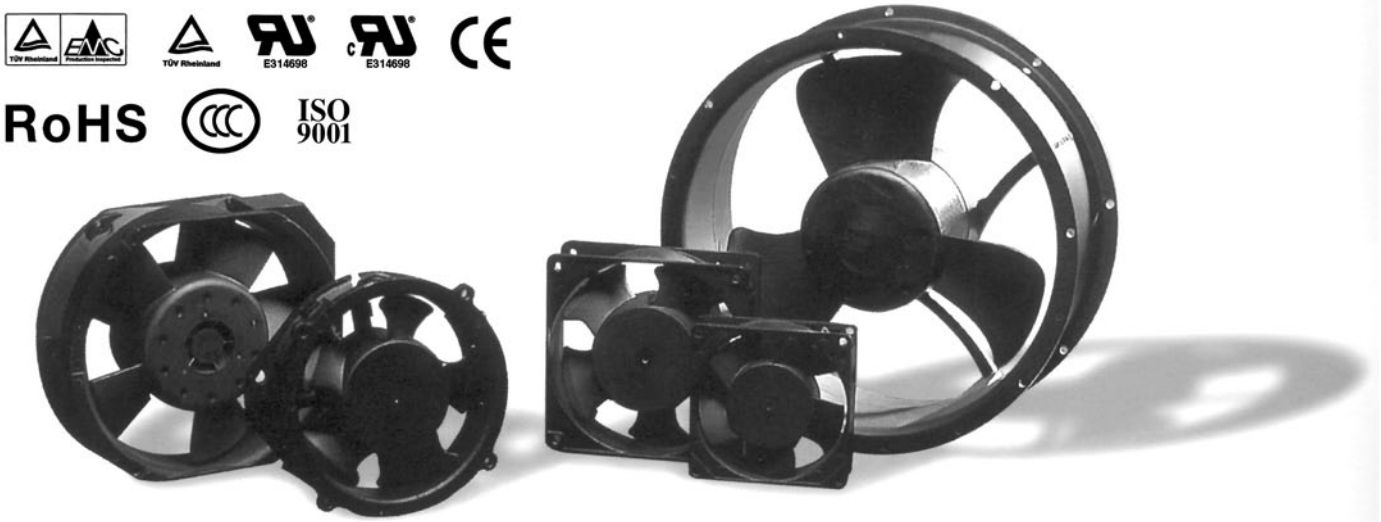
SAN JU SAN JUN

Suntronix



AXIAL AC FAN

Frame Type:	Aluminum painted & Plastic UL94V-O
Impeller:	Thermoplastic UL94V-O P.B.T.
Bearing:	Ball Bearing & Sleeve Bearing
Insulation Resistance:	Min. 100 MΩ at 500 VDC between terminal (wire) (+) and frame
Dielectric Withstand:	1500 VAC for 1 minute between terminal (wire) (+) and frame
Life Expectancy:	60,000 Hours at 20 °C-Ball bearing 30,000 Hours at 20 °C-Sleeve bearing
Operation Temperature:	-20°C / 85°C (Ordinary humidity)
Storage Temperature:	-30°C / 140°C (Ordinary humidity)
Safety:	UL - CUL - CSA - TUV - CE approved
Ingress of Protection:	IP 44

BRUSHLESS DC FAN

Frame Type:	Aluminum painted & Plastic UL94V-O
Impeller:	Thermoplastic UL94V-O P.B.T.
Bearing:	Ball Bearing & Sleeve Bearing
Insulation Resistance:	10 MΩ at 500 VDC
Dielectric Withstand:	Between lead or terminal and housing 700VAC for 3 sec or 500 VDC for 1 min.
Life Expectancy:	Ambient temperature 25 °C and humidity 65% 50,000 Hours Ball bearing 30,000 Hours Sleeve bearing
Operation Temperature:	-10°C / 70°C (Ordinary humidity)
Storage Temperature:	-40°C / 70°C (Ordinary humidity)
Safety:	UL - CSA - TUV - CE approved
Ingress of Protection:	IP 44

Technical Information of Fan Motor

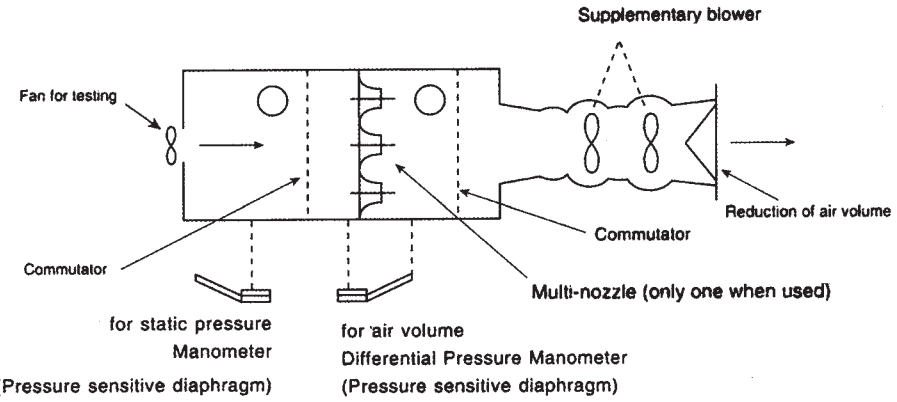
Measurement of Air Volume and Static Pressure

In our Company we have been measuring the air volume using the Multi-nozzle Chamber Air Volume Measuring Device of Automatic recording type, which is in conformity with the highly reliable AMCA specifications (USA).
The error rate is below 1% theoretically (based on AMCA). Also it is possible to measure the characteristics of the suction side as well as the blowing side. The values in catalog show the characteristics of the blowing side.

Operation Principle of Measuring Device (in the case of blowing characteristics)

Principle of Measurement

Determine the internal capacity of the chamber so that the speed of the air inside the chamber becomes less than 1m/sec, and let the air inside the chamber become stationary and measure the static pressure of Room A (difference of atmospheric pressure with the static pressure:
(+) Impressing pressure; (-) suction pressure) and the pressure difference between the front and the back nozzles (for air volume), and by means of the computing section output the result on the coder.



Note: The supplementary blower is used for reducing the pipe resistance to 0.

Computation Formula

Air Volume= 60xcx / 4D2 2g / r Δ Pn (m^3/min)
But C= Flow coefficient (variable due to wind speed) of nozzle
D= diameter of nozzle
r= air density= 1.293 x 273 / 273+1 x P / 760Kg/m^3
(t=temperature °C, P=air pressure mmhg)
g=9.8m / sec^2
ΔPn=Nozzle differential pressure mm-H_2O
Stationary Pressure ΔP=PA-P
mm-H_2O (PA=Air pressure in chamber A P=Atmospheric pressure)
Conversion formula of Air Volume and Stationary Pressure
P(inch-H_2O)=0.0394P(mm-H_2O)

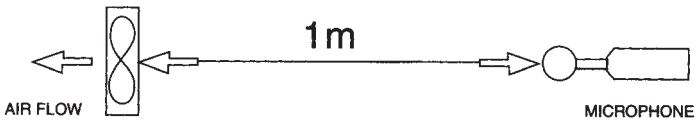
Q(CFM)=35.31Q (m^3/ min)
Q(l/S)=16.67Q (m^3/ min)

Guide to Research of Fan Motor

- **Computation of required Draft Volume:**

It becomes necessary to determine the draft volume when we force the equipment to be aircooled. Although it is advisable to obtain the air volume required for actual cooling by experiment, an approximate standard however, can be derived from the following formula:

Q=50 x HW / T... (1)
Q= Required Draft Volume m^3/ min
HW= hat value of heat source tw
ΔT= T2-T1
(T1= Air temperature at air inlet)
(T2= Air temperature at air outlet)
ΔT= Allowable temperature rise
It is safe to assume ΔT =8 °C, so from Formula (1)
Q= 6.25 x HW m^3/ min.



Example
Assuming Heat Value within Equipment=1kw
Temperature Rise within Equipment=8°C
Q= 6.25 m^3/ min

- **System impedance of Equipment**

In accordance with the Internal construction of the equipment to be cooled, the resistance will appear when passing air through the equipment.
This will cause reduction of stationary pressure during the ventilation and is called the system impedance.
Consequently, it becomes necessary for us to give stationary pressure value higher than the impedance for performing ventilation to the equipment.

System impedance can be given using the following formula:
ΔP=Reduced pressure (mm-H_2O)
Q=Air Volume (m^3/ min)
ΔP=KQn K5 Constant
n=Index to be determined by air flow
n=1: laminar flow
n=2: turbulent flow (normally n=2)
The constant K here cannot be determined unless measure it Physically equipment by equipment.

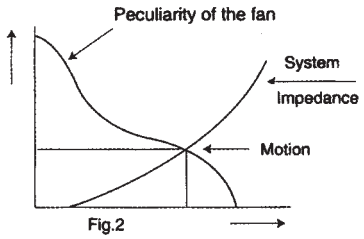
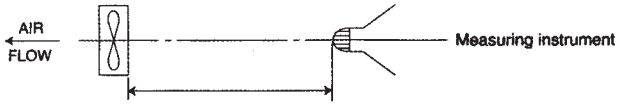


Fig.2

Selection of the Fan



The selection of fan is done in accordance with following steps:

a) Estimate the heat value (hw) of the heat source.
b) Determine the allowable temperature rise value ΔT.
c) Assume the approximate ventilation volume in accordance with Formula (1).
d) Assumption of system impedance based on the ventilation of internal equipment or past data.
e) Decide on the fan by referring to the Characteristic curve in Figure 2 from your catalog.
f) Determine the adaptability of the fan by physically installing it is the equipment and measure the air temperature rise value ΔT or draft volume Q. If draft volume Q is insufficient, it is caused by the high system impedance, so it advisable to replace it with a highter quality fan.

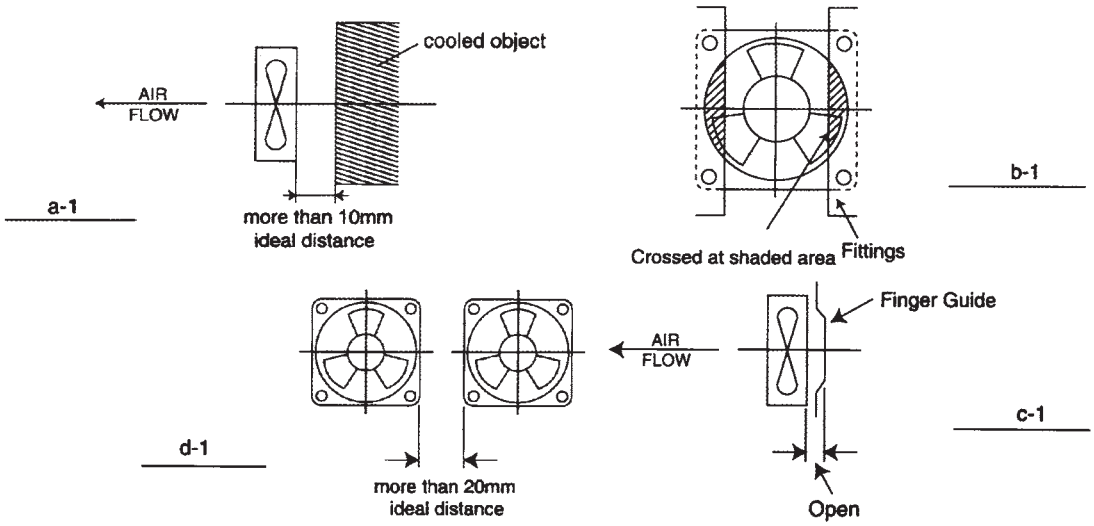
- **Measurement and measures against the Noises**

Measurement of Noises
Measure it at 1.0 meters from the maching plane (at the central line of the air inlet) according to JIS-B8330 (A characteristics)

- **Measures against Noise**

Although our fan motors are designed with special consideration of noises, sometime, it still can be affected by the user's machine design to a large extent, so your attention is drawn to the following points:

a. Keep some distance between the object to be cooled and the inlet of the fan (Figure a-1)
b. When fittings are used, pay attention not to cross each other with a spring (Figure b-1)
c. When more than two fans are used, please keep them apart (Figure c-1)
d. When finger guide is used, please keep it separated from the fan (we have kept some for this purpose).



AXIAL AC & BRUSHLESS DC FAN PART NUMBER CODE

FOR EXAMPLE: PART NO. 1238HA1BAT

12 Square/Round frame

38 Housing Thickness

H Motor Speed

A1 Rated Voltage

B Bearing Type

A Frame Type

T Connector Type

Square frame

20 x 20 mm	80 x 80 mm
30 x 30 mm	92 x 92 mm
40 x 40 mm	120 x 120 mm
50 x 50 mm	150 x 150 mm
60 x 60 mm	172 x 150 mm
	250 x 250 mm

Housing Thickness

7 mm	25 mm
10 mm	38 mm
15 mm	52 mm
20 mm	89 mm

Motor Speed
H: high speed
M: middle speed
L: low speed

Rated Voltage

A1:	110-120 VAC
A2:	220-240 VAC
A24:	24 VAC
D1:	12 VDC
D2:	24 VDC

Bearing Type
B: Ball bearing
S: Sleeve bearing

Frame Type
A: Aluminum in painting black
P: Plastic in black

Connector Type
T: two terminals
L: Lead wire