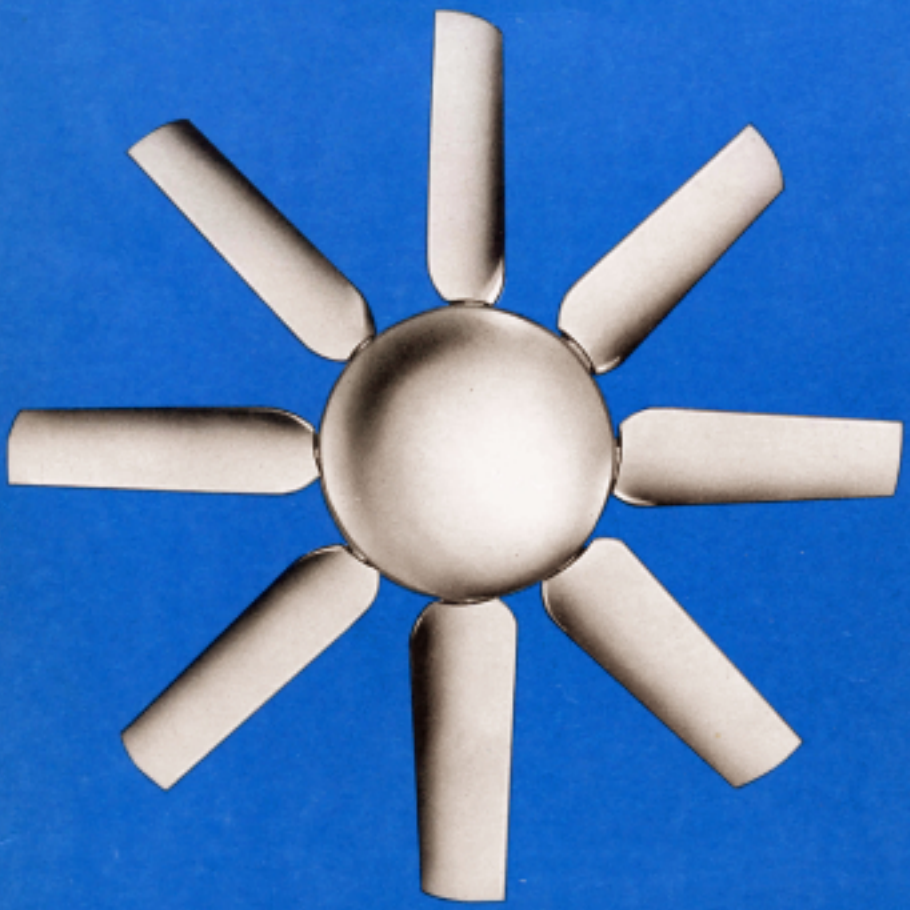
SHELDONS

ADJUSTAFOIL FAN



Adjustable Pitch Wheels

- TUBEAXIAL — ARR 4
- VANEAXIAL — ARR 4
- TUBEAXIAL — ARR 9
- VANEAXIAL — ARR 9

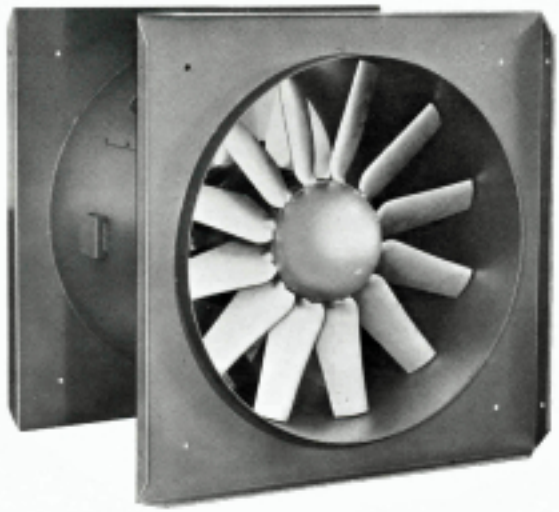
INDEX

CAT. NO. 688

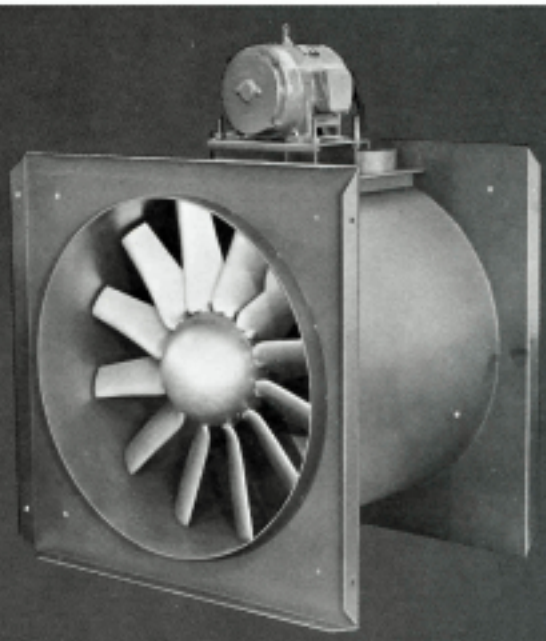
Sheldons

SHELDONS ENGINEERING

Type 'AF' Adjustafoil Axial Fan



TUBEAXIAL Arr.4



VANEAXIAL Arr.9

1. Adjustable

Sheldons policy of providing the market with the latest and best in fan design has led to the introduction of a unique fan design with several features that offer ease of installation, performance flexibility, and full engineering data.

Sheldons new ADJUSTAFOIL axial flow fan has adjustable pitch blades. Field adjustments can thus be made to accommodate changes in system design.

This feature provides extreme flexibility in performance selection which is not possible with fixed-pitch axial wheels.

2. Adaptable

Sheldons unique square end panel design provides a versatile and practical mounting arrangement.

To suit many engineering requirements, Sheldons are offering this fan with a choice of either Direct-Connected or Belt-Driven arrangement, on both Tubeaxial and Vaneaxial designs with one single simplified selection chart.

The standard ADJUSTAFOIL FAN can be mounted in a variety of positions to suit varying installation layouts.

3. Available

Unexpected changes in site requirements can often cause inconvenience in the installation of the regular foot-mounted fans. With the square panel, all mounting arrangements, including vertical, can be used.

With the adaptability provided by the new design of Belt-Driven and Direct-Connected Tubeaxial and Vaneaxial fans, it is now possible to stock standard wheels, motors and fan cases to provide complete flexibility to suit any combination of fan and motor selection, thus offering fast delivery of standard fans from stock.

Design Features

- ADJUSTAFOIL wheels in high strength cast aluminum alloy, with die-cast airfoil section blades designed for maximum efficiency and strength.
- Large streamlined nose cone ensures shock-free flow to blades of wheel.
- Standard TEAO and TEFC motors used in all sizes. No special flange motors required. Makes motor replacement easier. Standard motor may be used as spare. Motors with extended leads may be furnished on request, to provide external box connections thru internal conduit.
- Flexibility of motor mounting arrangement permits future use of larger frame motors, (up to maximum for size) to meet needs for increased capacity. No modifications to fan case required. Enables initial selection of economical size motor, adding larger motor later, with blade angle changes.
- Square end panels provide unique method of mounting fan. Adaptable to any mounting requirement. All holes punched on module system.
- Square end panels ensure rigidity of fan case and concentricity of wheel enclosure for closer wheel tolerances and higher efficiencies.
- Square end panels useful for connecting easily and economically to square ductwork.
- Slip-fit collar connections are standard on ADJUSTAFOIL fans. Flange connections are optional.
- Access panel provided as standard on all arrangement 4 ADJUSTAFOIL axial flow fans for access to motor grease fittings and motor connections.
- External grease lubrication fittings may be provided for motor bearings on request.
- Increased static pressure readily obtained by use of downstream guide vanes on Vaneaxial fans.
- For extreme flexibility as required on unusual applications, Sheldons ADJUSTAFOIL Axial fans may be readily selected from the complete range of belt-driven ratings provided.
- Belt-driven ADJUSTAFOIL fans may also be used on applications where it is desirable to mount the motor out of the airstream.
- Belt-driven fans employ heavy duty flange-mounted grease lubricated ball bearings with extended grease fittings as standard.
- Shaft Seals can be furnished as required on belt-driven ADJUSTAFOIL fans.
- Contra-rotating fan performances for higher static pressures.
- Octave band sound levels available for all fan types.

Type 'AF' Adjustafoil Wheel

- Adjustable pitch blades for flexibility in performance selection and application.
- Accurate die-cast high strength aluminum alloy blades, machined to close tolerances, and X-Rayed at inspection to provide high quality fan wheels.
- ADJUSTAFOIL wheels are designed to withstand temperatures up to 300°F. However, motors mounted in airstream will usually limit the maximum temperature handled by fan — (see Table on Page 69 for maximum ambient motor temperature recommended.)
- Aluminum alloy reduces wheel weight for lighter loads on motor bearings.
- All wheels accurately balanced for vibration-free operation.
- Spun Aluminum nose cone for stream-lined flow to wheel.

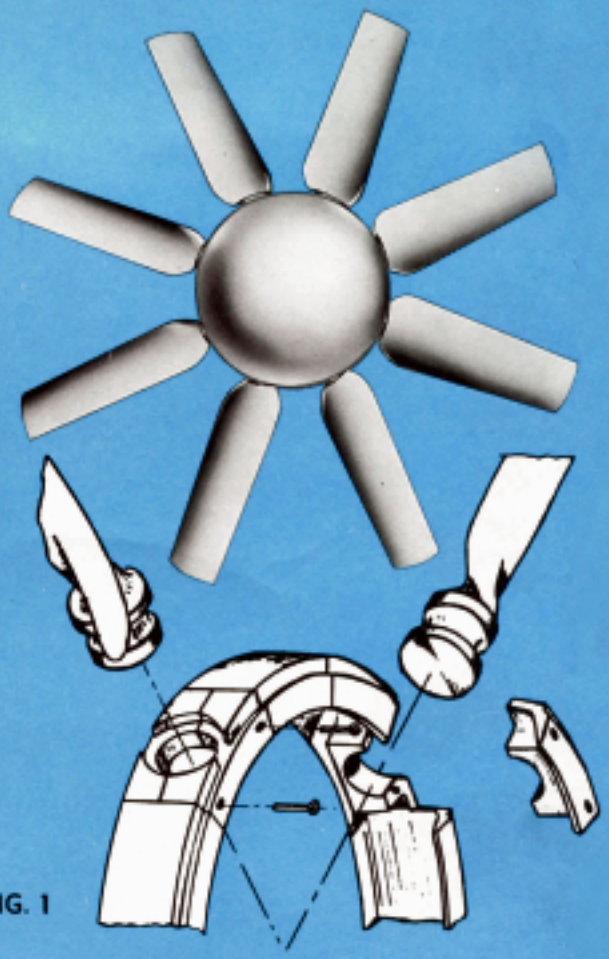


FIG. 1

DUCT CONNECTIONS

Sheldons square end panel axial fans have the added advantage of providing at least 5 alternate methods of duct connections, to suit any configuration of duct layout.

1. Slip fit over ends of mounting flanges. The use of inlet bell is recommended on fan inlet to reduce entry losses, and improve performance.
2. Slip fit over circular body of fan case, connect round duct directly to fan collar, or the flexible connection.
3. Slip fit over circular body of fan case — transition from rectangular or square-to-round by the installation contractor.
4. Slip fit over circular inlet and outlet cones.
5. Flanged connections to face of square end panels. Order optional "leg-in" panel design (not stocked).

   Companion flanges either square or round (as required) can be supplied as an optional extra.

   Flexible neoprene slip fit connections can be supplied as an optional extra.

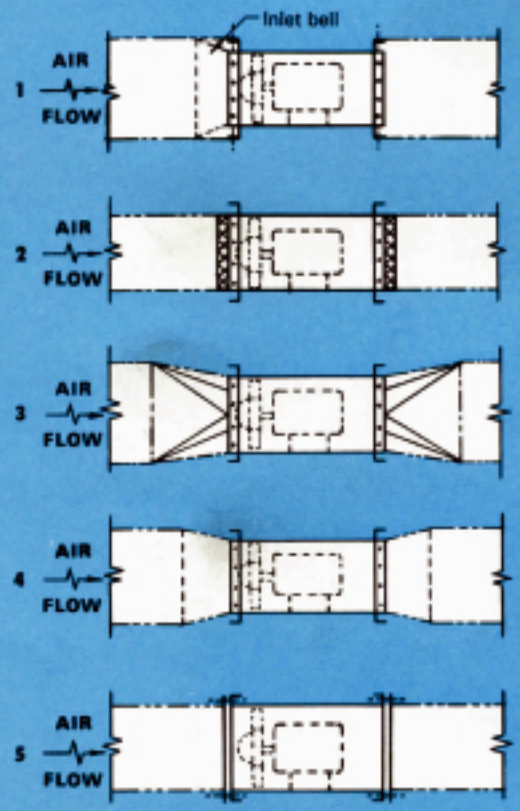


FIG. 2

Fan Performance

METHOD OF SELECTION

The fan performance curves shown in this catalog have been designed to provide a simple and accurate method of selecting the most economical and quietest fan.

Six different fans types can be selected from each performance chart shown, in sizes from 15" dia. to 60" dia. The performances shown are based on using an outlet duct of the same size as the fan. Therefore, it is not *necessary* to use an outlet cone on Sheldons ADJUSTAFOIL fans in order to obtain catalogue ratings.

If an outlet cone is used, or even a well-made transition, the ADJUSTAFOIL fan will provide a better performance than shown in this catalogue. The improvement in performance can be calculated by use of the regain scale at the top of each performance chart. A sample selection procedure for each of these types is outlined in detail on the next page, using the sample performance chart shown. A brief explanation opposite will illustrate the ease of selecting any of these six fan types.

ACCESSORIES

Inlet Screen —
used with inlet bell only.

Inlet Bell —
to smooth airflow into open-ended inlets. Also used to reduce loss at inlet connection when duct bolts direct to end panel flanges.

Inlet Cone —
normally used only with outlet cones and when round inlet ductwork is used.

Outlet Cone
used to recover some velocity pressure, and to enlarge fan outlet to lower the outlet velocity.

Variable Inlet Vanes —
used to control flow through fan inlet.

Butterfly Damper —
(horizontal airflow only.) To prevent recirculation through the system when fan is shutdown.

Vibration Isolators —
Rubber-in-shear, or spring isolators available to suit installation requirements.

Shaft Seals and Sealed Inner Belt Guard —
used on belt driven Tubeaxial and Vaneaxial fans only, when dirty or corrosive conditions would affect the bearings and drive.

External Belt Guard —
for belt driven Tubeaxial and Vaneaxial fans.

Internal Belt Guard —
standard on all Tubeaxial and Vaneaxial belt driven fans.

Companion Flanges —
available on request.

1. TUBEAXIAL — Direct-Driven — Arr.4

i. Read SP directly from black scale at LH side of performance chart. Applies to lower envelope of curves only.

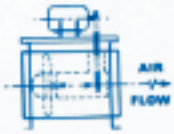
ii. Read cfm directly from scale on bottom line.

2. TUBEAXIAL — Belt-Driven — Arr.9

i. Read SP directly from box at LH side of performance chart, at appropriate speed line. Applies to lower envelope of curves only.

ii. Read cfm directly from box below bottom line, at appropriate speed line.

N.B. Interpolations may be made between respective lines in each box.



3. VANEAXIAL — Direct-Driven — Arr.4

i. Read SP directly from RED scale at RH side of performance chart. Applies to lower envelope of curves only.

ii. Read cfm directly from scale on bottom line.

4. VANEAXIAL — Belt-Driven — Arr.9

i. Read SP directly from RED box at RH side of performance chart, at appropriate speed line. Applies to lower envelope of curves only.

ii. Read cfm directly from box below bottom line at appropriate speed line.

N.B. Interpolations may be made between respective lines in each box.

5. TUBEAXIAL — 2 Stage (Contra-Rotating)) Arr.4

i. Read SP directly from scale at LH side of performance chart. Applies to upper envelope of curves only.

ii. Read cfm directly from scale on bottom line.

6. VANEAXIAL — 2 Stage — Arr.4

i. Read SP directly from scale at RH side of performance chart, for each *single* stage fan. Applies to lower envelope of curves only — See special selection method.

ii. Read cfm directly from scale on bottom line.

Fan Selection Procedure

1. TUBEAXIAL — Direct-Driven — Arr.4

Example: To select a size AF-49 Tubeaxial Fan, arr.4, with an outlet cone.
Required performance: 45,000 cfm, 1" SP, 1150 rpm

1. Select performance chart for AF-49 at 1150 rpm.
2. The use of an outlet cone has the effect of producing a regain of SP. Enter performance chart at bottom line for arr.4 cfm scale, and read from 45,000 cfm vertically up to SP regain scale at top of page.
For 45,000 cfm, SP regain = .23"
3. Since the fan curves are based on a performance without an outlet cone, the SP regain produced by the outlet cone will **not** have to be produced by the fan itself. Hence, deduct SP regain from the SP required.
i.e. 1" — .23" = .77" SP
4. Enter performance chart at bottom line for arr.4 cfm scale, and draw a line vertically up until it intersects the arr.4 Tubeaxial SP line read directly horizontally for .77" SP.
5. From the curve, fan requires 15 HP and sound pressure level (Lp) is approximately 85 dB.
6. From written data on curve sheet, note that overall sound power level (Lw) is 22 dB higher than Lp.
i.e. Lw = 85 + 22 = 107 dB
7. From table 3, note deductions from overall Lw to obtain Lw in each octave band.
i.e. Lw: 99, 101, 102, 100, 99, 95, 89, 82 dB

Final Performance: 45,000 cfm, 1" SP, 1150 rpm, 15 HP with standard outlet cone.

2. TUBEAXIAL — Belt-Driven — Arr.9

Example: To select a size AF-49 belt-driven Tubeaxial fan, arr.9 with no outlet cone.
Required performance: 30,000 cfm, 1.5" SP, 1000 rpm

1. The selection of appropriate fan speed depends on the job requirements, and with the large variation in possible performances available with adjustable pitch wheels it is not practical to make any accurate generalisations as to the "best" speed to use. The speed of 1000 rpm is chosen here only to illustrate the selection from the AF-49 performance curves. A smaller fan could have been selected which would be more efficient and more economical in cost.
2. Enter arr.9 cfm box for the size AF-49 at the horizontal 1000 rpm line, until this line intersects the interpolated diagonal line representing 30,000 cfm. From this **point**, draw a line vertically up.
3. Enter the arr.9 Tubeaxial fan SP box at the vertical 1000 rpm line, until this line intersects the diagonal line representing 1.5" SP. From this **point**, draw a line horizontally to intersect the 30,000 cfm line previously established in step 2.
4. At the intersection of these lines, read off 24 hp from the curve and 87 dB sound pressure level (Lp). These values must now be corrected to 1000 rpm.
5. From Table 1, enter LH side of graph at horizontal 1000 rpm line, until this line intersects the diagonal line representing 24 hp. Read off directly below this point on the bottom scale, the correct value of 16 hp required at 1000 rpm.
6. From Table 2, note that Lp at 1000 rpm will be 3 dB less than Lp given on curve.
i.e. Lp at 1000 rpm is 87 — 3 = 84 dB
7. From written data on curve sheet, note that overall Lw is 22 dB higher than Lp.
i.e. Lw = 106 dB
8. From Table 3, note deductions from overall Lw to obtain Lw in each octave band.
i.e. Lw: 98, 100, 101, 99, 96, 94, 88, 81 dB

Final Performance: 30,000 cfm, 1.5" SP, 1000 rpm, 16.0 hp with no outlet cone.

3. VANEAXIAL — Direct-Driven — Arr.4

Example: To select a size AF-49 Vaneaxial fan arr.4, with no outlet cone.
Required performance: 50,000 cfm, 1.75" SP, 1150 rpm

1. Select performance chart for AF-49 at 1150 rpm.
2. Enter performance chart at bottom line for arr.4 cfm scale, and draw a line vertically at 50,000 cfm.
3. Enter arr.4 Vaneaxial SP scale in RED at RH edge of performance chart. (Note that ordinates of Vaneaxial SP rise very slightly from R to L). Interpolate 1.75" SP between 1.5" SP and 2.0" SP and draw the 1.75" SP line **parallel** to the red Vaneaxial SP lines, to intersect cfm line drawn vertically in Step 2.
4. From the curve, fan requires 28 hp and sound pressure level (Lp) is approximately 87 dB.
5. From written data on curve sheet, note that overall Lw is 22 dB higher than Lp.
i.e. Lw = 109 dB
6. From Table 3, note deductions from overall Lw to obtain Lw in each octave band.
Lw: 101, 103, 104, 102, 101, 97, 91, 84 dB

Final Performance: 50,000 cfm, 1.75" SP, 1150 rpm, 28.0 hp with no outlet cone.

4. VANEAXIAL — Belt-Driven — Arr.9

Example: To select a size AF-49 belt-driven Vaneaxial fan, arr.9, with outlet cone.
Required performance: 55,000 cfm, 2.75" SP, 1150 rpm

1. Select performance chart AF-49 at 1150 rpm.
2. The use of an outlet cone has the effect of producing a regain of SP. Enter performance chart at bottom line for arr.4 cfm scale. (Note: Use arr.4 scale, **not** arr.9 scale for obtaining SP regain.) Read from 55,000 cfm vertically up to SP regain scale at top of page.
For 55,000 cfm, SP regain = .32"
3. Since the fan curves are based on a performance without an outlet cone, the SP regain produced by the outlet cone will **not** have to be produced by the fan itself. Hence, deduct SP regain from the SP required.
i.e. 2.75" — .32" = 2.43" SP
4. Enter arr.9 cfm box at the horizontal 1150 rpm line. (Note that this scale is not quite the same as the arr.4 scale, due to corrections for belt guard loss.) Move along this line until it intersects the interpolated diagonal line representing 55,000 cfm. From this **point**, draw a line vertically.
5. Enter the RED box representing arr.9 Vaneaxial SP, at the vertical 1150 rpm line, until this line intersects the interpolated diagonal line representing 2.43" SP. Draw the 2.43" SP line **parallel** to the RED Vaneaxial SP lines, to intersect the cfm line drawn vertically in Step 4.
6. At the intersection of these lines, read off 48 hp from the curve, and 90 dB sound pressure level (Lp). Since the belt-driven speed is 1150 rpm, these values do **not** have to be corrected for 1150 rpm, as can be seen from inspection of Table 1 and Table 2.
7. From written data on curve sheet, note that overall Lw is 22 dB higher than Lp.
i.e. Lw = 112 dB
8. From Table 3, note deductions from overall Lw to obtain Lw in each octave band.
i.e. Lw: 104, 106, 107, 106, 104, 100, 94, 87 dB

Final Performance: 55,000 cfm, 2.75" SP, 1150 rpm, 48 hp with standard outlet cone.

5. TUBEAXIAL — 2 Stage (Contra-rotating) Arr.4

Example: To select a size AF-49 contra-rotating Tubeaxial Fan, arr.4, without an outlet cone.
Required Performance: 30,000 cfm, 6" SP, 1150 rpm

1. Select size AF-49 performance chart at 1150 rpm
2. Enter performance chart at bottom line for cfm scale (arr.4), and draw a line vertically to upper envelope of curves, until it intersects the Tubeaxial arr.4 SP line read directly horizontally from 6" SP.
3. From the curve, **each** fan requires approximately 19.5 hp, and the total sound pressure level (Lp) for both fans together is approximately 93 dB.
4. From written data on curve sheet, note that the total overall Lw is 22 dB higher than Lp.
i.e. Lw = 115 dB
5. From table 3, note deductions from overall Lw to obtain Lw in each octave band.
i.e. Lw: 107, 108, 110, 108, 107, 103, 97, 90 dB
6. Note also that contra-rotating fans are designed to equally load each motor, and the blade angles between LH and RH wheels will necessarily be different to achieve this. Fans **must** be bolted directly together to achieve the design performance.

Final Performance Per Fan: 30,000 cfm, 3" SP, 1150 rpm, 19.5 hp

Overall Performance: 30,000 cfm, 6" SP, 1150 rpm, 39 hp

6. VANEAXIAL — 2 Stage (or Multi-Stage) — Arr.4

Example: To select a size AF-49 2-stage Vaneaxial Fan, arr.4 without outlet cone.
Required Performance: 48,000 cfm, 6.5" SP, 1150 rpm

1. Select size AF-49 performance chart at 1150 rpm.
2. In multi-stage Vaneaxial fan installations the SP developed across the fan combination is the sum of the total pressure (TP) across **each** fan less one velocity pressure (VP), measured at the outlet of the final stage.
The general expression for SP per stage for selection purposes from these performance charts is given by:

$$SP_s = \frac{SP_t - (n-1)\,VP}{n}$$

Where SP_s = SP per stage for fan selection
SP_t = overall SP required across fan combination,
n = number of stages

Hence, it is necessary to calculate the VP in order to arrive at the SP for fan selection from the performance charts.

3. Enter arr.4 cfm scale on bottom line at 48,000 cfm and draw line up until it intersects the VP line. Read off VP = .95" on LH arr.4 SP scale.
4. From 2 above, $SP_s = \frac{6.5 - (2-1)\,0.95}{2} = 2.77"$ SP

(**Note:** If 3 stage fans were required, SP_s for fan selection would be 1.53" SP.)

5. From arr.4 cfm scale draw line vertically at 48,000 cfm.
6. Enter arr.4 Vaneaxial SP scale in RED at RH edge of performance chart at 2.77" SP, and draw 2.77" SP line **parallel** to red Vaneaxial SP lines, to intersect cfm line drawn vertically in Step 5.
7. From the curve, **each** fan requires 41 hp, and the individual sound pressure level (Lp) is approximately 89 dB for each fan.
8. The total Lp for a 2-stage Vaneaxial is 6 dB more than a single stage fan, regardless of size and speed. Therefore, total overall Lp is 95 dB.
9. From written data on curve sheet, the overall Lw is 22 dB more than Lp.
i.e. Lw = 117 dB
10. From Table 3, note deductions from overall Lw to obtain Lw in each octave band.
i.e. Lw: 109, 111, 112, 110, 109, 105, 99, 92 dB
11. **Note:** It is not necessary to bolt the multi-stage Vaneaxial fans directly together as is the case with contra-rotating Tubeaxial fans. Thus it may be more advantageous to install multi-stage Vaneaxial fans at separate locations in a duct for convenience in layout.

Final Performance:

1st Stage: 48,000 cfm, 2.77" SP, 1150 rpm, 41 hp

2nd Stage: 48,000 cfm, 3.73" SP, 1150 rpm, 41 hp

Overall Performance: 48,000 cfm, 6.5" SP, 1150 rpm, 82 hp

TUBE AXIAL

VANE AXIAL

SIZE AF-49
1150 rpm.

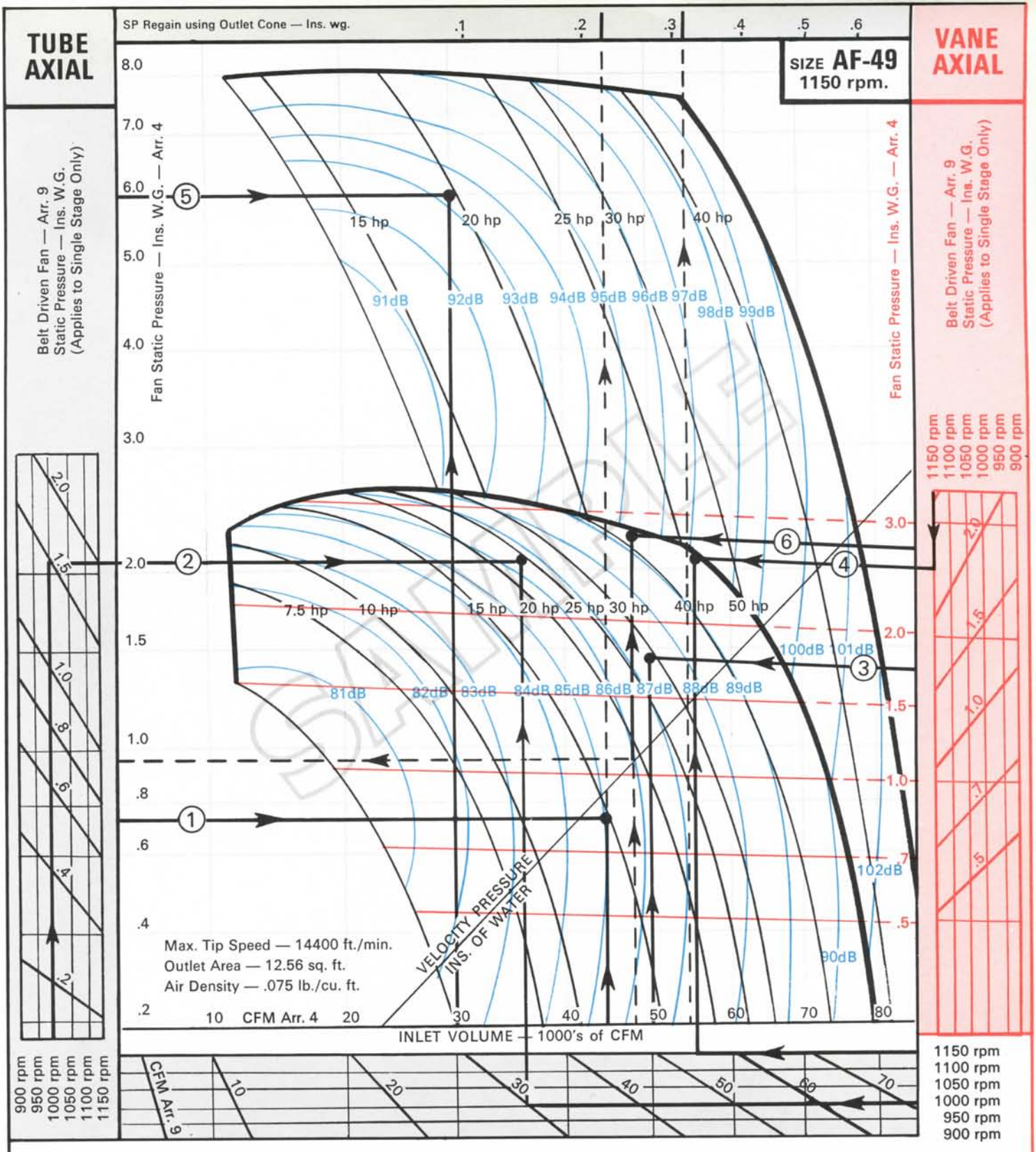


TABLE 1	HP/SPEED CORRECTION CHART

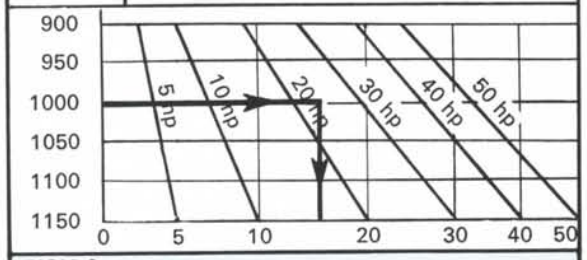


TABLE 2						
Sound Level Correction for Speed	1150	1100	1050	1000	950	900
dB	0	–1	–2	–3	–4	–5

The performance chart has been arranged to provide ratings for both Direct-driven and Belt driven, Tube and Vaneaxial fans. For details of a sample selection method refer to page 6. NB: Belt Driven Ratings Corrected for Belt Guard Losses

The range of performance is obtained by variations in number of blades and blade angle, the actual values of which are chosen by our Sales office on receipt of a specific duty.

The fan horsepower contours relate to the HP taken by each impeller, and for contra-rotating fans shown in the upper envelope give the maximum HP taken by each stage.

The contours of sound level relate to the average Sound Pressure Level (Lp) in dB, re .0002 dynes/cm². The corresponding Sound Power Level (Lw) re 10^{-12} watts is 22 dB higher.

TABLE 3									
Octave Band Mid frequency	cps	63	125	250	500	1000	2000	4000	8000
Spectrum	dB	–8	–6	–5	–7	–8	–12	–18	–25

QUICK SELECTION CHART

FOR SHELDONS TYPE AF ADJUSTAFOIL FANS

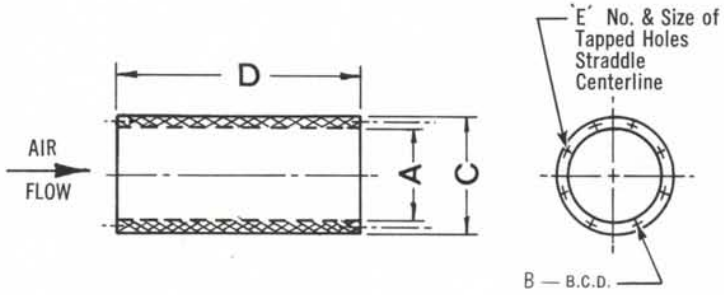
To assist in rapid selection, the tables on the following pages provide several choices for any given performance. These choices include:

a) The smallest fan for the duty,
b) The lowest in cost for the duty,
c) The most efficient fan for the duty, and
d) The quietest fan for the duty.

This chart contains only direct connected Tubeaxial Fans. Direct connected Vaneaxial Fans can be found by consulting the selection curves.

SHELDONS SILENCERS FOR ADJUSTAFOIL FANS

FULL FLOW SILENCERS

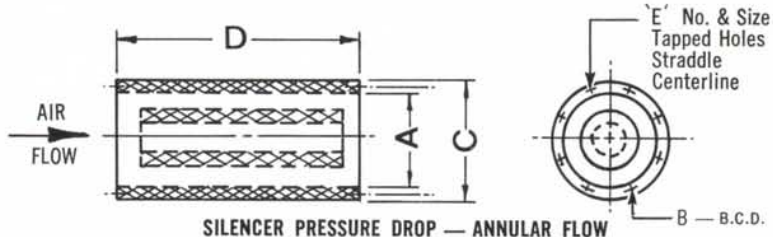


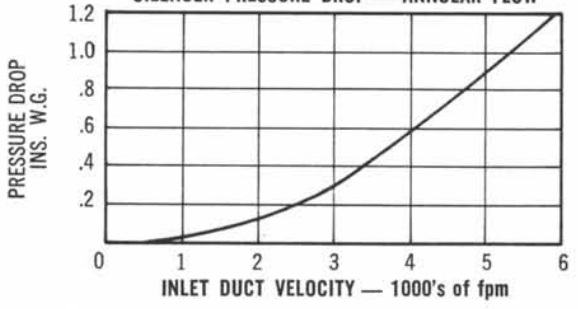
INSERTION LOSS ATTENUATION — dB

TABLE 1

SIZE	A	B	C	D	E	Octave Band Mid-Frequencies — Hertz							
						63	125	250	500	1000	2000	4000	8000
12	12½	13⅞	16½	18	8⁷⁄₁₆	0	1	3	7	12	13	12	9
15	15⅜	16¹¹⁄₁₆	19½	24	8⁷⁄₁₆	0	2	4	8	13	13	11	8
18	18⅝	19¹⁵⁄₁₆	22¾	27	8⁷⁄₁₆	0	2	5	9	14	13	10	7
21	21½	22¹⁵⁄₁₆	27½	32	8⁷⁄₁₆	0	3	6	10	14	12	9	7
24	25	26⅝	31¼	36	8⁷⁄₁₆	0	3	7	11	14	12	9	6
27	27½	29⅛	33¾	40	8⁷⁄₁₆	1	4	7	12	13	11	8	6
30	30⅜	32	36½	45	8⁷⁄₁₆	2	5	7	13	13	11	8	5
33	33⅜	35⅝	39½	50	12⁹⁄₁₆	2	5	8	13	13	10	7	5
36	36¾	39	45	54	12⁹⁄₁₆	2	6	10	14	13	10	7	5
38	38⅜	40⅝	46½	57	12⁹⁄₁₆	3	6	10	14	13	10	7	5
40	40⅝	42⅞	48¾	60	12⁹⁄₁₆	3	6	10	14	13	10	7	4
44	44⅞	47⅝	53	66	16¹¹⁄₁₆	4	7	12	14	12	9	6	4
49	49⅜	52¼	57½	74	16¹¹⁄₁₆	4	7	12	13	12	8	5	4
54	54⅝	57½	62¾	81	16¹¹⁄₁₆	5	8	12	13	11	8	5	4
60	60¼	63⅛	68½	90	24¹¹⁄₁₆	5	8	13	13	11	8	5	4

ANNULAR FLOW SILENCERS



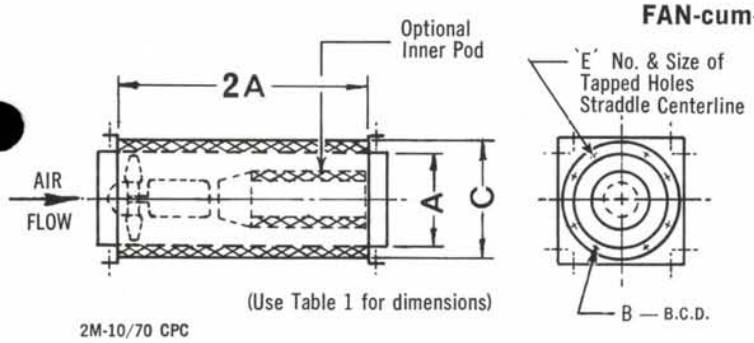


INSERTION LOSS ATTENUATION — dB

TABLE 2

SIZE	A	B	C	D	E	Octave Band Mid-Frequencies — Hertz							
						63	125	250	500	1000	2000	4000	8000
12	12½	13⅞	16½	18	8⁷⁄₁₆	4	5	5	11	19	28	29	20
15	15⅜	16¹¹⁄₁₆	19½	24	8⁷⁄₁₆	4	5	8	14	22	28	28	17
18	18⅝	19¹⁵⁄₁₆	22¾	27	8⁷⁄₁₆	4	5	11	17	25	29	24	17
21	21½	22¹⁵⁄₁₆	27½	32	8⁷⁄₁₆	5	5	12	19	27	29	22	16
24	25	26⅝	31¼	36	8⁷⁄₁₆	5	5	13	19	28	29	22	16
27	27½	29⅛	33¾	40	8⁷⁄₁₆	5	6	13	20	28	28	21	15
30	30⅜	32	36½	45	8⁷⁄₁₆	5	7	14	21	28	28	20	14
33	33⅜	35⅝	39½	50	12⁹⁄₁₆	5	8	15	22	29	26	20	13
36	36¾	39	45	54	12⁹⁄₁₆	5	9	17	24	29	24	20	12
38	38⅜	40⅝	46½	57	12⁹⁄₁₆	5	9	17	24	29	23	20	12
40	40⅝	42⅞	48¾	60	12⁹⁄₁₆	5	10	17	24	29	23	20	12
44	44⅞	47⅝	53	66	16¹¹⁄₁₆	5	11	19	27	29	22	20	10
49	49⅜	52¼	57½	74	16¹¹⁄₁₆	6	12	20	28	29	22	18	10
54	54⅝	57½	62¾	81	16¹¹⁄₁₆	6	13	21	28	29	22	18	10
60	60¼	63⅛	68½	90	24¹¹⁄₁₆	7	13	21	28	29	22	16	10

FAN-cum-SILENCERS



(Use Table 1 for dimensions)

INSERTION LOSS ATTENUATION — dB

ATTENUATION with pod — per Table 2 above

ATTENUATION without pod — 1.25 x Table 1 above

2M-10/70 CPC

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INLET VOLUME CFM	STATIC PRESSURE — inches of W.G.																							
	1/8				1/4				1/2				3/4				1				1 1/4			
	FAN DIA.	RPM	HP	Lp dB	FAN DIA.	RPM	HP	Lp dB	FAN DIA.	RPM	HP	Lp dB	FAN DIA.	RPM	HP	Lp dB	FAN DIA.	RPM	HP	Lp dB	FAN DIA.	RPM	HP	Lp dB
1000	12	1750	.05	61	12	1750	.07	62	12	3450	.13	74	12	3450	.17	75	12	3450	.25	76	12	3450	.33	77
	15	1150	.03	54	15	1750	.07	60					18	1750	.2	69	15	3450	.25	77	15	3450	.4	77
	15	1750	.04	59	18	1150	.06	59																
	18	860	.03	50	21	860	.06	55																
	21	700	.03	50	24	860	.09	58																
1500	12	3450	.13	75	12	3450	.17	75	12	3450	.12	75	12	3450	.3	76	12	3450	.4	77	12	3450	.5	78
	15	1150	.07	57	15	1750	.11	62					15	3450	.2	76	15	3450	.4	77	15	3450	.5	77
	15	1750	.08	61	18	1150	.09	59					18	1750	.3	70								
	18	860	.05	53	21	860	.08	56																
	18	1150	.06	58	24	860	.12	58																
	21	700	.05	52																				
	21	860	.05	54																				
2000	12	3450	.25	77	15	1750	.17	64	12	3450	.4	77	12	3450	.45	78	12	3450	.6	79	12	3450	.75	80
	15	1150	.11	60	18	1150	.13	69	15	3450	.25	76	15	3450	.4	77	15	3450	.5	77	15	3450	.7	78
	15	1750	.12	63	21	860	.11	57	18	1750	.25	67	18	1750	.4	70	21	1750	.6	73				
	18	860	.08	56	21	1150	.14	61					21	1750	.4	69								
	18	1150	.09	59																				
	21	700	.07	54																				
	21	860	.08	55																				
3000	12	3450	.6	81	15	3450	.4	79	12	3450	1.0	81	12	3450	1.05	82	15	3450	.8	79	15	3450	1.0	79
	15	1750	.3	68	18	1150	.26	64	15	3450	.6	78	15	3450	.7	78	21	1750	.75	73	24	1750	1.4	76
	18	1150	.18	63	18	1750	.33	69	18	1750	.4	70	18	1750	.6	72	24	1750	.8	74				
	21	700	.17	59	21	860	.25	61	21	1750	.33	69	21	1750	.5	70								
	21	860	.15	59	21	1150	.23	63	24	1150	.33	66	24	1750	.6	72								
	21	1150	.15	62	24	860	.25	60																
	24	700	.11	55	27	700	.2	59																
	24	860	.15	58	27	860	.2	59																
4000	18	1750	.4	72	15	3450	.75	81	15	3450	1.0	80	15	3450	1.2	81	15	3450	1.6	81	15	3450	1.7	81
	18	3450	.12	81	18	1750	.5	72	18	1750	.75	72	18	1750	1.0	74	18	3450	1.0	81	18	3450	1.2	81
	21	860	.25	62	21	1150	.35	65	21	1750	.55	70	21	1750	.75	71	21	1750	1.0	73	24	1750	1.7	77
	21	1160	.25	65	24	860	.35	61	24	1150	.5	67	24	1750	.75	72					27	1750	1.5	76
	21	1750	.33	70	24	1150	.25	65	27	1150	.6	69	27	1150	.75	71								
	24	700	.18	58	27	700	.3	60																
	24	860	.2	60	27	860	.3	61																
	27	700	.16	57																				
5000	18	1750	.8	74	15	3450	1.4	83	15	3450	1.7	83	15	3450	1.9	83	15	3450	2.3	83	15	3450	2.7	83
	18	3450	1.6	82	18	1750	.9	74	18	3450	1.0	82	18	3450	1.5	83	18	3450	1.7	82	18	3450	1.9	82
	21	1150	.4	67	21	1150	.55	68	21	1750	.75	71	21	1750	1.1	72	21	1750	1.5	74	24	1750	2.0	77
	21	1750	.5	71	24	860	.6	64	24	1750	.75	69	24	1750	.8	73	24	1750	1.4	75	27	1750	1.7	76
	24	700	.3	62	24	1150	.4	67	30	860	.8	65	27	1150	1.0	72	27	1750	1.2	75				
	24	860	.35	62	27	700	.4	61					30	1150	1.0	71								
	24	1150	.3	67	27	860	.4	62																
	27	700	.5	59	30	700	.33	59																
	27	860	.33	62																				
	30	700	.8	57																				
	30	860	.2	61																				
10.000	18	3450	7.5	89	24	1150	2.0	78	18	3450	6.5	88	18	3450	6.5	88	18	3450	7.0	88	18	3450	7.5	89
	21	1750	2.5	78	27	1750	1.7	77	24	1750	2.5	78	24	1750	3.0	79	24	1750	3.5	80	24	1750	4.0	81
	24	1750	1.7	79	30	860	1.1	67	27	1150	2.5	75	27	1150	3.0	76	27	1750	3.1	79	27	1750	4.0	79
	27	1150	1.8	74	30	1150	1.1	72	27	1750	2.0	77	27	1750	2.6	78	30	1750	2.5	78	30	1750	3.0	79
	27	1750	1.5	78	33	700	1.0	66	30	1150	1.8	73	30	1150	2.4	74	33	1150	2.8	77	33	1750	2.8	81
	30	860	.8	67	33	860	.9	67	33	860	1.7	69	30	1750	2.0	78	33	1750	2.2	81	36	1150	3.0	77
	30	1150	.8	72					33	1150	1.5	73	33	1150	1.8	75	36	1150	2.5	76	44	860	4.2	73
	33	700	.7	65					36	700	1.6	66	36	860	2.0	71	40	1150	2.0	75	49	860	4.0	76
	33	860	.7	67													44	860	3.0	71	54	860	5.0	76
	33	1150	.75	73													49	860	1.9	72				

PRINTED IN CANADA

INLET VOLUME CFM	STATIC PRESSURE — inches of W.G.																							
	1½				2				2½				3				3½				4			
	FAN DIA.	RPM	HP	Lp dB	FAN DIA.	RPM	HP	Lp dB	FAN DIA.	RPM	HP	Lp dB	FAN DIA.	RPM	HP	Lp dB	FAN DIA.	RPM	HP	Lp dB	FAN DIA.	RPM	HP	Lp dB
1000	15	3450	.65	78	2-12	3450	.25	82	2-12	3450	.3	82	2-12	3450	.35	83	2-12	3450	.4	83				
1500	15	3450	.8	78	2-12	3450	.4	83	2-12	3450	.45	83	2-12	3450	.5	84	2-12	3450	.55	84	2-15	3450	.75	86
					2-18	1750	.33	75																
2000	15	3450	1.3	80	2-12	3450	.55	84	2-12	3450	.6	85	2-12	3450	.65	85	2-12	3450	.65	85	2-15	3450	.9	86
					2-18	1750	.45	77	18	3450	1.2	82	2-15	3450	.5	85	2-15	3450	.75	86				
													18	3450	2.0	84								
													2-21	1750	.75	79								
3000	15	3450	2.0	82	2-12	3450	1.0	89	2-12	3450	1.05	89	2-12	3450	1.2	91	2-12	3450	1.5	90	2-15	3450	1.4	87
					2-15	3450	.75	86	2-15	3450	.9	86	2-15	3450	1.1	87	2-15	3450	1.2	87				
					18	3450	1.2	82	18	3450	1.9	83	18	3450	2.8	84								
					2-18	1750	.42	76					2-21	1750	1.0	80								
4000	15	3450	3.0	84	2-15	3450	1.2	88	2-15	3450	1.4	88	2-15	3450	1.6	88	2-15	3450	1.8	88	2-15	3450	2.0	89
	18	3450	1.4	82	18	3450	2.0	83	18	3450	1.9	83	18	3450	3.6	85					2-18	3450	2.5	91
	27	1750	2.0	78	2-18	1750	.9	82	2-18	1750	1.2	83	2-21	1750	1.3	81								
					2-21	1750	1.0	80	2-21	1750	1.2	81												
5000	18	3450	2.0	82	2-15	3450	1.9	90	2-15	3450	2.0	90	2-15	3450	2.2	91	2-15	3450	2.3	91	2-15	3450	2.7	92
	27	1750	2.5	79	18	3450	2.8	83	18	3450	3.5	84	18	3450	4.5	85	18	3450	6.0	86	2-18	3450	3.0	92
					2-21	1750	1.3	81	2-21	1750	1.7	82	2-21	1750	1.7	86	2-24	1750	2.2	85				
					2-24	1750	1.5	82	2-24	1750	1.7	83	2-24	1750	1.8	84								
					2-27	1150	1.7	78	2-27	1150	1.9	80												
					2-30	1750	2.8	81	2-30	1150	1.6	81												
					2-30	1150	1.3	79																
10,000	18	3450	7.6	89	18	3450	9.0	89	2-24	1750	3.3	87	2-24	1750	3.5	85	2-24	1750	3.8	91	2-18	3450	7.5	100
	27	1750	5.0	81	2-24	1750	3.1	87	2-27	1750	3.5	87	36	1750	8.5	87	2-27	1750	4.3	88	2-30	1750	5.5	89
	30	1750	3.8	80	27	1750	7.5	83	30	1750	7.5	85	2-36	1150	4.0	84	2-36	1150	4.0	85	2-36	1150	4.5	85
	33	1750	3.5	82	2-27	1150	2.6	84	2-30	1150	3.1	84	38	1750	8.0	87	2-38	1150	4.0	86				
	36	1150	5.0	79	30	1750	5.0	82	33	1750	7.5	85	2-38	1150	3.0	86								
	40	1150	4.0	76	2-30	1150	2.7	82	2-33	1150	2.5	82												
					2-33	1150	2.1	81	2-36	860	2.9	79												
					2-36	860	2.3	78	2-38	860	2.9	81												
					2-38	860	2.2	79	2-40	860	2.7	77												
					40	1150	7.5	80																
					2-40	860	2.2	76																

Note: 2-24 refers to 2 - 24″ dia. contra-rotating fans. HP shown in these cases is that required for each fan.

PRINTED IN CANADA

INLET VOLUME CFM	STATIC PRESSURE — inches of W.G.																							
	1/8				1/4				1/2				3/4				1				1 1/4			
	FAN DIA.	RPM	HP	Lp dB	FAN DIA.	RPM	HP	Lp dB	FAN DIA.	RPM	HP	Lp dB	FAN DIA.	RPM	HP	Lp dB	FAN DIA.	RPM	HP	Lp dB	FAN DIA.	RPM	HP	Lp dB
	27	1750	3.2	81	27	1750	4.0	81	27	1750	4.5	81	27	1750	6.0	81	27	1750	7.0	82	27	1750	7.5	82
	30	1150	1.8	75	30	1150	3.0	76	30	1150	3.5	77	30	1750	4.5	81	30	1750	5.5	81	30	1750	6.0	81
	33	860	1.8	70	30	1750	3.2	81	30	1750	4.0	81	33	1150	3.6	78	33	1150	5.0	80	33	1750	4.8	83
	33	1150	1.7	76	33	860	2.1	71	33	1150	2.8	76	36	860	4.0	73	36	1150	4.3	77	38	1150	5.0	80
15.000	36	700	1.6	68	33	1150	1.9	76	33	1750	2.9	82	36	1150	3.5	76	40	1150	3.0	75	40	1150	3.0	75
	38	700	1.2	68	33	1750	2.3	82	36	860	2.6	71	38	860	3.5	74	44	860	4.5	71	54	860	6.0	76
	40	580	.9	62	36	700	2.0	68	38	700	3.0	70	38	1150	2.5	77	54	860	4.5	75				
	40	700	.9	66	36	860	1.8	70					40	860	2.5	64	60	700	4.0	77				
	40	860	1.0	68	36	1150	2.1	76					40	700	2.1	67								
					38	700	1.7	78					40	860	3.0	69								
	33	1150	3.5	79	30	1750	6.5	85	30	1750	7.0	84	30	1750	8.0	84	30	1750	9.0	84	30	1750	10.0	85
	36	860	3.0	73	30	1150	4.0	79	33	1150	5.0	79	33	1150	6.5	81	33	1750	6.5	84	33	1750	7.0	85
	38	700	2.8	72	33	1750	4.5	84	33	1750	5.7	84	33	1750	6.0	84	36	1150	6.5	79	36	1150	8.0	80
	40	580	2.2	65	36	860	3.5	73	36	860	4.5	74	36	1150	6.0	78	40	1150	6.0	77	36	1750	8.0	85
	40	700	1.7	69	36	1150	3.6	78	36	1150	4.5	78	38	860	5.0	76	44	860	6.5	73	40	1150	7.0	78
20.000	40	860	2.0	69	40	580	2.7	65	38	860	4.0	75	40	860	5.0	71	49	860	5.0	74	44	860	7.5	74
	44	580	1.7	66	40	700	2.3	68	40	700	4.0	69	40	1150	4.0	76	49	1150	5.0	80	49	1150	6.5	81
					40	860	2.5	69	44	580	4.0	68	44	700	5.5	71	54	700	6.0	75	54	860	7.0	70
					40	1150	2.5	77	44	700	3.5	69	49	700	4.5	72	54	860	6.0	75	60	700	7.5	79
					44	580	2.4	66	44	860	3.5	71	49	860	4.0	73	60	700	5.0	77	60	860	7.0	78
									44	1150	4.0	77					60	860	5.0	78				
	40	700	6.0	73	33	1750	15.0	88	33	1750	18.0	88	33	1750	20	88	33	1750	22	88	33	1750	23	88
	40	860	5.0	74	38	1150	8.0	82	36	1150	13.0	88	36	1750	15	87	36	1750	16	87	36	1750	17	87
	40	1150	7.5	80	40	860	6.0	73	38	1150	11.0	83	38	1150	5	79	38	1750	14	88	38	1750	15	88
	44	580	3.8	70	40	1150	7.5	80	44	700	8.0	73	38	1750	13	88	40	1150	12	80	40	1150	15	81
	44	700	4.5	73	44	700	5.5	73	44	860	7.0	74	44	860	8.5	75	44	860	11	76	40	860	13	76
30.000	49	580	3.5	71	44	1150	7.0	80	44	1150	7.5	80	49	860	7.0	75	44	1150	11	80	44	1150	12	80
	49	700	3.0	73	49	580	4.5	71	49	700	6.0	73	54	700	7.0	75	49	860	8	76	49	860	11	78
	54	580	2.5	70	49	700	4.0	73	49	860	5.5	74	60	580	7.0	72	49	1150	8	87	49	1150	11	82
					49	860	4.0	75	49	1150	5.0	82	60	700	8.5	76	54	700	10	77	54	860	11	68
					49	1150	4.0	82	54	580	5.0	71					54	860	8	77	54	1150	10	83
					54	580	3.1	71	54	700	5.0	74					60	860	7.5	78	60	1150	8	86
	49	700	7.0	76	40	1150	15.0	82	36	1150	27.0	91	36	1750	28	90	36	1750	31	90	36	1750	32	90
	54	580	5.0	72	44	860	9.0	77	38	1750	25.0	91	38	1150	12	93	38	1750	28	91	38	1750	30	91
	60	580	4.0	71	44	1150	12.0	82	44	860	12.0	77	38	1750	25	91	40	1150	21	83	40	1150	25	84
					49	700	8.0	76	44	1150	13.0	82	49	860	12	78	44	1150	17	82	44	1150	19	83
					49	860	7.0	77	49	700	12.0	77	54	700	11	77	49	860	15	79	49	860	19	80
40.000					49	1150	10.0	84	49	860	9.0	77	60	580	9	73	54	700	15	78	49	1150	17	85
					54	580	6.0	73	54	580	8.5	74	60	700	8	77	54	860	13	78	54	860	17	79
					54	700	6.0	76	54	700	8.0	76					54	1150	14	84	60	700	16	80
					54	860	6.0	77	54	860	7.5	77					60	700	11	79	60	860	13	80
					60	580	4.5	71	60	580	7.0	72					60	860	12	79	60	1150	13	87
																	60	1150	11	87				
	54	580	9.0	75	40	1150	25.0	84	38	1750	41.0	94	38	1750	43	94	38	1750	45	94	38	1750	47	94
	60	580	6.5	73	44	1150	19.0	84	44	1150	22.0	84	44	1150	25	84	44	1150	28	84	44	1150	31	85
					49	860	12.0	80	49	860	16.0	80	49	860	20	80	49	1150	22	87	49	1150	26	87
					49	1150	15.0	86	49	1150	17.0	86	54	700	17	79	54	860	20	81	54	860	25	81
50.000					54	700	10.0	77	54	700	13.0	78	54	860	16	80	54	1150	20	86	54	1150	22	86
					54	860	10.0	80	54	860	13.0	80	54	1150	18	86	60	700	16	80	60	860	18	81
					60	580	7.5	72	54	1150	15.0	86	60	580	15	75	60	860	16	80	60	1150	19	88
					60	700	8.5	77	60	580	8.0	73	60	700	12	78	60	1150	17	88				
									60	860	8.0	80	60	860	13	80								
									60	1150	11.0	87	60	1150	14	87								
	60	580	13.0	77	49	1150	36.0	89	44	1150	35	86	54	860	32	83	49	1150	38	88	54	1150	38	89
					54	860	21.0	83	54	860	27	83	54	1150	31	88	54	1150	34	88	60	860	30	83
70.000					60	580	16.0	77	54	1150	28	88	60	700	25	81	60	860	26	83	60	1150	32	90
					60	700	15.0	80	60	700	18	80	60	860	21	82	60	1150	28	89				
					60	860	16.0	82	60	860	19	82	60	1150	25	89								
									60	1150	22	89												
					60	860	29	85	54	1150	50	91	54	1150	56	91	54	1150	61	91	54	1150	65	91
90.000									60	860	32	85	60	860	38	85	60	860	45	85	60	860	52	86
									60	1150	38	91	60	1150	41	91	60	1150	46	91	60	1150	51	91
110.000					60	860	51	87	60	1150	65	92	60	1150	70	92	60	1150	75	93	60	1150	80	93
130.000					60	1150	90	94	60	1150	110	94												

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INLET VOLUME CFM	STATIC PRESSURE — inches of W.G.																							
	1½				2				2½				3				3½				4			
	FAN DIA.	RPM	HP	Lp dB	FAN DIA.	RPM	HP	Lp dB	FAN DIA.	RPM	HP	Lp dB	FAN DIA.	RPM	HP	Lp dB	FAN DIA.	RPM	HP	Lp dB	FAN DIA.	RPM	HP	Lp dB
15.000	27	1750	9.0	83	2-27	1750	5.3	91	2-27	1750	5.6	91	2-27	1750	6.0	91	2-27	1750	6.2	92	30	1750	7.0	91
	30	1750	7.0	87	30	1750	8.5	84	2-30	1750	6.5	91	2-30	1750	4.5	88	2-30	1750	7.3	91	36	1150	7.0	87
	33	1750	5.5	83	2-30	1150	3.7	87	33	1750	10	86	2-33	1750	7.0	90	36	1750	13	89	36	1150	6.0	88
	36	1150	7.5	80	33	1750	7.0	85	2-33	1150	4.5	85	36	1750	11	87	2-36	1150	6.0	86	40	1150	6.5	85
	38	1150	7.0	81	2-33	1150	3.5	84	36	1750	8	86	2-36	1150	5.5	86	38	1750	13	89				
	40	1150	6.0	77	2-36	860	4.5	81	2-36	860	4.0	82	38	1750	11	88	2-40	1150	7.5	86				
					2-36	1150	3.2	85	2-36	1150	5.0	85	2-40	1150	5.5	84								
					40	1150	10.0	80	2-40	860	3.9	78												
					2-40	860	3.2	77																
20.000	30	1750	12.0	85	30	1750	15	86	2-30	1750	9.0	93	2-30	1750	9.5	93	2-30	1750	10.2	94	2-30	1750	11.0	94
	33	1750	7.0	85	33	1750	13	87	33	1750	20	88	2-33	1750	8.5	92	2-33	1750	9.5	92	2-33	1750	10.0	92
	36	1150	11.0	81	2-33	1150	5.7	88	2-33	1150	6.0	89	36	1750	14	88	36	1750	17	89	2-36	1150	8.5	90
	40	1150	8.0	79	36	1750	10.5	86	36	1750	12	86	2-36	1150	7.5	89	2-36	1150	8.5	89	2-40	1150	8.0	87
					2-36	1150	6.5	88	2-36	1150	7.0	89	38	1750	14	88	38	1750	16	89	2-49	860	8.5	85
					2-38	860	5.5	85	2-38	1150	6.5	89	2-38	1150	7.0	89	2-38	1150	7.5	90				
					2-38	1150	5.9	89	2-40	860	5.6	80	2-40	1150	7.0	86	2-40	1150	7.5	86				
					40	1150	15	82	2-40	1150	6.2	86	2-44	860	6.5	82								
					2-40	860	4.6	79	2-44	860	5.5	81	2-44	1150	8.0	88								
					44	1150	30	81	2-44	1150	7.5	88	2-60	700	8.0	83								
					2-44	700	4.5	79	54	1150	17	85												
					2-44	860	4.8	81																
30.000	33	1750	25	89	2-33	1750	15	97	2-33	1750	16	97	2-33	1750	17	97	2-33	1750	18	97	2-33	1750	18	97
	36	1750	18	87	36	1750	20	88	36	1750	40	89	36	1750	28	90	38	1750	28	91	2-40	1150	15	90
	38	1750	16	88	38	1750	19	89	38	1750	38	89	2-36	1150	9.5	90	2-40	1150	13	90	2-44	1150	14	90
	40	1150	17	82	2-40	1150	9.5	89	2-40	1150	10.5	89	38	1750	23	90	2-44	1150	13	90	2-49	860	11	85
	44	1150	14	81	44	1150	21	84	2-44	1150	10.5	90	2-40	1150	11.5	89	2-49	1150	15	91				
	49	1150	12	83	49	1150	17	85	49	1150	30	88	2-49	860	8.5	84	54	1150	28	88				
	54	860	15	78	2-49	700	7.0	83	2-49	700	9.0	85	60	1150	28	82	2-54	860	13	85				
					2-54	860	9.0	84	54	1150	20	86	2-60	700	10.0	84								
									2-54	860	9.5	84												
40.000	36	1750	33	91	36	1750	37	91	36	1750	40.0	92	2-36	1750	32.0	100	38	1750	46	93	2-36	1750	34	100
	38	1750	31	91	38	1750	36	91	38	1750	38.0	92	38	1750	40.0	92	2-44	1150	18	93	2-38	1750	29	100
	44	1150	21	83	2-40	1150	16	93	2-40	1150	18.0	93	2-44	1150	17.5	92	2-49	860	18	89	2-44	1150	20	93
	49	1150	19	85	44	1150	31	86	2-44	1150	16.0	92	2-49	860	16.0	88	2-49	1150	21	93	2-49	860	20	88
	54	860	22	80	49	1150	29	87	2-49	860	15.0	88	2-54	700	15.0	86	2-54	860	18	86	2-54	860	19	87
	54	1150	18	85	2-49	860	13	88	54	1150	28.0	87	2-54	860	15.0	86	2-54	1150	21	94	2-60	860	19	86
	60	860	17	81	54	1150	23	86	2-54	700	13.0	85	60	1150	35	90	2-60	860	17	86				
					2-54	700	10	84	2-54	860	14.0	85	2-60	700	13.0	85								
					60	1150	20	88	60	1150	26.0	89												
					2-60	580	9	80	2-60	700	12.0	84												
					2-60	700	10.5	83																
50.000	38	1750	50	94	2-44	1150	22	95	2-44	1150	24	95	2-49	1150	25	96	2-49	1150	26	96	2-49	1150	28	96
	44	1150	35	85	49	1150	40	89	2-49	1150	24	96	2-54	860	21	88	2-54	860	23	88	2-54	860	25	89
	49	1150	30	88	2-49	860	18	91	54	1150	39	88	2-54	1150	25	95	2-54	1150	27	95	2-54	1150	28	95
	54	860	31	82	54	1150	31	88	2-54	700	17	87	60	1150	42	90	2-60	860	23	87	2-60	860	26	87
	54	1150	25	87	2-54	700	15	87	2-54	860	19	87	2-60	700	17	86								
	60	860	22	82	2-54	860	17	87	60	1150	33	90	2-60	860	20	87								
	60	1150	22	88	60	1150	27	89	2-60	700	15	85												
					2-60	580	12	82	2-60	860	18	86												
					2-60	700	13	85																
					2-60	860	17	86																
70.000	54	1150	42	89	2-49	1150	38	100	2-49	1150	40	100	2-54	1150	36	98	2-49	1150	43	100	2-54	1150	41	98
	60	860	38	84	54	1150	52	90	54	1150	65	91	60	1150	62	92	2-54	1150	38	98	2-60	860	36	90
	60	1150	36	90	2-54	860	29	92	2-54	860	32	92	2-60	700	27	90	2-60	860	33	89	2-60	1150	42	96
					60	1150	42	91	60	1150	50	91	2-60	860	30	89	2-60	1150	40	96				
					2-60	700	22	89	2-60	700	25	89												
					2-60	860	26	89	2-60	860	28	89												
90.000	54	1150	70	92	2-54	1150	48	101	2-54	1150	52	101	2-54	1150	56	101	2-54	1150	60	101	2-54	1150	62	100
	60	1150	56	91	60	1150	65	92	60	1150	80	92	60	1150	95	93	2-60	860	46	94	2-60	860	49	94
					2-60	860	38	93	2-60	860	41	93	2-60	860	43	94	2-60	1150	52	98	2-60	1150	58	98
110.000	60	1150	90	93	2-60	1150	100	93	2-60	1150	70	100					2-60	1150	75	100	2-60	1150	80	100
130.000					2-60	1150	90	102	2-60	1150	95	102	2-60	1150	98	102	2-60	1150	100	102	2-60	1150	105	102

Note: 2-24 refers to 2 - 24" dia. contra-rotating fans. HP shown in these cases is that required for each fan.

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INLET VOLUME C F M	STATIC PRESSURE — inches of W.G.																							
	5				6				7				8				9				10			
	FAN DIA.	RPM	HP	Lp dB	FAN DIA.	RPM	HP	Lp dB	FAN DIA.	RPM	HP	Lp dB	FAN DIA.	RPM	HP	Lp dB	FAN DIA.	RPM	HP	Lp dB	FAN DIA.	RPM	HP	Lp dB
2000																	18	3450	2.2	92				
3000					18	3450	2.0	91	18	3450	2.2	91	18	3450	2.7	91	18	3450	3.0	92				
4000	18	3450	2.6	91	18	3450	2.8	91	18	3450	3.1	92	18	3450	3.2	92	18	3450	3.5	93				
5000	18	3450	3.1	92	18	3450	3.3	97	18	3450	3.4	92	18	3450	3.7	93	18	3450	4.8	94				
					30	1750	4.0	90	33	1750	6.0	90												
					33	1150	1.5	81																
10.000	18	3450	8.0	100	30	1750	7.0	91	33	1750	8.0	91												
	30	1750	6.0	90	33	1150	3.0	83																
	33	1750	6.5	89	33	1750	7.0	90																
15.000	30	1750	8.5	92	30	1750	10	93	33	1750	11	92												
	33	1750	8.0	90	33	1750	9.0	91																
	40	1150	8.0	87																				
20.000	2-30	1750	13	94	2-33	1750	13	93	2-33	1750	15	94	2-36	1750	17	94	2-36	1750	19	94	2-36	1750	21	95
	2-33	1750	11	92	2-36	1750	14	93	2-36	1750	15	94	2-38	1750	17	95	2-38	1750	18	96	2-38	1750	20	96
	2-40	1150	10	88					2-38	1750	15	95	2-54	1150	22	94								
									2-54	1150	19	93												
30.000	2-33	1750	21	97	2-36	1750	25	96	2-36	1750	27	96	2-38	1750	42	100	2-36	1750	31	97	2-36	1750	33	98
	2-36	1750	23	96	2-38	1750	22	97	2-38	1750	23	97	2-54	1150	35	95	2-38	1750	28	98	2-38	1750	31	98
	2-40	1150	17	91	2-49	1150	20	93	2-49	1150	21	95												
	2-54	860	17	86					2-54	1150	25	94												
40.000	2-36	1750	36	100	2-36	1750	38	100	2-36	1750	40	100	2-38	1750	42	100	2-38	1750	46	101	2-38	1750	50	101
	2-38	1750	32	100	2-38	1750	36	100	2-38	1750	38	100	2-54	1150	35	95	2-60	1150	44	97				
	2-44	1150	25	93	2-49	1150	26	95	2-49	1150	29	96												
	2-49	1150	24	94	2-54	1150	28	94	2-54	1150	32	95												
	2-54	860	23	88																				
50.000	2-49	1150	31	96	2-49	1150	35	97	2-49	1150	40	98	2-38	1750	46	103	2-38	1750	50	103				
	2-54	1150	31	95	2-54	1150	36	96	2-54	1150	40	96	2-54	1150	45	97	2-60	1150	53	98				
	2-60	860	31	89	2-60	1150	35	96																
70.000	2-54	1150	47	98	2-54	1150	54	98	2-54	1150	60	99	2-54	1150	65	99	60	1150	75	99				
	2-60	860	43	91	2-60	1150	50	97	2-60	1150	55	98	2-60	1150	62	98								
	2-60	1150	45	97																				
90.000	2-54	1150	65	101	2-54	1150	75	101	2-60	1150	75	95	2-60	1150	85	100	2-60	1150	100	101				
	2-60	1150	65	98	2-60	1150	65	99																
110.000	2-60	1150	110	103	2-60	1150	90	101	2-60	1150	102	102	2-60	1150	110	102								
130.000	2-60	1150	110	103	2-60	1150	120	103	2-60	1150	125	103												

Note: 2-24 refers to 2 - 24" dia. contra-rotating fans. HP shown in these cases is that required for each fan.

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ENGINEERING DATA

APPLICATION ASSESSMENT

Sheldons have provided a choice of six different axial fan arrangements in one catalogue.

In order to assist in determining which of the six arrangements to use in any system, the following points should be considered.

Tubeaxial Fan Arr.4
Tubeaxial Fan Arr.9

Most economical axial fan for low pressure applications is arr.4 Tubeaxial.

Arr.9 Tubeaxial offers advantages of speed change, and motor out of the airstream for heat and corrosion applications.

Also smaller and more economical 1750 rpm motors can be used.

Vaneaxial Fan Arr.4
Vaneaxial Fan Arr.9

Arr.4 Vaneaxial is the most economical fan for higher static pressures. Slight saving in motor HP may reduce motor size, for economy in operation and installation.

Arr.9 belt driven Vaneaxial offers advantages of speed change, and keeps motor out of airstream. Smaller and more economical 1750 rpm motors can be used.

Contra-rotating Tubeaxial Fan — Arr.4
2 Stage Vaneaxial Fan — Arr.4

2 stage fans used for higher pressures and lower noise levels than single stage fans. Requires two smaller motors with smaller starting equipment.

ECONOMY COMPARISONS

1. Tubeaxial fans are more economical in initial cost than Vaneaxial fans of the same size and speed.
2. Direct connected axial fans are more economical both in initial cost and running costs, than belt driven axial fans.
3. Direct connected fans in this catalogue provide a choice of 4 speeds in any one size. The higher the speed, the less expensive the motor for the same HP. At lower speeds the sound level is usually lower. Choose a smaller fan at a higher speed for economy.
4. For moderate pressures, say up to 3" SP, where a compromise between economy and noise level is required, the arr.4 Tubeaxial fan is the best selection.
5. When higher system pressures are required and where low noise levels are necessary, consider using two fans in series, either contra-rotating arr.4 Tubeaxial, or 2-stage arr.4 Vaneaxials. This will be much quieter than a single stage fan for the same pressure.

CONTRA-ROTATING AND MULTI-STAGE FANS

1. Higher static pressures may easily be obtained by means of two or more single-stage fans bolted together. In the case of Tubeaxial fans, it is necessary that the fans rotate in opposite directions, to utilize the rotational swirl from the first stage wheel in the second stage wheel. The blade angle is set slightly lower on this wheel to equalize the load on each motor.
2. In many system layouts, it may be advantageous to consider using multi-stage axial flow fans to provide the higher system pressures presently being used in ventilation and air conditioning design.
3. The "in-line" feature of multi-stage axial fans saves much-needed space, eliminates V-belt drive maintenance, and reduces bearing maintenance. It also provides economy and simplicity in utilizing much smaller motor starting equipment.
4. Sound attenuation can easily be achieved by building the silencer right into the fan case, thus providing further economy in first cost and in use of available space.

APPLICATION DATA

1. Adjustable pitch feature allows for variations in capacity within the original HP limits on arr.4 Tubeaxial and Vaneaxial fans.
2. With Sheldons design of motor mounting bracket, new larger motors can readily be bolted into place without the need to rework the original motor pedestal. See page 69.
3. When selecting axial flow fans from the performance charts, do not normally select a point of rating near the extreme top of the performance envelope, if there is likely to be some doubt as to the final system pressure. Most axial fans have an instability due to "stall" of the airflow over the blades just beyond the peak pressure shown. Choose a larger fan, or a higher fan speed to provide a margin of safety.
4. It is not necessary to grease motor bearings very frequently. Extending motor grease nipples to the outside of the fan case sometimes invites over-greasing of motor bearings. Most motor manufacturers recommend greasing every 2 to 3 years, with the old grease being re-packed every 10 years. Access panels on ADJUSTAFOIL fans provide adequate access to the bearing grease nipples.
   In the case of belt-driven fans, special seals on the bearings permit excess grease to ooze out, and thus reduce the danger of over-greasing. Extended grease fittings are always provided as standard on belt-driven arr.9 Tubeaxial and Vaneaxial fans.

HAZARDOUS ATMOSPHERES

Great care must be taken in the selection of a motor which is to be operated in a location which contains hazardous gases, vapours or dusts. The more common hazardous atmospheres are classified by the U.S.A. and Canadian Electrical Code as shown in the accompanying table. Standard explosion-proof and dust-explosion-proof motors are designed to meet the requirements of these codes for operation in Class I, Group D, and Class II, Groups F and G locations.

Available Motors	Classification	Hazardous Atmospheres
Special	Class I, Group A	Atmospheres containing acetylene.
Special	Class I, Group B	Atmospheres containing hydrogen or gases or vapours of equivalent hazards such as manufactured gas.
Special	Class I, Group C	Atmospheres containing ethyl-ether vapour.
Explosion-proof	Class I, Group D	Atmospheres containing gasoline, petroleum, naphtha, alcohols, acetone, lacquer-solvent vapours and natural gas.
Special	Class II, Group E	Atmospheres containing metal dust.
Dust-Explosion-Proof	Class II, Group F	Atmospheres containing carbon-black, coal or coke dust.
Dust-Explosion-Proof	Class II, Group G	Atmospheres containing grain dust.

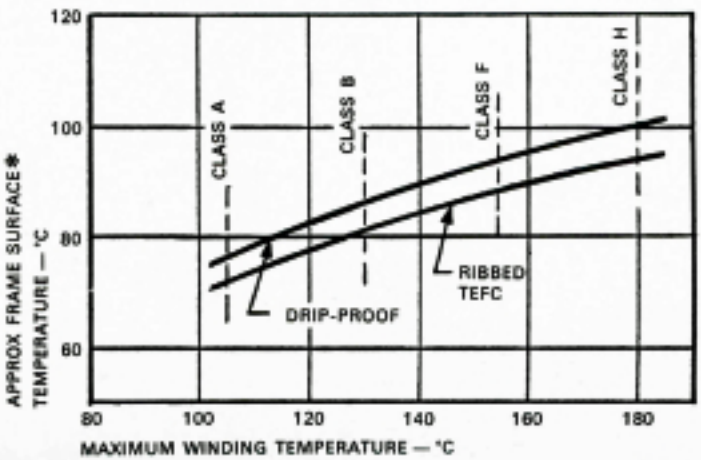


FIG. 3

MOTOR AND TEMPERATURE LIMITATIONS

1. For direct-connected Arr.4 Tubeaxial and Vaneaxial fans, the maximum temperature of the gases handled by the fan is limited either by the maximum temperature of 300°F for the aluminum wheel, or by the motor temperature limitation.
   In general, ambient temperature over 104°F would require special insulation. In some applications, it may be necessary to provide additional motor protection against higher ambient temperatures. The table shows the limits of the different classes of insulation and the maximum ambient temperatures possible with each insulation class, for TEFC or TEAO motors with a service factor of 1.0.
2. Standard motors used are TEAO (totally enclosed air over) or TEFC (totally enclosed fan cooled) with standard leads. Extended leads usually mean longer deliveries, as these are not usually stocked by motor manufacturers.
3. Explosion-proof motors are generally available for most fan sizes. Delivery is usually delayed for explosion-proof motors at speeds other than 1750 rpm and 1150 rpm.
4. Two speed motors are also available but delivery may be extended.
5. For industrial applications, belt-driven Tubeaxial and Vaneaxial fans can be used up to 150°F maximum, with standard aluminum AF wheels and bearings. Heat resistant V-belts are recommended however.
6. Above 150°F to the maximum of 300°F, it is necessary to insulate the bearing tube and internal belt guard. Standard aluminum AF wheels, bearings with high temperature grease, and heat resistant belts are also provided.

Insulation Class	Enclosure	Service Factor	Maximum Permissible Ambient Temperature	
			U-Frame	T-Frame
A	T.E.	1.0	104°F	N/A
B	T.E.	1.0	150°F	104°F
F	T.E.	1.0	195°F	150°F
H	T.E.	1.0	240°F	195°F

NOTE — With the new T-frame motors, which are supplied with Class B insulation as standard, higher surface temperatures are to be expected due to an increase in HP in a given frame size. Judging the surface temperature by hand is certainly no longer of any practical value. A guide to the expected surface temperature of TEFC and Drip-proof motors, for different insulation classes is shown in Fig. 3, Page 68.

TEAO motors will usually have somewhat lower surface temperatures than those indicated by TEFC motors, due to the additional cooling effect of the large air flow over the motor body.

MOTOR ADAPTOR BASES

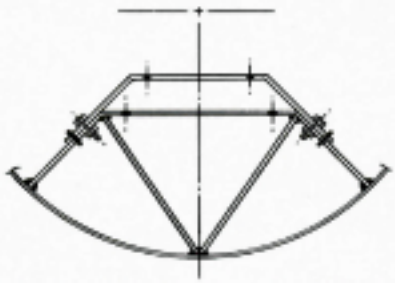


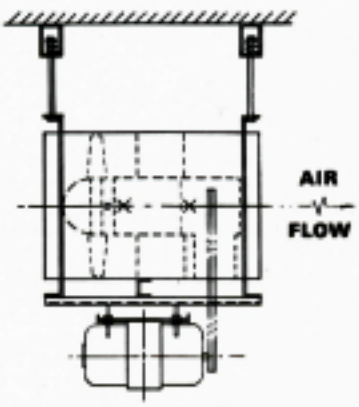
FIG. 4

With the flexibility offered by adjustable pitch blades it may be desirable on some occasions to increase the blade angle to achieve more capacity beyond the capabilities of the installed motor HP. With Sheldons new design of motor mounts it is possible to replace an existing motor with a larger motor without any major rework being done on the fan case.

Adaptors (as shown in Fig. 4) are available for all the standard motor frames up to the maximum listed in the dimension tables on Page 71. Pedestals are jig-drilled for accurate line-up of bolt holes to ensure that fan runs concentrically within the fan ring.

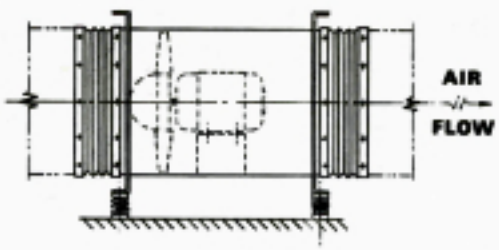
TYPICAL LAYOUTS OF AXIAL FLOW FANS

A



Vaneaxial Arr.9 ceiling suspended with spring isolators.

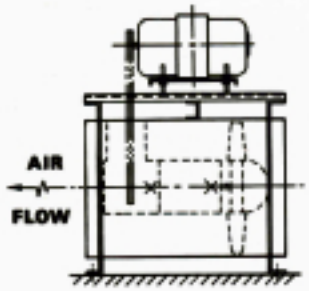
B



Tubeaxial Arr.4 with flexible connections at inlet and outlet.

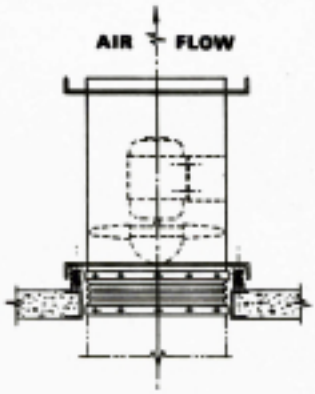
TYPICAL LAYOUTS OF AXIAL FLOW FANS

C



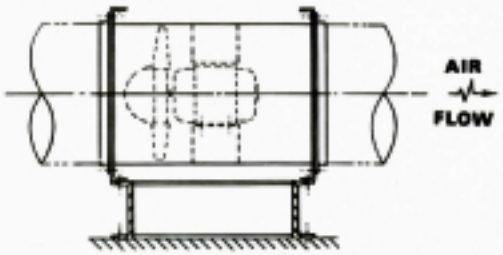
Tubeaxial Arr.9 bolted directly to floor using flanges of square end panels.

D



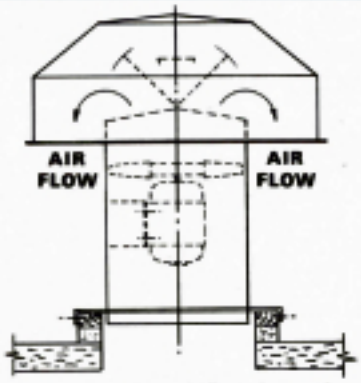
Tubeaxial Arr.4 mounted on spring isolators above opening in floor slab, with flexible connections on inlet.

E



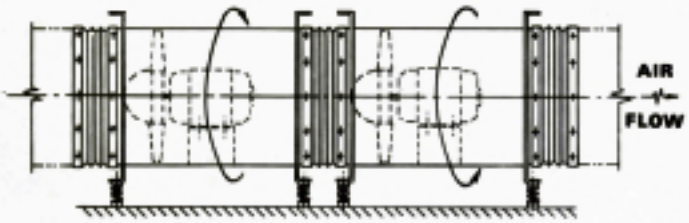
Vaneaxial Arr.4 with flange connections at inlet and outlet bolted to built-up base.

F



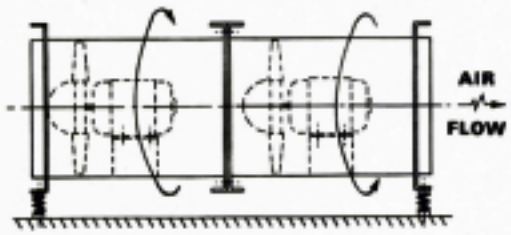
Tubeaxial Arr.4 with reversed air flow for roof ventilator application, with roof hood and butterfly backdraft dampers.

G



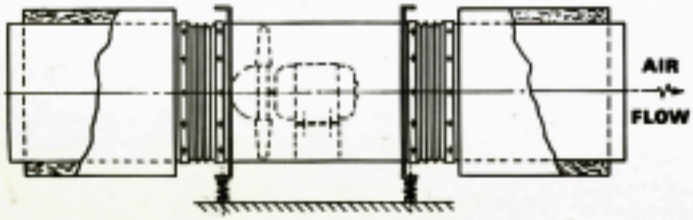
Contra-Rotating Tubeaxial Fan Arr.4 with flexible connections, and mounted on spring isolators. Note that one fan is clockwise and other fan is counter-clockwise.

H



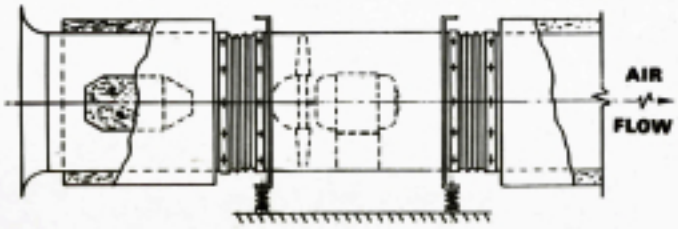
Contra-Rotating Tubeaxial Fan Arr.4 flanged together at centre, and supported on spring isolators.

J



Tubeaxial Fan Arr.4 with "Full-Flow" silencer at inlet and outlet.

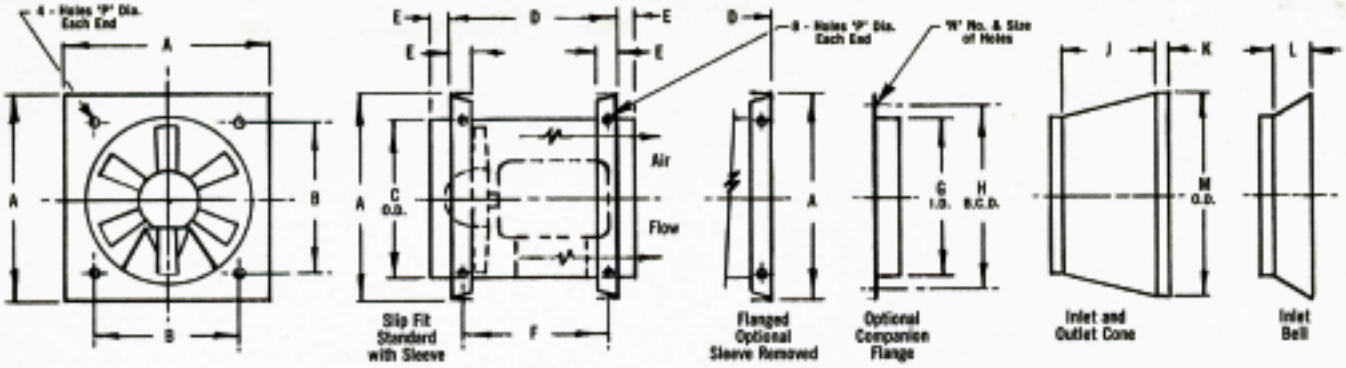
K



Tubeaxial Fan Arr.4 with "Annular-Flow" silencer at inlet, and "Full-Flow" silencer at outlet, with inlet bell and flexible connections.

DIMENSIONS

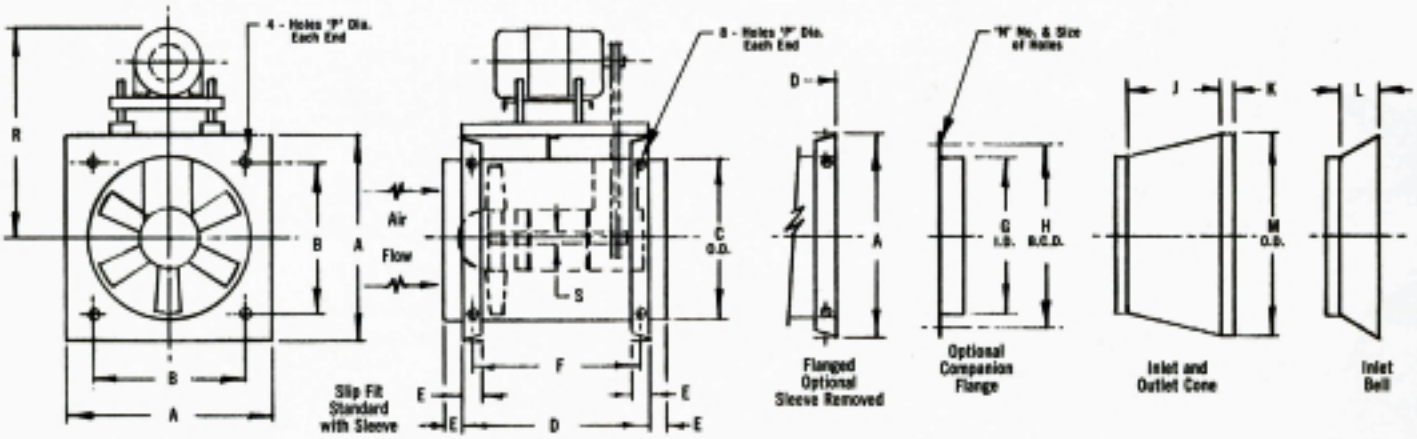
TUBE & VANEAXIAL FANS — Arr. 4 — Direct Drive



Fan Size	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Max. Motor Frame	Approx. Fan Wt. Lbs.
12	16½	11½	12⅜	15	1½	13½	12⅜	13⅞	6	1½	1¼	15	8—⅜	⅜	184T	30
15	19¼	14	15¼	15	1½	13½	15¼	16¾	7½	1½	1½	18¼	8—⅜	⅜	184T	40
18	22½	16¾	18½	15	1½	13½	18½	20	9⅛	1½	1¾	22¼	8—⅜	⅜	184T	65
21	27	19	21½	20¾	1⅝	19⅛	21½	23	10⅝	2	2	27	8—⅜	½	215T	115
24	30	22	24⅞	20¾	1⅝	19⅛	24⅞	26⅛	12⅛	2	2¼	30	8—⅜	½	215T	135
27	33	25	27⅜	26¾	1⅝	25⅛	27⅜	29¼	13⅝	2	2½	33	8—⅜	½	215T	180
30	36½	28½	30¼	26	2	24	30¼	32	15	2	2¾	36½	8—⅜	½	286T	230
33	40¼	30¼	33⅜	32	2	30	33⅜	35⅛	16⅝	2½	3	40¼	12—⅜	½	286T	325
36	44½	34½	36¾	32	2	30	36¾	39	18¼	2½	3¼	44½	12—⅜	½	326T	430
38	46¾	36¾	38⅞	37	2½	34½	38⅞	40⅛	19	2½	3½	46¾	12—⅜	½	365T	490
40	49	37	40⅛	37	2½	34½	40⅛	42⅞	20¼	2½	3¾	49	12—⅜	½	326T	540
44	54¼	44¼	45	37	2½	34½	45	47¾	22¾	2½	4⅛	54¼	16—⅞	⅝	365T	735
49	60	48	49½	36	3	33	49½	52¼	24¼	3	4½	60	16—⅞	⅞	405T	885
54	66	54	54¾	36	3	33	54¾	57½	27	3	4⅞	66	16—⅞	⅞	445T	990
60	73	61	60⅞	42	3	39	60⅞	63⅛	30	3	5⅜	73	24—⅞	⅞	445T	1180

Tubeaxial weights shown. For Vaneaxial weights add 10%. Weight shown does not include motor.

TUBEAXIAL & VANEAXIAL FANS — Arr. 9 — Belt Driven



Fan Size	A	B	C	D	E	F	G	H	J	K	L	M	N	P	R Max. Motor	S	Max. Motor Frame	Approx. Fan Wt. Lbs.
15	19¼	14	15¼	21	1½	19½	15¼	16¾	7½	1½	1½	18¼	8—⅜	⅜	22	1⅝	184T	65
18	22½	16⅜	18½	27	1½	25½	18½	20	9⅛	1½	1¾	22¼	8—⅜	⅜	27	1⅜	215T	115
21	27	19	21½	26⅜	1⅛	25⅛	21½	23	10⅝	2	2	27	8—⅜	⅜	27	1⅜	184T	155
24	30	22	24⅞	26⅜	1⅛	25⅛	24⅞	26⅛	12⅝	2	2¼	30	8—⅜	⅜	29	1⅜	184T	170
27	33	25	27⅜	32¾	1⅛	31⅛	27⅜	29¼	13⅝	2	2½	33	8—⅜	⅜	32	1⅜	215T	245
30	36½	28½	30¼	32	2	30	30¼	32	15	2	2¾	36½	8—⅜	⅜	36	1⅜	256T	325
33	40¼	30¼	33⅜	38	2	36	33⅜	35⅛	16⅝	2½	3	40¼	12—⅜	⅜	40	1 11/16	286T	405
36	44½	34½	36¾	44	2	42	36¾	39	18¼	2½	3¼	44½	12—⅜	⅜	44	1 11/16	326T	595
38	46¾	36¾	38⅞	43	2½	40½	38⅞	40⅛	19	2½	3½	46¾	12—⅜	⅜	45	1 11/16	326T	620
40	49	37	40⅛	43	2½	40½	40⅛	42⅞	20¼	2½	3¾	49	12—⅜	⅜	45	1 11/16	286T	650
44	54¼	44¼	45	43	2½	40½	45	47¾	22¾	2½	4⅛	54¼	16—1/4	⅜	48	1 11/16	286T	886
49	60	48	49½	48	3	45	49½	52¼	24¼	3	4½	60	16—1/4	1/2	53	2 5/16	326T	1206
54	66	54	54¾	48	3	45	54¾	57½	27	3	4⅞	66	16—1/4	1/2	58	2 5/16	365T	1326
60	73	61	60⅞	54	3	51	60⅞	63⅛	30	3	5⅜	73	24—1/4	1/2	63	2 11/16	405T	1446

Tubeaxial weights shown. For Vaneaxial weights add 10%. Weight shown does not include motor.

C.P.C.-1M-9-74

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