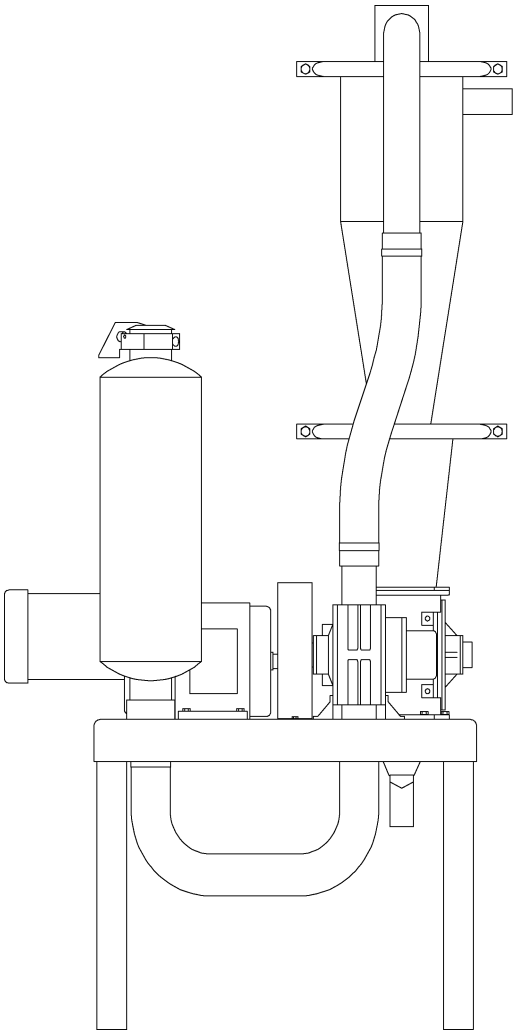


Sample Delivery

Model: SD

Installation and Operation Manual

PNEG-2172

Version: 1.0

Date: 12-15-17

PNEG-2172

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.

Contents

This manual covers the installation and operation for the Sample Delivery. 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 Delivery 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)
526799	Vacuum Pump Oil “AEON PD” Quart

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.

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

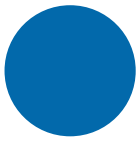
WARNING This symbol indicates a potentially hazardous situation which, if not avoided, **can result in serious injury or death.**

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

NOTICE 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

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

Flying Material and High Pressure Air Hazard

- Flying material and/or high pressure air can cause severe eye injury or blindness.
- Wear safety glasses around operating equipment.

ST-0071-1

Safety Sign-Off Sheet

Below is a sign-off sheet that can be used to verify that all personnel have read and understood the safety instructions. This sign-off sheet is provided for your convenience and personal record keeping.

Date	*Employee Name*	*Supervisor Name*

ST-0007

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 of missing decal, contact us to receive a free replacement.

InterSystems
13330 “I” Street
Omaha, Nebraska 68137
Phone: (402) 330-1500
FAX: (402) 330-3350

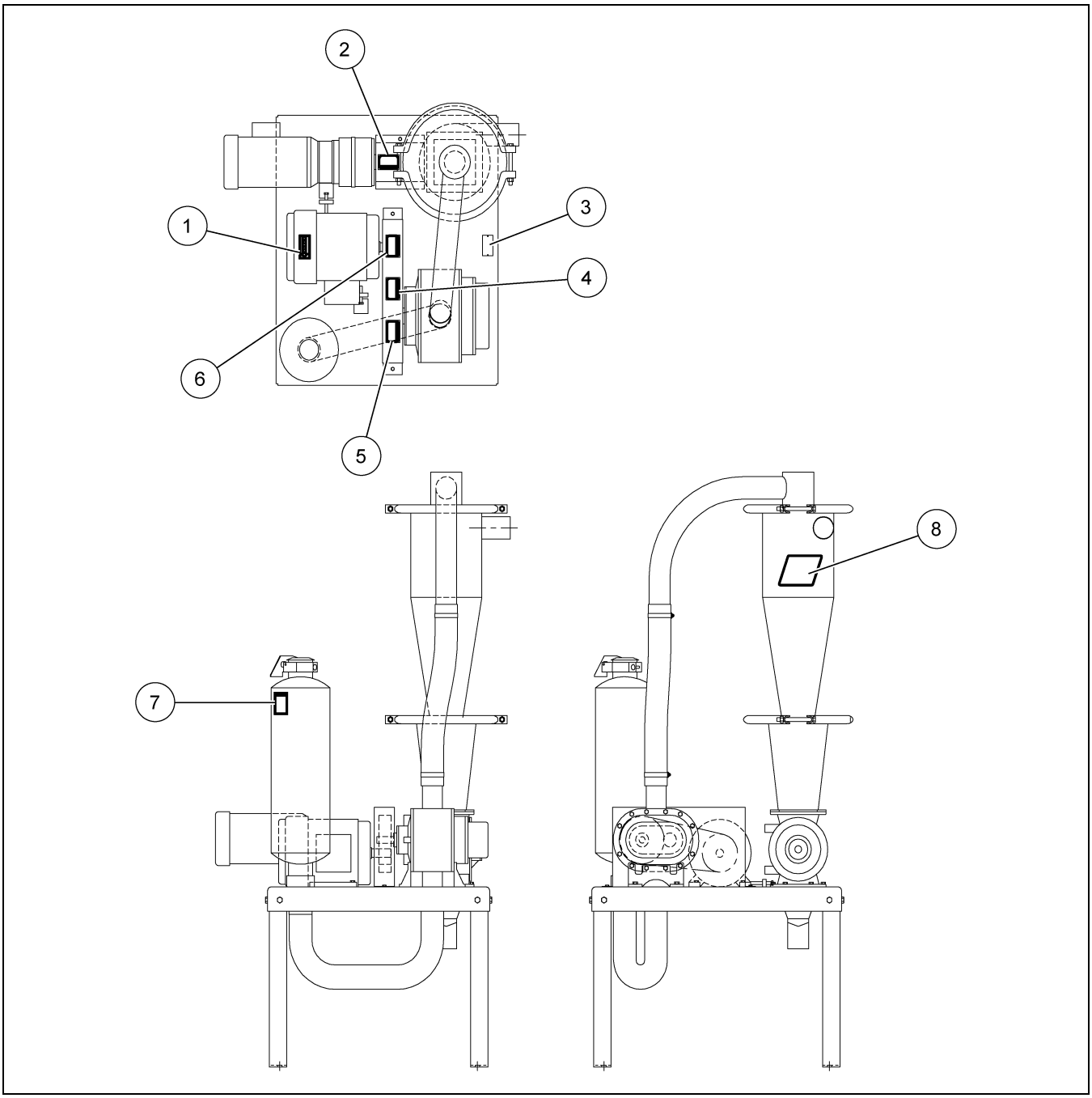
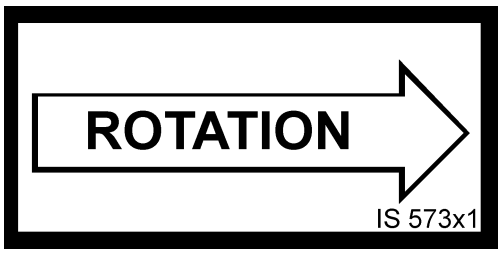
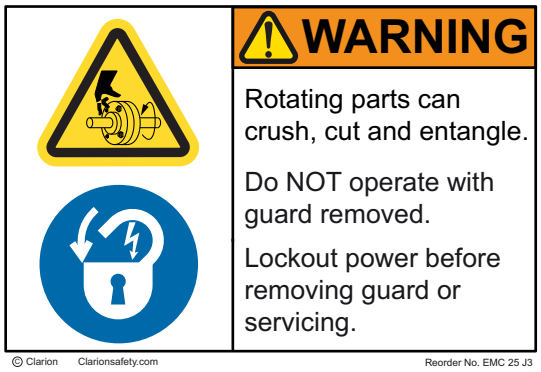
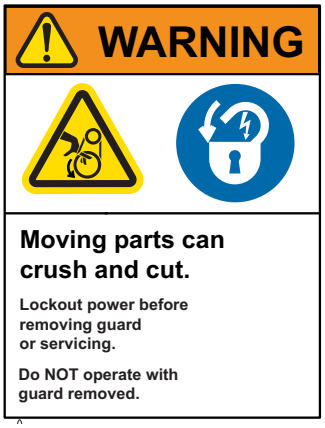


Figure 3A *Sample Delivery Safety Label Locations*

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
2	EMC 25 J3		Rotating Parts
3	IS Tag		Serial Number Tag
4	EMC 403 34		Starts without Warning

3. Decals

Ref #	Decal #	Decals	Description
5	EMC 402 34		Lock Out Machine
6	EMC 24 34		Exposed Belt
7	EMC 36 34		Eye Protection Air Blast
8	IS526 x 4		IS Logo

System Description

The Sample Delivery is designed to transport a representative sample of granular, pellet or other materials taken by a sampler. *Figure 4A* illustrates a typical Sample Delivery application.

The SD typically runs continuously. The SD-2 and SD-3 (2.0" and 3.0") pull material by means of a vacuum. Material falls via gravity from the sampler into a pick-up hopper. From there it is pneumatically pulled through the conveying line and into the cyclone. The material is separated in the cyclone from the conveying air via centrifugal force. The material collects in the airlock receiving chamber and feed through the airlock. The sample, flowing via gravity from the SD system, will then be routed to a sample divider or directly to the desired sample collection point. The SD-3 may also be connected directly to a “TD” sampler and thus eliminate the pick-up hopper.

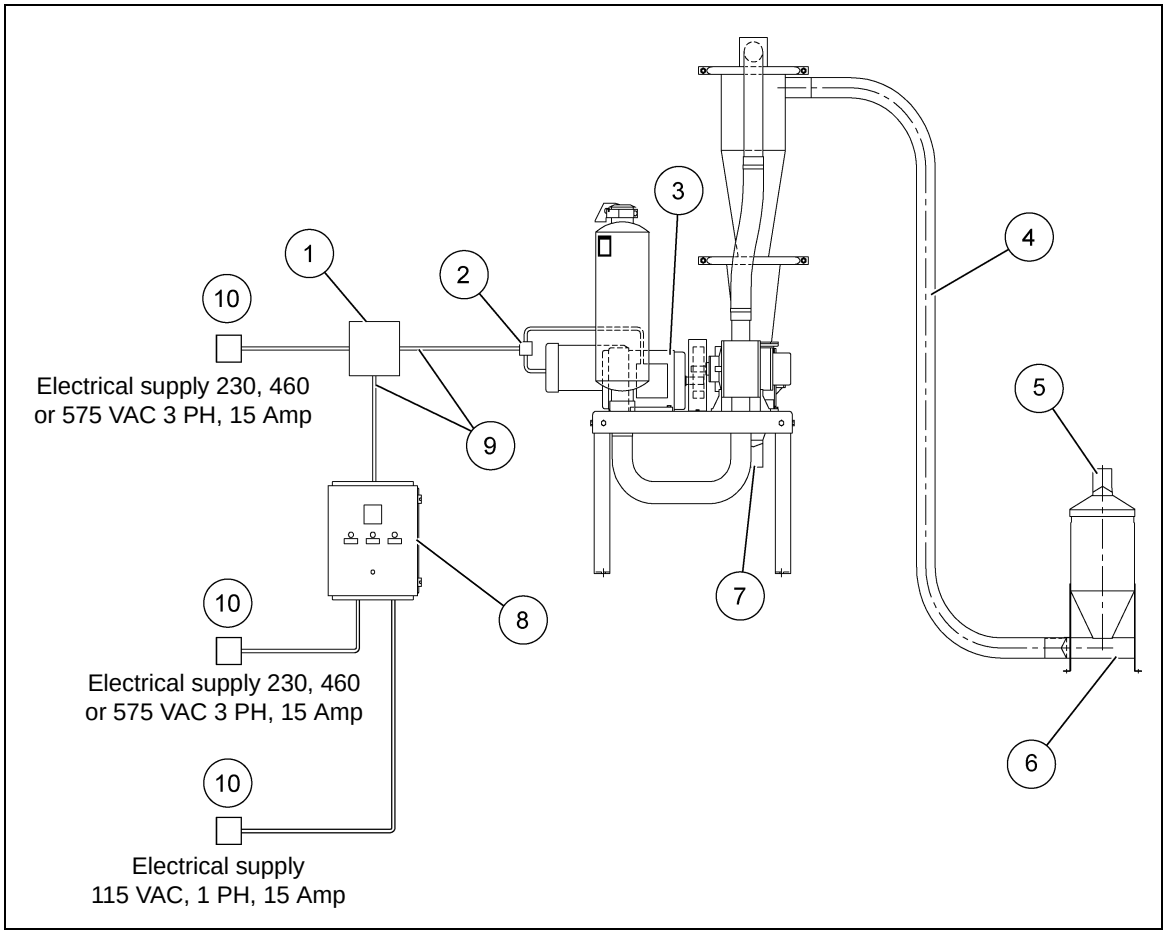


Figure 4A *Typical Installation, Model Sample Delivery System*

Ref #	Description
1	Starter Panel
2	Emergency Stop Lock-Out Switch
3	Vacuum and Airlock Motors
4	Sample Conveying Line
5	Sample Inlet

Ref #	Description
6	SD Pick-Up Hopper (Optional) Not used on TD Sampler
7	Sample Discharge (Extend to desired collection point)
8	Sampler Control Panel
9	Electrical Conduits
10	Circuit Breaker

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 drive motors.
    a. Class 2, Groups E, F and G, Division 1 and 2
2. Components of special materials, such as 316 stainless steel or nedox coatings.

Material Conveyed

Most materials from light to heavy density granules, pellets.

Sample Delivery Construction

Standard sample delivery construction is of painted carbon steel.

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.

Receiving Inspection

Carefully inspect the sample delivery 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 sample delivery 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 Sample Delivery is typically mounted above the desired collection point, allowing for material to flow via gravity from the SD down to the collection point. The sample delivery and associated equipment should be located for ease of access and maintenance.

The Sample Delivery 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 delivery is of a general design with modifications specifically for your application. It may be necessary to rework the sample delivery in order for it to function properly if you alter the application.

General Mounting Guidelines

Sample delivery cannot support any other equipment or conveying line. Collapse of the whole system can cause death, serious injury and extensive damage to equipment. Properly support all spouts, containers and conveying lines.

1. Locate and position the SD sample delivery in the desired location.
2. Anchor the frame to the floor using the holes provided in the support legs.

NOTE: *The leg nearest the airlock outlet may be removed, if braced from above or the side, to permit close coupling the sample discharge to a MD1000 divider.*

Material Sample Transport Lines

The tubing used to transport material samples must be compatible with the operating environment and the material sampled. Rigid tubing is routed from the sampler or sample pick-up hopper to the SD sample delivery using the most direct route with the fewest number of bends. The rigid tubing is directly connected to the cyclone inlet using a compression type coupling.

The SD-2 is designed to be used with 2.00" O.D. x 0.065" wall tubing.
The SD-3 is designed to be used with 3.00" O.D. x 0.065" wall tubing.

The sample line connecting to the sample outlet of the SD may be rigid tubing or a flexible hose. In either case, the sample line is then routed to allow material to flow via gravity to a convenient collection point. At that point, the hose may be connected to a collection jar bracket or a Sample Collection System cabinet.

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 vacuum conveying system. Escaping sample material can contaminate surrounding atmosphere and equipment.

System Wiring

Refer to the certified electrical drawing(s) for specific wiring requirements.

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

Electrical Power Requirements, System

Refer to the certified electrical drawing(s) to determine if what voltages and size of service is required.

Controller

Refer to the sampler manual and certified electrical drawing(s) for control panel information.

Drive Motors

Refer to the certified drawing(s) of the SD sample delivery for special motor sizes, horsepowers, voltages and current ratings.

The standard SD-2 motor sizes are:

Airlock motor - 1/3 HP, 230/460 VAC, 50/60 Hz, 3 Phase, 1.4/0.7 Full Load Amps.
Vacuum pump motor - 3 HP, 230/460 VAC, 50/60 Hz, 3 Phase, 9.0/4.5 Full Load Amps.

The standard SD-3 motor sizes are:

Airlock motor - 1/3 HP, 230/460 VAC, 50/60 Hz, 3 Phase, 1.4/0.7 Full Load Amps.
Vacuum pump motor - 5 HP, 230/460 VAC, 50/60 Hz, 3 Phase, 13.8/6.9 Full Load Amps.

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

Refer to the sampler manual and certified electrical drawing(s) for control panel information.

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

Sample Delivery Mounted Electrical Components

Vacuum Pump Drive Motor

This motor drives the vacuum pump through a set of timing pulleys and belt. 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.

Airlock Drive Motor

This motor drives the airlock through an in-line gear reducer and an alignment coupling. 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.

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 sampler 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. Loose drive belt
6. Structural damage
7. Rust or corrosion
8. Damaged wiring, including exposed conductors and connections
9. Make sure that all guards are in place and that all warning labels are in place and legible. *See Page 7*, GENERAL SAFETY INFORMATION, explains 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

Airlock Bearings

The airlock shaft bearings were greased at the factory. Re-greased once a year using a multi-purpose grease.

Airlock Gear Reducer

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.

Vacuum Pump

Refer to the vacuum pump manual for servicing information. The vacuum pump is shipped filled with “AEON PD” oil as recommended by the manufacturer. Do not overfill, excessive oil will cause premature failure of the vacuum pump.

The SD-2 has a 3" gear diameter vacuum pump and requires 2/3 pint of oil.
The SD-3 has a 4" gear diameter vacuum pump and requires 1 pint of oil.

Mechanical Repair Procedures

Drive Belt Adjustment

The drive belt will need adjustment periodically to maintain proper tension. When following the instructions below, refer to the applicable drawing of the sampler. Refer to *Page 26* of the SD’s and the certified drawing(s).

1. Shut off and lock out all power (electrical, pneumatic and hydraulic).
2. Remove the drive belt guard.
3. Loosen the vacuum pump motor bolts.
4. Use a wrench to tighten and/or loosen the adjusting screws that position to the motor.
5. Make sure the motor shaft is parallel to the vacuum pump shaft and that the pulleys are in line with each other.
6. Tightening the motor mount bolts.
7. Replace the drive guard.
8. Restore power to the sample delivery and operate.

General SD Sample Delivery Troubleshooting

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

Symptom	Possible Cause	Corrective Action
Sample delivery does not run (Power light OFF).	Power switch OFF.	Turn power switch ON.
	Circuit breaker is open.	Reset breaker.
	Main fuse is blown.	Replace.
	Faulty supply wiring.	Correct. Refer to certified electrical schematic.
	Defective power switch.	Replace switch.
Sample delivery does not run (Power light ON).	Faulty system wiring.	Correct. Refer to certified electrical schematic.
	Motor power OFF.	Turn ON.
	Motor starter heaters tripped.	Reset.
	Motor burnt out.	Replace.
	Motor thermal overload tripped.	Allow motor to cool and reset.
Too many fines the sample.	Sampler cutter not stopping under the seals.	Refer to sampler manual.
	Sampler cutter worn.	Refer to sampler manual.
	Sampler cutter seals deteriorated.	Refer to sampler manual.
Sample excessively broken.	Vacuum pump speed to high.	Decrease speed. (Refer to charts *on Pages 23-25*.)

Sample Delivery Vacuum Pump Drive Speed Calculation Charts

Calculate the vacuum pump speed by using the following charts *on Pages 23-25*. The sampling frequency rate is from the Federal Grain Inspection Service “Mechanical Sampling Systems Handbook” dated 5-05-95. Use the highest allowable sampling rate per sample to avoid over working the sampling equipment thus reducing unnecessary wear and tear.

1. Determine the material flow rate going through the sampler.
2. Stay out of the shaded area and determine sampling rate. The high flow rates in the shaded areas are not recommended. The standard SD-2 and SD-3 sample deliveries are not capable of handling high flow rates in areas below the heavy black line.

Flow Rate Past Sampler	Sampling Rate		
BPH	200 BU	350 BU	500 BU
10,000	72		
15,000	48		
20,000	36		
25,000	29		
30,000	24		
35,000	21		
40,000	18	32	
45,000	16	28	
50,000	14	25	
55,000	13	23	33
60,000	12	21	30
65,000		19	28
70,000		18	26
75,000		17	24
100,000			18
125,000			14
150,000			12

Samples Per Hour			
BPH	200 BU	350 BU	500 BU
10,000	50.0		
15,000	75.0		
20,000	100.0		
25,000	125.0		
30,000	150.0		
35,000	175.0		
40,000	200.0	114.3	
45,000	225.0	128.6	
50,000	250.0	142.9	
55,000	275.0	157.1	110.0
60,000	300.0	171.4	120.0
65,000		185.7	130.0
70,000		200.0	140.0
75,000		214.3	150.0
1,00,000			200.0
1,25,000			250.0
1,50,000			300.0

Sample Size	
BPH	LBS
10,000	3.33
15,000	5.00
20,000	6.67
25,000	8.33
30,000	10.00
35,000	11.67
40,000	13.33
45,000	15.00
50,000	16.67
55,000	18.33
60,000	20.00
65,000	21.67
70,000	23.33
75,000	25.00
1,00,000	33.33
1,25,000	41.67
1,50,000	50.00

Sample Flow Lbs./Min.			
BPH	200 BU	350 BU	500 BU
10,000	2.8		
15,000	6.3		
20,000	11.1		
25,000	17.4		
30,000	25.0		
35,000	34.0		
40,000	44.4	25.4	
45,000	56.3	32.1	
50,000	69.4	39.7	
55,000	84.0	48.0	33.6
60,000	100.0	57.1	40.0
65,000		67.1	46.9
70,000		77.8	54.4
75,000		89.3	62.5
1,00,000			111.1
1,25,000			173.6
1,50,000			250.0

Sample Flow Cu.ft./Min.			
BPH	200 BU	350 BU	500 BU
10,000	0.058		
15,000	0.130		
20,000	0.231		
25,000	0.362		
30,000	0.521		
35,000	0.709		
40,000	0.926	0.529	
45,000	1.172	0.670	
50,000	1.447	0.827	
55,000	1.751	1.000	0.700
60,000	2.083	1.190	0.833
65,000		1.397	0.978
70,000		1.620	1.134
75,000		1.860	1.302
1,00,000			2.315
1,25,000			3.617
1,50,000			5.208

3. Calculate the effective conveying distance by adding the following.

Horizontal distance	_____	
Vertical distance	+_____	(20' for every 90º elbow)
Effective elbow lengths	+_____	(10' for every 45º elbow)
Total (Round to 100, 200, etc.)	=_____	

Determine the recommended pump speed from the following *Charts* based on the material flow rate and the theoretical conveying distance.

SD-2 Pump RPM (3M Series)

BPH	Lbs./Min.	0'	100'	200'	300'	400'	500'	600'	700'	800'	900'	1000'
10,000	2.8	1138	1225	1313	1340	1500	1500	1615	1750	1750	1896	1896
15,000	6.3	1138	1225	1340	1500	1615	1750	1896	2019	2154	2333	
20,000	11.1	1138	1313	1420	1615	1750	1896	2154	2333	2545		
25,000	17.4	1138	1313	1480	1750	1896	2154	2333	2545			
30,000	25.0											
35,000	34.0											
40,000	25.4											
45,000	32.1											
50,000	39.7											
55,000	33.6											
60,000	40.0											
65,000	46.9											
70,000	54.4											
75,000												
100,000												
125,000												
150,000												

SD-3 Pump RPM (4M Series)

BPH	Lbs./Min.	0'	100'	200'	300'	400'	500'	600'	700'	800'	900'	1000'
10,000	2.8	1313	1400	1400	1400	1400	1400	1500	1500	1500	1500	1500
15,000	6.3	1313	1400	1400	1400	1500	1500	1500	1615	1615	1615	1615
20,000	11.1	1313	1400	1400	1500	1500	1500	1615	1615	1615	1750	1750
25,000	17.4	1313	1400	1400	1500	1500	1615	1615	1750	1750	1750	1896
30,000	25.0	1313	1400	1500	1500	1615	1615	1750	1750	1896	1896	1896
35,000	34.0	1313	1400	1500	1615	1615	1750	1750	1896	1896	2019	2019
40,000	25.4	1313	1400	1500	1500	1615	1615	1750	1750	1896	1896	2019
45,000	32.1	1313	1400	1500	1615	1615	1750	1750	1896	1896	2019	2019
50,000	39.7	1313	1400	1500	1615	1615	1750	1896	1896	2019	2019	2333
55,000	33.6	1313	1400	1500	1615	1615	1750	1750	1896	1896	2019	2019
60,000	40.0	1313	1400	1500	1615	1615	1750	1896	1896	2019	2019	2333
65,000	46.9	1313	1400	1500	1615	1750	1896	1896	2019	2333	2333	2333
70,000	54.4	1313	1500	1615	1750	1896	1896	2019	2333	2333	2545	2545
75,000												
100,000												
125,000												
150,000												

4. Based on the recommended pump speed from the previous *Charts*, use the following *Charts* to select the correct drive belt, pulleys and bushings. The SD-2 and SD-3 *Charts* below are identical except for the pump bushing.

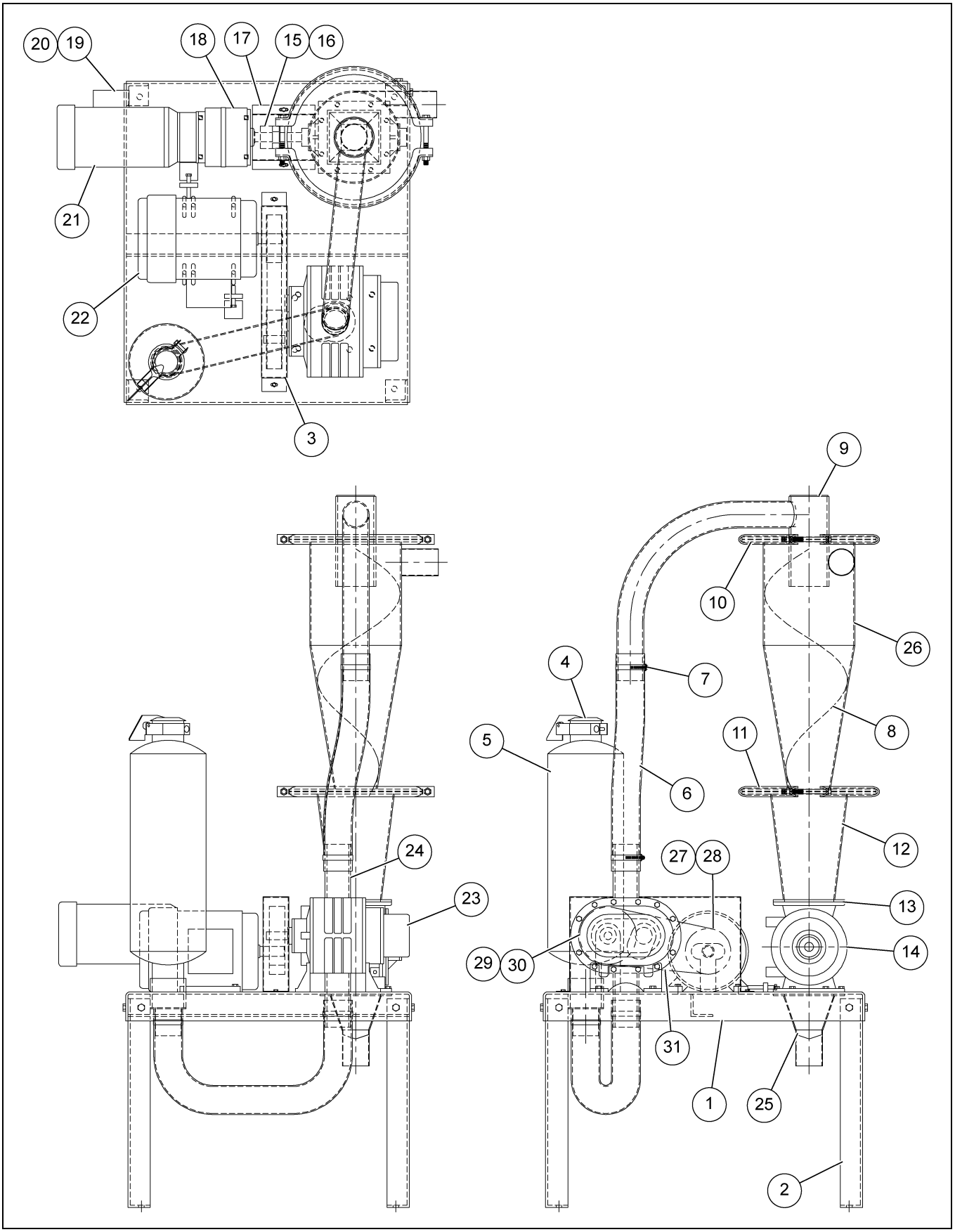
SD-2 Vacuum Pump Drive Parts

		3 HP Motor Shaft 1-1/8" Diameter				3M Pump Shaft 3/4" Diameter					
Ref #		27		28		29		30		31	
		Motor Pulley		Motor Bushing		Pump Pulley		Pump Bushing		Belt	
RPM	Ratio	Size	Part #	Size	Part #	Size	Part #	Size	Part #	Size	Part #
1138	0.650	26	522519	TL2012	512513	40	526680	TL2517	526682	390H100	526684
1225	0.700	28	526679	TL2012	512513	40	526680	TL2517	526682	390H100	526684
1313	0.750	24	526678	TL1610	302489	32	522525	TL2517	526682	360H100	522522
1400	0.800	24	526678	TL1610	302489	30	522520	TL2012	526681	360H100	522522
1500	0.857	24	526678	TL1610	302489	28	526679	TL2012	526681	360H100	522522
1615	0.923	24	526678	TL1610	302489	26	522519	TL2012	526681	330H100	35568
1750	1.000	24	526678	TL1610	302489	24	526678	TL1610	519427	330H100	35568
1896	1.083	26	522519	TL2012	512513	24	526678	TL1610	519427	330H100	35568
2019	1.154	30	522520	TL2012	512513	26	522519	TL2012	526681	360H100	522522
2154	1.231	32	522525	TL2517	100194-408	26	522519	TL2012	526681	360H100	522522
2333	1.333	32	522525	TL2517	100194-408	24	526678	TL1610	519427	360H100	522522
2545	1.455	32	522525	TL2517	100194-408	22	526677	TL1610	519427	360H100	522522

SD-3 Vacuum Pump Drive Parts

		5 HP Motor Shaft 1-1/8" Diameter				4M Pump Shaft 7/8" Diameter					
Ref #		27		28		29		30		31	
		Motor Pulley		Motor Bushing		Pump Pulley		Pump Bushing		Belt	
RPM	Ratio	Size	Part #	Size	Part #	Size	Part #	Size	Part #	Size	Part #
1138	0.650	26	522519	TL2012	512513	40	526680	TL2517	526683	390H100	526684
1225	0.700	28	526679	TL2012	512513	40	526680	TL2517	526683	390H100	526684
1313	0.750	24	526678	TL1610	302489	32	522525	TL2517	526683	360H100	522522
1400	0.800	24	526678	TL1610	302489	30	522520	TL2012	519310	360H100	522522
1500	0.857	24	526678	TL1610	302489	28	526679	TL2012	519310	360H100	522522
1615	0.923	24	526678	TL1610	302489	26	522519	TL2012	519310	330H100	35568
1750	1.000	24	526678	TL1610	302489	24	526678	TL1610	302488	330H100	35568
1896	1.083	26	522519	TL2012	512513	24	526678	TL1610	302488	330H100	35568
2019	1.154	30	522520	TL2012	512513	26	522519	TL2012	519310	360H100	522522
2154	1.231	32	522525	TL2517	100194-408	26	522519	TL2012	519310	360H100	522522
2333	1.333	32	522525	TL2517	100194-408	24	526678	TL1610	302488	360H100	522522
2545	1.455	32	522525	TL2517	100194-408	22	526677	TL1610	302488	360H100	522522

Sample Delivery Parts Drawing



Sample Delivery Drawing Parts List

Ref #	Part #	Description	Qty
1	526657	SD Frame CS	1
2	527154	SD Frame Bolt-On Leg	4
3	526669	SD Drive Belt Guard CS	1
4	527099	Silencer Rain Cap	1
5	527098	Silencer 3" NPT	1
6	34004	3.00" I.D. Blue Radialflex Hose	8'
7	34505	Worm Clamp 2-11/16" to 3-3/4"	4
8	527137	SD Cyclone Spiral	1
9	526662	SD Cyclone Top CS	1
10	526663	SD Cyclone Flange Gasket 1/8"	2
11	526665	12" Band Clamp Set (2 Pcs)	2
12	526666	SD Airlock Receiving Chamber CS	1
13	526659	Tip Cleaner with Poly Wiper	1
14	35564	6 x 6 SD Rotary Airlock (Standard)	1
	529290	6 x 6 SD Rotary Airlock with Vane Wipers	
15	301070	L-100 Coupling Half 1.00" Bore	2
16	35957	L-100 Hytrel Spider	1
17	526668	SD Airlock Coupling Guard	1
18	526671	Gear Reducer 71:1 Ratio 56C	1
19	34253	XP Junction Box for 36976	A/R
20	34518	Black Pipe Nipple 3/4" for XP Junction Box	A/R
21	35187	SD TEFC Airlock Motor 1/3 HP, 3 PH	1
	36976	SD XP Airlock Motor 1/3 HP, 3 PH	
22	513649	SD-2 TEFC Pump Motor 3 HP, 3 PH	1
	515422	SD-2 XP Pump Motor 3 HP, 3 PH	
	35049	SD-3 TEFC Pump Motor 5 HP, 3 PH	
	34278	SD-3 XP Pump Motor 5 HP, 3 PH	
23	35571	SD-2 Vacuum Pump 3M	1
	35513	SD-3 Vacuum Pump 4M	
24	526675	SD-2 Vacuum Pump Adapter 2" NPT	2
	526674	SD-3 Vacuum Pump Adapter 2-1/2" NPT	
25	527138	SD Airlock Discharge Hopper 2.00" O.D. CS	1
	526667	SD Airlock Discharge Hopper 3.00" O.D. CS	
26	526658	SD-2 Cyclone 2.00" O.D. Inlet CS	1
	526661	SD-3 Cyclone 3.00" O.D. Inlet CS	

NOTE: *See Page 25* *for drive belt (31), pulleys (27 and 29) and pulley bushings (28 and 30) part numbers.*

NOTES

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InterSystems is a part of GSI, a worldwide brand of AGCO Corporation.

Printed in the USA

CN-331627