

ATZAF

**DOUBLE INLET CENTRIFUGAL FANS
WITH AIRFOIL BACKWARD CURVED BLADES**



comefri



COMEFRI USA: Manufacturing and Warehouse facilities in Hopkinsville, KY.
Total facility: 125,000 sq.ft. Producing centrifugal fans for the HVAC industry.



COMEFRI SpA factory at Magnano in Riviera (UD) – Italy with 156,000 sq.ft.
Manufacturing floor space, which produces radial fans for HVAC products.



COMEFRI SpA factory at Artegn (UD) – Italy with 68,000 sq.ft. manufacturing and
Laboratory floor space for the production of standard and special application industrial fan.
Test facilities: laboratory accredited by AMCA and SINAL.



Comefri USA Inc. certifies that the Double Inlet Centrifugal Fans with Airfoil Backward Curved Blades – ATZAF shown herein are licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and comply with the requirements of the AMCA Certified Ratings Program.

Contents

Page

1. Standard ATZAF fans range	2
2. Technical details	2
2.1 Housing	2
2.2 Airfoil impeller	3
2.3 Shafts	3
2.4 Bearings	3
3. Labelling of fan components	4
4. Fan performances	5
4.1 Performance data	5
4.2 Motor selection	6
4.3 Free outlet performances (installation type A)	6
4.4 Temperature and altitude correction factors	7
5. Sound levels	8
5.1 Total Sound Power Level at the free outlet, L_{w6}	9
5.2 Selection Example	10
6. Performance charts	13
7. Fan dimensions	38
7.1. ATZAF 12-12 R to 28-28 R	39
7.2. ATZAF 12-12 T1 / T2 to 40-40 T1 / T2	40
7.3. ATZAF 44-44 T1 / T2 to 49-49 T1 / T2	41
7.4. Base frames for ATZAF 12-12 to 49-49.....	42
7.5. Side plate holes ATZAF 12-12 to 40-40	44
8. Accessories	45
9. Rotation, discharge and accessories position	51
9.1 Rotation and Discharge Position	51
9.2 Accessories Position	51
10. Reference code / example	52

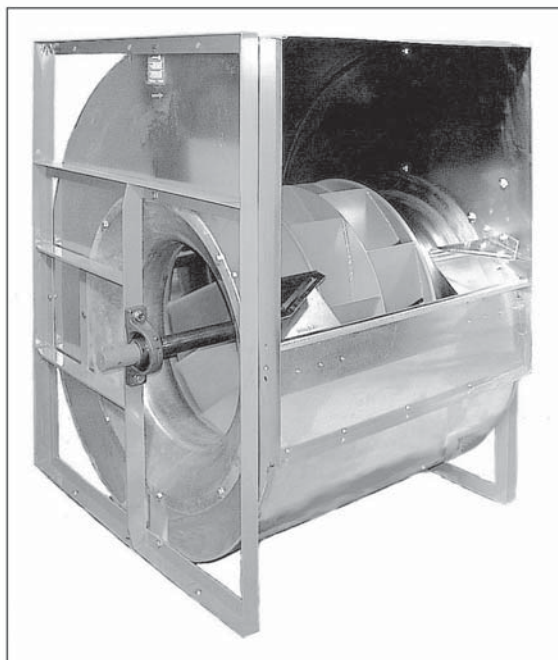

Fig. 1

Fig. 2

1. Standard ATZAF fans range

Comefri's ATZAF double inlet centrifugal fan with Airfoil blades series cover a size range from 12 to 49. All fans within this range have the following characteristics:

- optimally engineered for HVAC applications;
- high quality, compact design;
- class I and class II versions available (as per AMCA operating limits specification 99-2408-69);
- high efficiency;
- low power consumption;
- quiet operation;
- all fans are fully performance tested and certified in Comefri's own state-of-the-art laboratory in accordance with DIN, ISO, BS and AMCA standards.

2. Technical details

2.1. Housing

All fan housings from size 12 to 40 are manufactured in galvanized sheet steel (Fig. 1). From sizes 12 to 18, the fan sideplates are spot welded to the scroll housing. From sizes 20 to 40 the fan sideplates are locked to the scroll housing through a Pittsburgh seam (Fig. 2) which ensures a high quality air tight seal, as well as a structurally reinforced housing.

The design of the inlet cones is of vital importance for the fan performance and sound levels. They have been engineered to guarantee an optimal airflow path through the wheel and thus very high performance levels are achieved.

The inlet cones are manufactured in galvanized sheet steel and are bolted onto the housing sideplates. A series of standard holes are located on the sideplates to allow the installation of frames or mounting base. These holes are positioned in such a way that several standard accessories can be attached with the necessary fixing screws.

Housings for sizes 44 and 49 are manufactured in black steel sheet, reinforced with steel stiffeners, completely welded and painted with an anticorrosive synthetic paint. The inlet cones are also manufactured in black steel sheet and painted.


Fig. 3

2.2. Airfoil impeller

This high performance impeller is manufactured in corrosion resistant steel, with backward curved, true airfoil shaped blades, welded into position (Fig. 3). All wheels are coated with an anticorrosive primer and a final layer of epoxy paint and are balanced, both statically and dynamically, to an accuracy grade of $G = 2.5$ in accordance to DIN ISO 1940-1 and ANSI S2.19 – 1989.

The impellers from size 28-28 T1 to 49-49 T1 and from size 12-12 T2 to 49-49 T2 are secured to the shaft via a steel hub. Aluminium hubs are used from size 12-12 R to 28-28 R and from size 12-12 T1 to 25-25 T1.

The hub bore is precision machined and incorporates a keyway and locking screw.

2.3. Shafts

All shafts are designed with a high safety factor and with the first critical speed well in excess of the maximum fan speed.

Made with hardened steel, the shafts are precision ground and polished, and include keyways for the wheel hub and sheaves.

All shafts are coated with a protective paint for added corrosion protection prior to shipping.

2.4. Bearings

From size 12-12 R to 28-28 R, bearings are self-aligning, single row, deep groove ball type (Fig. 4).

From size 12-12 T1 to 36-36 T1, size 44-44 T1 and from size 12-12 T2 to 18-18 T2, bearings are self-aligning, single row, deep groove ball type, in pillow block cast iron housings (Fig. 5).

Size 40-40 T1, size 49-49 T1 and from size 20-20 T2 to 49-49 T2 bearings are double row roller bearings in pillow block split cast iron housings (Fig. 6).

All bearings have been selected to guarantee a minimum L_{50} life time of 200,000 hours (as per AFBMA standards).

R-framed fans have the bearings mounted in a rubber interliner, which in turn, fits in a sturdy three-arm or four-arm spider bracket (Fig. 4). These bearings are permanently lubricated and sealed for the life time of the fan.

T1 and T2 fans have the pillow block bearings mounted on a flat iron bar, welded to the T frame (Fig. 5, 6). These bearings are complete with re-lubrication fitting already installed.

Operating temperatures range from -4°F to $+176^{\circ}\text{F}$ (-20°C to $+80^{\circ}\text{C}$) for all blowers.

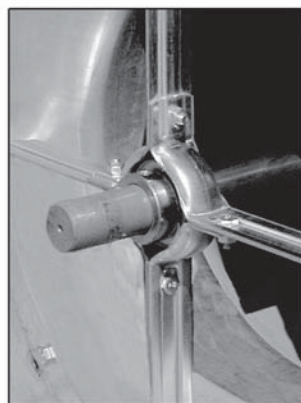
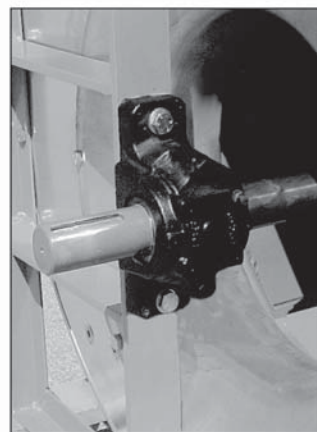
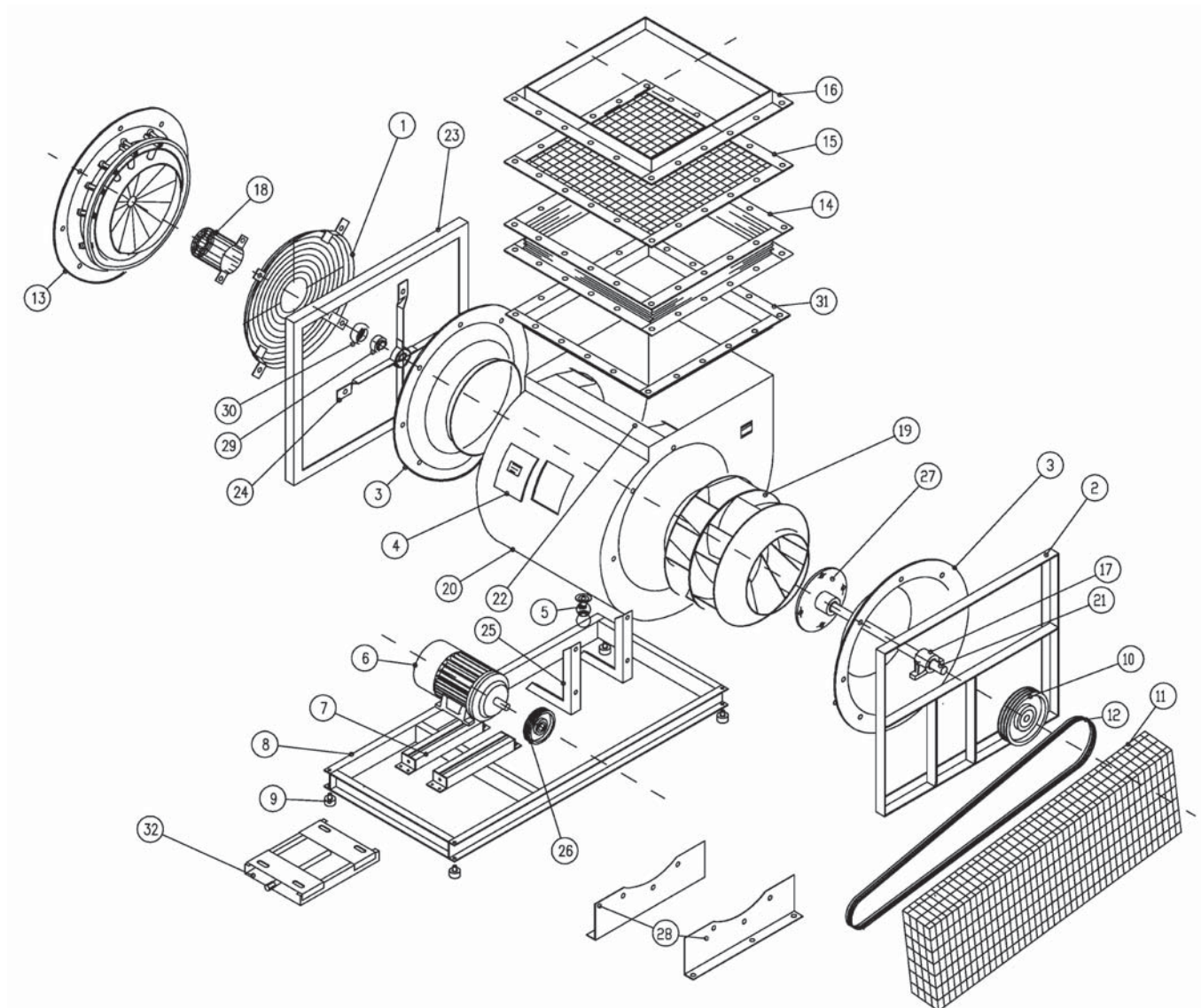

Fig. 4

Fig. 5

Fig. 6

3. Labelling of fan components



1 - INLET GUARD	17 - BEARING
2 - T FRAME	18 - SHAFT GUARD
3 - INLET CONE	19 - WHEEL
4 - INSPECTION DOOR	20 - HOUSING
5 - DRAIN PLUG	21 - SHAFT
6 - MOTOR	22 - CUT OFF
7 - MOTOR RAILS	23 - R FRAME
8 - BASE FRAME	24 - BEARING BRACKET
9 - ANTIVIBRATION MOUNTING	25 - GUARD MOUNT
10 - FAN PULLEY	26 - MOTOR PULLEY
11 - BELT GUARD	27 - HUB
12 - BELTS	28 - FEET
13 - INLET VANE CONTROL	29 - BEARING
14 - OUTLET FLEXIBLE CONNECTION	30 - RUBBER BUSH
15 - OUTLET GUARD	31 - OUTLET FLANGE
16 - OUTLET COUNTERFLANGE	32 - MOTOR BASE PLATE

4. Fan performances

4.1. Performance data

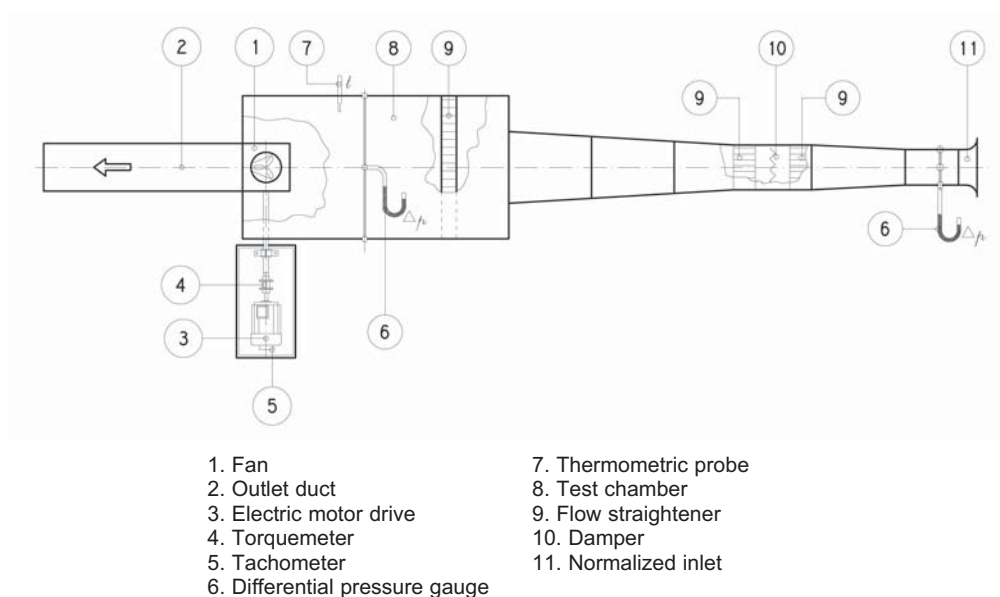
Comefri's laboratory measured the data detailed in the performance chart section with modern, state-of-the-art testing instruments.

Fan performance is measured for an installation type B (ref. AMCA 210-85, par. 7.1.1 installation type), i.e. free inlet and ducted outlet configuration and a reference density of $\rho = 0.075 \text{ lb/cu.ft}$

Outlet velocity o.v. and Δp_{dyn} pressure, refer to the flange cross section area at the fan outlet.

The performance data tolerances are according to DIN 24166 Class1.

Performance test rig according to DIN 24163 / BS 848, Part1 / ISO 5801 / AMCA 210



The performance curves include the following information:

Static pressure	Δp_{stat}	[In.W.G.]	inches water gauge
Dynamic pressure	p_{dyn}	[In.W.G.]	inches water gauge
Volume air flow	$\dot{V}$	[CFM]	cubic feet per minute
Absorbed power on fan shaft	P_w	[BHP]	brake horsepower
Fan speed	n	[RPM]	revolutions per minute
Static Efficiency	η_{stat}	[%]	$\frac{\Delta p_{\text{stat}} \cdot \dot{V} \cdot 100}{P_w \cdot 6362}$
Outlet velocity	o.v.	[ft/min]	Feet per minute
Sound Power Level	$L_{wA4;7}$	[dB(A)]	Decibel A

4.2. Motor selection

To determine the motor rating P_n , the fan absorbed shaft power P_w must be increased by a factor f_w to accommodate for the drive losses, safety margins,.....etc.

$$P_n = P_w (1 + f_w)$$

The factor f_w can be chosen from the following figures:

$$\begin{aligned} P_w < 4 \text{ BHP} & \dots f_w = 0.20 \\ P_w \leq 13.4 \text{ BHP} & \dots f_w = 0.15 \\ P_w > 13.4 \text{ BHP} & \dots f_w = 0.10 \end{aligned}$$

When selecting a suitable motor, the run-up time must be considered.
The run-up time " t_a " can be calculated according to the following formula:

$$t_a = 0.452 \frac{J \cdot n^2}{P_n} 10^{-6}$$

where:

t_a	acceleration time	[s]
J	moment of inertia of the revolving parts	[Lb ft ²]
n	impeller revolution	[rpm]
P_n	motor rating	[HP]

If " t_a " exceeds the motor's manufacturer recommendations, a larger motor or a high-torque type must be used.

4.3. Free outlet performance (installation type A)

As all data detailed in the fan performance charts refer to the free inlet - ducted outlet configuration, a correction to this data must be applied when a free outlet installation is requested.

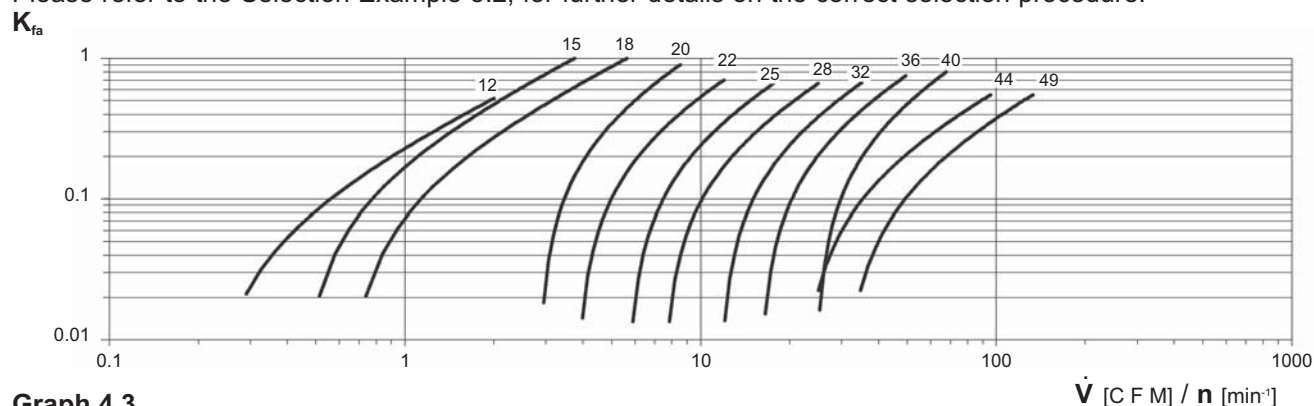
In free discharge condition the static pressure Δp_{fa} , for a given fan speed, can be obtained as:

$$\Delta p_{fa} = \Delta p_{stat} - K_{fa} \cdot \Delta p_{dyn}$$

where K_{fa} is a correction factor, function of fan size and V / n ratio, which can be found on the graph 4.3.
Note that the static pressure obtained is less than the requested pressure.

The final consequence is that, in the free outlet configuration, the fan has to run at a slightly higher speed than in the ducted outlet condition.

Please refer to the Selection Example 5.2, for further details on the correct selection procedure.



Graph 4.3.

4.4. Temperature and altitude correction factors

The performance charts refer to the standard air condition, i.e. $\rho = 0.075 \text{ lb/cu.ft}$, 68°F temperature at sea level. For different operating conditions the data performance must be corrected due to the change in air density.

Fan laws relate to performance variables for any fan of a given design.

Pressure, static and total, varies directly as the ratio of the air densities, K_p

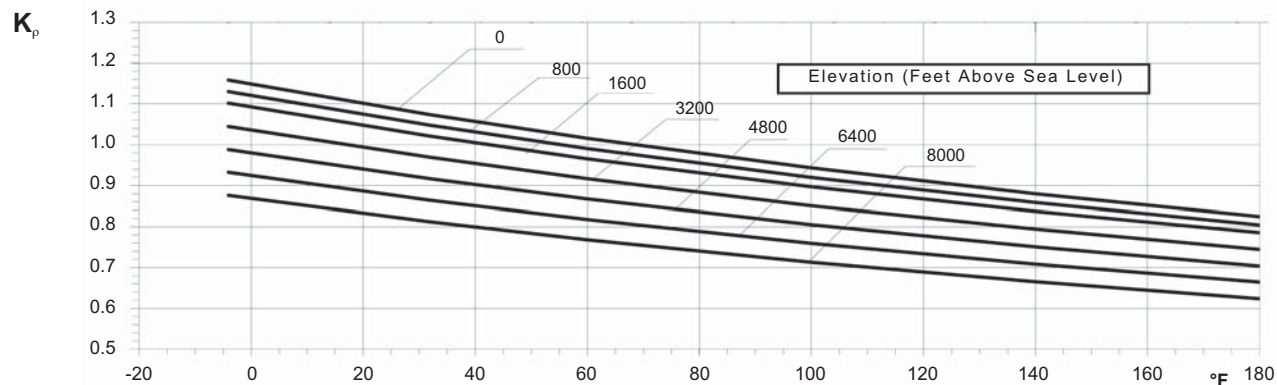
$$\Delta p_{\text{stat}2} = \Delta p_{\text{stat}1} \cdot K_p$$

Absorbed power varies directly as the ratio of the air densities, K_p

$$P_{w2} = P_{w1} \cdot K_p$$

The graph 4.4 contains air density ratios K_p for temperatures from -5°F to 180°F and elevations up to 8000 feet above sea level.

Please refer to the Selection Example 5.2, for further details on the correct selection procedure.



Graph 4.4.

5. Sound levels

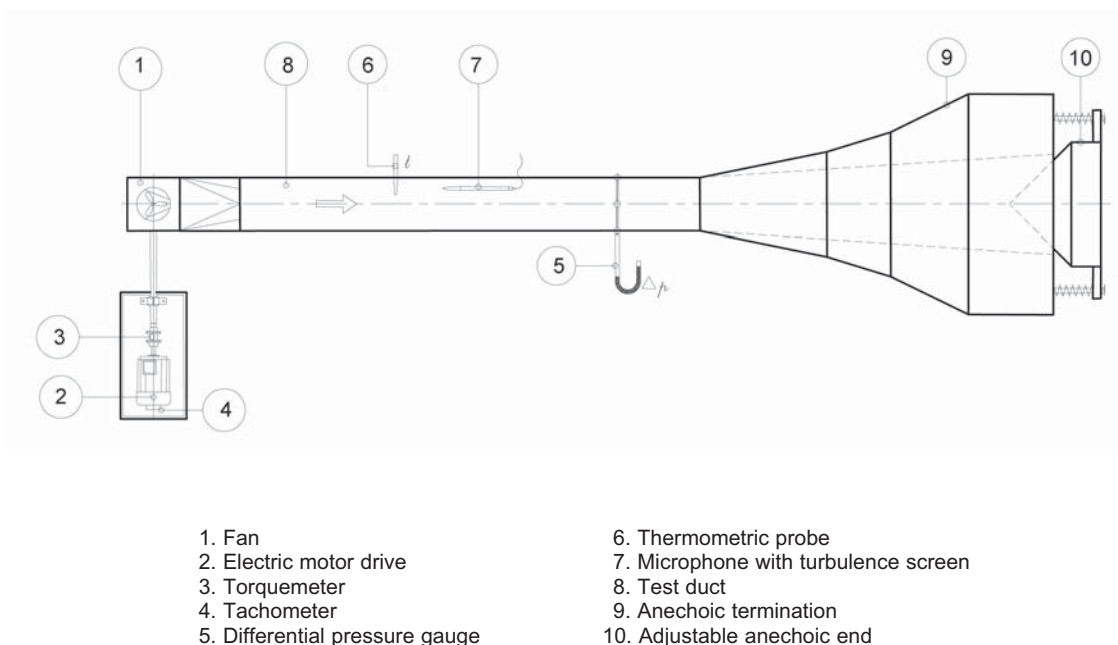
The measurement of noise levels have been made according to ISO, DIN and BS, ANSI / AMCA Standard using a Bruel & Kjaer real-time frequency analyser.

The Sound Power Level L_{wA} , referred to $W_0=10^{-12}$ watt, required for calculation and design of sound attention units, are marked on the performance curves.

Symbols and Formulas:

L_{wA4}	A-weighted Total Sound Power Level inside the outlet duct	[dB(A)]
L_{wA7}	A-weighted Total Sound Power Level at the fan inlet, with ducted outlet	[dB(A)]
L_{woct}	Sound Power Level at a specific Octave Band Mid-Frequency	[dB]
f_m	Octave Band Mid-Frequency	[Hz]
ΔL_{woct4}	Difference between the Total Sound Power Level at a specific Octave Band L_{woct4} and Total Sound Power Level, A-weighted, L_{wA4}	[dB]
ΔL_{w4}	Difference between the Total Sound Power Level L_{w4} and the A-weighted Total Sound Power Level L_{wA4}	[dB]

Sound measurement test rig scheme according to DIN 45635, Part9 / BS 848, Part2 / ISO 5136 / ANSI / AMCA 330



Fan Sound Data is determined as follows:

1. The A-weighted Total Sound Power Level L_{wA4} inside the outlet duct can be read from the Performance Chart, for a given fan performance.
2. The Sound Power Level L_{woct4} , at a specific Octave Band Mid-Frequency, inside the outlet duct can be determined from following formula:

$$L_{woct4} = L_{wA4} + \Delta L_{woct4}$$

3. The Total Sound Power Level inside the outlet duct can be obtained from the following formula:

$$L_{w4} = L_{wA4} + \Delta L_{w4}$$

The values for ΔL_{woct4} and ΔL_{w4} for each fan size can be found in the SOUND DATA TABLES section, considering the relevant Fan Performance Area and the range of fan speed.

Note that sound data is determined according to DIN 45635 Part9, BS 848 Part2, ISO 5136, / ANSI / AMCA 330 – In-duct method. The accuracy class, as defined by DIN 24166, on catalogue sound data is defined Class 1, i.e. the permissible deviation t_{LWA} on the measured value is equal to +3 dB(A) (negative deviations are permissible).

5.1. Total Sound Power Level at the free outlet, L_{w6}

The value L_{w6} , at the outlet in a free outlet condition, can be considered approximately equal to the Total Sound Power Level outside the termination of the discharge duct.

The Total Sound Power Level, outside the termination of the discharge duct, can be calculated with an approximation, using the “End Reflection” concept: part of the sound power generated by the fan at the discharge is reflected back into the duct when there is an abrupt termination.

The values in octave band can be obtained subtracting, octave by octave, from the L_{woct4} values the reflected back portion of the sound power.

The following table gives the correction factors ΔL_{woct4} for each fan size, that has to be added to the corresponding L_{woct4} value:

		Fan size											
		12	15	18	20	22	25	28	32	36	40	44	49
ΔL_{woct4} [dB]	63 [Hz]	-12	-10	-9	-8	-7	-6	-5	-5	-4	-4	-4	-3
	125 [Hz]	-7	-6	-5	-4	-3	-3	-2	-2	-1	-1	-1	-1
	250 [Hz]	-3	-2	-2	-1	-1	-1	0	0	0	0	0	0

Please refer to the Selection Example for the detailed procedure to follow.

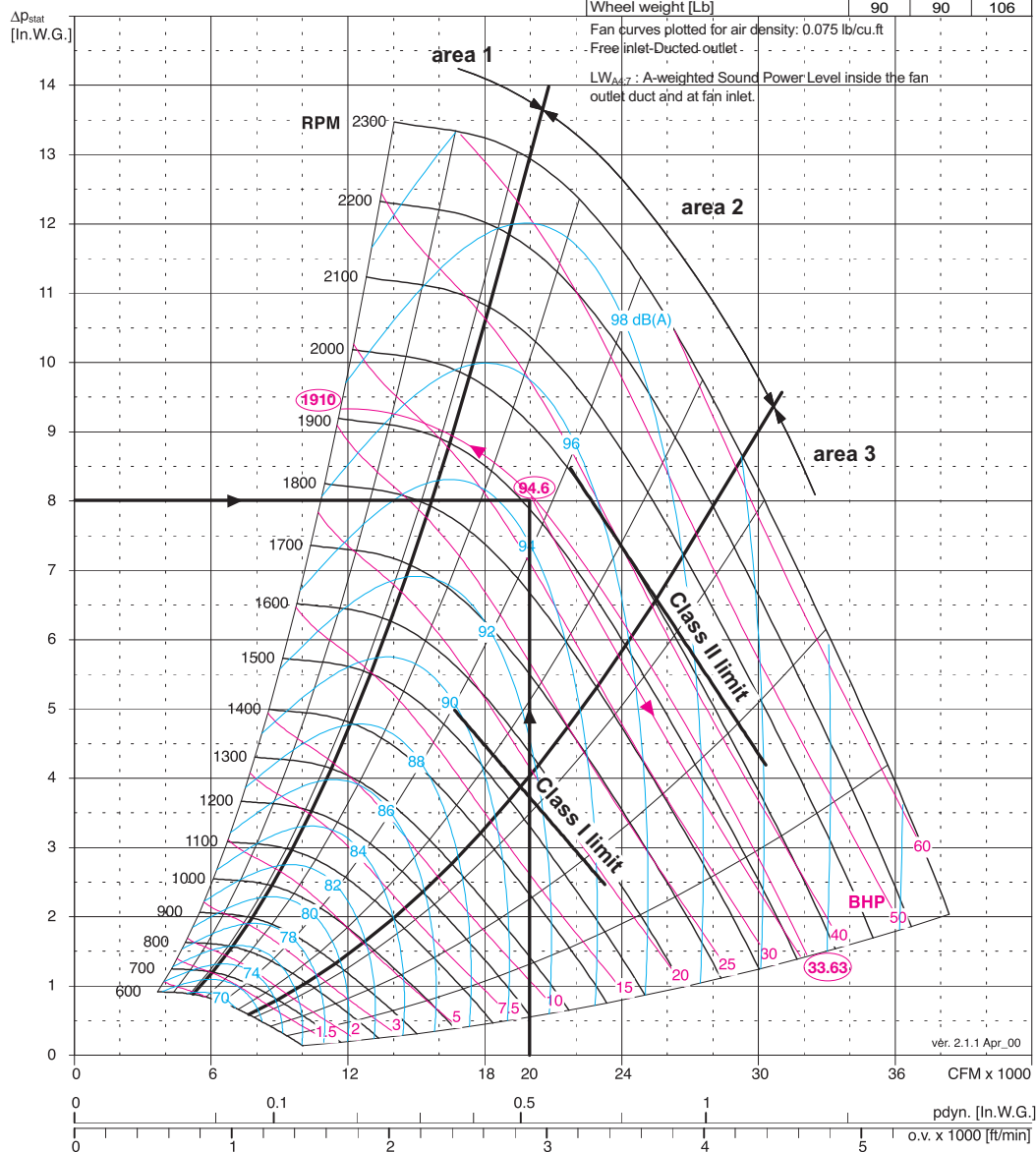
Note that, as L_{w6} is an estimated value, the Class 1 tolerance limit of + 3 dB(A) cannot be applied. Finally, please consider that the low frequencies (125 Hz and below) are strongly affected by vibrations (drive alignment, pulley unbalance, etc) and by ducts not properly acoustically insulated from the fan; the final effect is the generation of additional low frequency noise.

5.2. Selection Example

Fan selection for the following operating parameters:

Air volume = 20,000 CFM
 Δp_{stat} = 8 In.W.G.
 Operating temperature = 68F

ATZAF 25-25	R	T1	T2
Fan Max RPM [min ⁻¹]	1500	1650	2200
Fan Max BHP	17	20	50
Fan Outlet Area O.A. [ft ²]	6.9		
Fan weight [Lb]	311	387	448
Nominal wheel diameter [in.]	25.39		
Wheel width [in.]	20.39		
Wheel No. Blades	10		
Wheel Moment of Inertia [Lb ft ²]	69.5	69.5	82.8
Wheel weight [Lb]	90	90	106



Selected model and size:

ATZAF 25-25 T2

n = 1910 RPM

n_{max} = 2200 RPM

L_{wA4} = 94.6 dB(A)

Δp_{dyn} = 0.52 In.W.G.

BHP = 33.63 HP

o.v. = 2897.5 [ft/min]

a) Sound data

The following steps must be followed to determine the Octave Band values:

a1) Read on the Sound Data Table for ATZAF 25-25 T2, for each octave band and consider the selected fan performance zone and speed (AREA 2, $n > 1081$ RPM) the appropriate values for ΔL_{wOct4} :

9 4 3 -3 -6 -12 -17 -23

a2) Apply these corrections to $L_{wA4} = 94,6$ dB(A) (add the ΔL_{wOct4} values) to obtain values of L_{wOct4} :

103.6 98.6 97.6 91.6 88.6 82.6 77.6 71.6 rounded off to:
104 99 98 92 89 83 78 72

a3) To obtain the L_{w4} Total Sound Power value, add to L_{wA4} the ΔL_{w4} value

$$L_{w4} = L_{wA4} + \Delta L_{w4} = 94.6 \text{ dB(A)} + 11.2 = 105.8 \text{ dB (rounded off to 106 dB)}$$

a4) To obtain the A-weighted Octave Band values, apply to each octave-band value the correction factor listed below:

Octave Band Mid Frequency	63	125	250	500	1000	2000	4000	8000
A- weighting	-26	-16	-9	-3	0	+1	+1	-1

(Values rounded off)

L_{wOctA4} , A-weighted values, are consequently $L_{wOctA4} = L_{wOct4} - (\text{A-weighting})$:

78 83 89 89 89 84 79 71

b) Free-outlet selection

If the same fan must be selected in a free-outlet configuration (type A installation) the step will be;

b1) Calculated the value of Δp_{fa} as explained at section 4.3.

Being $\dot{V}/n$ equal to $20,000 / 1910 = 10.5$, from the relevant graph 4.3 the value K_{fa} of 0.25 is read:

$$\Delta p_{fa} = \Delta p_{stat} - K_{fa} \cdot \Delta p_{dyn} = 8 - 0.25 \cdot 0.52 = 7.87 \text{ In.W.G.}$$

The real obtainable Δp_{stat} pressure is 7.87 In.W.G., 0.13 In.W.G. less than required.

b2) To obtain a Δp_{stat} pressure of 8 In.W.G., in a free-outlet configuration, the fan must be selected at:

$$\Delta p_{stat} = 8 + 0.13 = 8.13 \text{ In.W.G.}$$

b3) With this new value for Δp_{stat} pressure, fan's performance parameters are now:

$n = 1921$ RPM, $L_{wA4} 94.7$ dB(A) (rounded off 95 dB(A)), $\Delta p_{dyn} = 0.52$ In.W.G. and BHP = 34.11 HP.

c) Free - outlet sound data

From the relevant table, for a ATZAF 25 – 25, the following values for ΔL_{wcorr} can be obtained:

-6 dB at 63 Hz; -3 dB at 125 Hz; -1 dB at 250 Hz

As a consequence, the values of L_{woc14} , in a free-outlet configuration, are now:

98 96 97 92 89 83 78 72

Following the same steps as in a4), the A-weighted values can be obtained:

72 80 88 89 89 84 79 71

d) Temperature and altitude correction

If the temperature and altitude, at which the fan will operate are not standard, the pressure values used for the selection must be corrected.

Let's consider the following parameters:

Required Δp_{stat} pressure: 6.4 In.W.G. referred to the following conditions:
 Operating temperature: 100°F
 Altitude: 4800 ft. a.s.l.
 Air volume: 20,000 CFM

From K_p Air Density Correction Factor table (Graph 4.4) the value of 0.8 is read.

The corrected pressure, to be used for the selection on the performance chart, is therefore:

$$\Delta p_{stat1} = \Delta p_{stat2} / K_p = 6.4 / 0.8 = 8 \text{ In.W.G.}$$

Selection should be made with a Δp_{stat1} equal to 8 In.W.G.

We obtain the following operation parameters:

Selected model and size: ATZAF 25-25 T2, $n = 1910$ RPM,

$$\text{effective } \Delta p_{dyn2} = \Delta p_{dyn1} \cdot K_p = 0.52 \text{ In.W.G.} \cdot 0.8 = 0.42 \text{ In.W.G.}$$

Effective absorbed power on fan shaft (corrected value) at that altitude and temperature, will be:

$$P_{w2} = BHP \cdot K_p = 33.63 \text{ HP} \cdot 0.8 = 26.90 \text{ HP}$$



6. Performance charts

6. 1. ATZAF 12-12 R / T1 / T2	14
6. 2. ATZAF 15-15 R / T1 / T2	16
6. 3. ATZAF 18-18 R / T1 / T2	18
6. 4. ATZAF 20-20 R / T1 / T2	20
6. 5. ATZAF 22-22 R / T1 / T2	22
6. 6. ATZAF 25-25 R / T1 / T2	24
6. 7. ATZAF 28-28 R / T1 / T2	26
6. 8. ATZAF 32-32 T1 / T2	28
6. 9. ATZAF 36-36 T1 / T2	30
6.10. ATZAF 40-40 T1 / T2	32
6.11. ATZAF 44-44 T1 / T2	34
6.12. ATZAF 49-49 T1 / T2	36

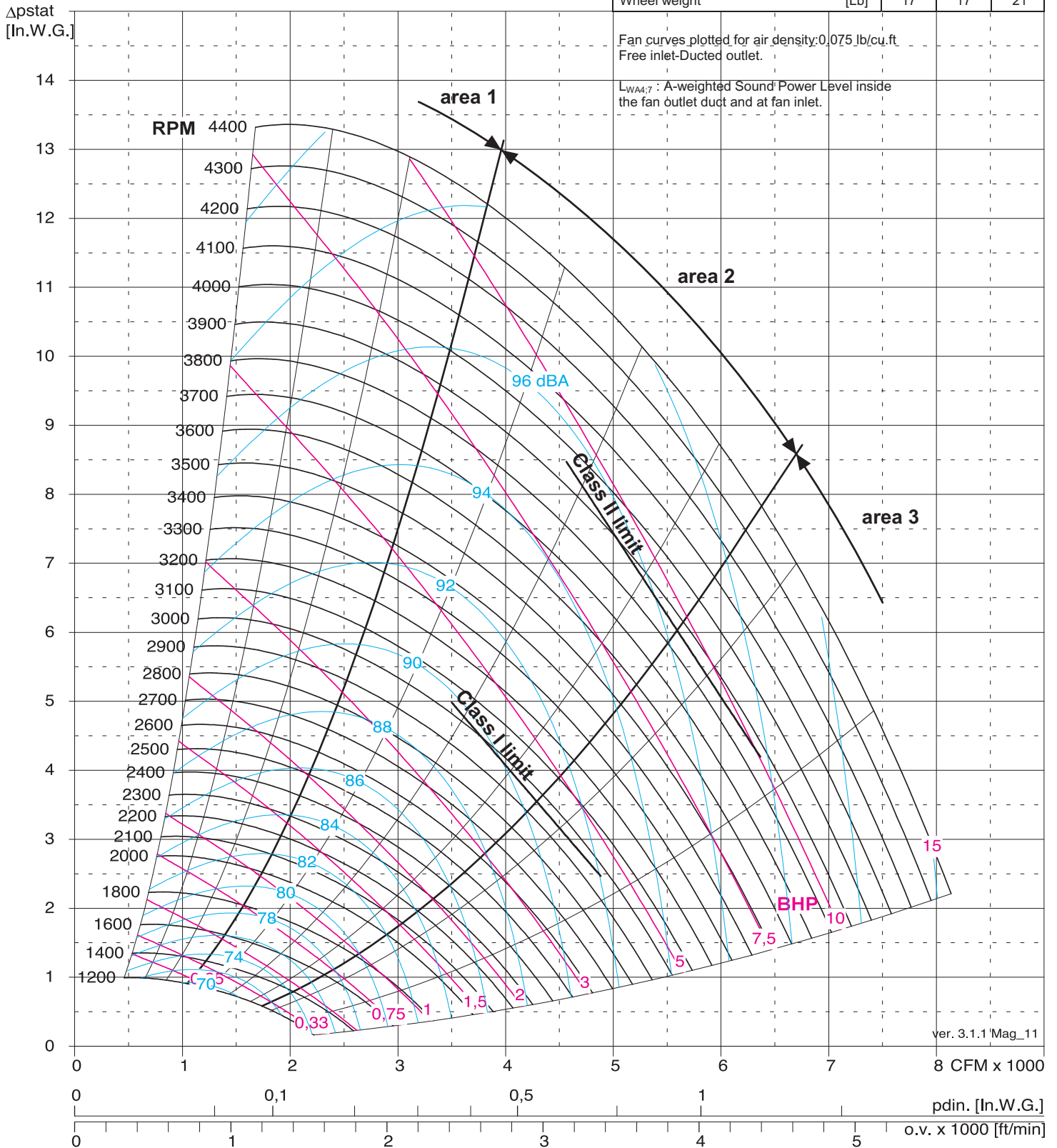


FEG 85
Peak $\eta_t = 71.4$

ATZAF 12-12		R	T1	T2
Fan Max RPM	[min ⁻¹]	3300	3700	4350
Fan Max	[BHP]	6	8	10.5
Fan Outlet Area O.A.	[ft ²]	1.45		
Fan weight	[Lb]	54	72	79
Wheel diameter	[in.]	12.72		
Wheel width	[in.]	10.67		
Wheel No. Blades	z	10		
Wheel Moment of Inertia	[Lb ft ²]	3.45	3.45	4.25
Wheel weight	[Lb]	17	17	21

Fan curves plotted for air density: 0.075 lb/cu.ft
Free inlet-Ducted outlet.

LWA4,7 : A-weighted Sound Power Level inside
the fan outlet duct and at fan inlet.



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Lab. 3.05.00



DOUBLE INLET AIRFOIL FANS - ATZAF

ATZAF 12-12 R / T1 / T2

Δp _{stat} [In.W.G.]																							
V	2	3	4	4,5	5	5,5	6	6,5	7	7,5	8	8,5	9	9,5	10	10,5	11	12	12,5	13			
[CFM]	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP			
800	1703 0.51	2088 0.86																					
1000	1711 0.56	2085 0.94	2408 1.36	2556 1.58																			
1200	1730 0.62	2094 1.02	2409 1.46	2554 1.69	2692 1.94	2824 2.19	2950 2.46	3073 2.73															
1400	1757 0.69	2111 1.1	2419 1.56	2561 1.81	2696 2.07	2825 2.33	2949 2.61	3069 2.89	3185 3.18	3297 3.47	3406 3.77	3513 4.08	3616 4.39										
1600	1790 0.77	2135 1.2	2436 1.68	2575 1.94	2707 2.2	2834 2.48	2956 2.76	3074 3.05	3187 3.35	3298 3.66	3405 3.97	3510 4.29	3611 4.61	3711 5.02	3808 5.36	3903 5.71	3996 6.05	4176 6.76					
1700	1808 0.81	2149 1.26	2447 1.74	2584 2.01	2715 2.28	2841 2.56	2962 2.84	3078 3.14	3191 3.44	3301 3.76	3407 4.07	3511 4.39	3612 4.72	3710 5.14	3807 5.49	3901 5.84	3993 6.19	4172 6.91	4260 7.27	4345 7.63			
1800	1828 0.86	2165 1.31	2459 1.81	2595 2.08	2725 2.35	2849 2.64	2969 2.93	3085 3.23	3197 3.54	3305 3.85	3411 4.18	3514 4.5	3614 4.83	3712 5.26	3807 5.61	3901 5.97	3992 6.33	4170 7.05	4257 7.42	4342 7.79			
1900	1849 0.91	2182 1.37	2473 1.88	2607 2.15	2736 2.43	2859 2.72	2978 3.02	3093 3.32	3204 3.64	3311 3.96	3416 4.28	3518 4.61	3617 4.95	3714 5.38	3809 5.74	3902 6.1	3993 6.46	4170 7.2	4256 7.58	4340 7.95			
2000	1871 0.96	2199 1.43	2488 1.95	2621 2.23	2748 2.51	2870 2.81	2988 3.11	3102 3.42	3212 3.74	3319 4.06	3422 4.39	3524 4.73	3622 5.07	3719 5.51	3813 5.87	3905 6.24	3995 6.6	4171 7.35	4256 7.73	4340 8.11			
2100	1894 1.01	2218 1.5	2503 2.03	2635 2.31	2761 2.6	2883 2.9	2999 3.2	3112 3.52	3221 3.84	3327 4.17	3430 4.5	3531 4.85	3629 5.19	3724 5.64	3818 6	3909 6.37	3999 6.75	4174 7.51	4258 7.89	4342 8.27			
2200	1919 1.07	2238 1.57	2520 2.11	2651 2.39	2776 2.69	2896 2.99	3012 3.3	3123 3.62	3232 3.95	3337 4.28	3439 4.62	3539 4.97	3636 5.32	3731 5.77	3824 6.14	3915 6.52	4004 6.89	4177 7.66	4262 8.05	4344 8.44			
2400	1971 1.2	2281 1.71	2556 2.27	2685 2.57	2807 2.88	2925 3.19	3039 3.51	3149 3.84	3256 4.18	3359 4.52	3460 4.87	3558 5.22	3654 5.58	3748 6.05	3840 6.43	3929 6.81	4017 7.2	4188 7.98	4271 8.38				
2600	2026 1.33	2327 1.87	2596 2.46	2722 2.76	2843 3.08	2959 3.4	3070 3.73	3179 4.07	3284 4.42	3386 4.77	3485 5.13	3582 5.49	3677 5.86	3769 6.34	3859 6.73	3948 7.12	4035 7.52	4204 8.32	4286 8.72				
2800	2086 1.49	2377 2.05	2640 2.66	2763 2.97	2881 3.3	2995 3.63	3105 3.97	3212 4.32	3315 4.68	3416 5.04	3514 5.4	3609 5.78	3702 6.26	3794 6.65	3883 7.05	3970 7.45	4056 7.85	4223 8.67	4304 9.08				
3000	2150 1.65	2430 2.24	2686 2.87	2807 3.2	2923 3.54	3034 3.88	3143 4.23	3248 4.59	3350 4.95	3449 5.33	3545 5.7	3639 6.08	3731 6.58	3821 6.98	3909 7.39	3996 7.79	4080 8.21	4245 9.04	4325 9.46				
3200	2216 1.84	2486 2.45	2736 3.1	2854 3.44	2967 3.79	3077 4.15	3183 4.51	3286 4.88	3387 5.25	3484 5.63	3579 6.01	3672 6.4	3763 6.92	3852 7.33	3939 7.74	4024 8.16	4108 8.58	4271 9.43					
3400	2286 2.04	2546 2.68	2788 3.35	2903 3.71	3014 4.06	3122 4.43	3226 4.8	3328 5.18	3427 5.56	3523 5.95	3617 6.35	3708 6.86	3798 7.28	3885 7.7	3971 8.12	4055 8.55	4138 8.98	4299 9.84					
3600	2359 2.26	2609 2.92	2844 3.62	2956 3.99	3064 4.36	3170 4.73	3272 5.12	3372 5.5	3469 5.9	3564 6.3	3656 6.7	3746 7.23	3835 7.66	3921 8.09	4006 8.52	4089 8.95	4171 9.39	4330 10.27					
3800	2434 2.51	2674 3.19	2902 3.91	3011 4.29	3117 4.67	3220 5.06	3321 5.45	3418 5.85	3514 6.25	3607 6.66	3698 7.07	3787 7.63	3874 8.06	3959 8.5	4043 8.94	4125 9.38	4206 9.83						
4000	2511 2.77	2742 3.48	2963 4.22	3069 4.61	3172 5	3273 5.4	3371 5.8	3467 6.21	3561 6.63	3653 7.05	3742 7.6	3830 8.04	3916 8.48	4000 8.93	4083 9.38	4164 9.83	4243 10.28						
4200	2591 3.06	2813 3.79	3026 4.56	3129 4.95	3230 5.36	3329 5.76	3425 6.18	3519 6.6	3611 7.02	3701 7.58	3789 8.03	3875 8.47	3960 8.93	4043 9.38	4124 9.84	4204 10.3							
4400	2672 3.36	2885 4.12	3092 4.91	3192 5.32	3290 5.73	3386 6.15	3480 6.58	3572 7.01	3662 7.44	3751 8.02	3837 8.47	3922 8.93	4006 9.4	4087 9.86	4168 10.33								
4600	2755 3.7	2960 4.48	3160 5.29	3257 5.71	3353 6.13	3446 6.56	3538 7	3628 7.44	3716 8.02	3803 8.48	3888 8.95	3972 9.42	4054 9.89	4134 10.36									
4800	2840 4.06	3037 4.86	3230 5.69	3324 6.12	3417 6.56	3508 7	3598 7.44	3686 7.89	3773 8.5	3858 8.97	3941 9.44	4023 9.92	4104 10.4										
5000	2926 4.44	3116 5.27	3302 6.12	3394 6.56	3484 7.01	3573 7.46	3660 7.91	3746 8.52	3831 9	3914 9.48	3996 9.97	4077 10.45											
5200	3013 4.85	3196 5.7	3376 6.58	3465 7.03	3553 7.48	3639 7.94	3724 8.56	3808 9.04	3891 9.53	3973 10.02													
5400	3101 5.3	3278 6.16	3452 7.06	3538 7.52	3623 7.99	3707 8.6	3791 9.09	3872 9.59	3953 10.08														
5600	3190 5.76	3361 6.65	3529 7.57	3613 8.18	3696 8.66	3778 9.16	3858 9.66	3938 10.16															
5800	3280 6.26	3445 7.17	3608 8.25	3689 8.74	3770 9.24	3849 9.74	3928 10.25																
6000	3371 6.79	3530 7.72	3689 8.83	3767 9.33	3845 9.84	3923 10.35																	
6200	3463 7.35	3617 8.44	3770 9.44	3846 9.96	3922 10.47																		
6400	3555 7.94	3704 9.07	3853 10.09																				
6600	3648 8.7	3792 9.72																					
6800	3741 9.37	3881 10.41																					
7000	3835 10.08																						
7100	3882 10.44																						

SOUND DATA TABLE

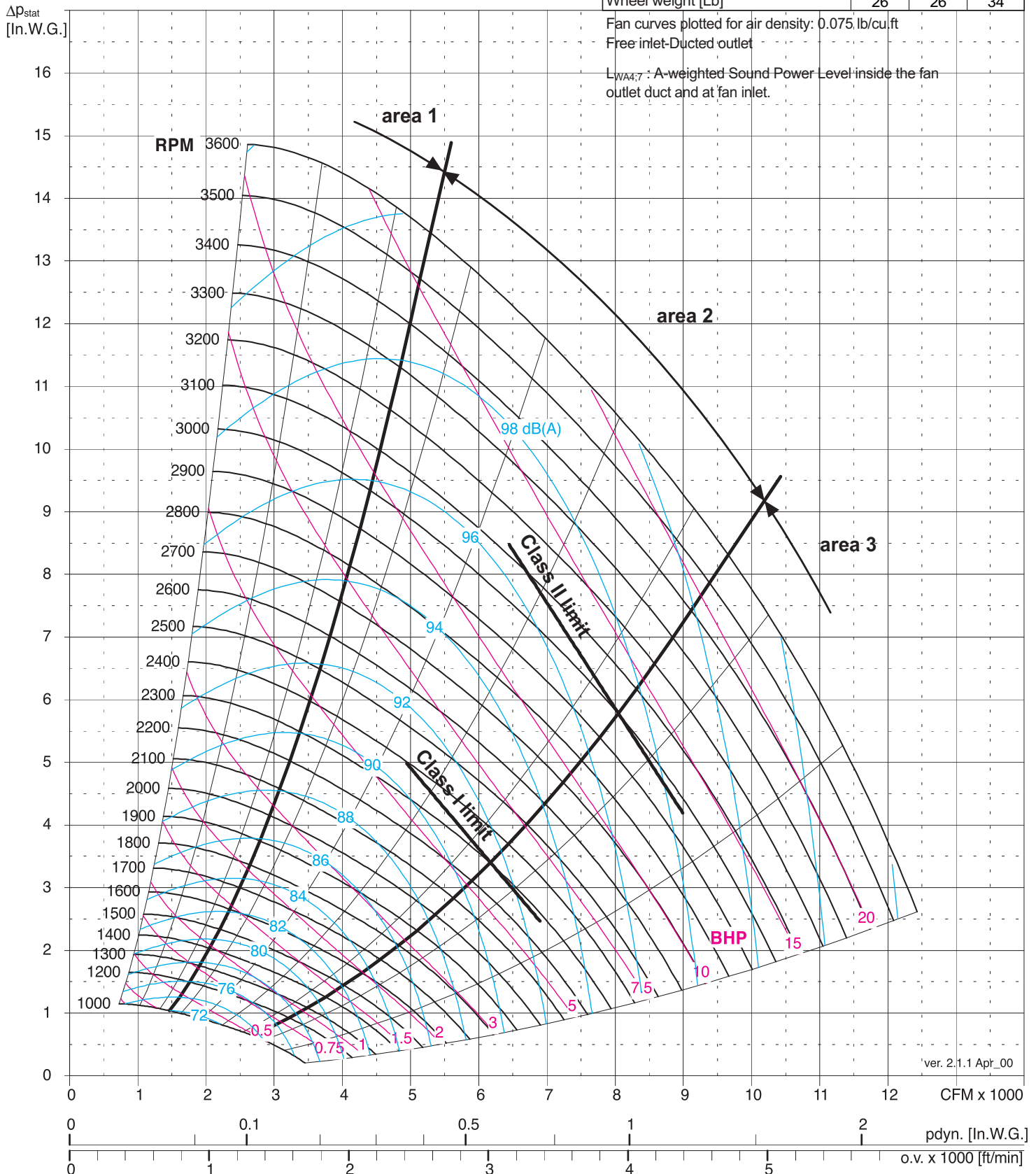
Fan Model and Size	Fan Performance Area	Range of fan speed	ΔL_{W4}	ΔL_{Woc4} 63	ΔL_{Woc4} 125	ΔL_{Woc4} 250	ΔL_{Woc4} 500	ΔL_{Woc4} 1000	ΔL_{Woc4} 2000	ΔL_{Woc4} 4000	ΔL_{Woc4} 8000
ATZAF 12-12	Area 1	RPM < 2130	16.3	15	9	4	-5	-9	-14	-20	-26
		RPM > 2131	12.6	11	5	2	-2	-7	-13	-20	-26
	Area 2	RPM < 2130	14.7	12	9	7	-6	-9	-11	-15	-23
		RPM > 2131	12.0	10	5	2	-2	-7	-10	-17	-24
	Area 3	RPM < 2130	13.1	11	6	5	-6	-9	-10	-15	-21
		RPM > 2131	11.1	9	4	2	-5	-6	-10	-15	-20

Performance certified is for installation type B - Free inlet, Ducted outlet. Performance ratings do not include the effects of appurtenances (accessories). Power rating (BHP) does not include transmission losses. The AMCA Certified Ratings Seal applies to air performance ratings only.



FEG 80
Peak $\eta_t = 71.9$

ATZAF 15-15			
Fan Max RPM [min ⁻¹]	2600	2900	3500
Fan Max BHP	8	10.5	15
Fan Outlet Area O.A. [ft ²]	2.04		
Fan weight [Lb]	85	105	123
Nominal wheel diameter [in.]	16.14		
Wheel width [in.]	13.03		
Wheel No. Blades	10		
Wheel Moment of Inertia [Lb ft ²]	8	8	10.5
Wheel weight [Lb]	26	26	34





DOUBLE INLET AIRFOIL FANS - ATZAF

ATZAF 15-15 R / T1 / T2

Δp _{stat} [In.W.G.]																							
V	3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10	10.5	11	12	13	13.5			
[CFM]	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	
1200	1618	1																					
1400	1622	1.13	1749	1.33	1868	1.54																	
1600	1630	1.25	1755	1.48	1872	1.72	1983	1.95	2089	2.18	2190	2.42											
1800	1641	1.37	1764	1.62	1880	1.88	1989	2.14	2093	2.4	2193	2.67	2289	2.93	2382	3.19	2471	3.45					
2000	1656	1.49	1777	1.76	1890	2.04	1998	2.32	2101	2.61	2199	2.9	2294	3.19	2385	3.48	2473	3.76	2559	4.05	2642	4.34	
2200	1672	1.6	1791	1.89	1904	2.19	2010	2.5	2111	2.81	2208	3.12	2302	3.43	2392	3.75	2479	4.06	2564	4.38	2646	4.69	
2400	1691	1.72	1808	2.03	1919	2.35	2024	2.67	2124	3	2220	3.33	2312	3.67	2401	4	2487	4.34	2571	4.68	2652	5.02	
2600	1711	1.85	1827	2.17	1936	2.5	2040	2.84	2139	3.19	2234	3.54	2325	3.9	2413	4.26	2498	4.62	2580	4.98	2661	5.34	
2800	1732	1.98	1847	2.31	1955	2.66	2058	3.02	2155	3.38	2249	3.75	2339	4.13	2426	4.5	2511	4.88	2592	5.27	2672	5.65	
3000	1754	2.11	1868	2.47	1975	2.83	2077	3.2	2173	3.58	2266	3.96	2355	4.36	2441	4.75	2525	5.15	2606	5.55	2684	5.96	
3200	1778	2.26	1890	2.62	1996	3	2097	3.39	2193	3.78	2284	4.18	2373	4.59	2458	5	2541	5.42	2621	5.84	2699	6.26	
3400	1802	2.41	1913	2.79	2018	3.18	2118	3.58	2213	3.99	2304	4.4	2392	4.83	2476	5.25	2558	5.69	2637	6.12	2714	6.56	
3600	1827	2.57	1938	2.97	2042	3.37	2140	3.78	2234	4.21	2324	4.63	2411	5.07	2495	5.51	2576	5.96	2655	6.41	2731	6.87	
3800	1854	2.74	1963	3.15	2065	3.57	2163	3.99	2257	4.43	2346	4.87	2432	5.32	2515	5.78	2596	6.24	2674	6.71	2750	7.18	
4000	1881	2.92	1988	3.34	2090	3.77	2187	4.21	2280	4.66	2368	5.12	2454	5.58	2536	6.05	2616	6.53	2693	7.01	2769	7.49	
4200	1908	3.11	2015	3.54	2116	3.99	2212	4.45	2303	4.91	2391	5.38	2476	5.85	2558	6.34	2637	6.83	2714	7.32	2789	7.82	
4400	1937	3.31	2042	3.76	2142	4.22	2237	4.69	2328	5.16	2415	5.65	2499	6.14	2580	6.63	2659	7.13	2735	7.64	2810	8.15	
4600	1967	3.51	2070	3.98	2169	4.45	2263	4.94	2353	5.43	2440	5.92	2523	6.43	2604	6.94	2682	7.45	2757	7.97	2831	8.49	
4800	1997	3.73	2099	4.21	2197	4.7	2290	5.2	2379	5.7	2465	6.21	2548	6.73	2628	7.25	2705	7.78	2780	8.31	2854	8.84	
5000	2028	3.96	2129	4.46	2225	4.96	2317	5.47	2406	5.99	2491	6.51	2573	7.04	2652	7.58	2729	8.12	2804	8.66	2877	9.21	
5200	2061	4.2	2160	4.71	2254	5.23	2345	5.76	2433	6.29	2517	6.83	2599	7.37	2677	7.92	2754	8.47	2828	9.02	2900	9.76	
5400	2094	4.45	2191	4.98	2284	5.51	2374	6.05	2461	6.6	2544	7.15	2625	7.71	2703	8.27	2779	8.83	2852	9.4	2924	10.16	
5600	2128	4.71	2223	5.25	2315	5.8	2404	6.36	2489	6.92	2572	7.49	2652	8.06	2729	8.63	2805	9.21	2878	9.79	2949	10.57	
5800	2163	4.98	2256	5.54	2347	6.11	2434	6.68	2518	7.26	2600	7.83	2679	8.42	2756	9	2831	9.59	2903	10.38	2974	11	
6000	2198	5.27	2290	5.85	2379	6.43	2465	7.01	2548	7.6	2629	8.2	2708	8.79	2784	9.39	2858	9.99	2930	10.8	3000	11.43	
6200	2235	5.57	2324	6.16	2412	6.76	2497	7.36	2579	7.96	2659	8.57	2736	9.18	2812	9.79	2885	10.41	2957	11.24	3026	11.89	
6400	2272	5.88	2360	6.49	2445	7.1	2529	7.72	2610	8.33	2689	8.96	2766	9.58	2840	10.21	2913	11.04	2984	11.69	3053	12.35	
6600	2310	6.21	2396	6.83	2480	7.46	2562	8.09	2642	8.72	2720	9.36	2796	9.99	2870	10.63	2942	11.49	3012	12.16	3080	12.83	
6800	2349	6.55	2433	7.19	2515	7.83	2596	8.47	2675	9.12	2751	9.77	2826	10.42	2899	11.28	2971	11.96	3040	12.64	3108	13.32	
7000	2388	6.91	2470	7.56	2551	8.21	2630	8.87	2708	9.53	2784	10.2	2858	11.06	2930	11.75	3000	12.44	3069	13.14	3137	13.83	
7200	2428	7.28	2509	7.94	2588	8.61	2666	9.28	2742	9.96	2816	10.63	2889	11.53	2961	12.23	3031	12.94	3099	13.64	3166	14.35	
7400	2469	7.67	2548	8.34	2625	9.02	2701	9.71	2776	10.4	2850	11.3	2922	12.01	2992	12.73	3061	13.45	3129	14.17	3195	14.89	
7600	2511	8.08	2587	8.76	2663	9.46	2738	10.15	2812	11.05	2884	11.78	2955	12.51	3024	13.24	3093	13.97	3160	14.71			
7800	2553	8.5	2628	9.2	2702	9.9	2775	10.8	2848	11.53	2919	12.28	2989	13.02	3057	13.77	3125	14.51					
8000	2595	8.94	2669	9.65	2741	10.36	2813	11.29	2884	12.04	2954	12.79	3023	13.55	3091	14.31							
8200	2639	9.39	2710	10.11	2781	11.03	2852	11.79	2921	12.56	2990	13.32	3058	14.1	3125	14.87							
8400	2682	9.87	2752	10.78	2822	11.54	2891	12.31	2959	13.09	3027	13.87	3093	14.66									
8600	2726	10.36	2795	11.3	2863	12.07	2930	12.85	2997	13.64	3064	14.44											
8800	2771	11.06	2838	11.83	2904	12.62	2971	13.41	3036	14.21													
9000	2816	11.6	2881	12.39	2946	13.18	3011	13.99	3076	14.8													
9200	2861	12.17	2925	12.96	2989	13.77	3053	14.59															
9400	2907	12.75	2970	13.56	3032	14.37																	
9600	2953	13.36	3014	14.17	3075	15																	
9800	3000	13.99	3060	14.81																			
10000	3047	14.64																					

SOUND DATA TABLE

Fan Model and Size	Fan Performance Area	Range of fan speed	ΔL_{W4}	ΔL_{Woct4} 63	ΔL_{Woct4} 125	ΔL_{Woct4} 250	ΔL_{Woct4} 500	ΔL_{Woct4} 1000	ΔL_{Woct4} 2000	ΔL_{Woct4} 4000	ΔL_{Woct4} 8000
ATZAF 15-15	Area 1	RPM < 1080	15.8	14	10	4	-7	-9	-14	-20	-27
		1081 <RPM< 2130	16.6	15	10	5	-6	-9	-15	-21	-27
		RPM > 2131	14.2	13	6	3	-4	-7	-14	-21	-27
	Area 2	RPM < 1080	16.5	15	10	4	-7	-7	-13	-16	-25
		1081 <RPM< 2130	14.3	12	8	6	-6	-7	-14	-17	-24
		RPM > 2131	11.7	10	4	1	-2	-5	-13	-19	-25
	Area 3	RPM < 1080	13.6	11	9	3	-6	-6	-11	-15	-20
		1081 <RPM< 2130	11.0	9	3	3	-6	-6	-11	-15	-19
		RPM > 2131	8.2	6	1	-4	-5	-3	-11	-15	-18

Performance certified is for installation type B - Free inlet, Ducted outlet. Performance ratings do not include the effects of appurtenances (accessories). Power rating (BHP) does not include transmission losses. The AMCA Certified Ratings Seal applies to air performance ratings only.



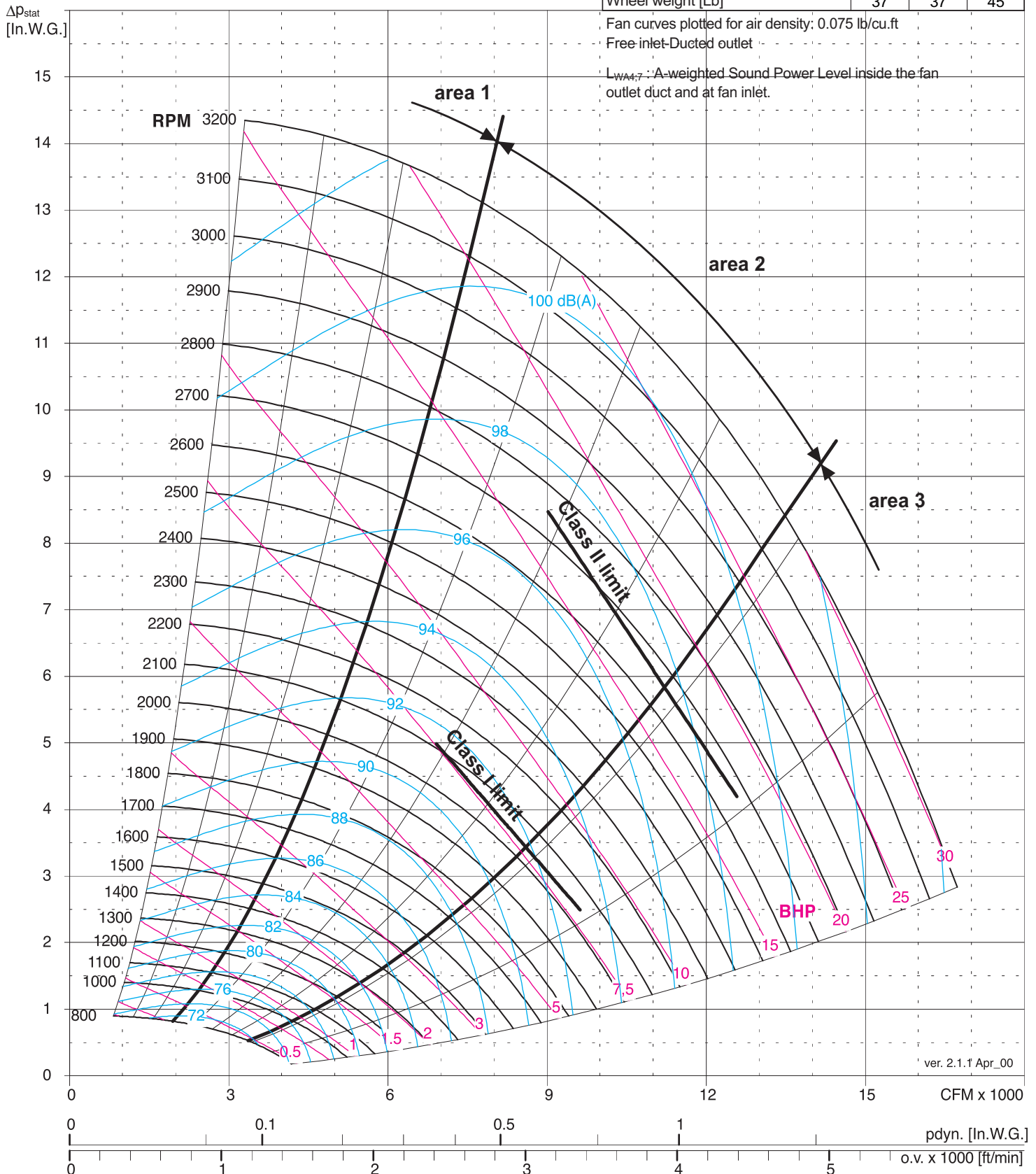
FEG 85
Peak $\eta_t = 77.5$

ATZAF 18-18			
Fan Max RPM [min ⁻¹]	2300	2450	3100
Fan Max BHP	10	12.5	20
Fan Outlet Area O.A. [ft ²]	2.86		
Fan weight [Lb]	115	148	163
Nominal wheel diameter [in.]	18.11		
Wheel width [in.]	14.49		
Wheel No. Blades	10		
Wheel Moment of Inertia [Lb ft ²]	14.5	14.5	17.4
Wheel weight [Lb]	37	37	45

Fan curves plotted for air density: 0.075 lb/cu.ft

Free inlet-Ducted outlet

L_{WA}4,7: A-weighted Sound Power Level inside the fan outlet duct and at fan inlet.



ver. 2.1.1 Apr_00

Performance certified is for installation type B - Free inlet, Ducted outlet. Performance ratings do not include the effects of appurtenances (accessories). Power rating (BHP) does not include transmission losses. The AMCA Certified Ratings Seal applies to air performance ratings only.



DOUBLE INLET AIRFOIL FANS - ATZAF

ATZAF 18-18 R / T1 / T2

Δpstat [in.W.G.]																																								
V	2		3		3.5		4		4.5		5		5.5		6		6.5		7		7.5		8		8.5		9		9.5		10		10.5		11		12		13	
[CFM]	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
1800	1204	0.96	1467	1.6	1582	1.95	1690	2.32																																
2000	1209	1.02	1470	1.68	1585	2.04	1693	2.42	1794	2.81	1890	3.22																												
2400	1222	1.14	1480	1.84	1593	2.22	1700	2.62	1800	3.04	1895	3.47	1986	3.92	2072	4.38	2156	4.85	2236	5.32	2314	5.81																		
2800	1238	1.27	1492	2.01	1604	2.41	1709	2.83	1809	3.27	1903	3.73	1993	4.2	2079	4.68	2162	5.17	2241	5.68	2319	6.19	2393	6.71	2466	7.4	2536	7.95	2605	8.52	2672	9.09								
3200	1258	1.42	1507	2.2	1618	2.62	1722	3.06	1820	3.52	1913	4	2002	4.49	2088	4.99	2170	5.5	2249	6.03	2326	6.57	2400	7.11	2472	7.83	2542	8.41	2610	9	2677	9.6	2742	10.21	2805	10.82	2928	12.05	3046	13.3
3600	1281	1.58	1525	2.4	1634	2.85	1736	3.31	1833	3.78	1926	4.28	2014	4.79	2099	5.31	2180	5.85	2259	6.39	2335	6.95	2408	7.51	2480	8.27	2550	8.87	2617	9.49	2684	10.11	2748	10.74	2811	11.37	2934	12.66	3051	13.96
4000	1308	1.77	1545	2.63	1652	3.09	1753	3.57	1849	4.07	1940	4.59	2027	5.11	2111	5.66	2192	6.21	2270	6.78	2346	7.35	2419	7.93	2490	8.71	2559	9.34	2626	9.98	2692	10.62	2756	11.27	2819	11.93	2941	13.26	3058	14.6
4200	1322	1.87	1556	2.76	1663	3.23	1763	3.72	1858	4.22	1948	4.75	2035	5.28	2119	5.84	2199	6.4	2276	6.97	2352	7.56	2424	8.15	2495	8.95	2564	9.58	2631	10.23	2697	10.88	2761	11.54	2824	12.21	2945	13.56	3062	14.93
4400	1338	1.98	1569	2.88	1673	3.37	1773	3.87	1867	4.38	1957	4.92	2043	5.46	2126	6.02	2206	6.6	2283	7.18	2358	7.77	2431	8.37	2501	9.19	2570	9.83	2637	10.49	2702	11.15	2766	11.82	2828	12.5	2949	13.87	3066	15.26
4600	1355	2.09	1581	3.02	1685	3.51	1783	4.02	1877	4.55	1966	5.09	2052	5.65	2134	6.22	2214	6.8	2291	7.39	2365	7.99	2437	8.6	2508	9.43	2576	10.09	2643	10.75	2708	11.42	2771	12.1	2834	12.79	2954	14.18	3070	15.58
4800	1372	2.21	1595	3.16	1697	3.66	1794	4.18	1887	4.72	1976	5.27	2061	5.84	2143	6.42	2222	7.01	2298	7.61	2372	8.22	2444	8.84	2514	9.68	2582	10.35	2649	11.02	2714	11.7	2777	12.39	2839	13.09	2960	14.5	3075	15.92
5000	1390	2.33	1609	3.31	1710	3.82	1806	4.35	1898	4.9	1986	5.46	2070	6.04	2152	6.62	2231	7.23	2307	7.84	2380	8.45	2452	9.28	2522	9.94	2589	10.61	2656	11.3	2720	11.99	2783	12.69	2845	13.39	2965	14.82	3080	16.26
5200	1409	2.46	1624	3.46	1724	3.99	1819	4.53	1910	5.09	1997	5.66	2081	6.24	2161	6.84	2240	7.45	2315	8.07	2389	8.7	2460	9.53	2529	10.21	2597	10.89	2663	11.58	2727	12.28	2790	12.99	2852	13.71	2971	15.15	3086	16.61
5400	1429	2.59	1640	3.62	1738	4.16	1832	4.71	1922	5.28	2008	5.86	2091	6.46	2171	7.06	2249	7.68	2324	8.31	2397	8.95	2468	9.8	2537	10.48	2604	11.17	2670	11.88	2734	12.58	2797	13.3	2858	14.02	2977	15.48	3092	16.96
5600	1450	2.73	1656	3.79	1753	4.34	1846	4.9	1934	5.48	2020	6.07	2103	6.68	2182	7.29	2259	7.92	2334	8.56	2406	9.2	2477	10.07	2546	10.77	2613	11.47	2678	12.18	2742	12.89	2804	13.62	2865	14.35	2984	15.83	3098	17.32
5800	1471	2.88	1673	3.96	1768	4.52	1860	5.1	1948	5.69	2032	6.29	2114	6.91	2193	7.53	2270	8.17	2344	8.81	2416	9.47	2486	10.36	2554	11.06	2621	11.77	2686	12.49	2750	13.21	2812	13.95	2873	14.69	2991	16.18		
6000	1493	3.03	1691	4.14	1785	4.71	1875	5.3	1962	5.9	2046	6.52	2126	7.14	2205	7.78	2281	8.42	2354	9.08	2426	9.74	2496	10.65	2564	11.36	2630	12.08	2695	12.8	2758	13.54	2820	14.28	2881	15.03	2998	16.54		
6200	1516	3.19	1710	4.32	1802	4.91	1891	5.51	1976	6.12	2059	6.75	2139	7.39	2217	8.03	2292	8.69	2365	9.35	2436	10.03	2506	10.95	2573	11.67	2639	12.39	2703	13.13	2767	13.88	2828	14.63	2889	15.38	3006	16.91		
6400	1539	3.36	1729	4.52	1819	5.12	1907	5.73	1991	6.35	2073	6.99	2153	7.64	2229	8.29	2304	8.96	2377	9.63	2447	10.32	2516	11.26	2583	11.98	2649	12.72	2713	13.47	2776	14.22	2837	14.98	2897	15.75	3014	17.29		
6600	1563	3.54	1749	4.72	1837	5.33	1924	5.96	2007	6.59	2088	7.24	2166	7.9	2242	8.56	2317	9.24	2389	9.92	2459	10.64	2527	11.57	2594	12.31	2659	13.06	2723	13.81	2785	14.57	2846	15.34	2906	16.12	3022	17.68		
6800	1588	3.72	1769	4.93	1856	5.55	1941	6.19	2023	6.84	2103	7.5	2181	8.17	2256	8.84	2330	9.53	2401	10.22	2470	11.16	2538	11.9	2605	12.65	2669	13.4	2733	14.17	2795	14.94	2856	15.72	2915	16.5	3031	18.07		
7000	1613	3.92	1790	5.14	1876	5.78	1959	6.43	2040	7.09	2119	7.76	2196	8.44	2270	9.13	2343	9.83	2414	10.53	2483	11.49	2550	12.24	2616	12.99	2680	13.76	2743	14.53	2805	15.31	2865	16.1	2925	16.89	3040	18.48		
7200	1639	4.12	1812	5.37	1896	6.02	1978	6.68	2058	7.35	2136	8.04	2211	8.73	2285	9.43	2357	10.13	2427	10.84	2495	11.82	2562	12.58	2628	13.35	2692	14.13	2754	14.91	2816	15.7	2876	16.49	2935	17.29	3049	18.9		
7400	1665	4.32	1834	5.6	1917	6.26	1997	6.94	2076	7.62	2152	8.32	2227	9.02	2300	9.73	2371	10.45	2441	11.17	2509	12.17	2575	12.94	2640	13.71	2703	14.5	2766	15.29	2826	16.09	2886	16.89	2945	17.7	3059	19.32		
7600	1691	4.54	1857	5.84	1938	6.52	2017	7.2	2094	7.9	2170	8.61	2244	9.32	2316	10.04	2386	10.77	2455	11.75	2522	12.52	2588	13.3	2652	14.09	2715	14.88	2777	15.69	2838	16.49	2897	17.3	2955	18.12	3069	19.76		
7800	1719	4.77	1881	6.09	1960	6.78	2037	7.48	2114	8.19	2188	8.91	2261	9.63	2332	10.36	2402	11.1	2470	12.1	2536	12.89	2602	13.68	2665	14.47	2728	15.28	2789	16.09	2849	16.9	2909	17.73	2967	18.55				
8000	1746	5.01	1904	6.35	1982	7.05	2058	7.76	2133	8.48	2207	9.21	2279	9.95	2349	10.69	2418	11.44	2485	12.46	2551	13.26	2616	14.06	2679	14.87	2741	15.68	2802	16.5	2862	17.33	2920	18.16	2978	18.99				
8200	1774	5.25	1929	6.62	2005	7.33	2080	8.05	2153	8.79	2226	9.53	2297	10.28	2366	11.03	2434	11.79	2501	12.84	2566	13.64	2630	14.45	2693	15.27	2754	16.1	2815	16.93	2874	17.76	2932	18.6	2990	19.44				
8400	1802	5.51	1954	6.9	2028	7.62	2102	8.36	2174	9.1	2245	9.85	2315	10.61	2384	11.38	2451	12.41	2517	13.22	2582	14.03	2645	14.86	2707	15.69	2768	16.52	2828	17.36	2887	18.2								

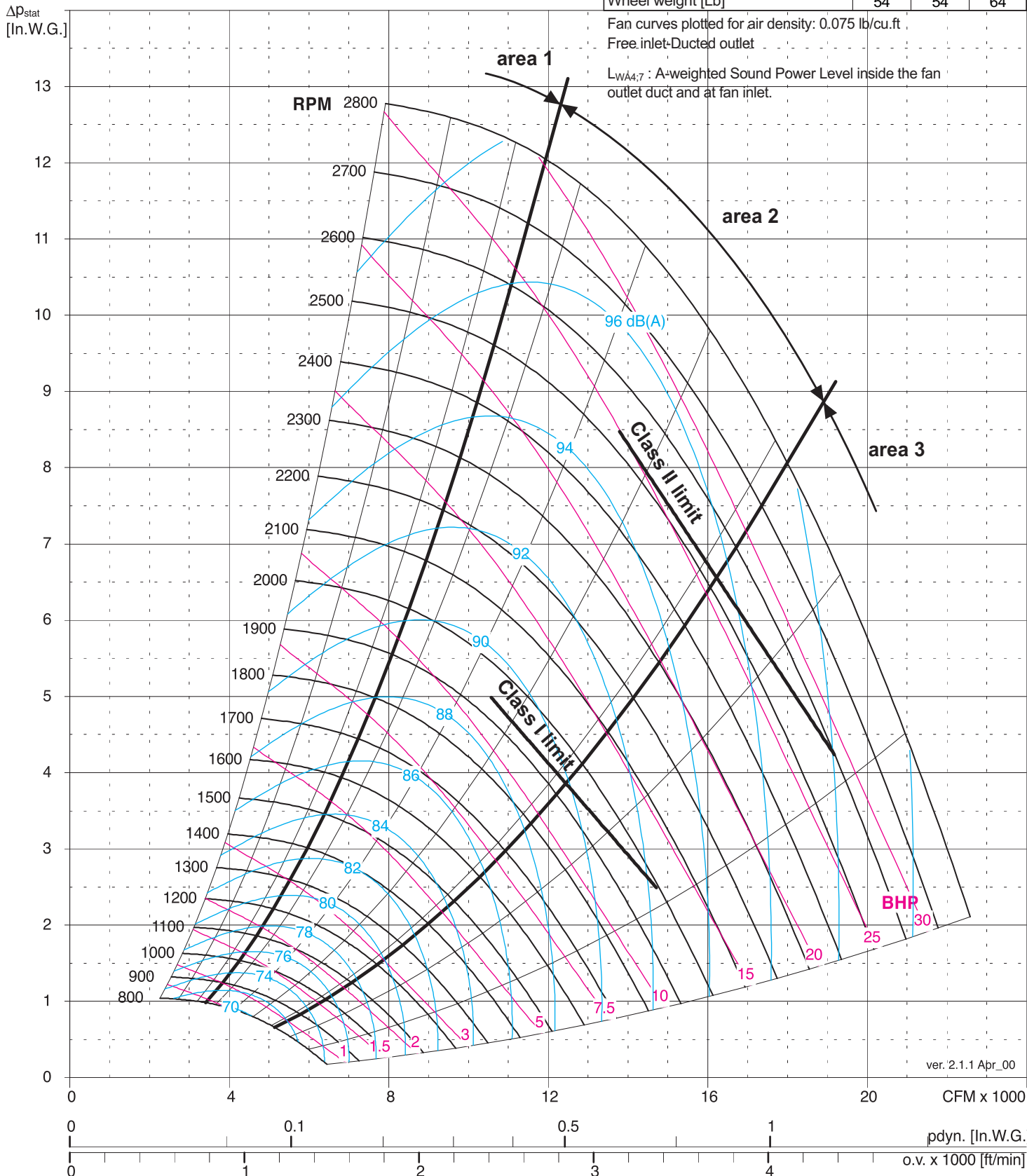
SOUND DATA TABLE

F



FEG 85
Peak $\eta_t = 79.7$

ATZAF 20-20	R	T1	T2
Fan Max RPM [min ⁻¹]	2100	2300	2750
Fan Max BHP	12.5	17.5	29.5
Fan Outlet Area O.A. [ft ²]	4.38		
Fan weight [Lb]	178	222	257
Nominal wheel diameter [in.]	20.16		
Wheel width [in.]	16.06		
Wheel No. Blades	10		
Wheel Moment of Inertia [Lb ft ²]	28	28	32
Wheel weight [Lb]	54	54	64





DOUBLE INLET AIRFOIL FANS - ATZAF

ATZAF 20-20 R / T1 / T2

Δp _{stat} [In.W.G.]																								
V	2	2.5	3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10	10.5	11	12				
[CFM]	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
3500	1112	1.71																						
4000	1119	1.84	1244	2.41	1358	3.01																		
4500	1130	1.99	1252	2.57	1364	3.20	1469	3.86	1567	4.55														
5000	1145	2.16	1263	2.75	1372	3.40	1476	4.09	1573	4.80	1665	5.55	1752	6.32										
5500	1165	2.35	1277	2.96	1384	3.62	1484	4.32	1580	5.06	1671	5.84	1757	6.64	1840	7.46	1919	8.30						
6000	1189	2.57	1296	3.19	1399	3.87	1496	4.58	1589	5.34	1679	6.13	1764	6.96	1846	7.80	1925	8.68	2001	9.57	2074	10.47		
6500	1217	2.82	1319	3.46	1417	4.14	1511	4.87	1602	5.64	1689	6.45	1773	7.29	1853	8.16	1931	9.06	2006	9.98	2079	10.91	2149	11.86
7000	1248	3.10	1345	3.76	1439	4.45	1530	5.20	1617	5.98	1702	6.80	1784	7.65	1863	8.54	1940	9.45	2014	10.39	2086	11.35	2155	12.33
7500	1282	3.42	1374	4.09	1464	4.80	1551	5.56	1636	6.35	1718	7.18	1798	8.05	1875	8.95	1950	9.88	2023	10.83	2094	11.81	2163	12.81
8000	1318	3.76	1406	4.45	1492	5.18	1576	5.95	1658	6.76	1737	7.60	1814	8.48	1890	9.39	1963	10.33	2034	11.30	2104	12.30	2172	13.31
8500	1357	4.14	1441	4.85	1523	5.60	1604	6.39	1682	7.21	1759	8.06	1834	8.96	1907	9.88	1978	10.83	2048	11.81	2116	12.82	2183	13.85
9000	1398	4.55	1478	5.29	1557	6.06	1634	6.86	1709	7.70	1783	8.57	1856	9.47	1927	10.41	1996	11.37	2064	12.36	2131	13.38	2196	14.42
9500	1440	5.00	1517	5.76	1592	6.55	1666	7.38	1739	8.23	1810	9.12	1881	10.03	1949	10.98	2017	11.96	2083	12.96	2148	13.96	2212	15.03
10000	1484	5.48	1557	6.27	1630	7.09	1701	7.93	1771	8.81	1840	9.71	1908	10.64	1974	11.60	2040	12.59	2104	13.60	2168	14.64	2230	15.69
10500	1528	6.00	1599	6.82	1669	7.66	1738	8.53	1805	9.43	1871	10.35	1937	11.30	2001	12.27	2065	13.27	2127	14.29	2189	15.34	2250	16.41
11000	1575	6.56	1643	7.41	1710	8.28	1776	9.17	1841	10.09	1905	11.03	1968	11.99	2031	12.98	2092	14.00	2153	15.03	2213	16.09	2272	17.17
11500	1622	7.17	1687	8.04	1752	8.94	1815	9.86	1878	10.79	1940	11.76	2002	12.74	2062	13.75	2122	14.78	2181	15.83	2239	16.90	2296	18.31
12000	1670	7.81	1733	8.72	1795	9.64	1857	10.59	1917	11.55	1977	12.53	2036	13.53	2095	14.56	2153	15.60	2210	16.67	2267	18.07	2323	19.20
12500	1719	8.50	1780	9.44	1840	10.39	1899	11.38	1958	12.35	2016	13.35	2073	14.38	2130	15.42	2186	16.48	2241	17.67	2296	19.00	2351	20.15
13000	1768	9.24	1827	10.21	1885	11.19	1942	12.18	1999	13.19	2055	14.22	2111	15.27	2166	16.33	2220	17.41	2274	18.63	2328	19.98	2381	21.15
13500	1818	10.02	1875	11.02	1931	12.03	1987	13.05	2042	14.09	2096	15.14	2150	16.21	2204	17.29	2257	18.71	2309	19.86	2361	21.02	2413	22.20
14000	1869	10.85	1924	11.88	1978	12.92	2032	13.97	2085	15.03	2138	16.11	2191	17.20	2243	18.62	2294	19.77	2345	20.93	2396	22.12	2446	23.31
14500	1920	11.73	1973	12.79	2026	13.86	2078	14.94	2130	16.02	2181	17.12	2232	18.55	2283	19.71	2333	20.88	2382	22.07	2431	23.27	2480	24.48
15000	1972	12.66	2023	13.75	2075	14.85	2125	15.95	2176	17.07	2225	18.51	2275	19.67	2324	20.85	2372	22.05	2421	23.25	2469	24.47	2516	25.70
15500	2024	13.64	2074	14.76	2124	15.89	2173	17.02	2222	18.48	2270	19.66	2318	20.85	2366	22.05	2413	23.27	2460	24.50	2507	25.74	2553	26.98
16000	2076	14.67	2125	15.83	2173	16.99	2221	18.46	2269	19.66	2316	20.87	2363	22.08	2409	23.31	2455	24.55	2501	25.80	2546	27.05	2591	28.32
16500	2129	15.76	2176	16.95	2223	18.45	2270	19.67	2316	20.90	2362	22.13	2408	23.37	2453	24.62	2498	25.88	2542	27.15	2587	28.42		
17000	2182	16.90	2228	18.43	2274	19.68	2319	20.93	2364	22.19	2409	23.45	2453	24.71	2498	25.99	2541	27.27	2585	28.56				
17500	2236	18.41	2281	19.70	2325	20.97	2369	22.25	2413	23.54	2457	24.82	2500	26.12	2543	27.41	2586	28.71						
18000	2290	19.70	2333	21.02	2377	22.33	2420	23.64	2462	24.94	2505	26.26	2547	27.57	2589	28.89								
18500	2344	21.04	2386	22.40	2428	23.74	2470	25.07	2512	26.41	2553	27.75	2595	29.09										
19000	2398	22.45	2439	23.83	2480	25.21	2521	26.57	2562	27.94	2603	29.30												
19500	2452	23.92	2493	25.33	2533	26.73	2573	28.13																
20000	2507	25.44	2546	26.89	2586	28.32																		
20500	2562	27.03	2600	28.50																				
21000	2617	28.67																						

SOUND DATA TABLE

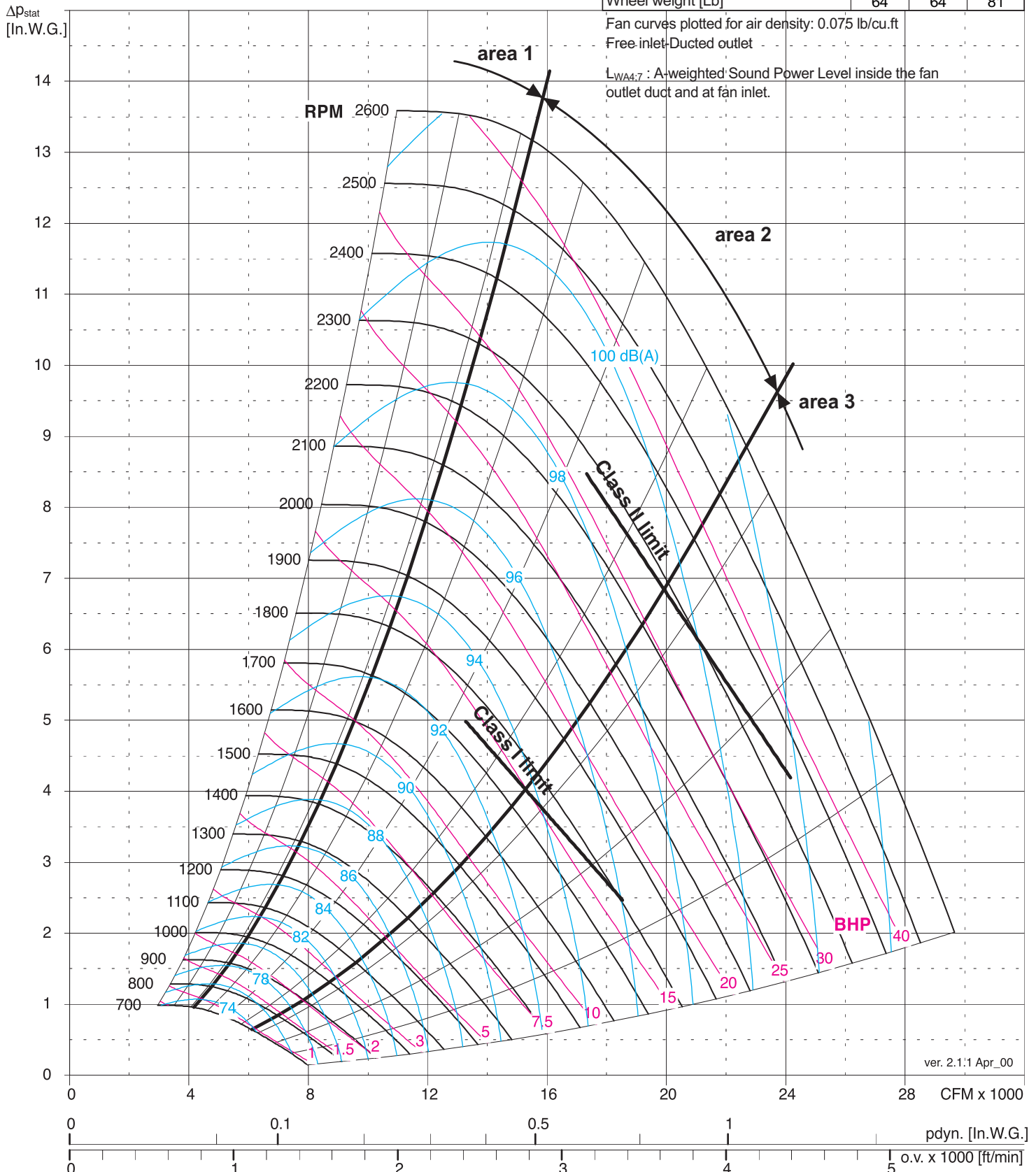
Fan Model and Size	Fan Performance Area	Range of fan speed	ΔL_{W4}	ΔL_{Woct4} 63	ΔL_{Woct4} 125	ΔL_{Woct4} 250	ΔL_{Woct4} 500	ΔL_{Woct4} 1000	ΔL_{Woct4} 2000	ΔL_{Woct4} 4000	ΔL_{Woct4} 8000
ATZAF 20-20	Area 1	RPM < 1080	15.0	13	10	1	-5	-7	-11	-17	-25
		1081 <RPM< 2130	13.6	9	11	2	-5	-7	-13	-18	-23
		RPM > 2131	10.1	5	7	0	-2	-5	-12	-18	-23
	Area 2	RPM < 1080	14.3	13	7	1	-5	-6	-9	-16	-24
		1081 <RPM< 2130	11.7	9	6	3	-4	-5	-11	-16	-22
		RPM > 2131	8.2	5	2	-3	-1	-4	-10	-18	-24
	Area 3	RPM < 1080	10.8	7	7	1	-3	-6	-10	-17	-25
		1081 <RPM< 2130	10.3	8	2	3	-3	-6	-11	-16	-23
		RPM > 2131	8.0	5	1	-3	-1	-4	-10	-15	-23

Performance certified is for installation type B - Free inlet, Ducted outlet. Performance ratings do not include the effects of appurtenances (accessories). Power rating (BHP) does not include transmission losses. The AMCA Certified Ratings Seal applies to air performance ratings only.



FEG 85
Peak $\eta_t = 80.4$

ATZAF 22-22			
	R	T1	T2
Fan Max RPM [min ⁻¹]	1850	1900	2500
Fan Max BHP	15	17.5	50
Fan Outlet Area O.A. [ft ²]	5.5		
Fan weight [Lb]	246	310	379
Nominal wheel diameter [in.]	22.6		
Wheel width [in.]	17.95		
Wheel No. Blades	10		
Wheel Moment of Inertia [Lb ft ²]	42.8	42.8	49.5
Wheel weight [Lb]	64	64	81





DOUBLE INLET AIRFOIL FANS - ATZAF

ATZAF 22-22 R / T1 / T2

Δp _{stat} [in.W.G.]																								
V	2	2.5	3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10	11	12	12.5				
[CFM]	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
4500	998	2.15																						
5000	999	2.30	1116	2.98																				
5500	1003	2.43	1117	3.16	1222	3.92																		
6000	1012	2.58	1120	3.33	1223	4.14	1320	4.96	1411	5.78														
6500	1025	2.76	1127	3.51	1226	4.34	1321	5.21	1411	6.10	1497	6.99												
7000	1042	2.96	1139	3.72	1233	4.55	1324	5.45	1412	6.38	1497	7.34	1578	8.29	1654	9.23								
7500	1062	3.19	1153	3.95	1243	4.79	1331	5.69	1416	6.65	1498	7.65	1578	8.67	1655	9.68	1728	10.69						
8000	1084	3.45	1171	4.22	1257	5.06	1340	5.96	1422	6.93	1502	7.95	1580	9.00	1655	10.08	1728	11.16	1799	12.23	1866	13.27		
8500	1108	3.73	1192	4.51	1273	5.36	1353	6.27	1432	7.24	1509	8.27	1584	9.34	1658	10.45	1730	11.57	1799	12.71	1867	13.84	1932	15.31
9000	1134	4.04	1214	4.84	1292	5.69	1369	6.6	1444	7.58	1518	8.61	1591	9.69	1662	10.81	1732	11.97	1801	13.15	1868	14.33	1932	15.89
9500	1161	4.37	1239	5.19	1314	6.06	1387	6.98	1459	7.96	1530	8.99	1601	10.07	1670	11.21	1738	12.38	1804	13.58	1870	14.80	1934	16.42
10000	1190	4.73	1265	5.58	1337	6.46	1408	7.39	1477	8.37	1545	9.41	1613	10.49	1680	11.63	1745	12.81	1810	14.02	1874	15.26	1937	16.92
10500	1219	5.12	1292	5.99	1362	6.89	1430	7.84	1497	8.83	1563	9.87	1628	10.95	1692	12.09	1755	13.27	1818	14.49	1880	15.74	1941	17.43
11000	1249	5.53	1320	6.43	1398	7.35	1454	8.32	1518	9.32	1582	10.37	1645	11.46	1707	12.60	1768	13.77	1829	15.00	1889	16.25	1948	17.97
11500	1280	5.96	1349	6.89	1415	7.85	1479	8.83	1542	9.85	1603	10.91	1664	12.00	1724	13.14	1783	14.33	1842	15.55	1900	17.19	1958	18.54
12000	1311	6.42	1378	7.39	1443	8.37	1505	9.38	1566	10.42	1626	11.49	1685	12.59	1743	13.74	1800	14.92	1857	16.14	1913	17.81	1969	19.16
12500	1343	6.91	1408	7.91	1472	8.93	1532	9.96	1592	11.02	1650	12.10	1707	13.22	1763	14.38	1819	15.56	1874	16.78	1928	18.47	1983	19.83
13000	1375	7.43	1439	8.47	1501	9.51	1561	10.57	1618	11.65	1675	12.76	1730	13.89	1785	15.05	1839	16.25	1893	17.47	1946	19.19	1998	20.54
13500	1408	7.98	1471	9.05	1531	10.13	1589	11.22	1646	12.32	1701	13.45	1755	14.60	1808	15.77	1861	16.98	1913	18.64	1964	19.96	2015	21.32
14000	1441	8.55	1503	9.66	1562	10.77	1619	11.89	1674	13.03	1728	14.18	1781	15.34	1833	16.54	1884	18.15	1935	19.45	1985	20.78	2034	22.14
14500	1474	9.16	1535	10.30	1593	11.45	1649	12.6	1703	13.76	1756	14.94	1807	16.13	1858	17.34	1908	19.00	1958	20.31	2006	21.65	2055	23.02
15000	1508	9.79	1568	10.98	1625	12.16	1679	13.35	1733	14.54	1784	15.74	1835	16.95	1885	18.59	1933	19.89	1982	21.21	2029	22.57	2076	23.95
15500	1542	10.46	1601	11.68	1657	12.90	1711	14.12	1763	15.34	1814	16.57	1863	18.20	1912	19.50	1960	20.82	2007	22.16	2053	23.53	2099	24.93
16000	1577	11.17	1634	12.42	1689	13.68	1742	14.93	1793	16.18	1843	17.43	1892	19.12	1940	20.45	1986	21.79	2032	23.16	2078	24.54	2123	25.95
16500	1611	11.90	1668	13.19	1722	14.48	1774	15.77	1824	17.05	1873	18.74	1921	20.08	1968	21.44	2014	22.81	2059	24.20	2104	25.60	2148	27.03
17000	1647	12.67	1702	14.00	1755	15.32	1806	16.64	1856	18.35	1904	19.71	1951	21.09	1997	22.47	2042	23.87	2087	25.28	2130	26.70	2174	28.15
17500	1682	13.47	1736	14.84	1788	16.20	1839	17.93	1887	19.32	1935	20.73	1981	22.13	2026	23.55	2071	24.97	2114	26.40	2157	27.85	2200	29.31
18000	1718	14.31	1771	15.71	1822	17.11	1871	18.9	1919	20.34	1966	21.78	2012	23.22	2056	24.66	2100	26.11	2143	27.57	2185	29.04	2227	30.52
18500	1753	15.19	1805	16.62	1856	18.45	1905	19.92	1952	21.39	1998	22.87	2043	24.34	2087	25.81	2130	27.29	2172	28.78	2214	30.27	2255	31.78
19000	1789	16.10	1841	17.95	1890	19.46	1938	20.98	1985	22.48	2030	23.99	2074	25.50	2118	27.01	2160	28.51	2201	30.03	2242	31.55	2283	33.08
19500	1826	17.05	1878	18.97	1924	20.52	1972	22.07	2018	23.62	2062	25.16	2106	26.70	2149	28.24	2190	29.78	2231	31.32	2272	32.86	2311	34.42
20000	1862	18.43	1911	20.03	1959	21.62	2006	23.21	2051	24.79	2095	26.37	2138	27.94	2180	29.51	2221	31.08	2262	32.65	2301	34.23	2341	36.80
20500	1899	19.50	1947	21.14	1994	22.76	2040	24.39	2084	26.01	2128	27.62	2170	29.23	2212	30.83	2252	32.43	2292	34.03	2332	35.63	2370	37.22
21000	1936	20.61	1983	22.28	2029	23.95	2074	25.61	2118	27.27	2161	28.91	2203	30.55	2244	32.19	2284	33.82	2323	35.45	2362	37.07	2400	38.69
21500	1973	21.77	2019	23.48	2065	25.18	2109	26.88	2152	28.57	2195	30.25	2236	31.92	2276	33.59	2316	35.25	2355	36.90	2393	38.55	2430	40.19
22000	2010	22.96	2056	24.71	2100	26.45	2144	28.18	2187	29.90	2228	31.62	2269	33.33	2309	35.02	2348	36.71	2386	38.40	2424	40.07	2461	41.75
22500	2048	24.21	2092	25.99	2136	27.76	2179	29.53	2221	31.29	2262	33.04	2302	34.78	2342	36.51	2380	38.22	2418	39.93	2455	41.64	2492	43.33
23000	2085	25.50	2129	27.32	2172	29.12	2214	30.92	2256	32.72	2296	34.50	2336	36.27	2375	38.03	2413	39.77	2450	41.51	2487	43.24		
23500	2123	26.83	2166	28.69	2208	30.53	2250	32.37	2291	34.19	2331	36.00	2370	37.80	2408	39.59	2446	41.36	2483	43.13				
24000	2161	28.21	2203	30.11	2245	31.98	2286	33.85	2326	35.70	2365	37.54	2404	39.37	2442	41.19	2479	42.99						
24500	2199	29.65	2240	31.57	2281	33.48	2321	35.37	2361	37.26	2400	39.13	2438	40.99	2475	42.83								
25000	2237	31.12	2278	33.08	2318	35.02	2358	36.95	2396	38.86	2435	40.76	2472	42.64										
25500	2276	32.64	2315	34.64	2355	36.60	2394	38.56	2432	40.50	2470	42.43												
26000	2314	34.21	2353	36.24	2392	38.23	2430	40.22	2468	42.19														
27000	2391	37.49	2429	39.57	2466	41.63																		
28000	2469	40.94																						

SOUND DATA TABLE

Fan Model and Size	Fan Performance Area	Range of fan speed	ΔL_{W4}	ΔL_{Woc4} 63	ΔL_{Woc4} 125	ΔL_{Woc4} 250	ΔL_{Woc4} 500	ΔL_{Woc4} 1000	ΔL_{Woc4} 2000	ΔL_{Woc4} 4000	ΔL_{Woc4} 8000
ATZAF 22-22	Area 1	RPM < 1080	14.0	11	10	2	-4	-7	-12	-17	-25
		1081 <RPM< 2130	12.8	8	10	3	-4	-7	-13	-18	-25
		RPM > 2131	11.1	8	6	2	-2	-6	-12	-18	-24
	Area 2	RPM < 1080	10.9	7	7	2	-4	-6	-12	-17	-25
		1081 <RPM< 2130	8.9	4	3	4	-3	-6	-13	-18	-24
		RPM > 2131	5.1	-1	-2	-3	0	-6	-13	-20	-27
	Area 3	RPM < 1080	11.3	7	7	4	-2	-7	-12	-17	-23
		1081 <RPM< 2130	9.0	5	1	4	-2	-7	-12	-17	-22
		RPM > 2131	6.2	2	-1	-3	-1	-4	-12	-17	-21

Performance certified is for installation type B - Free inlet, Ducted outlet. Performance ratings do not include the effects of appurtenances (accessories). Power rating (BHP) does not include transmission losses. The AMCA Certified Ratings Seal applies to air performance ratings only.



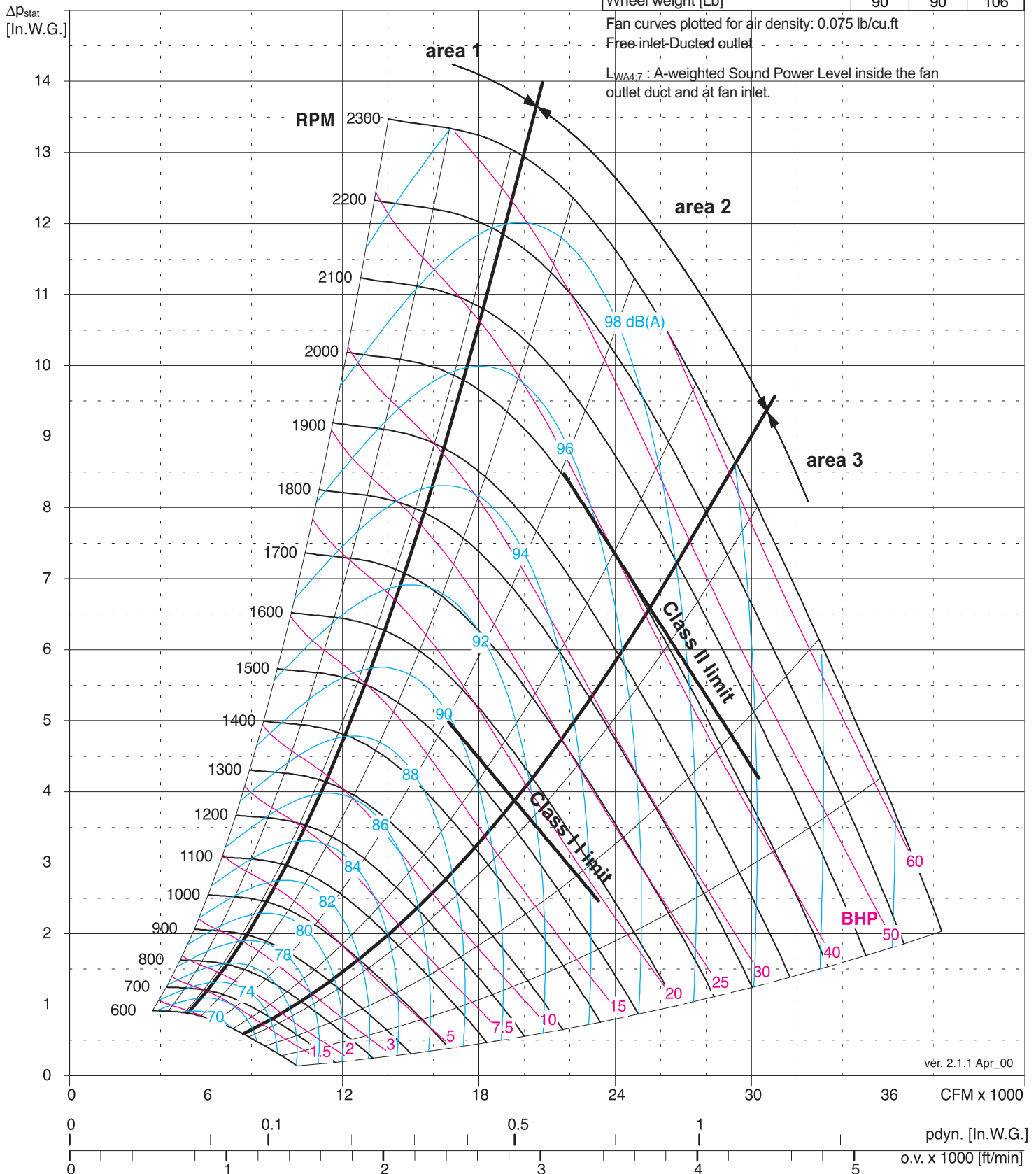
FEG 85
Peak $\eta_t = 80.9$

ATZAF 25-25			
	R	T1	T2
Fan Max RPM [min ⁻¹]	1500	1650	2200
Fan Max BHP	17	20	50
Fan Outlet Area O.A. [ft ²]	6.9		
Fan weight [Lb]	311	387	448
Nominal wheel diameter [in.]	25.39		
Wheel width [in.]	20.39		
Wheel No. Blades	10		
Wheel Moment of Inertia [Lb ft ²]	69.5	69.5	82.8
Wheel weight [Lb]	90	90	106

Fan curves plotted for air density: 0.075 lb/cu.ft

Free inlet-Ducted outlet

$L_{WA4.7}$: A-weighted Sound Power Level inside the fan outlet duct and at fan inlet.



ver. 2.1.1 Apr_00



DOUBLE INLET AIRFOIL FANS - ATZAF

ATZAF 25-25 R / T1 / T2

Δp _{stat} [In.W.G.]																					
V	2	2.5	3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10	11	11.5	12	
[CFM]	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	
6000	889	2.84																			
7000	894	3.10	995	4.05	1087	5.02															
8000	907	3.40	1001	4.38	1091	5.44	1176	6.54	1255	7.65											
9000	928	3.79	1015	4.77	1099	5.84	1181	7.01	1259	8.22	1333	9.46	1403	10.69	1470	11.90					
10000	955	4.26	1035	5.24	1114	6.32	1191	7.49	1265	8.74	1337	10.06	1407	11.40	1474	12.76	1538	14.12	1599	15.45	
10500	971	4.53	1048	5.52	1124	6.60	1198	7.77	1270	9.02	1341	10.35	1409	11.72	1476	13.13	1540	14.55	1601	15.96	
11000	988	4.81	1063	5.82	1135	6.90	1207	8.07	1277	9.33	1346	10.66	1413	12.05	1478	13.49	1542	14.95	1603	16.42	
11500	1005	5.12	1078	6.14	1148	7.23	1217	8.41	1285	9.66	1352	10.99	1418	12.39	1482	13.84	1544	15.34	1605	16.85	
12000	1024	5.44	1094	6.48	1162	7.59	1229	8.77	1295	10.02	1360	11.35	1424	12.75	1486	14.21	1547	15.72	1607	17.27	
12500	1043	5.78	1111	6.85	1178	7.97	1243	9.16	1306	10.41	1369	11.74	1431	13.14	1492	14.60	1552	16.12	1611	17.68	
13000	1062	6.14	1129	7.24	1194	8.38	1257	9.58	1319	10.84	1380	12.17	1440	13.56	1499	15.03	1558	16.54	1615	18.11	
13500	1082	6.52	1148	7.65	1211	8.81	1272	10.02	1332	11.29	1391	12.62	1450	14.02	1508	15.48	1565	17.00	1621	18.57	
14000	1103	6.92	1167	8.08	1228	9.27	1288	10.50	1347	11.78	1404	13.12	1461	14.51	1517	15.97	1573	17.49	1628	19.05	
14500	1123	7.34	1186	8.53	1246	9.74	1305	10.99	1362	12.29	1418	13.64	1473	15.04	1528	16.49	1582	18.01	1636	19.57	
15000	1144	7.77	1206	9.00	1265	10.24	1322	11.52	1378	12.83	1433	14.19	1487	15.60	1540	17.06	1593	18.57	1645	20.43	
15500	1165	8.22	1226	9.49	1284	10.77	1340	12.06	1395	13.40	1448	14.77	1501	16.19	1553	17.65	1604	19.16	1655	21.04	
16000	1187	8.69	1247	10.00	1304	11.31	1359	12.64	1412	13.99	1465	15.38	1516	16.81	1567	18.28	1617	19.79	1667	21.69	
16500	1209	9.19	1268	10.53	1324	11.88	1378	13.23	1430	14.61	1482	16.02	1532	17.46	1582	18.94	1631	20.75	1679	22.38	
17000	1231	9.70	1289	11.08	1344	12.46	1397	13.85	1449	15.26	1499	16.68	1548	18.14	1597	19.64	1645	21.48	1692	23.11	
17500	1253	10.23	1310	11.65	1365	13.07	1417	14.49	1468	15.93	1517	17.38	1565	18.86	1613	20.64	1660	22.24	1706	23.88	
18000	1276	10.78	1332	12.24	1386	13.70	1437	15.15	1487	16.62	1536	18.10	1583	19.59	1630	21.42	1676	23.03	1721	24.68	
18500	1298	11.35	1354	12.86	1407	14.35	1458	15.84	1507	17.34	1554	18.84	1601	20.63	1647	22.23	1692	23.86	1737	25.52	
19000	1321	11.94	1376	13.49	1428	15.02	1478	16.55	1527	18.08	1574	19.61	1620	21.45	1665	23.07	1709	24.72	1753	26.40	
19500	1344	12.56	1398	14.15	1450	15.72	1499	17.28	1547	18.84	1593	20.67	1639	22.30	1683	23.94	1726	25.61	1769	27.32	
20000	1367	13.20	1421	14.83	1471	16.44	1520	18.04	1567	19.63	1613	21.51	1658	23.17	1701	24.84	1744	26.53	1787	28.26	
20500	1390	13.86	1443	15.53	1493	17.18	1542	18.82	1588	20.71	1633	22.38	1677	24.07	1720	25.78	1763	27.50	1804	29.24	
21000	1414	14.55	1466	16.25	1515	17.95	1563	19.62	1609	21.57	1654	23.26	1697	25.00	1740	26.73	1781	28.48	1822	30.25	
22000	1461	15.99	1512	17.77	1560	19.94	1607	21.57	1652	23.37	1695	25.16	1738	26.95	1779	28.75	1819	30.55	1859	32.38	
23000	1509	17.53	1558	19.39	1606	21.52	1651	23.40	1695	25.28	1738	27.15	1779	29.01	1819	30.88	1859	32.75	1898	34.63	
24000	1558	19.18	1605	21.39	1651	23.37	1696	25.33	1739	27.28	1781	29.24	1821	31.18	1861	33.12	1899	35.06	1937	37.00	
25000	1607	21.20	1653	23.26	1698	25.32	1741	27.38	1783	29.41	1824	31.45	1864	33.47	1903	35.48	1941	37.49	1978	39.50	
26000	1656	23.13	1701	25.27	1745	27.41	1787	29.54	1828	31.66	1868	33.77	1908	35.88	1945	37.96	1983	40.04	2019	42.13	
27000	1706	25.18	1750	27.40	1792	29.61	1834	31.82	1874	34.03	1913	36.22	1951	38.39	1989	40.56	2025	42.72	2061	44.87	
28000	1757	27.37	1799	29.65	1840	31.94	1881	34.22	1920	36.51	1958	38.77	1996	41.03	2033	43.28	2068	45.51	2104	47.74	
29000	1807	29.68	1848	32.03	1889	34.40	1928	36.76	1967	39.12	2004	41.47	2041	43.80	2077	46.12	2112	48.43			
30000	1858	32.12	1898	34.56	1937	37.00	1976	39.43	2014	41.86	2050	44.28	2087	46.69	2122	49.09					
30500	1884	33.41	1923	35.87	1962	38.34	2000	40.81	2037	43.28	2074	45.75	2110	48.19							
31000	1910	34.72	1948	37.22	1987	39.73	2024	42.23	2061	44.73	2097	47.23	2133	49.72							
32000	1962	37.45	1999	40.03	2036	42.60	2073	45.17	2109	47.74											
33000	2014	40.34	2050	42.98	2086	45.61	2122	48.25													
34000	2066	43.36	2101	46.06	2136	48.77															
35000	2119	46.55	2153	49.32																	
36000	2172	49.86																			

SOUND DATA TABLE

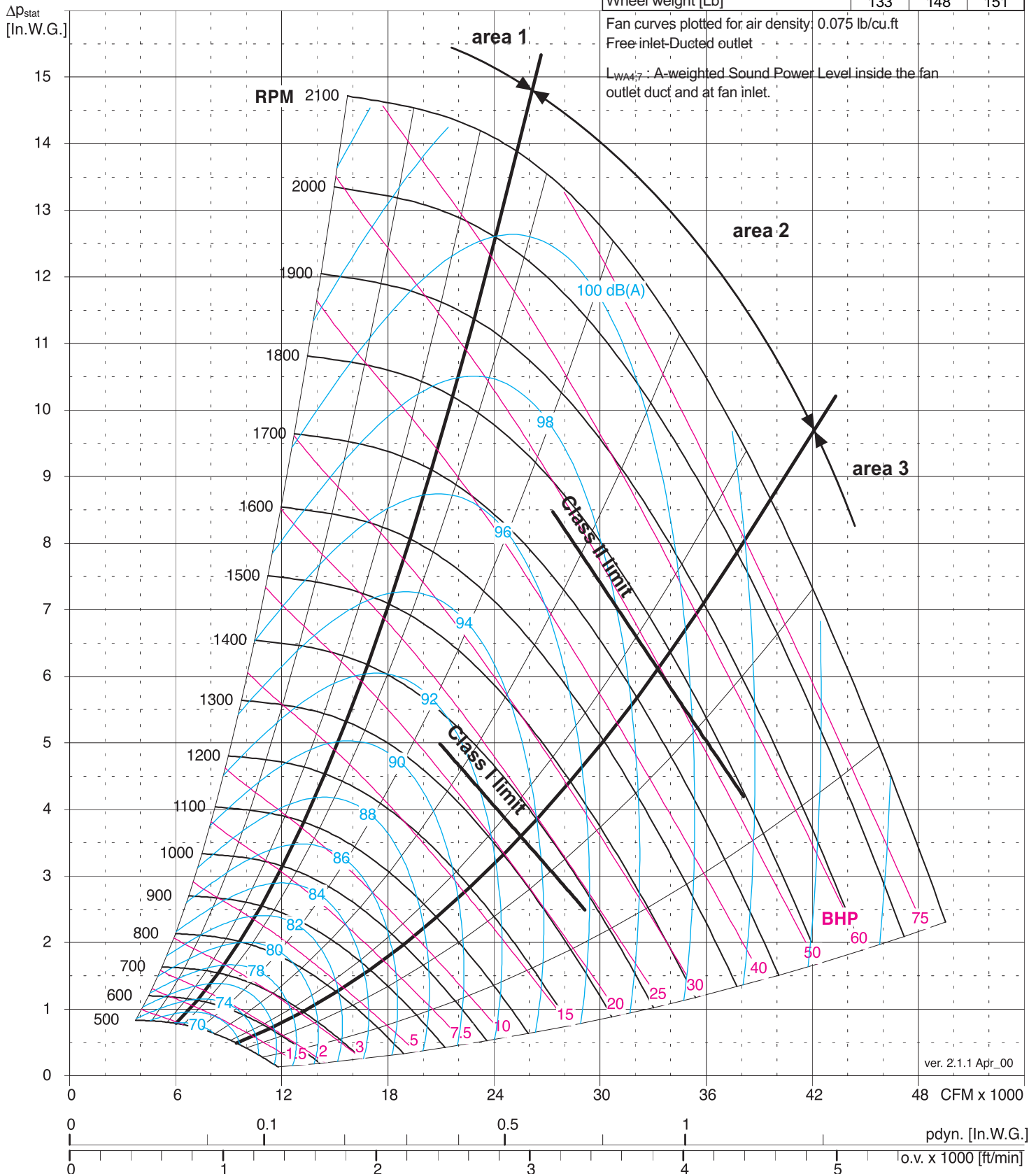
Fan Model and Size	Fan Performance Area	Range of fan speed	ΔL_{W4}	ΔL_{Woc4} 63	ΔL_{Woc4} 125	ΔL_{Woc4} 250	ΔL_{Woc4} 500	ΔL_{Woc4} 1000	ΔL_{Woc4} 2000	ΔL_{Woc4} 4000	ΔL_{Woc4} 8000
ATZAF 25-25	Area 1	RPM < 1080	16.4	15	10	1	-4	-7	-12	-18	-25
		RPM > 1081	14.8	13	9	2	-4	-7	-13	-19	-25
	Area 2	RPM < 1080	13.8	12	8	1	-4	-6	-11	-16	-24
		RPM > 1081	11.2	9	4	3	-3	-6	-12	-17	-23
	Area 3	RPM < 1080	11.9	9	7	2	-2	-6	-11	-15	-20
		RPM > 1081	9.5	7	1	2	-2	-6	-11	-15	-19

Performance certified is for installation type B - Free inlet, Ducted outlet. Performance ratings do not include the effects of appurtenances (accessories). Power rating (BHP) does not include transmission losses. The AMCA Certified Ratings Seal applies to air performance ratings only.



FEG 85
Peak $\eta_t = 82.2$

ATZAF 28-28			
Fan Max RPM [min ⁻¹]	R	T1	T2
Fan Max BHP	1400	1500	2050
Fan Outlet Area O.A. [ft ²]	18	24.5	60
Fan weight [Lb]	8.67		
Nominal wheel diameter [in.]	452	531	597
Wheel width [in.]	28.35		
Wheel No. Blades	23.15		
Wheel Moment of Inertia [Lb ft ²]	10		
Wheel weight [Lb]	127	140	143
	133	148	151





DOUBLE INLET AIRFOIL FANS - ATZAF

ATZAF 28-28 R / T1 / T2

Δp _{stat} [In.W.G.]																										
V	2	3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10	10.5	11	12	13	13.5					
[CFM]	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
6000	775	2.96																								
7000	778	3.22																								
8000	783	3.50	951	5.66	1025	6.82																				
9000	791	3.80	955	6.06	1028	7.29	1097	8.56	1162	9.86																
10000	802	4.14	960	6.48	1033	7.75	1101	9.08	1165	10.46	1227	11.88	1285	13.33												
11000	816	4.52	968	6.93	1039	8.25	1105	9.62	1169	11.06	1230	12.53	1288	14.06	1344	15.61	1397	17.20	1449	18.81						
12000	834	4.94	979	7.43	1047	8.78	1112	10.20	1174	11.67	1234	13.20	1292	14.78	1347	16.40	1400	18.06	1452	19.75	1502	21.80	1550	23.57	1596	25.36
13000	853	5.42	992	7.97	1058	9.36	1121	10.81	1182	12.33	1240	13.90	1297	15.53	1351	17.20	1404	18.91	1455	20.67	1505	22.81	1553	24.65	1599	26.51
14000	875	5.94	1008	8.57	1071	10.00	1132	11.48	1191	13.04	1248	14.65	1304	16.31	1357	18.03	1409	19.79	1460	21.60	1508	23.80	1556	25.71	1602	27.65
15000	899	6.51	1027	9.23	1087	10.69	1146	12.21	1203	13.80	1258	15.45	1312	17.15	1364	18.90	1415	20.71	1465	22.56	1513	24.83	1560	26.79	1606	28.78
16000	924	7.14	1047	9.95	1105	11.45	1162	13.01	1217	14.63	1270	16.31	1323	18.05	1374	19.83	1424	21.68	1472	23.57	1520	25.90	1566	27.90	1611	29.94
17000	951	7.82	1069	10.73	1125	12.27	1179	13.87	1232	15.52	1284	17.24	1335	19.01	1385	20.84	1433	22.71	1481	25.03	1527	27.03	1573	29.06	1618	31.15
18000	979	8.55	1092	11.57	1146	13.15	1199	14.79	1250	16.49	1301	18.24	1350	20.05	1398	21.91	1445	23.82	1492	26.18	1537	28.22	1582	30.30	1625	32.42
19000	1008	9.35	1117	12.46	1169	14.10	1220	15.78	1270	17.53	1318	19.32	1366	21.16	1413	23.05	1459	25.39	1504	27.42	1548	29.49	1592	31.60	1635	33.75
20000	1037	10.21	1143	13.43	1193	15.12	1242	16.85	1291	18.63	1338	20.46	1384	22.35	1430	24.28	1474	26.67	1518	28.73	1561	30.84	1604	32.98	1646	35.17
21000	1068	11.14	1170	14.47	1219	16.20	1266	17.98	1313	19.81	1359	21.69	1404	23.61	1448	25.59	1491	28.04	1534	30.14	1576	32.27	1617	34.45	1658	36.68
22000	1099	12.13	1198	15.58	1245	17.36	1291	19.19	1336	21.07	1381	22.99	1424	25.36	1467	27.40	1510	29.49	1551	31.62	1592	33.79	1633	36.01	1672	38.26
23000	1131	13.20	1226	16.75	1272	18.60	1317	20.48	1361	22.41	1404	24.37	1447	26.81	1488	28.89	1529	31.02	1570	33.19	1610	35.40	1649	37.65	1688	39.95
24000	1163	14.34	1256	18.01	1300	19.90	1344	21.84	1387	23.82	1429	26.26	1470	28.35	1510	30.47	1550	32.65	1590	34.86	1629	37.10	1667	39.39	1705	41.73
25000	1196	15.56	1286	19.34	1329	21.29	1372	23.29	1413	25.72	1454	27.83	1494	29.96	1534	32.14	1573	34.36	1611	36.61	1649	38.90	1686	41.23	1723	43.59
26000	1229	16.85	1316	20.76	1359	22.77	1400	25.21	1440	27.33	1480	29.48	1519	31.67	1558	33.89	1596	36.15	1633	38.45	1670	40.78	1707	43.16	1743	45.56
27000	1263	18.23	1348	22.26	1389	24.33	1429	26.85	1468	29.02	1507	31.23	1545	33.46	1583	35.74	1620	38.05	1656	40.40	1692	42.76	1728	45.18	1763	47.62
28000	1297	19.70	1379	23.84	1419	26.38	1458	28.57	1497	30.80	1535	33.06	1572	35.35	1609	37.68	1645	40.04	1680	42.42	1716	44.86	1751	47.31	1785	49.79
29000	1331	21.25	1412	25.83	1450	28.14	1489	30.39	1526	32.67	1563	34.99	1599	37.33	1635	39.71	1671	42.12	1705	44.56	1740	47.02	1774	49.52	1808	52.05
30000	1366	22.90	1444	27.73	1482	30.00	1519	32.30	1556	34.65	1592	37.01	1628	39.42	1662	41.83	1697	44.30	1731	46.79	1765	49.30	1798	51.85	1831	54.41
31000	1401	25.04	1477	29.61	1514	31.95	1551	34.32	1586	36.71	1622	39.13	1656	41.58	1690	44.07	1724	46.59	1758	49.12	1790	51.68	1823	54.27	1855	56.89
32000	1436	26.90	1511	31.61	1547	34.01	1582	36.42	1617	38.88	1652	41.36	1685	43.87	1719	46.40	1752	48.95	1785	51.55	1817	54.15	1849	56.80	1880	59.46
33000	1472	28.87	1544	33.71	1580	36.15	1614	38.64	1648	41.15	1682	43.68	1715	46.24	1748	48.83	1780	51.44	1812	54.08	1844	56.74	1875	59.42		
34000	1508	30.96	1578	35.91	1613	38.42	1647	40.96	1680	43.51	1713	46.11	1745	48.73	1778	51.38	1809	54.03	1840	56.71	1871	59.43				
35000	1544	33.13	1613	38.21	1646	40.78	1679	43.38	1712	46.01	1744	48.65	1776	51.32	1808	54.01	1839	56.72	1869	59.46						
36000	1580	35.42	1647	40.63	1680	43.26	1713	45.91	1745	48.59	1776	51.30	1807	54.03	1838	56.76	1868	59.53								
37000	1616	37.83	1682	43.16	1714	45.85	1746	48.57	1777	51.29	1808	54.04	1839	56.83	1869	59.62										
38000	1653	40.34	1717	45.80	1748	48.54	1780	51.33	1810	54.12	1841	56.92	1871	59.75												
39000	1690	42.98	1752	48.56	1783	51.36	1814	54.19	1844	57.04	1873	59.91														
40000	1727	45.73	1788	51.43	1818	54.31	1848	57.19																		
41000	1764	48.61	1824	54.43	1853	57.36																				
42000	1801	51.59	1860	57.56																						
43000	1838	54.71																								
44000	1875	57.96																								
44500	1894	59.63																								

SOUND DATA TABLE

Fan Model and Size	Fan Performance Area	Range of fan speed	ΔL_{W4}	ΔL_{Woct4} 63	ΔL_{Woct4} 125	ΔL_{Woct4} 250	ΔL_{Woct4} 500	ΔL_{Woct4} 1000	ΔL_{Woct4} 2000	ΔL_{Woct4} 4000	ΔL_{Woct4} 8000
ATZAF 28-28	Area 1	RPM < 540	16.0	15	8	2	-5	-6	-11	-15	-21
		541 <RPM< 1080	15.5	14	9	2	-5	-6	-12	-16	-21
		RPM > 1081	13.3	11	8	3	-4	-6	-13	-17	-22
	Area 2	RPM < 540	12.0	10	6	0	-4	-5	-9	-16	-23
		541 <RPM< 1080	10.9	6	8	1	-4	-5	-10	-15	-22
		RPM > 1081	8.7	4	2	4	-3	-6	-11	-16	-21
	Area 3	RPM < 540	13.7	12	7	3	-4	-6	-12	-17	-25
		541 <RPM< 1080	10.7	6	7	3	-3	-6	-12	-16	-24
		RPM > 1081	7.9	4	0	2	-2	-5	-12	-16	-23

Performance certified is for installation type B - Free inlet, Ducted outlet. Performance ratings do not include the effects of appurtenances (accessories). Power rating (BHP) does not include transmission losses. The AMCA Certified Ratings Seal applies to air performance ratings only.



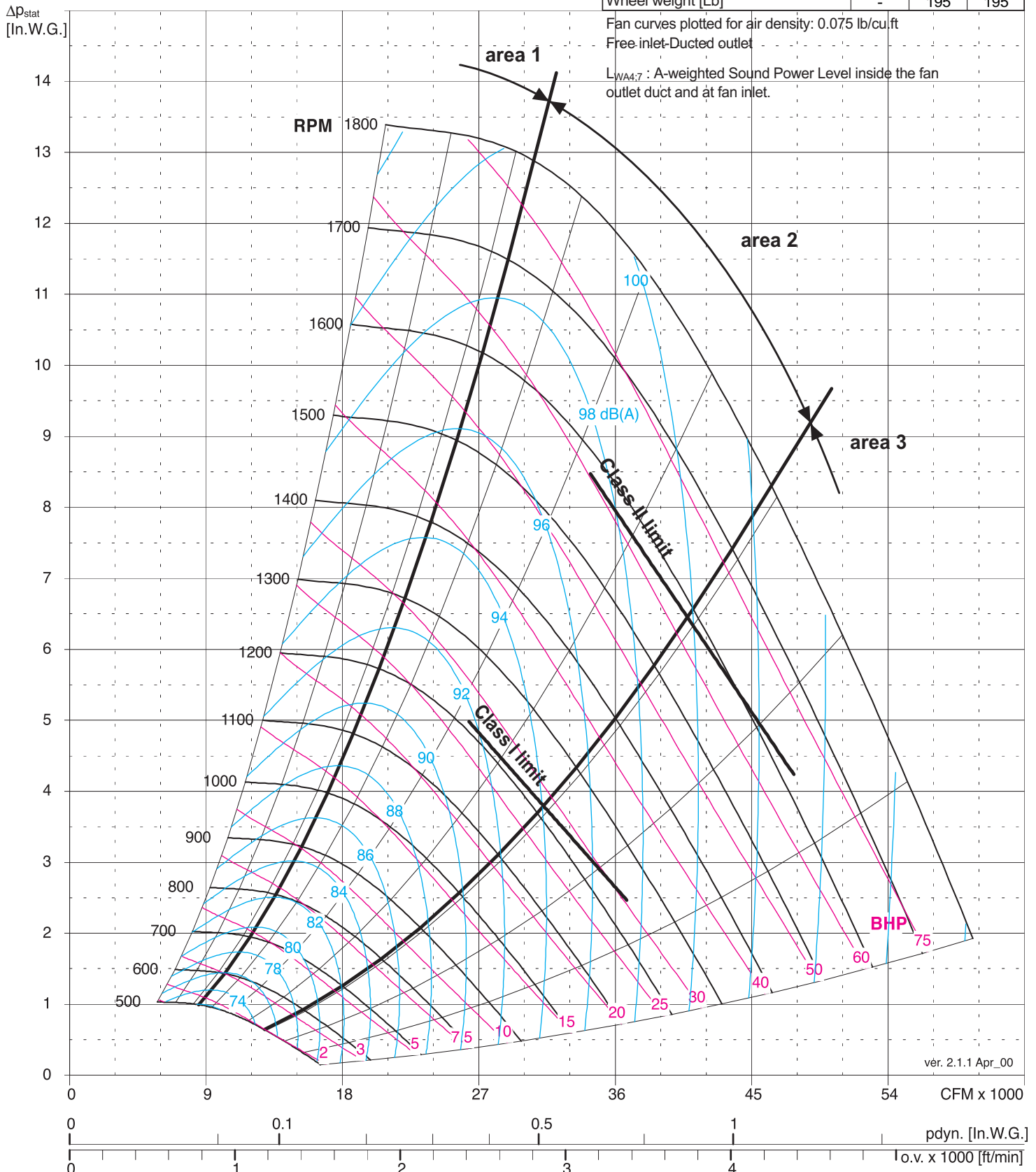
FEG 85
Peak $\eta_t = 82.3$

ATZAF 32-32		R	T1	T2
Fan Max RPM [min ⁻¹]	-	-	1300	1700
Fan Max BHP	-	-	30.5	66.5
Fan Outlet Area O.A. [ft ²]	10.91			
Fan weight [Lb]	-	-	649	694
Nominal wheel diameter [in.]	31.89			
Wheel width [in.]	25.89			
Wheel No. Blades	10			
Wheel Moment of Inertia [Lb ft ²]	-	-	232	232
Wheel weight [Lb]	-	-	195	195

Fan curves plotted for air density: 0.075 lb/cu.ft

Free inlet-Ducted outlet

L_{WA4,7}: A-weighted Sound Power Level inside the fan outlet duct and at fan inlet.





DOUBLE INLET AIRFOIL FANS - ATZAF

ATZAF 32-32 T1 / T2

Δp _{stat} [In.W.G.]																							
V	2	2.5	3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10	10.5	11	11.5			
[CFM]	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP			
9000	697	4.21																					
10000	699	4.45	780	5.84	852	7.30																	
11000	703	4.71	781	6.14	854	7.67	921	9.26															
12000	709	5.00	784	6.46	856	8.03	923	9.70	985	11.42													
13000	717	5.35	790	6.81	859	8.41	925	10.12	987	11.91	1045	13.75	1101	15.64									
14000	728	5.74	797	7.21	863	8.82	927	10.55	989	12.39	1047	14.30	1102	16.27	1155	18.28	1205	20.32					
15000	742	6.17	807	7.66	870	9.29	932	11.03	992	12.89	1049	14.84	1104	16.87	1157	18.96	1207	21.09	1255	23.26			
16000	756	6.66	819	8.17	879	9.81	939	11.57	996	13.43	1052	15.41	1106	17.47	1158	19.62	1208	21.82	1257	24.07			
17000	773	7.18	832	8.73	890	10.39	947	12.15	1002	14.03	1057	16.02	1109	18.11	1161	20.28	1210	22.53	1258	24.85			
18000	790	7.75	847	9.34	903	11.02	958	12.81	1011	14.70	1063	16.69	1114	18.80	1164	20.99	1213	23.27	1260	25.62			
19000	808	8.37	864	10.00	917	11.72	969	13.52	1021	15.43	1071	17.44	1121	19.55	1169	21.76	1217	24.05	1263	26.43			
20000	828	9.03	881	10.71	933	12.47	983	14.30	1033	16.23	1081	18.25	1129	20.38	1176	22.59	1222	24.90	1268	27.29			
21000	848	9.73	899	11.47	949	13.27	998	15.14	1046	17.09	1092	19.14	1139	21.27	1184	23.50	1229	25.82	1273	28.23			
22000	868	10.49	918	12.28	967	14.12	1014	16.04	1060	18.03	1105	20.09	1150	22.24	1194	24.49	1238	26.82	1280	29.23			
23000	889	11.28	938	13.13	985	15.03	1031	16.99	1075	19.02	1119	21.12	1163	23.29	1205	25.55	1247	27.90	1289	30.32			
24000	911	12.12	958	14.04	1004	16.00	1049	18.01	1092	20.07	1134	22.21	1176	24.41	1218	26.69	1258	29.06	1299	31.72			
25000	933	13.01	979	14.99	1024	17.01	1067	19.07	1109	21.19	1150	23.36	1191	25.60	1231	27.92	1271	30.30	1310	32.98			
26000	955	13.96	1000	16.01	1044	18.09	1086	20.20	1127	22.37	1167	24.59	1207	26.87	1246	29.21	1284	31.84	1323	34.33			
27000	977	14.95	1022	17.07	1064	19.21	1106	21.40	1146	23.61	1185	25.88	1224	28.20	1261	30.79	1299	33.25	1336	35.77			
28000	1000	16.00	1044	18.18	1085	20.40	1126	22.64	1165	24.91	1203	27.24	1241	29.60	1278	32.24	1315	34.74	1351	37.29			
29000	1023	17.10	1066	19.36	1107	21.63	1146	23.95	1185	26.28	1222	28.65	1259	31.30	1295	33.77	1331	36.30	1366	38.90			
30000	1047	18.27	1088	20.59	1129	22.95	1167	25.31	1205	27.70	1242	30.14	1277	32.84	1313	35.36	1348	37.94	1382	40.58			
31000	1070	19.48	1111	21.89	1150	24.30	1189	26.74	1225	29.21	1261	31.91	1297	34.46	1331	37.04	1365	39.66	1399	42.33			
32000	1094	20.76	1134	23.23	1173	25.72	1210	28.23	1246	30.98	1282	33.54	1316	36.14	1350	38.77	1383	41.45	1416	44.17			
33000	1118	22.11	1157	24.65	1195	27.22	1232	29.78	1268	32.61	1302	35.24	1336	37.90	1369	40.59	1402	43.32	1434	46.09			
34000	1142	23.52	1181	26.13	1218	28.76	1254	31.63	1289	34.31	1323	37.01	1356	39.73	1389	42.48	1421	45.27	1453	48.09			
35000	1167	25.00	1205	27.69	1241	30.39	1277	33.33	1311	36.08	1344	38.84	1377	41.64	1409	44.44	1441	47.28	1472	50.16			
36000	1191	26.54	1228	29.31	1264	32.31	1299	35.11	1333	37.91	1366	40.75	1398	43.60	1430	46.48	1461	49.38	1491	52.31			
37000	1216	28.16	1252	31.22	1288	34.07	1322	36.95	1355	39.84	1388	42.73	1419	45.65	1450	48.59	1481	51.56	1511	54.54			
38000	1241	29.85	1277	32.99	1311	35.92	1345	38.86	1378	41.82	1410	44.79	1441	47.78	1472	50.78	1502	53.82	1531	56.87			
39000	1265	31.83	1301	34.83	1335	37.84	1368	40.86	1401	43.88	1432	46.93	1463	49.97	1493	53.05	1522	56.14	1551	59.25			
40000	1291	33.68	1325	36.75	1359	39.83	1392	42.93	1424	46.03	1455	49.13	1485	52.26	1514	55.40	1544	58.56	1572	61.74			
41000	1316	35.62	1350	38.76	1383	41.91	1415	45.08	1447	48.23	1477	51.42	1507	54.62	1536	57.82	1565	61.05	1593	64.29			
42000	1341	37.62	1375	40.84	1407	44.06	1439	47.30	1470	50.55	1500	53.79	1530	57.06	1558	60.34	1587	63.64					
43000	1367	39.71	1400	43.00	1432	46.30	1463	49.61	1494	52.93	1523	56.26	1552	59.59	1581	62.94	1609	66.30					
44000	1392	41.89	1425	45.25	1456	48.62	1487	52.00	1517	55.39	1546	58.79	1575	62.21	1603	65.62							
45000	1418	44.15	1450	47.59	1481	51.04	1511	54.49	1541	57.94	1570	61.43	1598	64.91									
46000	1444	46.51	1475	50.02	1506	53.53	1536	57.06	1565	60.60	1593	64.13											
48000	1496	51.48	1526	55.15	1556	58.80	1585	62.48	1613	66.15													
50000	1548	56.82	1578	60.64	1606	64.47																	
52000	1601	62.56																					

SOUND DATA TABLE

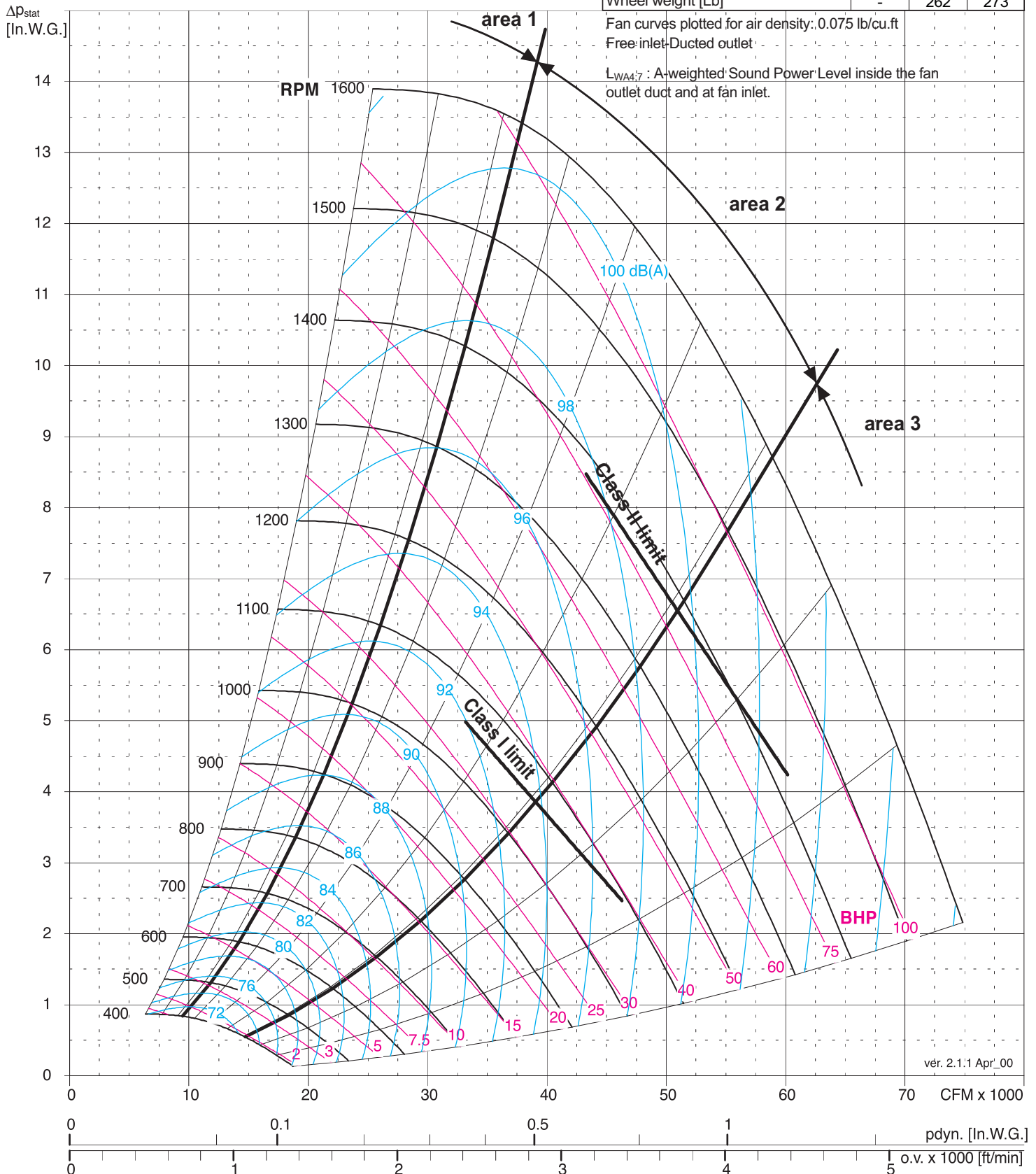
Fan Model and Size	Fan Performance Area	Range of fan speed	ΔL_{W4}	ΔL_{Woct4} 63	ΔL_{Woct4} 125	ΔL_{Woct4} 250	ΔL_{Woct4} 500	ΔL_{Woct4} 1000	ΔL_{Woct4} 2000	ΔL_{Woct4} 4000	ΔL_{Woct4} 8000
ATZAF 32-32	Area 1	RPM < 540	16.0	15	8	2	-4	-6	-13	-16	-22
		541 <RPM< 1080	15.5	14	9	2	-4	-6	-14	-17	-22
		RPM > 1081	12.8	10	8	3	-4	-6	-13	-18	-23
	Area 2	RPM < 540	13.9	13	4	0	-3	-5	-11	-17	-23
		541 <RPM< 1080	11.5	9	6	1	-3	-5	-12	-16	-22
		RPM > 1081	8.3	5	0	2	-2	-5	-12	-17	-22
	Area 3	RPM < 540	13.3	12	5	2	-3	-5	-13	-19	-27
		541 <RPM< 1080	9.9	6	5	2	-2	-5	-13	-18	-26
		RPM > 1081	7.1	3	-1	1	-2	-5	-12	-18	-25

Performance certified is for installation type B - Free inlet, Ducted outlet. Performance ratings do not include the effects of appurtenances (accessories). Power rating (BHP) does not include transmission losses. The AMCA Certified Ratings Seal applies to air performance ratings only.



FEG 85
Peak $\eta_t = 82.8$

ATZAF 36-36		R	T1	T2
Fan Max RPM [min ⁻¹]	-	-	1250	1550
Fan Max BHP	-	-	39	95
Fan Outlet Area O.A. [ft ²]	13.74			
Fan weight [Lb]	-	-	825	888
Nominal wheel diameter [in.]	35.83			
Wheel width [in.]	29.49			
Wheel No. Blades	10			
Wheel Moment of Inertia [Lb ft ²]	-	-	392	405
Wheel weight [Lb]	-	-	262	273





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DOUBLE INLET AIRFOIL FANS - ATZAF

ATZAF 36-36 T1 / T2

ΔP _{stat} [In.W.G.]																										
V	2	2.5	3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10	10.5	11	12	12.5					
[CFM]	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
10000	607	4.78																								
12000	609	5.26	679	6.88	743	8.64																				
14000	615	5.84	682	7.52	745	9.34	803	11.27	859	13.31																
16000	626	6.53	689	8.28	749	10.14	806	12.13	860	14.23	911	16.43	960	18.74	1007	21.13										
18000	641	7.35	700	9.16	757	11.09	811	13.13	863	15.28	913	17.54	961	19.90	1008	22.34	1052	24.88	1095	27.50						
20000	661	8.29	716	10.17	769	12.16	821	14.27	870	16.48	919	18.79	965	21.20	1010	23.70	1054	26.29	1096	28.97	1136	31.73	1176	34.57	1214	37.49
22000	683	9.35	735	11.32	785	13.39	834	15.57	881	17.84	927	20.21	972	22.68	1015	25.24	1057	27.88	1099	30.61	1139	33.42	1178	36.32	1215	39.50
24000	708	10.56	757	12.61	804	14.77	850	17.02	895	19.36	939	21.80	981	24.33	1023	26.95	1064	29.65	1104	32.43	1143	35.3	1181	38.25	1218	41.49
25000	721	11.21	769	13.32	815	15.52	860	17.81	903	20.19	946	22.66	988	25.22	1028	27.87	1068	30.60	1107	33.41	1146	36.3	1183	39.49	1220	42.58
26000	735	11.91	781	14.06	826	16.30	869	18.63	912	21.06	954	23.56	994	26.16	1034	28.84	1073	31.60	1112	34.45	1150	37.36	1186	40.60	1223	43.69
27000	749	12.64	794	14.84	838	17.13	880	19.51	922	21.97	962	24.51	1002	27.15	1041	29.86	1079	32.65	1117	35.53	1154	38.48	1190	41.74	1226	44.86
28000	763	13.41	807	15.66	850	18.00	891	20.42	932	22.92	971	25.51	1010	28.18	1048	30.93	1086	33.76	1123	36.67	1159	39.88	1195	42.95	1230	46.08
29000	778	14.22	821	16.53	862	18.91	903	21.38	942	23.93	981	26.55	1019	29.26	1056	32.04	1093	34.91	1129	37.85	1165	41.1	1200	44.20	1234	47.38
30000	793	15.08	835	17.43	875	19.87	915	22.38	953	24.97	991	27.64	1028	30.39	1065	33.22	1101	36.11	1136	39.31	1171	42.37	1206	45.51	1239	48.71
31000	808	15.97	849	18.38	889	20.86	927	23.43	965	26.06	1002	28.78	1038	31.57	1074	34.43	1109	37.38	1144	40.61	1178	43.71	1212	46.88	1245	50.12
32000	824	16.92	864	19.38	902	21.92	940	24.53	977	27.21	1013	29.97	1049	32.80	1084	35.70	1118	38.68	1152	41.96	1186	45.1	1219	48.31	1252	51.57
33000	839	17.90	878	20.42	916	23.01	953	25.67	990	28.40	1025	31.20	1060	34.08	1094	37.03	1128	40.28	1161	43.37	1194	46.55	1227	49.79	1259	53.09
34000	855	18.94	894	21.51	931	24.15	967	26.86	1002	29.64	1037	32.49	1071	35.41	1105	38.41	1138	41.71	1171	44.84	1203	48.05	1235	51.33	1266	54.67
35000	871	20.03	909	22.65	945	25.34	981	28.10	1016	30.94	1050	33.63	1083	36.79	1116	40.07	1148	43.18	1180	46.36	1212	49.61	1243	52.92	1274	56.30
36000	888	21.16	924	23.84	960	26.58	995	29.40	1029	32.27	1062	35.22	1095	38.24	1128	41.56	1159	44.72	1191	47.94	1222	51.23	1252	54.57	1283	57.99
37000	904	22.34	940	25.08	975	27.87	1009	30.75	1043	33.68	1076	36.68	1108	39.97	1139	43.11	1171	46.30	1202	49.57	1232	52.9	1262	56.30	1292	59.75
38000	921	23.58	956	26.37	990	29.22	1024	32.14	1057	35.13	1089	38.17	1121	41.52	1152	44.71	1182	47.97	1213	51.26	1243	54.65	1272	58.07	1301	61.57
39000	938	24.87	972	27.72	1006	30.62	1039	33.60	1071	36.63	1103	39.96	1134	43.14	1164	46.37	1194	49.66	1224	53.02	1254	56.44	1283	59.92	1311	63.46
40000	954	26.21	988	29.12	1021	32.08	1054	35.11	1085	38.20	1117	41.59	1147	44.81	1177	48.09	1207	51.43	1236	54.85	1265	58.31	1293	61.82	1322	65.39
41000	971	27.61	1005	30.57	1037	33.60	1069	36.68	1100	40.05	1131	43.28	1161	46.54	1190	49.88	1219	53.26	1248	56.71	1277	60.23	1305	63.79	1332	67.41
42000	989	29.07	1021	32.09	1053	35.18	1084	38.30	1115	41.74	1145	45.01	1175	48.33	1204	51.71	1232	55.16	1261	58.65	1289	62.2	1316	65.81	1344	69.48
43000	1006	30.58	1038	33.67	1069	36.80	1100	40.23	1130	43.49	1160	46.81	1189	50.19	1217	53.63	1246	57.12	1273	60.66	1301	64.26	1328	67.92	1355	71.62
44000	1023	32.16	1055	35.31	1086	38.50	1116	41.99	1145	45.31	1175	48.68	1203	52.10	1231	55.59	1259	59.12	1286	62.73	1313	66.36	1340	70.07	1367	73.83
45000	1041	33.80	1072	37.00	1102	40.49	1132	43.82	1161	47.18	1190	50.61	1218	54.09	1245	57.62	1273	61.21	1300	64.85	1326	68.65	1353	72.30	1379	76.11
46000	1059	35.51	1089	38.77	1119	42.32	1148	45.69	1177	49.12	1205	52.60	1232	56.13	1260	59.71	1287	63.36	1313	67.05	1339	70.79	1365	74.59	1391	78.44
47000	1076	37.26	1106	40.82	1135	44.21	1164	47.65	1192	51.13	1220	54.66	1247	58.24	1274	61.89	1301	65.58	1327	69.32	1353	73.11	1378	76.97	1404	80.86
48000	1094	39.32	1123	42.72	1152	46.17	1180	49.66	1208	53.20	1236	56.80	1262	60.43	1289	64.13	1315	67.87	1341	71.65	1366	75.5	1392	79.40	1416	83.33
49000	1112	41.22	1141	44.69	1169	48.19	1197	51.75	1224	55.35	1251	58.98	1278	62.68	1304	66.43	1330	70.22	1355	74.06	1380	77.95	1405	81.90	1430	85.91
50000	1130	43.19	1158	46.73	1186	50.30	1214	53.90	1241	57.55	1267	61.26	1293	65.01	1319	68.80	1344	72.65	1369	76.53	1394	80.49	1419	84.47	1443	88.52
51000	1148	45.23	1176	48.83	1203	52.46	1230	56.12	1257	59.83	1283	63.58	1309	67.40	1334	71.24	1359	75.15	1384	79.10	1408	83.09	1432	87.14	1456	91.24
52000	1166	47.34	1194	51.00	1221	54.70	1247	58.42	1273	62.18	1299	66.00	1324	69.85	1349	73.77	1374	77.73	1398	81.71	1423	85.77	1446	89.87	1470	94.01
53000	1184	49.51	1211	53.24	1238	57.00	1264	60.79	1290	64.60	1315	68.48	1340	72.39	1365	76.35	1389	80.37	1413	84.42	1437	88.53	1461	92.66		
54000	1202	51.76	1229	55.56	1255	59.38	1281	63.23	1307	67.11	1331	71.03	1356	75.01	1381	79.04	1405	83.09	1428	87.20	1452	91.35				
55000	1221	54.09	1247	57.96	1273	61.84	1298	65.74	1323	69.68	1348	73.66	1372	77.70	1396	81.77	1420	85.89	1444	90.05	1467	94.26				
56000	1239	56.49	1265	60.43	1290	64.36	1315	68.34	1340	72.35	1364	76.38	1388	80.46	1412	84.59	1436	88.77	1459	92.99						
57000	1258	58.96	1283	62.96	1308	66.98	1333	71.01	1357	75.08	1381	79.18	1405	83.33	1428	87.49	1451	91.73								
58000	1276	61.51	1301	65.58	1326	69.66	1350	73.76	1374	77.88	1398	82.05	1421	86.25	1444	90.48	1467	94.78								
59000	1295	64.14	1319	68.29	1344	72.42	1368	76.58	1391	80.77	1415	85.00	1438	89.27	1461	93.56										
60000	1313	66.84	1338	71.08	1362	75.29	1385	79.49	1409	83.75	1432	88.04	1454	92.35												
63000	1369	75.46	1393	79.91	1416	8																				

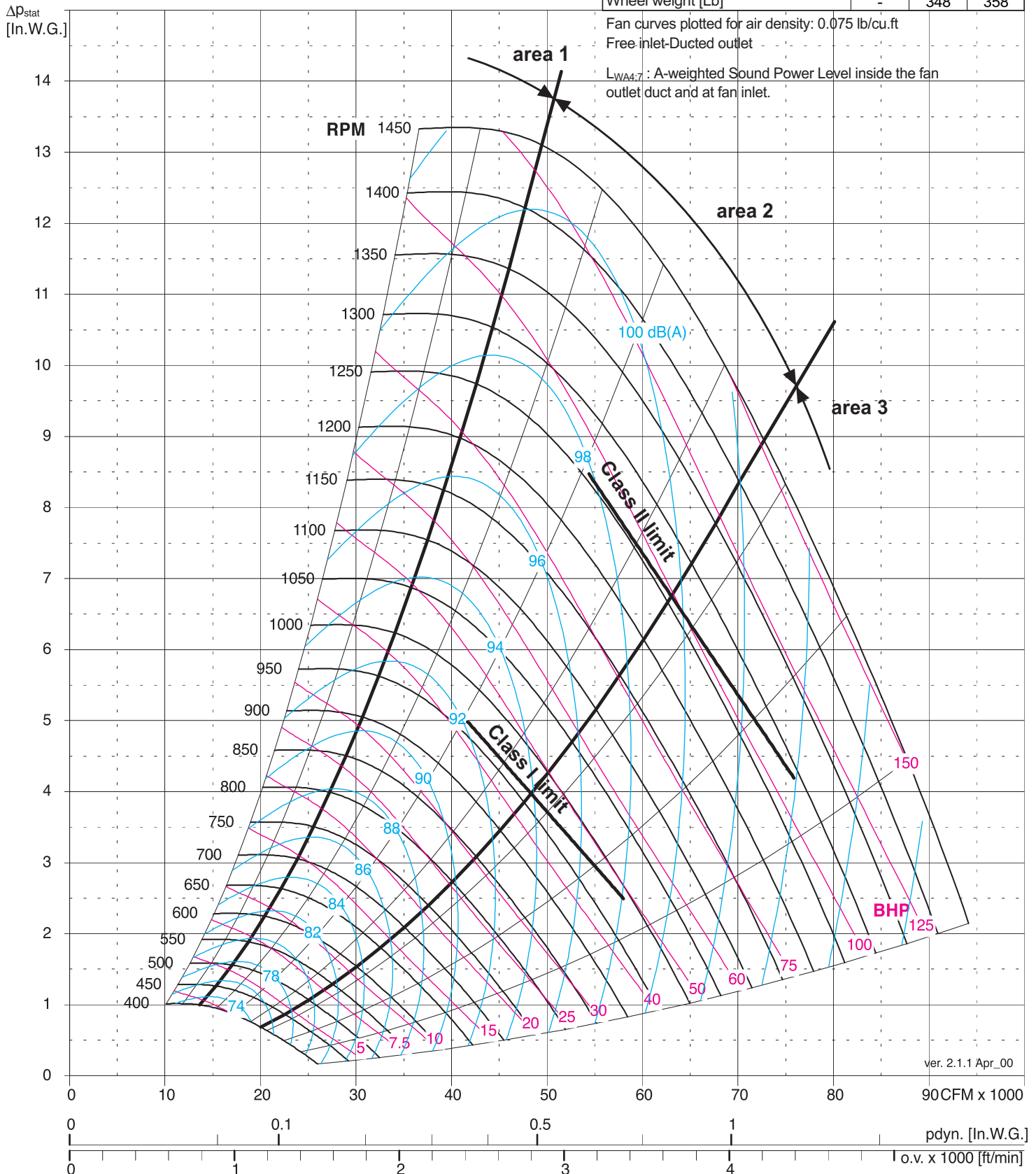
SOUND DATA TABLE

Fan Model and Size	Fan Performance Area	Range of fan speed	ΔL_{W4}	ΔL_{Woc4} 63	ΔL_{Woc4} 125	ΔL_{Woc4} 250	ΔL_{Woc4} 500	ΔL_{Woc4} 1000	ΔL_{Woc4} 2000	ΔL_{Woc4} 4000	ΔL_{Woc4} 8000
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FEG 85
Peak $\eta_t = 83.7$

ATZAF 40-40		R	T1	T2
Fan Max RPM [min ⁻¹]	-	-	1200	1350
Fan Max BHP	-	-	66.5	110
Fan Outlet Area O.A. [ft ²]	-	-	17.27	
Fan weight [Lb]	-	-	1038	1068
Nominal wheel diameter [in.]	-	-	39.37	
Wheel width [in.]	-	-	31.85	
Wheel No. Blades	-	-	10	
Wheel Moment of Inertia [Lb ft ²]	-	-	630	650
Wheel weight [Lb]	-	-	348	358





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DOUBLE INLET AIRFOIL FANS - ATZAF

ATZAF 40-40 T1 / T2

Δp _{stat} [In.W.G.]																																									
V	2		2.5		3		3.5		4		4.5		5		5.5		6		6.5		7		7.5		8		8.5		9		9.5		10		10.5		11		11.5		
[CFM]	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	
16000	561	7.07	628	9.30																																					
18000	563	7.56	627	9.88	688	12.37																																			
20000	569	8.15	629	10.49	687	13.05	743	15.79																																	
22000	579	8.89	635	11.21	690	13.78	743	16.57	794	19.52	842	22.58																													
24000	591	9.77	644	12.09	695	14.65	745	17.45	794	20.44	842	23.60	888	26.87	931	30.20																									
26000	607	10.78	656	13.14	704	15.69	751	18.46	798	21.45	843	24.63	888	27.99	931	31.47	972	35.03	1012	38.65																					
28000	624	11.91	670	14.33	715	16.90	759	19.67	804	22.65	847	25.82	890	29.18	931	32.70	972	36.37	1012	40.14	1050	43.99	1087	47.87																	
30000	642	13.16	686	15.65	729	18.28	771	21.07	812	24.05	853	27.20	894	30.54	934	34.07	974	37.76	1012	41.60	1050	45.56	1087	49.59	1123	53.72	1158	57.89													
32000	661	14.52	703	17.11	744	19.81	784	22.65	824	25.63	863	28.80	901	32.12	939	35.63	977	39.31	1014	43.15	1051	47.15	1087	51.28	1123	55.51	1157	59.83	1191	64.21	1224	68.81	1256	73.26							
34000	682	16.00	722	18.71	761	21.49	799	24.38	837	27.42	874	30.60	911	33.93	947	37.42	983	41.09	1019	44.92	1054	48.91	1089	53.06	1124	57.32	1157	61.70	1191	66.19	1223	70.95	1255	75.61	1286	80.29	1317	85.03			
36000	702	17.58	742	20.42	779	23.32	816	26.30	852	29.38	887	32.59	922	35.95	957	39.44	991	43.11	1025	46.92	1059	50.90	1093	55.03	1126	59.29	1159	63.70	1192	68.43	1224	73.07	1255	77.83	1286	82.65	1316	87.54	1346	92.49	
38000	724	19.30	762	22.27	798	25.28	833	28.37	868	31.52	902	34.79	935	38.18	969	41.70	1002	45.37	1034	49.17	1067	53.12	1099	57.25	1131	61.51	1163	65.90	1194	70.63	1225	75.32	1256	80.11	1286	84.99	1316	89.98	1346	95.05	
40000	746	21.13	783	24.24	818	27.38	852	30.57	885	33.82	918	37.18	950	40.63	982	44.18	1014	47.87	1045	51.68	1076	55.65	1107	59.74	1138	63.99	1168	68.56	1199	73.10	1229	77.75	1259	82.56	1288	87.46	1318	92.51	1346	97.64	
42000	769	23.09	804	26.34	838	29.62	871	32.93	904	36.29	935	39.73	966	43.25	997	46.87	1027	50.61	1058	54.44	1087	58.41	1117	62.51	1147	66.93	1176	71.32	1205	75.84	1234	80.48	1263	85.26	1292	90.17	1320	95.21	1348	100.4	
43000	780	24.13	815	27.45	849	30.79	881	34.17	913	37.60	944	41.08	975	44.63	1005	48.28	1035	52.04	1064	55.89	1094	59.90	1123	64.00	1152	68.43	1181	72.79	1209	77.32	1238	81.96	1266	86.72	1294	91.63	1322	96.65			
44000	792	25.19	826	28.60	859	32.01	892	35.44	923	38.92	953	42.47	983	46.08	1013	49.75	1042	53.54	1071	57.43	1100	61.42	1129	65.55	1157	69.99	1186	74.36	1214	78.87	1242	83.50	1269	88.26	1297	93.16	1325	98.19			
45000	803	26.28	837	29.77	870	33.24	902	36.77	933	40.29	963	43.90	992	47.54	1021	51.27	1050	55.10	1079	59.02	1107	63.04	1135	67.36	1163	71.63	1191	76.00	1218	80.50	1246	85.12	1273	89.88	1301	94.78	1328	99.80			
46000	815	27.42	849	30.97	881	34.54	912	38.11	943	41.73	972	45.38	1001	49.08	1030	52.86	1058	56.71	1086	60.64	1114	64.71	1142	69.05	1169	73.31	1197	77.69	1224	82.20	1251	86.83	1278	91.59	1304	96.48	1331	101.5			
47000	827	28.61	860	32.22	892	35.86	923	39.51	953	43.16	982	46.87	1011	50.63	1039	54.46	1067	58.36	1094	62.34	1122	66.41	1149	70.80	1176	75.08	1203	79.48	1229	83.99	1256	88.61	1282	93.37	1309	98.25	1335	103.2			
48000	839	29.80	871	33.51	903	37.21	933	40.93	963	44.67	992	48.44	1020	52.26	1048	56.14	1075	60.07	1103	64.08	1130	68.40	1156	72.61	1183	76.90	1209	81.31	1235	85.84	1261	90.48	1287	95.24	1313	100.1	1339	105.1			
49000	851	31.07	883	34.84	914	38.61	944	42.39	973	46.21	1002	50.04	1030	53.91	1057	57.84	1084	61.84	1111	65.91	1138	70.24	1164	74.46	1190	78.80	1216	83.22	1242	87.78	1267	92.40	1293	97.16	1318	102.0	1343	107.0			
50000	863	32.34	894	36.19	925	40.03	955	43.91	984	47.79	1012	51.68	1040	55.61	1067	59.60	1093	63.64	1120	67.96	1146	72.13	1172	76.40	1197	80.77	1223	85.21	1248	89.77	1273	94.42	1298	99.17	1324	104.1	1348	109.0			
51000	875	33.69	906	37.59	936	41.51	966	45.46	994	49.40	1022	53.35	1050	57.36	1076	61.40	1103	65.50	1129	69.86	1154	74.09	1180	78.38	1205	82.78	1230	87.25	1255	91.82	1280	96.49	1305	101.3	1329	106.2					
52000	887	35.05	918	39.03	948	43.02	977	47.04	1005	51.07	1033	55.10	1060	59.17	1086	63.26	1112	67.62	1138	71.82	1163	76.10	1188	80.43	1213	84.86	1238	89.37	1262	93.95	1287	98.65	1311	103.4	1335	108.3					
53000	899	36.47	930	40.53	959	44.59	988	48.67	1016	52.76	1043	56.85	1070	61.00	1096	65.14	1122	69.57	1147	73.82	1172	78.15	1197	82.55	1221	86.99	1246	91.53	1270	96.16	1294	100.9	1318	105.7							
54000	912	37.92	942	42.05	971	46.18	999	50.33	1027	54.51	1054	58.69	1080	62.86	1106	67.30	1131	71.57	1156	75.89	1181	80.26	1205	84.70	1230	89.20	1254	93.78	1277	98.42	1301	103.2	1325	108.0							
55000	924	39.41	954	43.61	983	47.84	1010	52.05	1038	56.29	1064	60.53	1091	64.82	1116	69.31	1141	73.63	1166	78.00	1190	82.44	1214	86.92	1238	91.46	1262	96.07	1285	100.7	1309	105.5									
56000	936	40.96	966	45.24	994	49.53	1022	53.83	1049	58.13	1075	62.46	1101	66.98	1126	71.35	1151	75.75	1175	80.16	1200	84.64	1223	89.18	1247	93.76	1270	98.43	1294	103.2	1317	107.9									
57000	949	42.54	978	46.89	1006	51.25	1033	55.62	1060	60.01	1086	64.39	1112	69.00	1137	73.44	1161	77.91	1185	82.39	1209	86.92	1233	91.50	1256	96.13	1279	100.8	1302	105.6											
58000	962	44.19	990	48.59	1018	53.04	1045	57.47	1071	61.91	1097	66.38	1122	71.08	1147	75.58	1171	80.10	1195	84.65	1219	89.26	1242	93.88	1265	98.58	1288	103.3	1310	108.1											
59000	974	45.88	1002	50.35	1030	54.87	1057	59.38	1083	63.89	1108	68.63	1133	73.20	1158	77.77	1182	82.36	1205	86.98	1229	91.63	1251	96.31	1274	101.1	1297	105.9													
60000	987	47.61	1015	52.14	1042	56.73	1068	61.30	1094	65.93	1119	70.72	1144	75.35	1168	79.99	1192	84.65	1215	89.34	1238	94.06	1261	98.80	1284	103.6	1306	108.4													
61000	1000	49.38	1027	54.01	1054	58.63	1080	63.29	1105	68.17	1130	72.88	1155	77.58	1179	82.29	1202	87.02	1226	91.78	1248	96.53	1271	101.4	1293	106.2															
62000	1013	51.22	1039	55.89	1066	60.60	1092	65.35	1117	70.31	1142																														

SOUND DATA TABLE

Fan Model and Size	Fan Performance Area	Range of fan speed	ΔL_{w4}	ΔL_{woc4} 63	ΔL_{woc4} 125	ΔL_{woc4} 250	ΔL_{woc4} 500	ΔL_{woc4} 1000	ΔL_{woc4} 2000	ΔL_{woc4} 4000	ΔL_{woc4} 8000
ATZAF 40-40	Area 1	RPM < 540	16.8	16	8	1	-3	-7	-11	-16	-22
		541 <RPM< 1080	16.2	15	9	1	-3	-7	-12	-17	-22
		RPM > 1081	13.7	12	7	2	-3	-7	-13	-18	-22
	Area 2	RPM < 540	12.0	10	6	0	-2	-6	-10	-17	-23
		541 <RPM< 1080	10.1	6	6	1	-2	-6	-11	-16	-22
		RPM > 1081	8.8	3	4	3	-1	-6	-12	-17	-21
	Area 3	RPM < 540	12.8	11	6	2	-3	-6	-11	-17	-23
		541 <RPM< 1080	9.9	5	6	2	-2	-6	-11	-16	-22
		RPM > 1081	7.0	3	0	0	-2	-6	-11	-16	-21

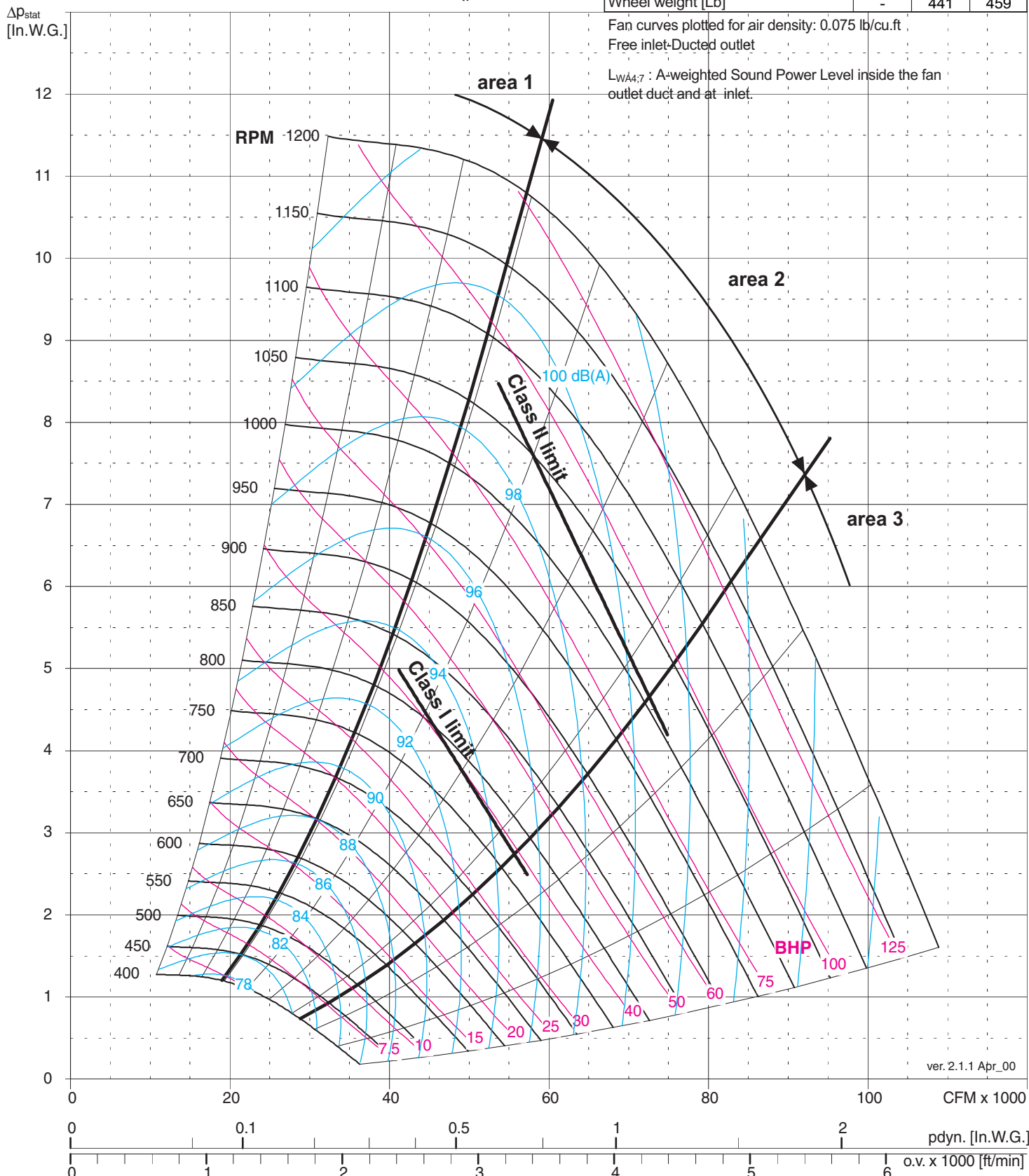


FEG 90
Peak $\eta_t = 84.3$

ATZAF 44-44		R	T1	T2
Fan Max RPM [min ⁻¹]	-	-	850	1150
Fan Max BHP	-	-	50	130
Fan Outlet Area O.A. [ft ²]	17.05			
Fan weight [Lb]	-	-	1451	1616
Nominal wheel diameter [in.]	44.09			
Wheel width [in.]	35.35			
Wheel No. Blades	10			
Wheel Moment of Inertia [Lb ft ²]	-	-	1005	1045
Wheel weight [Lb]	-	-	441	459

Fan curves plotted for air density: 0.075 lb/cu.ft.
Free inlet-Ducted outlet

L_{WA4,7} : A-weighted Sound Power Level inside the fan outlet duct and at inlet.



ver. 2.1.1 Apr_00



DOUBLE INLET AIRFOIL FANS - ATZAF

ATZAF 44-44 T1 / T2

Δp _{stat} [In.W.G.]																					
V	1	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10	10.5	
[CFM]	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	
10000	354 2.55																				
12000	356 2.86	434 4.60																			
14000	357 3.13	435 5.07	501 7.10																		
16000	361 3.42	436 5.48	502 7.73	561 10.05																	
18000	367 3.76	439 5.89	504 8.28	562 10.81	615 13.40	663 15.99															
20000	376 4.16	443 6.34	506 8.81	563 11.50	615 14.29	664 17.16	709 20.04														
22000	386 4.64	450 6.86	509 9.39	565 12.16	617 15.11	665 18.17	710 21.29	753 24.45	792 27.62												
24000	398 5.18	458 7.45	515 10.02	568 12.85	619 15.90	666 19.11	711 22.42	754 25.81	794 29.23	832 32.68	868 36.39										
26000	411 5.79	468 8.13	521 10.74	573 13.62	622 16.73	668 20.04	713 23.48	755 27.04	795 30.68	833 34.36	869 38.38	904 42.12	938 45.85								
28000	424 6.46	479 8.88	530 11.54	579 14.46	626 17.62	671 21.00	715 24.54	756 28.23	796 32.03	834 35.91	870 40.14	905 44.14	939 48.16	971 52.20	1003 56.22	1033 60.23					
30000	439 7.21	491 9.72	540 12.45	587 15.42	632 18.61	676 22.03	718 25.64	758 29.42	798 33.33	835 37.36	871 41.79	906 46.00	940 50.23	972 54.52	1004 58.82	1034 63.14	1063 67.44	1092 71.76			
32000	454 8.03	504 10.64	551 13.44	596 16.46	639 19.71	681 23.16	722 26.82	762 30.67	800 34.67	837 38.80	873 43.38	907 47.73	941 52.17	973 56.66	1005 61.20	1035 65.76	1065 70.33	1094 74.94	1121 79.53	1148 84.13	
34000	470 8.94	518 11.65	563 14.53	606 17.61	648 20.91	688 24.41	728 28.11	766 32.00	804 36.07	840 40.29	875 44.98	909 49.44	942 54.02	974 58.67	1006 63.40	1036 68.17	1066 73.00	1095 77.84	1123 82.70		
36000	486 9.91	532 12.75	575 15.72	617 18.87	657 22.22	696 25.76	735 29.50	772 33.44	808 37.55	843 41.84	878 46.61	912 51.18	944 55.88	976 60.66	1007 65.52	1037 70.46	1067 75.46	1096 80.52	1124 85.61		
38000	502 10.97	547 13.93	589 17.01	629 20.24	668 23.65	706 27.25	743 31.03	778 35.01	814 39.16	848 43.50	882 48.33	915 52.99	947 57.75	978 62.65	1009 67.63	1039 72.72	1068 77.86	1097 83.08	1125 88.37		
40000	519 12.12	562 15.20	603 18.38	642 21.71	679 25.19	716 28.85	751 32.68	786 36.71	820 40.90	854 45.61	887 50.18	919 54.87	950 59.71	981 64.67	1011 69.75	1041 74.96	1070 80.24	1098 85.58	1126 91.03		
42000	536 13.35	578 16.57	618 19.87	655 23.29	691 26.85	727 30.58	761 34.48	795 38.54	828 42.79	861 47.54	893 52.15	924 56.90	955 61.79	985 66.82	1015 71.98	1044 77.22	1072 82.60	1100 88.08	1128 93.64		
44000	553 14.66	594 18.03	633 21.45	669 24.98	704 28.63	738 32.43	772 36.39	805 40.52	837 45.15	868 49.61	899 54.26	930 59.06	960 63.99	990 69.06	1018 74.26	1047 79.60	1075 85.04	1103 90.62	1130 96.28		
46000	571 16.09	611 19.59	648 23.15	683 26.78	718 30.53	751 34.41	783 38.45	815 42.63	846 47.33	877 51.84	907 56.52	937 61.37	966 66.32	995 71.46	1023 76.71	1051 82.11	1079 87.61	1106 93.24	1133 98.99		
48000	589 17.61	627 21.26	664 24.94	698 28.69	732 32.54	764 36.52	795 40.64	826 45.23	857 49.66	886 54.23	916 58.94	945 63.81	973 68.84	1001 74.01	1029 79.30	1057 84.75	1083 90.31	1110 95.98	1136 101.8		
50000	606 19.23	644 23.03	680 26.85	713 30.72	746 34.69	777 38.76	808 42.96	838 47.65	868 52.14	896 56.75	925 61.52	953 66.44	981 71.50	1009 76.71	1036 82.06	1062 87.53	1089 93.13	1115 98.90	1141 104.7		
52000	624 20.95	661 24.92	696 28.87	729 32.88	761 36.95	791 41.13	821 45.76	850 50.19	879 54.75	907 59.46	935 64.29	963 69.26	990 74.37	1017 79.61	1043 84.98	1069 90.51	1095 96.15	1120 101.9	1146 107.8		
54000	643 22.79	679 26.91	712 31.00	745 35.14	776 39.33	805 43.61	835 48.39	863 52.91	891 57.54	919 62.29	946 67.17	973 72.23	999 77.37	1025 82.68	1051 88.10	1077 93.65	1102 99.34	1127 105.2			
56000	661 24.74	696 29.02	729 33.26	761 37.53	791 41.86	820 46.63	849 51.12	877 55.76	904 60.47	931 65.31	957 70.28	983 75.34	1009 80.56	1035 85.89	1060 91.38	1085 96.98	1110 102.7	1134 108.6			
58000	680 26.81	714 31.26	746 35.64	777 40.06	807 44.86	835 49.42	863 54.03	890 58.74	917 63.56	943 68.46	969 73.52	995 78.68	1020 83.95	1045 89.35	1070 94.85	1094 100.5	1118 106.3	1142 112.2			
60000	698 29.00	732 33.60	763 38.16	794 42.71	823 47.67	851 52.32	878 57.05	905 61.88	931 66.79	956 71.79	982 76.90	1007 82.15	1031 87.48	1056 92.94	1080 98.54	1104 104.2	1127 110.1				
62000	717 31.31	750 36.09	781 40.80	810 45.86	839 50.60	866 55.38	893 60.23	919 65.16	945 70.18	970 75.27	994 80.46	1019 85.80	1043 91.19	1067 96.71	1090 102.4	1114 108.1	1137 114.0				
64000	736 33.76	768 38.71	798 43.57	827 48.80	855 53.67	882 58.61	908 63.57	934 68.62	959 73.73	983 78.91	1008 84.22	1032 89.59	1055 95.10	1079 100.7	1102 106.4	1124 112.2	1147 118.2				
66000	754 36.35	786 41.45	816 46.86	844 51.87	871 56.88	898 61.95	924 67.06	949 72.20	973 77.41	998 82.72	1021 88.12	1045 93.60	1068 99.17	1091 104.9	1113 110.6	1136 116.6					
68000	773 39.06	804 44.33	833 49.90	861 55.09	888 60.27	914 65.46	940 70.68	964 75.97	988 81.31	1012 86.71	1035 92.18	1058 97.78	1081 103.5	1103 109.2	1126 115.1	1148 121.1					
70000	792 41.92	823 47.76	851 53.13	879 58.47	905 63.78	931 69.13	955 74.46	980 79.89	1003 85.32	1027 90.84	1050 96.43	1072 102.2	1094 107.9	1116 113.7	1138 119.7						
72000	812 45.31	841 50.96	869 56.49	896 61.97	922 67.45	947 72.91	972 78.43	996 83.96	1019 89.53	1042 95.17	1064 100.9	1086 106.7	1108 112.5	1130 118.5							
74000	831 48.45	860 54.28	887 60.01	914 65.68	939 71.28	964 76.90	988 82.53	1011 88.19	1034 93.89	1057 99.66	1079 105.5	1101 111.4	1122 117.3	1143 123.4							
76000	850 51.81	879 57.82	905 63.67	931 69.47	957 75.25	981 81.02	1005 86.79	1028 92.59	1050 98.42	1072 104.3	1094 110.3	1115 116.3	1137 122.3								
78000	869 55.27	897 61.46	924 67.50	949 73.49	974 79.43	998 85.32	1021 91.23	1044 97.17	1066 103.2	1088 109.2	1109 115.2	1130 121.3									
80000	889 58.92	916 65.29	942 71.52	967 77.65	992 83.75	1015 89.79	1038 95.85	1060 101.9	1082 108.1	1104 114.2	1125 120.4	1146 126.6									
82000	908 62.76	935 69.31	961 75.70	985 82.00	1009 88.22	1033 94.46	1055 100.7	1077 106.9	1099 113.1	1120 119.4	1141 125.7										
84000	928 66.72	954 73.44	979 80.02	1004 86.49	1027 92.88	1050 99.27	1072 105.6	1094 112.0	1115 118.4	1136 124.8											
86000	947 70.89	973 77.82	998 84.54	1022 91.20	1045 97.74	1068 104.3	1089 110.8	1111 117.3	1132 123.8												
88000	967 75.22	992 82.31	1017 89.23	1040 96.06	1063 102.8	1085 109.5	1107 116.1	1128 122.8	1148 129.5												
90000	987 79.78	1011 87.02	1035 94.13	1059 101.1	1081 108.0	1103 114.8	1124 121.6	1145 128.5													
92000	1006 84.45	1031 91.91	1054 99.20	1077 106.3	1099 113.4	1121 120.4	1142 127.4														
94000	1026 89.36	1050 97.02	1073 104.4	1096 111.8	1117 119.0	1139 126.2															
96000	1046 94.46	1069 102.3	1092 109.9	1114 117.4	1136 124.8																
98000	1066 99.73	1089 107.7	1111 115.6	1133 123.3																	
100000	1086 105.3	1108 113.5	1130 121.4																		
102000	1105 110.9	1128 119.3																			
104000	1125 116.9	1147 125.4																			

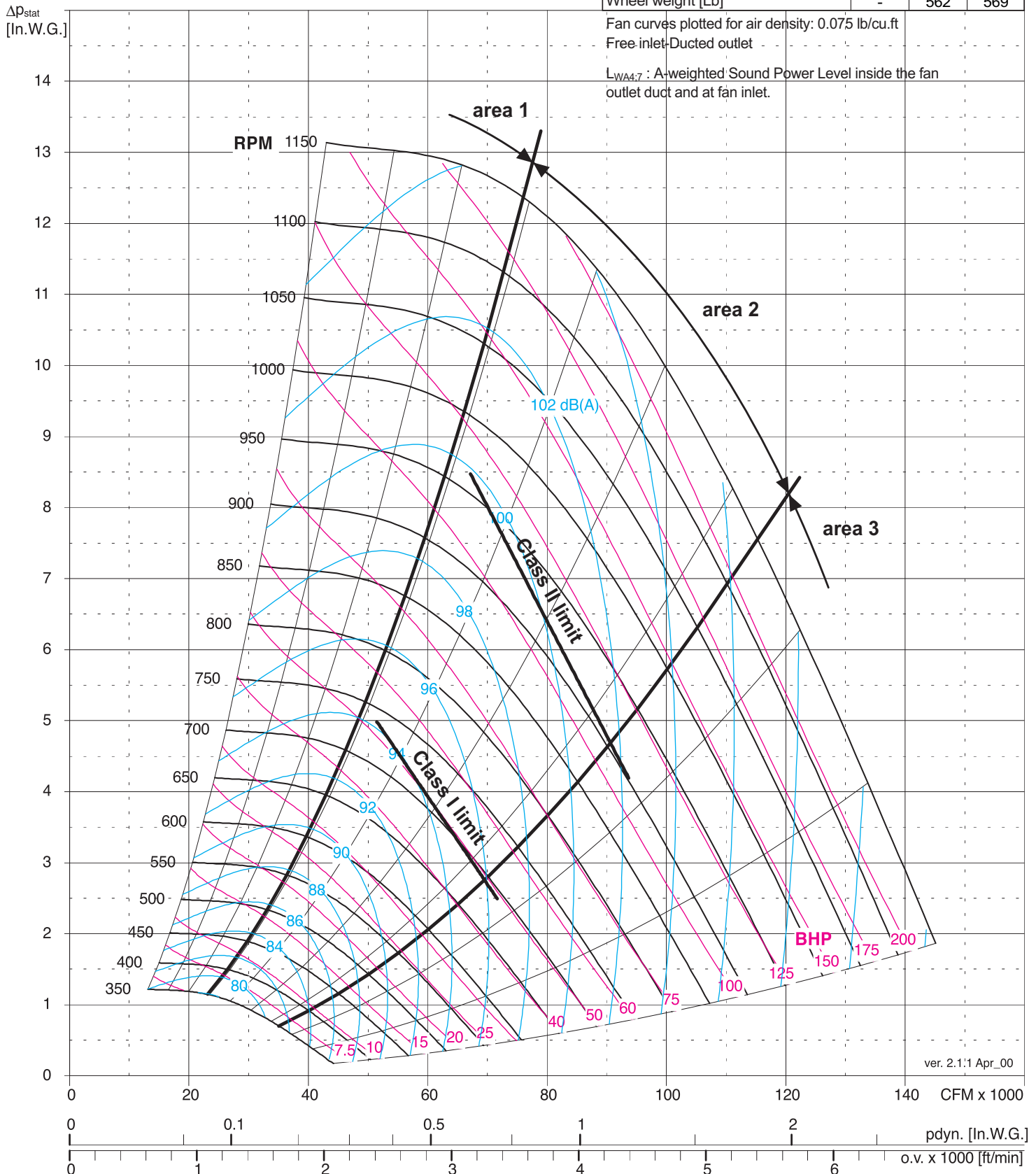
SOUND DATA TABLE

Fan Model and Size	Fan Performance Area	Range of fan speed	ΔL_{W4}	ΔL_{Woc4} 63	ΔL_{Woc4} 125	ΔL_{Woc4} 250	ΔL_{Woc4} 500	ΔL_{Woc4} 1000	ΔL_{Woc4} 2000	ΔL_{Woc4} 4000	ΔL_{Woc4} 8000
ATZAF 44-44	Area 1	RPM < 540	16.8	16	7	2	-2	-6	-13	-19	-26
		541 <RPM< 1080	15.8	15	6	2	-2	-6	-14	-20	-26
		RPM > 1081	14.0	12	8	3	-2	-6	-15	-21	-26
	Area 2	RPM < 540	12.7	11	6	1	-3	-7	-11	-19	-25
		541 <RPM< 1080	10.6	7	6	2	-3	-7	-12	-18	-24
		RPM > 1081	9.3	4	4	4	-2	-7	-13	-19	-23
	Area 3	RPM < 540	13.5	12	6	2	-3	-7	-11	-15	-18
		541 <RPM< 1080	9.6	6	4	2	-2	-7	-11	-14	-17
RPM > 1081		7.8	4	0	2	-2	-7	-11	-14	-16	



FEG 90
Peak $\eta_t = 84.3$

ATZAF 49-49		R	T1	T2
Fan Max RPM [min ⁻¹]	-	-	800	1100
Fan Max BHP	-	-	110	170
Fan Outlet Area O.A. [ft ²]	21.32			
Fan weight [Lb]	-	-	1825	2056
Nominal wheel diameter [in.]	49.21			
Wheel width [in.]	38.78			
Wheel No. Blades	10			
Wheel Moment of Inertia [Lb ft ²]	-	-	1578	1597
Wheel weight [Lb]	-	-	562	569





comefri

DOUBLE INLET AIRFOIL FANS - ATZAF

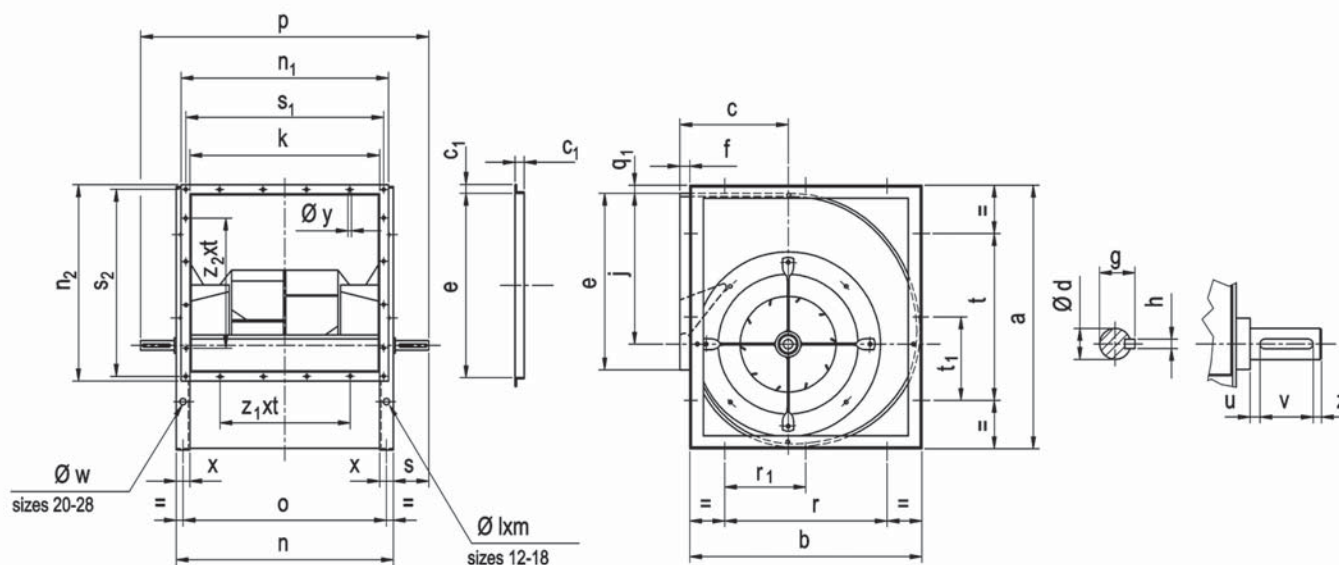
ATZAF 49-49 T1 / T2

Δp _{stat} [In.W.G.]																						
V	1	2	2.5	3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10	10.5	11	11.5	
[CFM]	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	RPM BHP	
14000	318 3.43																					
18000	321 3.97	449 9.05																				
22000	328 4.61	451 10.22	503 13.33	550 16.51																		
26000	340 5.43	454 11.29	505 14.69	552 18.27	595 21.96	636 25.69	674 29.44															
30000	357 6.48	461 12.53	509 16.07	554 19.87	597 23.88	637 28.01	675 32.24	711 36.53	745 40.84	778 45.14												
34000	376 7.74	472 14.02	517 17.65	559 21.57	600 25.74	639 30.12	677 34.67	713 39.35	747 44.10	779 48.91	811 54.21	841 59.11	870 64.01	898 68.89								
38000	397 9.24	486 15.82	528 19.53	568 23.53	607 27.81	644 32.33	680 37.06	715 41.98	749 47.04	781 52.21	812 57.94	842 63.29	871 68.70	900 74.15	927 79.59	953 85.09	979 90.53	1004 96.00				
42000	419 10.97	503 17.91	541 21.74	579 25.84	616 30.19	651 34.81	686 39.65	719 44.71	752 49.96	784 55.35	814 61.39	844 67.09	873 72.84	901 78.72	928 84.60	955 90.58	981 96.58	1006 102.6	1030 108.6	1054 114.7	1077 120.7	
46000	442 12.95	521 20.32	558 24.30	593 28.51	628 32.96	661 37.64	694 42.58	726 47.72	758 53.09	788 58.63	818 64.85	847 70.76	875 76.79	903 82.94	930 89.21	956 95.51	982 101.9	1007 108.4	1031 114.9	1055 121.4	1079 128.0	
48000	454 14.03	531 21.64	566 25.69	601 29.97	635 34.48	667 39.21	699 44.20	731 49.39	761 54.79	791 60.39	820 66.69	849 72.69	877 78.82	904 85.05	931 91.42	957 97.90	983 104.4	1008 111.1	1032 117.8	1056 124.5	1079 131.3	
50000	466 15.19	541 23.04	576 27.19	609 31.54	642 36.11	674 40.89	705 45.90	735 51.13	765 56.58	795 62.24	823 68.61	852 74.66	879 80.83	906 87.19	933 93.65	959 100.3	984 106.9	1009 113.7	1033 120.6	1057 127.5	1080 134.5	
52000	478 16.41	552 24.52	585 28.76	618 33.20	650 37.82	681 42.66	711 47.74	741 53.00	770 58.49	799 64.19	827 70.64	855 76.73	882 82.98	908 89.38	935 95.95	960 102.7	985 109.4	1010 116.3	1034 123.3	1058 130.5	1081 137.6	
54000	491 17.73	562 26.07	595 30.42	627 34.94	658 39.65	688 44.55	718 49.67	747 55.00	775 60.52	804 66.80	831 72.73	858 78.90	885 85.19	911 91.66	937 98.31	962 105.1	987 111.9	1011 119.0	1035 126.1	1059 133.3	1082 140.6	
56000	503 19.10	573 27.03	605 32.18	637 36.80	667 41.58	696 46.56	725 51.72	753 57.08	781 62.66	809 69.01	836 74.98	862 81.61	889 87.52	914 94.06	940 100.7	965 107.6	989 114.5	1013 121.7	1037 128.9	1060 136.2	1083 143.6	
58000	516 20.55	584 29.46	616 34.03	646 38.73	676 43.60	705 48.65	733 53.88	761 59.32	788 64.94	815 71.31	841 77.37	867 83.58	893 89.98	918 96.54	943 103.3	968 110.2	992 117.2	1015 124.4	1039 131.7	1062 139.1	1085 146.7	
60000	528 22.09	596 31.27	626 35.95	656 40.77	685 45.73	713 50.86	741 56.17	768 61.66	795 67.33	821 73.79	847 79.86	872 86.10	898 92.57	922 99.16	947 106.0	971 112.9	995 120.0	1018 127.2	1041 134.6	1064 142.1	1087 149.7	
62000	541 23.71	607 33.18	637 37.97	667 42.92	695 47.96	722 53.19	749 58.56	776 64.10	802 70.41	828 76.81	853 82.49	878 88.78	903 95.27	927 101.9	951 108.7	975 115.8	998 122.9	1021 130.2	1044 137.6	1067 145.2	1089 152.8	
64000	554 25.41	619 35.17	648 40.11	677 45.15	705 50.30	732 55.59	758 61.05	784 66.70	810 73.06	835 79.09	860 85.25	884 91.61	908 98.13	932 104.8	956 111.7	979 118.7	1002 125.9	1025 133.2	1047 140.7	1070 148.3	1091 156.1	
66000	567 27.20	631 37.26	660 42.33	688 47.49	715 52.74	741 58.13	767 63.68	793 69.40	818 75.85	842 81.93	867 88.17	891 94.57	914 101.1	938 107.9	961 114.7	984 121.8	1007 129.1	1029 136.4	1051 144.0	1073 151.6	1094 159.4	
68000	580 29.08	643 39.45	671 44.64	699 49.92	725 55.31	751 60.79	777 66.42	802 72.79	826 78.76	850 84.89	874 91.17	898 97.65	921 104.2	944 111.0	967 118.0	989 125.1	1011 132.3	1033 139.8	1055 147.3	1077 155.1	1098 162.9	
70000	594 31.05	655 41.71	683 47.06	710 52.44	736 57.96	761 63.54	786 69.28	811 75.74	835 81.82	859 88.00	882 94.37	905 100.9	928 107.5	950 114.3	973 121.4	995 128.5	1017 135.8	1038 143.3	1060 150.9	1081 158.6		
72000	607 33.12	667 44.09	694 49.57	721 55.10	747 60.72	772 66.41	796 72.26	820 78.84	844 84.97	867 91.25	890 97.66	913 104.3	935 111.0	957 117.9	979 124.9	1001 132.0	1022 139.4	1044 146.9	1065 154.6	1085 162.3		
74000	620 35.27	679 46.59	706 52.19	732 57.86	758 63.57	782 69.42	806 75.96	830 82.05	853 88.24	876 94.60	898 101.1	921 107.7	943 114.5	964 121.5	986 128.5	1007 135.8	1028 143.2	1049 150.7	1070 158.4	1090 166.3		
76000	634 37.54	691 49.16	718 54.92	744 60.72	769 66.57	793 72.53	817 79.17	840 85.38	863 91.66	885 98.12	907 104.7	929 111.4	951 118.3	972 125.2	993 132.4	1014 139.7	1035 147.1	1055 154.7	1076 162.4			
78000	647 39.90	704 51.85	730 57.76	756 63.70	780 69.67	804 76.33	827 82.56	850 88.82	872 95.20	894 101.8	916 108.4	938 115.2	959 122.1	980 129.2	1000 136.3	1021 143.7	1041 151.2	1062 158.8	1082 166.6			
80000	661 42.38	716 54.63	742 60.68	767 66.77	791 72.90	815 79.73	838 86.02	860 92.39	882 98.92	904 105.5	925 112.3	946 119.1	967 126.1	988 133.2	1008 140.5	1028 147.9	1049 155.5	1068 163.1				
82000	674 44.95	729 57.53	755 63.77	779 69.98	803 76.83	826 83.21	849 89.61	871 96.14	892 102.7	914 109.5	935 116.2	956 123.2	976 130.3	996 137.5	1016 144.8	1036 152.3	1056 159.9	1076 167.6				
84000	688 47.63	742 60.56	767 66.94	791 73.29	815 80.32	837 86.77	860 93.34	881 99.97	903 106.6	924 113.5	944 120.4	965 127.4	985 134.6	1005 141.9	1025 149.3	1044 156.8	1064 164.4					
86000	701 50.43	755 63.72	779 70.21	803 77.35	826 83.90	849 90.53	871 97.21	892 103.9	913 110.8	934 117.7	954 124.7	974 131.8	994 139.0	1014 146.4	1033 153.9	1053 161.5	1072 169.2					
88000	715 53.34	767 66.94	792 73.62	816 80.95	838 87.64	860 94.38	882 101.2	903 108.0	924 115.0	944 122.0	964 129.1	984 136.3	1004 143.6	1023 151.1	1042 158.6	1061 166.3						
90000	729 56.39	780 70.34	805 77.80	828 84.66	850 91.46	872 98.38	893 105.3	914 112.3	935 119.3	955 126.5	975 133.7	994 141.0	1013 148.4	1033 155.9	1051 163.6							
92000	743 59.55	793 73.84	817 81.47	840 88.46	862 95.45	884 102.5	905 109.5	925 116.6	946 123.8	966 131.1	985 138.3	1004 145.8	1023 153.3	1042 160.9	1061 168.7							
94000	757 62.82	807 76.10	830 85.30	853 92.42	874 99.53	896 106.7	916 113.9	937 121.1	957 128.4	976 135.8	996 143.2	1015 150.8	1033 158.4	1052 166.1								
96000	770 66.21	820 81.83	843 89.18	865 96.50	887 103.8	908 111.1	928 118.4	948 125.8	968 133.2	987 140.7	1006 148.2	1025 155.8	1044 163.6									
98000	784 69.75	833 85.73	856 93.28	878 100.7	899 108.1	920 115.6	940 123.1	960 130.5	979 138.1	998 145.7	1017 153.4	1035 161.1	1054 169.0									
100000	798 73.42	846 89.81	868 97.44	890 105.1	911 112.7	932 120.3	952 127.9	971 135.5	991 143.2	1009 150.9	1028 158.7	1046 166.6										
102000	812 77.82	859 93.95	881 101.8	903 109.6	924 117.3	944 125.0	964 132.8	983 140.6	1002 148.3	1021 156.2	1039 164.1											
104000	826 81.80	873 98.27	894 106.2	916 114.2	936 122.1	956 130.0	976 137.9	995 145.8	1014 153.7	1032 161.7	1050 169.7											
106000	840 85.84	886 102.7	908 110.9	929 119.0	949 127.0	969 135.1	988 143.1	1007 151.1	1025 159.3	1044 167.4												
108000	854 90.08	899 107.3	921 19																			



7. Fan dimensions

	Page
7.1. ATZAF 12-12 R to 28-28 R	39
7.2. ATZAF 12-12 T1 / T2 to 40-40 T1 / T2	40
7.3. ATZAF 44-44 T1 / T2 to 49-49 T1 / T2	41
7.4. Base frames for ATZAF 12-12 to 49-49.....	42
7.5. Side plate holes ATZAF 12-12 to 40-40	44

7.1. ATZAF 12-12 R to 28-28 R


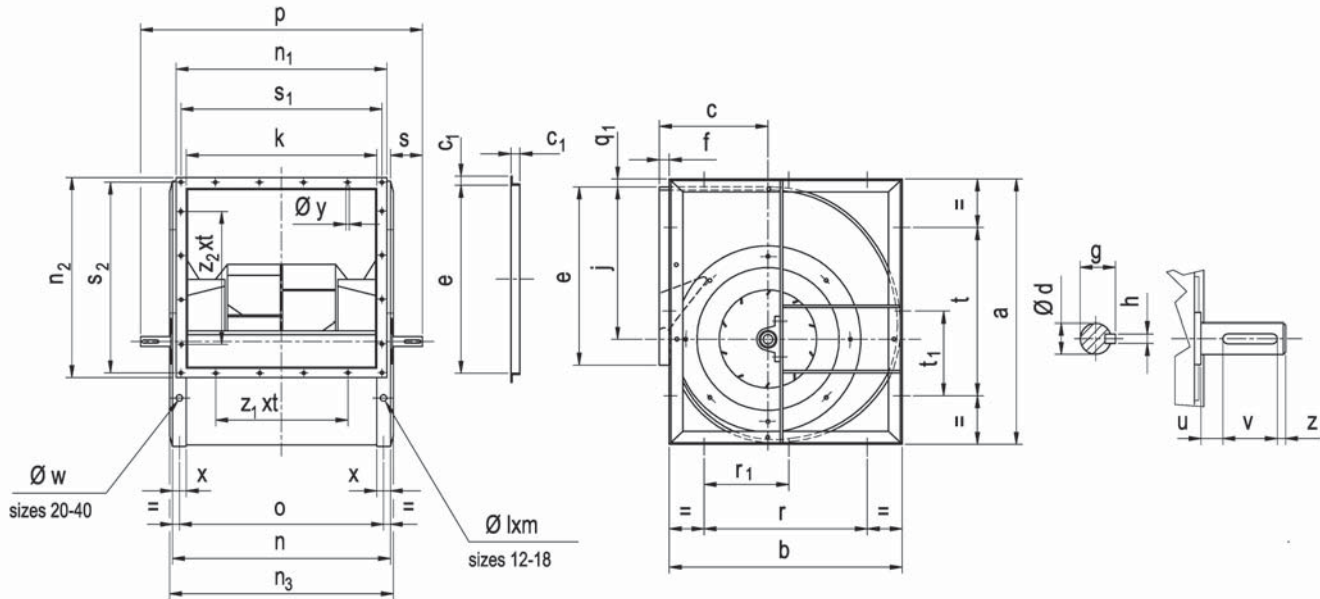
	a	b	c	c_1	$\varnothing d$	e	f	g	h	j	k
ATZAF 12-12 R	21.61	18.62	9.09	0.98	1"	13.45	0.98	1.11	1/4"	11.65	15.55
ATZAF 15-15 R	25.51	21.93	10.39	0.98	1-3/16"	15.87	0.98	1.30	1/4"	13.46	18.54
ATZAF 18-18 R	30.43	26.26	12.36	0.98	1-3/16"	18.78	0.98	1.30	1/4"	16.34	21.93
ATZAF 20-20 R	36.14	29.29	13.86	0.98	1-3/8"	25.12	2.21	1.51	5/16"	21.26	25.12
ATZAF 22-22 R	40.55	32.99	15.35	0.98	1-1/2"	28.15	2.13	1.66	3/8"	23.84	28.15
ATZAF 25-25 R	45.59	36.85	17.09	0.98	1-1/2"	31.54	2.44	1.66	3/8"	26.79	31.54
ATZAF 28-28 R	51.34	41.26	19.09	0.98	1-15/16"	35.35	2.81	2.17	1/2"	30.19	35.35

	$\varnothing l \times m$	n	n_1	n_2	o	p	r	r_1	s	s_1	s_2
ATZAF 12-12 R	0.44x0.88	18.55	17.52	15.16	17.38	24.76	16.62	-	3.11	16.73	14.37
ATZAF 15-15 R	0.44x0.88	21.54	20.51	17.60	20.33	27.87	19.93	-	3.17	19.72	16.81
ATZAF 18-18 R	0.44x0.88	24.93	23.90	20.51	23.66	32.52	24.26	-	3.80	23.11	19.72
ATZAF 20-20 R	-	28.26	27.09	27.09	26.69	34.45	17.71	8.86	3.09	26.30	26.30
ATZAF 22-22 R	-	32.09	30.12	30.12	30.12	39.37	19.69	9.84	3.64	29.33	29.33
ATZAF 25-25 R	-	35.48	33.50	33.50	33.50	42.91	22.05	11.02	3.72	32.72	32.72
ATZAF 28-28 R	-	39.29	37.32	37.32	37.72	48.03	24.80	12.40	4.37	36.53	36.53

	t	t_1	u	v	z	x	$\varnothing y$	q_1	$\varnothing w$	$z_1 \times t$	$z_2 \times t$
ATZAF 12-12 R	19.61	-	0.93	1.77	0.20	1.50	0.35	0.88	-	2x8.37	2x7.18
ATZAF 15-15 R	23.51	-	0.86	1.77	0.20	1.50	0.35	1.00	-	2x9.86	2x8.40
ATZAF 18-18 R	28.43	-	0.90	2.36	0.20	1.50	0.35	0.98	-	2x11.55	2x9.86
ATZAF 20-20 R	17.71	8.86	0.95	1.57	0.20	1.57	0.29	0.16	0.47	6x3.54	6x3.54
ATZAF 22-22 R	19.69	9.84	0.98	2.36	0.20	1.97	0.29	0.22	0.59	7x3.54	7x3.54
ATZAF 25-25 R	22.05	11.02	1.05	2.36	0.20	1.97	0.29	0.26	0.59	8x3.54	8x3.54
ATZAF 28-28 R	24.80	12.40	0.82	3.15	0.20	1.97	0.29	0.24	0.71	9x3.54	9x3.54



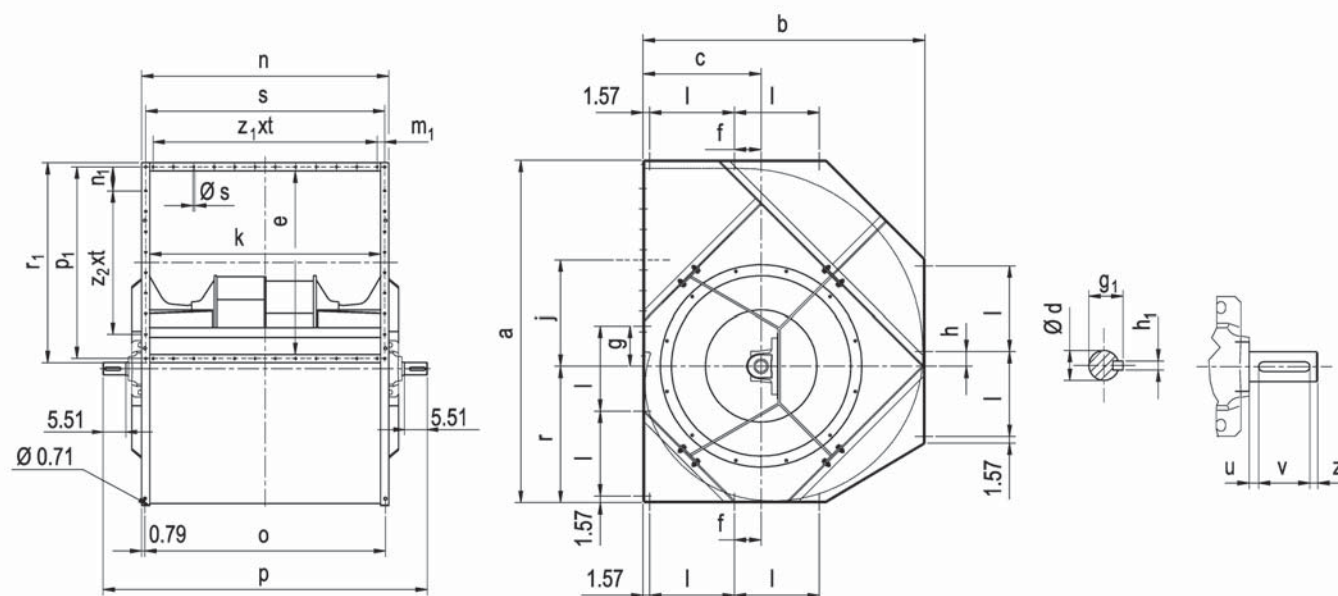
7.2. ATZAF 12-12 T1 / T2 to 40-40 T1 / T2



	a	b	c	c ₁	Ø d		e	f	g		h		j	k
					T1	T2			T1	T2	T1	T2		
ATZAF 12-12 T	21.61	18.62	9.09	0.98	1"	1-3/16"	13.45	0.98	1.11	1.30	1/4"	1/4"	11.65	15.55
ATZAF 15-15 T	25.51	21.93	10.39	0.98	1-3/16"	1-7/16"	15.87	0.98	1.30	1.60	1/4"	3/8"	13.46	18.54
ATZAF 18-18 T	30.43	26.26	12.36	0.98	1-3/16"	1-1/2"	18.78	0.98	1.30	1.66	1/4"	3/8"	16.34	21.93
ATZAF 20-20 T	36.14	29.29	13.86	0.98	1-1/2"	1-11/16"	25.12	2.21	1.66	1.85	3/8"	3/8"	21.26	25.12
ATZAF 22-22 T	40.55	32.99	15.35	0.98	1-1/2"	2"	28.15	2.13	1.66	2.22	3/8"	1/2"	23.84	28.15
ATZAF 25-25 T	45.59	36.85	17.09	0.98	1-11/16"	2"	31.54	2.44	1.85	2.22	3/8"	1/2"	26.79	31.54
ATZAF 28-28 T	51.34	41.26	19.09	0.98	1-15/16"	2-3/16"	35.35	2.81	2.17	2.41	1/2"	1/2"	30.19	35.35
ATZAF 32-32 T	57.80	46.22	21.26	0.98	2-3/16"	2-3/16"	39.65	3.19	2.41	2.41	1/2"	1/2"	34.03	39.65
ATZAF 36-36 T	64.88	51.65	23.78	1.18	2-7/16"	2-7/16"	44.49	3.82	2.71	2.71	5/8"	5/8"	38.26	44.49
ATZAF 40-40 T	71.26	56.85	25.87	1.18	2-3/16"	2-7/16"	49.88	3.82	2.41	2.71	1/2"	5/8"	42.06	49.88

	Ø l x m	n	n ₁	n ₂	n ₃		o	p		r	r ₂	s		s ₁
					T1	T2		T1	T2			T1	T2	
ATZAF 12-12 T	0.44x0.88	18.55	17.52	15.16	18.94	18.94	17.38	24.76	24.76	16.62	-	3.11	3.11	16.73
ATZAF 15-15 T	0.44x0.88	21.54	20.51	17.60	22.01	22.40	20.33	27.87	28.54	19.93	-	3.17	3.50	19.72
ATZAF 18-18 T	0.44x0.88	24.93	23.90	20.51	25.79	26.18	23.66	32.52	33.27	24.26	-	3.80	4.17	23.11
ATZAF 20-20 T	-	28.26	27.09	27.09	29.37	30.16	26.69	35.67	38.70	17.71	8.86	3.70	5.22	26.30
ATZAF 22-22 T	-	32.09	30.12	30.12	32.48	33.27	30.12	40.47	43.94	19.69	9.84	4.19	5.93	29.33
ATZAF 25-25 T	-	35.48	33.50	33.50	36.65	36.65	33.50	43.90	48.03	22.05	11.02	4.21	6.28	32.72
ATZAF 28-28 T	-	39.29	37.32	37.32	40.47	40.47	37.72	49.61	52.60	24.80	12.40	5.16	6.66	36.53
ATZAF 32-32 T	-	43.58	41.61	41.61	44.76	44.78	42.01	53.82	56.89	27.95	13.98	5.12	6.65	40.83
ATZAF 36-36 T	-	48.43	46.85	46.85	49.61	49.61	46.85	60.20	61.97	31.50	15.75	5.88	6.77	45.83
ATZAF 40-40 T	-	53.82	52.24	52.24	55.00	55.00	52.24	67.40	67.40	35.43	17.72	6.79	6.79	51.22

	s ₂	t	t ₂	u		v		z	x	Ø y	q ₁	Ø w	z _{1xt}	z _{2xt}
				T1	T2	T1	T2							
ATZAF 12-12 T	14.37	19.61	-	0.81	0.68	1.77	1.77	0.20	1.50	0.35	0.88	-	2x8.37	2x7.18
ATZAF 15-15 T	16.81	23.51	-	0.70	0.63	1.77	1.97	0.20	1.50	0.35	1.00	-	2x9.86	2x8.40
ATZAF 18-18 T	19.72	28.43	-	0.64	0.68	2.36	2.36	0.20	1.50	0.35	0.98	-	2x11.55	2x9.86
ATZAF 20-20 T	26.30	17.71	8.86	0.68	0.73	1.97	2.76	0.20	1.57	0.29	0.16	0.47	6x3.54	6x3.54
ATZAF 22-22 T	29.33	19.69	9.84	0.74	1.30	2.76	3.15	0.20	1.97	0.29	0.22	0.59	7x3.54	7x3.54
ATZAF 25-25 T	32.72	22.05	11.02	0.56	1.65	2.76	3.15	0.20	1.97	0.29	0.26	0.59	8x3.54	8x3.54
ATZAF 28-28 T	36.53	24.80	12.40	1.12	1.34	3.15	3.54	0.20	1.97	0.29	0.24	0.71	9x3.54	9x3.54
ATZAF 32-32 T	40.83	27.95	13.98	0.93	1.34	3.15	3.54	0.20	1.97	0.29	0.26	0.71	11x3.54	11x3.54
ATZAF 36-36 T	45.83	31.50	15.75	1.18	1.36	3.54	3.54	0.20	1.97	0.39	0.24	0.71	11x3.94	11x3.94
ATZAF 40-40 T	51.22	35.43	17.72	1.48	1.38	3.54	3.54	0.20	1.97	0.39	0.26	0.71	12x3.94	12x3.94

7.3. ATZAF 44-44 T1 / T2 to 49-49 T1 / T2


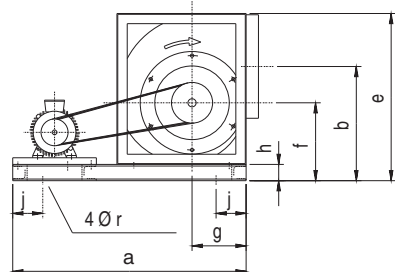
	a	b	c	ϕd		e	f	g	g ₁		h
				T1	T2				T1	T2	
ATZAF 44-44 T	82.36	68.00	28.50	2-15/16"	2-15/16"	44.09	6.44	9.65	3.26	3.26	3.54
ATZAF 49-49 T	91.69	75.95	31.89	2-3/4"	2-15/16"	49.21	7.28	10.97	3.03	3.26	3.66

	h		j	k	l	m ₁	n	n ₁	o	p		p ₁
	T1	T2								T1	T2	
ATZAF 44-44 T	3/4"	3/4"	25.47	55.71	20.47	1.77	59.65	5.77	58.07	73.82	77.76	45.98
ATZAF 49-49 T	5/8"	3/4"	28.43	62.44	23.03	4.19	66.38	3.86	64.80	83.66	83.66	51.81

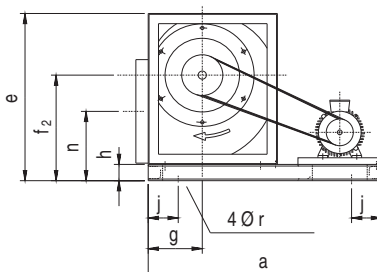
	r	r ₁	s	ϕs	z _{1xt}	z _{2xt}	u		v	z	
							T1	T2		T1	T2
ATZAF 44-44 T	32.87	48.03	57.68	0.45	11x4.92	7x4.92	1.18	0.79	3.94	0.39	0.79
ATZAF 49-49 T	36.65	53.15	65.08	0.59	9x6.30	7x6.30	0.79	0.79	3.94	0.79	0.79

7.4. Base frames for ATZAF 12-12 to 49-49

RD 90° (12-12/40-40)

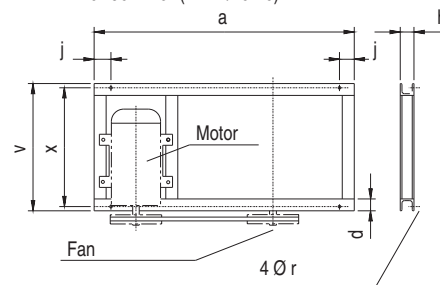


RD 270° (12-12/40-40)

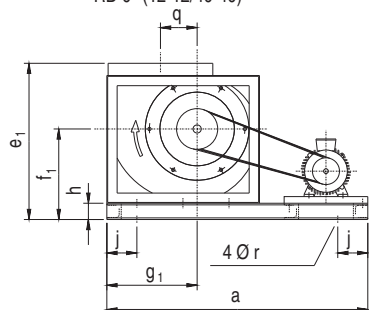


Top view (only base frame)

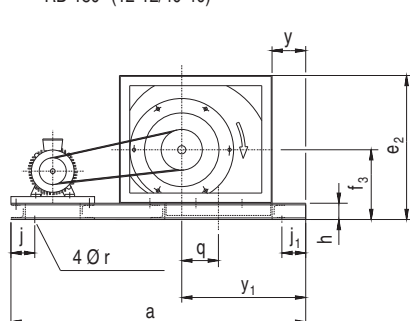
0°-90°-270° (12-12/40-40)



RD 0° (12-12/40-40)

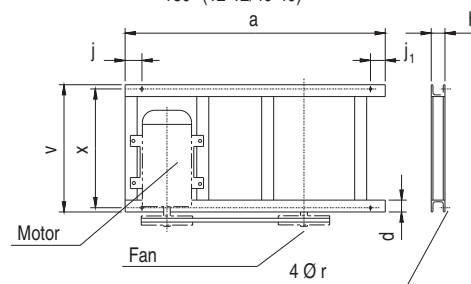


RD 180° (12-12/40-40)

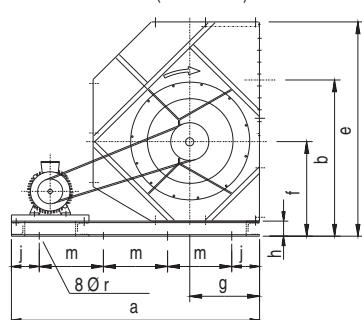


Top view (only base frame)

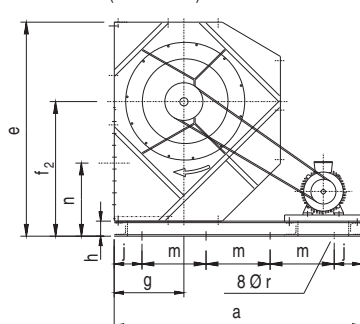
180° (12-12/40-40)



RD 90° (44-44/49-49)

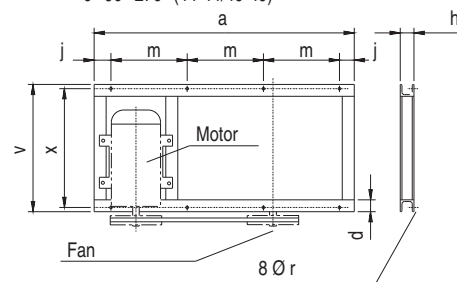


RD 270° (44-44/49-49)

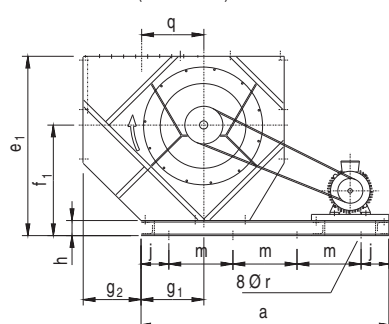


Top view (only base frame)

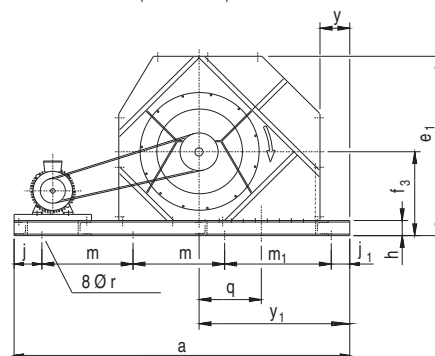
0°-90°-270° (44-44/49-49)



RD 0° (44-44/49-49)

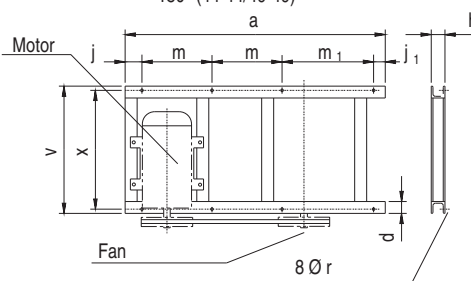


RD 180° (44-44/49-49)



Top view (only base frame)

180° (44-44/49-49)



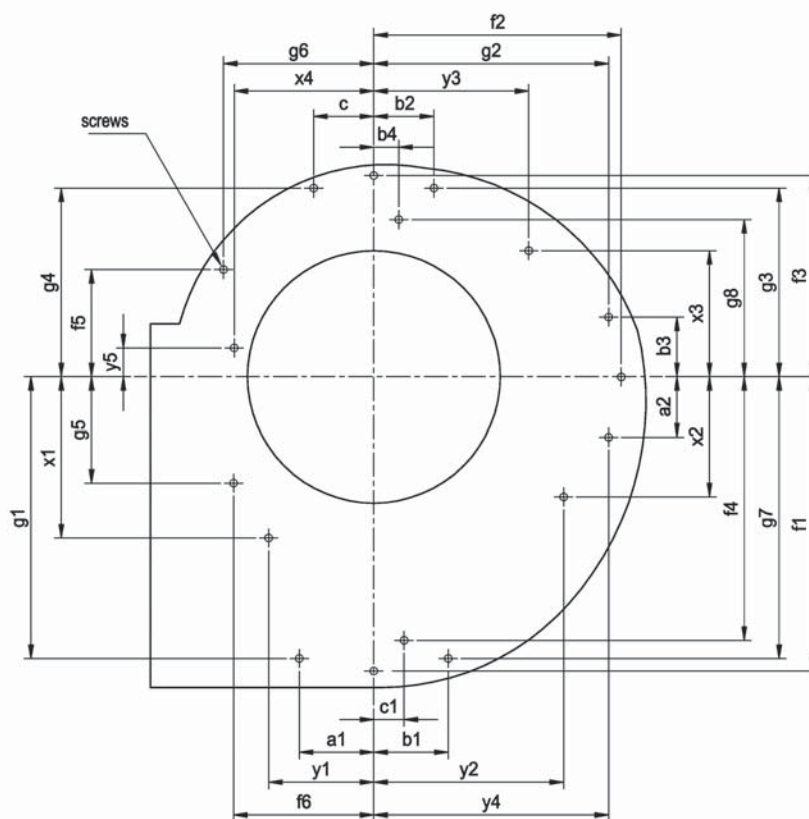


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DOUBLE INLET AIRFOIL FANS - ATZAF

	Motor base plates	a			b	d	e	e ₁	e ₂	f	f ₁	f ₂	f ₃	g	g ₁	g ₂	h	j	j ₁	m	m ₁	n	q	Ør	v	x	y	y ₁
		RD-LG 0°	RD-LG 180°	RD-LG 90°/270°																								
355	SY1	34.21	44.84	34.21	17.01	1.50	24.61	22.61	21.62	12.08	13.52	15.53	11.11	8.11	12.53	-	3.00	1.97	1.18	-	-	10.61	4.93	0.39	18.55	17.38	3.94	16.47
	SY2	44.84																										
	SY3		48.78	44.84																								
15-15	SY1	40.87	46.77	40.87	19.58	1.50	28.51	25.91	24.93	14.05	15.52	17.46	12.41	9.41	14.46	-	3.00	1.97	1.97	-	-	11.94	5.53	0.39	21.54	20.33	5.91	20.37
	SY2		54.65	46.77																								
	SY3	54.65	60.55	54.65																								
18-18	SY1	45.79	53.66	45.79	23.06	1.50	33.43	30.24	29.26	16.11	17.88	20.32	14.38	11.38	17.32	-	3.00	1.97	1.97	-	-	13.37	6.95	0.39	24.92	23.66	5.91	23.23
	SY2		59.57	53.66																								
	SY3	59.57	65.47	59.57																								
20-20	SY1	48.03	59.37	48.03	27.43	1.72	40.14	35.50	33.29	18.72	21.64	25.42	15.61	11.61	21.42	-	4.00	1.97	1.97	-	-	16.72	8.70	0.39	28.56	26.69	7.87	29.29
	SY2	59.37																										
	SY3	73.15	73.15	59.37																								
22-22	SY1	53.15	62.99	53.15	30.26	1.72	44.55	39.12	36.99	20.50	23.76	28.06	17.19	13.19	24.06	-	4.00	3.94	1.97	-	-	18.29	9.76	0.39	31.59	30.12	7.87	31.93
	SY2	62.99	77.56	62.99																								
	SY3	77.56																										
25-25	SY1	57.87	66.06	57.87	33.57	1.72	49.59	43.29	40.85	22.58	26.20	31.05	18.61	14.61	27.01	-	4.00	3.94	1.97	-	-	20.02	11.02	0.59	34.98	33.50	7.87	34.88
	SY2	66.06	72.83	66.06																								
	SY3	72.83	88.11	72.83																								
28-28	SY1	71.81	82.44	71.81	37.43	1.72	55.34	48.06	45.26	24.94	28.96	34.43	20.22	16.22	30.39	-	4.00	3.94	1.97	-	-	21.91	12.52	0.59	38.80	37.72	7.87	38.27
	SY2	82.44	93.86	82.44																								
	SY3	93.86																										
32-32	SY1	72.83	85.83	72.83	42.72	1.89	62.80	54.41	51.22	28.54	33.15	39.29	23.07	18.07	34.25	-	5.00	3.94	1.97	-	-	25.08	14.21	0.59	43.46	42.05	7.87	42.13
	SY2	85.83	108.19	85.83																								
	SY3	108.19																										
36-36	SY1	79.53	92.52	79.53	47.40	1.89	69.88	60.47	56.65	31.38	36.69	43.50	25.00	20.00	38.50	-	5.00	3.94	1.97	-	-	27.48	16.02	0.59	48.26	46.85	7.87	46.38
	SY2	92.52	101.89	92.52																								
	SY3	101.89	115.28	101.89																								
40-40	SY1	89.76	104.72	89.76	51.06	1.89	76.26	65.67	61.85	33.98	39.80	47.32	27.05	22.05	42.28	-	5.00	3.94	1.97	-	-	30.20	17.13	0.59	53.65	52.24	7.87	50.16
	SY2	104.72	113.78	104.72																								
	SY3	113.78	121.65	113.78																								
44-44	SH2/SH5	110.24	129.92	110.24	63.35	1.89	87.36	72.99	-	37.87	44.49	54.49	33.50	28.50	25.00	24.49	5.00	4.92	1.38	33.46	56.69	29.02	25.47	0.59	59.49	58.07	5.71	55.20
49-49	SH2/SH5	116.14	138.58	116.14	71.08	2.03	97.69	81.94	-	42.65	50.07	61.05	37.89	31.89	27.68	27.36	6.00	4.92	1.38	35.43	61.42	32.63	28.43	0.59	66.54	64.80	5.51	60.51

Motor base plates	Motor sizes	Accessories Page 45
SY1	56 to 145	
SY2	182 to 215	
SH2	254 to 256	
SH3	284 to 326	
SH4	364 to 405	
SH5	444 to 505	

**7.5. Side plate holes ATZAF 12-12 to 40-40**

	a ₁	a ₂	b ₁	b ₂	b ₃	b ₄	c	c ₁	f ₁	f ₂	f ₃	f ₄	f ₅	f ₆	g ₁	g ₂	g ₃
ATZAF 12-12	3.92	1.73	5.73	1.44	8.21	1.46	3.90	1.44	-	9.61	-	10.79	3.03	6.54	10.79	3.62	8.15
ATZAF 15-15	6.52	0.59	7.60	0.98	5.10	-	5.43	-	12.80	-	-	-	5.98	-	10.24	7.44	9.84
ATZAF 18-18	0.65	0.85	8.98	1.04	7.07	-	5.79	-	-	-	-	-	7.09	8.80	15.67	8.98	12.03
ATZAF 20-20	8.39	8.39	8.39	8.39	8.39	-	8.39	-	20.43	16.65	13.74	-	-	-	15.75	11.02	8.15
ATZAF 22-22	9.25	9.25	9.25	9.25	9.25	-	9.25	-	22.87	18.58	15.31	-	-	-	19.45	14.25	10.87
ATZAF 25-25	9.25	9.25	9.25	9.25	9.25	-	9.25	-	25.83	21.06	17.36	-	-	-	22.32	16.97	12.91
ATZAF 28-28	10.43	10.43	10.43	10.43	10.43	-	10.43	-	29.02	23.66	19.53	-	-	-	25.08	18.74	14.61
ATZAF 32-32	-	-	-	-	-	-	-	-	32.87	26.81	22.13	-	-	-	-	-	-
ATZAF 36-36	-	-	-	-	-	-	-	-	37.13	30.31	25.00	-	-	-	-	-	-
ATZAF 40-40	-	-	-	-	-	-	-	-	40.91	33.43	27.56	-	-	-	-	-	-

	g ₄	g ₅	g ₆	g ₇	g ₈	x ₁	x ₂	x ₃	x ₄	y ₁	y ₂	y ₃	y ₄	y ₅	screws
ATZAF 12-12	6.83	1.75	6.54	8.48	6.83	6.04	-	4.35	-	4.11	-	8.09	8.21	-	Self-Tapping B6.3
ATZAF 15-15	6.63	-	6.67	9.35	-	-	-	7.07	7.99	-	-	7.44	11.30	0.12	Self-Tapping B8
ATZAF 18-18	8.74	10.43	8.35	11.79	-	11.69	8.78	8.54	9.76	7.72	8.48	8.50	13.44	1.67	Self-Tapping B8
ATZAF 20-20	8.15	-	-	15.75	-	10.63	-	-	-	10.63	-	-	11.02	-	M 10
ATZAF 22-22	10.87	-	-	19.45	-	12.01	-	-	-	12.01	-	-	14.25	-	M 12
ATZAF 25-25	12.91	-	-	22.32	-	13.39	-	-	-	13.39	-	-	16.97	-	M 12
ATZAF 28-28	14.61	-	-	25.08	-	14.86	-	-	-	14.86	-	-	18.74	-	M 12
ATZAF 32-32	-	-	-	-	-	16.63	-	-	-	16.63	-	-	-	-	M 12
ATZAF 36-36	-	-	-	-	-	18.60	18.60	-	-	18.60	11.71	-	-	-	M 12
ATZAF 40-40	-	-	-	-	-	20.67	20.67	-	-	20.67	12.76	-	-	-	M 12



8. Accessories

	Page
8.1. Spark resistant construction	EX 46
8.2. Mounting feet	F 46
8.3. Outlet flange	A 46
8.4. Flexible outlet connection	AEL 47
8.5. Drain plug	K 47
8.6. Inspection door	I 47
8.7. Outlet guard	AS 47
8.8. Inlet guard	ZS 48
8.9. Belt guard	RIS 48
8.10. Shaft guard	WES 48
8.11. Anti vibration mountings	DAG, DAM 48
8.12. Motor rails	SH 49
8.13. Motor base plate	SY 49
8.14. Standard base frame	GR 49
8.15. Airflow measuring device	Cometer 49
8.16. Variable inlet vane control	DRD 50

8.1. Spark resistant construction ..EX

Comefri's ATZAF fans can also be supplied in a spark resistant construction that conforms to the requirements of AMCA 99-0401-86 (standard specification spark resistant construction).

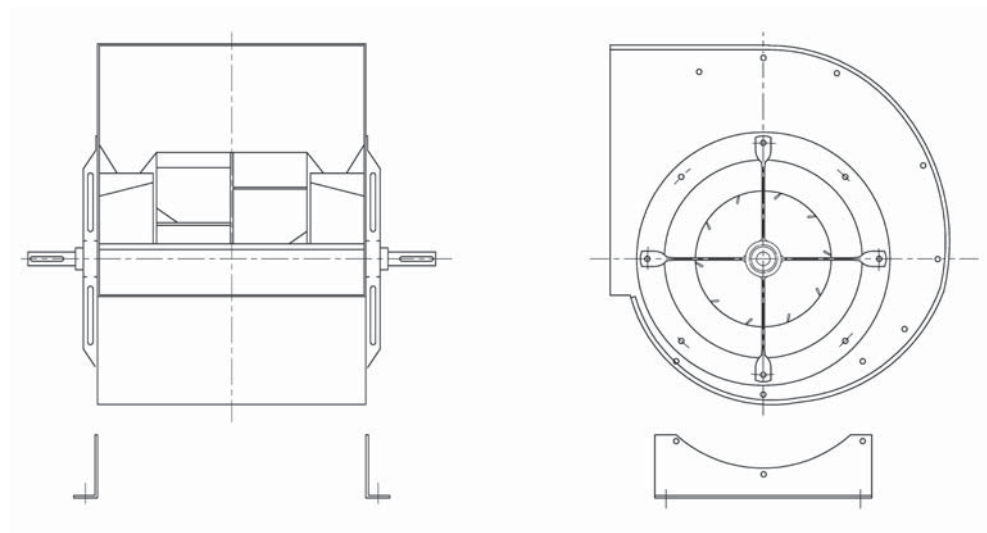
8.2. Mounting feet ..F

The basic ATZAF fans, 12-12 R up to 18-18 R are usually supplied with square frames, manufactured in galvanized steel sheet.

However, on request, the frames can be removed and mounting feet can be installed.

This accessory is available up to and including size 18.

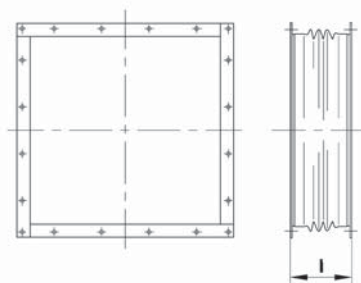
Note: Mounting feet effects the fan's rigidity, so please consider a maximum applicable RPM reduction of 20% on RPM limits data when feet are going to be used.



8.3. Outlet flange ..A

An outlet flange can be supplied separately or fitted at the customer's request. Manufactured in galvanized steel, the dimensions and hole locations are given in the fan dimension tables.

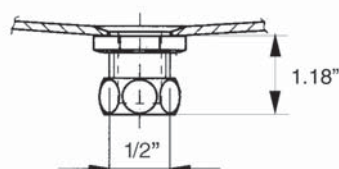
Sizes 44 and 49 include an integral outlet flange.



8.4. Flexible outlet connection ..AEL

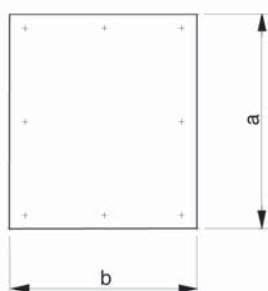
The flexible connection for the outlet is manufactured from a polyester / PVC fabric with two matching flanges, made in galvanized sheet steel.

The "l" dimension, for all fan sizes, is equal to 6.10". Special flexible connections can be manufactured on request.



8.5. Drain plug ..K

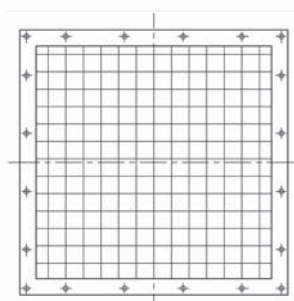
Usually fitted at the lowest part of the fan to facilitate draining of condensation.



8.6. Inspection door ..I

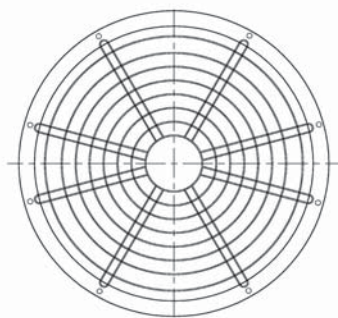
Can be fitted to the fan casing and made of a galvanized steel plate fixed by quick release fasteners. A synthetic gasket prevents leakage. Position of the inspection door must be clearly stated in the order.

	a	b
ATZAF 12 to 22	8.66	9.45
ATZAF 25 to 40	10.63	11.42
ATZAF 44 to 49	22.05	22.05



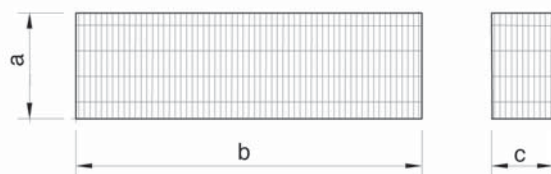
8.7. Outlet guard ..AS

Industrial safety regulations specify that reliable guards must be provided for rotating machinery. Inlet and outlet protections are available, in full accordance to EN 294 and OSHA requirements.



8.8. Inlet guard ..ZS

Industrial safety regulations specify that reliable guards must be provided for rotating machinery. Inlet and outlet guards are available, according to EN 294 and OSHA requirements.

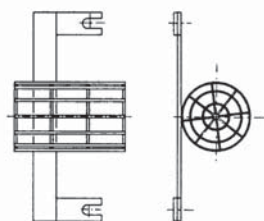


8.9. Belt guard ..RIS

Belt guards are manufactured in a zinc coated steel wire mesh, in full accordance with EN 294 and OSHA requirements.

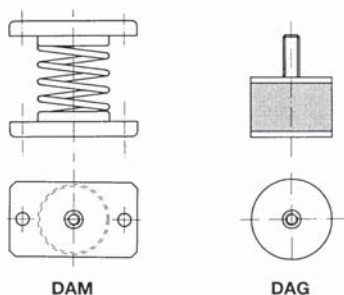
Dimensions denoted with "a", "b" and "c" depend upon the corresponding sheave diameters and number of belts.

Upon request, access for speed measurement can be provided.



8.10. Shaft guard ..WES

A wire meshed shaft guard is available, for both R and T1/T2 versions.

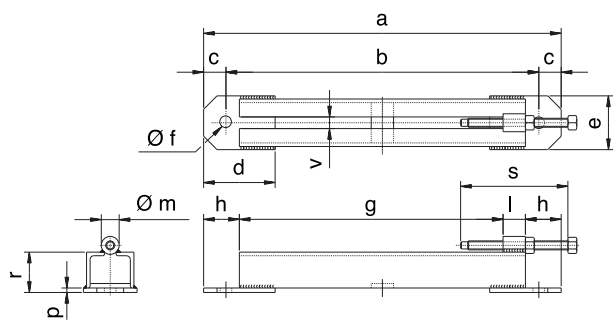


8.11. Anti vibration mountings, rubber type ..DAG and Anti vibration mountings, spring type ..DAM

The anti-vibration mountings are normally delivered separately, together with the necessary bolts to secure the mountings to the base frames.

They are selected taking into consideration the total weight of the fan, belt drive, motor and all the other accessories.

On request, and to suit special applications, spring type mountings can be ordered and supplied.

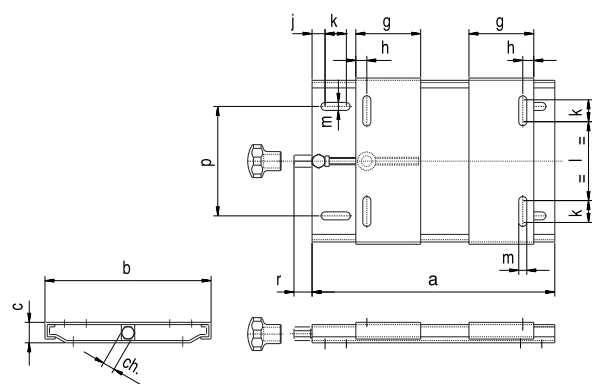


8.12. Motor rails ..SH

Four sizes of motor rails are available, covering motor sizes from 254 to 505.

	motor sizes	a	b	c	d	e	Ø f	g
SH 2	254 to 256	21.26	12.29	0.98	3.15	2.76	0.51	17.13
SH 3	284 to 326	27.17	23.62	1.77	3.94	3.54	0.71	20.67
SH 4	364 to 405	32.68	29.13	1.77	4.33	3.54	0.87	25.79
SH 5	444 to 505	40.55	37.01	1.77	5.12	3.94	0.87	33.66

	motor sizes	h	l	Ø m	p	r	s	v
SH 2	254 to 256	1.57	0.98	0.79	0.20	1.77	4.72	0.79
SH 3	284 to 326	2.56	1.38	1.18	0.31	2.28	6.30	1.18
SH 4	364 to 405	2.56	1.77	1.57	0.31	2.28	7.87	1.18
SH 5	444 to 505	2.56	1.77	1.57	0.39	2.76	7.87	1.18



8.13. Motor base plate ..SY

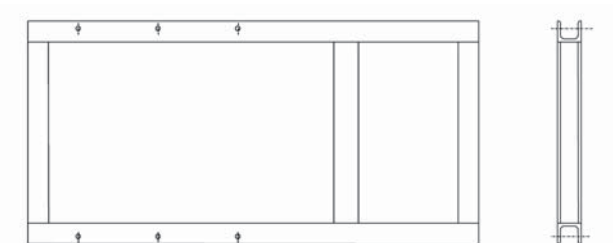
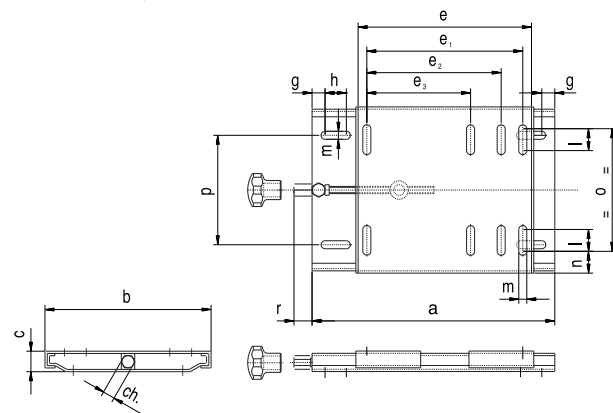
Two size of base plates are available, for motor sizes from 56 to 215.

	motor sizes	a	b	c	g	h	k
SY 1	56 to 145	10.63	7.68	1.30	2.76	0.79	1.97

	motor sizes	j	l	m	p	r	ch.
SY 1	56 to 145	0.98	1.69	0.41	3.86	1.18	0.75

	motor sizes	a	b	c	e	e ₁	e ₂	e ₃	g
SY 2	182 to 215	13.39	11.42	1.57	11.26	8.50	7.48	6.30	1.10

	motor sizes	h	l	m	n	o	p	r	ch.
SY 2	182 to 215	2.48	1.87	0.49	1.48	8.46	6.50	1.18	0.87



8.14. Standard base frame ..GR

Made of carbon steel, welded "C" profile and painted. For dimensions see the relevant pages 42/43.

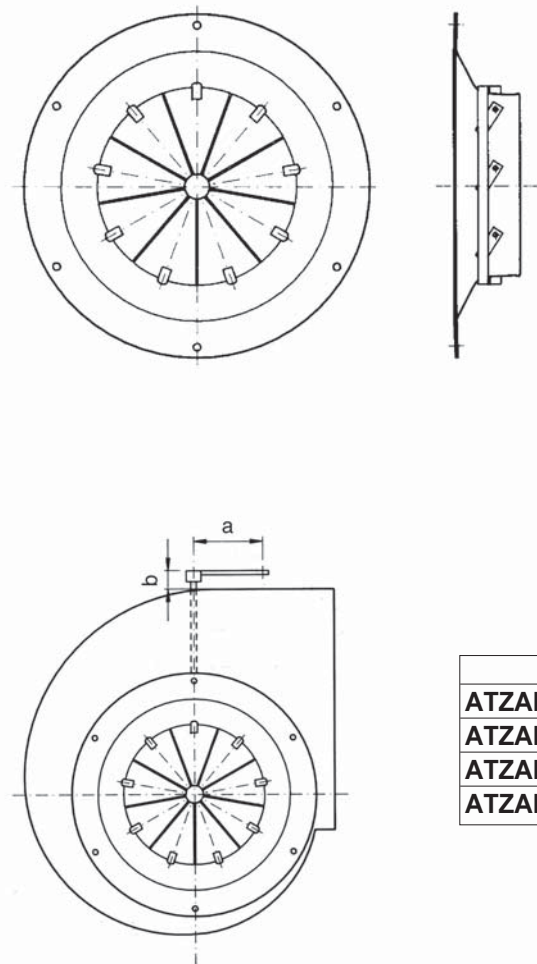
8.15. Airflow measuring device ..Cometer

A compact, precise and economic instrument to measure and control fan's airflow.

Available in two versions: for immediate reading on a manometer or with a pressure transducer for further electronic control.

Please refer to Cometer technical data sheet for further details.

8.16. Variable inlet vane control..DRD



Comefri's ATZAF fans are also available with an inlet guide vane option, with manual, electric or pneumatic actuator. Airflow regulation by the inlet vane control occurs through the closing or opening of a series of blades assembled radially in the fan inlet.

Since the guide vanes are continuously adjustable in pitch, the fan performances can be easily tuned to the requested airflow and pressure.

Inlet vane control lever dimensions are determined by the fan size.

DRD selection must be carried out using the relevant selection procedure, that also enables the evaluation of the advantages of DRD when compared to other regulation devices.

	a	b
ATZAF 12 to 15	7.87	2.95
ATZAF 18 to 20	90.84	2.95
ATZAF 22 to 36	11.81	2.95
ATZAF 40 to 49	15.75	5.31

Maximum torque required for inlet vane control operation is:

	Mt [Lb ft]
ATZAF 12-12	7.37
ATZAF 15-15	8.84
ATZAF 18-18	9.58
ATZAF 20-20	11.06
ATZAF 22-22	11.79
ATZAF 25-25	16.21
ATZAF 28-28	17.69
ATZAF 32-32	25.80
ATZAF 36-36	33.17
ATZAF 40-40	35.38
ATZAF 44-44	42.75
ATZAF 49-49	47.91

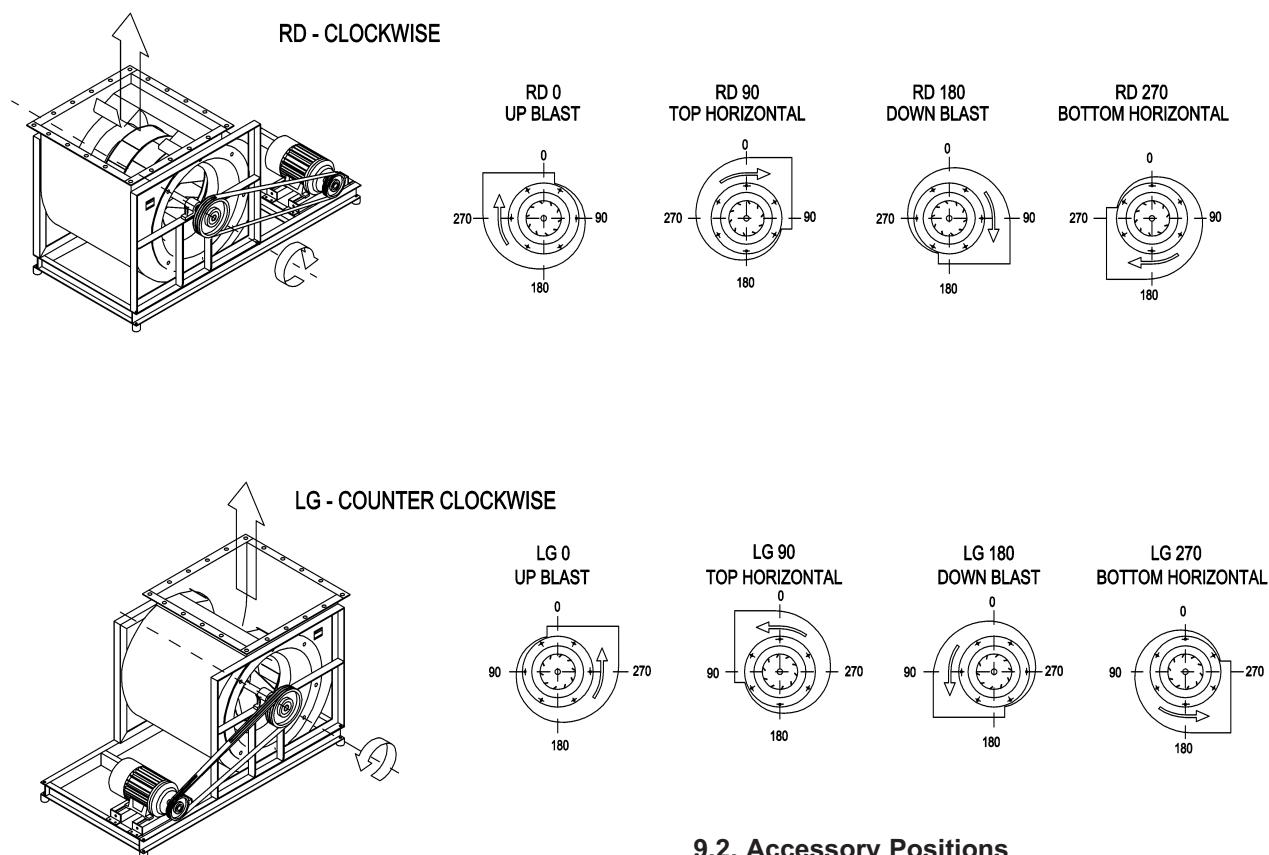
9. Rotation, discharge and accessory positions

9.1. Rotation and discharge position

The fan direction of rotation, when seen from drive side is:

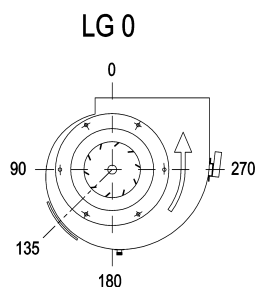
- clockwise, if indicated with the symbol RD, or
- counter-clockwise if indicated with the symbol LG

The fan discharge position is indicated by the rotation symbol (RD or LG) and, then, by the angle with respect to the reference line perpendicular to the mounting surface(e.g. RD 90)



9.2. Accessory Positions

The position indicated, gives the rotation RD or LG, by the angle measured in degrees, with respect to the reference perpendicular line to the mounting surface.



Example: Fan LG 0
 Drain plug 180
 Inspection door 135
 DRD control 270



comefri

DOUBLE INLET AIRFOIL FANS - ATZAF

10. Reference code / example

ATZAF	40 - 40	T2	A	RD90	GR, I225,K180,RIS,ZS	
						Fan type
						Fan size
						with T2 frame
						with A outlet flange
						Discharge position RD90
						Base frame, Inspection door 225, Drain plug 180, Belt guard, Inlet guard

We reserve the right to modify fan designs or dimensions in order to enhance our products.

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