## HUDSON PRODUCTS CORPORATION FAN ASSEMBLY AND INSTALLATION INSTRUCTIONS

- I. Assembly of Hub to Gear Box or fan shaft using a Tapered Bushing
  - A. Clean all mating surfaces between shaft, bushing and hub spool.
  - B. Install the dry bushing on the dry shaft until flush with the top of the shaft.
  - C. Tighten the set screws on the busing flange to the shaft.

D. Coat the mating surfaces between the bushing and the hub spool with an anti-seizing compound.

- E. Align key and install hub onto the bushing.
- F. Torque the bushing bolts into the hub spool, per the bushing specifications.
- II. Assembly of Blades to Fan Hub
  - A. Remove blade clamp bolts, nuts, lock washers, and blade clamp halves from hub.
  - B. Remove and discard the PVC blade clamp spacers.
  - C. Position blade clamp halves on blade neck with chamfered edge toward hub.
  - D. Install blade clamp with blade necks into hub with leading edge of blade toward direction of fan rotation (always clockwise when viewed from above).
  - E. Install clamp bolts with bolt heads on top side through hub plates and blade clamps.
  - F. Install lock washers and nuts.
  - G. Lightly tighten clamp bolts, at this time.
- III. Setting Blade Pitch Angle and Tracking
  - A. Pull blade out until blade neck flange is flush with the back of the blade clamp.
  - B. Support blade at tip in a horizontal position while setting pitch angle.
  - C. Use a protractor with a flat bar extended across width of blade as a base plate approximately
  - 1" from tip of blade and adjust blade to specified pitch angle.
  - D. While maintaining the specified pitch angle and while supporting the tip of the blade, tighten the blade clamp bolts to hold blade firmly in place.
  - E. Scribe the blade profile on the fan stack with a marking instrument, which will benchmark the tracking profile for all of the blades.
  - F. Rotate the fan assembly to the next blade and repeat steps A,B,C, and D for all remaining blades in the fan assembly, using the profile of the first marked blade as a reference for setting the tracking for all remaining blades.
  - G. Ensure that weep holes in the blade tips are clear of any obstruction.
  - H. All pitch angles should be within plus/minus  $0.2^{\circ}$  of the specified setting, while maintaining a tracking pattern not to exceed one (1) inch between the highest and the lowest blade track profile.
  - I. Torque all blade clamp bolts to the specification required for a specific fan size.
  - J. Recheck blade pitch angles and tracking to be within specified settings.
- IV. Install the Seal Disc.
- V. Rotate the assembled fan by hand to verify the fan turns freely with no interference.
- VI. Bump start the motor to verify a clockwise rotation (as viewed from above).
- VII. Run the fan and check motor power consumption to ensure proper motor load.

## HUDSON PRODUCTS CORPORATION FAN ASSEMBLY AND INSTALLATION INSTRUCTIONS

- I. Assembly of Hub to Gear Box Shaft that has a Straight Bore (w/ retainer)
  - A. Clean all mating surfaces between hub spool and shaft.
  - B. Coat the mating surfaces with an anti-seize compound.
  - C. Install the retainer channel on top of the hub.
  - D. Align key and install hub.
  - E. Thread the retainer channel eyebolt into the gear box shaft.
  - F. Tighten set screws on hub spool to shaft.
- II. Assembly of Blades to Fan Hub
  - A. Remove blade clamp bolts, nuts, lock washers, and blade clamp halves from hub.
  - B. Remove and discard the PVC blade clamp spacers.
  - C. Position blade clamp halves on blade neck with chamfered edge toward hub.
  - D. Install blade clamp with blade necks into hub with leading edge of blade toward direction of fan rotation (always clockwise when viewed from above).
  - E. Install clamp bolts with bolt heads on top side through hub plates and blade clamps.
  - F. Install lock washers and nuts.
  - G. Lightly tighten clamp bolts, at this time.
- III. Setting Blade Pitch Angle and Tracking
  - A. Pull blade out until blade neck flange is flush with the back of the blade clamp.
  - B. Support blade at tip in a horizontal position while setting pitch angle.
  - C. Use a protractor with a flat bar extended across width of blade as a base plate approximately
  - 1" from tip of blade and adjust blade to specified pitch angle.
  - D. While maintaining the specified pitch angle and while supporting the tip of the blade, tighten the blade clamp bolts to hold blade firmly in place.
  - E. Scribe the blade profile on the fan stack with a marking instrument, which will benchmark the tracking profile for all of the blades.
  - F. Rotate the fan assembly to the next blade and repeat steps A,B,C, and D for all remaining blades in the fan assembly, using the profile of the first marked blade as a reference for setting the tracking for all remaining blades.
  - G. Ensure that weep holes in the blade tips are clear of any obstruction.
  - H. All pitch angles should be within plus/minus  $0.2^{\circ}$  of the specified setting, while maintaining a tracking pattern not to exceed one (1) inch between the highest and the lowest blade track profile.
  - I. Torque all blade clamp bolts to the specification required for a specific fan size.
  - J. Recheck blade pitch angles and tracking to be within specified settings.
- IV. Install the Seal Disc.
- V. Rotate the assembled fan by hand to verify the fan turns freely with no interference.
- VI. Bump start the motor to verify a clockwise rotation (as viewed from above).
- VII. Run the fan and check motor power consumption to ensure proper motor load.

## HUDSON PRODUCTS CORPORATION FAN ASSEMBLY AND INSTALLATION INSTRUCTIONS

- I. Assembly of Hub to Tapered Fan Shaft (usually a HPC standard)
  - A. Clean all mating surfaces between shaft and hub spool.
  - B. Coat the mating surfaces between the fan shaft and the hub spool with an anti-seizing compound.
  - C. Install the hub on the shaft.
  - D. Align key.
  - E. Install and tighten the retainer plate to the top of the shaft.
- II. Assembly of Blades to Fan Hub
  - A. Remove blade clamp bolts, nuts, lock washers, and blade clamp halves from hub.
  - B. Remove and discard the PVC blade clamp spacers.
  - C. Install blade clamp with blade necks into hub with leading edge of blade toward direction of fan rotation (always clockwise when viewed from above).
  - D. Install clamp bolts with bolt heads on top side through hub plates and blade clamps.
  - E. Install lock washers and nuts.
  - F. Lightly tighten clamp bolts, at this time.
- III. Setting Blade Pitch Angle and Tracking
  - A. Pull blade out until blade neck flange is flush with the back of the blade clamp.
  - B. Support blade at tip in a horizontal position while setting pitch angle.
  - C. Use a protractor with a flat bar extended across width of blade as a base plate approximately
  - 1" from tip of blade and adjust blade to specified pitch angle.
  - D. While maintaining the specified pitch angle and while supporting the tip of the blade, tighten the blade clamp bolts to hold blade firmly in place.
  - E. Scribe the blade profile on the fan stack with a marking instrument, which will benchmark the tracking profile for all of the blades.
  - F. Rotate the fan assembly to the next blade and repeat steps A,B,C, and D for all remaining blades in the fan assembly, using the profile of the first marked blade as a reference for setting the tracking for all remaining blades.
  - G. Ensure that weep holes in the blade tips are clear of any obstruction.
  - H. All pitch angles should be within plus/minus  $0.2^{\circ}$  of the specified setting, while maintaining a tracking pattern not to exceed one (1) inch between the highest and the lowest blade track profile.
  - I. Torque all blade clamp bolts to the specification required for a specific fan size.
  - J. Recheck blade pitch angles and tracking to be within specified settings.
- IV. Install the Seal Disc.
- V. Rotate the assembled fan by hand to verify the fan turns freely with no interference.
- VI. Bump start the motor to verify a clockwise rotation (as viewed from above).
- VII. Run the fan and check motor power consumption to ensure proper motor load.