

# Blade Measurement and Adjustment Instructions For Style “C” Cast Aluminum Blade Propeller Fans

**NOTE:** Before attempting to measure or adjust the fan blades, **make sure the unit is off and power has been disconnected.** Carefully remove any fan appurtenances to gain access to the blade assembly.

1. USE OF BUBBLE-TYPE PROTRACTOR.

American Coolair can provide a bubble-type protractor head for field use in checking and setting the blade angle of adjustable pitch type fans. The protractor head is a 180° dial with a bubble.

2. POSITION OF FAN (OR BLADE ASSEMBLY). As the actual blade angle is a relationship to the plane of the blade hub, it is necessary to check the hub section in the horizontal or vertical plane. This can be done by setting the protractor head on either 0° or 90° and checking the angle of the hub section. See figures on reverse side.

3. MEASUREMENT OF BLADE PITCH. American Coolair blade angle settings are measured at the extreme tip of the blade. To check the existing blade angle on a propeller, the protractor head should be placed across the concave face of the blade as near the tip of the blade as possible. As the blade angle changes approximately 1° per linear inch of the blade, make whatever adjustment is necessary for a measurement made an inch or more away from the blade tip.

(a) MEASUREMENT OF BLADE ANGLE WITH PROPELLER IN VERTICAL PLANE. Position one blade so that it is in a horizontal position. Place protractor head across concave face of blade at tip and measure pitch angle from 90°. Position successive blades at this same spot and check each pitch angle. See figures on reverse side.

(b) MEASUREMENT OF BLADE ANGLE WITH PROPELLER IN HORIZONTAL PLANE. Position protractor head across concave face of blade at tip and measure pitch angle from 0°. Check remaining blades in this same fashion. See figures on reverse side.

4. SETTING BLADE PITCH WITH BUBBLE-TYPE PROTRACTOR.

(a) Set correct angle on protractor head to provide desired blade pitch using measurement technique outlined above.

(b) Position one blade as suggested in step #3(a) and loosen U-bolts or blade retention clamps until blade can be rotated to correct angle. Retighten bolts, carefully check pitch angle to make sure of correct angle when blade is secure. Use of a torque wrench for this purpose is required. Torque should be set for a minimum of 16 ft. lbs. and a maximum of 18 ft. lbs. for propeller with U-bolts. For propellers with blade retention clamps, torque blade clamp nuts to 16-18 ft. lbs. Blade pitch angle on successive blades can be set and secured in the same fashion.

(c) Short cut to setting pitch on successive blades: After getting correct pitch angle on one blade, use sharp pencil and carefully scribe blade tip position on surface of adjacent orifice ring. With this reference mark other blades may be set to this exact position without use of a protractor head.

5. CAUTION. Any change in blade pitch from factory setting will affect motor load. An increase in blade pitch may result in motor overload and possible trip-out or damage to the motor. Motor load should be carefully checked after any adjustment in blade pitch to be sure it is within safe limits. It is recommended that you contact your American Coolair representative before making any adjustments in blade pitch.

## WARNING



## CAUTION

**DO NOT** INSTALL FAN WITH MOVING PARTS WITHIN 8 FEET OF FLOOR OR GRADE LEVEL WITHOUT A GUARD THAT COMPLIES WITH OSHA REGULATIONS. **DO NOT** USE UNLESS ELECTRICAL WIRING COMPLIES WITH ALL APPLICABLE CODES. **DO NOT** WIRE WITHOUT PROVIDING FOR A POWER SOURCE DISCONNECT AT THE FAN ITSELF. **DO NOT** SERVICE EXCEPT BY A QUALIFIED MAINTENANCE TECHNICIAN AND ONLY AFTER DISCONNECTING THE POWER SOURCE. FAILURE TO OBSERVE THESE PRECAUTIONS CAN RESULT IN SERIOUS INJURY OR DEATH.



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# Instructions for Vertically Mounted Blade Assembly

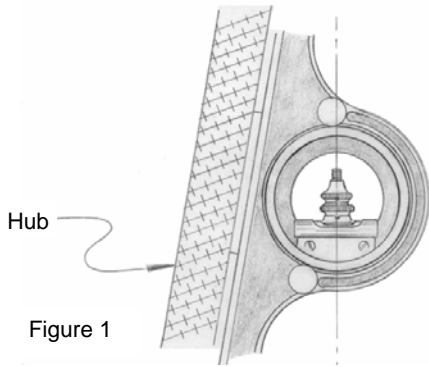


Figure 1

1. Place the protractor flat against the hub face or hub bushing as shown in Figure 1.
2. Turn the revolving turret until it indicates a balance point. See Figure 2. If you are using a digital protractor with an "Alt-0" function, set this position as the Alternate 0°, then place the protractor as described in step #4 to measure the blade angle.

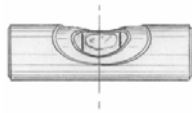


Figure 2

3. Turn the protractor around to read the angle as shown in Figure 3. Start from either zero point.

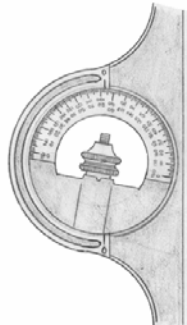


Figure 3

4. Place the protractor flat against the blade tip (as shown in Figure 4) and turn the turret until it indicates a balance point as in steps #1 & #2 above.

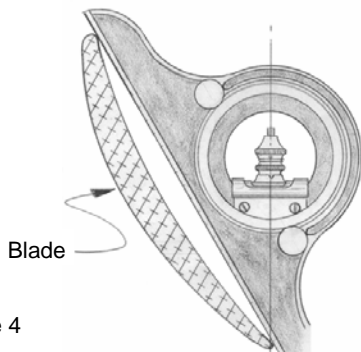


Figure 4

5. Proceed as in step #3, reading from the same zero point.
6. Subtract the smaller reading from the larger reading.  
**Example:** Reading in step #3 = 125°  
 Reading in step #5 = 140°  
 Blade pitch = 140° - 125° = 15°

# Instructions for Horizontally Mounted Blade Assembly

1. Set the protractor on the zero degree marks
2. Place the protractor flat on the hub face or hub bushing perpendicular to the axis of a blade. If you are using a digital protractor with an "Alt-0" function, set this position as the Alternate 0°. Otherwise, turn the blade assembly around slowly until the turret indicates a balance point. See Figure 5.

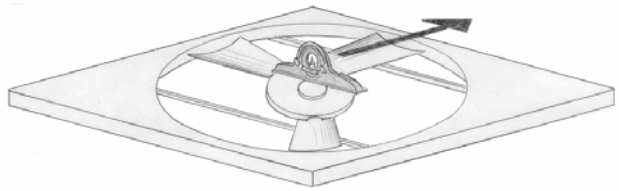


Figure 5

3. Once the zero point is determined, move the protractor along the blade directly across from the zero point position to the tip of the blade. Mark this point on the orifice of the fan. See Figures 5 & 6. Making sure each blade is aligned with this mark, take the pitch reading by placing the protractor flat against the blade tip as shown in Figure 4.

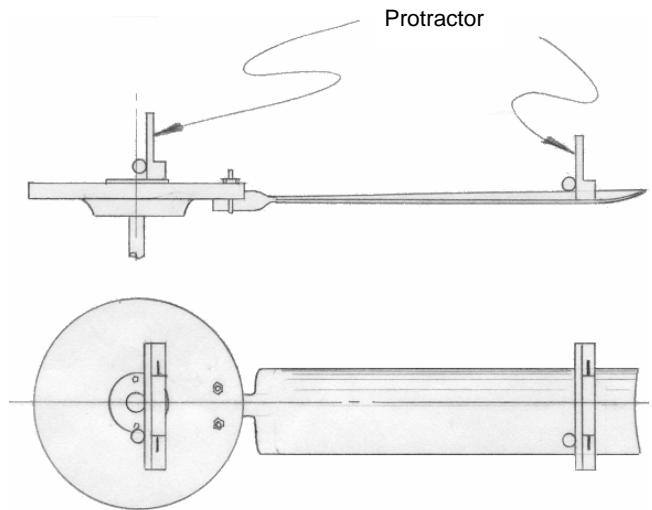


Figure 6

**NOTE:** The turret bubble should face left for both readings.