

# Improved Performance

## due to Model Change

Lower current consumption and low noise



ASFP4□



ASFP6□



ASEP8□



ASFP8□





ASFP9□






ASFP1□

# Fan Motor Selector Chart


## ■DC Fan motor

Appearance shape	ASFP4*7** □40 × 10t						ASFP6*3** □60 × 25t					
												
Item	Standard speed		Middle speed		Low speed		Standard speed		Middle speed		Low speed	
Rated voltage	5 V DC	12 V DC	5 V DC	12 V DC	5 V DC	12 V DC	12 V DC	24 V DC	12 V DC	24 V DC	12 V DC	24 V DC
Rated current [mA] (Max.)	270	90	200	80	130	60	140	80	110	60	80	50
Rated power consumption [W] (Max.)	1.35	1.08	1.00	0.96	0.65	0.72	1.68	1.92	1.32	1.44	0.96	1.20
Rotation speed [min. <sup>-1</sup> ] (Ave.)	7,500		6,500		5,500		4,000		3,500		3,000	
Max. static pressure [Pa] (Ave.)	50.0		37.0		27.5		46.0		35.0		26.0	
Max. air flow [m <sup>3</sup> /min.] (Ave.)	0.19		0.16		0.14		0.56		0.48		0.41	
Noise [dB(A)] (Ave.)	29.5		24.5		21.5		27.5		23.5		21.0	
Weight [g]	16						65					
Operating voltage range	For rated 5 V: 4.5 to 5.5 V DC, for rated 12 V: 10.2 to 13.8 V DC						For rated 12 V: 6 to 13.8 V DC, for rated 24 V: 12 to 27.6 V DC					
Page	P.5						P.6					

Appearance shape	ASFP8*3** □80 × 25t						ASFP9*3** □92 × 25t					
												
Item	Standard speed		Middle speed		Low speed		Standard speed		Middle speed		Low speed	
Rated voltage	12 V DC	24 V DC	12 V DC	24 V DC	12 V DC	24 V DC	12 V DC	24 V DC	12 V DC	24 V DC	12 V DC	24 V DC
Rated current [mA] (Max.)	180	90	80	50	60	40	170	90	130	70	90	50
Rated power consumption [W] (Max.)	2.16	2.16	0.96	1.20	0.72	0.96	2.04	2.16	1.56	1.68	1.08	1.20
Rotation speed [min. <sup>-1</sup> ] (Ave.)	3,100		2,300		2,000		2,750		2,400		2,050	
Max. static pressure [Pa] (Ave.)	37.5		21.5		16.5		36.2		29.0		21.5	
Max. air flow [m <sup>3</sup> /min.] (Ave.)	1.17		0.86		0.74		1.28		1.13		0.95	
Noise [dB(A)] (Ave.)	30.0		22.0		19.0		29.0		25.0		22.0	
Weight [g]	80						102					
Operating voltage range	For rated 12 V: 6 to 13.8 V DC, for rated 24 V: 12 to 27.6 V DC						For rated 12 V: 6 to 13.8 V DC, for rated 24 V: 12 to 27.6 V DC					
Page	P.7						P.8					

Appearance shape	ASFP1*3** □120 × 25t					
						
Item	Standard speed		Middle speed		Low speed	
Rated voltage	12 V DC	24 V DC	12 V DC	24 V DC	12 V DC	24 V DC
Rated current [mA] (Max.)	380	190	200	100	140	70
Rated power consumption [W] (Max.)	4.56	4.56	2.40	2.40	1.68	1.68
Rotation speed [min. <sup>-1</sup> ] (Ave.)	2,500		1,900		1,600	
Max. static pressure [Pa] (Ave.)	48.0		28.5		21.0	
Max. air flow [m <sup>3</sup> /min.] (Ave.)	2.58		1.90		1.63	
Noise [dB(A)] (Ave.)	37.0		30.0		26.5	
Weight [g]	165					
Operating voltage range	For rated 12 V: 7 to 13.8 V DC, for rated 24 V: 12 to 27.6 V DC					
Page	P.9					

## ■AC Fan motor

Appearance shape	ASEP8021* □80 × 25t	
		
Rated voltage	100 V	115 V
Frequency	50 / 60 Hz	
Rated power consumption [W]	8.0 / 6.5	8.0 / 6.5
Rated current [mA] (Max.)	130 / 110	110 / 90
Locked current [mA] (Max.)	150 / 140	130 / 120
Rotation speed [min. <sup>-1</sup> ] (Ave.)	2,700 / 3,200	
Max. air flow [m <sup>3</sup> /min.] (Ave.)	0.57 / 0.68	
Max. static pressure [Pa] (Ave.)	39.0 / 55.0	
Noise [dB(A)] (Ave.)	24.0 / 31.0	
Operating voltage range [V]	Rated voltage ±10%	
Weight [kg]	0.24	
Page	P.10	

# Product Types

## ■DC Fan motor

Size	Speed	Rated voltage	Part No.
□40 × 10	Standard speed	5 V DC	ASFP40770
	Middle speed		ASFP42770
	Low speed		ASFP44770
	Standard speed	12 V DC	ASFP40771
	Middle speed		ASFP42771
	Low speed		ASFP44771
□60 × 25	Standard speed	12 V DC	ASFP60371
	Middle speed		ASFP62371
	Low speed		ASFP64371
	Standard speed	24 V DC	ASFP60372
	Middle speed		ASFP62372
	Low speed		ASFP64372
□80 × 25	Standard speed	12 V DC	ASFP80371
	Middle speed		ASFP82371
	Low speed		ASFP84371
	Standard speed	24 V DC	ASFP80372
	Middle speed		ASFP82372
	Low speed		ASFP84372
□92 × 25	Standard speed	12 V DC	ASFP90371
	Middle speed		ASFP92371
	Low speed		ASFP94371
	Standard speed	24 V DC	ASFP90372
	Middle speed		ASFP92372
	Low speed		ASFP94372
□120 × 25	Standard speed	12 V DC	ASFP10371
	Middle speed		ASFP12371
	Low speed		ASFP14371
	Standard speed	24 V DC	ASFP10372
	Middle speed		ASFP12372
	Low speed		ASFP14372

Note: A super speed type (except ASFP4 series) and type with sensor can be special ordered.  
(For details, please refer the "Functions of DC Fan Sensor" on page 12.)

## ■AC Fan motor

Size	Speed	Rated voltage	Part No.
□80 × 25	Standard speed	100 V AC	ASEP80211
		115 V AC	ASEP80212

## ■Accessories

### 1. Fan guard (for DC and AC)

Product name	Standards	Part No.
Fan guard for □40	Recognized by UL/CSA	ASFN48001
Fan guard for □60	Recognized by UL/CSA	ASFN68001
Fan guard for □80	Recognized by UL/CSA	ASFN88001
Fan guard for □80	Compliant with Electrical Appliance and Material Safety Law	ASEN88001
Fan guard for □92	Recognized by UL/CSA	ASFN98001
Fan guard for □92	Compliant with Electrical Appliance and Material Safety Law	ASEN98001
Fan guard for □120	Recognized by UL/CSA	ASFN18001

### 2. Fan motor filter (for DC and AC)

Product name	Part No.
Fan motor filter for □60	ASEN68002
Fan motor filter for □80	ASEN88002
Fan motor filter for □92	ASEN98002
Fan motor filter for □120	ASEN18002

# Ordering Information

## ■DC type

ASFP 6 0 3 7 1

### Size

1: □120

4: □40 (Cannot select super speed type)

6: □60

8: □80

9: □92

### Speed

0: Standard

2: Middle

4: Low

### Case thickness

3: 25t (□60, □80, □92, □120)

7: 10t (□40)

### Sensor when blocked

7: Without sensor

9: With sensor

### Rated voltage

0: 5 V DC (□40)

1: 12 V DC (all types)

2: 24 V DC (□60, □80, □92 and □120)

For the DC type, a super speed type (except ASFP4 series) and type with sensor can be special ordered.

## ■AC type

ASEP 8 0 2 1 1

### Size

8: □80

### Speed

0: Standard

### Case thickness

2: 25t (□80)

### Input type

1: Lead wire type

### Rated voltage

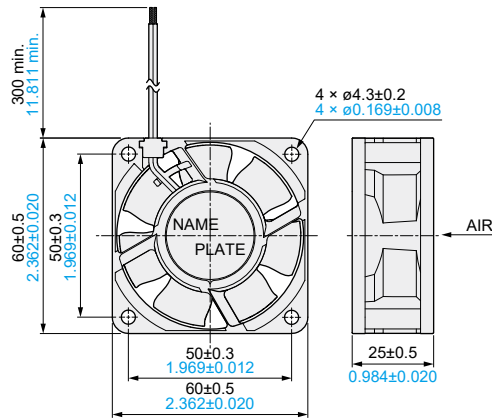
1: 100 V AC

2: 115 V AC

\*Depending on the combination, not all specifications can be met. For details, please consult us.



## ■ Dimensions (mm in)



## ■ Rating

### 1. Standard speed

Part No.	Rated voltage [V]	Rated power consumption [W] Max. / Ave.	Rated current [mA] Max. / Ave.	Rotation speed [min. <sup>-1</sup> ] Min. / Ave.	Max. air flow [m <sup>3</sup> /min.] Min. / Ave.	Max. static pressure [Pa] Min. / Ave.	Noise [dB] Max. / Ave. (Note 1)	Weight [g]
ASFP60371	12	1.68 / 1.20	140 / 100	3,800 / 4,000	0.51 / 0.56	39.0 / 46.0	32.5 / 27.5	65
ASFP60372	24	1.92 / 1.44	80 / 60					

### 2. Middle speed

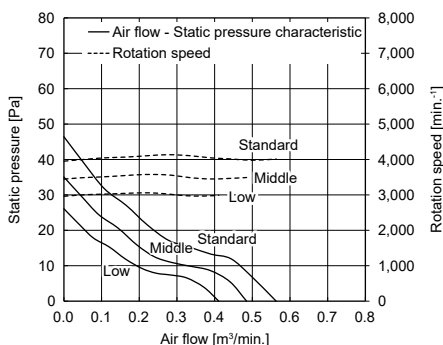
Part No.	Rated voltage [V]	Rated power consumption [W] Max. / Ave.	Rated current [mA] Max. / Ave.	Rotation speed [min. <sup>-1</sup> ] Min. / Ave.	Max. air flow [m <sup>3</sup> /min.] Min. / Ave.	Max. static pressure [Pa] Min. / Ave.	Noise [dB] Max. / Ave. (Note 1)	Weight [g]
ASFP62371	12	1.32 / 0.96	110 / 80	3,300 / 3,500	0.44 / 0.48	29.0 / 35.0	28.5 / 23.5	65
ASFP62372	24	1.44 / 0.96	60 / 40					

### 3. Low speed

Part No.	Rated voltage [V]	Rated power consumption [W] Max. / Ave.	Rated current [mA] Max. / Ave.	Rotation speed [min. <sup>-1</sup> ] Min. / Ave.	Max. air flow [m <sup>3</sup> /min.] Min. / Ave.	Max. static pressure [Pa] Min. / Ave.	Noise [dB] Max. / Ave. (Note 1)	Weight [g]
ASFP64371	12	0.96 / 0.72	80 / 60	2,800 / 3,000	0.37 / 0.41	21.0 / 26.0	26.0 / 21.0	65
ASFP64372	24	1.20 / 0.72	50 / 30					

Note: Noise levels are based on measurements taken at a distance of 1 m 3.281 ft from the front of the fan.

## ■ Data (air flow - static pressure characteristic)



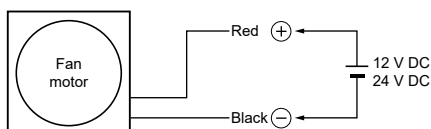
## ■ Materials used

Frame: plastic  
 Propeller: plastic  
 Bearings: ball bearings  
 Lead wires: UL3385 and AWG26

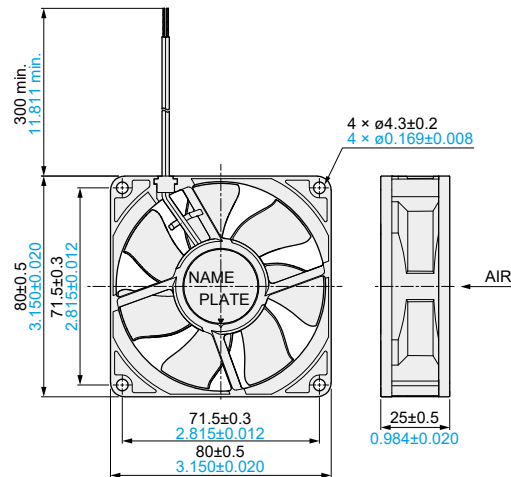
## ■ Specifications

Ambient temperature	-10 to +60 °C +14 to +140 °F
Humidity resistance test conditions	+85 °C +185 °F, 95 % RH, 240 hours
Temperature rise	Coil surface: Max. +50 °C +122 °F (Rated voltage, by resistive method) External surface: Max. +20 °C +68 °F (Rated voltage, by thermocouple method)
Breakdown voltage	500 V AC for 1 min. (between lead wire and external housing)
Insulation resistance	Min. 10 MΩ (at 500 V DC)
Frequency	10 to 55 Hz
Double amplitude width	0.75 mm 0.030 in
Applied direction	X, Y and Z directions
Applied time	10 min. in each direction
Lead wire tensile strength	9.8 N, single wires did not break at 15 seconds
Fan blockage	No coil burnout even after blockage of 72 hours at rated voltage.
Reverse polarity power connection	No damage even after reverse polarity connection for short time at rated voltage.
Expected life	40,000 hours at +60 °C +140 °F (Working life, at continuous powering at rated voltage, assumes a value of +15 % or higher current and -15 % or lower rotation speed.)

## ■ Wiring diagram



## ■ Dimensions (mm in)



## ■ Rating

### 1. Standard speed

Part No.	Rated voltage [V]	Rated power consumption [W] Max. / Ave.	Rated current [mA] Max. / Ave.	Rotation speed [min. <sup>-1</sup> ] Min. / Ave.	Max. air flow [m <sup>3</sup> /min.] Min. / Ave.	Max. static pressure [Pa] Min. / Ave.	Noise [dB] Max. / Ave. (Note 1)	Weight [g]
ASFP80371	12	2.16 / 1.68	180 / 140	2,900 / 3,100	1.07 / 1.17	32.0 / 37.5	35.0 / 30.0	80
ASFP80372	24	2.16 / 1.92	90 / 80					

### 2. Middle speed

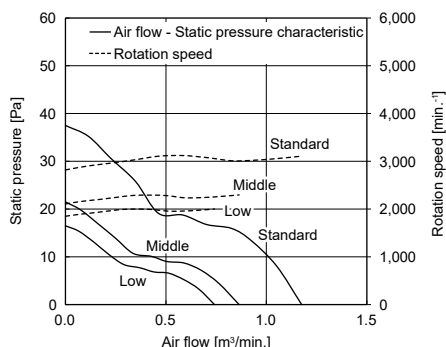
Part No.	Rated voltage [V]	Rated power consumption [W] Max. / Ave.	Rated current [mA] Max. / Ave.	Rotation speed [min. <sup>-1</sup> ] Min. / Ave.	Max. air flow [m <sup>3</sup> /min.] Min. / Ave.	Max. static pressure [Pa] Min. / Ave.	Noise [dB] Max. / Ave. (Note 1)	Weight [g]
ASFP82371	12	0.96 / 0.72	80 / 60	2,100 / 2,300	0.76 / 0.86	17.0 / 21.5	27.0 / 22.0	80
ASFP82372	24	1.20 / 0.96	50 / 40					

### 3. Low speed

Part No.	Rated voltage [V]	Rated power consumption [W] Max. / Ave.	Rated current [mA] Max. / Ave.	Rotation speed [min. <sup>-1</sup> ] Min. / Ave.	Max. air flow [m <sup>3</sup> /min.] Min. / Ave.	Max. static pressure [Pa] Min. / Ave.	Noise [dB] Max. / Ave. (Note 1)	Weight [g]
ASFP84371	12	0.72 / 0.60	60 / 50	1,800 / 2,000	0.65 / 0.74	12.5 / 16.5	24.0 / 19.0	80
ASFP84372	24	0.96 / 0.72	40 / 30					

Note: Noise levels are based on measurements taken at a distance of 1 m 3.281 ft from the front of the fan.

## ■ Data (air flow - static pressure characteristic)



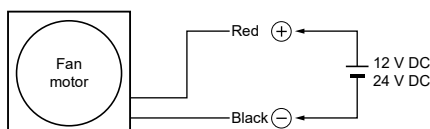
## ■ Materials used

Frame: plastic  
 Propeller: plastic  
 Bearings: ball bearings  
 Lead wires: UL3385 and AWG26

## ■ Specifications

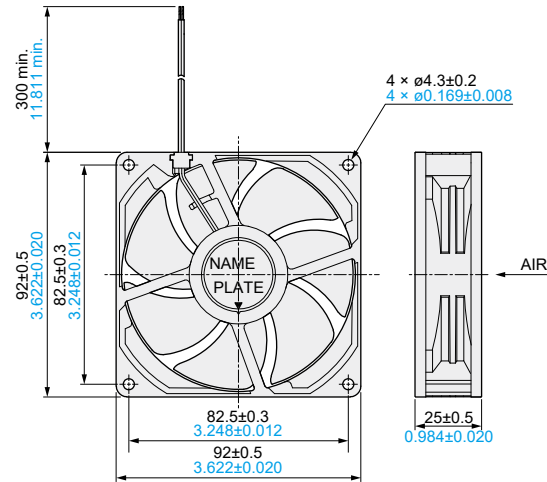
Ambient temperature	-10 to +60 °C +14 to +140 °F	
Humidity resistance test conditions	+85 °C +185 °F, 95 % RH, 240 hours	
Temperature rise	Coil surface: Max. +50 °C +122 °F (Rated voltage, by resistive method) External surface: Max. +20 °C +68 °F (Rated voltage, by thermocouple method)	
Breakdown voltage	500 V AC for 1 min. (between lead wire and external housing)	
Insulation resistance	Min. 10 MΩ (at 500 V DC)	
Vibration resistance	Frequency	10 to 55 Hz
	Double amplitude width	0.75 mm 0.030 in
	Applied direction	X, Y and Z directions
Applied time	10 min. in each direction	
Lead wire tensile strength	9.8 N, single wires did not break at 15 seconds	
Fan blockage	No coil burnout even after blockage of 72 hours at rated voltage.	
Reverse polarity power connection	No damage even after reverse polarity connection for short time at rated voltage.	
Expected life	40,000 hours at +60 °C +140 °F (Working life, at continuous powering at rated voltage, assumes a value of +15 % or higher current and -15 % or lower rotation speed.)	

## ■ Wiring diagram





## ■Dimensions (mm in)



## ■Rating

### 1. Standard speed

Part No.	Rated voltage [V]	Rated power consumption [W] Max. / Ave.	Rated current [mA] Max. / Ave.	Rotation speed [min. <sup>-1</sup> ] Min. / Ave.	Max. air flow [m <sup>3</sup> /min.] Min. / Ave.	Max. static pressure [Pa] Min. / Ave.	Noise [dB] Max. / Ave. (Note 1)	Weight [g]
ASFP90371	12	2.04 / 1.68	170 / 140	2,550 / 2,750	1.15 / 1.28	30.0 / 36.2	34.0 / 29.0	102
ASFP90372	24	2.16 / 1.68	90 / 70					

### 2. Middle speed

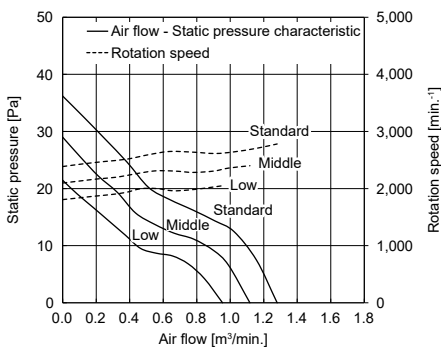
Part No.	Rated voltage [V]	Rated power consumption [W] Max. / Ave.	Rated current [mA] Max. / Ave.	Rotation speed [min. <sup>-1</sup> ] Min. / Ave.	Max. air flow [m <sup>3</sup> /min.] Min. / Ave.	Max. static pressure [Pa] Min. / Ave.	Noise [dB] Max. / Ave. (Note 1)	Weight [g]
ASFP92371	12	1.56 / 1.20	130 / 100	2,200 / 2,400	1.00 / 1.13	24.0 / 29.0	30.0 / 25.0	102
ASFP92372	24	1.68 / 1.20	70 / 50					

### 3. Low speed

Part No.	Rated voltage [V]	Rated power consumption [W] Max. / Ave.	Rated current [mA] Max. / Ave.	Rotation speed [min. <sup>-1</sup> ] Min. / Ave.	Max. air flow [m <sup>3</sup> /min.] Min. / Ave.	Max. static pressure [Pa] Min. / Ave.	Noise [dB] Max. / Ave. (Note 1)	Weight [g]
ASFP94371	12	1.08 / 0.84	90 / 70	1,850 / 2,050	0.80 / 0.95	17.0 / 21.5	27.0 / 22.0	102
ASFP94372	24	1.20 / 0.96	50 / 40					

Note: Noise levels are based on measurements taken at a distance of 1 m 3.281 ft from the front of the fan.

## ■Data (air flow - static pressure characteristic)



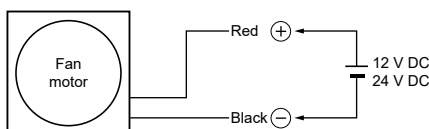
## ■Materials used

Frame: plastic  
 Propeller: plastic  
 Bearings: ball bearings  
 Lead wires: UL3385 and AWG26

## ■Specifications

Ambient temperature	-10 to +60 °C +14 to +140 °F
Humidity resistance test conditions	+85 °C +185 °F, 95 % RH, 240 hours
Temperature rise	Coil surface: Max. +50 °C +122 °F (Rated voltage, by resistive method) External surface: Max. +20 °C +68 °F (Rated voltage, by thermocouple method)
Breakdown voltage	500 V AC for 1 min. (between lead wire and external housing)
Insulation resistance	Min. 10 MΩ (at 500 V DC)
Frequency	10 to 55 Hz
Double amplitude width	0.75 mm 0.030 in
Applied direction	X, Y and Z directions
Applied time	10 min. in each direction
Lead wire tensile strength	9.8 N, single wires did not break at 15 seconds
Fan blockage	No coil burnout even after blockage of 72 hours at rated voltage.
Reverse polarity power connection	No damage even after reverse polarity connection for short time at rated voltage.
Expected life	40,000 hours at +60 °C +140 °F (Working life, at continuous powering at rated voltage, assumes a value of +15 % or higher current and -15 % or lower rotation speed.)

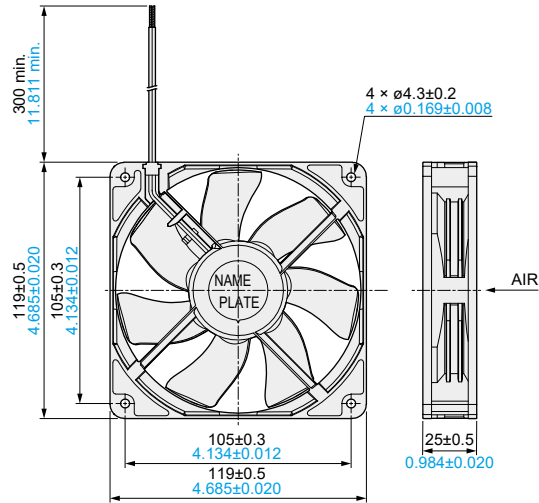
## ■Wiring diagram







## Dimensions (mm in)



## Rating

### 1. Standard speed

Part No.	Rated voltage [V]	Rated power consumption [W] Max. / Ave.	Rated current [mA] Max. / Ave.	Rotation speed [min. <sup>-1</sup> ] Min. / Ave.	Max. air flow [m <sup>3</sup> /min.] Min. / Ave.	Max. static pressure [Pa] Min. / Ave.	Noise [dB] Max. / Ave. (Note 1)	Weight [g]
ASFP10371	12	4.56 / 2.88	380 / 240	2,300 / 2,500	2.26 / 2.58	39.5 / 48.0	42.0 / 37.0	165
ASFP10372	24	4.56 / 2.64	190 / 110					

### 2. Middle speed

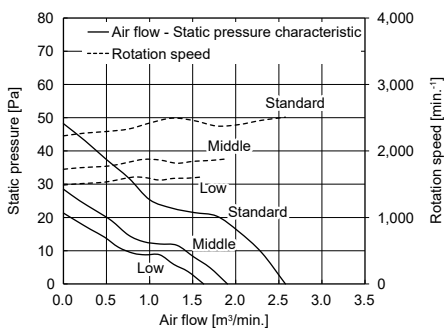
Part No.	Rated voltage [V]	Rated power consumption [W] Max. / Ave.	Rated current [mA] Max. / Ave.	Rotation speed [min. <sup>-1</sup> ] Min. / Ave.	Max. air flow [m <sup>3</sup> /min.] Min. / Ave.	Max. static pressure [Pa] Min. / Ave.	Noise [dB] Max. / Ave. (Note 1)	Weight [g]
ASFP12371	12	2.40 / 1.56	200 / 130	1,700 / 1,900	1.65 / 1.90	21.5 / 28.5	35.0 / 30.0	165
ASFP12372	24	2.40 / 1.44	100 / 60					

### 3. Low speed

Part No.	Rated voltage [V]	Rated power consumption [W] Max. / Ave.	Rated current [mA] Max. / Ave.	Rotation speed [min. <sup>-1</sup> ] Min. / Ave.	Max. air flow [m <sup>3</sup> /min.] Min. / Ave.	Max. static pressure [Pa] Min. / Ave.	Noise [dB] Max. / Ave. (Note 1)	Weight [g]
ASFP14371	12	1.68 / 1.08	140 / 90	1,400 / 1,600	1.34 / 1.63	14.5 / 21.0	31.5 / 26.5	165
ASFP14372	24	1.68 / 0.96	70 / 40					

Note: Noise levels are based on measurements taken at a distance of 1 m 3.281 ft from the front of the fan.

## Data (air flow - static pressure characteristic)



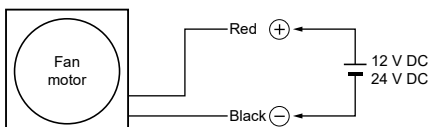
## Materials used

Frame: plastic  
 Propeller: plastic  
 Bearings: ball bearings  
 Lead wires: UL3385 and AWG26

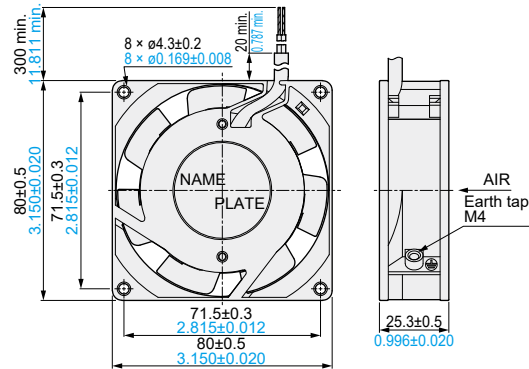
## Specifications

Ambient temperature	-10 to +60 °C +14 to +140 °F	
Humidity resistance test conditions	+85 °C +185 °F, 95 % RH, 240 hours	
Temperature rise	Coil surface: Max. +50 °C +122 °F (Rated voltage, by resistive method) External surface: Max. +20 °C +68 °F (Rated voltage, by thermocouple method)	
Breakdown voltage	500 V AC for 1 min. (between lead wire and external housing)	
Insulation resistance	Min. 10 MΩ (at 500 V DC)	
Vibration resistance	Frequency	10 to 55 Hz
	Double amplitude width	0.75 mm 0.030 in
	Applied direction	X, Y and Z directions
Applied time	10 min. in each direction	
Lead wire tensile strength	9.8 N, single wires did not break at 15 seconds	
Fan blockage	No coil burnout even after blockage of 72 hours at rated voltage.	
Reverse polarity power connection	No damage even after reverse polarity connection for short time at rated voltage.	
Expected life	40,000 hours at +60 °C +140 °F (Working life, at continuous powering at rated voltage, assumes a value of +15 % or higher current and -15 % or lower rotation speed.)	

## Wiring diagram



## ■ Dimensions (mm in)



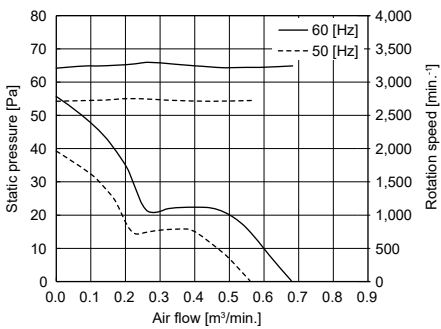
## ■ Rating

### 1. Lead wire type standard speed

Part No.	Rated voltage [V]	Frequency [Hz]	Rated power consumption [W] Max. / Ave.	Rated current [mA] Max. / Ave.	Locked current [mA] Max. / Ave.	Rotation speed [min. <sup>-1</sup> ] Min. / Ave.	Max. air flow [m <sup>3</sup> /min.] Min. / Ave.	Max. static pressure [Pa] Min. / Ave.	Noise [dB] Max. / Ave. (Note 1)	Operating voltage range (V) [%]	Weight [kg]
ASEP80211	100	50	8.8 / 8.0	130 / 110	150 / 120	2,500 / 2,700	0.52 / 0.57	34.0 / 39.0	29.0 / 24.0 (34.0 / 29.0)	±10	0.24
		60	7.15 / 6.5	110 / 90	140 / 110	3,000 / 3,200	0.63 / 0.68	48.0 / 55.0	36.0 / 31.0 (41.0 / 36.0)		
ASEP80212	115	50	8.8 / 8.0	110 / 93	130 / 100	2,500 / 2,700	0.52 / 0.57	34.0 / 39.0	29.0 / 24.0 (34.0 / 29.0)		
		60	7.15 / 6.5	90 / 77	120 / 90	3,000 / 3,200	0.63 / 0.68	48.0 / 55.0	36.0 / 31.0 (41.0 / 36.0)		

Note: Noise level was measured at a distance of 1 m 3.281 ft from side of fan. Values in brackets were measured at a distance of 1 m 3.281 ft from front of fan.

## ■ Data (air flow - static pressure characteristic)



## ■ Materials used

Frame: aluminum alloy die-casting  
 Propeller: plastic  
 Bearings: ball bearings  
 Lead wires: UL3266 and AWG22  
 Label: black base

## ■ Specifications

Ambient temperature	-10 to +60 °C +14 to +140 °F	
Ambient humidity	15 to 85 % RH	
Breakdown voltage	1,500 V AC for 1 min. (between charging section and frame)	
Insulation resistance	Min. 100 MΩ (at 500 V DC megger) (between charging section and frame)	
Insulation class	UL: A class	
Vibration resistance	Frequency	10 to 55 Hz
	Double amplitude width	0.75 mm 0.030 in
	Applied direction	X, Y and Z directions
Applied time	10 min. in each direction	
Protection	Impedance protected	
Mean life	100,000 hours at +25 °C +77 °F (Working life, at continuous powering at rated voltage, assumes a value of +15 % or higher current and -15 % or lower rotation speed.)	

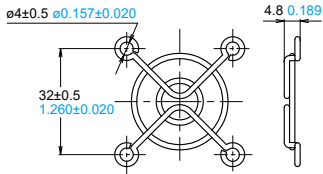
# Accessories

## ■ Dimensions (mm in)

### 1. Fan guard

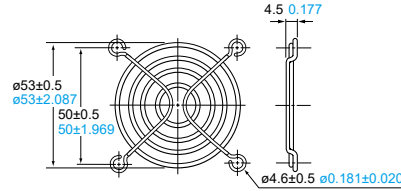
#### ASFN48001

Recognized for □40 by UL/CSA  
Material used: steel



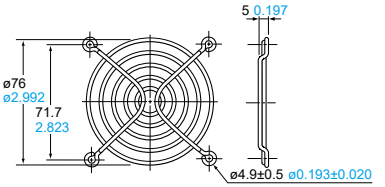
#### ASFN68001

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Material used: steel



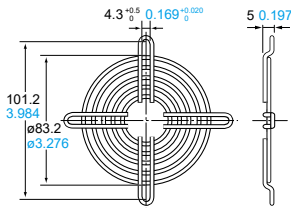
#### ASFN88001

Recognized for □80 by UL/CSA  
Material used: steel



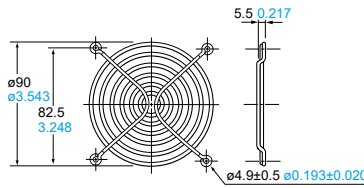
#### ASEN88001

For □80 by Electrical Appliance and  
Material Safety Law  
Material used: steel



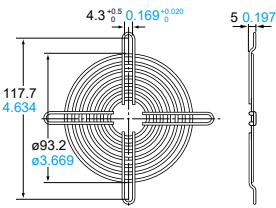
#### ASFN98001

Recognized for □92 by UL/CSA  
Material used: steel



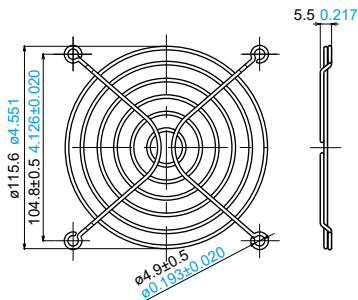
#### ASEN98001

For □92 by Electrical Appliance and  
Material Safety Law  
Material used: steel



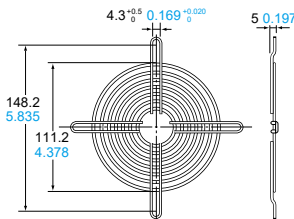
#### ASFN18001

Recognized for □120 by UL/CSA  
Material used: steel



#### ASEN18001

For □120 by Electrical Appliance and  
Material Safety Law  
Material used: steel



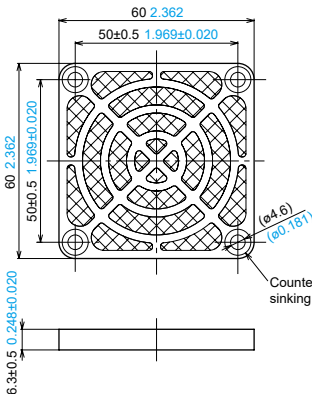
### 2. Fan motor filter



(ASEN18002)

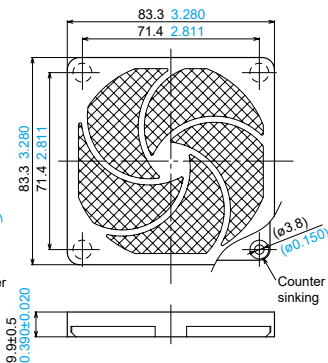
#### ASEN68002

For □60



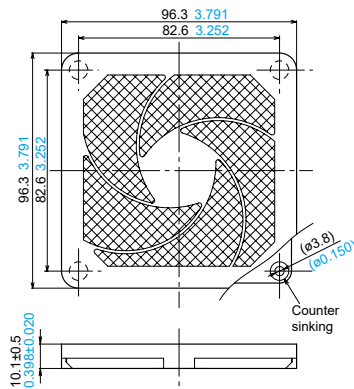
#### ASEN88002

For □80



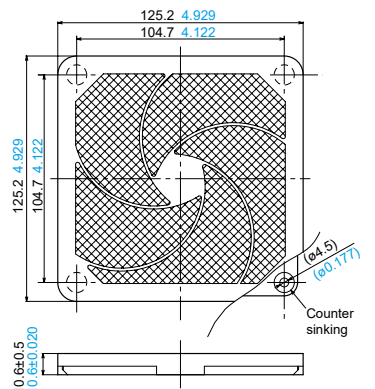
#### ASEN98002

For □92



#### ASEN18002

For □120



\*Non-indicated tolerance is  $\pm 1 \pm 0.039$ .

# Functions of DC Fan Sensor

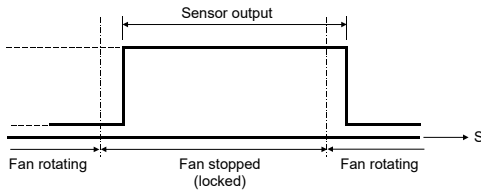
## ■DC Fan sensor

If the fan stops as a result of forced external restraint, a signal will be generated to indicate that there is a problem. This signal can be used to control an external warning circuit in order to help prevent the device from overheating.

Although there are various detection methods for this sensor, we employ the method that uses a logic circuit.

### 1. Lock sensor specifications

Output waveform

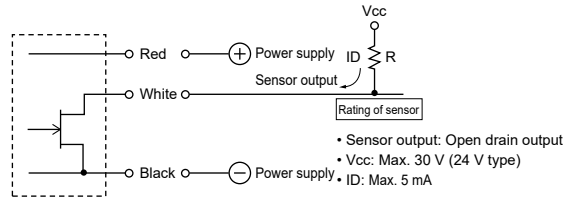
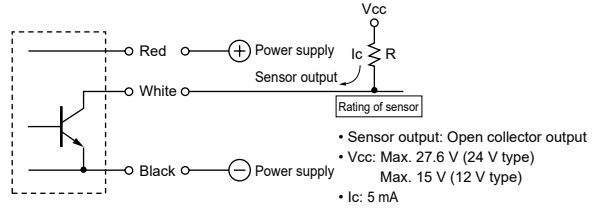


Notes: 1) Output may be high for approximately 0.5 seconds when power is turned on.

2): The continually high output waveform type when fan is stopped (locked) is standard.

Output waveform type that corresponds to the rotation frequency during fan rotation are available by special order. Please inquire for details.

### 2. Sensor output circuit



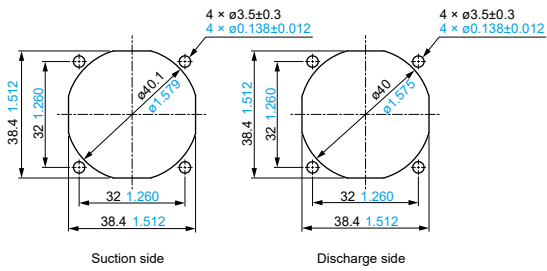
Notes: 1) Set the resistance value (R) so that the sensor circuit current does not exceed 5 mA. Exceeding the values above may lead to IC damage.

2) Open drain output only applies to ASFP1 series 24 V type.

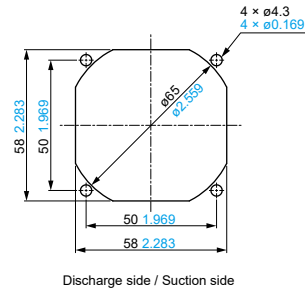
# Mounting Hole Dimensions

## ■ For DC Fan motor

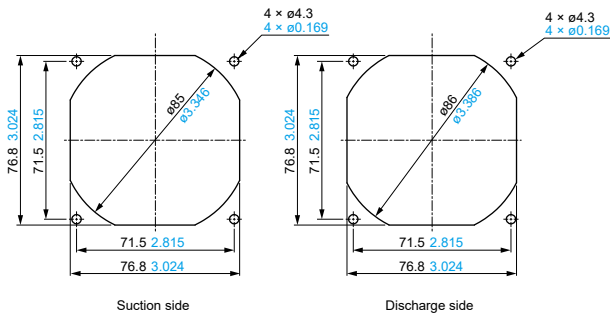
### 1. □40 series



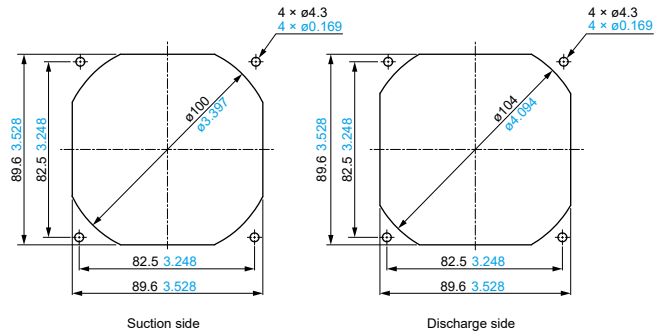
### 2. □60 series



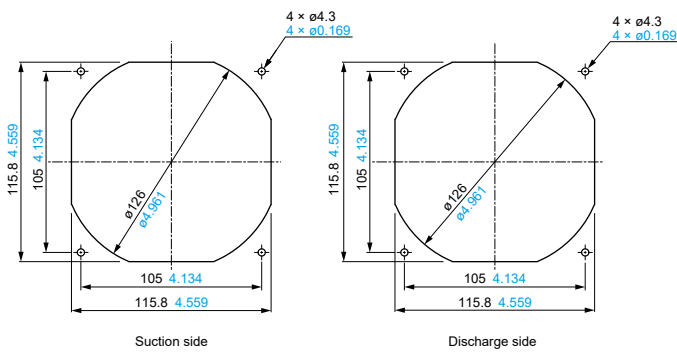
### 3. □80 series



### 4. □92 series

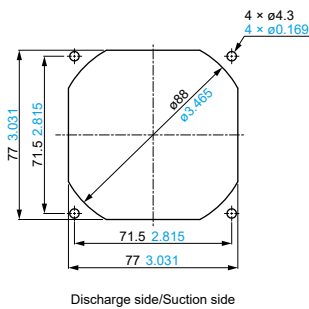


### 5. □120 series



## ■ For AC Fan motor

### 1. □80 series



\*Non-indicated tolerance is  $\pm 0.5 \pm 0.020$ .

# Cautions For Use

## Cautions for Safety Please observe the following in order to prevent accidents and injury.

Be sure to read the cautions for use the product correctly before installing, operating, maintaining and inspecting the product.

Be sure to master all aspects of the device including safety and cautions.

**Warning** Cases in which a user could die or undergo serious injury due to incorrect handling.

**Caution** Cases in which a user could undergo serious injury or property could be damaged.

### Cautions

- Please employ a protective device if there is a possibility of the device overheating when the fan stops.
- Do not touch the blades when they are rotating as injury may result.
- Be sure to ground the device to prevent the possibility of electrocution. (only applies to AC fan motors)
- Do not touch the terminals when the device is powered as you may be electrocuted. (only applies to AC fan motors)

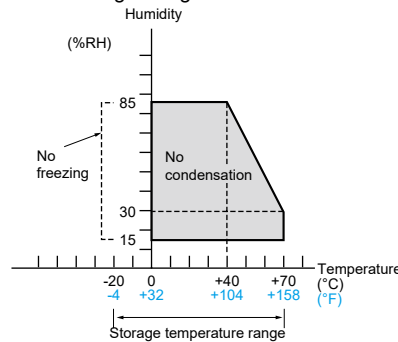
### ■ DC Fan motor

1. Do not reverse-connect the power supply. Although nothing adverse will occur if the rated voltage is connected in reverse for a short time period, the fan will not operate.

### ■ DC Fan motor and AC Fan motor

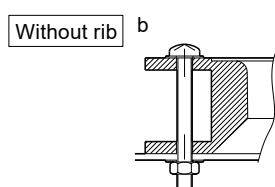
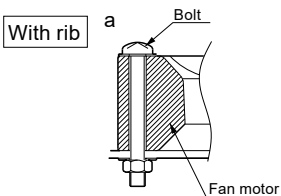
1. Since our fan motor employs precision ball bearings, due care should be taken not to apply any shock in handling.
2. Due to the bearing mechanism, the noise level will increase in proportion to the length of time the fan is used. Avoid use where the temperature is high or where there is a lot of dirt.
3. Do not allow substances such as oil and grease to get onto the plastic part of the fan body. Some oils and greases decompose and become altered at high temperatures. These can have an adverse effect if they contact the fan. Therefore, be very careful when handling these substances.
4. Do not apply unnecessary force to the internal parts when handling the product. Also, do not use a fan that has been dropped.
5. Installation  
Install according to the diagrams below.

6. Fan life is based on usage at room temperature (AC fan) and temperature +60 °C +140 °F. Please verify life under actual conditions, since life will depend on the frequency and duration of use, as well as the atmosphere in which it is used.
7. Transport and storage conditions  
The allowable specifications for environments suitable for transportation and storage are given below.



- No freezing between -20 to 0 °C -4 to +32 °F
- No condensation in the range above between 0 to +70 °C +32 to +158 °F

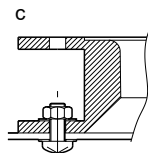
- 1) Condensation  
If the temperature is high and there is a lot of humidity, condensation will occur when the temperature suddenly changes. This should be avoided because it can cause degradation of the fan insulation.
- 2) Freezing  
At temperatures below 0 °C +32 °F moisture such as that caused by condensation will freeze and lead to problems such as lockage of the moving parts and operation lags. Be careful to prevent this from happening.
- 3) Low-temperature, low-humidity environments  
Do not leave the fan for a long period in an environment of low temperature and low humidity. Doing so may cause the plastic to become brittle.
- 4) When storing, avoid places of high temperature and high humidity or where corrosive gas is present.
- 5) Do not store the fan any longer than six months.



#### Recommended tightening torque

DC fan motor: Max. 0.67 N•m

AC fan motor: Max. 0.98 N•m



When there is no rib, we recommend securing as shown in Fig. c.

# Technical Information

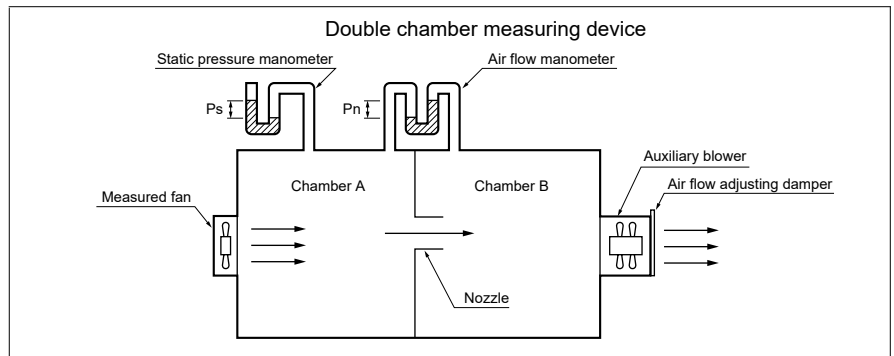
## Measurement of air flow and static pressure

It is very difficult to measure air flow and static pressure, and there are cases where measured values vary depending on measuring devices. There are two kinds of measuring methods; double chamber method provided by JIS and AMCA (Air Moving and Conditioning Association) and wind tunnel method. Our company adopted the double chamber method, and therefore we will explain it hereinafter.

The auxiliary blower (fan) adjusts an inner pressure by sucking out air. At this moment, as air flow and static pressure are varied by opening or closing the damper, each value is read on the manometer.

**Maximum air flow:** The damper opens, and the auxiliary blower sucks out air so that static pressure becomes zero. At this moment, the pressure differential (air flow differential pressure: Pn) in chambers A and B becomes maximum. The air flow whose Pn is measured and which is determined by using the equation shown at right is called the maximum air flow.

**Maximum static pressure:** When the damper is completely closed, the pressure in chamber A becomes maximum. At this moment, the pressure differential (static pressure: Ps) in chambers A against atmospheric pressure is called the maximum static pressure.



### 1. Equation

Air flow Q =

$$60 \times C \times \left(\frac{D}{2}\right)^2 \times \pi \times \sqrt{\frac{2g}{\gamma} \times (P_n \times 9.81)} \quad (\text{m}^3/\text{min})$$

In the above equation,

C: Flow coefficient of nozzle

D: Nozzle diameter (m)

$\gamma$ : Air density =

$$\left[1.293 \times \frac{273}{273+t} \times P \times 133.32\right] (\text{kg}/\text{m}^3)$$

t: Temperature (°C)

P: Atmospheric pressure (Pa)

g: 9.8 (m/s<sup>2</sup>)

Pn: Air flow differential pressure (Pa)

Ps: Static pressure (Pa)

### 2. Unit conversion table

#### 1) Air flow

m <sup>3</sup> /min	ℓ/s	CFM (ft <sup>3</sup> /min)
1	16.678	35.334
0.06	1	2.1186
0.0283	0.472	1

#### 2) Static pressure

Pa	mmH <sub>2</sub> O (mmAq)
1	0.10197
9.80665	1

## Noise measurement

Operation noise is measured by hanging the fan in midair. For the DC fan, noise is measured in dB (A) 1 m **3.281 ft** from the front of the suction opening. For the AC fan, noise is measured in dB (A) 1 m **3.281 ft** from the front and side of suction opening. The background noise complies with the section in JIS B8346 that states that it should be at least 10 dB lower than the target noise reading.

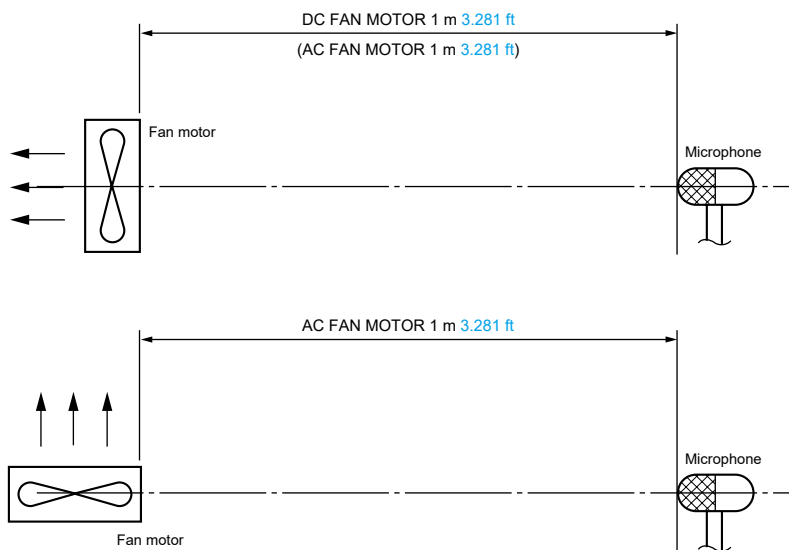
Our measurements were made in an anechoic chamber with a background noise of approximately 15 dB.

## Countermeasures against noise

Our fan motors are designed placing great importance on low noise. However, take into consideration the following points because noise is influenced depending on the mechanism design used.

- 1) Leave a space between the rear of the fan suction opening and the cooled object.
- 2) When using two or more fan motors, leave a space between the fans.

- 3) According to the mounting hole dimensions (page 13), design so that the mounting face and blades are not crossed.
- 4) Grease in the bearings will deteriorate and noise will gradually increase as the fan is used. The replacement period will differ depending on the conditions of use and allowable sound level. We recommend periodic replacement.

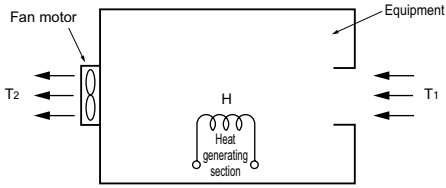




## Method of selecting fan motor

When selecting a fan motor, for normal use the following method is used.

- 1) Determine the amount of heat generated inside the equipment.
- 2) Decide the permissible temperature rise inside the equipment.



- 3) Calculate the volume of air necessary from Equation (1).

Equation (1)

$$Q = \frac{50 \times H}{T_2 - T_1} = \frac{50 \times H}{\Delta T} \text{ (m}^3\text{/min.)}$$

where

- Q: Air flow (m<sup>3</sup>/min.)
- H: Heat generated (kW)
- T<sub>1</sub>: Inlet air temperature (°C)
- T<sub>2</sub>: Exhaust air temperature (°C)
- ΔT: Temperature rise (°C)

- 4) Determine the system impedance of the equipment by means of Equation (2).

For the flow of air to the equipment, there is a loss of pressure due to the resistance to the flow of air from the components inside the equipment. This loss varies in accordance with the flow of air. This is referred to as the system impedance.

$$\Delta P = KQ^n \text{ .....Equation (2)}$$

where

- ΔP: Pressure drop (Pa)
- K: Constant determined for each equipment
- Q: Air flow (m<sup>3</sup>/min.)
- n: Coefficient determined by air flow

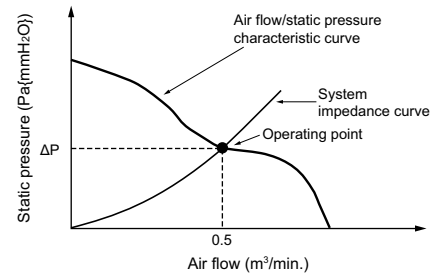
In this equation, it is generally considered that n = 2.

Also, it is difficult to calculate the value of K, since there is no good method other than an actual test measurement with the equipment.

[Example]

When the heat generated is 100 W with ΔT = +10 °C +50 °F, the following is the result.

$$Q = \frac{50 \times 0.1}{10} = 0.5 \text{ (m}^3\text{/min.)}$$



The intersection of the air flow/static pressure characteristic curve with the system impedance curve is called the operating point. This shows the condition with the fan motor operating.

In actuality, the system impedance is approximately assumed, a fan motor is decided from the catalogue, the temperature difference "ΔT" and air flow "Q" are measured, and from this data the fan is judged as suitable or not as the ordinary method. If the temperature difference "ΔT" is high indicating the air flow "Q" is not satisfactory, because the system impedance is higher than the assumed value, a change should be made to a fan motor with a greater air flow.

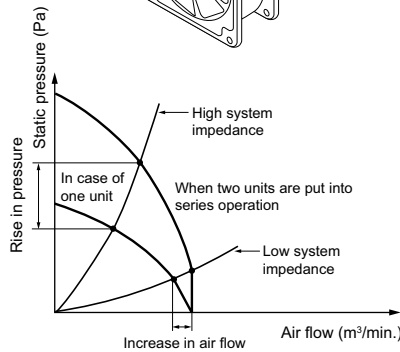
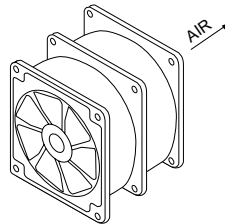
## Fan motor series/parallel operation

When one fan motor does not satisfy a sufficient cooling capacity;

Series operation: Higher pressure characteristic obtained. (Nearly double)

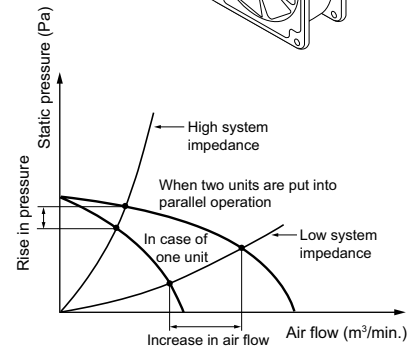
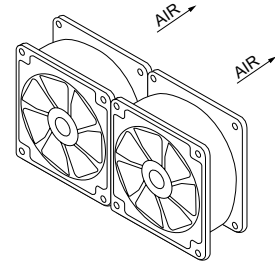
Parallel operation: Larger air flow characteristic obtained. (Nearly double)

### 1. In case of series operation



- In case of high system impedance, static pressure rises.
- In case of low system impedance, air flow slightly increases.

### 2. In case of parallel operation



- In case of low system impedance, air flow increases.
- In case of high system impedance, pressure slightly rises.

Please contact .....

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