure switch activate, the **HIGH VACUUM alarm** will sound. Press the **ALARM SILENCE** pushbutton and hold it in to clear the alarm. The high vacuum **alarm will sound in SHORT TONES**.
4. If the pump motor contactor fails or the pump motor overload trips, the **PUMP FAULT alarm** will be activated. Press the **ALARM SILENCE** pushbutton and hold it in to clear the alarm. The pump fault **alarm will sound in a CONTINUOUS TONE**.
5. To stop conveying, depress the **green START pushbutton**. The controller will no longer display “\*\*\*” on the station and pump setup screens.

# 6

# Configurable Settings

This section describes the proper setup of the SSC1-5Q control system parameters. These parameters are operator changeable; however, these items should require setup only during the initial installation. Only authorized personnel should change them.

Many of the variables and setup parameters have been preset at the factory and do not need to be changed. However, this section of the manual will address all of the setup parameters that were available at the time of printing. The purpose of this is to familiarize the reader with all the setup parameters and their usage.

## 6-1 Options for Station Setup

Name	Description	Default
Conveying Components		
Convey time <b>(CONVEY)</b>	Length of time the station's vacuum valve remains open to allow material to be drawn in. (For a volume-fill station, the valve closes when material covers the station's volume-fill proximity sensor or this time elapses, whichever comes first.)  Adjust this value to match the actual time needed to fill the station. <b>To disable a station, set the convey time to Ø (zero).</b>	15 sec.
Dump delay <b>(DUMP)</b>	Length of time allowed for material to drain from the station into the receiver. The controller will not attempt to deliver more material to the station until this time has elapsed.  Adjust this value to match the actual time needed to drain the station. If it is set too short, the controller may attempt to refill the station before it is empty, causing material to back up and/or underusing the station's capacity. If it is set too long, the system may be unable to keep up with your equipment's demand for material. <b>DO NOT SET TO "Ø".</b>	10 sec.
No convey <b>(NO CONVEY)</b>	The controller issues a "no convey" alarm if it has repeatedly attempted to convey material to the station but the flapper never opened during the dump delay. (The number of attempts is controlled by this setting.)  The setting for this option depends on (a) how much material your injection mold uses to make each part compared with the capacity of the receiver and (b) how important it is to keep your injection mold from running out of material and shutting down. A higher setting will give you fewer alarms, at the risk of emptying the receiver without warning. A lower setting will give more frequent alarms, at the risk of disrupting operations unnecessarily. <b>DO NOT SET TO "Ø".</b>	3

## 6-2 Options for Pump Setup

The ramp time represents the amount of time it takes for the vacuum blower to come up to full speed once it has been turned on. The ramp down time represents the amount of time it takes the blower to stop once it has been turned off.

The ramp up time lets the blower reach full speed unloaded. When the ramp up time is reached, the vent valve will open and allow the pump to draw a vacuum on the main vacuum line. This in turn will open the receiver sequence valve connected to the main vacuum line and allow material to be drawn into the vacuum receiver.

The ramp down time allows the vacuum blower to come to a full stop before it can be started again. This prevents the blower motor from becoming a generator and blowing fuses.

Name	Description	Default
Pump Settings		
Idle (IDLE)	Length of time the pump continues to run unloaded without demand from any station. After this time has elapsed, the pump shuts down to save power and to prevent wear on the pump. Adjust this setting to fit the needs of your facility in trading off the savings against the costs associated with waiting for a pump to start up when there is a demand for material.	45 sec.
Ramp Up	This feature specifies the time (in seconds) allowed for the pump motor to reach operating speed.	5 sec.
Ramp Down (Ramp Dn)	This feature specifies the time (in seconds) allowed for the pump motor to come to a complete stop.	5 sec.
Conveys Before Blowback (CNV>BB)	When this option is enabled, the controller periodically sends compressed air backward through the pump's air filter to dislodge accumulated dust and debris. Enable this option if and only if the pump has the equipment for compressed-air filter cleaning. <b>Set to Ø to Disable Blowback.</b>	enabled
	Number of conveying cycles to stations between filter cleanings. Adjust this setting based on experience. The more dust and debris in your material line, the smaller this number needs to be.	5
Pulse On Time (BB ON)	Tenths of seconds that the air pulse remains on for each cleaning pulse during filter cleaning. If blow-back is not working as desired, the Sterling service may ask you to change this setting.	1.6 sec.
Pulse Off time (BB OFF)	Tenths of seconds between air pulses during filter cleaning. If blow-back is not working as desired, the Sterling service may ask you to change this setting.	0.8 sec.
Number of cleaning pulses (No. Pulses) (BB CYC)	Number of pulses of compressed air sent through the pump's filter during cleaning. If blow-back is not working as desired, the Sterling service may ask you to change this setting. <b>Set to Ø to Disable Blowback.</b>	1

No Periodic maintenance is required on this unit.

**8-1 General Troubleshooting**

<b>Problem</b>	<b>Possible Cause</b>	<b>Solution</b>
The control panel doesn't light up at all	The control panel is not turned on.	Turn on the control panel.
	The external disconnect (recommended) in the dedicated circuit is open (off).	Close the switch (on).
	Fuse/circuit breaker in the power drop is blown/tripped.	Replace/reset.
	Control power switch is broken.	Replace.
A pump package doesn't run, even though it is on-line and its indicator is lit.	The motor overload has tripped.	Reset the overload and check the motor for the proper amp draw on tag.
	Main fuse in power drop or optional fused disconnect has blown.	Replace the fuse.
	Motor contact is faulty.	Repair or replace as required.
A vacuum receiver is being bypassed in the loading cycle.	The vacuum receiver is off-line.	Use the controller to put the vacuum receiver on-line.
	The convey time for the vacuum receiver is set to zero.	Use the controller to enter a longer convey time.
	The field-installed station bypass switch is simulating a Bin Full condition.	Normal operation. Set the switch so the vacuum receiver is back in the loading sequence.
	The field-installed station bypass switch is bad or mis-wired.	Repair, replace, or re-wire.
	The vacuum receiver was assigned to the wrong pump during setup.	Repeat the setup procedure.
Vacuum receivers are overfilling.	Conveying times are too long (Time Fill Mode only).	Time the vacuum receiver (s) during loading, and set the conveying times to a few seconds less.
	Maximum conveying times are too long, and the PLC does not recognize the Vacuum Receiver Full Proximity Switch(es).	Check proximity sensors for proper operation and proper wiring to the PLC. Repair as needed. Reset the conveying times to a reasonable value, and adjust as needed.

## 8-2 Alarms

The format for all station alarms is “Station *n* [alarm text],” for example, “Station 12 receiver low level.” The format for all pump alarms is “Pump *n* [alarm text].” Any alarm that does *not* start with “Station” or “Pump” is a system alarm.

The following tables list all alarms alphabetically, together with possible causes. A “critical” alarm is one that causes the affected device to stop.

**Note:** You can also see a list of alarms and their causes in the controller’s online help. To display this information, touch the color key of statuses in the upper right-hand corner of either the “Station Status” or the “Pump Status” screen, or touch **Help** at any other screen. When you are finished reviewing the help, touch **Return**.

### 8-2-1 Station Alarms

Alarm message	Possible cause
High vacuum	Material line is blocked.
	Vacuum line is blocked.
	Convey time is too long (time-fill station only).
	Sequence valve has malfunctioned.
	Vacuum switch has malfunctioned.
	<i>Note:</i> After you have corrected the cause of this alarm, the alarm will be cleared when the controller has conveyed a full load to this station.
No convey	Material container is empty.
	Material line is disconnected from material source.
	Vacuum line is disconnected from station.
	Take-off compartment is not adjusted properly.
	Convey time is too short.
	<i>Note:</i> As a stopgap measure, you can disable the “no convey” alarm for this station until the problem can be remedied.

### 8-2-2 Pump Alarms

Alarm message	Possible cause
Pump failure (Critical)	Circuit breaker or overload protector has tripped.
	Contactors has malfunctioned.

The following is a list of options that your controller may be equipped with:

**230/1/60 Operation**

Required to operate with a 230/1/60 supply voltage.

**CE Package for 220/1/50 Operation**

Required in Europe and other areas that need 220/1/50 supply voltage

**Remote Audible/visual alarm**

Alarm light and horn assembly that can be remote mounted and wired into the controller to indicate an alarm condition.

**10-1 Recommended Spare Parts List**

Quantity	Sterling Part Number	Vendor Part Number	Description
1	A0538007	FNM-6	Fuse
1	A0536896	FNM-2	Fuse



**11-1 Contact Information for Technical Assistance****Parts Department**

Call toll-free 7am–5pm CST [800] 423-3183 or call [414] 354-0970, Fax [414] 354-6421

The ACS Customer Service Group will provide your company with genuine OEM quality parts manufactured to Sterling engineering design specifications, which will maximize your equipment's performance and efficiency. To assist in expediting your phone or fax order, please have the model and serial number of your unit when you contact us. A customer replacement parts list is included in this manual for your convenience. ACS welcomes inquiries on all your Sterling parts needs and is dedicated to providing excellent customer service.

**Service Department**

Call toll-free 8am–5pm CST [800] 657-4679 or call [414] 354-0970

Emergencies after 5pm CST, call [847] 439-5655

Sterling has a qualified service department ready to help. Service contracts are available for most Sterling products.

**Sales Department**

Call [414] 354-0970 Monday–Friday, 8am–5pm CST

Sterling products are sold by a world-wide network of independent sales representatives. Contact our Sales Department for the name of the sales representative nearest you.

**Contract Department**

Call [414] 354-0970 Monday–Friday, 8am–5pm CST

Let Sterling install your system. The Contract Department offers any or all of these services: project planning; system packages including drawings; equipment, labor, and construction materials; and union or non-union installations.



Sterling  
5200 W. Clinton Ave  
Milwaukee, WI 53223  
[414] 354-0970 • Fax [414] 354-6421

## 11-2 Returned Material Policy

### 11-2-1 Credit Returns

1. Prior to the return of any material, **authorization** must be given by **Sterling**. A RMS number will be assigned for the equipment to be returned.
2. Reason for requesting the return must be given.
3. All returned material purchased from **Sterling** returned is subject to 15% (\$75.00 minimum) restocking charge.
4. All returns are to be shipped prepaid.
5. The invoice number and date or purchase order number and date must be supplied.
6. No credit will be issued for material that is not within the manufacturer's warranty period and/or in new and unused condition, suitable for resale.

### 11-2-2 Warranty Returns

1. Prior to the return of any material, **authorization** must be given by **Sterling**. A RMS number will be assigned for the equipment to be returned.
2. Reason for requesting the return must be given.
3. All returns are to be shipped prepaid.
4. The invoice number and date or purchase order number and date must be supplied.
5. After inspecting the material, a replacement or credit will be given, at **Sterling's** discretion, if the item is found to be defective in materials or workmanship, and it was manufactured by **Sterling**. Purchased components are covered under their specific warranty terms.

## 11-3 Warranty

**Sterling** warrants all equipment manufactured by it to be free from defects in workmanship and material when used under recommended conditions. The Company's obligation is limited to repair or replace FOB the factory any parts that are returned prepaid within one year of equipment shipment to the original purchaser, and which, in the Company's opinion, are defective. Any replacement part assumes the unused portion of this warranty.

This parts warranty does not cover any labor charges for replacement of parts, adjustment repairs, or any other work. This warranty does not apply to any equipment which, in the Company's opinion, has been subjected to misuse, negligence, or operation in excess of recommended limits, including freezing or which has been repaired or altered without the Company's express authorization. If the serial number has been defaced or removed from the component, the warranty on that component is void. Defective parts become the property of the warrantor and are to be returned.

The Company is not liable for any incidental, consequential, or special damages or expense. The Company's obligation for parts not furnished as components of its manufactured equipment is limited to the warranty of the manufacturers of said parts.

Any sales, use, excise, or other tax incident to the replacement of parts under this warranty is the responsibility of the purchaser.

The company neither assumes nor authorizes any other persons to assume for it any liability in connection with the sale of its equipment not expressed in this warranty.

## 12-1 Controller Safety Tags




High Voltage  
Inside Enclosure



Read Operation and  
Installation Manual

## 12-2 Controller Identification (Serial Number) Tag

(Located on the side of the controller box)

	5200 W. Clinton Ave Milwaukee, WI 53223 Tel. (414) 354-0970 Fax (414) 354-6421	
<hr/>		
SSC CONTROL PANEL		
Model No. SSC1-5Q	Serial No. 31K0182	
<input type="text" value="115"/> Volt	<input type="text" value="60"/> Hz	<input type="text" value="1"/> Ph
Control Voltage 24VDC		
<div style="border: 1px solid black; height: 80px; width: 100%;"></div>		

Review electrical drawings supplied in the packet with the manual.

# Warranty

**Sterling** warrants all equipment manufactured by it to be free from defects in workmanship and material when used under recommended conditions. The Company's obligation is limited to repair or replace FOB the factory any parts that are returned prepaid within one (1) year of equipment shipment to the original purchaser, and which, in the Company's opinion, are defective. Any replacement part assumes the unused portion of this warranty.

This warranty does not apply to any equipment which, in the Company's opinion, has been subjected to misuse, negligence, or operation in excess of recommended limits or which has been repaired or altered without the Company's express authorization. If the serial number has been defaced or removed from the component, the warranty on that component is void. Defective parts become the property of the warrantor and are to be returned.

The Company is not liable for any incidental, consequential, or special damages or expenses. The Company's obligation for parts not furnished as components of its manufactured equipment is limited to the warranty of the manufacturers of said parts.

Any sales, use, excise, or other tax incident to the replacement of parts under this warranty is the responsibility of the purchaser.

The company neither assumes nor authorizes any other persons to assume for it any liability in connection with the sale of its equipment not expressed in this warranty.

Many types of Sterling equipment carry an additional one-year service policy. Consult your Sterling/Sterlco sales representative for specific details.



PO Box 245018 • 5200 W. Clinton Avenue • Milwaukee, WI 53224-9518 USA  
Phone (414) 354-0970 • Fax (414) 354-6421  
<http://www.sterlco.com>

# **STERLCO** Service Department

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