



**STERNVENT CO., INC.**

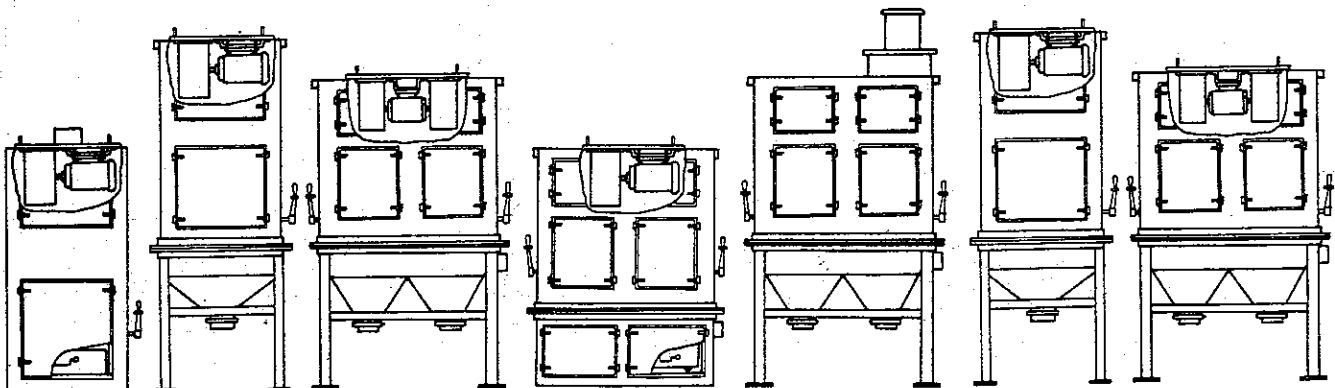
253 West Fort Lee Road Bogota, NJ 07603

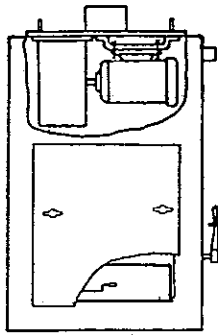
(201) 488-1146 • FAX (201) 488-1605

# INSTALLATION OPERATION AND SERVICE MANUAL

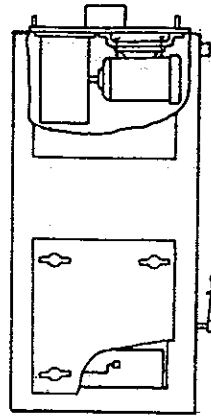
**FOR STERNVENT SELF CONTAINED CABINET DUST ARRESTERS**

**MODEL SERIES DE, DG & DS**

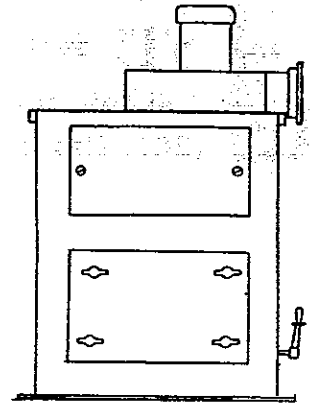




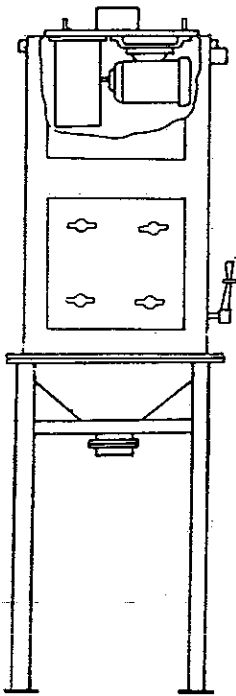
DG 60 & 100



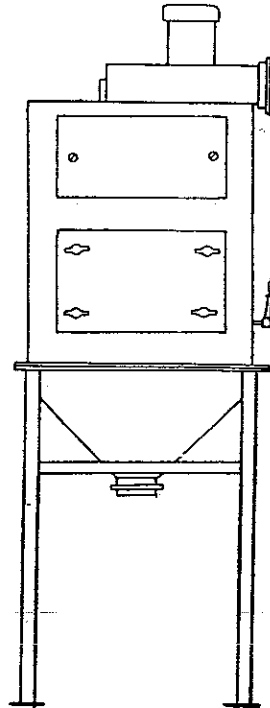
DG 150-300



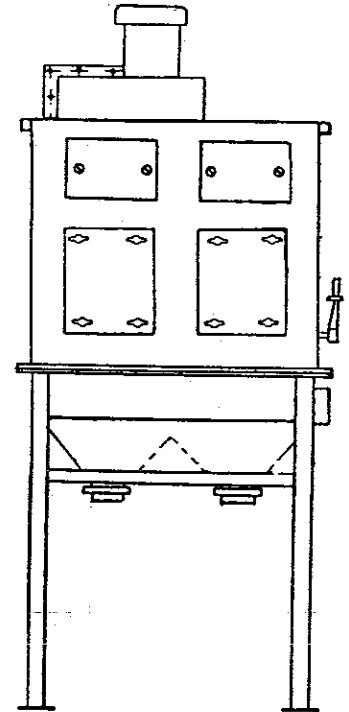
DEF 300



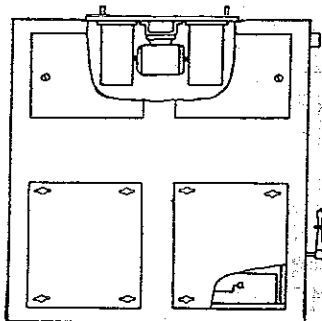
DGH 150-300



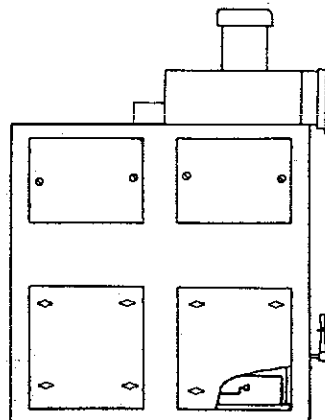
DEH 300



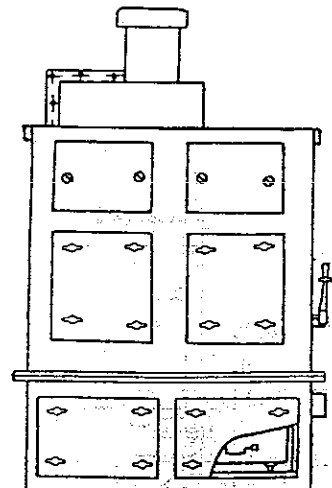
DEH 400-1200



DS 400 & 600



DE 400



DEB 400-1200

FIG. 1 TYPICAL D SERIES ARRESTERS

## IMPORTANT

THIS MANUAL CONTAINS SPECIFIC PRECAUTIONARY STATEMENTS RELATIVE TO WORKER SAFETY IN APPROPRIATE SECTIONS. READ THIS MANUAL THOROUGHLY AND COMPLY AS DIRECTED. IT IS IMPOSSIBLE TO LIST ALL OF THE POTENTIAL HAZARDS OF DUST CONTROL EQUIPMENT OR SYSTEMS. IT IS IMPERATIVE THAT THE SPECIFIC USE OF THE EQUIPMENT BE DISCUSSED WITH A STERNVENT REPRESENTATIVE. PERSONNEL INVOLVED WITH THE EQUIPMENT SHOULD BE INSTRUCTED TO CONDUCT THEMSELVES IN A SAFE MANNER.

## WARNING

1. Avoid mixing combustible materials such as buffing lint, paper and wood with dust generated from grinding ferrous metals; due to the potential fire hazard caused by sparks in the dust collector.
2. This dust collector should never be used for the collection of aluminum or magnesium dust. It is not possible to list all hazardous materials which are not suitable for collection by this type of dust collector. It is the responsibility of the user to consult with their liability insurance company and the **National Fire Protection Association**, Batterymarch Park, Quincy, MA 02269, telephone number 1-800-344-3555 for procedure to be followed for the collection of specific dust.
3. Under no conditions should the machine operator be allowed to put lit cigarettes or any burning object into the hood or ducting of any dust control system.
4. When dust collectors are used to collect fire or explosion risk dust, the dust collector should be located outside the building. Also, an installer of fire extinguishing equipment, familiar with this type of fire hazard and local fire codes, should be consulted for his recommendations and installation of the proper fire extinguishing equipment.
5. Explosion relief vents are required on some applications. Consult with your insurance company and **National Fire Protection Association** to determine proper vent size ratio. Vents installed on dust control equipment within a building must be vented to the outside to minimize chances of a secondary explosion. Again, consult the proper authority to determine proper method of venting. Dust collectors do not contain explosion relief vents, except on special orders.
6. It is the responsibility of the user to comply with applicable national or local fire and safety codes.

(CCP,D, DA, DDB, TL, RB, SPV)

## IMPORTANT

IT IS IMPERATIVE THAT THESE INSTRUCTIONS BE THOROUGHLY READ BY BOTH THE INSTALLER AND THE OPERATOR OF THIS EQUIPMENT.

### Basic Facts

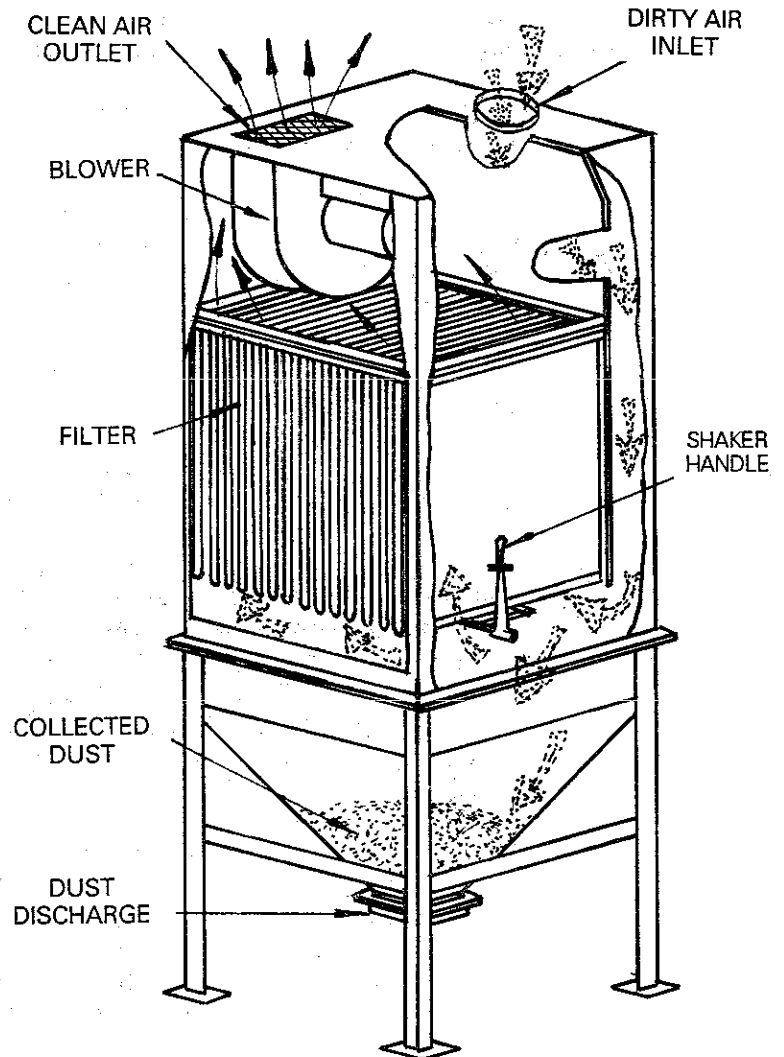
STERNVENT D Series cabinet dust arresters are self-contained, compact filter bag collectors, requiring a minimum of floor space. A proven, widely used method of dust collection, they are especially suited for industry, schools and maintenance facilities, where saving space and ease of maintenance are important considerations. Standard filter media is polyester sateen with optional material available to suit particular applications. The filter bags are envelope shaped.

The STERNVENT D Series Dust Arresters are available with either an internally mounted forward curved blower (DG & DS) or an externally mounted radial blower (DE). Cabinet styles available are with dust drawer (DG, DS, DE), hopper bottom with legs (DGH, DSH, DEH), bin bottom with large drawers (DGB, DSB, DEB) or flanged open bottom (DGF, DSF, DEF). Information in this manual applies to all types and styles with necessary differences noted.

### Operational Explanation

Dust laden air is directed around the baffled inlet, causing the heavier particles to be separated out of the air-stream. This greatly reduces the dust load on the filters, permitting more effective use of the filter area and longer intervals between shaking. The blower pulls the air up through the filter bags and the finer dust particles are trapped on the exterior surface of the filter forming a slight cake of dust. This increases the cleaning efficiency of the unit by preventing extremely fine particles from passing through the filter. The cake takes a few hours to a few days to develop depending on usage.

Periodically the filter must be shaken to remove the excess buildup. The dust that is dislodged from the filters is collected in the dust drawer, bin or hopper. See Fig. 2.



OPERATIONAL CROSS SECTION  
VIEW OF MODEL DGH 305

FIG. 2

**NOTE:** Maximum suction and minimum maintenance is achieved when optional drum assembly is used with hopper style unit dust discharge and slide gate in the open position.

**NOTE:** The DG & DS types cannot be installed outside unless furnished with weatherproof silencer with protected side discharge. The DE type is furnished weatherproof. Optional cap to protect motor from icing is available.

### **PRE-INSTALLATION**

The STERNVENT Dust Arrester should be located with consideration for maintenance, inspection, shortest possible run for duct and electrical work and access for emptying dust receptacles (drum, drawer or hopper). If unit is installed indoors and has an explosion relief door, provisions must be made to duct door to outside of building.

### **INSTALLATION**

The model # on the cover sheet of this manual indicates the size and style of your Dust Arrester. Follow the steps below which apply to your size and style.

1. Uncrate or unpack unit parts. Loose parts are usually shipped in dust receptacles (drum, drawer or hopper).
2. Check that all pieces on the packing list have been delivered. Notify STERNVENT immediately if parts are missing. Notify trucker and STERNVENT immediately if parts have been damaged in shipment and mark on Bill of Lading.
3. Find model style indicated on front cover and refer to model drawing at end of this manual.

For style DG, DS & DE (one-piece cabinet consisting of filters, blowers and dust drawers), place unit in desired location. Proceed to step # 4.

For style DGH, DSH & DEH (cabinet consisting of filters, blowers and separate hopper bottom with legs, place hopper in desired location. Fasten leg pads to foundation with suitable anchor bolts. If necessary, shim leg pads. Apply caulking or Mortite, provided, to hopper flange. Lift filter section onto hopper and bolt together with hardware provided. Inspect flange connection for airtight seal. If included, locate drum assembly(s) under hopper and attach flexible hose to collar(s) on hopper slide gate and drum cover. Proceed to step # 4.

For style DGB, DSB and DEB (cabinet consisting of filters and blowers and separate bin bottom with deep dust drawer) place bin in desired location. If provided, fasten leg pads to foundation with suitable anchor bolts. Apply caulking or Mortite, provided, to bin flange. Lift filter section onto bin. Bolt together with hardware provided. Inspect flange connection for airtight seal. Proceed to step # 4.

For style DGF, DSF & DEF (cabinet consisting of filters and blower, dust bin, silo or hopper by others) apply caulking or Mortite, provided, to flange or bolt hole pattern on customer's bin, silo or hopper. Lift filter section onto bin, bolt down and inspect flange connection for airtight seal. Proceed to step # 4.

4. **SILENCER** (optional) - The silencer is designed to reduce the sound level of the exhaust air. The box silencer for the DG & DS units is usually factory installed. The dust silencer for the DE units requires caulking and bolting to blower discharge. Field support for duct silencer is required.
5. **FINAL FILTERS** (optional) - These filters provide another stage of filtration and act as a safety filter. Final filters for DG & DS units are usually factory installed. For DE units, airtight connection to blower discharge is required. **Note:** Even with final filters, if the airstream contains toxic substances, the air cannot be recirculated to the building, it instead must be exhausted outdoors per State and Federal guidelines.
6. **MOTORIZED SHAKER** (optional) - The motorized shaker automatically shakes the filters after the blower is manually shut off. It includes the shaker motor, factory wired controller for blower and shaker motors with adjustable timer and remote push button station. Two style are used depending on size of unit. See Figure 3.

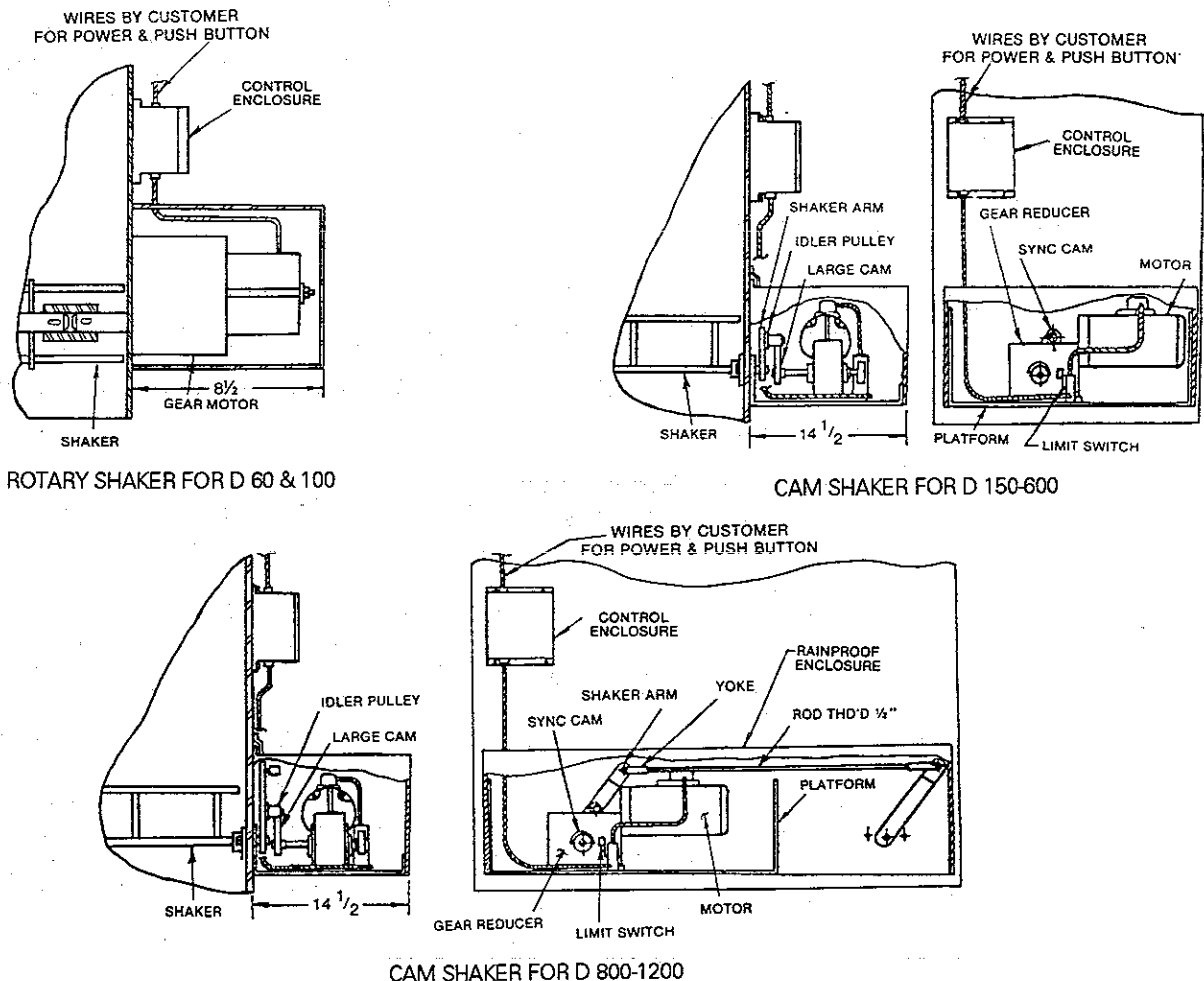


FIG. 3. DETAIL FOR OPTIONAL MOTORIZED SHAKER

<u>STYLE</u>	<u>FOR CABINET SIZE</u>	<u>DESCRIPTION</u>
Rotary	D60 & 61	A 60 rpm gear motor rotates the shaker bar to shake the filters.
Cam	D150 - 600 (Single Shaker) D800 - 1200 (Double Shaker)	A motor and 35 rpm output gear reduces, raises and shake the filters. Includes an idler pulley which must be field installed after rotation direction is correct.

#### MOTORIZED SHAKER OPERATION DESCRIPTION -

Pressing start button activates blower. Upon pressing stop button, blower is deactivated and shaker is activated and will operate until adjustable timer completes the desired time and cycle. Timer automatically resets for next cycle.

#### ROTARY SHAKER INSTALLATION -

- a) Open controller enclosure. Remove wiring diagram. Make holes in enclosure for power line and push button station. Wiring, according to diagram, must be by a qualified electrician.
- b) Check that rotation of blower is in direction of blower arrow. If 3 phase power, reverse any two power lines to change directions.
- c) The timer is set at the factory, but can be field adjusted if a different delay or shaker time is desired.
- d) Close controller enclosure.

#### CAM SHAKER INSTALLATION -

**IMPORTANT** Idler pulley is shipped loose in a cloth bag, under the shaker cover, in order to prevent accidental damage to shaker drive assembly, if shaker rotation should be incorrect upon start up. Incorrect rotation will bend shaker bar and render the mechanism useless.

- a) Remove motorized shaker cover.
- b) Open controller enclosure. Remove wiring diagram. Make holes in enclosure for power line and push button. Wire according to diagram.
- c) To check rotation of blower and shaker motors, push start button followed by stop button. This will cause blower to run for a moment and then shaker approximately 15 seconds. Correct rotation is indicated by arrow on blower housing or on top of unit and on shaker motor gear reducer. If rotation is incorrect, reverse power line leads.
- d) ONCE MOTOR ROTATION IS CORRECT, SHUT OFF MAIN POWER TO UNIT TO PREVENT ACCIDENTAL START UP WHILE WORKING WITH DRIVE ASSEMBLY.
- e) Remove idler pulley, shoulder bolt and bushing from cloth bag. Insert shoulder bolt into deep side of pulley. Slip on bushing and screw into tapped hole in shaker arm. After tightening shoulder bolt, check that pulley spins freely.

- f) Operate unit to check for correct engagement of shaker area with idler pulley.
  - g) To change duration of shaking cycle, adjust timer attached to shaker starter with screwdriver (range 1.8-180 sec.).
  - h) Replace shaker cover.
7. EXPLOSION RELIEF DOOR (optional) - The explosion door allows for quick release of pressure caused by a dust explosion within the duct work or dust collector. If the dust collector is installed indoors, the explosion relief door must be vented out of the building. Contact your insurance company and the National Fire Protection Association (NFPA) at 1-800-344-3555 for proper compliance and request an additional danger sign from Sternvent for installation at termination of explosion door duct. Include an access door panel in the duct or removable section so that door hardware may be inspected and oiled every two months.
8. Electrical wiring and hook-up should be done by a qualified electrician following wiring diagram on motor. Motors for most DG & DS units are prewired to a knockout box located on right side of unit unless factory wired to magnetic starter if ordered with optional motorized shaker. Make sure that the voltage at the motor corresponds to the motor name plate. The motor manufacturer will guarantee the motor only if the voltages is within 10% of the rating. Use appropriate safety devices such as a magnetic starter with overload heaters. When ordered with optional motorized shakers, starters are included and factory wired.

**IMPORTANT** Check for correct blower rotation, clockwise, as indicated by arrow blower housing or discharge by starting and stopping motor and viewing either blower wheel or motor cooling fan (located at rear end of TEFC motors). Incorrect rotation will substantially decrease blower efficiency.

If rotation is incorrect, on three (3) phase motors switch any two (2) leads; on single phase follow motor nameplate wiring diagram.

**IMPORTANT** DO NOT run the motor for extended periods of time until the ductwork is in place and connected. If you do, you will overload the motor. DO NOT run the collector with either drum cover off, doors or hopper slide gate open. This will also overload the motor.

11. DUCTWORK If ductwork is not properly designed and sized, the suction of the dust collector will be greatly reduced as well as increased chance of fire or explosion. The designer of the ductwork must be experienced with dust collection systems, not just heating and air conditioning systems. The ductwork should have shortest possible runs, long sweep elbows which have a radius of 1 1/2 times the diameter of the elbow and at least 45° from the main duct. Use duct sealant and rivets to connect the pipes. Do not use plastic pipes because of static charge potential and poor selection of fittings.



## START-UP PROCEDURE CHECK LIST

1. Start and stop motor. Make sure motor rotation in direction of arrow.
2. If unit is equipped with cam type motorized shaker, make sure gear reducer is rotating in the direction of arrow. If yes, install idler pulley which is shipped loose.
3. Open lower filter access door. Make sure shaker bar is "pointing" to rear of unit and is not touching filters. Close door.
4. Make sure all access doors are closed.
5. If hopper unit has a drum assembly, slide gate should be in open position during operation. If drum assembly is not included, then slide gate should be in closed position.
6. Check that all duct connections are airtight.

## MAINTENANCE

### 1. General

Shake filterbags once or twice daily for most applications. (Fine dust requires shaking only when there is a noticeable loss of suction). Make sure BLOWER IS SHUT OFF and briskly move shaker handle back and forth four or five times. Do not attempt to rotate shaker handle completely around.

Shut off blower and check dust drawer, drum or hopper for dust accumulation every day. Empty when 2/3 full.

Both manual and motorized shakers units require periodic brushing of the filter bags to maintain proper suction. Frequency of brushing is determined by type of dust collected, dust loading and usage. If unit loses suction, brushing will often restore proper operating suction. If this does not help, then it may be necessary to replace the filter bags. Contact your Sternvent representative for replacement filters.

### 2. Motorized Shaker

CAM type shakers should be inspected every two to three months for wear of idler pulley and proper engagement of parts. Remove shaker cover and carefully observe shaker operation. Call your local Sternvent sales representative if parts are required.

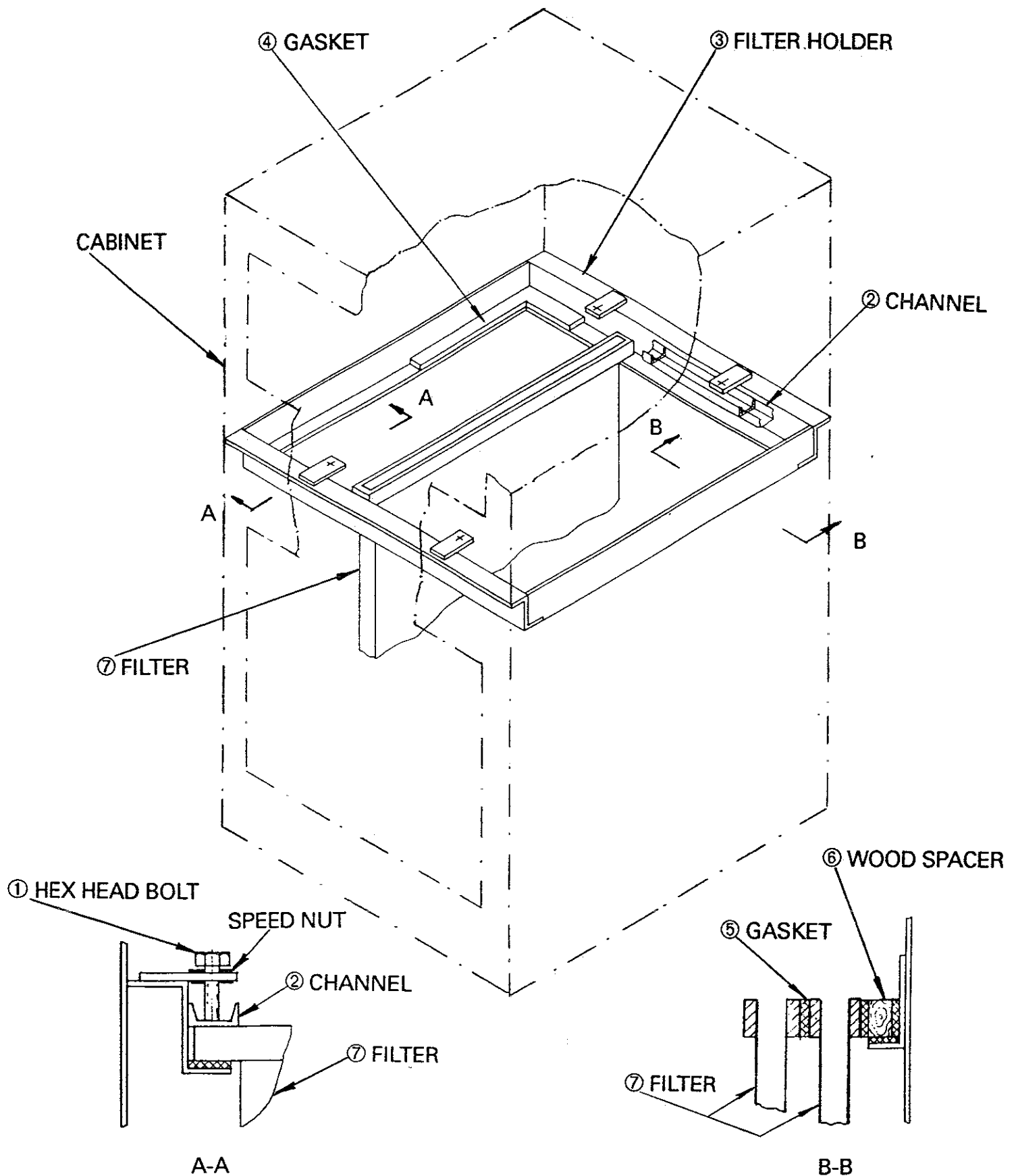
### 3. LUBRICATION

- a) The shaker bar bearings, located inside of the unit, should only be oiled if the shaker bar binds and bearing alignment has been checked first.
- b) For optional explosion door, open the door and inspect the hinges and Brixon latches every two months or more frequently for installation in cold and/or dirty environments. Make sure all parts move freely. Typically, the hinge and Brixon latch pivot point, which is the bearing pin about which the laminated cam pivots, should be oiled every two months with SAE 10-20 oil. For additional information, contact Brixon Manufacturing Co. at 1-800-LATCHES.

**FILTER BAG REPLACEMENT INSTRUCTIONS**  
**FOR STERNVENT MODEL SERIES DC, DG, DE, DS & DT**

There are 15 to 120 filters in the dust collectors depending on the model. Each filter is envelope shaped and has a metal frame at the top that allows it to hang from the filter frame holder(s) which is part of the dust collector cabinet. The top of each filter must be 100% airtight to the adjoining filter, wood spacer or filter frame holder. Any leak will allow dust to bypass the filters. REFER TO ILLUSTRATION ON BACK OF THIS PAGE. If filters have ground wires, also see separate sheet "Supplement to Filter Bag Installation Instructions for Grounded Filters."

1. Shut off and lock out power.
2. Remove upper access door(s). For D60 and 100 units (3/4 and 1 HP), remove blower assembly and optional silencer for access.
3. Unscrew the thumbscrews or hex head bolts (1). (For models manufactured prior to 1978, loosen the side screws, located on the outside of the unit.)
4. Remove hold down channels (2).
5. Remove the center filter bag first by grabbing the filter frame which is at the top of each filter. Lift filter bag until the bottom of it clears the filter frame holder (3). Remove filter from cabinet. Repeat for other filters.
6. Clean surface of filter frame holder of dust, chips, etc. Inspect gasket (4). Replace, if necessary.
7. Before installing replacement filters, cut strips of gasket the length of each filter bag frame from the roll of gasket. Peel off paper backing and press the self-adhesive gasket (5) onto one side of each filter frame and two wood spacers.
8. Insert wood spacers (6) at both left and right side of filter frame with gasket facing the wall of the unit.
9. Working from left and right sides and working towards the center, insert as many filter bags (7) as can be done without using any mechanical aid for leverage. You should be able to get all but two or three in place. Filter bags and spacers must have one gasket between each item.
10. Reinstall rear hold down channel (2) and finger tighten hold down screws.
11. Using either screwdrivers or optional Filter Inserter tools, compress the installed filters and insert the remaining filters. Use wooden spacers, with gasket on one side, if necessary, to fill any gaps. (Model Series D150 requires approximately eight wood spacers alternating between the filters.) Sometimes it is not possible to insert all of the filters, depending on the thickness of the filter media.
12. Reinstall the front hold down channel (2) and tighten all hold down screws.
13. Filter bags and wood spacers must form an airtight unit. Carefully inspect each seal by placing a light, from below, in between every two bags. If any leaks are detected, use a little caulking to fill the voids. Leaks of any size, including pin holes, are not acceptable.
14. Allow the caulking to dry for at least four hours before using the collector.
15. Replace access door(s). For D60 and 100 units, reinstall blower assembly and optional silencer. Unit is ready for operation.



INTERIOR DETAILS OF TYPICAL STERNVENT  
 D - SERIES DUST COLLECTOR  
 FOR FILTER REPLACEMENT

## TROUBLE SHOOTING

1. MOTOR WILL NOT START  
Check if overload heaters are in the starter and if all switches are ON; push the reset button on starter.
2. MOTOR STARTS WITH A WHINE AND IS NOT RUNNING AT FULL SPEED.  
Stop motor immediately. It is single phasing (getting current on two legs only) and will burn out if not stopped.  
Check fuses and wires for a poor connection.
3. MOTOR MAKES A SCRAPING KNOCKING NOISE.  
Check that the motor cooling fan is not rubbing against its cover.
4. LITTLE OR NO SUCTION  
Check that the fan is rotating in direction indicated by arrow on unit (clockwise when looking from above). A radial fan running backwards will deliver only 50% of its rated air capacity.  
Check for blockage in ducts.  
Filter bags may be dirty or plugged up and not allowing air to pass through freely. Shake filters to dislodge dust. Replace every two to three years.  
Too many machines and branch pipes may have been added, exceeding the dust collector air capacity. Eliminate the new machines from this dust collector and add another Sternvent dust collector.
5. EXCESS VIBRATION  
SHUT OFF THE UNIT IMMEDIATELY to prevent serious personal injury and/or property damage.  
Check that the unit is level.  
Remove and inspect fan wheel. If there is a build-up of sticky material, scrape or wire brush. If fan wheel is damaged, it must be replaced.
6. MOTOR STOPPED WORKING  
Check if power is on, push starter reset.  
Take to nearest motor manufacturer's representative for evaluation.

7. STARTER KICKING OUT

Fan may be moving too much air. Motor will overload if ducts are not attached or if drum is not in place with airtight hose, one slide gate or access door is open.

Check electrical connections. Wiring and wire sizes must be up to applicable codes.

Check if starter and overload heater is correct size.

8. EXCESS DUST EXITING THE FAN

Check filters for leaks or tears.

## GUARANTEE

STERNVENT equipment is guaranteed against defects in materials and workmanship for a period of one year from date of shipment (with the exception of filter bags and flexible connections, which carry a ninety (90) day warranty and motors which are guaranteed by their manufacturers). In the event of defects developing within that period under normal and proper use, seller will furnish F.O.B. its plant, without charge, parts required to replace material found defective. Seller shall not be held liable for any further costs, expenses, indirect or consequential damages and liability shall not exceed price of purchased equipment.