

# ***DRAMM***



## **AME Horizontal Air Flow System Manual**

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## **Thank you for your purchase of this AME HAF System.**

Your Dramm AME Horizontal Air Flow System is designed to provide even, gentle air flow to homogenize temperature, humidity, CO<sub>2</sub>, and the general environment throughout the greenhouse and to gently remove the microclimate around the plant created by transpiration.

This system consists of both fans and speed regulation. Unlike other HAF systems that focus on speed, The AME System concentrates on even momentum. Lower, but consistent, air speeds provide more stable momentum, providing more even air flow with less turbulence and uneven crop drying.

Please direct any questions or service requests you might have to the contacts below.

**Dramm Corporation**  
Main Office  
PO Box 1960  
2000 North 18<sup>th</sup> Street  
Manitowoc, WI 54221

**Dramm Corporation**  
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[www.dramm.com](http://www.dramm.com)

## Limited Warranty

This is a limited warranty as defined in in the consumer product warranty and federal trade com- mission improvement act. This warranty gives you specific legal rights, which may vary from state to state.

Dramm Corporation warrants to the extent of the purchase price, that the AME Fans will be free from defects in materials and workmanship to the original purchaser for a period of three years. Parts subject to wear are not covered under this limited warranty. Defects or damages due to the misuse, non-observance of safety standards are not covered under this limited warranty. Please read and follow the instructions and heed warnings stated in the operating manual.

Dramm Corporation makes no other further warranty, expressed or implied, and all other or further warranties, including any warranties of merchantability or fitness for a particular purpose are expressly excluded.

In no event shall Dramm Corporation be liable for loss of product, profit or any other special, incidental or consequential damages including, but not limited to, plant damage, property or persons.

This warranty begins on the date of original purchase. If warranty service is required, the equipment must be sent prepaid to:

**AME Fan Service  
Dramm Corporation  
2000 North 18th Street  
Manitowoc, WI 54220**

## The Dramm AME System

The Dramm AME Horizontal Air Flow System is designed to run at lower speeds for best result. In most greenhouses, your fan speed should be approximately 50 - 60% of the maximum capacity of the fan. This will not only reduce turbulence and prevent uneven drying of your crop, but it will also reduce your electrical usage when compared to full speed operation. The chart below shows the two different AME fans at lower voltages and slower rpm. In each instance, the Watts are reduced as voltage to the fan is reduced. Lower operating costs result.

### AME350

Static Pressure (in.H2O)	Airflow (cfm)	rpm	Volts	Amps	Watts	cfm/Watt
0.00	1850	1430	230.0	0.75	171	10.8
0.00	1770	1359	220.0	0.77	164	10.8
0.00	1660	1276	210.0	0.77	156	10.6
0.00	1530	1189	200.0	0.77	145	10.6
0.00	1410	1083	190.0	0.75	134	10.5
0.00	1260	976	180.0	0.73	121	10.4
0.00	1140	887	170.0	0.66	109	10.5
0.00	990	776	160.0	0.67	97	10.2
0.00	870	687	150.0	0.63	85	10.2
0.00	750	589	140.0	0.60	73	10.3
0.00	630	494	130.0	0.55	61	10.3

### AME400

Static Pressure (in.H2O)	Airflow (cfm)	rpm	Volts	Amps	Watts	cfm/Watt
0.00	2860	1648	230.0	1.13	250	11.4
0.00	2820	1628	220.0	1.18	248	11.4
0.00	2780	1605	210.0	1.24	243	11.4
0.00	2740	1571	200.0	1.31	241	11.4
0.00	2640	1527	190.0	1.37	240	11.0
0.00	2530	1463	180.0	1.43	236	10.7
0.00	2350	1371	170.0	1.50	230	10.2
0.00	2110	1233	160.0	1.55	219	9.7
0.00	1800	1050	150.0	1.55	202	8.9
0.00	1490	868	140.0	1.50	176	8.4
0.00	1220	718	130.0	1.41	152	8.0
0.00	1000	599	120.0	1.30	127	7.9
0.00	820	495	110.0	1.18	102	8.0
0.00	630	382	100.0	1.05	80	7.9

Finally, low volume chemical applications can be improved with lower speed fans. High speed, basket fans can collect pesticide on the blades and can cause over-deposition beneath the fans. Slower moving, AME fans will not cause this potential damage.

While your fans should run at medium speed most of the time, there are some times where increased air speed is beneficial. Any time that the crop needs to be dried more quickly, higher air speeds can help. Your variable speed system allows you to have control on these occasions.

It is possible to have your climate control computer vary the speed through an analog connection (4-20 mAmp, 2-10 vDC) to our speed controller. Instructions on connecting this are detailed later in the manual.

## Hanging:

Due to differences in greenhouse construction, Dramm AME Fans do not come with specific mounting brackets. The fans have four mounting holes on the corners of the fan housing. These are suitable for bolting through to greenhouse trusses or other mounting hardware created on site.

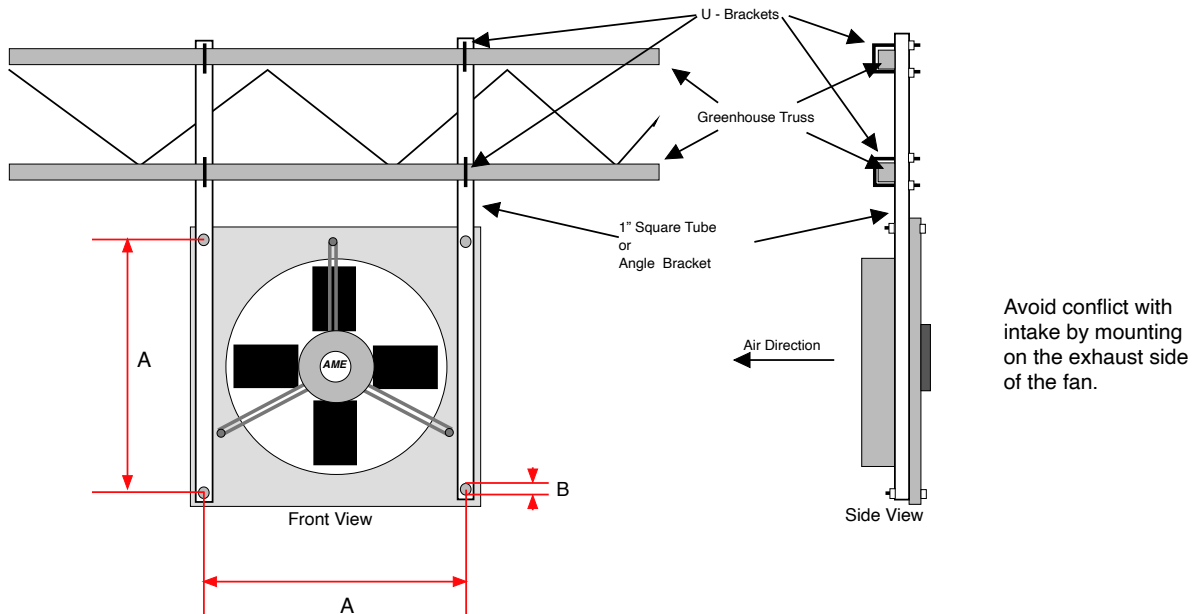
AME fans should be mounted level with the ground and rigid. Chains should not be used to hang AME fans.

Make sure that any mounting hardware that might obstruct air flow is mounted to the outlet (rough) side of the housing. Keep the intake free of all obstructions. Any obstruction may reduce the amount of air flowing through the fan.

AME fans do not include guards. When hung above 8 feet above the ground, guards are not required. If hanging fans below 8 feet, guards must be purchased and installed separately. Installation of guards is covered later in this manual.

A common method for hanging the AME fans is with 1" square tubing or angle bracket. A drawing of this is included below. Ensure that either is mounted on the OUTLET side of the fan to prevent a reduction of airflow.

**Height is dependent on crop and growing situation. Contact DRAMM with questions.**



ALL AME Fans are 220v Standard.

Fan	A	B
AME350	15.75"	.38"
AME400	17.48"	.38"

Fans do not include brackets or guards.  
Guards are available for fans placed lower than 8' above ground level.

# Wiring:

**NOTE: Three Wire Installation is Better for Large Installations.**

This will reduce motor wear and electrical consumption.

For best results the AME fans use a three wire regulation of motor speed. This increases electrical efficiency and reduces wear on the motor. In a three wire regulation installation of the AME fans full current 220v is connected to the start winding of the motor, the variable control current is connected to the run winding of the motor. This allows for a lower starting load, lower running load and less heat build up. The result is greater electrical efficiency and a longer motor life.

**General Guidelines:**

**Two Wire Installation:**

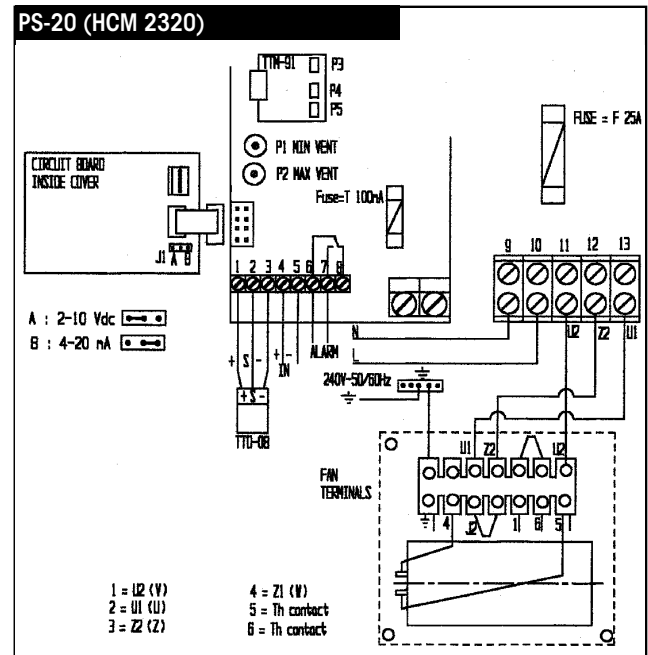
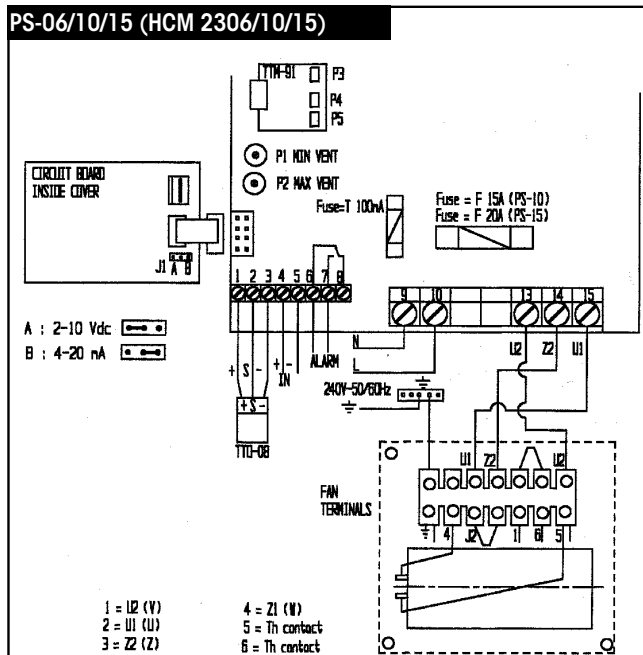
PS-06/10/15: Connect Line U1 from controller terminal 15 to fan terminal U1.  
Connect Line U2 from controller terminal 13 to fan terminal Tk (last).

PS-20: Connect Line U1 from controller terminal 13 to fan terminal U1.  
Connect Line U2 from controller terminal 11 to fan terminal Tk(last).

**Three Wire Installation:**

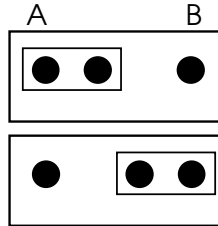
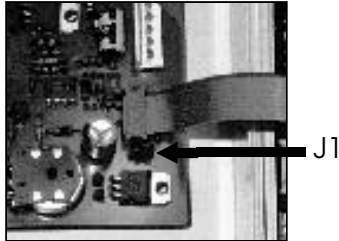
PS-06/10/15: Connect Line U1 from controller terminal 15 to fan terminal U1.  
Connect Line Z2 from controller terminal 14 to fan terminal Z2.  
Connect Line U2 from controller terminal 13 to fan terminal Tk(last).  
Remove jumper between U1 and Z2 (J2) on the rear of the terminal strip  
*see diagram and photos*

PS-20: Connect Line U1 from controller terminal 13 to fan terminal U1.  
Connect Line Z2 from controller terminal 12 to fan terminal Z2.  
Connect Line U2 from controller terminal 11 to fan terminal Tk(last).  
Remove jumper between U1 and Z2 (J2) on the rear of the terminal strip  
*see diagram and photos*

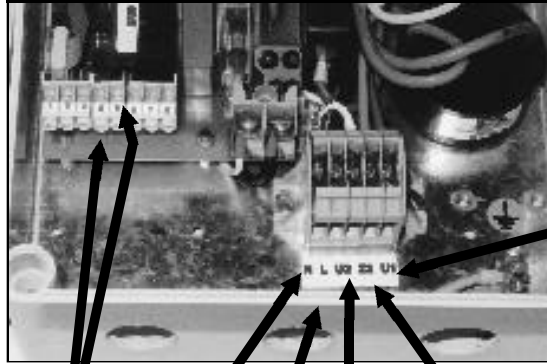


To control for an external source, connect control wires to terminals 4 and 5. Select correct control source with jumper J1. Bridge moves between A and B. see diagram and photos

Jumper J1 for External Control



PS-20 Terminals



Control input

L

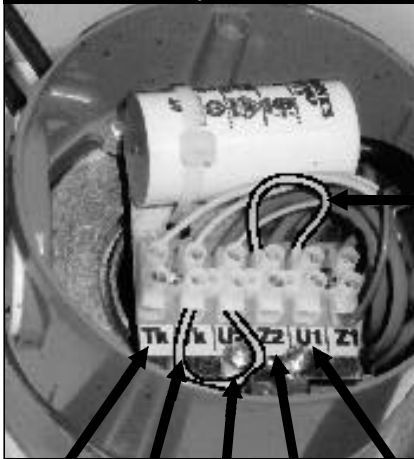
L

Connect to TK last on Fan

Connect to Z2 last on Fan (3 wire only)

Connect to U1 on Fan

Dramm AME Fan Capacitor & Terminals



Remove jumper for 3-wire regulation only

connect to controller terminal PS-10/15 # 13 or PS-20 # 11

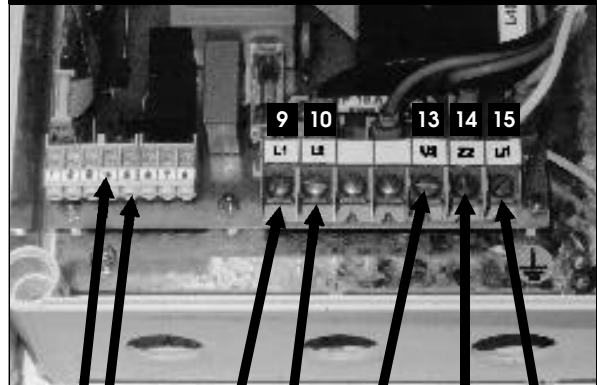
DO NOT remove this jumper

Ground

connect to controller terminal PS-10/15 # 14 or PS-20 # 12 (3 wire only)

connect to controller terminal 15 PS-10/15 # 15 or PS-20 # 13

PS-06/10/15 Terminals



Control input

L

L

Connect to TK last on Fan

Connect to Z2 last (3 wire only)

Connect to U1

NOTE: Terminals may be labeled 9-15 or by designation

**IMPORTANT: Wiring must remain consistent throughout the installation for speed control to work.  
DO NOT CROSS WIRES!**

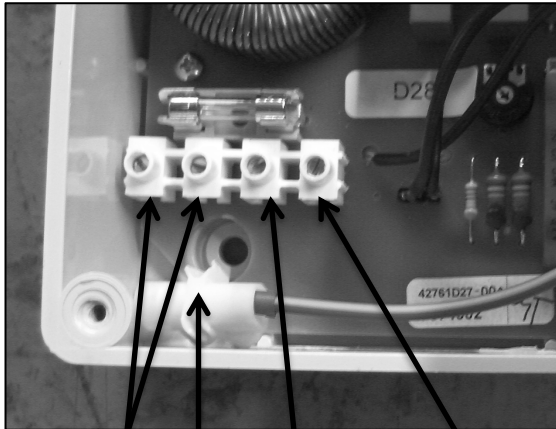
## ERW 2303/ERW 2305

If using the **PS-05** (ERW 2305), the following instructions should be used.

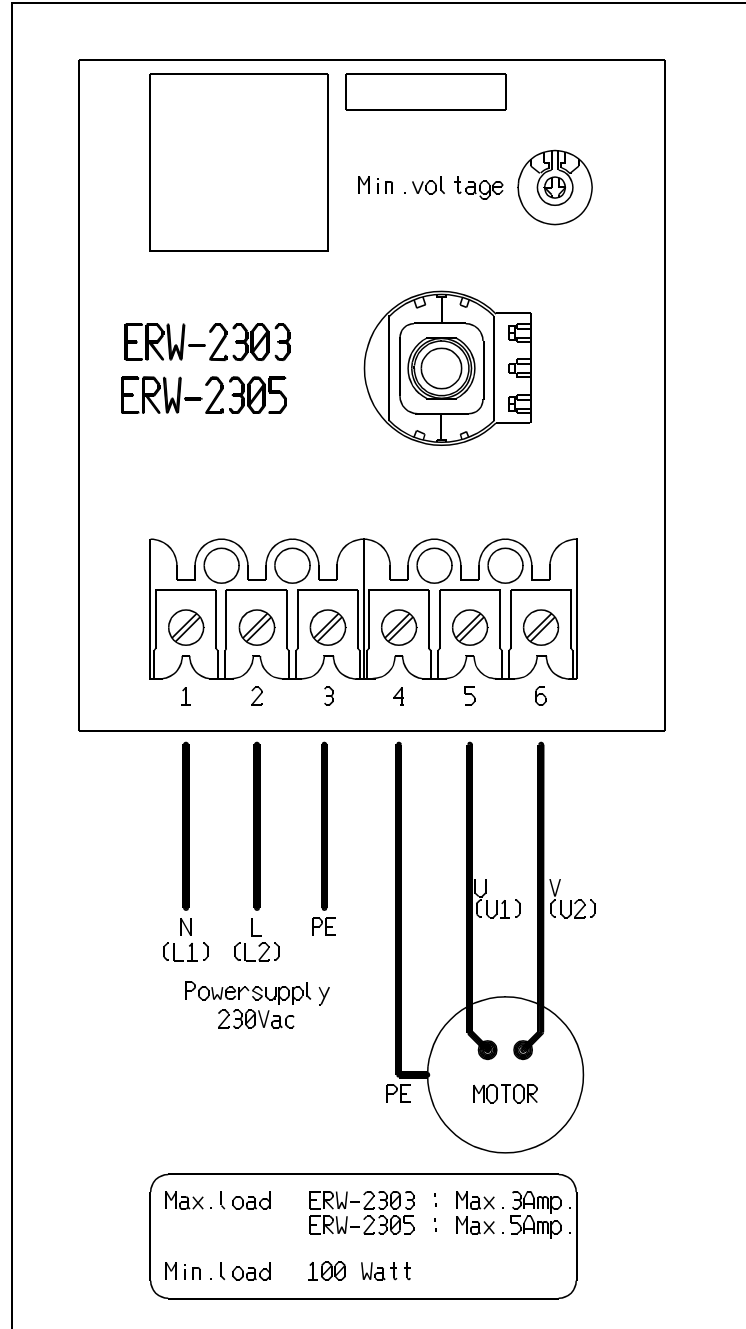
Connect line voltage to positions 1 and 2 and ground to position 3 on the controller.

Connect position 4 to ground on the fan.

Connect position 5 to U1 on the fan and connect position 6 to U2 on the fan.



Line In  
Ground  
To U1 in fan  
To U2 in fan





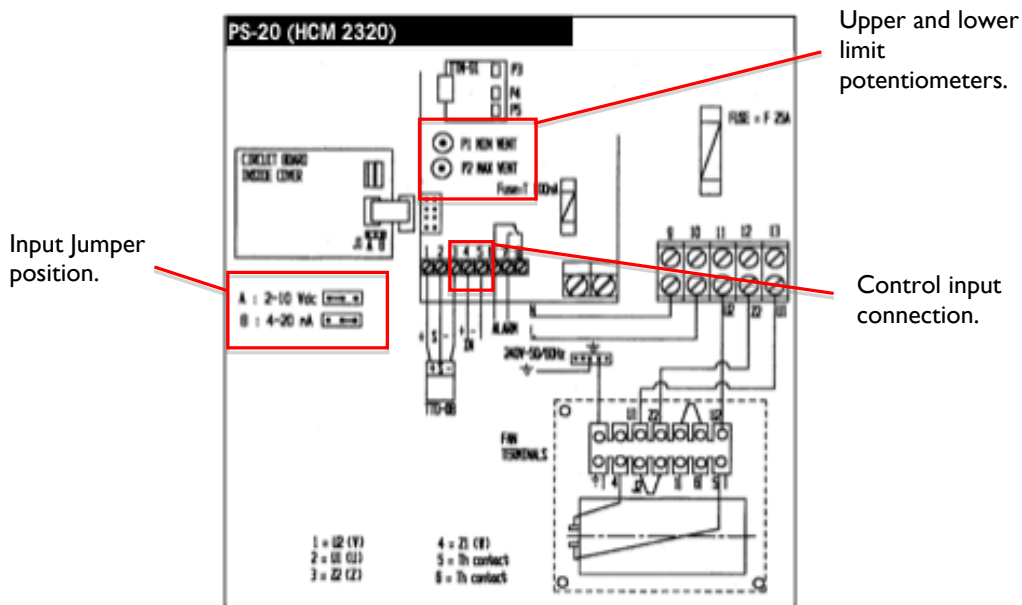
# AME Fan Speed Regulation from an External Controller

## Operation of DRAMM AME Fans from an External Computer

The speed of the Dramm AME Fans can be controlled by an external computer by using a proportional output signal connected to a Dramm Speed Controller.

Each of the following Speed Controllers have an input that will accept either a 20-Vdc or 4-20 mA signal. The signal type is selected by the position of jumper J1 as seen in the diagram below.

Upper and lower limits on the speed of the fan are set using the minimum and maximum ventilation potentiometers inside the controller. These are also highlighted on the diagram below. **This may need to be adjusted depending on voltage and load. Use a meter to measure voltage for best results.**

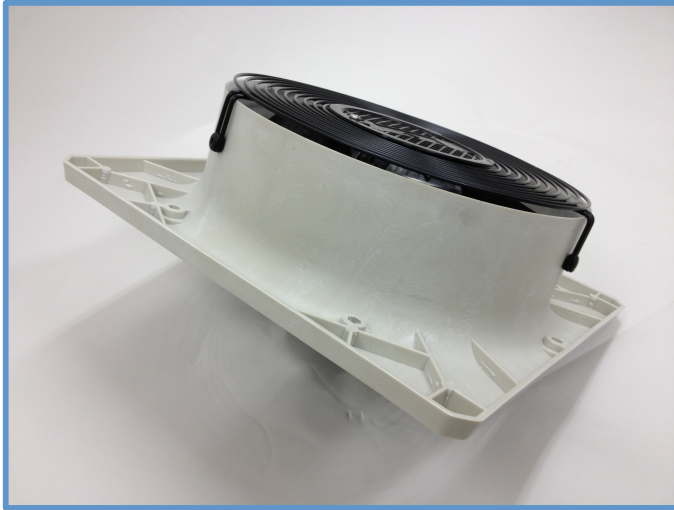


As these signals are proportional analog signals, the controller will accept the low signal as the minimum ventilation rate and the high signal as the maximum ventilation rate. As the signal increases from low to high, the controller will adjust proportionally.

**NOTE: Any signal from an external source will override the knob on the front of the speed controller. If there is no signal, the knob on the front of the speed controller will adjust the speed of the fans.**

As a result, this feature can be used to turn off the fans when desired. If the knob is in the OFF position (turned fully to the left, a click will indicate this) and there is no signal, the fans will be turned off.

## Optional Guard Installation



The front guard is pressure fit. The rubber grommets will hold the guard in place with friction alone. Just press into place over the front housing of the fan.



Grommets hold the guard securely.



The rear guard is held in place by the 3 motor mounting brackets.

Place the fan exhaust side down on a flat surface.

Remove the bolts holding the mounting brackets in place.

Slide the brackets through the space between the first and second wire guard rings and reconnect the brackets to the fan housing.

**Notes:**

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