

Sample Collection System

Installation and Operation Manual

PNEG-2169

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All information, illustrations, photos, and specifications in this manual are based on the latest information available at the time of publication. The right is reserved to make changes at any time without notice.

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1. Introduction

This manual covers the installation and operation for the Sample Collection System. This manual provides guidelines for installing the product. You must retain a qualified contractor to provide on-site expertise. INTERSYSTEMS IS NOT RESPONSIBLE FOR THE INSTALLATION OF THIS PRODUCT.

InterSystems reserves the right to improve its product whenever possible and practical to do so. We reserve the right to change, improve and modify products at any time without obligation to make changes, improvements and modifications on equipment sold previously.

General Safety Statements

1. The Sample Collection System is designed and manufactured with operator safety in mind. However, residual hazards remain due to the nature of material handling, and specific material hazards. Use extreme caution at all times.
2. Modifications to equipment may cause extremely dangerous situations that could result in damage to the equipment as well as serious injury or death. Never modify the equipment.
3. Intersystems recommends that you contact the local power company to have a representative survey the installation to ensure wiring is compatible with their system and adequate power is supplied to the unit.
4. Consult Intersystems before making any changes to the sampler or its operating environment. Careless changes could result in death or serious injury to people and reduce the performance and service life of the equipment.
5. Never perform any service on this equipment or any powered equipment until all power has been shut off and locked out so that it cannot be restored without the consent and knowledge of the person who interrupted power includes electrical, fluid, mechanical or pneumatic energy.
6. Never perform any service on this equipment without utilizing the required PPE (Personal Protective Equipment). Refer to the MSDS (s) (Material Safety Data Sheet (s)), on all products to which this equipment is in contact to determine what PPE is required.



This equipment is to be obtained only on the voltage designated on the certified electrical drawings. Fire or explosion may result, which can cause death, serious injury and extensive damage to equipment. Do not connect to voltages other than designated.

Scope

The certified drawings list the non-standard components that have been incorporated into the equipment. InterSystems, Inc. normally stocks non-fabricated parts and non-custom OEM parts. Replacement parts for any other components, including fabricated parts and custom OEM components can be supplied upon request.

Ordering Parts

Direct parts orders or requests for technical assistance to your sales representative or to:

InterSystems, Inc.
13330 "I" St.
Omaha, NE. 68137
Phone: (402) 330-1500
FAX: (402) 330-3350

Please have available the MODEL NUMBER, SERIAL NUMBER and CUSTOMER ORDER NUMBER of the equipment in question as well as the location where the sampler is INSTALLED.

Replacement Parts

The InterSystems, Inc. sampler is a quality built piece of machinery. As with any machine, parts do wear out and fail. It is InterSystem's recommendation that a small supply of spare parts be kept on hand to cover any minor breakdowns. A separate priced spare parts list will be sent identifying the suggested spare parts. It is also necessary to check the certified drawings, which will list any special or custom components utilized on this equipment.

Repair Kits

The following chart lists repair kits and parts that are available from InterSystems. These kits are offered as a more economical solution by rebuilding the defective part rather than replacing it. However in some cases the part may be beyond repair and replacement will be necessary.

Product Code	Description
34769	Standard SAE 80W-90 EP Gear Lubricant Oil Quart (Pennzoil 4096)
529601	Optional Synthetic Gear Lubricant Oil Quart (Mobil SHC634)
35527	Limit Switch Contact Block 1 N.O. 1 N.C.

Safety Guidelines

Safety guidelines are general-to-specific safety rules that must be followed at all times. This manual is written to help you understand safe operating procedures and problems that can be encountered by the operator and other personnel when using this equipment. Save these safety guidelines for future reference.

As owner or operator, you are responsible for understanding the requirements, hazards, and precautions that exist and to inform others as required. Unqualified persons must stay out of the work area at all times.

Alterations must not be made to the equipment. Alterations can produce dangerous situations resulting in **SERIOUS INJURY** or **DEATH**.

This equipment must be installed in accordance with the current installation codes and applicable regulations, which must be carefully followed in all cases. Authorities having jurisdiction must be consulted before installations are made.

When necessary, you must consider the installation location relative to electrical, fuel and water utilities.

Personnel operating or working around equipment must read this manual. This manual must be delivered with equipment to its owner. Failure to read this manual and its safety instructions is a misuse of the equipment.

ST-0001-3

Cautionary Symbol Definitions

Cautionary symbols appear in this manual and on product decals. The symbols alert the user of potential safety hazards, prohibited activities and mandatory actions. To help you recognize this information, we use the symbols that are defined below.



This symbol indicates an imminently hazardous situation which, if not avoided, **will result in serious injury or death.**



This symbol indicates a potentially hazardous situation which, if not avoided, **can result in serious injury or death.**



This symbol indicates a potentially hazardous situation which, if not avoided, **can result in minor or moderate injury.**



This symbol is used to address practices not related to personal injury.



This symbol indicates a general hazard.



This symbol indicates a prohibited activity.



This symbol indicates a mandatory action.

ST-0005-2

Safety Cautions

Use Personal Protective Equipment

- Use appropriate personal protective equipment:

Eye Protection



Respiratory Protection



Foot Protection



Hearing Protection



Head Protection



Fall Protection



Hand Protection



- Wear clothing appropriate to the job.
- Remove all jewelry.
- Tie long hair up and back.

ST-0004-1

Follow Safety Instructions

- Carefully read all safety messages in this manual and safety signs on your machine. Keep signs in good condition. Replace missing or damaged safety signs. Be sure new equipment components and repair parts include the current safety signs. Replacement safety signs are available from the manufacturer.
- Learn how to operate the machine and how to use controls properly. Do not let anyone operate without instruction.
- If you do not understand any part of this manual or need assistance, contact your dealer.



ST-0002-1

Maintain Equipment and Work Area

- Understand service procedures before doing work. Keep area clean and dry.
- Never service equipment while it is operating. Keep hands, feet, and clothing away from moving parts
- Keep your equipment in proper working condition. Replace worn or broken parts immediately.



ST-0003-1

Stay Clear of Hoisted Equipment

- Always use proper lifting or hoisting equipment when assembling or disassembling equipment.
- Do not walk or stand under hoisted equipment.
- Always use sturdy and stable supports when needed for installation. Not following these safety precautions creates the risk of falling equipment, which could crush personnel and cause serious injury or death.



ST-0047-1

Sharp Edge Hazard

- This product has sharp edges, which can cause serious injury.
- To avoid injury, handle sharp edges with caution and always use proper protective clothing and equipment



ST-0036-2

Install and Operate Electrical Equipment Properly

- Electrical controls must be installed by a qualified electrician and must meet the standards set by applicable local codes (National Electrical Code for the US, Canadian Electric Code, or EN60204 along with applicable European Directives for Europe).
- Lock-out power source before making adjustments, cleaning, or maintaining equipment.
- Make sure all equipment is properly grounded.



ST-0027-4

2. Safety

Stay Clear of Moving Parts

- Stay clear - machine can start without warning.
- Entanglement in gate will cause serious injury.
- Keep all shields and covers in place at all times.
- Lock-out power source before making adjustments, cleaning, or maintaining equipment.



ST-0070-1

Stay Clear of Rotating Parts

- Do not service equipment while it is in operation.
- Entanglement in rotating parts or exposed belts will cause serious injury or death.
- Keep all shields and covers in place at all times.
- Lock-out power source before making adjustments, cleaning, or maintaining equipment.



ST-0072-1

3. Decals

The safety decals on your equipment are safety indicators which must be carefully read and understood by all personnel involved in the installation, operation, service and maintenance of the equipment. To replace a damaged or missing decal, contact us to receive a free replacement.

InterSystems
 13330 "I" Street
 Omaha, Nebraska 68137
 Phone: (402) 330-1500
 Fax: (402) 330-3350

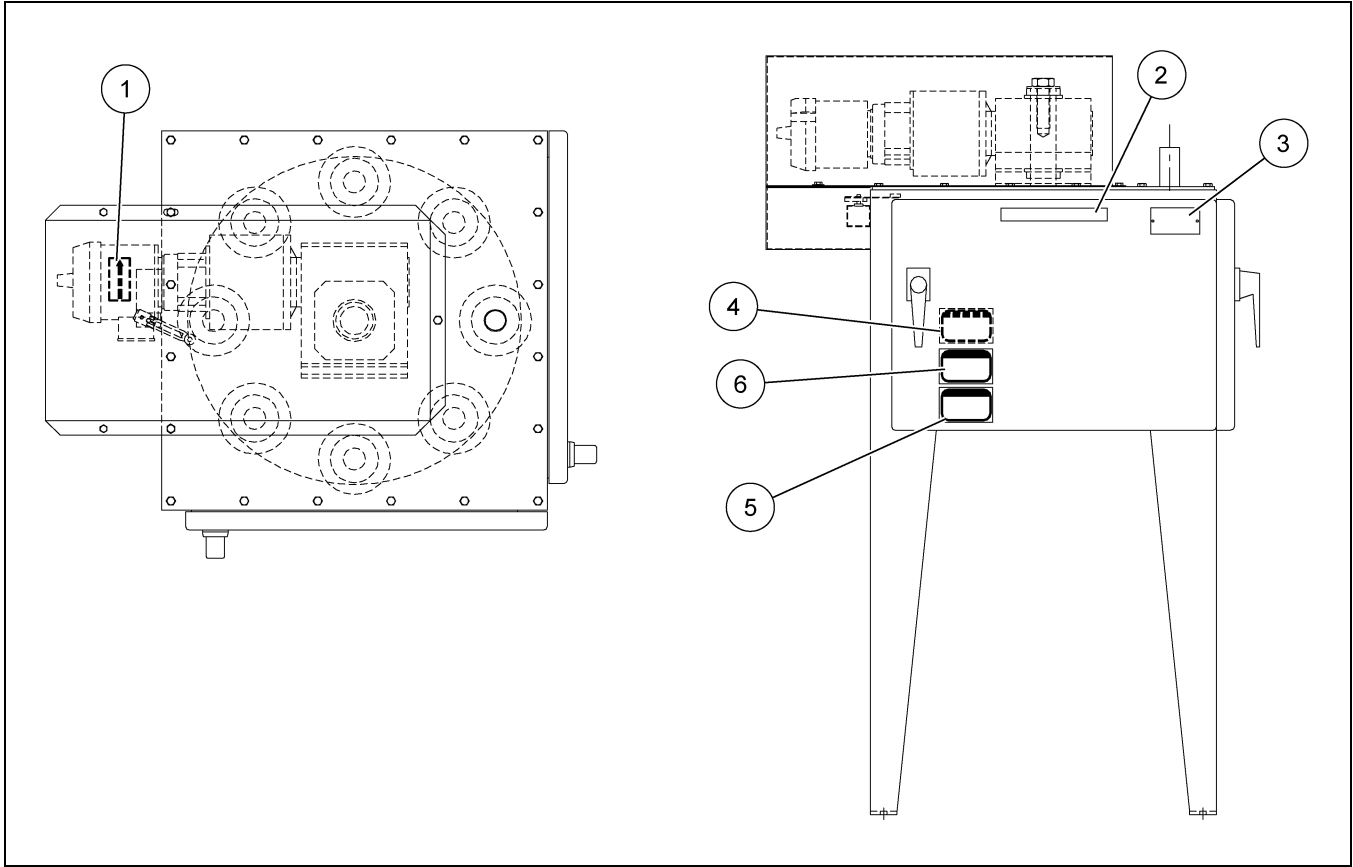







Figure 3A SCS Sample Cabinet Safety Label Locations

NOTE: These signs must never be removed, tampered with, painted over or obscured in anyway. If labels are damaged or become unreadable, replacement labels are available from Intersystems.

Ref #	Decal #	Decals	Description
1	IS 573x1		Rotation

Ref #	Decal #	Decals	Description
2	IS 516x1		IS Samplers
3	IS Tag		Serial Number Tag
4	EMC 25 3J	 <div data-bbox="683 758 987 1100"> <p>WARNING</p> <p>Rotating parts can crush, cut and entangle.</p> <p>Do NOT operate with guard removed.</p> <p>Lockout power before removing guard or servicing.</p> </div> <p><small>© Clarion Clarionsafety.com Reorder No. EMC 25 3J</small></p>	Rotating Parts Inside and Outside Both Doors
5	EMC 402 34	 <div data-bbox="683 1178 954 1478"> <p>WARNING</p> <p>Avoid serious injury or death.</p> <p>This machine MUST be locked out in accordance with current OSHA requirements before any maintenance or service is performed.</p> </div> <p><small>© Clarion Clarionsafety.com 16089 Reorder No. EMC 402 34</small></p>	Lock Out Machine (Both Doors)
6	EMC 403 34	 <div data-bbox="683 1545 987 1887"> <p>WARNING</p> <p>Stay clear.</p> <p>Machine starts without warning.</p> </div> <p><small>Reorder No. EMC 403 34</small></p>	Starts without Warning Both Doors

4. General Information

System Description

The SCS sample collection system is designed to retain and hold a series of samples from through out a given period of time. The cabinet automatically loads one or more samples into a jar, bag or bucket. [Figure 4A](#) illustrates a typical SCS sample collection system.

The SCS is typically positioned below an automatic sampler so that the samples flow via gravity into the inlet and on into the sample container. After one or more samples is taken, the control will temporarily halt sampling and will index signal the SCS to index to the next container position. This sequence will be repeated until the control reaches the “Number of Sample Containers” preset.

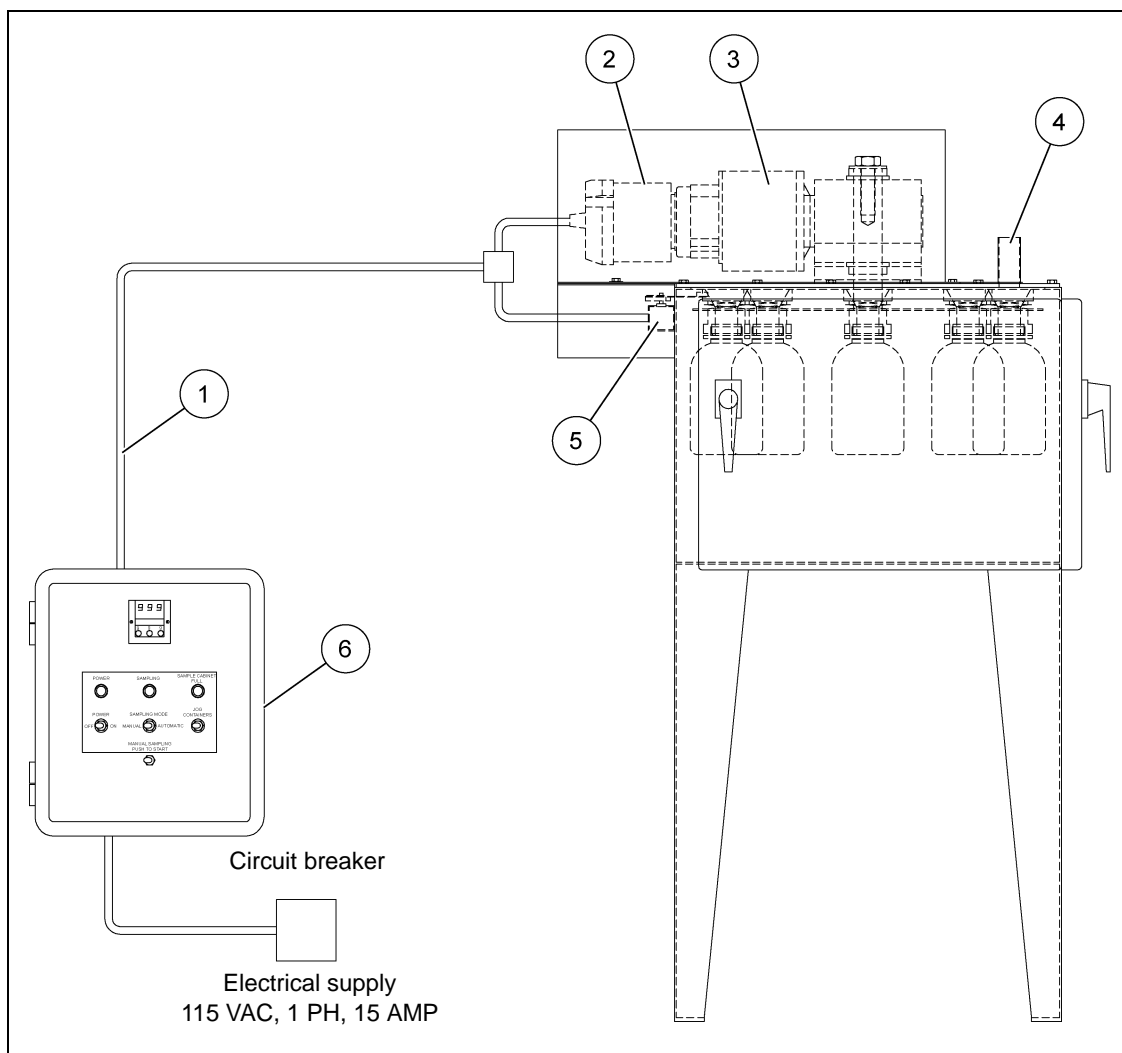


Figure 4A Typical Installation, Model SCS Sample Collection System

Ref #	Description
1	Electrical Conduit
2	Drive Motor
3	Magnetic Brake
4	Sample Inlet
5	Limit Switch
6	Combination SCS and Sampler Control Panel

Optional Features

The certified drawings indicate which, if any, optional features are included with a sampling system. Some of the more frequently specified optional features are briefly described in the following list.

1. Explosion-proof system. There are several major differences in an explosion-proof cabinet as compared to a standard sample collection system. An explosion proof cabinet will typically have the following features.
 - a. An explosion-proof limit switch with the rating of:
 - Class 1, Groups C and D, Division 1 and 2
 - Class 2, Groups E, F and G, Division 1 and 2
 - b. An explosion-proof motor with the rating of:
 - Class 1, Groups D, Division 1 and 2
 - Class 2, Groups E, F and G, Division 1 and 2

The explosion proof sample collection system control is available in two enclosure classifications.

- a. The NEMA 9 control with the rating of:
 - Class 2, Groups E, F and G, Division 1 and 2
 - b. The NEMA 7 control with the rating of:
 - Class 1, Groups C and D, Division 1 and 2
 - Class 2, Groups E, F and G, Division 1 and 2
2. Components of special materials, such as 316 stainless steel, monel, inconel or nedox coatings.
 3. Programmable controls to sequence the sampler and the sample collection equipment.

Material Collected

Most materials from light to heavy density granules, flakes and pellets.

Cabinet Construction

Standard cabinet housing construction is of painted carbon steel or 304 stainless steel. The sample loaders are of nylon. Other materials and/or finishes appropriate to the operating environment and the material or product being sampled may be used. Refer to the certified drawing(s) for any optional or special components installed on the sampler.

5. Installation

Receiving Inspection

Carefully inspect the sampling system for damage as soon as it is received. Also, verify that the quantity of parts or packages actually received corresponds to the quantity shown on the packing slip. Report any damage or shortage to the delivering carrier as soon as possible. InterSystem's responsibility for the equipment ended with acceptance by the delivering carrier. Refer to the bill of lading.

Pre-Installation Preparation

NOTE: *Before starting sampling system installation, study this manual, the certified drawing(s) furnished with the system, and other applicable documents (including, but not limited to OSHA Regulations, the National Electrical Code and all other applicable federal, state and local codes and regulations).*

Location

The SCS sample cabinet is typically mounted to the floor below the sampler as shown in [Figure 4A on Page 14](#). The sample cabinet needs to be installed so that the top of the cabinet is level. Additionally, the sample cabinet and associated equipment should be located for ease of access and maintenance.

The SCS sample cabinet is to be installed only as shown on the certified drawing(s). If an alternate mounting arrangement is desired contact InterSystems prior to installation for proper guidance. The sample cabinet is of a general design with modifications specifically for your application. It may be necessary to rework the sample cabinet in order for it to function properly if you alter the application.

General Mounting Guidelines



The SCS index cabinet cannot support any other equipment that is not shown on the certified drawings. Collapse of the whole system can cause death, serious injury and extensive damage to equipment. Properly support all spouts, and conveying lines.

1. Locate and position the SCS index cabinet in the desired location.
2. Anchor the cabinet to the floor using the holes provided in the support legs.

Material Sample Transport Lines

The tubing used to transport material samples must be compatible with the operating environment and the material sampled. Typically a 1-1/2" I.D. flexible hose is slipped over the inlet tube of the SCS cabinet and held in place by a worm clamp. The hose is then routed to allow material to flow via gravity from the discharge of the sampler.

Make all connections airtight and make sure all interior surfaces of joints are smooth and flush. Any ragged or raised tube ends will collect dust and debris as well as retard material flow. Air leaks can interfere with the pressure or vacuum conveying and sampling system. Escaping sample material can contaminate surrounding atmosphere and equipment.

Controller Location

1. Use vibration isolation pads when mounting the control enclosure or mount the controller in a vibration free location.
2. Unless ordered for severe duty, locate controller so it is protected from water and dust.
3. Unless an explosion-proof rated controller was specifically ordered, DO NOT locate the controller in a hazardous area.
4. Most applications require that the sampler be in easy view of the controller.

System Wiring

Refer to the certified electrical drawing(s) for specific wiring requirements. As explained in Terminal Strip [on Page 22](#), the 20-position barrier terminal strips on the two circuit boards mounted INSIDE the combination sampler and SCS controller enclosure is the connection point for ALL external circuitry.

The controller was completely assembled and tested with the sampler before it left the factory. The electrical installation must comply with OSHA Regulations, the National Electrical Code and all other applicable federal, state and local codes and regulations.

If wiring between the controller and the sampler unit is run through rigid conduit, use a short length of flexible conduit to connect wiring to the sampler. This will isolate the rigid conduit from any vibration originating in the product conveying line and sampler.

Electrical Power Requirements, System

110/120 VAC 50/60 Hz, Single Phase, 10 Amp Service

Optional - 220/240 VAC 50/60 Hz, Single Phase, 5 Amp Service

Refer to the certified electrical drawing(s) for specific wiring requirements. InterSystems strongly recommends that electrical service to the sampling system be an isolated line. Voltage fluctuations and line noise can affect the controller's circuit board, thus causing the sampler to malfunction.

Controller

110/120 VAC, 50/60 Hz, Single Phase, 6 Amp Maximum (includes motor power requirements).

Optional - 220/240 VAC, 50/60 Hz, Single Phase, 3 Amp Maximum (includes motor power requirements).

Drive Motor

Standard 110/120 VAC, 220/240 VAC, 50/60 Hz, Single Phase, 2.3/1.2 Full Load Amps.

Refer to the certified drawing(s) of the SCS sample cabinet to verify motor size, horsepower, voltage and current rating.

6. Operations and Adjustments



Failure to observe all safety rules, written and implied and those suggested by common sense, can result in death, serious injury and/or equipment damage. Lock out power before performing any maintenance.

Control Components and their Functions

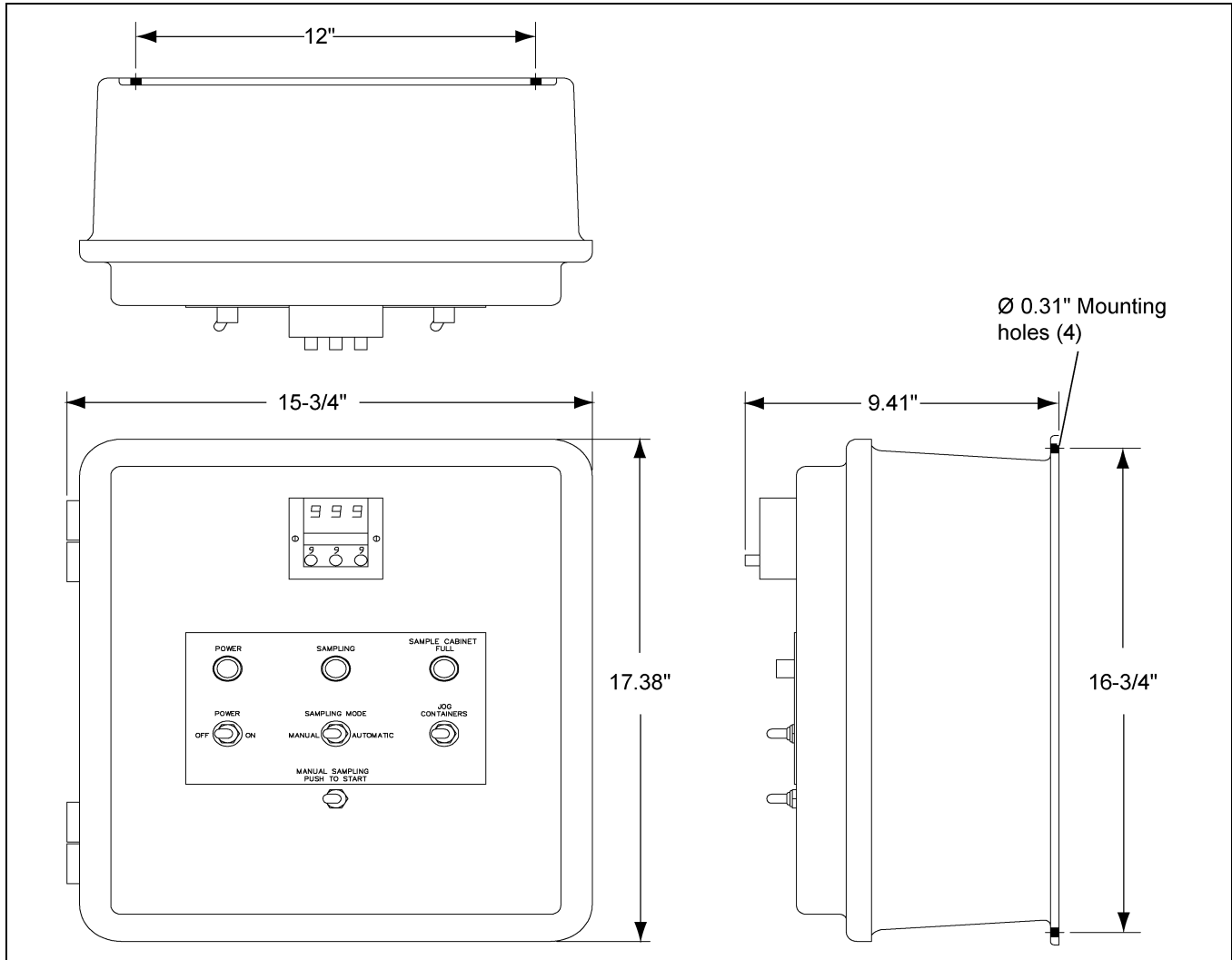


Figure 6A Standard NEMA 4 Combination Sampler and SCS Control Panel Detail

Refer to the certified electrical drawing(s) for dimensions on control panels with optional features. Also, refer to the sampler manual for control and PC board settings for the sampler.

Power OFF/ON Switch S-2

This toggle switch controls all electrical power to the controller and the sampler unit.



This machine starts without warning. Moving parts can cause severe injury. Clear area prior to controller start-up.

Sampling Mode Switch S-3 (Automatic/Manual)

This switch permits the operator to select whether samples will be collected automatically at precisely timed or counted intervals as determined by the Digital Display Timer (T-1) or Counter C-1, or manually whenever the operator momentarily actuates the MANUAL SAMPLING toggle switch (S-4).

Manual Sampling Switch S-4

This switch functions ONLY when the AUTO/MANUAL switch has been set to the Manual Mode position. Switch S-4 is a spring-return switch that is maintained in the OFF or Normally Open position. Correct operating procedure is to momentarily actuate S-4 to the Start position. When the SAMPLING light is illuminated, release the switch. The sampler will complete its cycle without further operator intervention.

Jog Sampling Switch S-1

This switch functions ONLY when the AUTO/MANUAL switch has been set to the Manual Mode position. Switch S-1 is a spring-return switch that is maintained in the OFF or Normally Open position. Correct operating procedure is to momentarily actuate S-1 to the Start position. The cabinet motor will start and index the cabinet to the next container position. Upon actuation of this switch the “Number of Sample Containers” counter is reset.

NOTE: *Make sure the sample cabinet is empty prior to returning the auto/manual switch back to the auto mode after jogging the cabinet motor.*

Power Pilot Light

This light is illuminated as long as power is available to the controller and the POWER switch (S-2) is set to ON.

Sampling Pilot Light

This light will illuminate when a sampling cycle has been initiated and will stay lit until the sampling cycle has completed.

Sample Jars Full Pilot Light

This light will illuminate when all the sample containers have been filled and will stay lit until the sample cabinet has been emptied.

Digital Display Timer T-1 (Standard)

Refer to the sampler manual for this information.

6. Operations and Adjustments

SCS Printed Circuit Board (PCB-2) #527075

The circuit board mounted inside the controller enclosure controls the SCS cabinet and interfaces with sampler printed circuit board PCB-1. *Figure 6B* illustrates a typical board. Depending upon the options selected there may be minor differences. The following paragraphs describe the major components of this printed circuit board, their functions and adjustments. Refer to the sampler manual for settings on the sampler PCB-1.

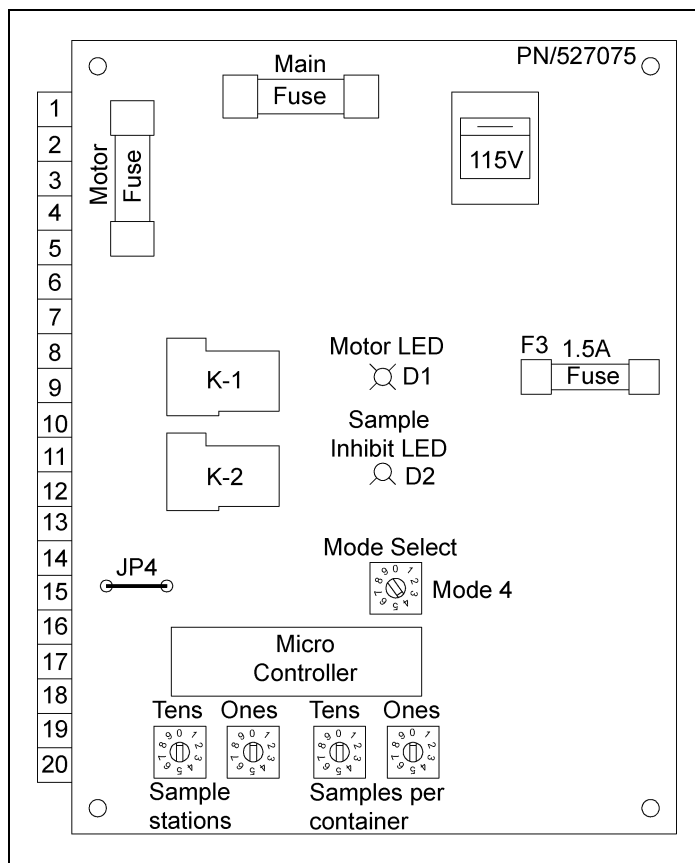


Figure 6B SCS Printed Circuit Board

Main Fuse

This fuse, located along the top center of the board, protects the controller and SCS cabinet components against overloads and short circuits.

For 110/120 VAC, 1 PH operation use **ONLY** a Buss Type FNM, 2 Amp, 250 Volt Slo-Blo fuse or equal.
For 220/240 VAC, 1 PH operation use **ONLY** a Buss Type FNM, 1 Amp, 250 Volt Slo-Blo fuse or equal.

Motor Fuse Holder

This fuse, located at the top left corner of the board, protects the motor against overloads and short circuits. Standard TEFC gearmotor.

For 110/120 VAC, 1 PH operation use **ONLY** a Buss Type FNM, 5 Amp, 250 Volt Slo-Blo fuse or equal.
For 220/240 VAC, 1 PH operation use **ONLY** a Buss Type FNM, 3-2/10 Amp, 250 Volt Slo-Blo fuse or equal.

PC Board Fuse F3

This fuse, located to the right on the middle of the board, protects the printed circuit board against overloads and short circuits. Use ONLY a Buss Type AGC, 1-1/2 Amp, 250 Volt fast acting fuse or equal.

Samples Per Container Counter Switches (Tens and Ones)

These rotary switches set the number of samples to be put one container. These rotary switches can be adjusted to alter the number of samples deposited in one container.

NOTE: *Cycle the sampler several times before adjusting this counter. Avoid setting this counter too high to prevent overflowing an spillage. Maximum counter setting will depend on the characteristics of the material being sampled and may well require re-adjustment if the product being sampled changes.*

Utilizing a small screw driver turn the slotted rotor of the tens and/or ones switches to desired number of samples per container. The time period can be adjusted from 1 to 99 seconds. The counter is factory set at 4.

Number of Sample Stations Counter Switches (Tens and Ones)

These rotary switches can be adjusted to suit various sizes of sample cabinets. The switches will need to be set to a number matching the number of sample container stations in the sample cabinet. Utilizing a small screw driver turn the slotted rotor of the tens and/or ones switches to match the number of sample stations in the SCS sample cabinet. The number of sample stations can be adjusted from 1 to 99. This counter is factory set to match the SCS sample cabinet.

NOTE: *When the SCS cabinet is filled it indexes to the next position (the first container) and stops.*

Motor LED Indicator

This LED (D1) is illuminated when power is present to K-1 relay coil on the PC board. It is a visual signal showing when the sample cabinet motor should be running.

Sample Inhibit LED Indicator

This LED (D2) is illuminated when power is present to K-2 relay coil on the PC board. It is a visual signal showing that sampling is being inhibited. This LED will illuminate when the cabinet is changing sample container positions and when all sample containers are full. There is a 10 second delay after the last sample is taken upon filling a container before the sample cabinet motor starts. This allows the sampled material drop an settle into the sample container.

Mode Select Switch

The switch, located at the lower center of the circuit board, determines the sequencing of certain internal controller events.

As this board is used in controllers for several different types of machinery, MODE switch settings allow the board's functions to be tailored to the requirements of the various pieces of machinery.

NOTE: *SCS cabinets require the mode switch to be positioned on setting four. If the mode setting is not correctly set, turn power OFF to the control prior to reselecting. The PC board will only change modes when power is initially applied.*

6. Operations and Adjustments

Terminal Strip

This 20-position barrier terminal strip is located along the left edge of the circuit board. It serves as the controller's interface and connection point for all external circuits and for the components mounted on the enclosure's front panel. Refer to the certified electrical drawing(s).

115V/230V Switch

This switch is factory set to allow a common PC board to be operated on either 115 VAC, 50/60 Hz or 230 VAC, 50/60 Hz. The printed circuit board operating voltage can only be switched after all electrical components connected to it are changed. To field convert the control and sampler operating voltage, determine what components will need to be replaced. Typically this includes, but is not limited to: the digital display timer, power lamp and socket, fuse(s), solenoid coil(s) and possibly the motor. Refer to the name plate and wiring diagram on the motor to determine if the motor is rated for the desired voltage. If it is, change the wiring connections in the motor junction box for operation on the new voltage.



This control is to be operated only on the voltage designated on the certified electrical drawing. Fire or explosion may result, which can cause death, serious injury and extensive damage to equipment. Do not change the 115/230 VAC switch setting without consulting InterSystems.

Jumper (J4)

This jumper is factory installed to allow the SCS PC board to operate without optional Jar Full Level Sensor. (See Jar Full Level Sensor (Optional) [on Page 23.](#))

Control Relay K-3

This relay energizes when the sampler is running. Contact closure signals PCB-2 that a sample is being taken. This increments the "Number of Sample Per Container" counter.

Control Relay K-4

This relay energizes when the sample inhibit LED illuminates and prevents samples from being taken.

Sample Cabinet Mounted Electrical Components

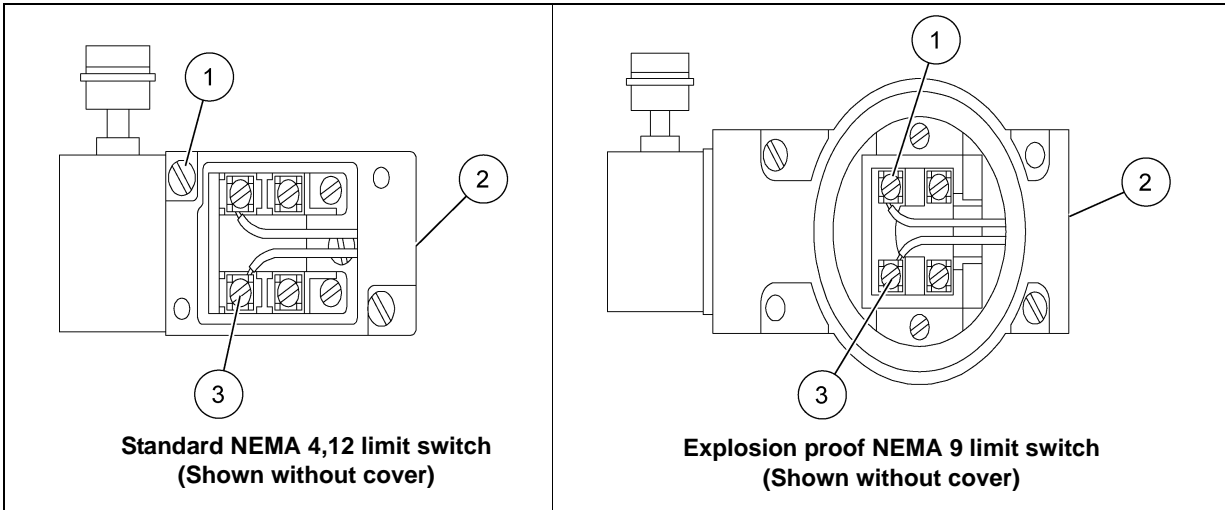


Figure 6C Limit Switch Connections

Ref #	Description
1	N.O. Contact Connection
2	1/2" NPT Conduit Connection
3	Common Connection

Limit Switch, LS-1

This switch is actuated when a sample container is in the loading position. Upon indexing the sample cabinet drive motor starts, the limit switch de-actuates and then re-actuates when the next sample container is in position. The control senses both the opening and closing of the limit switch.

Correct wiring termination is essential to proper sampler operation. [See Figure 6C](#), it shows the limit switch utilized on the SCS index cabinet and the physical orientation of the proper wiring connections.

Jar Full Level Sensor (Optional)

This sensor is connected between terminals #12 and #17 on PCB-2 instead of the normally installed wire. When the sensor is connected, the SCS cabinet will index to the next container whenever the current container is full.

Drive Motor

This motor drives the platter rotation through a right angle gear reducer. Verify that the motor is turning the proper direction of rotation when wiring the system. On initial setup, jog the motor to ensure proper rotation.

NEMA 4 C-Face Magnetic Brake

The magnetic brake is mounted between the gear reducer and the drive motor. The brake ensures accurate positioning of the turntable by eliminating any motor coasting. It is spring engaged when at rest and releases when power is applied. The brake is wired in parallel with the drive motor wiring. Refer to certified electrical schematic for proper wiring.

7. Maintenance and Repair



Failure to observe all safety rules, written and implied and those suggested by common sense, can result in death, serious injury and/or equipment damage. Lock out power before performing any maintenance.

General Maintenance

A good maintenance program involves thorough general housekeeping, adequate periodic re-lubrication and replacement of worn or damaged components.

Periodic Inspection

At regularly scheduled intervals, while observing all safety precautions, observe the sample as it operates. Inspect for:

1. Loose or missing hardware
2. Noisy motor or motor/reducer bearings
3. Overheated motor or reducer
4. Adequate lubricant in gear reducer
5. Structural damage
6. Rust or corrosion
7. Damaged wiring, including exposed conductors and connections
8. Make sure that all guards are in place and that all warning labels are in place and legible.
[See Page 4](#) for GENERAL SAFETY INFORMATION to explain the purpose and intended location of the warning signs. Warning signs are an important part of any safety program, replace any missing signs IMMEDIATELY.

Lubrication

Gear Reducer Lubrication

The gear reducer is shipped filled with oil. Check the oil level every six months and add oil if required. Under normal sampler operating conditions the oil should be changed once every two years.

Use a gear lubricant with an AGMA #8 rating for normal operating conditions. Use a synthetic gear lubricant such as "Mobil SHC 634" for extreme operating conditions.

Gearmotor Gear Case

This gear reducer is lubricated for life at the manufacturer factory and periodic re-lubrication should not be required under normal conditions. If leakage is detected repair as needed, clean gear case completely and refill with Hodson 4111 or Gulf Harmony #121 heavy gear oil. The gear case will require approximately 4 ounces (by weight) to fill.

Limit Switch Adjustment

Loosen and adjust the limit switch arm if required. The limit switch trips on each of the jar loaders thus sensing that the platter has rotated into the next position. The limit switch should trip and remove power from the motor thus stopping the rotation. The jar loader should be positioned directly below the sample inlet.

General Sample Collection System Troubleshooting



Careless or accidental restoration of power can result in death or serious injury. Make certain area is clear before removing lock outs.

Symptom	Possible Cause	Corrective Action
Sample cabinet does not index in either AUTO or MANUAL modes (Power light OFF).	Power switch OFF.	Turn power switch ON.
	Circuit breaker is open.	Reset breaker.
	Main fuse is blown.	Replace. (See Main Fuse on Page 20.)
	Faulty supply wiring.	Correct. Refer to certified electrical schematic.
	Defective power switch.	Replace switch.
Sample cabinet does not index in either AUTO or MANUAL modes (Power light ON).	Faulty system wiring.	Correct. Refer to certified electrical schematic.
	PC board fuse is blown.	Replace. (See PC Board Fuse F3 on Page 21.)
	Drive motor burnt out.	Replace.
	Magnetic brake not dis-engaging or defective.	Repair or replace.
Sample container overfills.	Sampler taking too many samples per container.	Adjust samples per container counter setting on PC board. (See Samples Per Container Counter Switches (Tens and Ones) on Page 21.)
Sample cabinet does not stop in the correct spot (spillage occurs in the cabinet).	Sample cabinet limit switch not adjusted properly.	Adjust limit switch. (See Limit Switch Adjustment on Page 24.)

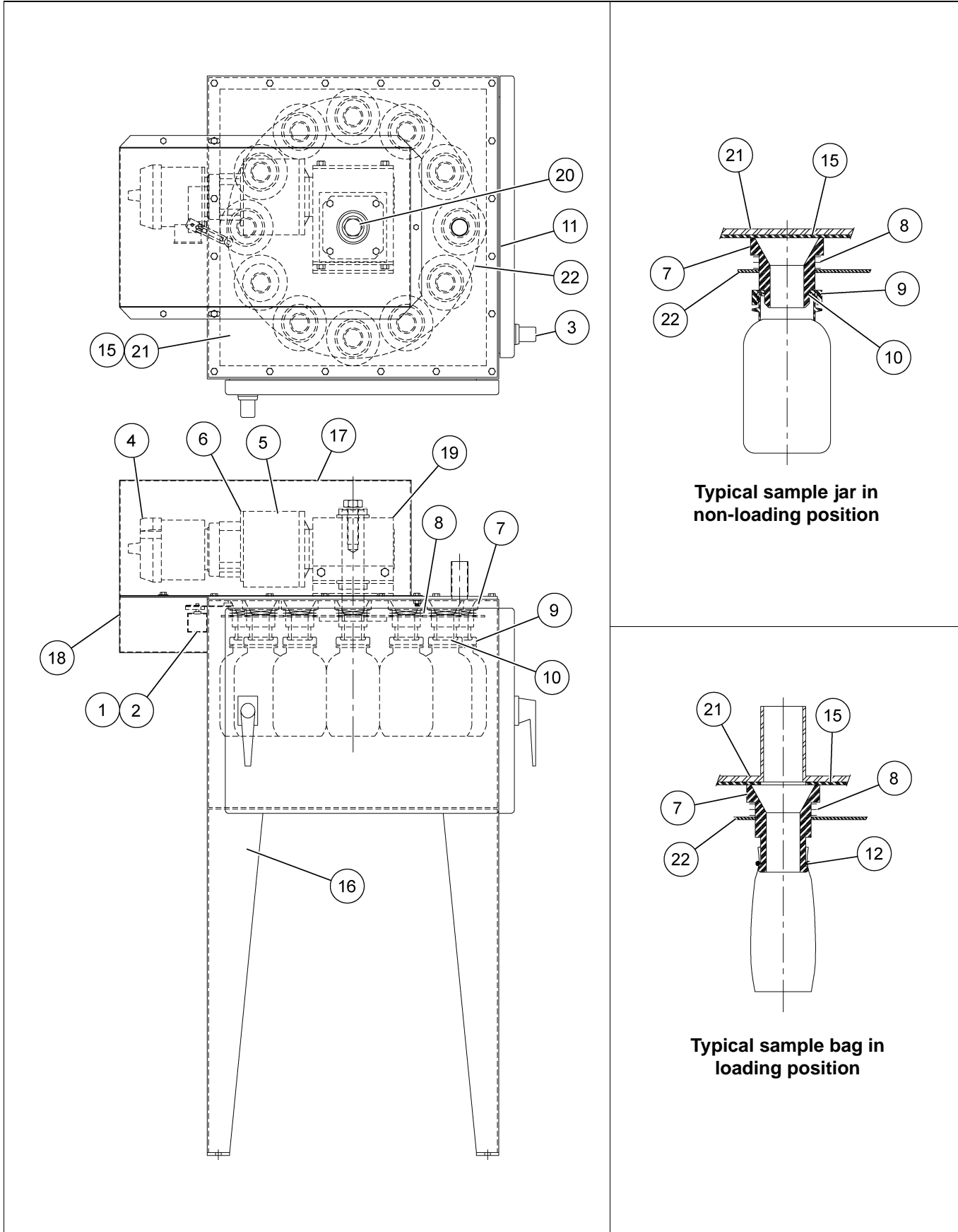
PC Board Troubleshooting

Symptom	Possible Cause	Corrective Action
Number of samples per container counter cannot be adjusted.	PC board needs to be reset.	Turn power switch OFF for 10 seconds and turn back ON.
	Defective PC board.	Replace.
Number of samples stations counter cannot be adjusted.	PC board needs to be reset.	Turn power switch OFF for 10 seconds and turn back ON.
	Defective PC board.	Replace.
Sample Inhibit LED illuminates but no full line voltage signal at terminal #13.	Defective PC board.	Replace.
	Improper ground wiring.	Correct. See Note below.
Motor LED illuminates but no full line voltage signal at terminal #10.	Motor fuse blown.	Replace. (See Motor Fuse Holder on Page 20.)
	Defective PC board.	Replace.
	Improper ground wiring.	Correct. See Note below.

NOTE: SCS cabinets require the mode switch to be positioned on setting four. If the mode setting is not correctly set, turn power OFF to the control prior to reselecting. The PC board will only change modes when power is initially applied.

NOTE: SCS cabinets may fail to operate or operate improperly if the DC ground trace on the PC board is not isolated from the AC ground or neutral wiring. Refer to the certified electrical drawing(s) for AC ground connections.

Sample Collection System Plan and Elevation Views



Sample Collection System Parts List

Ref #	Part #	Description	Qty
1	26402	Limit Switch NEMA 4, 12	1
2	35341	Adjust Limit Switch Roller Arm	1
3	35596	Locking Handle with Latch Cam	2
4	522544	Machined Gearmotor 1/6 HP 40 RPM	1
5	512152	Magnetic Brake	1
6	529323	Adaptor Plate Motor SCS	1
7*	513920	Jar Adapter SCS	A/R
7*	513498	18 Oz Whirlpac Bag Adapter SCS	A/R
8	513488	Wave Spring 2-1/2" I.D. x 1-1/8" LG	A/R
9*	510717	70 mm Lid with 2" Hole	A/R
9*	510719	100 mm Lid with 2" Hole	A/R
10	23852	2" Shaft Retaining Ring 302SS	A/R
11	34185	Doortite Seal	A/R
12	27236	O-ring 1-7/8" x 2-1/8"	A/R
13*	35601	Plexiglas 1/4" x 7-3/4" x 11-1/4"	2
14*	512907	Window Retainer SS 12" LG	4

* Refer to the certified drawings.

Ref #	Part #				Description	Qty
	18"	26"	34"	42"		
15	531734	514129	514791	513022	Seal Plate	1
16*	522632	522633	522634	522635	Housing	1
16*	525580	525581	525582	525583	Housing with Windows	1

Ref #	Part #				Description	Qty
	18"	26"	34"	42"		
17	524465	523105	524467	524468	Drive Cover	1
18	531735	523122	531719	N/A	Limit Switch Cover	1

9. Parts List

Description		Ref #				
		Gear Reducer	Drive Shaft	1-1/2" O.D. Inlet Cover	2.00" O.D. Inlet Cover	Platter
Cabinet Size	Size	19	20	21*	21*	22
1 Pint 4 Position	18"	522636	522641	522666	522667	522645
1 Pint 6 Position	18"	522636	522641	522666	522667	522646
1 Pint 8 Position	18"	522637	522642	522668	522669	522647
1 Pint 10 Position	26"	522637	522642	522670	522671	522650
1 Pint 12 Position	26"	522638	522643	522672	522673	522651
1 Pint 14 Position	26"	522638	522643	522672	522673	522652
1 Pint 16 Position	34"	522639	522644	522680	522681	522656
1 Pint 18 Position	34"	522639	522644	522680	522681	522657
1 Pint 20 Position	34"	522639	522644	522680	522681	522658
1 Pint 22 Position	42"	522640	522644	522684	522685	522663
1 Pint 24 Position	42"	522640	522644	522684	522685	522664
1 Pint 26 Position	42"	522640	522644	522684	522685	522665
1 Quart 4 Position	18"	522636	522641	522666	522667	522645
1 Quart 6 Position	18"	522636	522641	522666	522667	522646
1 Quart 8 Position	26"	522637	522642	522672	522673	522649
1 Quart 10 Position	26"	522637	522642	522672	522673	522650
1 Quart 12 Position	26"	522638	522643	522674	522675	522651
1 Quart 14 Position	34"	522638	522643	522678	522679	522655
1 Quart 16 Position	34"	522639	522644	522680	522681	522656
1 Quart 18 Position	42"	522639	522644	522684	522685	522661
1 Quart 20 Position	42"	522639	522644	522684	522685	522662
1 Quart 22 Position	42"	522640	522644	522684	522685	522663
2 Quart 4 Position	18"	522636	522641	522666	522667	522645
2 Quart 6 Position	26"	522636	522641	522670	522671	522648
2 Quart 8 Position	26"	522637	522642	522672	522673	522649
2 Quart 10 Position	26"	522637	522642	522672	522673	522650
2 Quart 12 Position	34"	522638	522643	522678	522679	522654
2 Quart 14 Position	34"	522638	522643	522678	522679	522655
2 Quart 16 Position	42"	522639	522644	522684	522685	522660
2 Quart 18 Position	42"	522639	522644	522684	522685	522661
1 Gallon 4 Position	18"	522636	522641	522666	522667	522645
1 Gallon 6 Position	26"	522636	522641	522670	522671	522648
1 Gallon 8 Position	26"	522637	522642	522672	522673	522649
1 Gallon 10 Position	34"	522637	522642	522676	522677	522653
1 Gallon 12 Position	34"	522638	522643	522678	522679	522654
1 Gallon 14 Position	42"	522638	522643	522682	522683	522659
1 Gallon 16 Position	42"	522639	522644	522684	522685	522660

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