



COBRA-5

Power Brush System



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FG0110

Air-Care is a proud member

NADCA
National Air Duct Cleaners Association

ISSA
International Sanitary Supply
Association

NAFA
National Air Filter Association

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P/N MM0122

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.

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-5 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. Three position remote control switch with 15-foot cable. (Fwd-OFF-Rev)
5. 9 foot AC power cable.
6. Commercial Option (12”-36” diameter Flex-E-Bristle Brush.)
7. Dryer Duct Options (5/16” cable, 4” brush, Nest Claw, etc)

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-5; only trained technicians should attempt to make internal repairs on this equipment.
- Never use the COBRA-5 in a wet environment.
- Always turn off the main power switch on the COBRA-5 panel when the brush and cable are laid down to prevent injury if the “FWD-OFF-REV” 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 activate 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

Equipment Specifications and part numbers are subject to and change without notice.

Operating Instructions

Setup and Testing

The COBRA-5 is designed for use with a portable negative air machine to thoroughly clean round, square and rectangular ducts. Caution must be used when cleaning soft surface ducts such as **older, deteriorated** duct-board or flexible ducts. There is a torque control switch to reduce the torque when using the more flexible 5/16" Dryer Duct cable and accessories. **Always use the LOW torque setting when using the dryer duct cable.**

1. Place the Cobra 5 drive unit on the floor or other stable surface near the ducts to be cleaned.
2. Verify that the speed control on the panel is at "0", the power switch on the panel is off, "0", and the remote control is in the center "Off" position. (Page 6,7)
3. Connect the power cord to the inlet receptacle on of the motor unit panel and to a standard 115 volt AC outlet. (Page 6,7)
4. Set the "Torque" switch to "LOW" when using the dryer duct cable. The standard cable requires the "HIGH" torque setting in most cases.
5. 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.
6. The FWD/REV switch on the panel and remote should be in the center or "Off" position.
7. 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.
8. Turn on the power switch, then turn the speed control to approximately "30".
9. Using caution, flip the switch on the remote to "Forward" and wait a few seconds for the brush to begin to turn slowly. If it fails to turn, go to the trouble shooting section, page 9.
10. Once the brush is turning, you may want to test the unit by increasing the speed slowly to maximum then back to zero. Be careful to not let the brush hit anything breakable. The remote switch can be set to "Off", then "Reverse" and the speed control slowly adjusted up and down to complete the test. Use **caution** when **changing** the direction of **rotation**. Pause in the "STOP" position momentarily when changing from Forward to Reverse or Reverse to Forward or the cable may flip around with the possibility of hitting breakable objects in the immediate area.
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.**

Duct Cleaning *

1. Before using the COBRA-5 to clean the air system, the supply and return duct diffuser grills must be removed. Also, pre-vacuum and plug these openings, and then attach the Turbojet or other negative air machine to the system.
2. **CAUTION: DO NOT INSERT OR REMOVE THE BRUSH FROM THE DUCT WHILE THE BRUSH IS TURNING**
3. Begin at the duct opening farthest from the furnace/air conditioner.
4. 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.
5. Start the brush by turning on the main power, set the speed dial to 30 or 40, and then flip the remote switch to "Forward". The brush will begin to rotate within a few seconds.

NOTE: The brush will begin to turn slowly at 10 to 20 on the Dial. Most duct cleaning will be done between 30 and 60 on the scale (200 to 900 RPM).

6. 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-5 Brush system should be used at a low speed 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.

(See Forward and Reverse Air Whisk and Sidewinder, on www.air-care.com)

7. 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, stop the COBRA-5 with the remote switch, then run it in the Reverse direction as you pull it back to the duct opening. This will assure that the brush cleans both sides of the rectangular duct.
8. 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.
9. 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.

* For a complete Duct Cleaning Procedure Summary refer to the back of this manual. Air-Care also has classroom and self-study training programs available. Please visit our website at www.air-care.com or call 800-322-9919 for a free catalog.

Dryer Duct Cleaning *

Dryer exhaust ducts vary in construction, materials and configuration from city to city. The general procedure for using the COBRA-5 Power Brush system described here may need to be modified to safely and effectively clean these ducts in your area.

CAUTION: Cleaning the exhaust duct on a clothes dryer will improve performance and reduce future lint build up, but the dryer itself must also be cleaned and lint removed from its fan, heating area and other interior components to reduce the risk of fire.

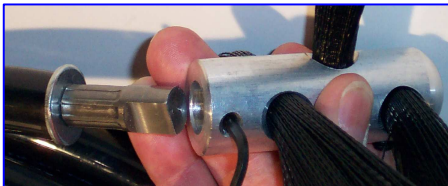
1. With the dryer running, clip the outside flap “OPEN” and check the airflow at the exhaust with a flow meter. Write down the reading for comparison after cleaning.
2. Turn off the dryer, remove power, then move it away from the wall and disconnect the exhaust tubing. If it is a gas dryer, be careful to not damage or break the gas line.
3. Apply vacuum to the end of the exhaust duct (inside or outside, depending on configuration).
4. Use the COBRA-5 in “Low Torque” mode with the 5/16” flexible dryer duct cable.
5. Set the speed dial to 50 or 60 and insert the brush into the exhaust duct.
6. Turn the remote switch to “FORWARD”, and push the brush into the duct with the cable.
7. If resistance is met, try reversing the rotation of the brush and pushing it in again.
8. If the cable cannot be pushed all the way to the end of the duct, it may be necessary to insert the cable and brush from the other end of the duct.
9. If there is a visible lint clog or bird nest, the nest claw may be needed to break it up.
CAUTION: The nest claw can be very aggressive, and may damage flexible ducts.
10. If you have access to only one end of the exhaust duct, the Air-Care Vent Vac 4x4 “Y” adapter allows the vacuum and the cable to be inserted from the same end of the exhaust duct.
11. Remove the back cover of the dryer and clean out the lint on internal components. Usually 4-8 screws are used to mount the back cover. Access to the interior of the dryer will vary with model, be careful to not damage it.
12. Once the duct and dryer are clean, connect the dryer to the wall opening with aluminum hose. (The Consumer Product Safety Commission does NOT recommend plastic connector hoses, nor does any major dryer manufacturer).
13. Turn the dryer on and again check the airflow outside. Typically over 1000 fpm (Feet Per Minute) is good, and less than 1000 fpm is not. If the flow has increased substantially over the original flow rate, you have been successful.
14. Clean up any lint around the outside of the dryer, clean the exterior of the dryer and if you have a sticker or magnet, date it for a follow-up cleaning in 12 months.

*** For complete Instructions on Cleaning Dryer Ducts, see the Air-Care Dryer Duct Cleaning Video.**

Control Panel Components

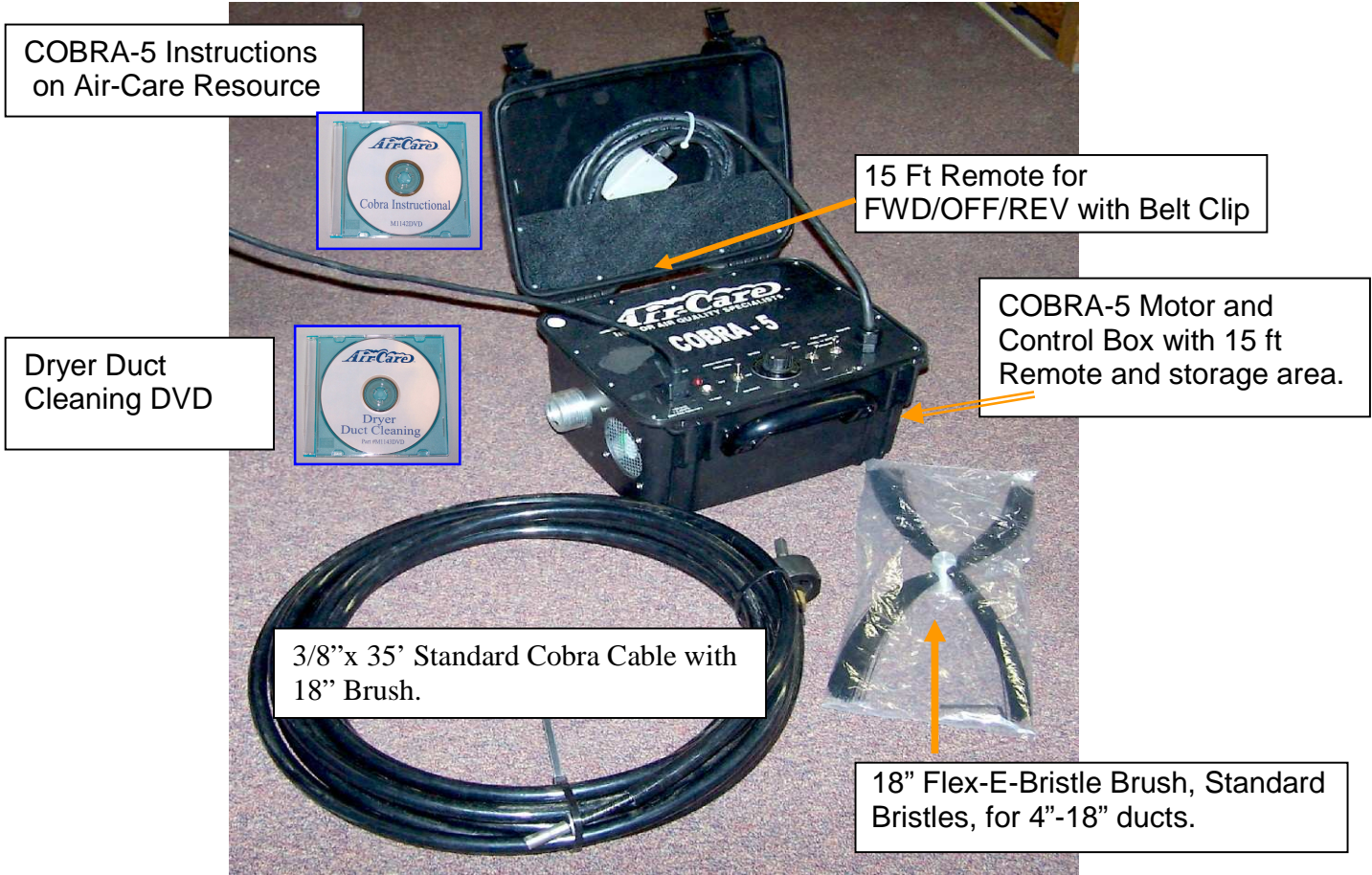


Installing Cobra Cable to Motor Box coupler.



Installing Flex-E-Bristle Brush on Cobra Cable

COBRA-5 Standard Accessories



Optional Accessories



Parts List

Ref #	Description	Included	Part #
1	COBRA-5, Complete with Standard Accessories 120/220	--	FG0110 Rev B
2	COBRA-5, Motor & Control Box with Remote for 120 V and 220V	YES	SACOB0038
3	Brush and Cable, COBRA-5 Std 3/8" Core x 35' Cable. No brush, order 18" Flex-E-Bristle Brush (Ref#7)	YES	SACOB0015
4	Internal Parts for Motor and control panel	YES	Call
5	Dryer Duct Cable, 5/16" core x 20', Comes w/ 4" Dryer Duct Brush	Optional	FG0058
6	Dryer Duct Cable, 5/16" core x 35', Comes w/ 4" Dryer Duct Brush	Optional	FG0060
7	18" Flex-E-Bristle Brush, Standard Black Bristles for 4" to 18" Ducts	YES	SACOB0011
8	The Brush Hub for the Cobra 5 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, 9 foot	YES	EC0012
12	Dryer Duct Brush, 4" w/ Lint Buster Ball	Optional	FG0072
13	Cable Housing 3/4" OD for 3/8" Core	Optional	COM0022
14	Nest Claw for Dryer Ducts	Optional	FG0089
15	Cable Repair Kit, for Standard 3/8" Cable, Brush End	Optional	SACOB0020
16	Cable Repair Kit, for Dryer 5/16" Cable, Brush End	Optional	SACOB0021
17	Cable Repair Kit, for Standard 3/8" Cable, Machine End	Optional	SACOB0018
18	Cable Repair Kit, for Dryer 5/16" Cable, Machine End	Optional	SACOB0019
19	Allen Wrench, for Brush to Cable Set Screw, 1/8" --	Optional	BC0005
20	Disconnect Nut (For all Cobra Cables)	Optional	ACC0151
21	Air Flow Meter – Thermo-Anemometer	Optional	FG0096
22	Vent Flap Clip	Optional	COM0196
23	Dryer Duct Cleaning Instruction DVD	Optional	SAO0039
24	COBRA-5 Instructions, This Document (On Air-Care Resource CD). P/N MM0122	YES	SAO0009
25	DVD, Cobra Instructional Video	YES	SAO0130
26	Motor, 1/2 HP 90 VDC	YES	M0005
27	Remote, Direct Attached, 15 ft cable, Box, switch & belt clip	YES	SACOB0033
28	Filter, Inlet, Polypropylene Cut to 3.06" Dia	YES	SACOB0054

Equipment Specifications and part numbers are subject to change without notice.

Troubleshooting Guide

Prior to troubleshooting, check the following.

1. Be sure power cord is in the power inlet on the COBRA-5 Motor Case Panel, AND the switch is in the "ON" or "1" position. The LED should be on, if not try another outlet.
2. When testing the motor, select "Remote" for FORWARD or REVERSE, and use the remote switch to turn the motor on for the first test.
3. Set the speed control on the front of the motor case to "40".
4. It is SAFER to run the COBRA-5 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 Follow the 5 instructions above then go to #2.
Motor does not run	2. Turn the Motor "ON" with the Remote switch in FWD Then switch to REV. Did the Motor Run in BOTH directions?	Yes No	Go to #3 The Remote switch may defective, call Air-Care
Motor does not run.	3. Switch the "FWD / REV" selector to "PANEL" and flip the "FWD/REV" switches to Forward then Reverse. Does the Motor run?	Yes No	The Remote Switch may be defective, call Air-Care. Go to #4
Motor Does not Run	4. Does the Motor HUM when turned on?	Yes No	Call Air-Care. Go to #5
Motor does not run.	5. Check the circuit breaker on the panel, has it popped up?	Yes No	Reset the circuit breaker and try the motor again. Go to #6. Call Air-Care
	6. Does the circuit breaker trip every time the motor is turned on in forward and reverse?	Yes No	Call Air-Care Run a full test in forward, reverse, fast and slow, If it runs OK, attach the brush and cable and run in all modes, then go to #7.
	7. Did the COBRA-5 run properly in all modes?	Yes No	Problem solved. A power surge may have tripped the breaker. Look for the new symptom in the left column or call Air-Care
The Brush slows down when set to #100 on speed Control	8. Is the Cable coiled tightly or is this a 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. Go to #10
	9. Is the Large 36" brush attached?	Yes No	The 36" brush should only be run at speeds of 5 and lower. Go to #11
	10. Is the standard cable being used (3/8" Core)	Yes No	Be sure the torque switch is set to "High" Call Air-Care
The Dryer Cable (5/16") twists	11. Is the torque switch set to "LOW"	Yes No	Call Air-Care Set the torque switch to LOW and test again.

Cobra Cable Repair Procedure

1. If one or more wires breaks at the end of a Cobra Cable, it should be repaired to prevent the strands from unraveling inside the housing and damaging the cable beyond repair.
2. The brush end is the most likely to be damaged during use, but the machine end can also be repaired in the same manner with the proper repair kit.
3. Locate the damaged area, and grind off at least 2 inches beyond the visible damage.
4. DO NOT USE A HACK SAW; it will cause the strands to separate. Use an abrasive chop saw or a grinder to cut the cable to the proper length.
5. The housing must be cut 2" shorter than the core.
6. Install the proper size repair end on the cable core (3/8" standard core or 5/16" dryer core). Be sure to reinstall the washer onto the end of the cable before the replacement end.
7. Tighten the collar set screws alternately a little at a time until the collar is holding the split end on the end of the cable securely.
8. The cable is now ready for testing. It should perform like new.

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

Specifications

Power Requirements:	120/220 VAC, 50/60 Hz 7.0 Amps
Size:	16" W x 12" D x 9 1/2" 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, torque and load correction. With "HIGH" and "LOW" torque settings
Cable sizes:	Standard: 3/8" core, 3/4" O.D. Nylon housing, 35 feet long. Optional: 50-foot cable available Optional: 5/16" core, 1/2" housing Dryer Duct cable available in 20 ft or 35-foot lengths
Brushes:	Standard: 4"-18" self-adjusting Flexible Brush, Detachable Optional 14"-36" Self-Adjusting Flex-E-Bristle Brush Optional 4" Dryer duct brush with Lint Buster Ball Optional: Dryer Duct Nest Claw
Power Cord:	9 foot grounded plug with "computer" type connecting socket.

Specifications subject to change without notice.

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. CO₂—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 us 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
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 5 POWERBRUSH

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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