Plasticair

# BIF Series (Inline Centrifugal FRP Fans)

SPECIFICATIONS

## 1 GENERAL

a) The fan is designed and constructed so that the gas stream only contacts solid FRP surfaces.
b) All steel fasteners within the gas contact area will be stainless steel and encapsulated with a minimum of 0.1875" (3 mm) of FRP lay-up.
c) All fan shafts will be fully protected from exposure to the gas stream with FRP shaft sleeves.
d) The fan shall be constructed as per AMCA Standards 99.
e) Fans to be in compliance with ANSI-9.5 (when used for Lab exhaust)
f) Fans shall be tested to ANSI/AMCA 210 and AMCA 300
g) All Electrical components will be CSA/UL compliant and meet NEMA standards
h) Manufacture of acceptance: Plasticair Inc.

## 2 AIR PERFORMANCE

a) The performance ratings of equal or alternate bidders shall not exceed any of the following: scheduled performance characteristics by more than 5%; revolutions per-minute, horse power, or sound levels.
b) Supplied fans must be able to achieve 10% variation in static pressure without a motor change.
c) Fan must bear the AMCA Air and Sound Seal.

## 3 IMPELLER CONSTRUCTION

a) The impeller is to be of a high efficiency backward inclined, full width design.
b) The material of construction is to be vinyl ester resin (premium quality Derakane 510) and reinforcing glass throughout. The method of construction is to be hand lay-up only. The entire surface of the impeller exposed to the gas stream will be complete with a resin rich corrosion barrier consisting of C-veil and a smooth finish.
c) Impeller will be constructed of clear resin to detect imperfections.
d) The shaft is to be attached to the back-plate of the impeller by way of a taper lock bushing and a one-piece sprocket hub. The entire shaft attachment assembly is to be completely covered with a minimum 0.25"(6 mm) of FRP lay-up.

## 4 HOUSING CONSTRUCTION

a) The fan housing shall be tubular flow through design.
b) The method of construction is to be hand lay-up only.
c) The entire surface of the inlet cone and housing exposed to the gas stream will be complete with a resin rich corrosion barrier consisting of C-veil and a smooth finish minimum 90 mils thickness.

d) All flanges are to have factory flat finishes.
e) The outer surface of the housing will be of a heavy UV stabilized gel coat and grey in color.
f) Fan housing shall be structurally designed to handle specified static pressure and reduce vibrations.
g) The housing shall include a machined Teflon shaft seal to limit gas leakage.

## 5 STEEL FAN BASE

a) The bearing/shaft mounting assembly is to be constructed by forming heavy gauge steel. When forming is complete, steel is to be cleaned or sand blasted and coated with 4-5 mils of epoxy paint. Standard of acceptance: Intergard 345 two part epoxy – color to be grey.
b) Threaded rod and fasteners shall be 316 stainless steel

## 6 BEARINGS

a) The type and mountings of Bearings shall be designed for a minimum of L10 – 115,000 hours.
b) Bearings shall be ball or spherical roller type.
c) Mountings shall be solid pillow block or split pillow block.
d) The successful bidder shall supply with the submittal package, the bearing calculation.

## 7 SHAFT

a) Shaft material shall be; 316 stainless steel, complete with correct keyways to accept V-belt drive selections.
b) The diameter of the shaft shall be sized to ensure that the critical speed of the fan is at least 25% above the fan operating speed.
c) The impeller side of the shaft shall be complete with an FRP shaft sleeve, which is bonded to the back-plate of the impeller and protrudes through the housing. The outside diameter of the sleeve is machined to provide a minimum clearance gap with the Teflon shaft seal.
d) OPTIONAL Mechanical Shaft Seal. The impeller shaft shall be supplied with a minimum 0.1875" thick shaft sleeve fully covering the shaft throughout the seal. The Shaft seal shall be constructed of FRP, packed with Teflon, spring loaded and lithium grease filled

## 8 MOTOR

a) Motor will be a foot mounted totally enclosed fan cooled motor with a 1.15 service factor.

## 9 BELT DRIVE

a) V-belt drive shall be sized with a safety factor of 1.5 times the motor horsepower.
b) An adjustable base will be provided under the motor to permit setting the belt tension.

## 10 GUARDS

a) Weatherproof FRP guards complying with the OSHA standard will protect the shaft and v-belt drive.
b) Guards will be vented for proper motor ventilation.

## 11 BALANCING AND TESTING

a) Balancing of the impeller shall be achieved only with the use of the identical material used to fabricate the impeller. Balancing shall be in accordance with ASTM D-4167 and meet the standard of G2.5.
b) The fan shall be test run at operating speed and not shipped until vibration readings are within acceptable limits

## 12 OPTION FOR SPARK RESISTANT CONSTRUCTION

a) Fan shall be constructed incorporating an electrically conductive layer of graphite within the gas contact corrosion barrier.
b) Wheel and housing will be pigmented black.
c) Grounding lugs and wire are to be used to provide a common grounding point for static electricity to safely purge.

## 13 FLAME SPREAD RATING

a) If indicated on the fan scheduled 0-25 flame spread is required; fan housing and impeller will be constructed of Derakane 510-C throughout and will meet ASTM-E84 class 1 0-25 flame spread.

## 14 WARRANTY

a) The supplier shall warrant that all fan components shall be free from defects in materials and workmanship for a period of 15 months from date shipped or 12 months from equipment startup, whichever occurs first.