

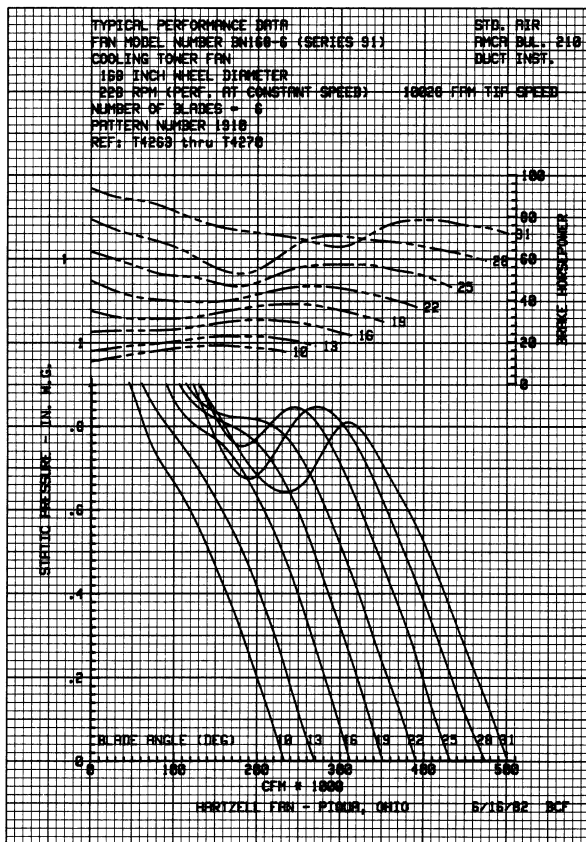
Construction Features:

- **Airfoil Section** – Blades are alloy #319 aluminum, sand cast, ground to satin finish for balance.
- **Sizes** – 7' through 14', 4-blade and 6-blade assemblies.
- **Hub** – Welded steel construction.
- **Taper lock bushing** - Standard on all sizes.
- **Manual Adjustments** – Angle changes in the field are easily effected by loosening the blade clamps at each blade shank and rotating the blade to correct angle.
- **Balance** – Blades are statically balanced against a master. Hub is dynamically balanced.
- **Maximum Tip Speed** – 11,000 FPM.

Performance:

- **Air Flow** – High efficiency at low tip speeds.
- **Air Volume** – 50,000 to 500,000 CFM at free air.
- **Static Pressure** – Efficient operation from free air through 3/4" SP.
- **Fan Efficiency** – Hartzell Series 91 adjustable pitch fans can reach a maximum total efficiency of 75%. Average efficiency design is 65%.
- **Testing Method** – Fans are tested for sound and air ratings in Hartzell's Research and Development Center in accordance with industry standards.

Typical Fan Performance Curve



Series 91 Aluminum Adjustable Pitch Fan Assembly



BN BLADE

Special Design Features:

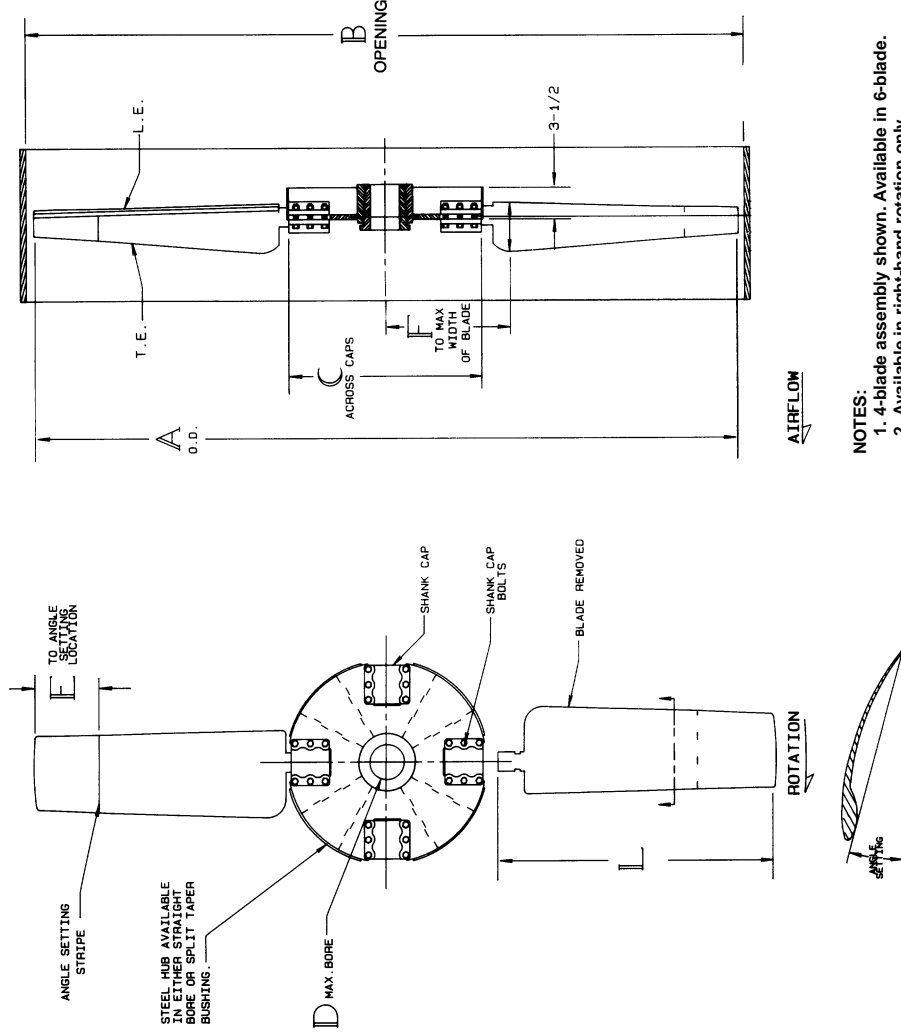
- **Stable Performance** – Top performance with low tip speed and low sound ratings.
- **Standard Rotation** – All sizes available in right-hand rotation only.
- **Maximum Temperature** – 200°F. High temperature construction available – Maximum 350°F.
- **Coatings** – Special coatings for application of Hartzell blades in corrosive atmospheres are available in a wide variety which include, but are not limited to, epoxy, bitumastic, and inorganic zinc.
- **Shipment** – Series 91 fans are shipped knocked down as standard.
- **CONTACT YOUR LOCAL HARTZELL REPRESENTATIVE FOR ASSISTANCE. CALL 1-800-336-3267.**

Fan Performance Curves and Complete Sound Data are Available Upon Request

Principal Dimensions

Fan Size	84	96	108	120	132	144	156	168
A	84	96	108	120	132	144	156	168
B	85 1/4	97 3/8	109 1/2	121 1/2	133 1/2	146	158	170
C	19 5/8	19 5/8	24 3/4	24 3/4	30	30	41	41
D	4	4	4	4	4	4	4	4
E	8 3/8	14 3/8	12	18	15 1/2	21 1/2	22	28
F	21 1/4	21 1/4	26 1/4	26 1/4	31 1/4	31 1/4	42 1/2	42 1/2
L	36 1/16	42 1/16	46 1/8	52 1/2	55 1/2	61 1/2	62	68
Blade Patt.	2110	2110	2109	2109	1907	1907	1907	1907
Blade Wgt.	25	28	47	53	57	60	60	65
Hub Wgt.	(4) 91	165	165	165	220	220	340	340
Blade Wgt.	(6) 95	185	185	236	236	236	360	360
Bolt	1/2-13 x 2 1/2	1/2-13 x 2 1/2	1/2-13 x 2 1/2	1/2-13 x 2 1/2	5/8-11 x 3 3/4	5/8-11 x 3 3/4	5/8-11 x 3 3/4	5/8-11 x 3 3/4
Ass'y. Wgt.	(4) 191	203	352	369	440	460	582	600
Blade Wgt.	(6) 245	263	466	491	566	596	722	750
WR ² Lb.	(4) 272	402	880	1172	1867	2370	3422	4038
Ft. ² Blade	(6) 392	588	1289	1726	2755	3509	4951	5875

Dimensions and specifications are subject to change. Certified prints are available.



- NOTES:**
1. 4-blade assembly shown. Available in 6-blade.
 2. Available in right-hand rotation only.

SAFETY ACCESSORIES, APPLICATION AND USE WARNING

The safe application and use of equipment supplied by Hartzell Fan, Inc. is the responsibility of the installer, the user, the owner, and the employer. Since the application and use of its equipment can vary greatly, Hartzell Fan, Inc. offers various product types, optional safety accessories, and sound performance data per laboratory tests. Hartzell Fan, Inc. sells its equipment with and without safety accessories, and accordingly, it can supply such safety accessories only upon receipt of an order. The need for safety accessories will frequently depend upon the type of system, fan location and operating procedures being employed. The proper protective safety accessories to meet company standards, local codes, and the requirements of the Occupational Safety and Health Act must be determined by the user since safety requirements vary depending on the location and use of the equipment. If applicable local conditions, standards, codes or OSHA rules require the addition of the safety accessories, the user should specify and obtain the required safety accessories from Hartzell Fan, Inc. and should not allow the operation of the equipment without them.

Owners, employers, users and installers should read "RECOMMENDED SAFETY PRACTICES FOR USERS AND INSTALLERS OF INDUSTRIAL AND COMMERCIAL FANS" published by the Air Movement Control Association, Inc., 30 West University Drive, Arlington Heights, Illinois 60004. A copy of this publication is enclosed with each fan shipped from Hartzell Fan, Inc., and is available upon request at Hartzell's office in Piqua, Ohio 45356.

Please contact Hartzell Fan, Inc. or your local Hartzell representative for more information on product types, safety accessories, and sound performance estimates. Remember, the selection of safety accessories and the safe application and use of equipment supplied by Hartzell Fan, Inc. is **your** responsibility.

Hartzell
SERIES 91