

## AGG5.305

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### Product Description

AGG5.305 is a speed sensor kit used for monitoring the speed of a motor when using a VFD on an LMV3... or LMV5... linkageless controller. This kit is used to mount the speed sensor directly to the motor housing, and comes with 1/2" and 3/4" NPT conduit connections.

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### Components Supplied

Figure 1 shows the components supplied with the AGG5.305 speed sensor kit:



**Figure 1: Pieces Supplied with the AGG5.305 Speed Sensor Kit**

- |                                      |  |
|--------------------------------------|--|
| 1. 3-finger speed wheel              | 9. 7/8" x 1" O-ring                    |
| 2. (2) 3/8" x 1" disc spring washers | 10. Conduit adapter                    |
| 3. 3/8" shoulder screw               | 11. O-ring compression plate           |
| 4. Speed sensor with locknut         | 12. (2) 1/4"-20 x 5/8" hex head screws |
| 5. Mounting back plate               | 13. (2) 1/4" split lock washers        |
| 6. (4) #4-40 x 1/2" pan head screws  | 14. 5/16"-18 hex screw                 |
| 7. (4) #4 split lock washers         | 15. 3/8" x 3/4" disc spring washer     |
| 8. Speed sensor mounting block       |  |
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## Recommended Installation Tools

The following tools are recommended for installing the AGG5.305 speed sensor kit:

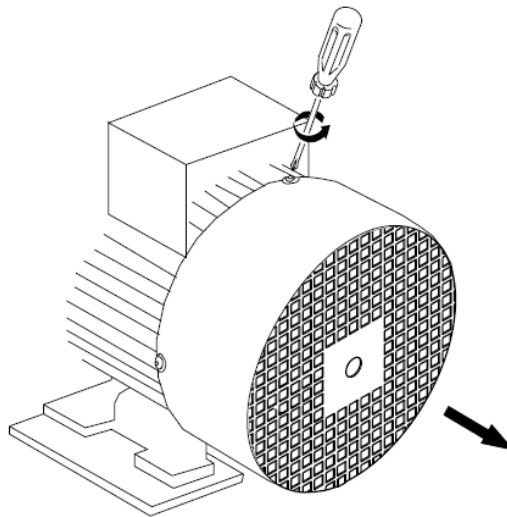
- Drill press (or hand drill)
- F (0.257") drill bit
- 5/16"-18 tap
- 3/16" hex key
- Wire-cutting pliers
- Small flathead screwdriver
- 7/16" open-end wrench
- Crescent wrench

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## Installation Procedure

1. Ensure that a section of the motor shaft extends outboard of the rear bearing of the motor (fan cooled motor). The installation of kit AGG5.305 is not possible if the shaft does not extend outboard of the rear bearing. Then, remove the fan cover as shown in Figure 2 below.

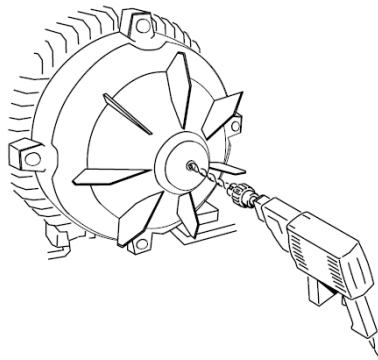
**NOTE: The AGG5.305 speed sensor kit comes with a 3-finger speed wheel, which can be used to reliably monitor motor speeds from 300-6300 RPM. For motor speeds less than 300 RPM, 6-finger speed wheel ADPT-6F should be used, which can reliably monitor speeds from 150-3150 RPM.**



**Figure 2: Removing the Fan Cover**

2. The motor shaft must be drilled and tapped in order to mount the speed wheel. It is preferable to use a drill press to drill a hole in the motor shaft before the motor is mounted. However, a hand drill can be used if necessary. If a hand drill is used, a guide should be used to ensure that the drilled hole is perpendicular and concentric to the end of the shaft.

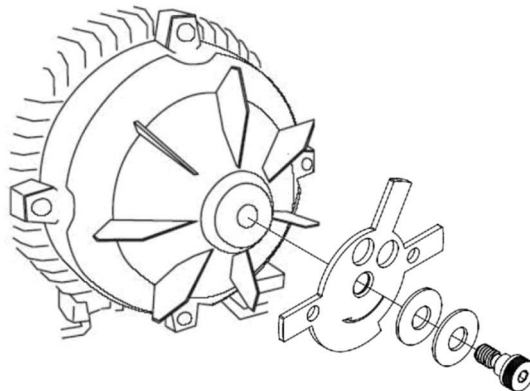
Using an F (0.257") drill bit, drill a hole 7/8" deep in the middle of the motor shaft. Then, using a 5/16"-18 tap, thread the hole until the tap bottoms out at the bottom of the hole.



**Figure 3: Drilling and Tapping the Motor Shaft**

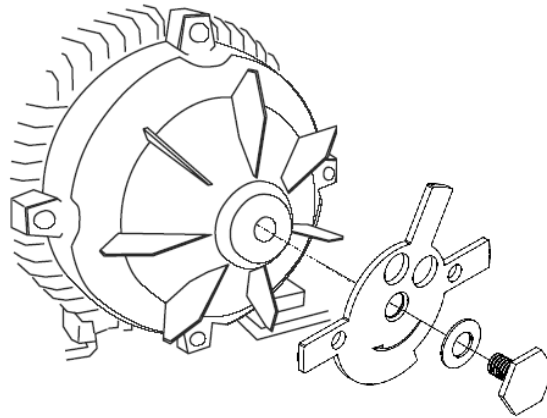
3. There are two available methods of mounting the speed wheel. If space allows, it is recommended to use Option 1.

**Option 1:** Using a 3/16" hex key, the 3/8" shoulder bolt, and the (2) 3/8" x 1" disc spring washers, install the speed wheel as shown in Figure 4a below. The tightening torque on the 3/8" shoulder bolt should be 180-220 in-lb. Make sure that the arrow on the speed wheel points in the motor's intended direction of rotation.



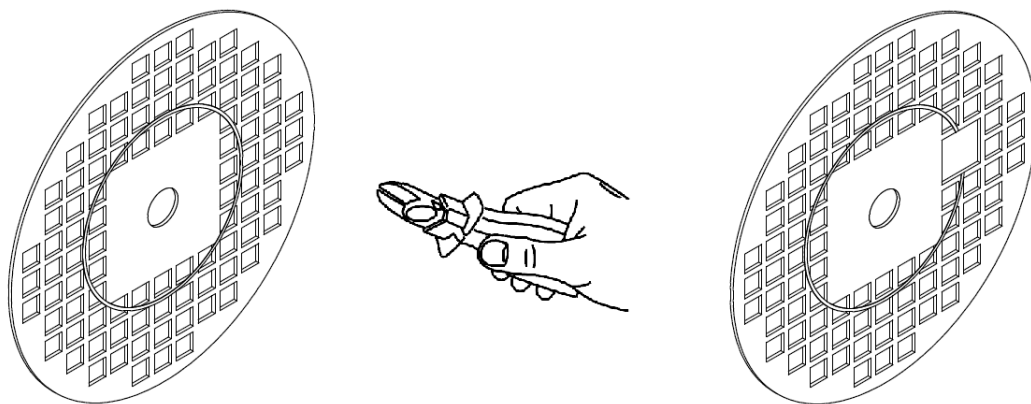
**Figure 4a: Speed Wheel Installation (Option 1)**

**Option 2:** If the end of the motor shaft is too close to the motor housing, the shoulder screw from Option 1 will interfere with the motor housing. In this case, using a crescent wrench, the 5/16"-18 hex screw, and the 3/8" x 3/4" disc spring washer, install the speed wheel as shown in Figure 4b below. The tightening torque on the 5/16"-18 hex screw should be 25-50 in-lb. Make sure that the arrow on the speed wheel points in the motor's intended direction of rotation.



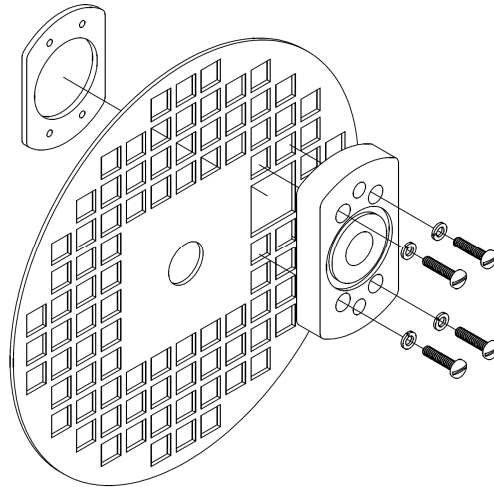
**Figure 4b: Speed Wheel Installation (Option 2)**

4. On the fan cover, draw a circle concentric with the motor shaft having a diameter of 3". **NOTE: If using a 6-finger speed wheel, use a diameter of 3.75" instead.** Using a pair of wire-cutting pliers, cut out a small window in the cover, about 3/4" x 3/4", with the center of the window being on the circle that was just drawn. If this was done correctly, the speed sensor should mount near the end of the "fingers" of the speed wheel.



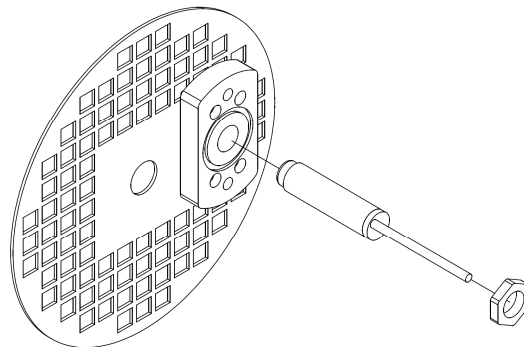
**Figure 5: Cutting a 3/4" x 3/4" Window in the Fan Cover**

- Using a small flathead screwdriver, the mounting back plate, the (4) #4-40 x 1/2" pan head screws, and the (4) #4 split lock washers, mount the speed sensor mounting block as shown in Figure 6 below. Only snug the screws for now. Align the speed sensor mounting block so that it is roughly centered on the 3/4" x 3/4" window in the fan cover. Replace the fan cover.



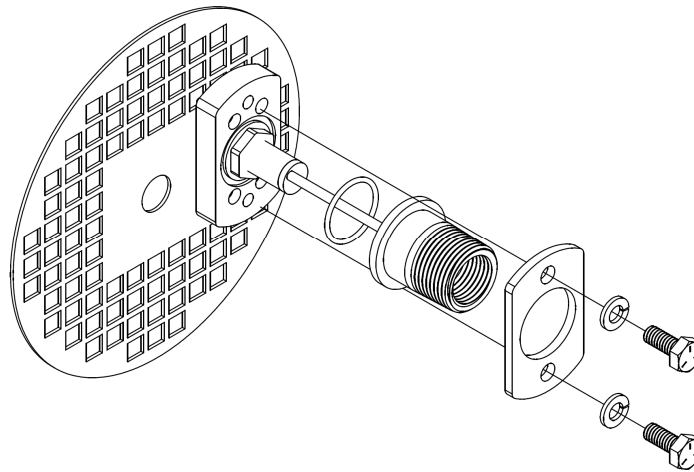
**Figure 6: Installation of the Speed Sensor Mounting Block**

- Thread the speed sensor into the speed sensor mounting block. The speed sensor should align so that it is near the end of one of the speed wheel's fingers. If it is not, loosen the (4) pan head screws, and move the mounting block to achieve the proper radial alignment. Tighten the screws once the correct alignment has been achieved. To set the depth of the speed sensor, thread the sensor into the bracket until it touches one of the speed wheel's fingers. Then, back the sensor out two revolutions. This will achieve an axial gap of approximately 1/16". Thread the locknut onto the sensor and tighten it using a crescent wrench without rotating the sensor.



**Figure 7: Speed Sensor Installation**

- Slide the O-ring over the sensor and into the O-ring gland in the speed sensor mounting block. Next, slide the conduit adapter through the O-ring compression plate. Slide both the conduit adapter and O-ring compression plate over the sensor. Using a 7/16" open-end wrench (or crescent wrench), the (2) 1/4"-20 x 5/8" hex head screws, and the (2) 1/4" split lock washers, fasten the compression plate against the mounting block as shown in Figure 8 below.



**Figure 8: Compression Plate and Conduit Adapter Installation**

- Using a male 1/2" NPT conduit fitting or a female 3/4" NPT conduit fitting, connect the conduit to the conduit adapter. If a 45° or 90° fitting is being used, the orientation of the fitting can be adjusted by loosening the 1/4"-20 hex head screws in the compression plate, rotating the conduit adapter to the desired orientation, and then tightening the 1/4"-20 hex head screws again.

Alternatively, a cord grip having male 1/2" NPT threads can be screwed into the conduit adapter.

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