

# **COBRA VI**

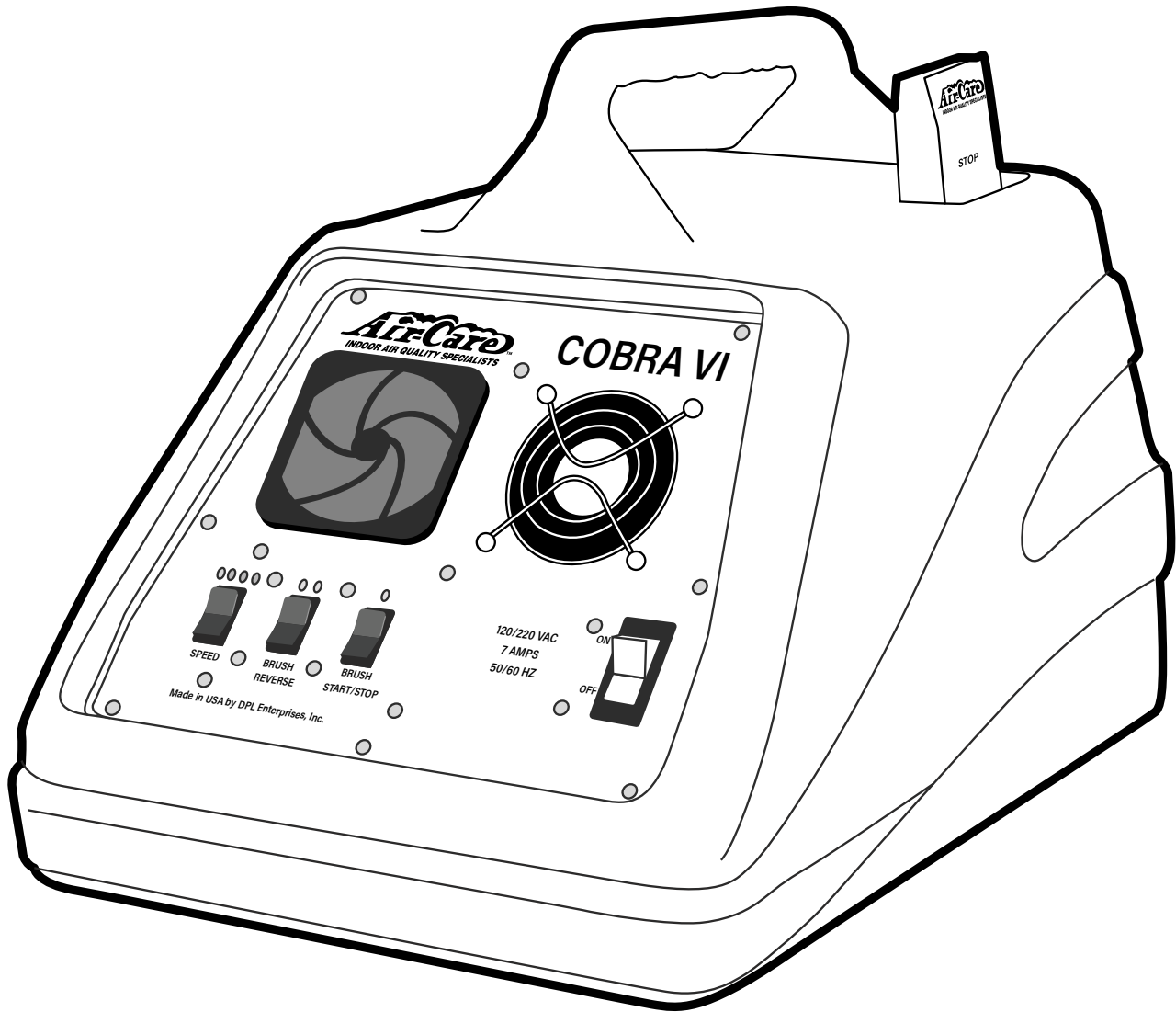
POWER BRUSH SYSTEM





# COBRA VI

POWER BRUSH SYSTEM



**Division of D.P.L. Enterprises Inc.**

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## TABLE OF CONTENTS

<b>CHAPTER</b>	<b>PAGE</b>
Unpacking and Safety Information	<u>4</u>
Operating Instructions	<u>5</u>
Duct Cleaning with COBRA VI	<u>6</u>
Troubleshooting Guide	<u>8</u>
Component Names & Locations	<u>9</u>
Parts List	<u>10</u>
Specifications	<u>11</u>
Glossary	<u>12</u>
Warranty	<u>13</u>

## UNPACKING & INSTALLATION INSTRUCTIONS

### UNPACKING & INSTALLATION INSTRUCTIONS

Remove the outer box and inspect for damage. Report all damage immediately to your carrier. If special setup instructions are required, they will be taped to the outside of the equipment or in the "Operating" section of this manual, available online.

Inspect all of the packing material for small parts before discarding packaging material. Report all damage to Air-Care immediately. Any attempt at repairing damages may void warranty.

#### **Check that all parts are present (See Pages 6-7)**

1. COBRA-VI variable speed motor drive unit.
2. Flexible drive cable, 3/8" core by 35 feet long.
3. Flex-E-Bristle Brush, for use in 4" to 18" diameter air ducts.
4. 5 Button Wireless remote control handheld transmitter with 2-AA batteries installed.
5. Commercial Option (12"-36" diameter Flex-E-Bristle Brush.)

### **SAFETY PRECAUTIONS:**

Always use safe and common sense precautions when working with Air-Care equipment. Do not block walkways with equipment, and remove delicate and breakable articles from the immediate work area. The following are precautions that should be reviewed by all persons who will be involved in the cleaning activity.

- There are no user serviceable components in the COBRA VI; only trained technicians should attempt to make internal repairs on this equipment. Call Air-Care 800-322-9919 for tech Support.
- Never use the COBRA-VI in a wet environment.
- Always turn off the main power switch/Breaker on the COBRA-VI panel when the brush and cable are laid down to prevent injury if the START switch is accidentally activated.
- Be sure all power cords and electrical extensions are rated to meet or exceed the original Air-Care power cord spec's, and inspect AC power plugs to be sure the ground pin is in place.
- Never connect power to Air-Care equipment unless all covers and safety shields are in place. Mechanical and electrical parts could be activated and cause injury.
- Never allow anyone but a properly trained technician to use Air-Care equipment or cleaning products.
- All Air-Care equipment is designed for US standard 115 volt, 60 Hz AC. Most Air-Care equipment can be special ordered to meet other worldwide standards for a reasonable price and delivery schedule. Always check the specifications on the Equipment before connecting electrical power to Air-Care equipment.
- Keep the cable clear of breakable objects as it can flip and twist during higher torque applications.
- Turn off main power switch when removing or replacing the Flex-E-Bristle Brush. If you have questions about the safe use of any Air-Care product, call 702-454-5515.

# OPERATING INSTRUCTIONS

## Setup and Testing

1. Place the Cobra VI drive unit on the floor or other stable surface near the ducts to be cleaned.
2. Connect a power cord to the pigtail on of the rear of Power unit and to a standard 115 volt grounded AC outlet (**ill. 1**).
3. Attach the flexible shaft to the motor unit by first aligning the square end of the shaft with the square hole in the drive unit, then screwing the black disconnect nut onto the 2" diameter, threaded end of the coupler. This nut should be snug, but NOT excessively tight (**ill.2**).
4. Hold the outer cable housing near the Flex-E-Bristle Brush. Hold the brush where it will not hit you or other objects when it begins to rotate. It should only be started AFTER it is inside an air duct.
5. Turn on the power breaker/switch (**ill. 3**).
6. Using caution, Press the "START" button on the rocker switch on the Control panel (**ill. 4**). The brush will be started in its LOWEST speed. If a new brush cable is still rolled up tighter than a 30" diameter, it may not turn due to internal friction. Open up the size of the coiled cable and try to run it again.
7. The Cobra VI always starts in the Lowest of its 4 speeds. If a higher speed is required use the rocker switch on the Control Panel (**ill.5**). Once the brush is turning, test other functions by increasing the speed slowly to maximum by pressing the Speed Increase button 3 times, then press the Speed Reduce Button. Be careful to not let the brush hit anything breakable. The direction of rotation can be changed by pressing the "Change Directions" switch (**ill.6**). The brush will slow to a stop then start to turn in the opposite direction at the lowest speed.
8. Now Press "STOP" (**ill. 7**) before going on to test the Remote Controls.
9. The handheld remote (**ill. 8**) can now be tested for the same functions to START, STOP, Change Directions, Increase Speed and Decrease Speed. Use caution when changing the direction of rotation. The back torque in the cable may flip the coils of the cable with the possibility of hitting breakable objects in the immediate area. To reduce this condition, The Brush Speed will always return to Speed #1 when the Rotational Direction is changed. You may then increase it with the speed switch.
10. NOTE: When the Change Direction switch is activated, the Lights on the Panel switches will flash while the Brush is slowing to a stop and restarting in the SLOWEST speed.
11. The brush **MUST BE STOPPED BEFORE INSERTING IT INTO AN AIR DUCT.**
12. **DO NOT CRIMP THE CABLE WHEN STORING OR TRANSPORTING. THIS MAY BEND THE STRANDS IN THE CABLE CAUSING PREMATURE FATIGUE AND FAILURE.**



Illustration 1

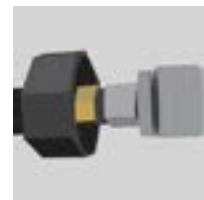


Illustration 2



Illustration 3



Illustration 4



Illustration 5



Illustration 6



Illustration 7

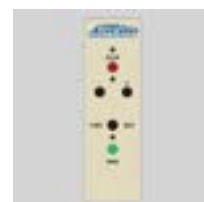


Illustration 8

## DUCT CLEANING PROCEDURES



1. Bring the TurboJet into close proximity to the planned connection ducts.



2. Pre-vacuum and plug these openings.



3. Attach the TurboJet or other negative air machine to the system.



4. If the Return has a Filter, Remove the filter, place it in a Plastic bag and reinstall the filter into the return to block air flow through the air system during cleaning. Do not forget to remove this bag when the job is complete.



**5. CAUTION: DO NOT INSERT OR REMOVE THE BRUSH FROM THE DUCT WHILE THE BRUSH IS TURNING**



6. Begin at the duct opening farthest from the furnace/air conditioner.

7. With the Brush **STOPPED**, insert the brush and cable assembly one or two feet into the duct to be cleaned. **THE MACHINE END OF THE CABLE MUST BE STRAIGHT FOR AT LEAST 4 to 5 FEET TO REDUCE THE FRICTION and HEATING OF THE CABLE HOUSING.** A tight bend in the cable will cause friction that will damage the cable housing and cable resulting in costly repairs or replacement of the cable.

## DUCT CLEANING PROCEDURES (CONTINUED)

**8.** Start the brush by turning on the main power, press the **START** switch on the Remote and it will start in the lowest speed. The brush will begin to rotate within a few seconds. **NOTE:** The brush will begin to turn slowly in the Lowest Speed setting. Most duct cleaning will be done between 2 and 3 of the 4 speeds.

**9.** Push the Flex-E-Bristle Brush into the duct with a smooth gentle force. The brush will expand and compress to clean any size duct from 4" to 18" high and any width.

**CAUTION:** To clean duct board ducts, or older flex duct systems, the COBRA VI Brush system should be used at a lower speeds (1 or 2) with caution as its aggressive cleaning action may damage these delicate ducts. Internally insulated ducts, brittle flex ducts and fraying duct board ducts should NOT be cleaned with a power brush.

**10.** When the end of the duct is reached, the cable can be pulled slowly back toward the opening. If the duct is rectangular in shape, Press the "Change Rotation" on the Remote. The rotation of the brush in this direction will allow it to "Walk" to the opposite side of the duct from what was cleaned going into the duct and assure that both sides of the rectangular duct are cleaned.

**11.** Stop the brush 1 or 2 feet from the duct entrance then remove the brush. This duct opening can now be plugged with the foam plug, and the next duct opening cleaned in the same manner. Repeat this on each duct opening until all have been cleaned.

**12.** The duct system is now ready to be decontaminated by fogging in a duct sealant like Soot Set and an EPA registered sanitizer such as Envirocon.

# TROUBLESHOOTING GUIDE

## PRIOR TO TROUBLESHOOTING, CHECK THE FOLLOWING.

1. Be sure power cord is plugged in, AND the Breaker/switch is in the "ON" with the Light Lit. If there is no light, try another outlet.
2. When testing the motor use the remote switch to turn the motor on for the first test.
3. For testing leave the Speed at the Lowest Setting (1).
4. It is SAFER to run the COBRA VI with the cable end DISCONNECTED. You will be told when to attach it.

PROBLEM	CHECK	IF	ACTION
Motor does not run.	1. Did you follow the first 5 steps at the top of this page?	Yes  No	Be sure the Brush and Cable have been disconnected and Go to #2  <b>Follow the 5 instructions above then go to #2</b>
Motor does not run	2. Does the RED LED on the remote flash when the buttons are pushed?	Yes No	Go to #3 <b>The Remote may have a dead battery, Replace the 2- "AA" batteries and repeat the test. If it still does not light, go to #4</b>
Motor does not run	3. Turn the Motor "ON" with the Remote START button then Press "Change Rotation". Does the motor run in BOTH directions?	Yes No	The motor is good, but the remote is failing, Call Air Care.  <b>Go to #4</b>
Motor does not run	4. Use the Panel START switch and Change Direction Switch, and count to 4 to give it time to respond. Did Motor Run?	Yes No	The Remote appears to be failing, Call Air Care. 702-454-5515  <b>Contact Air-Care for advanced Diagnostics. 702-454-5515</b>
Brush Speed does not change	5. Press the PANEL "START" switch. Does the Motor start to run at any speed?	Yes No	Go to #7  <b>If the "Speed Indicator" lights on the Panel change? Contact Air-Care Tech Support.</b>
Brush Speed does not change	6. Does the Motor Start Light turn on after Pressing "START"?	Yes No	Go to #7  <b>Contact Air-Care Tech Support</b>
Brush Speed does not change	7. Press the Speed Increase button (+) and the Speed Decrease button, (-) several times. Does the Light Change on the Panel Speed Indicator?	Yes No	Attach the Cable and brush and verify that the Brush Speed changes with the Button.  <b>Go to #8</b>
Brush Speed does not change	8. Does the Brush Speed change when the Speed is increased and decreased.	Yes No	Repeat Test with the Remote.  <b>Contact Air Care Tech Support.</b>
Motor Runs until Cable and Brush Installed	9. Is the Cable coiled tightly or is this brand new cable?	Yes No	When being used, the cable must be coiled loosely, about 24" diameter or larger coils. A new cable must "break in" a few hours.  <b>Go to #10</b>
Motor Runs until Cable and Brush Installed	10. Is the Large 36" brush attached?	Yes No	The 36" brush should only be run at speeds of Lowest and Med Slow (1 and 2)  <b>Contact Air-Care Tech Support</b>
Final Test Run	11. Did the COBRA VI run properly in all modes?	Yes No	Problem solved. A power surge may have tripped the breaker.  <b>Look for the new symptom in the left column or call Air-Care Tech Support. 702-454- 5515</b>



## COBRA VI COMPONENTS



- A** Remote Control Front Sensor
- B** Intake Fan w/Filter
- C** Remote Control Storage Pocket
- D** Exhaust Fan
- E** 4 Speed Control Switch
- F** Change Brush Rotation Switch
- G** Brush Start/Stop Switch
- H** Power Switch Circuit Breaker Power On Light



- I** Grounded Power Cord
- J** Brush Cable Connector



## COBRA VI STANDARD ACCESSORIES



### OPTIONAL ACCESSORIES



## PARTS LIST

Ref #	Description	Included	Part #
1	COBRA VI, Complete with Standard Accessories 120/220	--	FG0194
2	COBRA VI, Motor & Control Box with Remote for 120 V and 220V	YES	SACOB0062
3	Brush and Cable, COBRA VI Std 3/8" Core x 35' Cable. WITHOUT brush, order 18" Flex-E-Bristle Brush (Ref#7)	YES	SACOB0015
4	Internal Parts for Motor and control panel	YES	Call
7	18" Flex-E-Bristle Brush, Standard Black Bristles for 4" to 18" Ducts	YES	SACOB0011
8	Brush Hub. The Hub for the Cobra VI brush can be fitted with other length and diameter bristles for special applications.	Optional	SACOB0005
9	18" Replacement Bristles, Standard Bristles, 18" x .021 diameter (5 changes)	Optional	BA0006
10	Handle, Coil'n'Carry	YES	FG0102
11	Power Cord, 3 ft Pigtail	YES	EC0186
13	Cable Housing 5/8" OD for 3/8" Core	Optional	COM0571
15	Cable Repair Kit, for Standard 3/8" Cable, Brush End	Optional	SACOB0020
17	Cable Repair Kit, for Standard 3/8" Cable, Machine End	Optional	SACOB0018
19	Allen Wrench, for Brush to Cable Set Screw, 1/8" --	Optional	BC0005
20	Disconnect Nut (For all Cobra Cables)	Optional	ACC0151
24	COBRA VI Instructions, This Document (Online at the Air-Care Website). P/N MM0206	YES	SAO0009
25	Control Panel Assembly with all parts	YES	SACOB0058
26	Motor, 1/2 HP 90 VDC, 1750 RPM	YES	M0005

## SPECIFICATIONS

Power Requirements:	120/220 VAC, 50/60 Hz 7.0 Amps
Size:	14.4" W x 19.5" D x 14" H
Weight:	28-lbs. motor case, 7-lbs. cable and brush
Motor:	90-Volt high torque DC motor
Controller:	90-Volt DC controller with speed and load correction
Cable Sizes:	Standard 3/8" core, 5/8" O.D. nylon housing, 35 feet long. Optional: 50-foot cable available
Brushes:	Standard: 4"-18" self adjusting Flexible Brush, Detachable Optional: 14"-36" self adjusting Flex-E-Bristle Brush
Power Cord:	Pigtail with grounded plug

*Specifications subject to change without notice.*

**If you have any questions, call Air-Care at 800-322-9919**

## GLOSSARY & ACRONYMS

1. **ACGIH** — American Conference of Government Industrial Hygienists
2. **ASHRAE** — American Society of Heating, Refrigerating, and Air Conditioning Engineers
3. **Air Handler/ AHU** — The Furnace or air conditioner that heats, cools and moves the air.
4. **Antimicrobial** — Agent that kills Bacteria, Molds and viruses. See "Sanitizer
5. **Arrestance** — An ASHRAE standard procedure to measure air filter efficiency (52.1)
6. **Bioaerosols** — Molds and bacteria that are found floating in the air.
7. **Biological Contaminants** — Bacterial, Mold/Fungus, viruses and their waste, byproducts and decomposition materials that can be inhaled and cause many types of health effects.
8. **Building Related Illness** — Diagnosable illness whose symptoms can be identified and whose cause can be directly attributed to airborne building pollutants (e.g., Legionnaire's disease, and hypersensitivity pneumonitis).
9. **CFM** — Cubic Feet per Minute, a measure of how much air is flowing in an air system.
10. **CO** — Carbon Monoxide, an odorless, toxic gas produced during combustion.
11. **CO<sub>2</sub>** — Carbon Dioxide an odorless, non-toxic gas produced during combustion and exhaled by people.
12. **Ceiling Plenum** — The area above a suspended ceiling that may be used as a return path to the Air Handler.
13. **Conditioned Air** — The air that has been filtered, heated or cooled by the air handler.
14. **Dampers** — Flaps or valves in the air duct that control the amount of airflow in the duct.
15. **Diffusers & Grilles & Registers** — The covers at the end of supply and return ducts that control the amount and direction of the air-conditioned air entering or leaving a room.
16. **Electrostatic Filter** — A High Efficiency (95% Arrestance) Air filter that generate static electricity from the air movement through the air handler and captures dust from the air while the clean air move freely through it.
17. **EPA** — Environmental Protection Agency
18. **Duct** — A metal, plastic or fiberglass tube that transports air to and from the Air Handler. They can be round, square or rectangular.
19. **Duct Board** — Compressed fiberglass material used to make air ducts, particularly in the southern U.S.
20. **Fiberglass Filter** — A disposable, very low efficiency filter (approx. 10% arrestance).
21. **Flex duct** — Plastic fabric duct with a spiral wire support. It is used extensively in the Western U.S.
22. **HEPA** — High Efficiency Particulate Air
23. **HVAC** — Heating, ventilation and air-conditioning
24. **IAQ** — Indoor Air Quality
25. **MSDS** — Material Safety Data Sheet
26. **Make-up Air** — Fresh "outside" air that is brought into a Commercial building.
27. **NADCA** — National Air Duct Cleaners Association
28. **NAFA** — National Air Filter Association
29. **NIOSH** — National Institute for Occupational Safety and Health
30. **Negative building pressure** — A condition that allows air to flow into a building when a door is opened.
31. **NSC** — Nevada Safety Counsel
32. **NSF International** — An independent testing laboratory for Air filters
33. **OSHA** — Occupational Safety and Health Administration
34. **Positive building Pressure** — A condition when air will come out of a building when a door is opened.
35. **Re-entrainment** — The flow of dust and debris removed from an air system back into the same building
36. **Return/Return Duct** — Ducts that brings air back to the furnace or air conditioner
37. **Sanitizer** — A material designed to kill mold, bacteria, and viruses.
38. **Sick Building Syndrome** — A group of symptoms such as headache and watery eyes that disappear after the sufferer leaves the building for a few hours.
39. **Supply/ Supply Duct** — The opening and related ductwork that delivers conditioned air to a room.
40. **VAV** — Variable air volume system – A system that varies the amount of flow of air to regulate temperature.
41. **VOC's** — See "Volatile Organic Compounds"
42. **Volatile Organic Compounds (VOC's)** — Chemicals that release gasses into the air such as solvents.

# LIMITED WARRANTY

## Cobra VI Power Brush System

Air-Care warrants this product to be free from defects in materials and workmanship to the original purchaser for a period of two (2) years from the date of purchase. Components listed below are excluded from this two year period and are covered for periods described below:

Motor	1 Year
Circuit Board & Remote	1 Year
Cable Assembly	90 Days
Brush Assembly	No Warranty

Warranty covers both parts and labor (labor is to be performed at Air-Care's facility located at 3868 E. Post Road, Las Vegas, Nevada).

Warranty is extended to the original purchaser and is not transferrable.

This warranty does not extend to any damage to a product caused by or attributable to freight damage, abuse, misuse, improper or abnormal usage. Warranty is also void if the product has been modified or altered in any way.

The purchaser is responsible for the cost of shipping the equipment to Air-Care's facility for evaluation. If found to be defective and covered by the terms of this warranty, Air-Care will pay FedEx ground shipping charges on the repaired or replaced item back to the purchaser's location. Any additional expedited service charges for quicker shipping shall be born by the purchaser. If the product or component is not found to be a warranty issue, the purchaser will be responsible for return shipping charges.

Air-Care is not responsible or liable for indirect, special, or consequential damages arising out of or in connection with the use of performance of the product; damages with respect to any economic loss, loss of property, loss of revenues or profits, loss of use, or other incidental or consequential damages of whatsoever nature.

The warranty extended hereunder is in lieu of any and all other warranties, and any implied warranties of any type.

This warranty gives you specific rights. These rights and others vary from state to state.

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