SAFETY

INSTALLATION

OPERATION

MAINTENANCE

M A N U A L

SAMPLE DELIVERY
Model SD

No. PC 527156A

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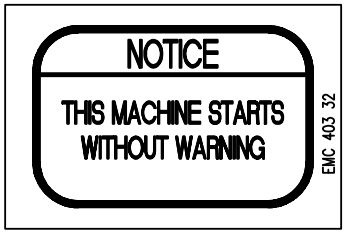
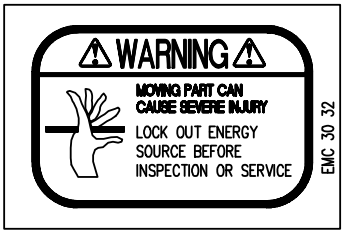
I. GENERAL SAFETY INFORMATION

SAFETY FIRST! The symbols shown identify examples of the safety labels and signs to be found on InterSystems equipment. They are affixed to the equipment to warn of danger to persons and of possible equipment damage. These signs must never be removed, tampered with, painted over or obscured in any way. (See Page 4 for label locations.) If labels are damaged or become unreadable, replacement labels are available from InterSystems. The user must institute a continuing program to instruct all personnel in safe operating and maintenance procedures, and to insure that all safety devices, guards, and covers are intact and operable, and that all safety signs are legible.



STARTS W/OUT WARNING
EMC40332



MOVING PART
EMC3032

Consult InterSystems, Inc. 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.

Never perform any service on this equipment or any other 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. Power includes electrical, fluid, mechanical, or pneumatic energy.

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 the products to which this equipment is in contact with to determine what PPE is required.

DANGER

THIS EQUIPMENT IS TO BE OPERATED ONLY ON THE VOLTAGE DESIGNATED ON THE CERTIFIED ELECTRICAL DRAWING(S)! FIRE OR EXPLOSION MAY RESULT, WHICH CAN CAUSE DEATH, SERIOUS INJURY, AND EXTENSIVE DAMAGE TO EQUIPMENT. DO NOT CONNECT TO VOLTAGES OTHER THAN DESIGNATED.

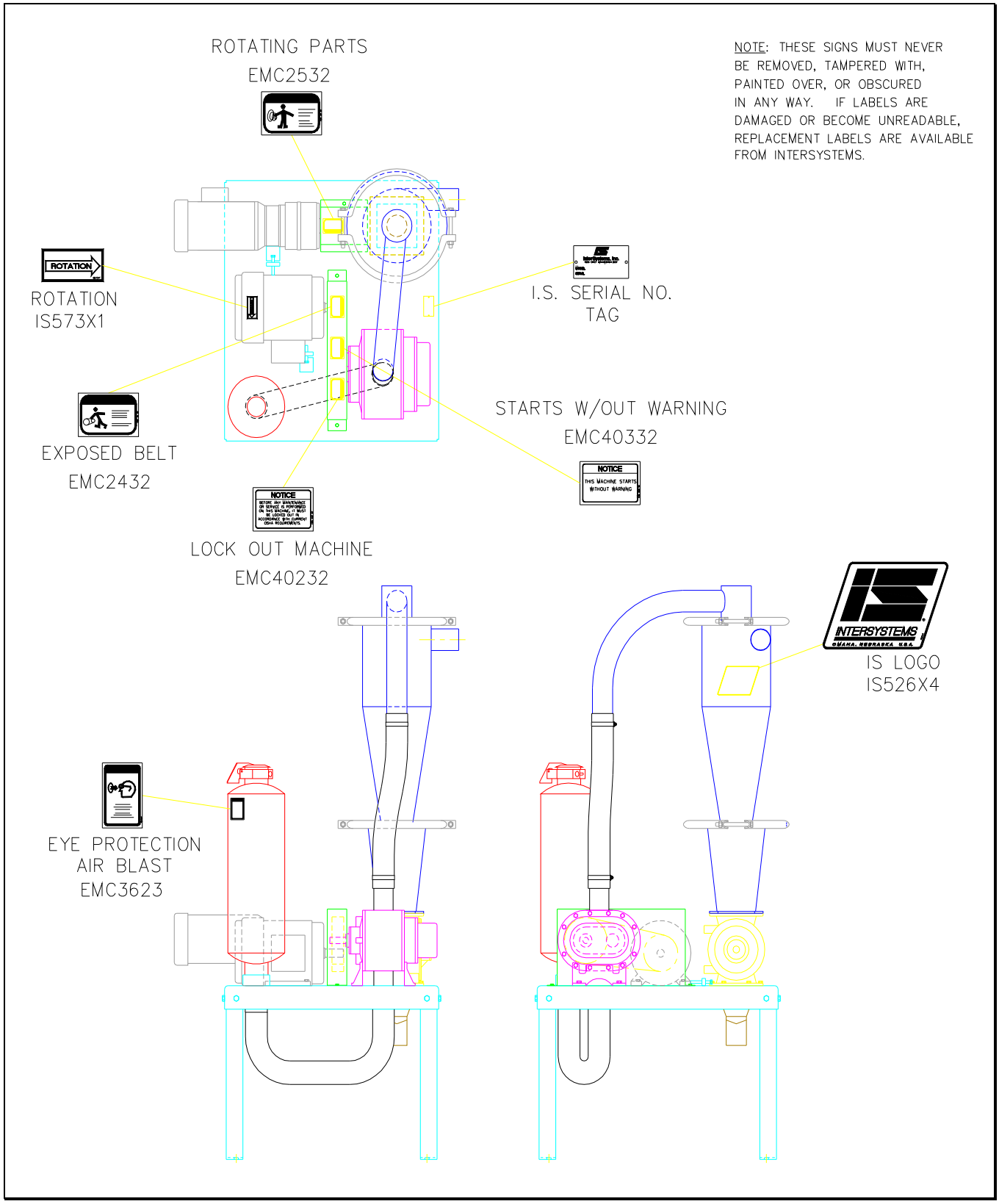


FIGURE 1-1, SD SAMPLE DELIVERY SAFETY LABEL LOCATIONS

II. GENERAL INFORMATION

2.1 System Description

The SD Sample Delivery is designed to transport a representative sample of granular, pellet, or other materials taken by a sampler. Figure 2-1 illustrates a typical SD Sample Delivery application.

The SD typically runs continuously. The SD-2 & SD-3 (2.0" & 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 & thus eliminate the pick-up hopper.

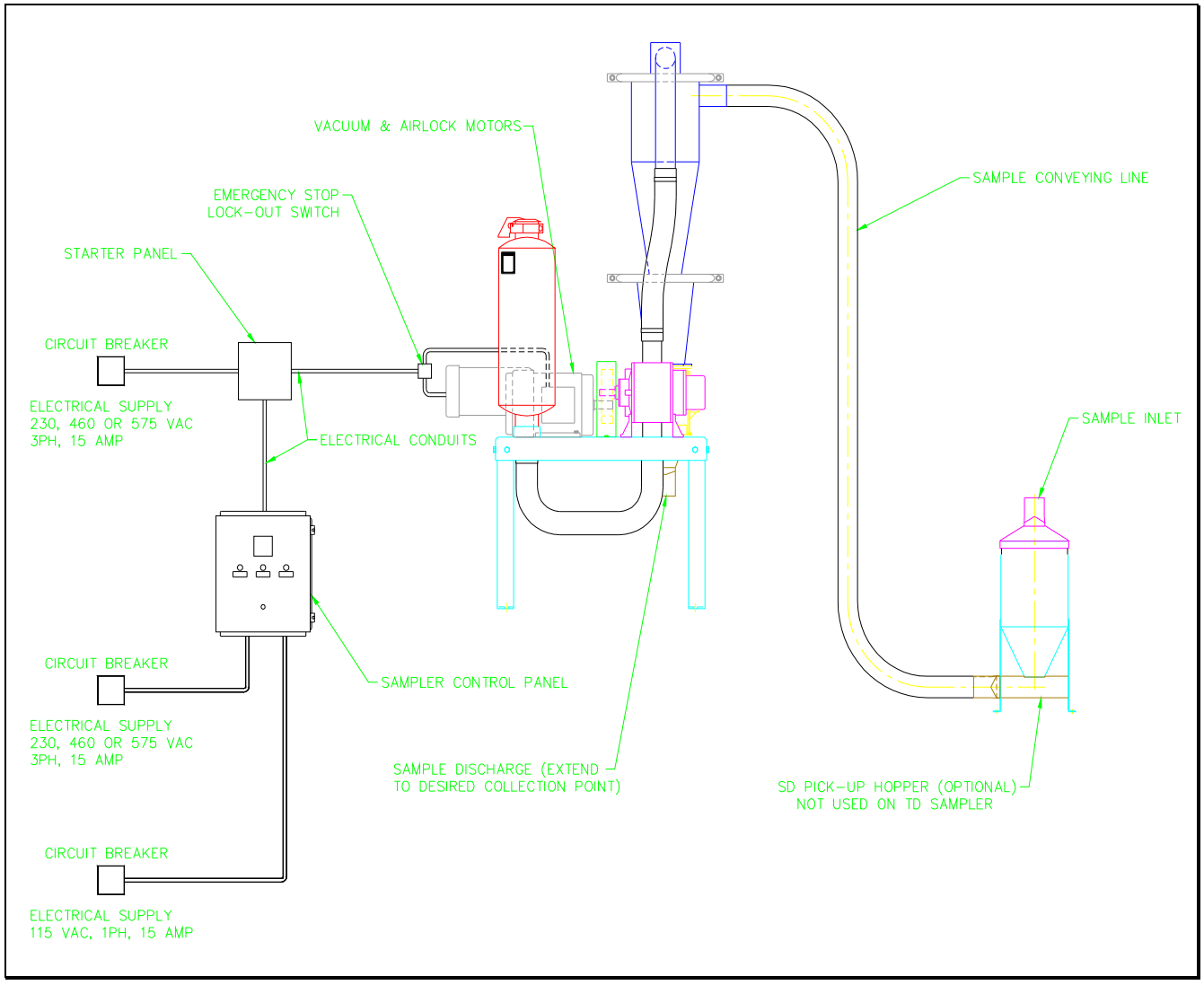


FIGURE 2-1, TYPICAL INSTALLATION, MODEL SD SAMPLE DELIVERY SYSTEM

2.2 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.

A. Explosion proof drive motors.
   Class 2, Groups E, F & G, Division 1 & 2

B. Components of special materials, such as stainless steel or nedox coatings.

2.3 Material Conveyed

Most materials from light to heavy density granules, pellets.

2.4 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.

III. GENERAL INSTALLATION REQUIREMENTS

3.1 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. InterSystems' responsibility for the equipment ended with acceptance by the delivering carrier. Refer to the bill of lading.

3.2 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).

3.3 Location

The SD 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.

3.4 General Mounting Guidelines

DANGER

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.

A. Locate and position the SD sample delivery in the desired location.

B. 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.

3.5 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 OD x 0.065 wall tubing.
The SD-3 is designed to be used with 3.00 OD 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.

3.6 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.

3.6.1 Electrical Power Requirements, System

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

3.6.1.1 Controller

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

3.6.1.2 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.

IV. OPERATIONS AND ADJUSTMENTS

DANGER

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. LOCKOUT POWER BEFORE PERFORMING ANY MAINTENANCE.

4.1 Control Components And Their Functions

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

WARNING

THIS MACHINE STARTS WITHOUT WARNING. MOVING PARTS CAN CAUSE SEVERE INJURY. CLEAR AREA PRIOR TO CONTROLLER START-UP.

4.2 Sample Delivery Mounted Electrical Components

4.2.1 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 insure proper rotation.

4.2.2 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 insure proper rotation.

V. MAINTENANCE AND REPAIR

DANGER

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. LOCKOUT POWER BEFORE PERFORMING ANY MAINTENANCE.

5.1 General Maintenance

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

5.2 Periodic Inspection

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

A. Loose or missing hardware

B. Noisy motor or motor/reducer bearings

C. Overheated motor or reducer

D. Adequate lubricant in gear reducer

E. Loose drive belt

F. Structural damage

G. Rust or corrosion

H. Damaged wiring, including exposed conductors and connections

I. Make sure that all guards are in place and that all warning labels are in place and legible. Section I, 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!

5.3 Lubrication

5.3.1 Airlock Bearings

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

5.3.1 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.

5.3.2 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.

5.4 Mechanical Repair Procedures

5.4.1 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. Reference the drawings of the SD’s on pages 22 & 23 and the certified drawing(s).

A. Shutoff and lockout all power (electrical, pneumatic and hydraulic).

B. Remove the drive belt guard.

C. Loosen the vacuum pump motor bolts.

D. Use a wrench to tighten and/or loosen the adjusting screws that position to the motor.

E. Make sure the motor shaft is parallel to the vacuum pump shaft and that the pulleys are in line with each other.

F. Tightening the motor mount bolts.

G. Replace the drive guard.

H. Restore power to the sample delivery and operate.

VI. TROUBLESHOOTING

6.1 General SD Sample Delivery Troubleshooting

DANGER

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 & 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 Section 6.2.

6.2 Sample Delivery Vacuum Pump Drive Speed Calculation Charts

Calculate the vacuum pump speed by using the following charts. 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 & 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
10000	50.0		
15000	75.0		
20000	100.0		
25000	125.0		
30000	150.0		
35000	175.0		
40000	200.0	114.3	
45000	225.0	128.6	
50000	250.0	142.9	
55000	275.0	157.1	110.0
60000	300.0	171.4	120.0
65000		185.7	130.0
70000		200.0	140.0
75000		214.3	150.0
100000			200.0
125000			250.0
150000			300.0

	SAMPLE SIZE
BPH	LBS
10000	3.33
15000	5.00
20000	6.67
25000	8.33
30000	10.00
35000	11.67
40000	13.33
45000	15.00
50000	16.67
55000	18.33
60000	20.00
65000	21.67
70000	23.33
75000	25.00
100000	33.33
125000	41.67
150000	50.00

	SAMPLE FLOW (LBS/MIN)		
BPH	200 BU	350 BU	500 BU
10000	2.8		
15000	6.3		
20000	11.1		
25000	17.4		
30000	25.0		
35000	34.0		
40000	44.4	25.4	
45000	56.3	32.1	
50000	69.4	39.7	
55000	84.0	48.0	33.6
60000	100.0	57.1	40.0
65000		67.1	46.9
70000		77.8	54.4
75000		89.3	62.5
100000			111.1
125000			173.6
150000			250.0

	SAMPLE FLOW (CU.FT/MIN)		
BPH	200 BU	350 BU	500 BU
10000	0.058		
15000	0.130		
20000	0.231		
25000	0.362		
30000	0.521		
35000	0.709		
40000	0.926	0.529	
45000	1.172	0.670	
50000	1.447	0.827	
55000	1.751	1.000	0.700
60000	2.083	1.190	0.833
65000		1.397	0.978
70000		1.620	1.134
75000		1.860	1.302
100000			2.315
125000			3.617
150000			5.208

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

Horizontal distance	_____	
Vertical distance	+_____	(20 feet for every 90 degree elbow)
Effective elbow lengths	+_____	(10 feet for every 45 degree 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 FT	100 FT	200 FT	300 FT	400 FT	500 FT	600 FT	700 FT	800 FT	900 FT	1000 FT
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 FT	100 FT	200 FT	300 FT	400 FT	500 FT	600 FT	700 FT	800 FT	900 FT	1000 FT
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 & SD-3 charts below are identical except for the pump bushing.

SD-2 VACUUM PUMP DRIVE PARTS

		3 HP MOTOR SHAFT 1-1/8 DIA				3M PUMP SHAFT 3/4 DIA					
	ITEM NO.	31		32		33		34		35	
		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 DIA				4M PUMP SHAFT 7/8 DIA					
	ITEM NO.	31		32		33		34		35	
		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

VII. REPLACEMENT PARTS

7.1 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.

7.2 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.

7.3 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 InterSystems' 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.

7.4 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

7.4.1 Sample Delivery Parts Listing SD (see Figure 7-1)

ITEM NO.	PART NO.	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 ID BLUE RADIALFLEX HOSE	8FT
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 W/ POLY WIPER	1
14			1
	35564	6 X 6 SD ROTARY AIRLOCK (STANDARD)	
	529290	6 X 6 SD ROTARY AIRLOCK W/ 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			1
	35187	SD TEFC AIRLOCK MOTOR 1/3 HP, 3 PH	
	36976	SD XP AIRLOCK MOTOR 1/3 HP, 3 PH	
22			1
	513649	SD-2 TEFC PUMP MOTOR 3 HP, 3 PH	
	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			1
	35571	SD-2 VACUUM PUMP 3M	
	35513	SD-3 VACUUM PUMP 4M	
24			2
	526675	SD-2 VACUUM PUMP ADAPTER 2" NPT	
	526674	SD-3 VACUUM PUMP ADAPTER 2.5" NPT	
25			1
	527138	SD AIRLOCK DISCHARGE HOPPER 2.00 OD CS	
	526667	SD AIRLOCK DISCHARGE HOPPER 3.00 OD CS	
26			1
	526658	SD-2 CYCLONE 2.00 OD INLET CS	
	526661	SD-3 CYCLONE 3.00 OD INLET CS	

NOTE: REFER TO PAGE 14, FOR DRIVE BELT (35), PULLEYS (31 & 33), AND PULLEY BUSHINGS (32 & 34), PART NUMBERS.

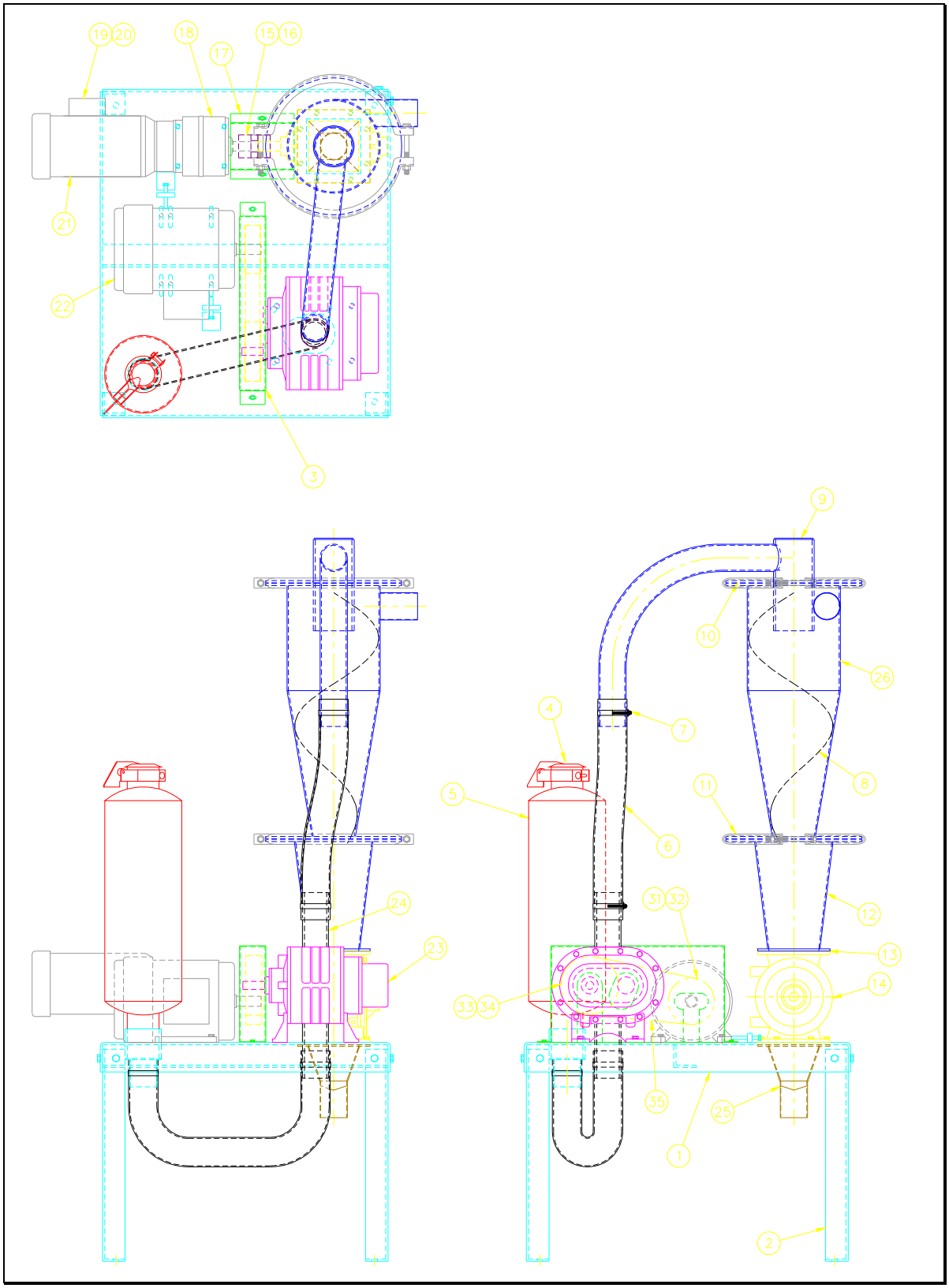


FIGURE 7-1, SD PARTS DRAWING FIGURE 7-1, SD PARTS DRAWING

VIII. WARRANTY

InterSystems, Inc. reserves the right to make changes in design or in construction of equipment and components without obligation to incorporate such changes in equipment and components previously ordered.

WARRANTY, LIMITATION OF LIABILITY, DISCLAIMER OF IMPLIED WARRANTIES: InterSystems, Inc. manufactured equipment and components are guaranteed against defects in workmanship or materials for one year from date of shipment. The obligation of InterSystems, Inc. with respect to any goods is limited to replacement or repair of defective parts and equipment provided those parts are returned, shipping costs prepaid, to InterSystems' factory and provided the product has not been subject to misuse, negligence, or accident, or repaired or altered outside of our factory, or other than by an Authorized Service Representative. This warranty does not cover the replacement of parts inoperative because of wear occasioned by use, the cost of replacing parts by a person other than an InterSystems employee or an Authorized Service Representative, or the adjustment of a product where the product was improperly adjusted by the purchaser. In addition, this warranty does not cover components manufactured by others such as motors, drives, clutches, cylinders, valves, blowers, and the like. On those components the standard Manufacturers' warranty applies. In any event, liability is limited to the purchase price paid, and InterSystems, Inc. will, under no circumstances, be responsible for special or consequential damages, or for incidental damages.

INTERSYSTEMS, INC. NEITHER MAKES NOR AUTHORIZES ANY WARRANTY OTHER THAN AS HEREIN CONTAINED. THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING THOSE OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.