

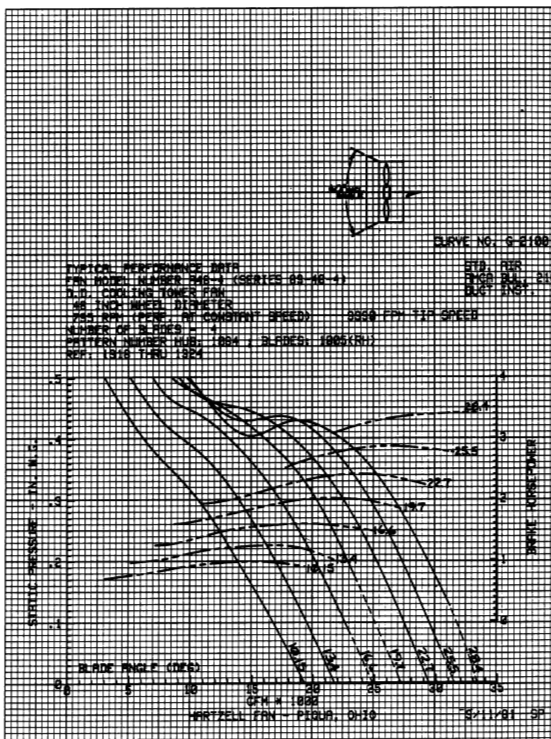
Construction Features:

- **Airfoil Section** – Blades are alloy #319 aluminum, sand cast, ground to satin finish for balance.
- **Sizes** – **Model A** – 48" - 144" diameter, 4-blade & 6-blade. **Model AS** – 156" and 168" diameter, 4-blade & 6-blade.
- **Hub** – **Model A** – Hub is cast aluminum with self-contained blade housing threaded to accept the blades. **Model AS** – Hub is constructed of heavy welded steel with the "drop-in" blade assembly and bolted steel cap blade retention.
- **Split Taper Bushing** – 84" and larger are furnished with split taper bushing as standard. Sizes 48" through 72" are furnished with clamp-type bushing as standard. Clamp-type bushings available on sizes 84" - 144".
- **Manual Adjustments** – **Model A** – Blades have threaded shanks, which screw into threaded aluminum hub sockets. Angle change is easily effected by loosening the hub clamping bolts at each blade socket and rotating the blade. **Model AS** – Angle change is made by loosening the steel cap just enough to rotate each blade to the required angle.
- **Balance** – Blades are statically balanced against a master. Hub is dynamically balanced.
- **Maximum Tip Speed** – 15,000 FPM.

Performance:

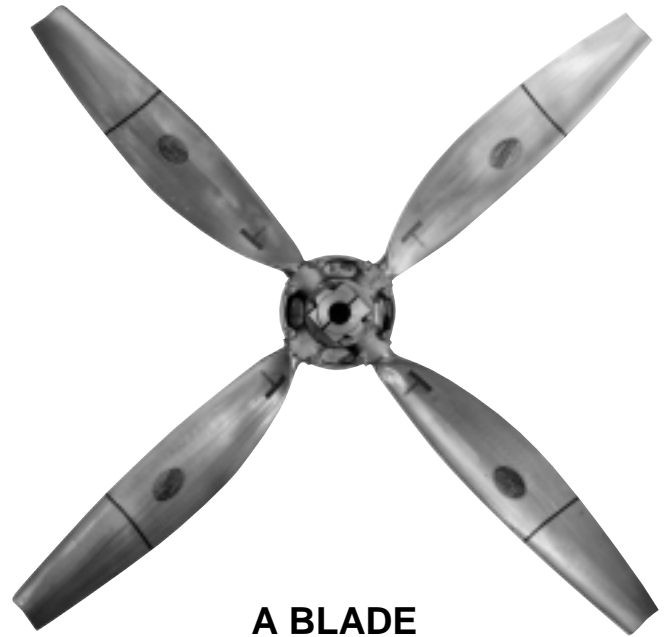
- **Air Flow** – High efficiency at moderate pressure.
- **Air Volume** – **Model A** – 13,000 to 435,000 CFM at free air. **Model AS** – Performance to 450,000 CFM at .70" S.P.
- **Static Pressure** – Efficient operation ranges from free air through 3/4" W.G.
- **Fan Efficiency** – Hartzell Series 89 adjustable pitch fans can reach a maximum total efficiency of 75%. Average efficiency for 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



Fan Performance Curves and Complete Sound Data are Available Upon Request

Series 89 Aluminum Adjustable Pitch Fan Assembly



Special Design Features:

- **Stable Performance** – Wide range in flow volume from medium to high blade angle settings.
- **Standard Rotation** – All sizes are available in right-hand rotation. Left-hand rotation available in sizes 72", 84", 96", 108", 120", and 132" only.
- **Maximum Temperature:**
Model A – Sizes 48" - 72" – 200°F maximum.
 Sizes 84" - 144" – 200°F is standard. **High temperature construction (300°F) is available.**
Model AS – Sizes 156" and 168" – 300°F is standard.
- **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 89 fans are shipped knocked down as standard. Shipment of complete assemblies up to 72" is available upon request.
- **CONTACT YOUR LOCAL HARTZELL REPRESENTATIVE FOR ASSISTANCE. CALL 1-800-336-3267.**

Principal Dimensions

Fan Size	Model AS											
	48	54	60	72	84	96	108	120	132	144	156	168
A	48	54	60	72	84	96	108	120	132	144	156	168
B	48 3/4	54 3/4	60 3/4	73	85 1/4	97 3/4	109 1/2	122	134	146	158	170
C	8	8	9 1/2	9 1/2	11 3/4	11 3/4	14	14	15	15	30 3/4	42
D	1 3/4	1 3/4	2 3/4	2 3/4	2 1/2	2 1/2	3	3	3 1/2	3 1/2	4	4
D ₁	—	—	—	—	2 1/2	2 1/2	3 3/8	3 3/8	3 3/8	3 3/8	5	5
E	16	17 3/4	20	24	28 5/8	32	36	40	44	48	50 1/2	56
F	13 1/4	14 3/4	15 3/4	18 3/4	21 1/4	24 3/4	30 3/8	31 3/8	34 1/8	37	39 3/4	44 7/8
L	22 1/4	25 1/4	27 1/2	33 1/2	38 3/4	45 3/4	50 3/4	56 1/4	62 1/4	68 7/8	67 1/2	68
Max. Width of Blade	4 1/4	5 1/2	6 1/8	7 1/8	8 1/2	9 3/8	10 3/8	12 1/8	13	14 3/4	14 3/4	14 3/8
Blade Pattern	RH	1005	1004	1003	996	997	998	1650	1000	1594	1002	1557
LH	—	—	—	—	1178	1822	1844	1682	1698	—	—	—
Blade Weight	4.0	4.0	6.0	9.0	12.0	16.0	35.0	33.0	48.0	52.0	52.0	52.0
Hub Pattern	(4)	1064	1062	1062	1768	1768	1770	1770	1767	1767	8795	8795
Blade	(6)	1058	1059	1059	1769	1769	1771	1771	1750	1750	8795	8795
Hub Weight	(4)	9	9	14	28	28	48	48	50	50	225	355
Blade	(6)	10	10	18	30.25	30.25	53	53	53.5	53.5	260	375
Bushing	—	—	—	—	03	03	R2	R2	R2	R2	R2	R2
Max. Bore	—	—	—	—	2 1/2	2 1/2	3 5/8	3 5/8	3 5/8	3 5/8	3 5/8	3 5/8
Ass'y. Wgt.	(4)	24	24	35	47	71	87	121	256	244	367	556
Blade	(6)	32	32	50	68	97	121	256	244	367	556	672
WR ² Lb.	(4)	10.5	11.75	29.5	70	160	295	540	840	1400	2200	2812
Blade Ft. ²	(6)	15	18.25	41	100	235	420	800	1300	2000	3300	4160

*Sizes 48"-72" include clamp-type hub. Sizes 84" and larger include split taper bushing. Dimensions and specifications are subject to change. Certified prints are available.

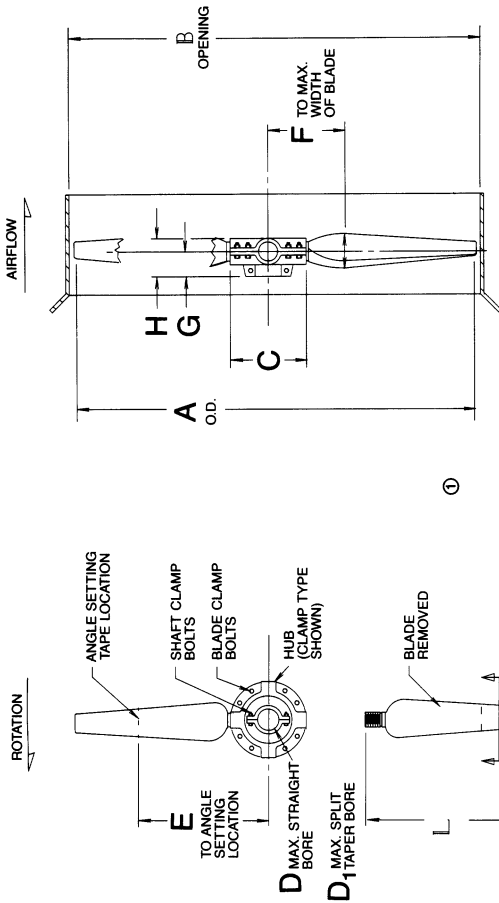
SAFETY ACCESSORIES, APPLICATION AND USE WARNING

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.

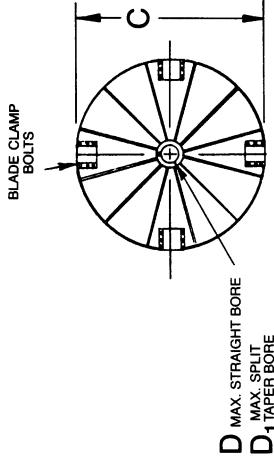
Owners, employers, users and installers should read "RECOMMENDED SAFETY PRACTICES FOR USERS AND INSTALLERS OF INDUSTRIAL AND COMMERCIAL FANS" published by the Air Movement Control Association, Inc., 30 West University Drive, Arlington Heights, Illinois 60004. A copy of this publication is enclosed with 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.



MODEL A
(Cast Aluminum Hub)



MODEL AS
(Steel Hub)

- NOTES:**
- ① 4-blade assembly shown. Available in 6-blade. All sizes are available in right-hand rotation. Left-hand rotation available in sizes 72", 84", 96", 108", 120", 132" only.
 - ② Clamp type hub standard on sizes 48"-72". Available on sizes 84"-144".
 - ③ Split taper bushing type hub standard on sizes 84" through 144".

Hartzell **SERIES 89**