








# Fan Motor Selector Chart

## DC FAN MOTOR

Type	ASFN3*7** 30 sq.×10t						ASFN4*7** 40 sq.×10t					
	<b>NEW</b> 						<b>NEW</b> 					
Item	Standard speed		Middle speed		Low speed		Standard speed		Middle speed		Low speed	
Rated operating voltage	5 V DC	12 V DC	5 V DC	12 V DC	5 V DC	12 V DC	5 V DC	12 V DC	5 V DC	12 V DC	5 V DC	12 V DC
Rated operating current, max. (mA)	240	120	200	100	130	90	210	100	160	100	100	90
Rated power consumption, max. (W)	1.20	1.44	1.00	1.20	0.65	1.08	1.05	1.20	0.80	1.20	0.50	1.08
Rotation speed, average (r/min)	10,500		9,000		7,500		6,500		5,500		4,500	
Max. static pressure, average (Pa)	54.0		37.0		29.0		46.0		34.0		24.0	
Max. air flow, average (m <sup>3</sup> /min)	0.110		0.091		0.078		0.17		0.15		0.12	
Noise, average (dB(A))	27		23		21		29		25		22	
Weight (g)	8.5						15.0					
Operating voltage range	For rated 5 V: 4.5 to 5.5 V DC, for rated 12 V: 6 to 13.8 V DC						For rated 5 V: 4.5 to 5.5 V DC, for rated 12 V: 10.2 to 13.8 V DC					
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Type	ASFN6*3** 60 sq.×25t						ASFN8*3** 80 sq.×25t					
	<b>NEW</b> 						<b>NEW</b> 					
Item	Standard speed		Middle speed		Low speed		Standard speed		Middle speed		Low speed	
Rated operating 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 operating current, max. (mA)	160	100	100	60	70	50	330	180	170	90	100	60
Rated power consumption, max. (W)	1.92	2.40	1.20	1.44	0.84	1.20	3.96	4.32	2.04	2.16	1.20	1.44
Rotation speed, average (r/min)	4,050		3,000		2,550		2,950		2,400		1,900	
Max. static pressure, average (Pa)	41.7		23.4		17.2		36.6		24.3		14.2	
Max. air flow, average (m <sup>3</sup> /min)	0.61		0.44		0.37		1.09		0.88		0.68	
Noise, average (dB(A))	30.5		22.5		19.0		32.5		27.0		22.0	
Weight (g)	65						80					
Operating voltage range	For rated 12 V: 6 to 13.8 V DC, for rated 24 V: 15 to 27.6 V DC						For rated 12 V: 6 to 13.8 V DC, for rated 24 V: 10 to 27.6 V DC					
Page	9						10					

Type	ASFN9*3** 92 sq.×25t						ASFN1*3** 120 sq.×25t						ASFN1*B** 120 sq.×38t					
	<b>NEW</b> 						<b>NEW</b> 						<b>NEW</b> 					
Item	Standard speed		Middle speed		Low speed		Standard speed		Middle speed		Low speed		Standard speed		Middle speed		Low speed	
Rated operating 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	12 V DC	24 V DC	12 V DC	24 V DC	12 V DC	24 V DC
Rated operating current, max. (mA)	250	130	180	90	120	80	520	290	250	130	160	100	720	400	520	280	350	200
Rated power consumption, max. (W)	3.00	3.12	2.16	2.16	1.44	1.92	6.24	6.96	3.00	3.12	1.92	2.40	8.64	9.60	6.24	6.72	4.20	4.80
Rotation speed, average (r/min)	2,350		2,000		1,700		2,500		1,900		1,600		2,950		2,650		2,300	
Max. static pressure, average (Pa)	27.6		20.0		14.4		40.9		24.8		17.9		68.1		55.9		44.1	
Max. air flow, average (m <sup>3</sup> /min)	1.38		1.17		0.98		2.85		2.15		1.80		3.07		2.75		2.37	
Noise, average (dB(A))	32.0		27.0		22.0		38.5		31.0		27.0		42.5		41.0		37.0	
Weight (g)	85						180						260					
Operating voltage range	For rated 12 V: 6 to 13.8 V DC, for rated 24 V: 10 to 27.6 V DC						For rated 12 V: 6 to 13.8 V DC, for rated 24 V: 10 to 27.6 V DC						For rated 12 V: 6 to 13.8 V DC, for rated 24 V: 10 to 27.6 V DC					
Page	11						12						13					

# Product Types

## DC FAN MOTOR

Size	Specifications	Rotation speed	Voltage	Part number
30 sq.×10	Ball bearing type	Standard Standard speed	5V DC	ASFN30770
		Middle speed		ASFN32770
		Low speed		ASFN34770
	Ball bearing type	Standard speed	12V DC	ASFN30771
		Middle speed		ASFN32771
		Low speed		ASFN34771
40 sq.×10	Ball bearing type	Standard speed	5V DC	ASFN40770
		Middle speed		ASFN42770
		Low speed		ASFN44770
	Ball bearing type	Standard speed	12V DC	ASFN40771
		Middle speed		ASFN42771
		Low speed		ASFN44771
60 sq.×25	Ball bearing type	Standard speed	12V DC	ASFN60371
		Middle speed		ASFN62371
		Low speed		ASFN64371
	Ball bearing type	Standard speed	24V DC	ASFN60372
		Middle speed		ASFN62372
		Low speed		ASFN64372
80 sq.×25	Ball bearing type	Standard speed	12V DC	ASFN80371
		Middle speed		ASFN82371
		Low speed		ASFN84371
	Ball bearing type	Standard speed	24V DC	ASFN80372
		Middle speed		ASFN82372
		Low speed		ASFN84372
92 sq.×25	Ball bearing type	Standard speed	12V DC	ASFN90371
		Middle speed		ASFN92371
		Low speed		ASFN94371
	Ball bearing type	Standard speed	24V DC	ASFN90372
		Middle speed		ASFN92372
		Low speed		ASFN94372
120 sq.×25	Ball bearing type	Standard speed	12V DC	ASFN10371
		Middle speed		ASFN12371
		Low speed		ASFN14371
	Ball bearing type	Standard speed	24V DC	ASFN10372
		Middle speed		ASFN12372
		Low speed		ASFN14372
120 sq.×38	Ball bearing type	Standard speed	12V DC	ASFN10B71
		Middle speed		ASFN12B71
		Low speed		ASFN14B71
	Ball bearing type	Standard speed	24V DC	ASFN10B72
		Middle speed		ASFN12B72
		Low speed		ASFN14B72

Notes: 1. Frames with ribs are standard (except 120 sq.×38). Casings without ribs can be special ordered.

2. A super speed type (except ASFN3 and ASFN4 Series), 48 V DC type (only ASFN1\*B\*\* Series), and type with sensor can be special ordered.

(For details, please refer the description of the DC fan sensor function on page 14.)

# ACCESSORIES

## 1. Plug Cord for AC Fan Motor

Product name	Specifications	Part number
Plug code for 2-terminal type	For inside of appliance, L = 1,000 mm	ASE51100
	Compliant with Electrical Appliance and Material Safety Law, L = 1,000 mm	ASE51107
	UL Standard, L = 1,000 mm	ASE51109

## 2. Fan Guard for DC and AC Fan Motor

Product name	Specifications	Part number
40 sq.	Recognized by UL/CSA	ASFN48001
60 sq.	Recognized by UL/CSA	ASFN68001
80 sq.	Recognized by UL/CSA	ASFN88001
92 sq.	Recognized by UL/CSA	ASFN98001
80 sq.	Compliant with Electrical Appliance and Material Safety Law	ASEN88001
92 sq.	Compliant with Electrical Appliance and Material Safety Law	ASEN98001
120 sq.	Compliant with Electrical Appliance and Material Safety Law	ASEN18001
150×172	Recognized by UL/CSA	ASEN58001

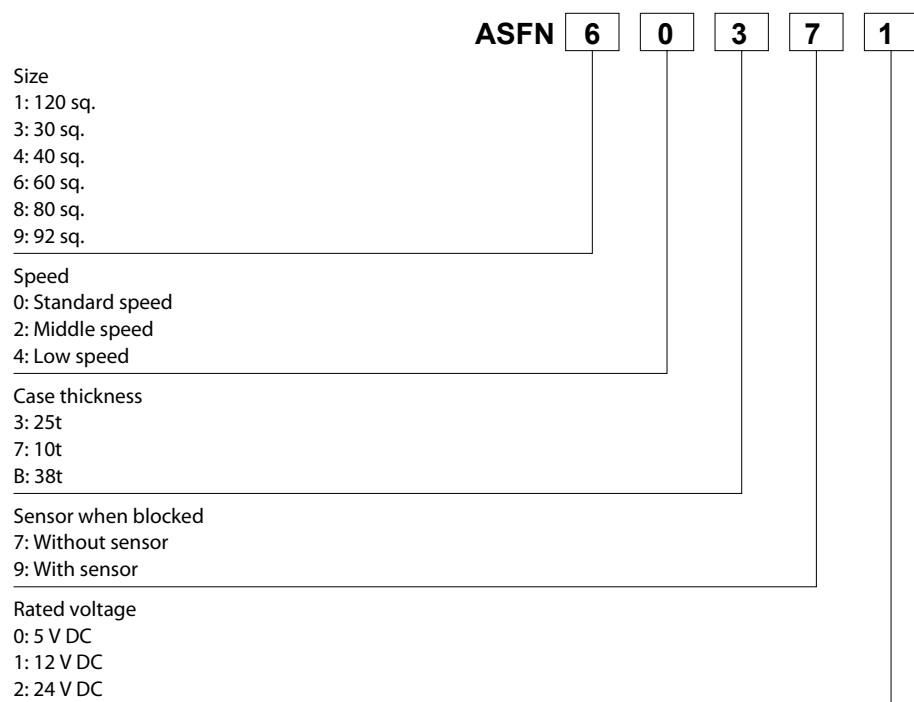
## 3. Filter for DC and AC Fan Motor

Product name	Part number
60 sq.	ASEN68002
80 sq.	ASEN88002
92 sq.	ASEN98002
120 sq.	ASEN18002

# Ordering Information

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## DCType

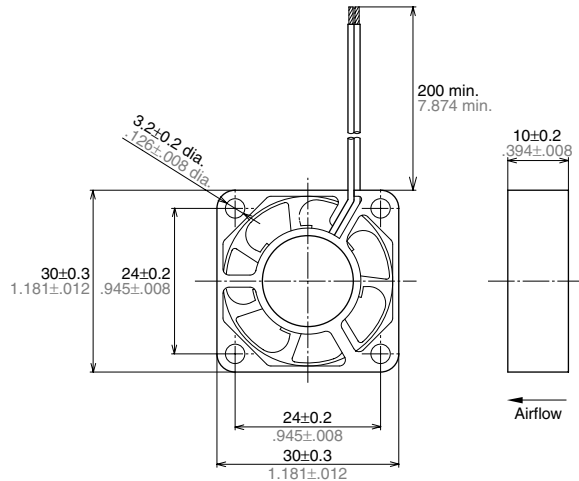


• For the DC type, a super speed type (except ASFN3 and ASFN4 Series), 48 V DC type (only ASFN1 \*B\*\* Series), and type with sensor can be special ordered.

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

**NEW**

**DIMENSIONS** (mm inch)



**RoHS Directive compatibility information**  
<http://www.nais-e.com/>

**RATING**

**1. Standard speed**

Part number	Rated voltage (V)	Input power (W) Max./Av.	Rated current (mA) Max./Av.	Rotation speed (r/min)	Max. air flow (m <sup>3</sup> /min)	Max. static pressure (Pa)	Noise (dB(A))	Weight (g)
ASFN30770	5	1.20/0.90	240/180	10,500	0.110	54.0	27	8.5
ASFN30771	12	1.44/0.96	120/80					

**2. Middle speed**

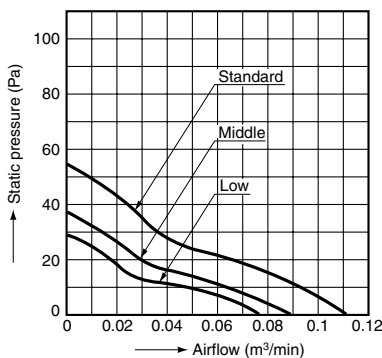
Part number	Rated voltage (V)	Input power (W) Max./Av.	Rated current (mA) Max./Av.	Rotation speed (r/min)	Max. air flow (m <sup>3</sup> /min)	Max. static pressure (Pa)	Noise (dB(A))	Weight (g)
ASFN32770	5	1.00/0.70	200/140	9,000	0.091	37.0	23	8.5
ASFN32771	12	1.20/0.84	100/70					

**3. Low speed**

Part number	Rated voltage (V)	Input power (W) Max./Av.	Rated current (mA) Max./Av.	Rotation speed (r/min)	Max. air flow (m <sup>3</sup> /min)	Max. static pressure (Pa)	Noise (dB(A))	Weight (g)
ASFN34770	5	0.65/0.50	130/100	7,500	0.078	29.0	21	8.5
ASFN34771	12	1.08/0.72	90/60					

Notes: 1. Values above without designations are averages.  
2. Noise levels are based on measurements taken at a distance of 1 m from the front of the fan.

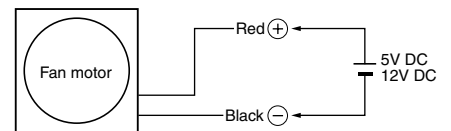
**DATA** (Airflow - Static pressure Characteristic Curve)



**MATERIALS USED**

Frame: plastic  
Propeller: plastic  
Bearings: ball bearings  
Lead wires: UL1061 and AWG26

**WIRING DIAGRAM**



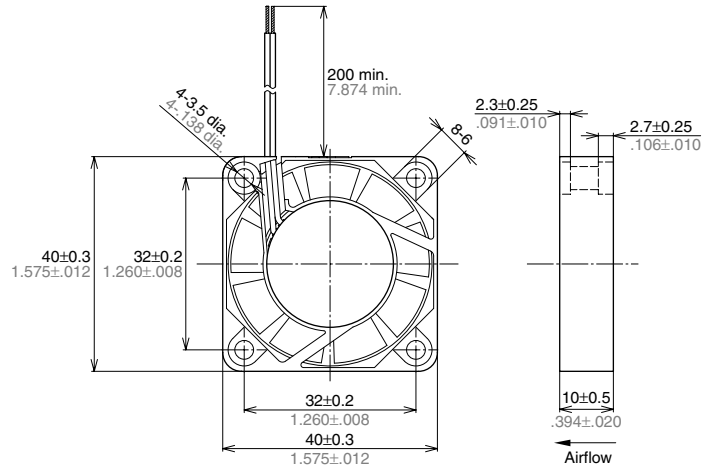
**SPECIFICATIONS**

Ambient temperature	-10°C to +60°C +14°F to +140°F	
Ambient humidity	15 to 85% RH	
Temperature rise	Coil surface: Max. 50 °C 122°F (Nominal voltage, by resistive method) External surface: Max. 20°C 68°F (Nominal voltage, by thermocouple method)	
Breakdown voltage	500 V AC for 1 min. (between lead wire and external housing)	
Insulation resistance	Min. 10MΩ (at 500 V DC)	
Vibration resistance	Frequency	10 to 55Hz
	Double amplitude width	0.75mm
	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 hrs. at nominal voltage.	
Reverse polarity power connection	No damage even after reverse polarity connection for short time at nominal voltage.	
Expected life	90% survival rate at 50,000 hrs. (When rotation frequency drops 30% of initial value when run at nominal voltage under 25°C 77°F, room humidity.)	

**NEW**



**DIMENSIONS (mm inch)**



RoHS Directive compatibility information  
<http://www.nais-e.com/>

**RATING**

**1. Standard speed**

Part number	Rated voltage (V)	Input power (W) Max./Av.	Rated current (mA) Max./Av.	Rotation speed (r/min)	Max. air flow (m <sup>3</sup> /min)	Max. static pressure (Pa)	Noise (dB(A))	Weight (g)
ASFN40770	5	1.05/0.775	210/155	6,500	0.17	46.0	29	15.0
ASFN40771	12	1.20/0.876	100/73					

**2. Middle speed**

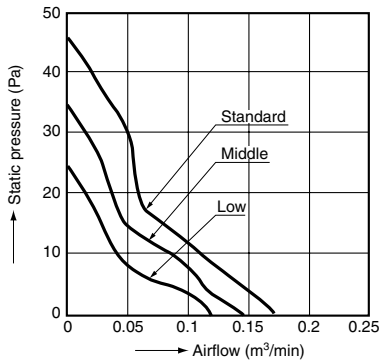
Part number	Rated voltage (V)	Input power (W) Max./Av.	Rated current (mA) Max./Av.	Rotation speed (r/min)	Max. air flow (m <sup>3</sup> /min)	Max. static pressure (Pa)	Noise (dB(A))	Weight (g)
ASFN42770	5	0.80/0.60	160/120	5,500	0.15	34.0	25	15.0
ASFN42771	12	1.20/0.876	100/73					

**3. Low speed**

Part number	Rated voltage (V)	Input power (W) Max./Av.	Rated current (mA) Max./Av.	Rotation speed (r/min)	Max. air flow (m <sup>3</sup> /min)	Max. static pressure (Pa)	Noise (dB(A))	Weight (g)
ASFN44770	5	0.50/0.375	100/75	4,500	0.12	24.0	22	15.0
ASFN44771	12	1.08/0.744	90/62					

Notes: 1. Values above without designations are averages.  
2. Noise levels are based on measurements taken at a distance of 1 m from the front of the fan.

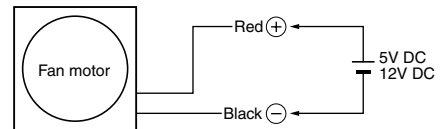
**DATA (Airflow - Static pressure Characteristic Curve)**



**MATERIALS USED**

Frame: plastic  
Propeller: plastic  
Bearings: ball bearings  
Lead wires: UL1061 and AWG26

**WIRING DIAGRAM**

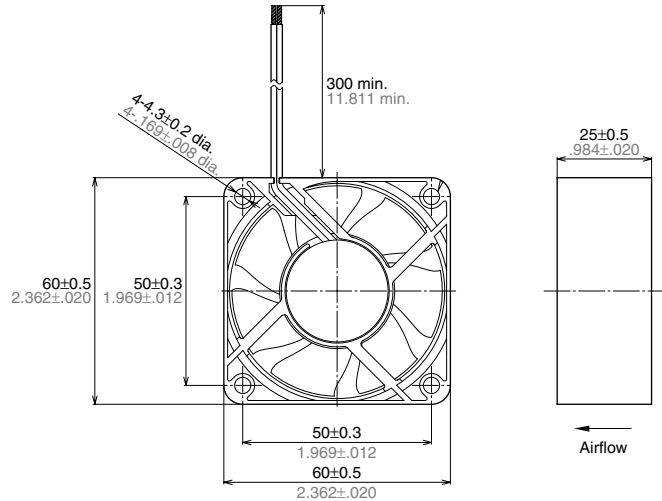


**SPECIFICATIONS**

Ambient temperature	-10°C to +60°C +14°F to +140°F	
Ambient humidity	15 to 85% RH	
Temperature rise	Coil surface: Max. 50 °C 122°F (Nominal voltage, by resistive method) External surface: Max. 20°C 68°F (Nominal 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 55Hz
	Double amplitude width	0.75mm
	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 hrs. at nominal voltage.	
Reverse polarity power connection	No damage even after reverse polarity connection for short time at nominal voltage.	
Expected life	90% survival rate at 60,000 hrs. (When rotation frequency drops 30% of initial value when run at nominal voltage under 25°C 77°F, room humidity.)	

**NEW**

**DIMENSIONS (mm inch)**



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**RATING**

**1. Standard speed**

Part number	Rated voltage (V)	Input power (W) Max./Av.	Rated current (mA) Max./Av.	Rotation speed (r/min)	Max. air flow (m <sup>3</sup> /min)	Max. static pressure (Pa)	Noise (dB(A))	Weight (g)
ASFN60371	12	1.92/1.56	160/120	4,050	0.61	41.7	30.5	65
ASFN60372	24	2.40/1.92	100/80					

**2. Middle speed**

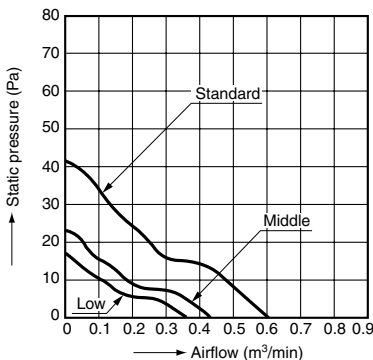
Part number	Rated voltage (V)	Input power (W) Max./Av.	Rated current (mA) Max./Av.	Rotation speed (r/min)	Max. air flow (m <sup>3</sup> /min)	Max. static pressure (Pa)	Noise (dB(A))	Weight (g)
ASFN62371	12	1.20/0.96	100/80	3,000	0.44	23.4	22.5	65
ASFN62372	24	1.44/1.20	60/50					

**3. Low speed**

Part number	Rated voltage (V)	Input power (W) Max./Av.	Rated current (mA) Max./Av.	Rotation speed (r/min)	Max. air flow (m <sup>3</sup> /min)	Max. static pressure (Pa)	Noise (dB(A))	Weight (g)
ASFN64371	12	0.84/0.6	70/50	2,550	0.37	17.2	19.0	65
ASFN64372	24	1.20/0.96	50/40					

Notes: 1. Values above without designations are averages.  
2. Noise levels are based on measurements taken at a distance of 1 m from the front of the fan.

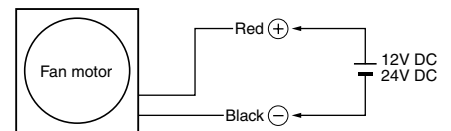
**DATA (Airflow - Static pressure Characteristic Curve)**



**MATERIALS USED**

Frame: plastic  
Propeller: plastic  
Bearings: ball bearings  
Lead wires: UL1007 and AWG24

**WIRING DIAGRAM**

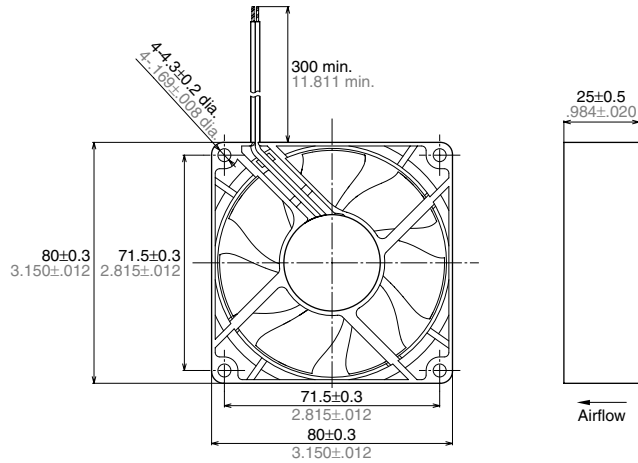


**SPECIFICATIONS**

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Insulation resistance	Min. 10 MΩ (at 500 V DC)	
Vibration resistance	Frequency	10 to 55Hz
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	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 hrs. at nominal voltage.	
Reverse polarity power connection	No damage even after reverse polarity connection for short time at nominal voltage.	
Expected life	90% survival rate at 60,000 hrs. (When rotation frequency drops 30% of initial value when run at nominal voltage under 25°C 77°F, room humidity.)	

**DIMENSIONS** (mm inch)

**NEW**



RoHS Directive compatibility information  
<http://www.nais-e.com/>

**RATING**

**1. Standard speed**

Part number	Rated voltage (V)	Input power (W) Max./Av.	Rated current (mA) Max./Av.	Rotation speed (r/min)	Max. air flow (m <sup>3</sup> /min)	Max. static pressure (Pa)	Noise (dB(A))	Weight (g)
ASFN80371	12	3.96/3.00	330/250	2,950	1.09	36.6	32.5	80
ASFN80372	24	4.32/3.36	180/140					

**2. Middle speed**

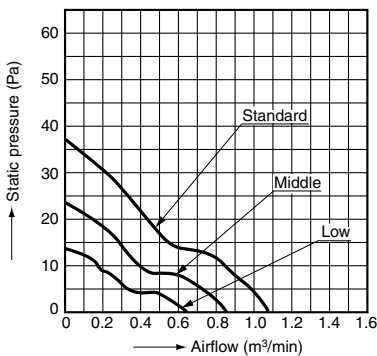
Part number	Rated voltage (V)	Input power (W) Max./Av.	Rated current (mA) Max./Av.	Rotation speed (r/min)	Max. air flow (m <sup>3</sup> /min)	Max. static pressure (Pa)	Noise (dB(A))	Weight (g)
ASFN82371	12	2.04/1.56	170/130	2,400	0.88	24.3	27.0	80
ASFN82372	24	2.16/1.68	90/70					

**3. Low speed**

Part number	Rated voltage (V)	Input power (W) Max./Av.	Rated current (mA) Max./Av.	Rotation speed (r/min)	Max. air flow (m <sup>3</sup> /min)	Max. static pressure (Pa)	Noise (dB(A))	Weight (g)
ASFN84371	12	1.20/0.84	100/70	1,900	0.68	14.2	22	80
ASFN84372	24	1.44/0.96	60/40					

Notes: 1. Values above without designations are averages.  
2. Noise levels are based on measurements taken at a distance of 1 m from the front of the fan.

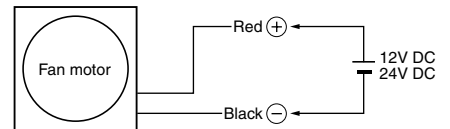
**DATA** (Airflow - Static pressure Characteristic Curve)



**MATERIALS USED**

Frame: plastic  
Propeller: plastic  
Bearings: ball bearings  
Lead wires: UL1007 and AWG24

**WIRING DIAGRAM**



**SPECIFICATIONS**

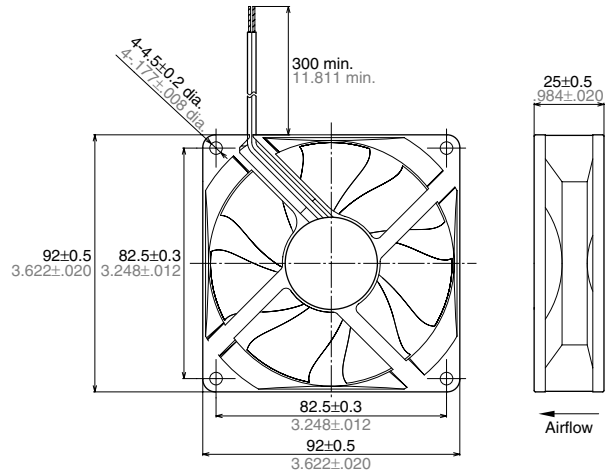
Ambient temperature	-10°C to +60°C +14°F to +140°F	
Ambient humidity	15 to 85% RH	
Temperature rise	Coil surface: Max. 50 °C 122°F (Nominal voltage, by resistive method) External surface: Max. 20°C 68°F (Nominal voltage, by thermocouple method)	
Breakdown voltage	500 V AC for 1 min. (between lead wire and external housing)	
Insulation resistance	Min. 10 MΩ (at 500 V DC)	
Vibration resistance	Frequency	10 to 55Hz
	Double amplitude width	0.75mm
	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 hrs. at nominal voltage.	
Reverse polarity power connection	No damage even after reverse polarity connection for short time at nominal voltage.	
Expected life	90% survival rate at 60,000 hrs. (When rotation frequency drops 30% of initial value when run at nominal voltage under 25°C 77°F, room humidity.)	



**NEW**



**DIMENSIONS** (mm inch)



RoHS Directive compatibility information  
<http://www.nais-e.com/>

**RATING**

**1. Standard speed**

Part number	Rated voltage (V)	Input power (W) Max./Av.	Rated current (mA) Max./Av.	Rotation speed (r/min)	Max. air flow (m <sup>3</sup> /min)	Max. static pressure (Pa)	Noise (dB(A))	Weight (g)
ASFN90371	12	3.00/2.40	250/200	2,350	1.38	27.6	32.0	85
ASFN90372	24	3.12/2.40	130/100					

**2. Middle speed**

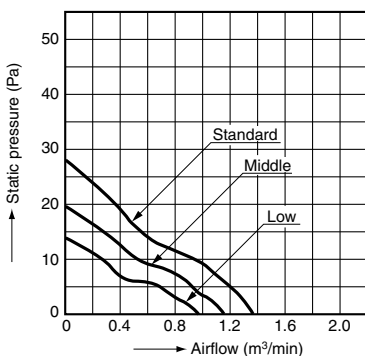
Part number	Rated voltage (V)	Input power (W) Max./Av.	Rated current (mA) Max./Av.	Rotation speed (r/min)	Max. air flow (m <sup>3</sup> /min)	Max. static pressure (Pa)	Noise (dB(A))	Weight (g)
ASFN92371	12	2.16/1.68	180/140	2,000	1.17	20.0	27.0	85
ASFN92372	24	2.16/1.68	90/70					

**3. Low speed**

Part number	Rated voltage (V)	Input power (W) Max./Av.	Rated current (mA) Max./Av.	Rotation speed (r/min)	Max. air flow (m <sup>3</sup> /min)	Max. static pressure (Pa)	Noise (dB(A))	Weight (g)
ASFN94371	12	1.44/1.08	120/90	1,700	0.98	14.4	22.0	85
ASFN94372	24	1.92/1.20	80/50					

Notes: 1. Values above without designations are averages.  
2. Noise levels are based on measurements taken at a distance of 1 m from the front of the fan.

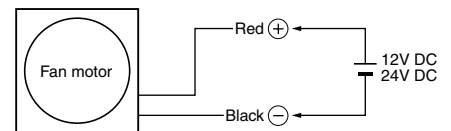
**DATA** (Airflow - Static pressure Characteristic Curve)



**MATERIALS USED**

Frame: plastic  
Propeller: plastic  
Bearings: ball bearings  
Lead wires: UL1007 and AWG24

**WIRING DIAGRAM**



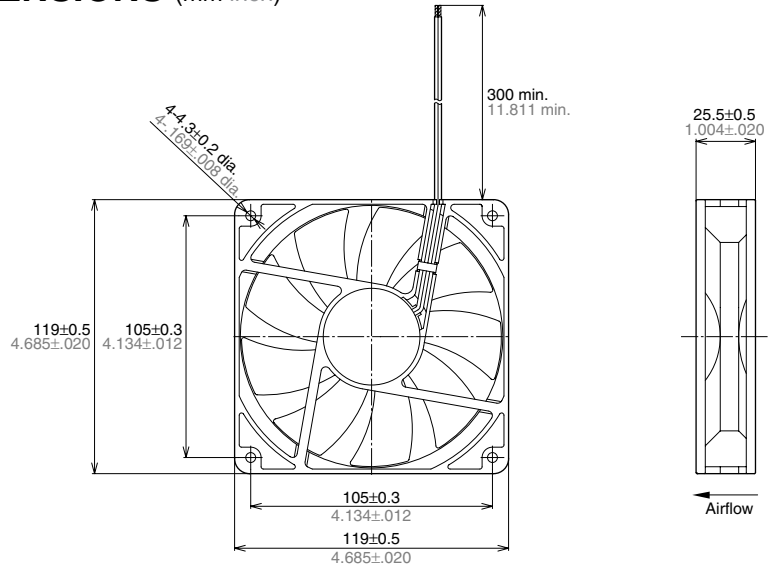
**SPECIFICATIONS**

Ambient temperature	-10°C to +60°C +14°F to +140°F	
Ambient humidity	15 to 85% RH	
Temperature rise	Coil surface: Max. 50 °C 122°F (Nominal voltage, by resistive method) External surface: Max. 20°C 68°F (Nominal 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 55Hz
	Double amplitude width	0.75mm
	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 hrs. at nominal voltage.	
Reverse polarity power connection	No damage even after reverse polarity connection for short time at nominal voltage.	
Expected life	90% survival rate at 60,000 hrs. (When rotation frequency drops 30% of initial value when run at nominal voltage under 25°C 77°F, room humidity.)	

**NEW**



**DIMENSIONS** (mm inch)



RoHS Directive compatibility information  
<http://www.nais-e.com/>

**RATING**

**1. Standard speed**

Part number	Rated voltage (V)	Input power (W) Max./Av.	Rated current (mA) Max./Av.	Rotation speed (r/min)	Max. air flow (m <sup>3</sup> /min)	Max. static pressure (Pa)	Noise (dB(A))	Weight (g)
ASFN10371	12	6.24/4.80	520/400	2,500	2.85	40.9	38.5	180
ASFN10372	24	6.96/5.28	290/220					

**2. Middle speed**

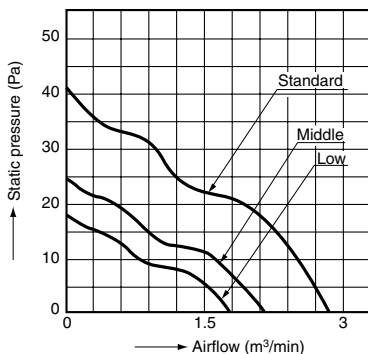
Part number	Rated voltage (V)	Input power (W) Max./Av.	Rated current (mA) Max./Av.	Rotation speed (r/min)	Max. air flow (m <sup>3</sup> /min)	Max. static pressure (Pa)	Noise (dB(A))	Weight (g)
ASFN12371	12	3.00/2.28	250/190	1,900	2.15	24.8	31.0	180
ASFN12372	24	3.12/2.40	130/100					

**3. Low speed**

Part number	Rated voltage (V)	Input power (W) Max./Av.	Rated current (mA) Max./Av.	Rotation speed (r/min)	Max. air flow (m <sup>3</sup> /min)	Max. static pressure (Pa)	Noise (dB(A))	Weight (g)
ASFN14371	12	1.92/1.44	160/120	1,600	1.80	17.9	27.0	180
ASFN14372	24	2.40/1.92	100/80					

Notes: 1. Values above without designations are averages.  
2. Noise levels are based on measurements taken at a distance of 1 m from the front of the fan.

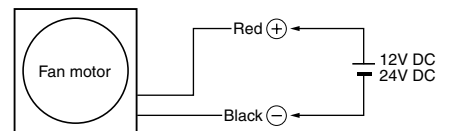
**DATA** (Airflow - Static pressure Characteristic Curve)



**MATERIALS USED**

Frame: plastic  
Propeller: plastic  
Bearings: ball bearings  
Lead wires: UL1007 and AWG24

**WIRING DIAGRAM**



**SPECIFICATIONS**

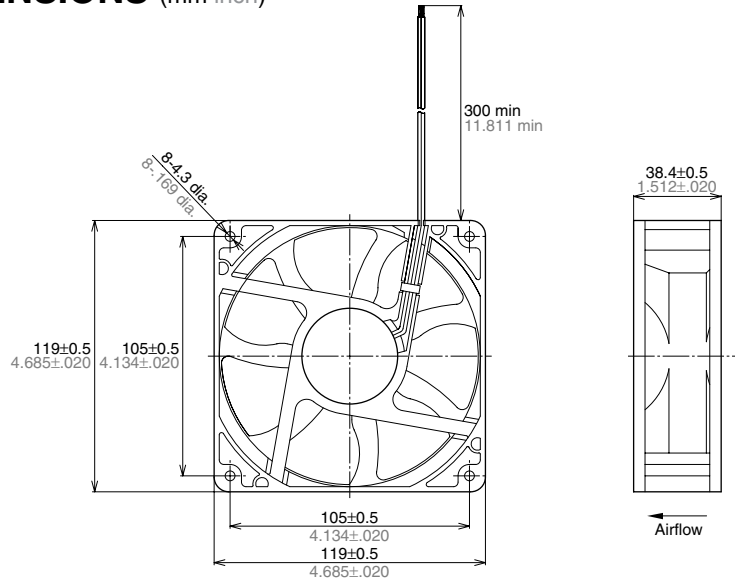
Ambient temperature	-10°C to +60°C +14°F to +140°F	
Ambient humidity	15 to 85% RH	
Temperature rise	Coil surface: Max. 50 °C 122°F (Nominal voltage, by resistive method) External surface: Max. 20°C 68°F (Nominal voltage, by thermocouple method)	
Breakdown voltage	500 V AC for 1 min. (between lead wire and external housing)	
Insulation resistance	Min. 10 MΩ (at 500 V DC)	
Vibration resistance	Frequency	10 to 55Hz
	Double amplitude width	0.75mm
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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 hrs. at nominal voltage.	
Reverse polarity power connection	No damage even after reverse polarity connection for short time at nominal voltage.	
Expected life	90% survival rate at 100,000 hrs. (When rotation frequency drops 30% of initial value when run at nominal voltage under 25°C 77°F, room humidity.)	

**NEW**



RoHS Directive compatibility information  
<http://www.nais-e.com/>

**DIMENSIONS (mm inch)**



**RATING**

**1. Standard speed**

Part number	Rated voltage (V)	Input power (W) Max./Av.	Rated current (mA) Max./Av.	Rotation speed (r/min)	Max. air flow (m <sup>3</sup> /min)	Max. static pressure (Pa)	Noise (dB(A))	Weight (g)
ASFN10B71	12	8.64/6.60	720/550	2,950	3.07	68.1	42.5	260
ASFN10B72	24	9.60/7.44	400/310					

**2. Middle speed**

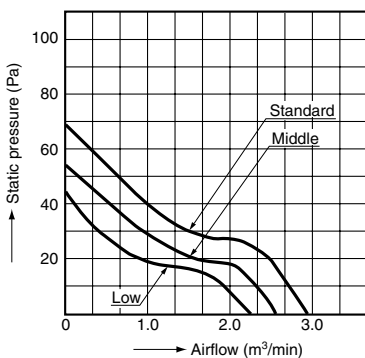
Part number	Rated voltage (V)	Input power (W) Max./Av.	Rated current (mA) Max./Av.	Rotation speed (r/min)	Max. air flow (m <sup>3</sup> /min)	Max. static pressure (Pa)	Noise (dB(A))	Weight (g)
ASFN12B71	12	6.24/4.80	520/400	2,650	2.75	55.9	41.0	260
ASFN12B72	24	6.72/5.04	280/210					

**3. Low speed**

Part number	Rated voltage (V)	Input power (W) Max./Av.	Rated current (mA) Max./Av.	Rotation speed (r/min)	Max. air flow (m <sup>3</sup> /min)	Max. static pressure (Pa)	Noise (dB(A))	Weight (g)
ASFN14B71	12	4.20/3.24	350/270	2,300	2.37	44.1	37.0	260
ASFN14B72	24	4.80/3.60	200/150					

Notes: 1. Values above without designations are averages.  
2. Noise levels are based on measurements taken at a distance of 1 m from the front of the fan.

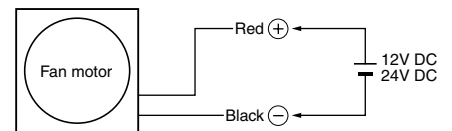
**DATA (Airflow - Static pressure Characteristic Curve)**



**MATERIALS USED**

Frame: plastic  
Propeller: plastic  
Bearings: ball bearings  
Lead wires: UL1007 and AWG24

**WIRING DIAGRAM**



**SPECIFICATIONS**

Ambient temperature	-10°C to +60°C +14°F to +140°F	
Ambient humidity	15 to 85% RH	
Temperature rise	Coil surface: Max. 50 °C 122°F (Nominal voltage, by resistive method) External surface: Max. 20°C 68°F (Nominal 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)	
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Fan blockage	No coil burnout even after blockage of 72 hrs. at nominal voltage.	
Reverse polarity power connection	No damage even after reverse polarity connection for short time at nominal voltage.	
Expected life	90% survival rate at 50,000 hrs. (When rotation frequency drops 30% of initial value when run at nominal voltage under 25°C 77°F, room humidity.)	

# Accessories

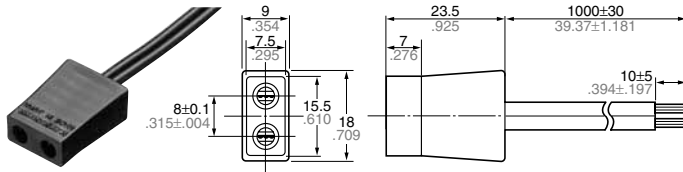
## DIMENSIONS (mm inch)

### 1. Plug cord for AC Fan Motor 2 terminals type

ASE51100

For inside of appliance

Flat type 2-core cord (20/0.18)



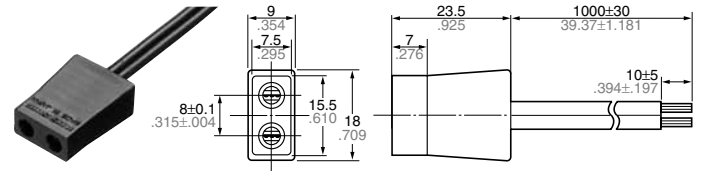
ASE51109

UL Standard: File No. E106219

Thermoplastic, flat type 2-core cord

UL SPT-1 AWG18 (41/0.16)

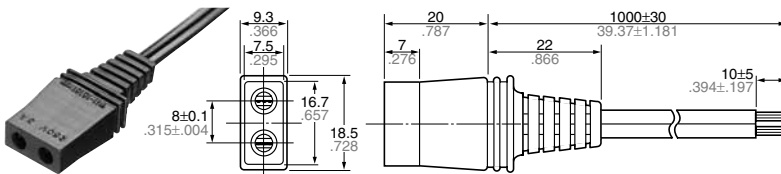
CSA POT-64 AWG18 (41/0.16)



ASE51107

Compliant with Electrical Appliance and Material Safety Law

Flat type 2-core cord (30/0.18)

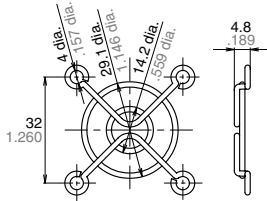


### 2. Fan guard (You can use this with both DC and AC types.)

ASFN48001

Recognized for 40 sq. by UL/CSA

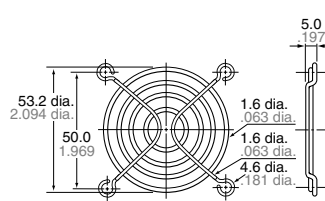
Material used: Steel, 1.6 dia.



ASFN68001

Recognized for 60 sq. by UL/CSA

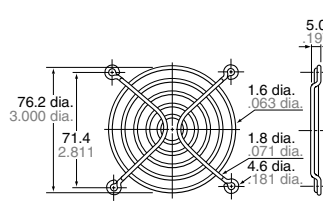
Material used: Steel, 1.6 dia.



ASFN88001

Recognized for 80 sq. by UL/CSA

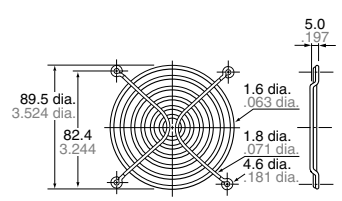
Material used: Steel, 1.6 dia.



ASFN98001

Recognized for 92 sq. by UL/CSA

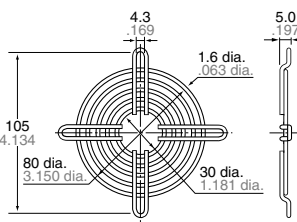
Material used: Steel, 1.6 dia.



ASEN88001

For 80 sq. by Electrical Appliance and Material Safety Law

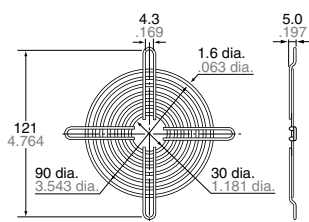
Material used: Steel, 1.6 dia.



ASEN98001

For 92 sq. by Electrical Appliance and Material Safety Law

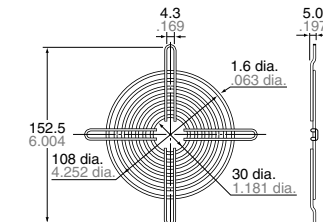
Material used: Steel, 1.6 dia.



ASEN18001

For 120 sq. by Electrical Appliance and Material Safety Law

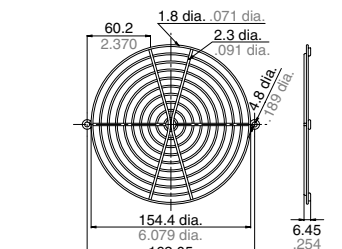
Material used: Steel, 1.6 dia.



ASEN58001

Recognized for 150x172 by UL/CSA

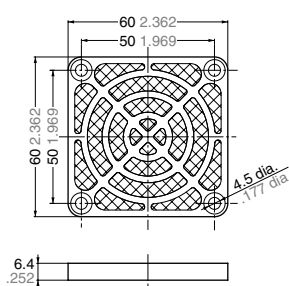
Material used: Steel, 2.3 dia.



### 3. Fan motor filter (You can use this with both DC and AC types.)

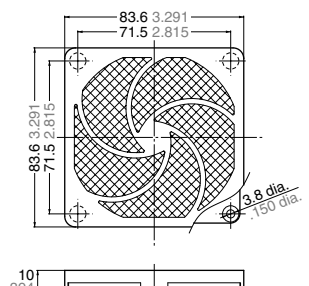
ASEN68002

For 60 sq.



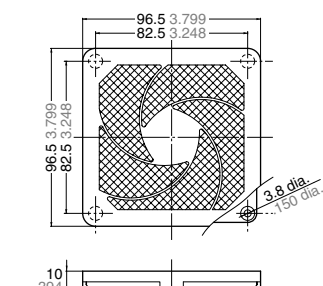
ASEN88002

For 80 sq.



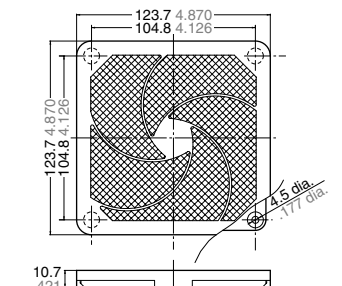
ASEN98002

For 92 sq.



ASEN18002

For 120 sq.

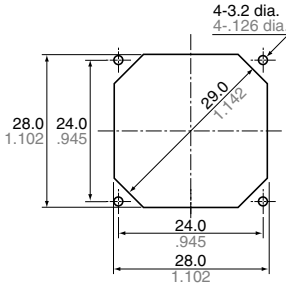


# Mounting Hole Dimensions

## For DC Fan Motor

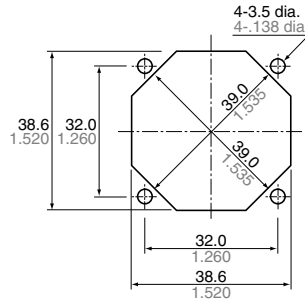
### 1. 30 sq. Series

Discharge side/Suction side



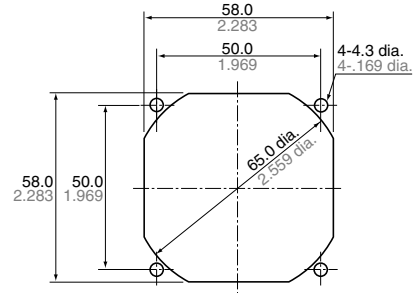
### 2. 40 sq. Series

Discharge side/Suction side



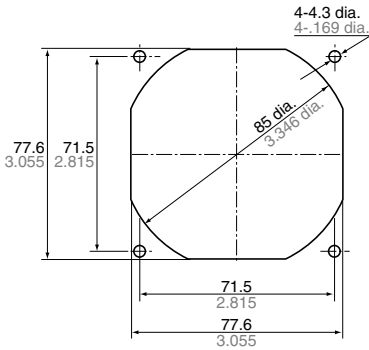
### 3. 60 sq. Series

Discharge side/Suction side



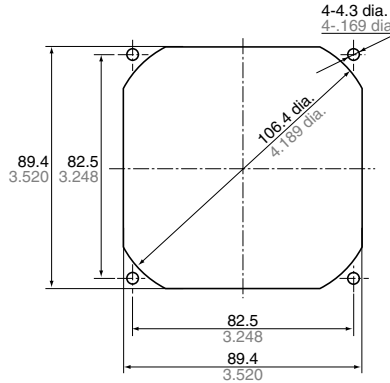
### 4. 80 sq. Series

Discharge side/Suction side



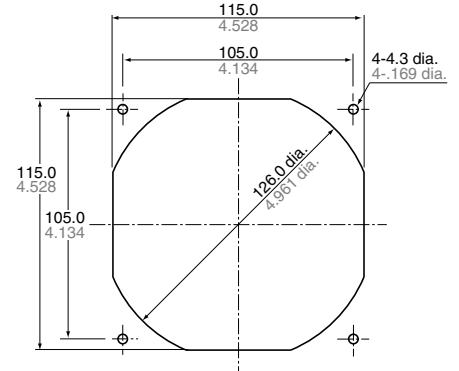
### 5. 92 sq. Series

Discharge side/Suction side



### 6. 120 sq. Series

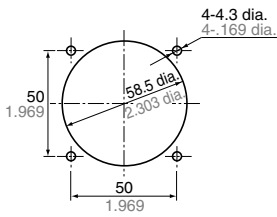
Discharge side/Suction side



## For AC Fan Motor

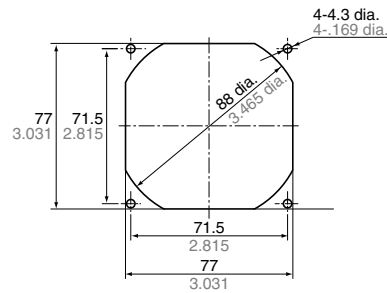
### 1. 60 sq. Series

Discharge side/Suction side



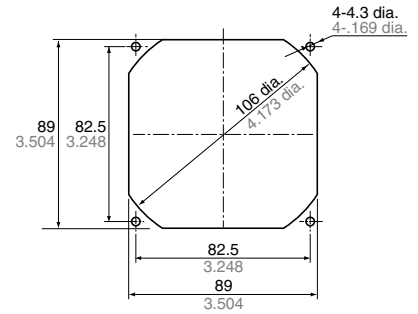
### 2. 80 sq. Series

Discharge side/Suction side



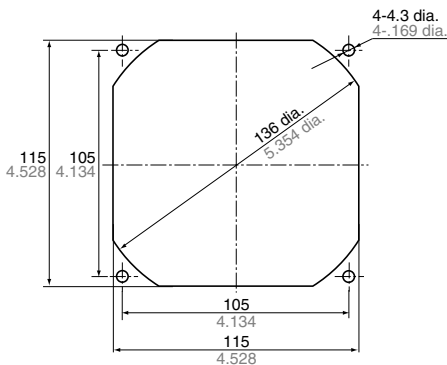
### 3. 92 sq. Series

Discharge side/Suction side



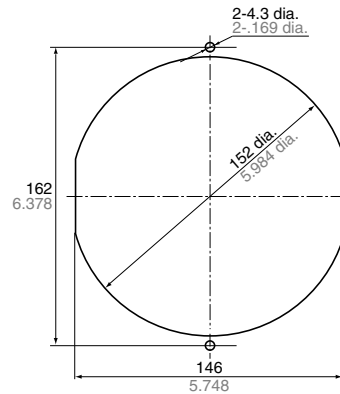
### 4. 120 sq. Series

Discharge side/Suction side



### 5. 150x172 Series

Discharge side/Suction side



# Functions of DC Fan Sensor

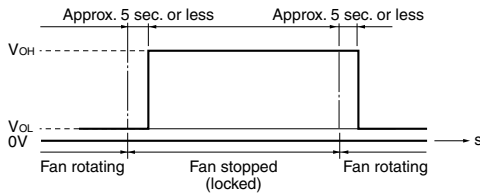
## DC FAN SENSOR

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



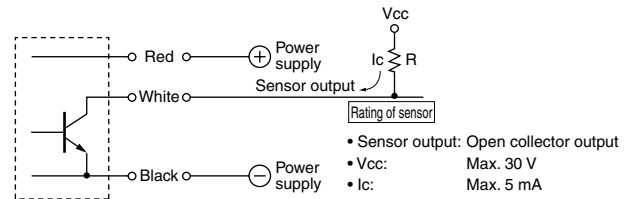
\* Output may be high for approximately 0.5 seconds when power is turned on.

\* The continually high output waveform type when fan is stopped (locked) is standard.

A high/low output waveform type and 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



- Sensor output: Open collector output
- Vcc: Max. 30 V
- I<sub>c</sub>: Max. 5 mA

Notes: 1. Set the resistance value (R) so that the sensor circuit current (I<sub>c</sub>) does not exceed 5 mA.

2. When using at TTL level, the sensor circuit current (I<sub>c</sub>) should be approximately 2 mA.

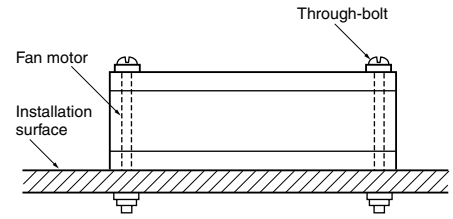
\* Exceeding the values above may lead to IC damage.

# Cautions For Use

## 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.
2. If the power is to be pulsed on and off in order to start and stop the fan quickly, be sure to install a switch on the + side of the power supply. Not doing so may damage the circuit.

3. The DC fan motor installation bracket has a rib. As shown in the figure, use the through-bolts when installing.
4. Use a tightening torque of no more than 0.6 Nm.

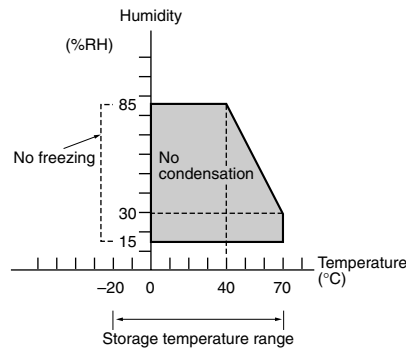


## DC FAN MOTOR and AC FAN MOTOR

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. Fan life is based on usage at room temperature and a humidity of 15 to 45% RH. 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.

### 6. Transport and storage conditions

The allowable specifications for environments suitable for transportation and storage are given below.



- No freezing between  $-20^{\circ}\text{C}$  to  $0^{\circ}\text{C}$   
 $-4^{\circ}\text{F}$  to  $+32^{\circ}\text{F}$
- No condensation in the range above between  $0^{\circ}\text{C}$  to  $+70^{\circ}\text{C}$   
 $+32^{\circ}\text{F}$  to  $+158^{\circ}\text{F}$

### 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  $0^{\circ}\text{C}$   $+32^{\circ}\text{F}$  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.

# Technical Information

## MEASUREMENT of AIRFLOW and STATIC PRESSURE

It is very difficult to measure airflow 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.

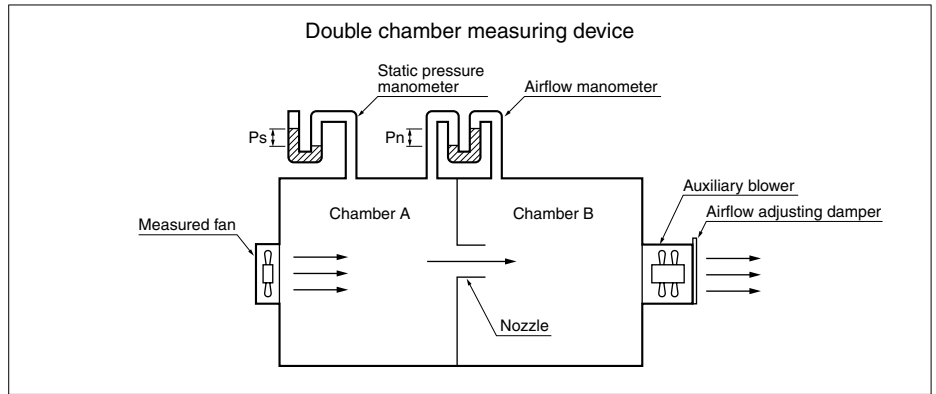
The auxiliary blower (fan) adjusts an inner pressure by sucking out air. At this moment, as airflow and static pressure are varied by opening or closing the damper, each value is read on the manometer.

### Maximum airflow:

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

### 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

Airflow Q =

$$60 \times C \times \left(\frac{D}{2}\right)^2 \times \pi \times \sqrt{\frac{2g}{7}} \times (P_n \times 9.81) \quad (\text{m}^3/\text{min})$$

In the above equation,

C: Flow coefficient of nozzle

D: Nozzle diameter (m)

γ: 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: Airflow differential pressure (Pa)

Ps: Static pressure (Pa)

### 2. Unit conversion table

#### 1) Airflow

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

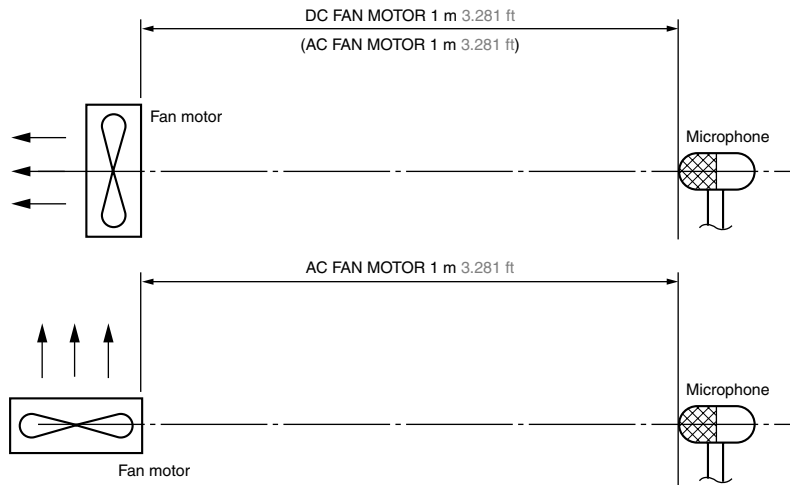
Pa	mmH <sub>2</sub> O (mmAq)
1	0.10197
9.80665	1

## NOISE MEASUREMENT

Operation noise is measured by hanging the fan in midair. For the DC fan, noise is measured in dB(A) 1 m from the front of the air-intake side. For the AC fan, noise is measured in dB(A) 1 m from the front of the air-intake side and the side of the fan.

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 side 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 22), 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.

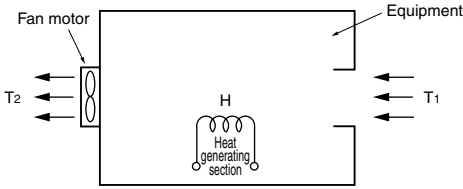


# Technical Information

## 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 volume (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.  $\Delta P = KQ^n$ .....Equation (2)

where

- ΔP: Pressure drop(Pa{mmH<sub>2</sub>O})
- K: Constant determined for each equipment
- Q: Air volume (m<sup>3</sup>/min.)
- n: Coefficient determined by air flow

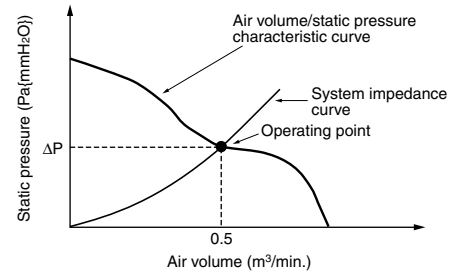
In this equation, it is generally considered that n = 2.

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 volume/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 volume “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 volume “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 volume.

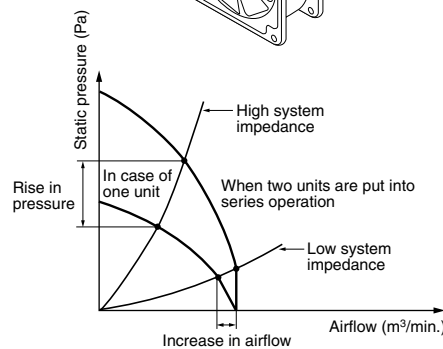
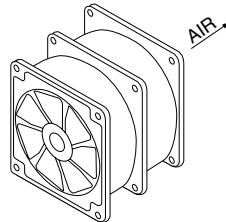
## FAN MOTOR SERIES/PARALLEL OPERATION

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

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

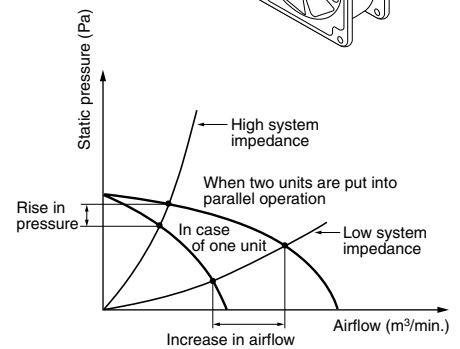
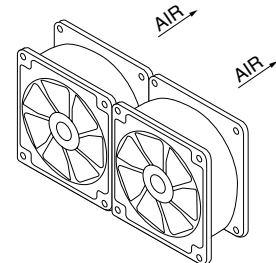
Parallel operation: Larger airflow characteristic obtained. (Nearly double)

### 1. In case of series operation



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

### 2. In case of parallel operation



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

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