

# Spencer® Industravac® Self-Contained Vacuum Cleaning Systems— Series A,B,C, D & V

Serial No:

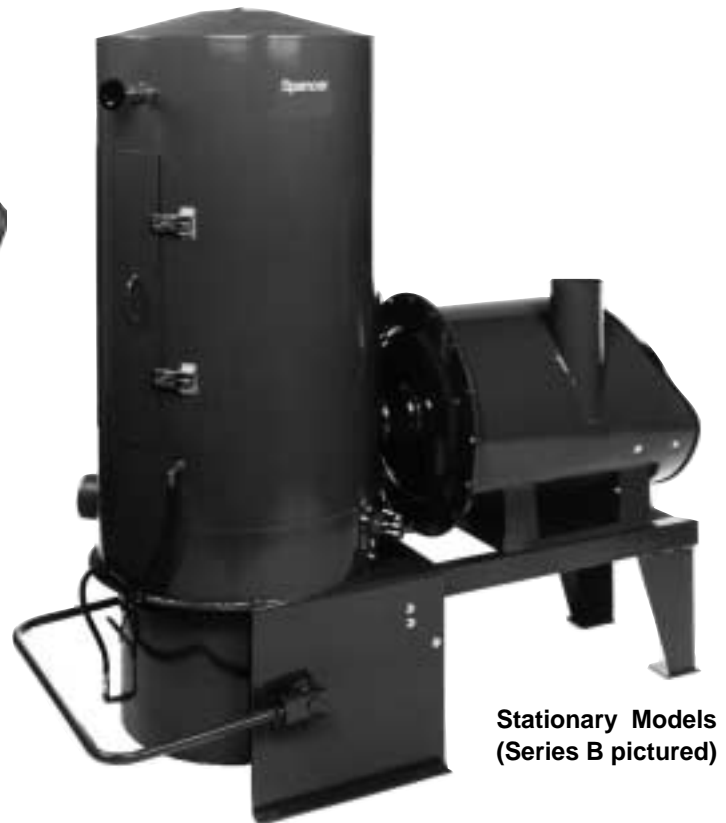
Model No:

Filter Bags:

## Handling, Installing and Operating Instructions



Portable Models  
(Series A pictured)



Stationary Models  
(Series B pictured)

## Important

Do not operate machine in unstable, low-flow range (surge).

Read and become familiar with this manual prior to installing your Spencer Industravac equipment. Following the instructions detailed here will help you realize its full potential of efficient service and extended lifespan. Damage resulting from failure to follow correct procedures will void the warranty.

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## I. Warranty


We warrant that this product will be free from defects in materials and workmanship for a period of 18 months from date of shipment or 12 months from date of start-up, whichever comes first. Within the warranty period, we shall repair or replace, F.O.B. our Factory, such products that are determined by us to be defective.

This warranty will not apply to any product which has been subjected to misuse, negligence, or accident or misapplied or improperly installed. This warranty will not apply to any product which has been disassembled, repaired or otherwise altered by any persons not authorized by our Service Department.

The guarantee of the motor and control manufacturers will govern the extent of our guarantee on such equipment.

Refer to Bulletin 706 for complete terms and conditions.

## II. General Introduction

**Spencer® Industravac® System**

Read instructions before handling and starting equipment.

Serial No.

Model No.

Original Filter Bag No.

Manufactured under some or all of the following -  
United States Patent: 4,874,410; 5,045,098; 5,087,274  
Registered Trademark: 62,801,;140,976; 652,701; 1,284,095  
1,616,417; 134,026; 341,418; 1,348,270; 959,254

**The Spencer Turbine Company, Windsor, CT 06095**  
**860-688-8361**

Made in U.S.A Plate No. PLN-90056

Before proceeding with setup, record the machine catalog number and serial number in the boxes on the front cover of this manual. These numbers may be found on the nameplate located on the vacuum producer casing. Also record the filter bag number for convenient reordering. Having this information easily accessible will expedite parts orders and other communication with the factory, ensuring prompt, accurate service.

## Description

The Industravac unit consists of a multi-stage centrifugal vacuum producer (Series V equipped with a Vortex® regenerative vacuum producer) with continuous duty motor; a highly effective two-stage separator and a large capacity dirt can, all mounted on steel legs (stationary model) or a rubber-tired carriage (portable model). These components form a dependable, heavy-duty vacuum cleaning system that is designed and rated for continuous operation *handling dry, free-flowing materials*.

**CAUTION: Standard Industravac units must not be used for liquid pickup or for vacuuming volatile, viscous, flammable or explosive materials. If such problems exist, consult your Spencer Representative for a special-purpose system utilizing either a custom-engineered Industravac unit or a component-based design with special separator and other modules specifically selected for the application.**

### Portable Model

The portable Industravac model is self-contained and easily moved to various points of use. It is equipped with a motor starter and 50 feet of heavy-duty four-wire (three conductors and ground wire) electrical cable, ready for your addition of a male plug and connection to a suitable power supply. Refer to the machine nameplate for specific electrical information.

### Stationary Model

The stationary Industravac model is intended for permanent installation in one location, where, for example, it may be connected to a tubing network to form a central vacuum cleaning system. Since the motor starter is separately installed, usually in a remote location, it is not furnished as standard equipment but is available as an optional Spencer accessory.

NOTE: If a stationary Industravac unit is to be connected to a tubing system, check the tubing runs for leaks before enclosing them in walls where repairs would be difficult.

## III. Getting Started

NOTE: If any problems are encountered during installation or start-up of your Industravac system, consult your local Spencer Representative.

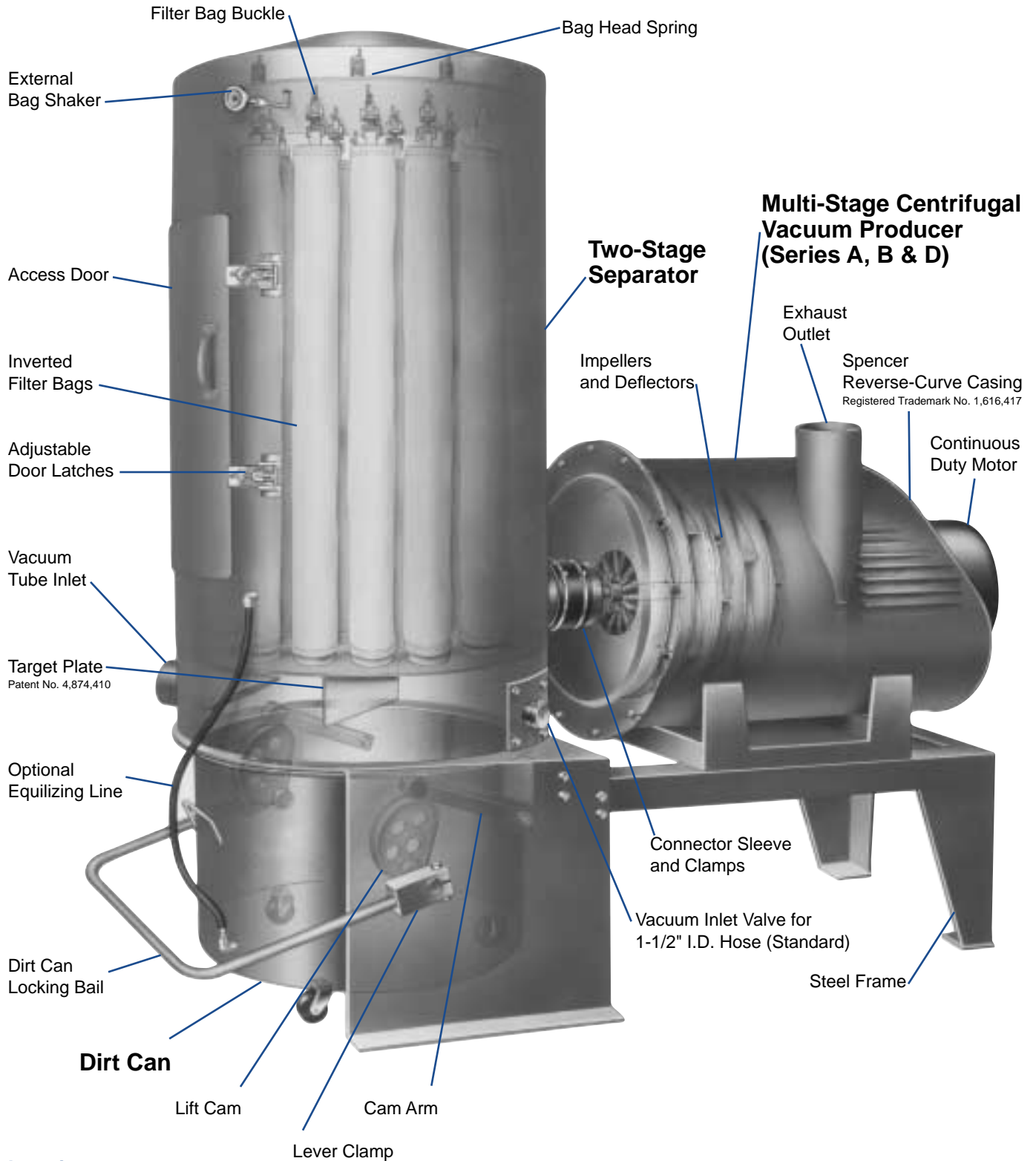
### Moving and Handling

Each Industravac unit is carefully balanced and tested at the factory. For optimum performance, it must be handled with care during installation. Using accepted rigging practices and safety precautions, the unit can be lifted and relocated with a forklift, overhead crane or hoist.

### Storage

If the machine is to be stored for an extended period before use or between uses, it must be protected from dampness, dirt and vibration. The inlet and discharge should be covered to keep foreign matter out; the motor shaft should be periodically rotated a few times by hand.

## Typical Industravac Assembly



### Location

Industravac vacuum producers are designed for operation at or near sea level atmospheric pressure and a nominal ambient temperature of 70°F (21°C). When necessary, they can be factory-designed for higher altitude or higher temperature operation.

Consideration should be given to the noise generated by Industravac equipment and its contribution to the ambient noise level. When desired, the exhaust can be fitted with an

optional Spencer silencer. C Series models have a built-in silencer as standard equipment.

Note: V Series stationary models should be properly protected from precipitation.

**Portable Model.** The portable Industravac unit is designed for use on flat, dry, level surfaces. As a safety precaution, the wheels should be blocked to prevent accidental movement.

**Stationary Model.** No special foundation is required. A level concrete floor or pad is recommended, although any other substantial floor is satisfactory. The Industravac base should be placed on rubber isomode pads furnished with the unit.

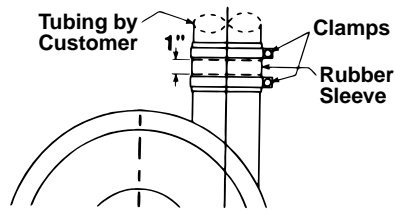
In selecting an installation site for a stationary Industravac model, be sure the unit is readily accessible for servicing by allowing several feet of clearance around the machine. The exhaust should discharge outdoors or into a room having ample volume and sufficient ventilation to allow air to escape. Avoid placing the Industravac unit in an enclosed room where a substantial heat buildup might occur. The ambient temperature should not exceed 104°F (40°C).

## Unpacking

1. Uncrate the Industravac unit, saving all literature, boxes and parts.  
NOTE: The D Series Industravac is shipped on two skids: the frame with vacuum producer on one skid, and the separator horizontally mounted on the other skid. To assemble the two units, attach the rubber inlet sleeve to the vacuum producer inlet; lift the separator at the lifting points, position it on the frame and align the rubber sleeve and bolt holes. Secure with bolts provided.
2. Remove packing materials, plugs, etc.
3. Use the packing slip to check off and confirm the presence of all ordered components.
4. Lower the dirt can by raising the bail arm in front of the separator and look inside for parts and optional accessories (e.g., equalizing line, dirt can bags, motor starter, hose, tools) which are often shipped loose in this location.
5. Read all instructional and warning labels on the machine before operation.

## Industravac Setup

**1. Vacuum producer.** The upblast exhaust tubing on A, B and D Series units will accept, if required, an air gate (throttling valve), discharge silencer, tubing connection and weather cap. The C Series has a bottom exhaust with silencer, Patent No. 4,874,410, as standard equipment. (Optional adapter P/N PLT90023 can be purchased to provide a 6" O.D. tube connection.) The V Series equipped with exhaust diffuser for weather protection and a relief valve for load control. If any optional items have been purchased for field installation, they should be mounted on the exhaust tubing with the air gate first, followed by a flexible connector (see diagram and caution below), silencer and weather cap or tubing.



**CAUTION: Tubing connected to the vacuum producer should be properly aligned and supported so there is no stress on the machine casing. The tubing must not touch the vacuum producer. Use a flexible connector to create an isolating gap of approximately 1" minimum and clamp it in place for an air-tight seal.**

**2. Separator.** Open the separator access door to confirm that the door gasket and filter bags are in place and secure. With the door open, operate the external bag shaker to check for proper action.

Lower the dirt can to see that nothing has been left inside

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inadvertently, and check that the dirt can gasket is in place beneath the separator. Raise the dirt can, making sure it seals tightly against the gasket. Inspect both separator inlet ports to be sure they are clear.

If optional dirt can liners will be used, install one liner in the dirt can and make sure the equalizing line is in place, properly connected to the separator and dirt can.

**CAUTION: The dirt can liner must not be used without the equalizing line (the liner will be sucked out of the can, up against the filter bags) and vice versa (without the liner in place, mechanical and environmental damage may result)**

**CAUTION: If the separator is equipped with an optional explosion relief port, it must be installed in accordance with the National Fire Code and all applicable safety regulations. The port should be positioned away from nearby personnel and ducted to the outdoors.**

## 3. Electrical.

NOTE: All wiring and electrical adjustments or installations should be done by a qualified electrician in accordance with the National Electrical Code and local codes.

The standard electrical motor furnished with the A, B and D Series Industravac vacuum producer is a NEMA design B, open drip proof induction type motor suitable for 60 Hz, 3-phase, 200-230/460VAC operation. The C Series and V Series have a TEFC type motor as standard. Other motors such as TEFC and explosion-proof types, and other voltages, may be furnished as required by the application.

**CAUTION: The electrical service at the installation site must supply the voltage stamped on the motor nameplate. Operation at an incorrect voltage will result in a damaged motor.**

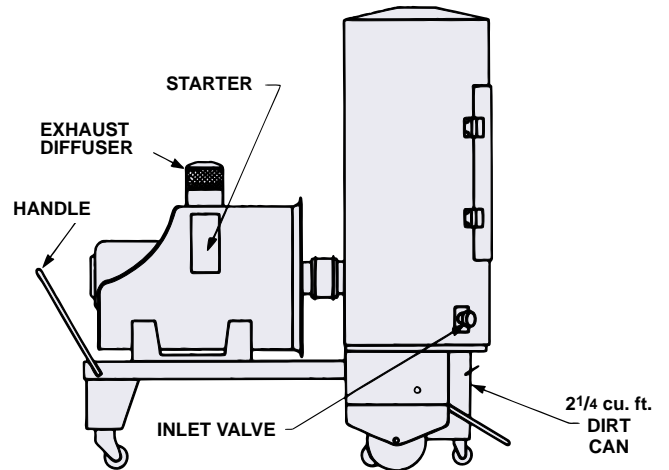
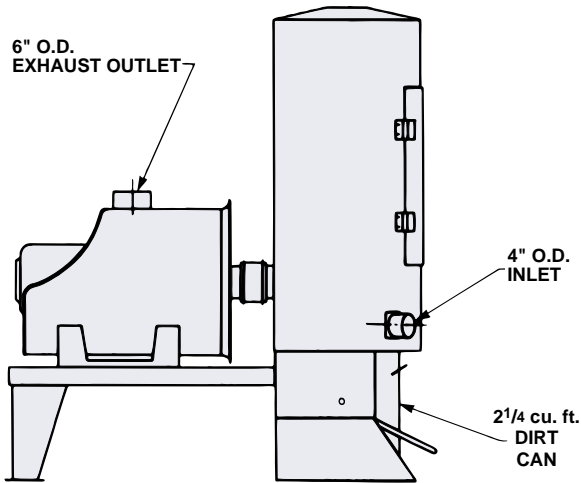
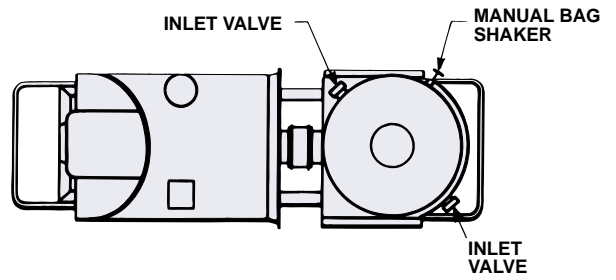
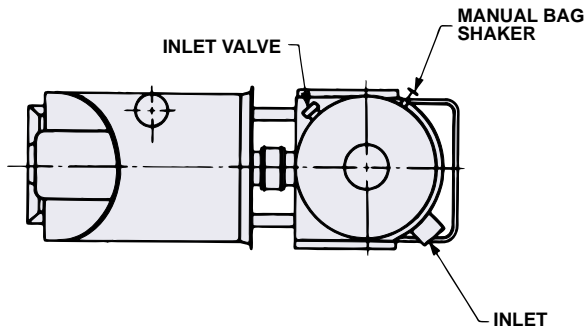
Industravac portable units are furnished with a starter and 50-ft cable, requiring only a suitable male plug for connection. In making the electrical connections for a stationary Industravac, follow the wiring instructions furnished. All wiring, power cords and circuit breakers should be of ample capacity to ensure that proper voltage is maintained at the motor terminals while starting and running. Starters should have thermal overload protection and low-voltage protection.

**Electrical Accessories.** Certain optional accessories such as an Electronic Modulating Bleed Control and motorized filter bag shaker require 115VAC, single-phase electrical service. Such accessories should be installed using the separate instruction sheets accompanying them.

A grounding lug is provided for those Industravac units having optional grounded filter bags. In order to effectively bleed off static electricity charges, this lug should be securely connected to an electrical ground.

**4. Motor Rotation.** Perform a pre-start check to make sure the motor turns in the correct direction. (While the vacuum producer will operate both ways, its performance will be greatly diminished if it runs backward.) If V Series rotation is incorrect, it will perform as a blower, not a vacuum producer.

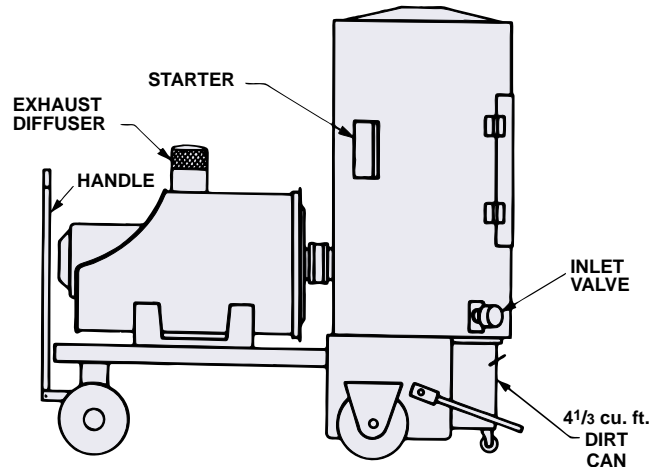
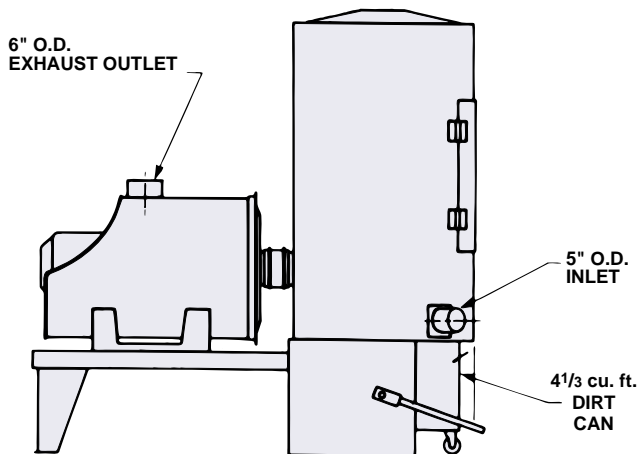
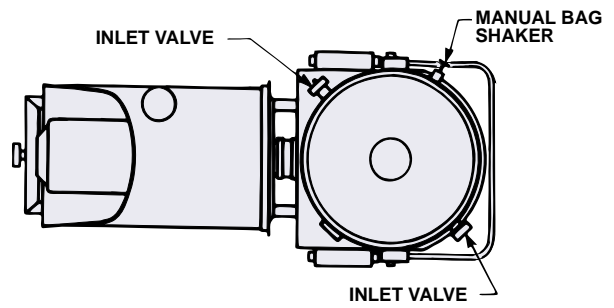
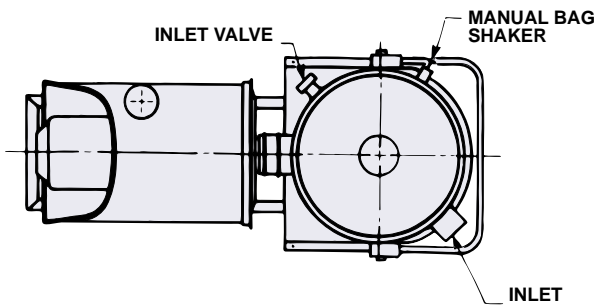
A rotation direction arrow is located on the vacuum producer casing. To see if the motor is wired correctly, momentarily start the motor. "Bump" or jog the start button and observe the direction of rotation at either the end bell of the motor or the motor shaft, whichever is visible. If the rotation is incorrect, the motor wiring must be reversed.



Stationary Model

## Series A

Portable Model

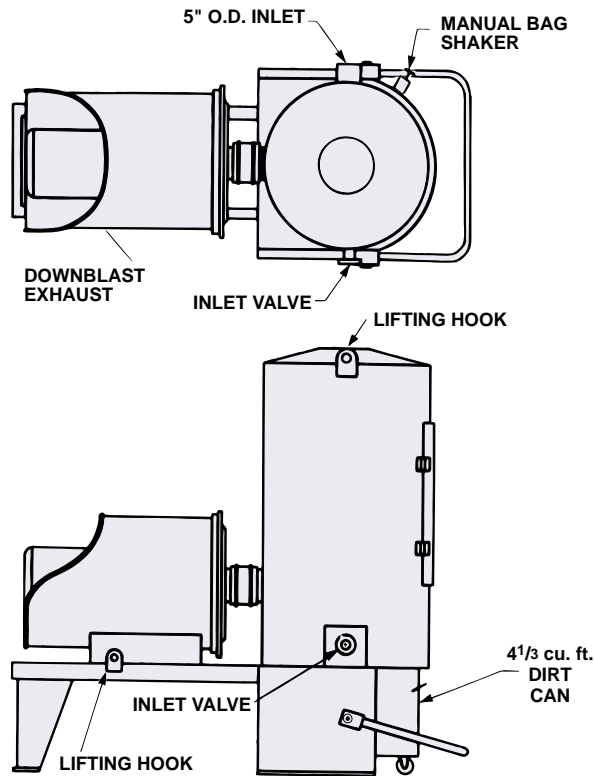


Stationary Model

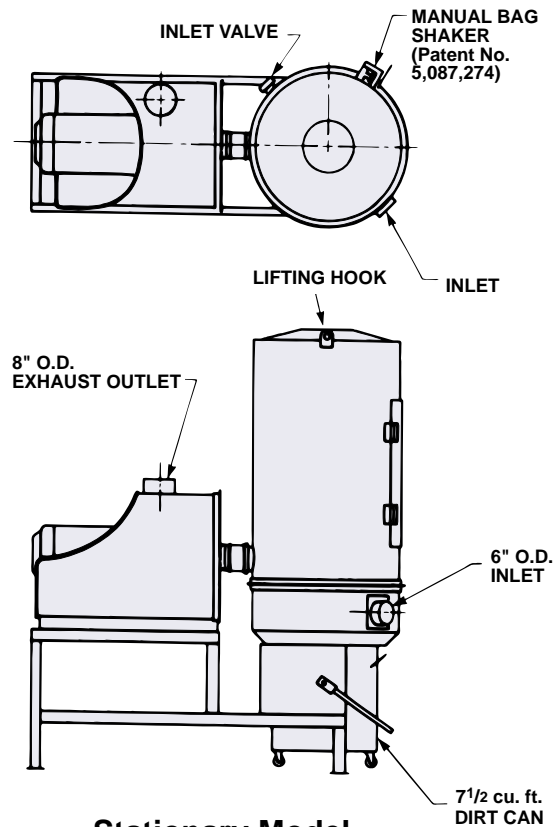
## Series B

Portable Model

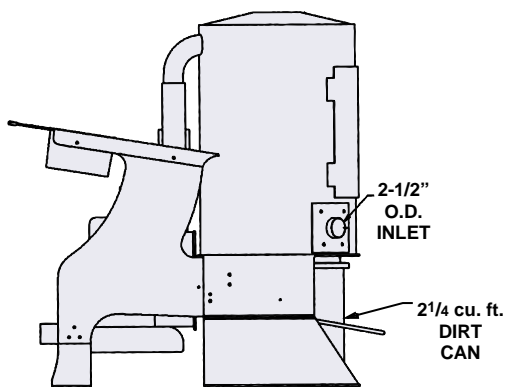
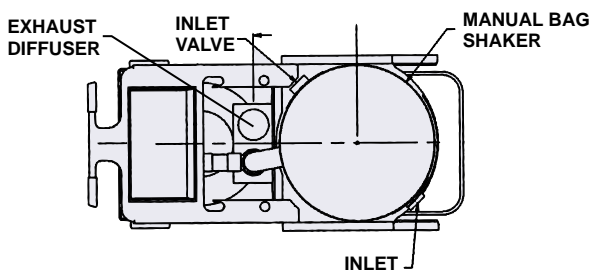




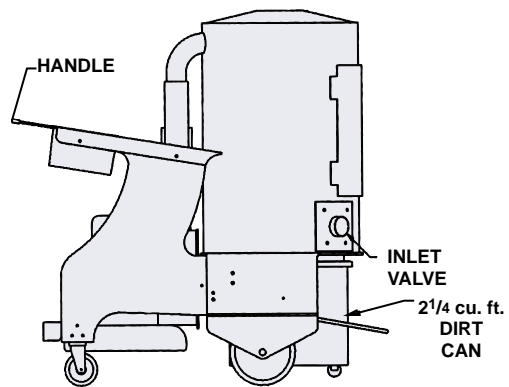
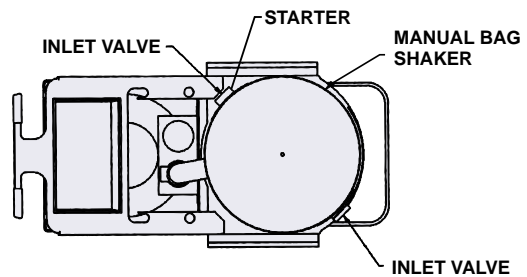
**Stationary Model  
Series C**



**Stationary Model  
Series D**



**Stationary Model**



**Portable Model**

# Series V

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## IV. Operation and Adjustments

NOTE: An Industravac vacuum cleaning system consists of the Industravac unit and its associated components. The vacuum producer is designed for operation under load, hence it must always be connected directly to hose and tools or to a tubing system with hose and tools.

### Machine startup

1. Turn the Industravac unit on, having fully completed the previous setup procedures.
2. (For units equipped with discharge air gate.) With a full vacuum system load connected to the separator inlet(s), connect an ammeter to the motor circuit. Measure the draw (amperage) of the motor. If it is below the full load current rating, open the air gate until the amperage reaches, but does not exceed, the full-rated motor capacity. The air gate should then be fixed to prevent opening beyond this point.
3. (For units equipped with Electronic Modulating Bleed Control.) Follow adjustment instructions in the separate data sheet accompanying the EMBC.

4. Check the tubing system and vacuum equipment for leaks. At the separator, check the access door, dirt can seal and hose inlet valves. Examine all hoses, tubes, and fittings connected to the Industravac unit. Air leaks are highly detrimental to the overall system performance, wasting power and impairing the operating efficiency.

**CAUTION:** When the vacuum producer is operating, its housing will be hot to the touch. Use caution when making inspections or adjustments in this area.

### Hose and tools

For optimum performance, Industravac units should be used only with complementary Spencer vacuum cleaning equipment system components—Spencer tubing, fittings, flexible hose, tools, attachments and accessories. These products have been designed and sized specifically for compatible use in an Industravac system.

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## V. Maintenance

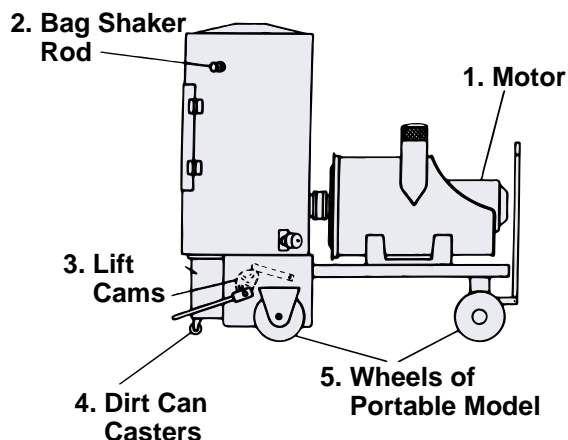
**CAUTION:** Disconnect electrical power before performing any maintenance procedure.

### 1. Lubrication

1. **Motor.** Follow motor manufacturer's recommendations.

For following items 2 through 4, apply light lubricating oil yearly or more often as needed.

2. **Bag shaker rod.** Grease yearly or more often as needed.
3. **Lift cams,** left- and right-hand.
4. **Dirt can casters.**
5. **Wheels of portable model.** Grease yearly or more often as needed. (No lubrication is required for the fifth wheel of large portable models.)



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### 2. Vacuum Producer – Multi-stage Centrifugal (Series A, B, C & D)

NOTE: For maintenance of the Vortex regenerative vacuum producer, equipped on Series V models, see handling, installing and operating instructions Form ZZ.

NOTE: For maintenance of the motor, consult motor manufacturer's information provided with the equipment.

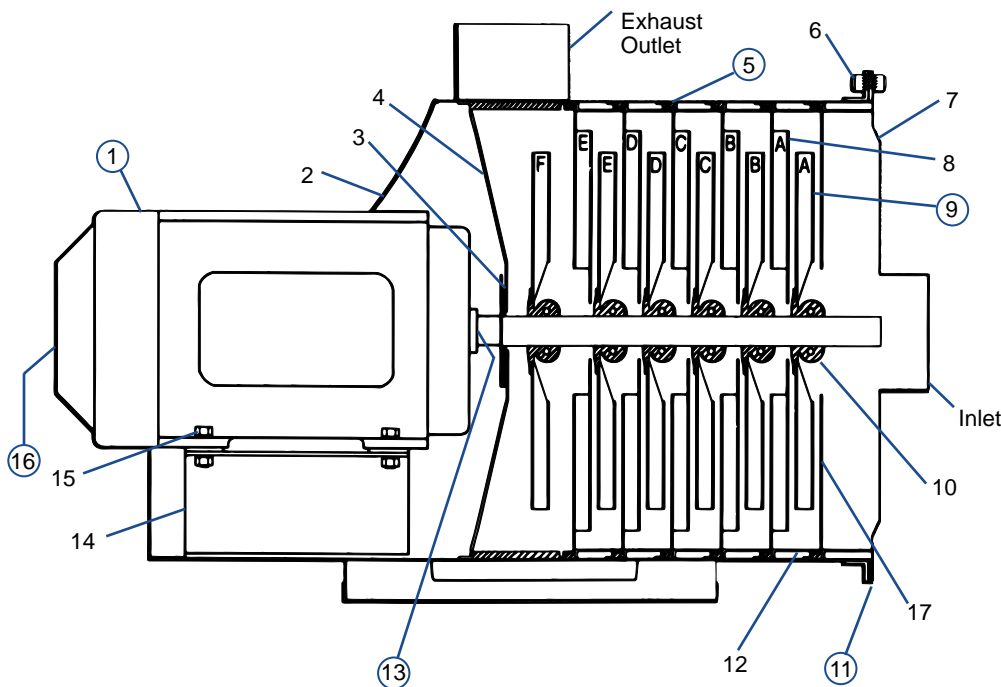
NOTE: Disassembly, repair or alteration cannot be done by unauthorized personnel during the warranty period without voiding the warranty. The maintenance instructions that follow are provided as a customer service to facilitate field repair after the warranty period.

If operating problems are detected, notify your local Spencer Representative, describing the situation in detail before attempting repairs or disassembly.

The Industravac vacuum producer has an overhung type construction with multiple impellers mounted directly on the motor shaft. The motor bearings support the shaft and impeller assembly.

Six impellers and five deflectors are shown in the accompanying diagram of a typical vacuum producer; the actual number of each will vary from two to nine, depending on the model.

Circled items are recommended spare parts



- 1 Motor
- 2 Casing
- 3 Division Head Packing
- 4 Division Head (not available as separate item)
- 5 Rope Packing for Deflector
- 6 End Head Bolts
- 7 End Head
- 8 Deflectors (A, B, etc.)
- 9 Impellers (A, B, etc.)
- 10 Split Clamped Hub
- 11 End Head Gasket
- 12 Spacers
- 13 Front Motor Bearing
- 14 Motor Base
- 15 Motor Hold-Down Bolts
- 16 Rear Motor Bearing
- 17 Half Deflector (not all models)

### Disassembly (For Series V see Form ZZ)

NOTE: Read these procedures carefully before attempting disassembly. Refer to the diagram on page 7 and the instructions below as you proceed. Contact your local Spencer Representative for help if any questions arise.

To facilitate repairs, disconnect the vacuum producer from the separator and unbolt the casing from the Industravac frame. Using adequate and safe lifting equipment, remove the vacuum producer to a convenient work location.

**CAUTION: During reassembly, parts must be installed in exactly the same relative positions. Therefore, as each part is removed, it should be marked or tagged and stacked in sequence. It is especially important that the location of each impeller, as well as its rotated position on the shaft, be marked.**

1. Begin at the intake and remove, in turn, end head #7, (some models may have an extra spacer and half deflector inserted during manufacturing; these must be removed before reaching the first impeller), impeller #9A, spacer #12, rope packing #5, deflector #8A, impeller #9B, and so on until all impellers have been removed. (Note: division head #4 cannot be removed.)
2. Check the division head packing #3 and replace it if damaged. Any time the motor is removed and reinstalled, replace this packing before the motor is put in place.
3. Temporarily reconnect electrical power and run motor to check for mechanical or electrical defects. If the motor must be removed, disconnect electrical power, remove bolts #15 and slide motor straight back, being careful not to damage packing #3 around shaft or the shims (if present) under each motor attach-point.

### Reassembly (For Series V see Form ZZ)

1. Bolt the motor down tightly in its original position with the shaft in the exact center of the vacuum producer casing. Be sure that shims (if removed) are replaced in their exact positions on the same attach-points as before. See that packing #3 is in place and tight around the shaft.
2. Place the last-removed impeller #9 on the shaft and push it toward the motor until it bottoms. Position the impeller same distance from the division head as noted during disassembly and tighten. Rotate once by hand to check placement.
3. Place the last-removed deflector #8 back tightly against the stops and, with a suitable tool, caulk the rope packing #5 firmly into the groove.
4. Place the next impeller on the shaft. Push it toward the motor until it bottoms. Back it off approximately 1/8" and tighten it to the shaft. Rotate once by hand to check placement.
5. Place spacer #12 into the last deflector. Place the next deflector into position in the casing as shown, caulking the rope packing into the groove.  
  
Note: Make sure the spacer and deflector are pressed back tightly and at a uniform distance from the end of the casing at all points.
6. Repeat procedure until all stages are reassembled.
7. Align gasket #11 and division end head #7 together and bolt to casing.



### Balancing (For Series V see Form ZZ)

Turn the machine on with inlet blocked to check balance. If there is excess vibration due to an unbalanced condition after reassemble, use the following balancing procedure:

1. Mark the position of the end impeller hub on the shaft.
2. Loosen the bolts or screws holding the impeller on the shaft.
3. Rotate the impeller 90° on the shaft, retighten the bolts or screws.
4. Run the machine again at operating speed and check vibration.
5. Repeat this procedure until the best balance (least vibration) is obtained. If satisfactory results are not achieved, contact the Spencer Service Department for recommendations.

## 3. Separator

### Shaking the Filter Bags

NOTE: The vacuum producer must be turned off during bag shaking, or loosened dirt will immediately redeposit on the filter bags.

Grasp the external bag shaker handle and move it back and forth vigorously for 5 to 10 seconds. This action loosens dirt that has accumulated inside the filter bags, allowing it to fall into the dirt can.

For portable Industravac models, bag shaking should be done after each use; for stationary models, after each shift to maintain optimum vacuum performance.

### Emptying the Dirt Can

For new Industravac applications, check the rate of dirt accumulation in the dirt can and then establish a regular emptying schedule. If the application characteristics change, modify the schedule to suit. The can should be emptied when it is no more than 3/4 full. Or, for convenience, it can be emptied by weight rather than volume, at any lesser level.

To remove the dirt can, lift the bail arm in front of the separator, lowering the container onto the floor where it can be wheeled away on its casters for emptying. To replace the can, simply push it into place under the separator. A self-locating guide positions the can correctly. Lower the bail arm, lifting the can into position and sealing it against the rubber gasket.

### Changing Door and Dirt Can Gaskets

1. Peel off old gasket.
2. Clean old adhesive off gasket seat.
3. Check replacement gasket for fit; trim if necessary.
4. Coat gasket and seat with rubber cement, apply gasket.
5. Check for airtight seal after cement is dry.

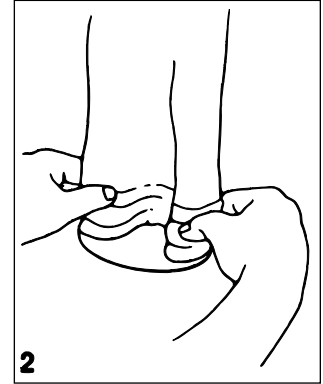
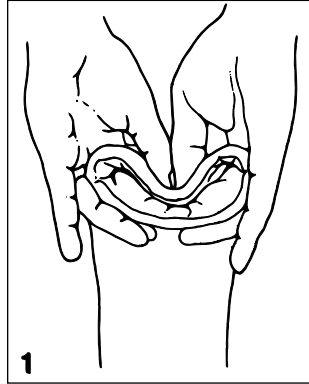
### Maintaining the Equalizing Line

Periodically check the equalizing line, if present, to be sure it is clear and free of leaks. If problems occur, replacement kits are available from Spencer.

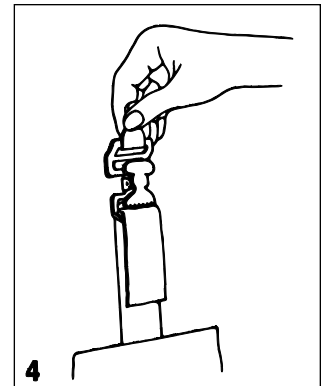
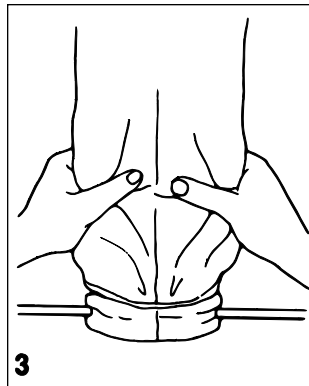
NOTE: Spencer disposable dirt can liners must always be used if an equalizing line has been installed or mechanical and environmental damage will result.

### Changing Filter Bags

Keep a set of spare filter bags in reserve at all times. Examine the bags in service periodically and replace them with genuine Spencer filter bags when visibly worn. Also look for leaks, which are signalled by dirt on the outside of the bags or on the bag head or by dust in the discharge airstream.



1. To install a new filter bag, compress the spring collar at the bottom of the bag.
2. Insert the compressed spring collar into the bag head opening and allow it to resume its original shape.



3. Pull up on the bag to be sure it is properly seated. The recess in the spring collar must be at the bag head opening. (Entire collar should not be below bag head.)
4. Install buckle on the narrow tab of filter bag and attach to hook on shaker plate. Pull on tab end to remove slack.

In addition to standard cotton sateen filter fabric, various other materials are available in Spencer replacement bags. They offer specialized properties suited to adverse conditions such as dampness, abrasion or chemical attack.

Special-purpose filters are also available, such as optional HEPA (High Efficiency Particulate Air) filters with a filtration efficiency of 99.97% at 0.3 micron particle size. For recommendations, consult your Spencer Representative.

### Replacing the Target Plate

The target plate, Patent No. 4,874,410, at the bottom of the separator is able to absorb a great deal of impact and abrasion damage as it diverts solid litter into the dirt can. Because it will eventually wear out, provisions have been made for easy replacement:

1. Lower the dirt can and wheel it out of the way.
2. Swing the target plate to a horizontal position and release it from its supporting hooks.
3. Reverse the procedure in Step 2 to install a new plate.

## 4. Machine Exterior

The nature of its work exposes the Industravac unit to dust and dirt which should be periodically removed by washing the exterior with soap and water. Disconnect the electrical power before any cleaning procedure; do not spray water directly on the motor, electrical connections or in the vacuum producer outlet.

## 5. Replacement Parts

Provide full information about your Industravac equipment, including the serial number and catalog number, when ordering parts. When ordering replacement filter bags, be sure to provide the bag part number. Replacement bags are supplied in the following quantities: A Series—10 bags, B Series—19, C Series—12, D Series—24, and V Series—10. For other vacuum producer and separator parts, refer to the illustrations on pages 5, 6, and 7 for the names of needed items. Touch-up paint is also available from Spencer.

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## VI. Troubleshooting Guide - Separator

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PROBLEM	Possible Cause	Corrective Action
<b>AIR LEAKS</b>	<ul style="list-style-type: none"><li>• Worn or poorly fitting seals.</li><li>• Holes worn in separator by abrasive materials.</li><li>• Leaks.</li></ul>	<p>Check access door and dirt can seals, reposition or replace if necessary.</p> <p>Check target plate, replace if worn; repair holes.</p> <p>See above.</p>
<b>LOW VACUUM/ NO VACUUM</b>	<ul style="list-style-type: none"><li>• Separator outlet blocked.</li><li>• Dirt can liner sucked up against filter bag inlet.</li><li>• Machine rotating backward.</li><li>• Filter bags clogged.</li></ul>	<p>Check dirt can, empty if more than 3/4 full. Make sure filter bags are not blocking separator outlet. Check outlet duct.</p> <p>Inspect equalizing line for holes and clean line to ensure proper manifold suction under dirt can to keep liner in place.</p> <p>Reverse motor leads.</p> <p>Shake bags more frequently (only when system is shut down).</p>
<b>DIRT PASSING THROUGH SYSTEM</b>	<ul style="list-style-type: none"><li>• Loose bag(s).</li><li>• Holes in bags.</li><li>• Leaks.</li><li>• Incorrect filter bag material.</li></ul>	<p>Reinstall bags according to instructions on page 9.</p> <p>Replace worn bags, eliminate cause if bags wear out prematurely (e.g., wrong filter bag material, dirt can not emptied often enough).</p> <p>See Air Leaks, page 9.</p> <p>Consult Spencer Service Dept. with information on material handled.</p>

# VI. Troubleshooting Guide - Vacuum Producer

PROBLEM	Possible Cause	Corrective Action
<b>INSUFFICIENT AIR THROUGH SYSTEM</b>	<b>Indication: low vacuum as determined by gauge measurement</b>	
	• Incorrect rotation.	Change motor leads to correct rotation.
	• Incorrect reassembly of machine after customer repairs.	Following instructions on pages 7-8, disassemble machine and reassemble correctly.
	• Tubing too small, causing excessive friction loss.	Increase tubing size or install machine providing higher vacuum.
	• Too many operators using system at once.	Restrict number of simultaneous operators or upgrade to larger Industravac unit.
	• Too much air entering system due to improper tools or open end hoses being used.	Use only Spencer tools, do not use open end hoses.
	• Machine running slow due to low motor voltage.	Refer to motor manufacturer's instructions, check voltage supply and connections.
	• Machine air passages clogged with material.	Disassemble, clean and inspect all parts, check filter bags for holes.
	• Impellers worn due to abrasion or vibration.	Replace impellers.
	• Air gate (blast gate) closed.	Refer to air gate instructions on page 6 and readjust.
	<b>Indication: machine design capacity too small for the system</b>	
	• System requirements incorrectly calculated.	Install larger Industravac unit to handle system requirements.
	• Too much leakage and/or openings.	Eliminate all leakage; see separator troubleshooting section.
	<b>MACHINE NOISY</b>	<b>Indication: external machine malfunction—bearing whining or growling</b>
• Too much grease; motor bearings hot.		Remove drain plug and let excess grease drain out.
• Too little grease; motor bearings dry.		Grease per instructions of motor manufacturer.
• Bearing failure.		Replace bearing.
• Bearing retainers worn.		Replace bearing.
<b>Indication: internal machine malfunction</b>		
• Impellers hitting after field reassembly and/or slipping on shaft due to heat.		Reassemble per instructions on pages 7-8, tighten impellers. Bleed air at low flow to reduce heat.
• Impellers coming apart due to age.		Replace impellers.
• Deflectors coming apart due to age.		Repair or replace deflectors.
• Impellers and/or deflectors coming apart due to wear from dirty air.		Too much material passing through separator. Replace impellers and/or deflectors. Check filter bags for holes. Check to be sure filter bag material is correct for debris collected.
• Machine operating in surge or unbalanced flow range.		Increase air flow to stop surge condition.
• Machine unbalanced, running rough.		Rebalance and/or clean machine, see further comments under Machine Vibrating.
• Motor not aligned in casing, causing impellers to hit.		Reassemble and carefully realign shaft and motor.
• Foreign material in machine.		Disassemble machine, inspect and clean. Check filter bags for holes to prevent further clogging.
<b>Indication: motor malfunction</b>		
• Abnormal hum or whine.	Check motor manufacturer's instructions, check voltage supply and connections.	
• Wrong voltage (high voltage will burn out motor and cause noticeable noise).	Check motor manufacturer's instructions, check voltage supply and connections.	
• Bearing noise.	See External Machine Malfunction.	
• Motor rebuilt improperly, thrust taken on wrong end.	Rebuild motor properly and correct the end play.	
• Loose part in motor.	Tighten, repair or replace. (Check with motor manufacturer.)	
• Low frequency.	Separate power supply, correct frequency.	

## VI. Troubleshooting Guide - Vacuum Producer *(cont.)*

PROBLEM	Possible Cause	Corrective Action
<b>MACHINE VIBRATING</b>	• Material buildup on impellers.	Clean impellers, check filter bags for holes.
	• Shaft bent (.001" max. runout per 10' of length).	Straighten shaft.
	• Bearing failure.	Replace bearing(s).
	• Faulty replacement motor installed.	Replace with correct motor.
	• Motor imbalance.	Disassemble machine, balance motor.
	• Machine reassembled incorrectly.	Disassemble machine, reassemble following instructions on pages 7-8.
	• Motor not aligned in casing, impellers rubbing.	Align motor, realign shaft.
	• Bearing(s) cramped due to improper fit.	Check bearings, shaft and housing, correct bearing fit.
	• Improper motor voltage causing operation at incorrect speed.	Check voltage and wiring connections, correct voltage.
	• Liquids passing through machine.	Do not use Industravac unit for liquid pickup. (Contact Spencer representative for portable wet separator.)
	• Material passing through vacuum producer.	Disassemble, clean and inspect all parts, check filter bags for holes.
	• Machine operating in surge or unbalanced flow range.	Increase air flow to stop surge condition.
	• Machine not mounted on solid foundation (e.g., on unstable catwalk).	Reinforce the foundation.
<b>MOTOR HOT</b>	(Check with putty and thermometer; consult Spencer Service Dept. for assistance.)	
	• Ambient temperature too high for insulation class.	Cool motor or replace with motor having proper insulation.
	• Incorrect voltage.	Change to correct voltage.
	• Incorrect cycle.	Change to correct cycle.
	• Electrical short-circuit; insulation failure.	Repair or replace motor.
	• Motor overloaded.	Upgrade to larger Industravac unit, or reduce amount of air in vacuum producer. Verify amperage of motor. Set air gate.
	• Leaks in system.	Check components and tubing system for leaks.
	• Unbalanced voltage supply.	Consult power company for correction.

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# Filter Bag Maintenance Record

Date	Filter Bag Part No.	Filter Bag Material	Date Changed



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# Vacuum Accessories Record (Hoses, Tools, Valves)

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Part No.	Description



## Related Literature



**Vacuum Cleaning Attachments and Accessories Catalog, Bulletin 241**, contains Spencer's product line of professional cleaning components for use with portable and stationary Industravac systems. There are broad selections of hoses, cleaning wands, hand and floor tools, inlet valves, connectors, adapters and accessories to make work easier in every application from general floor cleaning to car upholstery vacuuming and specialized bulk material handling. **Bulletin No. 241**



**Tubing, Fittings, and System Components Catalog, Bulletin 600**, covers every variety of components for Industravac-based central vacuum cleaning systems - metal tubing, elbows, branches, couplings, reducers, adapters, shrink sleeves, air gates, check valves - everything you need for specialized convenience in system design and installation. Also included: layout recommendations, friction loss data and component assembly information for your assistance. **Bulletin No. 600**



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