OPERATING and MAINTENANCE INSTRUCTIONS

SAFE Systems, Inc.

VDC-4, Vacuum Dust Collector

SRS, Inc.
425-251-8545

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VDC-4 Vacuum Dust Collector

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I. DAILY OPERATOR CONSIDERATIONS & LOG

A. DO NOT OVERLOAD the system. Do not exceed a 40% abrasive to 60% air mixture during recovery operations

B. DO NOT introduce wet air to the system.

C. DO NOT operate without an abrasive collection tank or other type of collection device.

D. Check the Magnehelic differential pressure gauge (located at the bottom of the filter door) during operation to verify consistent readings. If inconsistent readings exist, check for vacuum leaks in the system. Tighten the flanges, if required.

E. Empty the dust collector hopper at least every four hours, or more frequently if required.

F. When storing the unit, ensure the hopper has been emptied and the unit is protected from the elements.

G. Follow all instructions in this manual and component manufacturers' literature, in individual sections.

***** Make copies of this sheet to use daily and retain in file*****

DATE _____ TIME _____ NAME _____ AIR TEMP _____ºF

BEFORE STARTING		**AFTER STARTING**	
Empty dust		Magnehelic Reading	
EMERGENCY SHUT-DOWNS			
TYPE		TYPE	
TIME		TIME	

COMMENTS:

II. INTRODUCTION AND SYSTEM DESCRIPTION

The SAFE Systems VDC-4 Cartridge Dust Collector is an aspirated cartridge, self-cleaning design, which will work in conjunction with a wide variety of vacuum producers.

The vacuum recovery system MUST be used in conjunction with a collection tank or other types of collection equipment. The VDC-4 is not designed for the collection of abrasive; it is designed to remove dust from the vacuum air stream.

III. INTENDED USE OF EQUIPMENT

The following is a list of material and operational parameters established to enable the system to function properly:

A.	Recovery hose to vacuum	4” diameter
B.	Maximum and minimum ambient temperature	100°F, -40°F
C.	Maximum incline (front to rear)	+/- 8 degrees
D.	Operating hours per day operation	8 hrs max continuous
E.	VDC unit must be used after an abrasive collection tank or other types of collection equipment.	
F.	Only dry air may be connected to the system.	
G.	Operating manual(s) must be followed precisely.	
H.	Daily Operator Log Sheets (section I.) must be completed and kept on file.	
I.	Complete maintenance records must be available.	
J.	Only properly trained personnel can operate the system. It is the responsibility of the owner to train and assign properly trained personnel to this equipment. The owner will provide documentation showing that personnel have been properly trained.	

IV. VDC-4 VACUUM DUST COLLECTION SYSTEM SPECIFICATIONS

The Cartridge Dust Collector is an aspirated cartridge, self-cleaning unit designed to remove airborne dust coming from the *customer-supplied* collection tank or hopper. It is not intended to collect abrasive. The abrasive should be vacuumed up into a collection tank or other collection or recovery equipment.

NOTE: It is VERY IMPORTANT not to overfill the dust hopper (cone). This may result in carryover of abrasive particles which will damage the filters, dust collector housing and may cause damage to the vacuum pump.

The VDC-4 is designed for operation under vacuum up to a maximum of 29" Hg. The incoming air passes from the outside to the inside of the cartridges; enters the upper or clean

air plenum; and exits through the clean air outlet. Cartridges are cleaned in sequence by back flushing with compressed air through the clean air plenum. A short burst of compressed air creates this momentary airflow reversal, which is limited to one (1) cartridge at a time. Therefore, the unit continues to collect dust while its cartridges are being cleaned.

A solid-state Sequential Controller located in the control box determines the order in which the solenoid valves will be operated; the length of time that each valve will be opened; and the time interval between such valve openings. The solid-state controller operates continuously whenever electrical power is supplied to it.

The dust collector is equipped with a compressed air regulator/filter and a pressure gauge. This filter/regulator is intended to remove only minor amounts of water and dirt. Periodic draining of condensate from the compressed air reservoir (manifold) and regulator/filter is recommended.

NOTE: It is very important that only clean, dry air be supplied to the dust collector. Wet air will drastically shorten the life of the filters.

UTILITIES SUPPLY AND CONNECTION

Recommended operating pressure is 90 to 105 PSIG.

The total usage of compressed air is a variable that is dependent upon the amount and type of dust being collected; the size of the dust collector; the condition of the filter cartridges; the set points of the RATE and DURATION timers in the Sequential Controller and the pressure in the air reservoir (manifold). When the DURATION timer is set at its normally recommended time of 0.1 second, the approximate amount of air usage will be as follows:

Number of Cartridges	Air Usage per Pulse in Cubic Feet Free air (when RATE timer is set at 60 seconds)
4	0.9

The air usage rate in CFM of free air depends upon the setting of the RATE timer. If the timer is set at one (1) minute, the rate will be 0.9 CFM. If the timer is set at twenty (20) seconds, the rate will be 3 times greater, or 2.7 CFM.

V. VDC-4 OPERATION AND MAINTENANCE

NOTE: DO NOT use the hopper as a receptacle for the temporary storage of the collected dust. It is merely a large funnel from which the dust must be removed on a semi-continual basis. If dust is allowed to collect in the hopper, it will tend to re-entrain in the air stream, re-depositing on the cartridges and shortening their life. If the dust being collected is sticky or fibrous it may be necessary to check the hopper every two (2) hours, or as required, to make sure that the dust has not bridged across and plugged the outlet.

After each dumping of dust from the dust collector, make sure the butterfly valve is completely closed to the last notch on the handle indicator. This can be difficult, but failure to completely close this valve may cause damage to the butterfly valve and the hopper shell.

FILTER REPLACEMENT

The normal operating range for these filters is between .5" to 8" as read on the magnahelic gauge DURING vacuum operations. When the pressure drop across the cartridges is between six (6) to eight (8) inches on the Magnehelic gauge, cartridges should be replaced as described in the following instructions. Prior to installing new filters, verify that the cartridges have not been damaged during shipment, storage or transporting of the unit.

Shut off electrical power to the dust collector.

The cartridges are removed and installed through the main access door of the Dust Collector. Remove the bolts securing the door and open the door. Remove the top nut and loosen the second, locking nut, on the top of the dust collector. This will allow the threaded rod (adjustment rod) to lower to a position where the top of the threaded rod is flush with the top of the bottom nut. This will allow the four (4) legged filter platform to turn like a "Lazy Susan".

NOTE: Do not remove the second nut completely or the rod will drop down into the lower part of the hopper.

Remove and reinstall the filters on this turntable platform. Once all new filters are in place, line the filters up with the capture rings located in the top of the dirty air chamber of the dust collector. Slowly tighten the nut on the top of the dust collector, which will raise the filters until they are sealed against the top of the dirty air chamber.

IMPORTANT: While tightening the nut, make sure the filters are rising straight and that they are all lined up correctly in their appropriate capture ring. This is best done with two people; one person tightening the nut while the other observes the filter line-up. Tighten the nut until the filters are tight and will not slide or move. Be careful not to over tighten the filters as this may cause the filters to collapse.

Once the desired tightness (approximately forty-five (45) ft. lbs. of torque) is achieved, install the second nut and tighten it down against the first nut to act as a jam nut.

Close and fasten the access door and pre-coat the filters as described below. Pre-coating the cartridges with a suitable filter aid material will both increase efficiency and increase cartridge life. Filters are expensive. The cost of pre-coat material could save many dollars in filter costs. A simple feeder and qualified pre-coat material are available from SAFE Systems or SRS, Inc.

With the controls set to pulse continuously at five (5) second intervals, feed five (5) to ten (10) pounds of filter pre-coat material per cartridge through an open hopper discharge device or into the inlet duct. Repeat as frequently as desired.

Reset the RATE (OFF) timer to 20 seconds. Check the DURATION (ON) timer. It should be set for 0.5 second. Close the door of the Control Box. Tighten all door clamps.

SAFETY NOTES:

The manufacturer relies on the skills and expertise of its customer, and any consulting engineers and/or installing contractor hired by that customer, to properly design and operate the dust collection system of which the dust collector is a part. Please take precautions as required to minimize the inherent risk of dust combustion, fires and explosions. Be sure to read this manual thoroughly and comply with all precautionary statements relative to worker safety.

Take special care whenever the door of the control box is open. The full line voltage can appear from any electrical point on the circuit board to the metal enclosure or to ground.

Do not collect combustible materials along with dust from ferrous grinding or other spark generating operations. Sparks caused by such operations may start a fire in the combustible dust.

Under no circumstances should anyone be allowed to discard a lighted cigarette or other burning material into an inlet hood or ducting of the dust collection system.

It is the responsibility of the user to comply with all applicable national or local fire and safety codes.

The dust collector does not contain explosion vents except on special order. Refer to NFPA 68 "Guide for Explosion Venting" or your insurance underwriter for recommendations regarding the sizing and installation of explosion vents.

VI. RECOMMENDED SPARE PARTS

We recommend that the following spare parts be keep on hand to avoid costly down time.

Description	**Qty**	**Part #**
Vacuum Dust Collector filters	4	SAFE #1000 1245
Pamic filter	1	SAFE #1000 1500
Fuse	1	2 amp AG