MULTI-WING FAN PITCH SETTING INSTRUCTIONS

When following the procedures below, the multi-wing fan construction allows for easy replacement of damaged fan blades. Before attempting to replace damaged blades, it is necessary to identify the correct fan configuration. Multi-wing fan configuration parameters are the blade pitch angle, rotation, and fan designation. Carefully review the configuration parameters below. Contact the Allied Systems Company Service Department if there are ANY questions regarding correct fan configuration.

Note: It is necessary to also replace the blade 180° from any damaged blade.

BLADE PITCH ANGLE

The blade pitch angle is set by placing a locking pin in the specified blade socket. The corresponding notch in the blade is placed over the locking pin and pressed into place (See Figure 3, page 5). Before disassembling the fan components, note which locking pin groove and blade pitch is used. (See Figures 1 and 2 for locking groove and blade socket notch identification).

⚠ WARNING

IT IS VERY IMPORTANT THAT THE CORRECT BLADE PITCH ANGLE IS MAINTAINED WHEN REPLACING INDIVIDUAL BLADES. IF THE BLADE PITCH ANGLE IS CHANGED, THE FAN MAY FAIL RESULTING IN INJURY OR DEATH.

Note: With the blade socket at 6 o'clock, locking pin grooves are designated 1-4, from left to right.

FAN DESIGNATION

The fan hub consists of two pieces – (1) hub and (1) retainer (See Figure 1). The fan hub is the male and the retainer is the female part of the set. Fan designation refers to the location of the hub with relation to air intake and discharge. Designations are divided into two types – "A" and "B". A fan with an "A" designation has the hub on air intake and the retaining ring on air discharge. A fan with a "B" designation has the hub on the air discharge and retaining ring on the air intake.

FAN ROTATION

Fan rotation can be determined by the location of the leading edge of the fan blade (See Figure 2). To determine the location of the leading edge, look towards the blade socket (base of the fan blade) and determine how the leading edge lies with respect

Figure 1 Fan Component Identification

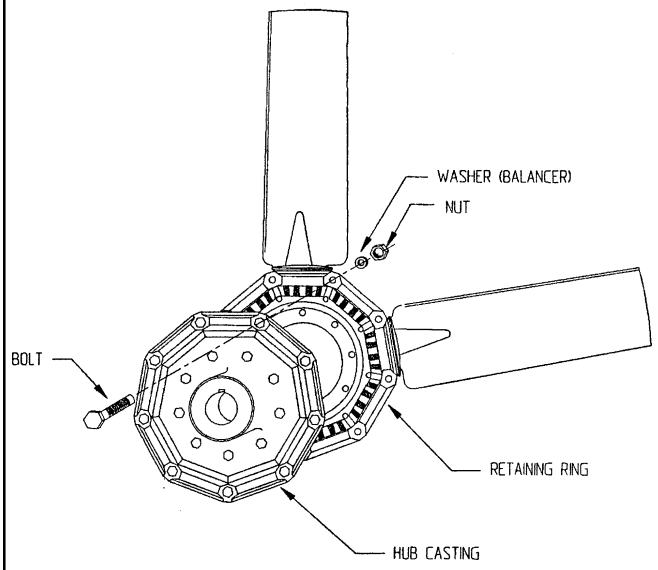
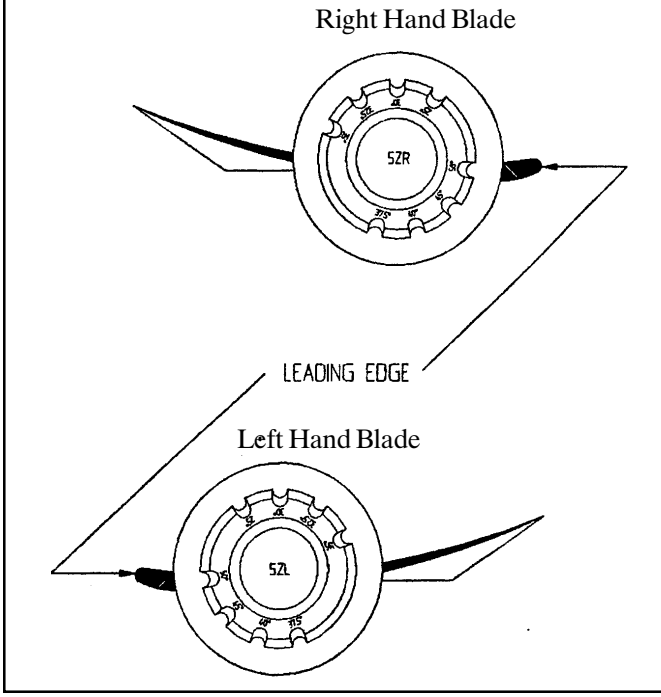


Figure 2 Fan Rotation Identification



to the socket. If the leading edge is on the left hand side of the socket, the fan is for L.H. rotation and vice versa.

DISASSEMBLY PROCEDURES

1. Mark the hub castings in one spot along the split line, so the fan can be reassembled in the same position (hub castings consist of (1) hub and (1) retaining ring).

2. Verify the correct locking pin groove orientation and blade pitch marking.

3. Mark the location of any balancing weight, if there is one. The balancing weight will be in the form of a washer or a combination of a bolt and washers located on the outer bolt circle.

4. Remove bolts, nuts, washers and separate the hub, retaining ring and blades.

5. Retain locking pins for reuse or replace with new pins.

REASSEMBLY PROCEDURES

Once the correct fan configuration is identified, locate the instructions for that configuration below and follow them very closely.

"A" Designation, Left Hand Rotation - 37.5° through 50° Blade Pitch

1. Place the hub casting on work surface with blade socket facing up.

2. With the blade socket at 6 o'clock, place the locking pin in the hub casting groove that corresponds to the desired pitch angle (See Table 1).

Table 1: Pitch and Groove for L.H. Rotation "A" Designation Fan Blades (37.5 to 50 degree pitch)

Pitch	Groove
37.5°	1
40°	2
45°	3
50°	4

3. Assemble blades to the hub blade socket with the leading (thick) edge DOWN as follows:

a. Engage the specified angle-marked notch on the blade with the corresponding locking pin groove identified in Step #2 above. Press the blade into place in blade socket.

b. Repeat with each successive blade.

4. Match the hub and retaining ring casting at the spot marked on the split line.

5. Replace the balancing weight by putting the bolt and washer in their original positions.

6. Replace the remaining bolts and tighten in cross pattern (10 lb×ft).

"A" Designation, Left Hand Rotation - 25° through 35° Blade Pitch

1. Place the retaining ring on work surface with blade socket facing up.

2. With the blade socket at 6 o'clock, place the locking pin in the retainer casting groove that corresponds to the desired pitch angle (See Table 2).

Table 2: Pitch and Groove for L.H. Rotation "A" Designation Fan Blades (25 to 35 degree pitch)

Pitch	Groove
25°	1
30°	2
32.5°	3
35°	4

3. Assemble blades to the retainer blade socket with the leading (thick) edge UP as follows:

a. Engage the specified angle marked notch on the blade with the corresponding locking pin groove identified in Step #2 above. Press the blade into place in blade socket.

b. Repeat with each successive blade.

4. Match the hub and retaining ring casting at the spot marked on the split line.

5. Replace the balancing weight by putting the bolt and washer in their original positions.

6. Replace the remaining bolts and tighten in cross pattern (10 lb×ft).

"B" Designation, Left Hand Rotation - 37.5° through 50° Blade Pitch

1. Place the retaining ring on work surface with blade socket facing up.

2. With the blade socket at 6 o'clock, place the locking pin in the retainer casting groove that corresponds to the desired pitch angle (See Table 3).

Table 3: Pitch and Groove forL.H. Rotation "B" Designation Fan Blades (37.5 to 50 degree pitch)

Pitch	Groove
37.5°	1
40°	2
45°	3
50°	4

3. Assemble blades to the retainer blade socket with the leading (thick) edge DOWN as follows:

a. Engage the specified angle marked notch on the blade with the corresponding locking pin groove identified in Step #2 above. Press the blade into place in blade socket.

b. Repeat with each successive blade.

4. Match the hub and retaining ring casting at the spot marked on the split line.

5. Replace the balancing weight by putting the bolt and washer in their original positions.

6. Replace the remaining bolts and tighten in cross pattern (10 lb×ft).

"B" Designation, Left Hand Rotation - 25° through 35° Blade Pitch

1. Place the hub casting on work surface with blade socket facing up.

2. With the blade socket at 6 o'clock, place the locking pin in the hub casting groove that corresponds to the desired pitch angle (See Table 4).

Table 4 Pitch and Groove for L.H. Rotation "B" Designation Fan Blades (25 degree to 35 degree pitch)

Pitch	Groove
25°	1
30°	2
32.5°	3
35°	4

3. Assemble blades to the hub blade socket with the leading (thick) edge UP as follows:

a. Engage the specified angle-marked notch on the blade with the corresponding locking pin groove identified in Step #2 above. Press the blade into place in blade socket.

b. Repeat with each successive blade.

4. Match the hub and retaining ring casting at the spot marked on the split line.

5. Replace the balancing weight by putting the bolt and washer in their original positions.

6. Replace the remaining bolts and tighten in cross pattern (10 lb×ft).

"A" Designation, Right Hand Rotation - 37.5° through 50° Blade Pitch

1. Place the hub casting on work surface with blade socket facing up.

Table 5 Pitch and Groove for R.H. Rotation "A" Designation Fan Blades (37.5 degree to 50 degree pitch)

Pitch	Groove
37.5°	4
40°	3
45°	2
50°	1

2. With the blade socket at 6 o'clock, place the locking pin in the hub casting groove that corresponds to the desired pitch angle (See Table 5).

3. Assemble blades to the hub blade socket with the leading (thick) edge DOWN as follows:

a. Engage the specified angle-marked notch on the blade with the corresponding locking pin groove identified in Step #2 above. Press the blade into place in blade socket.

b. Repeat with each successive blade.

4. Match the hub and retaining ring casting at the spot marked on the split line.

5. Replace the balancing weight by putting the bolt and washer in their original positions.

6. Replace the remaining bolts and tighten in cross pattern (10 lb×ft).

"A" Designation, Right Hand Rotation - 25° through 35° Blade Pitch

1. Place the retainer casting on work surface with blade socket facing up.

2. With the blade socket at 6 o'clock, place the locking pin in the hub casting groove that corresponds to the desired pitch angle (See Table 6).

Table 6 Pitch and Groove for R.H. Rotation "A" Designation Fan Blades (25 degree to 35 degree pitch)

Pitch	Groove
25°	4
30°	3
32.5°	2
35°	1

3. Assemble blades to the hub blade socket with the leading (thick) edge UP as follows:

a. Engage the specified angle-marked notch on the blade with the corresponding locking pin groove identified in Step #2 above. Press the blade into place in blade socket.

b. Repeat with each successive blade.

4. Match the hub and retaining ring casting at the spot marked on the split line.

5. Replace the balancing weight by putting the bolt and washer in their original positions.

6. Replace the remaining bolts and tighten in cross pattern (10 lb×ft).

"B" Designation, Right Hand Rotation - 37.5° through 50° Blade Pitch

1. Place the retainer casting on work surface with blade socket facing up.

Table 7 Pitch and Groove for R.H. Rotation "B" Designation Fan Blades (37.5 degree to 50 degree pitch)

Pitch	Groove
37.5°	4
40°	3
45°	2
50°	1

2. With the blade socket at 6 o'clock, place the locking pin in the hub casting groove that corresponds to the desired pitch angle (See Table 7).

3. Assemble blades to the hub blade socket with the leading (thick) edge DOWN as follows:

a. Engage the specified angle-marked notch on the blade with the corresponding locking pin groove identified in Step #2 above. Press the blade into place in blade socket.

b. Repeat with each successive blade.

4. Match the hub and retaining ring casting at the spot marked on the split line.

5. Replace the balancing weight by putting the bolt and washer in their original positions.

6. Replace the remaining bolts and tighten in cross pattern (10 lb×ft).

"B" Designation, Right Hand Rotation - 25° through 35° Blade Pitch

1. Place the hub casting on work surface with blade socket facing up.

2. With the blade socket at 6 o'clock, place the locking pin in the hub casting groove that corresponds to the desired pitch angle.

Table 8 Pitch and Groove for R.H. Rotation "B" Designation Fan Blades (25 degree to 35 degree pitch)

Pitch	Groove
25°	4
30°	3
32.5°	2
35°	1

3. Assemble blades to the hub blade socket with the leading (thick) edge DOWN as follows:

a. Engage the specified angle-marked notch on the blade with the corresponding locking pin groove identified in Step #2 above. Press the blade into place in blade socket.

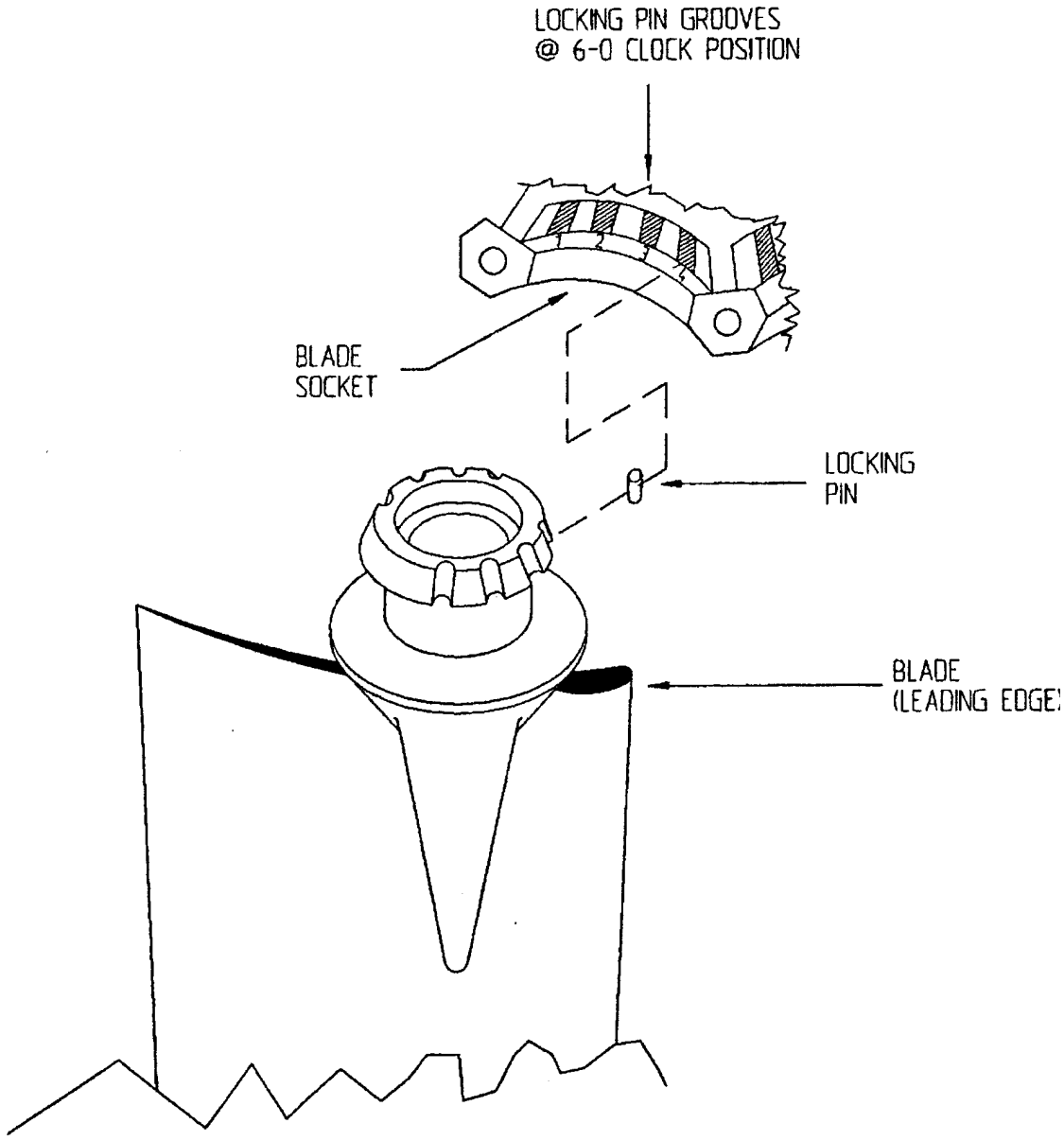
b. Repeat with each successive blade.

4. Match the hub and retaining ring casting at the spot marked on the split line.

5. Replace the balancing weight by putting the bolt and washer in their original positions.

6. Replace the remaining bolts and tighten in cross pattern (10 lb×ft).

Figure 3: Blade Installation



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