Fan Motor Selection Guide

DC Fan Motor

Type	ASFN4*7** □40 × 10 t						ASFN6*3** □60 × 25 t					
Appearance												
Rotation speed	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	12 V DC	24 V DC	12 V DC	24 V DC	12 V DC	24 V DC
Rated operating current [mA] (max.)	210	100	160	100	100	90	160	100	100	60	70	50
Rated power consumption [W] (max.)	1.05	1.20	0.80	1.20	0.50	1.08	1.92	2.40	1.20	1.44	0.84	1.20
Rotation speed [r/min] (typ.)	6,500		5,500		4,500		4,050		3,000		2,250	
Max. static pressure [Pa] (typ.)	46.0		34.0		24.0		41.7		23.4		17.2	
Max. air flow [m^3/min] (typ.)	0.17		0.15		0.12		0.61		0.44		0.37	
Noise [dB(A)] (typ.)	29		25		22		30.5		22.5		19.0	
Weight (g)	15.0						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: 15 to 27.6 V DC					
Page	P.1307						P.1307					

Type	ASFN8*3** □80 × 25 t						ASFN9*3** □92 × 25 t					
Appearance												
Rotation 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
Rated operating current [mA] (max.)	330	180	170	90	100	60	250	130	180	90	120	80
Rated power consumption [W] (max.)	3.96	4.32	2.04	2.16	1.20	1.44	3.00	3.12	2.16	2.16	1.44	1.92
Rotation speed [r/min] (typ.)	2,950		2,400		1,900		2,350		2,000		1,700	
Max. static pressure [Pa] (typ.)	36.6		24.3		14.2		27.6		20.0		14.4	
Max. air flow [m^3/min] (typ.)	1.09		0.88		0.68		1.38		1.17		0.98	
Noise [dB(A)] (typ.)	32.5		27.0		22.0		32.0		27.0		22.0	
Weight (g)	80						85					
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					
Page	P.1307						P.1307					

Type	ASFN1*3** □120 × 25 t						ASFN1*B** □120 × 38 t					
Appearance												
Rotation 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
Rated operating current [mA] (max.)	520	290	250	130	160	100	720	400	520	280	350	200
Rated power consumption [W] (max.)	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 [r/min] (typ.)	2,500		1,900		1,600		2,950		2,650		2,300	
Max. static pressure [Pa] (typ.)	40.9		24.8		17.9		68.1		55.9		44.1	
Max. air flow [m^3/min] (typ.)	2.85		2.15		1.80		3.07		2.75		2.37	
Noise [dB(A)] (typ.)	38.5		31.0		27.0		42.5		41.0		37.0	
Weight (g)	180						260					
Operating voltage range	For rated 12 V: 6 to 13 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	P.1307						P.1307					

AC Fan Motor

Type	ASEN6051* □60 × 30 t		ASEN802*** □80 × 25 t		ASEN802*** □80 × 25 t	
Appearance						
Rated voltage	100 V	115 V	100 V	115 V	200 V	230 V
Frequency	50/60 Hz		50/60 Hz		50/60 Hz	
Input power (W) $^{+10}_{-20}$ %	6/5	4.5/4	6/5	6/5	7/6	7.5/6.5
Rated current [mA] (max.)	80/70	70/60	90/80	80/70	60/50	50/45
Locked current [mA] (typ.)	85/75	70/60	95/85	85/75	70/60	60/55
Rotation speed [r/min] (min.)	2,000/2,600		2,400/2,750		2,500/3,000	
Max. air flow [m^3/min] (min.)	0.2/0.26		0.74/0.85		0.57/0.68	
Max. static pressure [Pa] (min.)	13.7/22.6		37.5/43		39.0/55.0	
Noise [dB(A)] (typ.)	28/29		28/33		24/31(28.5/35.5)	
Operating voltage range (V)	Rated voltage ±10 %		Rated voltage ±10 %		Rated voltage ±10 %	
Weight (kg)	0.14		0.22		0.24	
Page	P.1308		P.1308		P.1308	

Type	ASEN804*** □80 × 38 t				ASEN902*** □92 × 25 t				ASEN102*** □120 × 25 t			
Appearance												
Rated voltage	100 V	115 V	200 V	230 V	100 V	115 V	200 V	230 V	100 V	115 V	200 V	230 V
Frequency	50/60 Hz				50/60 Hz				50/60 Hz			
Input power (W) $^{+10}_{-20}$ %	9/7			10/8	13/10				14/11			
Rated current [mA] (max.)	170/120	140/110	80/65	70/55	190/150	170/130	100/80	90/70	220/180	190/160	110/90	100/90
Locked current [mA] (typ.)	180/160	160/140	90/80	80/70	200/170	180/160	110/100	100/80	220/200	200/180	120/100	110/100
Rotation speed [r/min] (min.)	2,700/3,200				2,600/3,100				2,300/2,700			
Max. air flow [m^3/min] (min.)	0.75/0.9				0.80/0.98				1.8/2.0			
Max. static pressure [Pa] (min.)	44.2/62.8				43.1/60.8				41.2/41.2			
Noise [dB(A)] (typ.)	33/38				34/39				34/38			
Operating voltage range (V)	Rated voltage ±10 %				Rated voltage ±10 %				Rated voltage ±10 %			
Weight (kg)	0.3				0.3				0.36			
Page	P.1308				P.1308				P.1308			

Type	ASEN104*** □120 × 38 t				ASEN5075* 150 × 172 × 38 t			
Appearance								
Rated voltage	100 V	115 V	200 V	230 V	100 V	115 V	200 V	230 V
Frequency	50/60 Hz				50/60 Hz			
Input power (W) $^{+10}_{-20}$ %	15/14	15.5/14.5	15/13	15/14	37/33	35/32	34/33	35/35
Rated current [mA] (max.)	270/230	250/210	140/120	120/100	470/440	380/360	230/210	190/180
Locked current [mA] (typ.)	370/300	320/270	190/170	160/140	750/700	550/530	340/320	280/310
Rotation speed [r/min] (min.)	2,600/2,900				2,700/3,200			
Max. air flow [m^3/min] (min.)	2.5/2.9				5.0/6.0			
Max. static pressure [Pa] (min.)	64.7/76.4				157/215.8			
Noise [dB(A)] (typ.)	37/41				52/56			
Operating voltage range (V)	Rated voltage ±10 %				Rated voltage ±10 %			
Weight (kg)	0.55				0.8			
Page	P.1308				P.1308			

Product Types

DC Fan Motor

Size	Specifications	Rotation speed	Voltage	UL	CSA	UL/CUL	Part No.
□40 × 10	Ball bearing type	Standard speed	5 V DC	○	○	—	**ASFN40770**
		Middle speed		○	○	—	**ASFN42770**
		Low speed		○	○	—	**ASFN44770**
		Standard speed	12 V DC	○	○	—	**ASFN40771**
		Middle speed		○	○	—	**ASFN42771**
		Low speed		○	○	—	**ASFN44771**
□60 × 25	Ball bearing type	Standard speed	12 V DC	—	—	○	**ASFN60371**
		Middle speed		—	—	○	**ASFN62371**
		Low speed		—	—	○	**ASFN64371**
		Standard speed	24 V DC	—	—	○	**ASFN60372**
		Middle speed		—	—	○	**ASFN62372**
		Low speed		—	—	○	**ASFN64372**
□80 × 25	Ball bearing type	Standard speed	12 V DC	—	—	○	**ASFN80371**
		Middle speed		—	—	○	**ASFN82371**
		Low speed		—	—	○	**ASFN84371**
		Standard speed	24 V DC	—	—	○	**ASFN80372**
		Middle speed		—	—	○	**ASFN82372**
		Low speed		—	—	○	**ASFN84372**
□92 × 25	Ball bearing type	Standard speed	12 V DC	—	—	○	**ASFN90371**
		Middle speed		—	—	○	**ASFN92371**
		Low speed		—	—	○	**ASFN94371**
		Standard speed	24 V DC	—	—	○	**ASFN90372**
		Middle speed		—	—	○	**ASFN92372**
		Low speed		—	—	○	**ASFN94372**
□125 × 25	Ball bearing type	Standard speed	12 V DC	○	○	—	**ASFN10371**
		Middle speed		○	○	—	**ASFN12371**
		Low speed		○	○	—	**ASFN14371**
		Standard speed	24 V DC	○	○	—	**ASFN10372**
		Middle speed		○	○	—	**ASFN12372**
		Low speed		○	○	—	**ASFN14372**
□120 × 38	Ball bearing type	Standard speed	12 V DC	○	○	—	**ASFN10B71**
		Middle speed		○	○	—	**ASFN12B71**
		Low speed		○	○	—	**ASFN14B71**
		Standard speed	24 V DC	○	○	—	**ASFN10B72**
		Middle speed		○	○	—	**ASFN12B72**
		Low speed		○	○	—	**ASFN14B72**

Notes: 1) Frames with ribs are standard (except □120 × 38). Casings without ribs can be special ordered. (Please consult us before ordering. There are some products which are not supplied.)
2) A super speed type (except **ASFN4** series), 48 V DC type (only **ASFN1*B**** series), and type with sensor can be special ordered. (Please consultus before selecting.)

AC Fan Motor

Size	Specifications	Rotation speed	Voltage	UL	CSA	UL/CUL	Part No.
□60 × 30	Lead wire type	Standard speed	100 V AC	○	—	—	**ASEN60511**
			115 V AC	○	○	—	**ASEN60512**
□80 × 25	Lead wire type	Standard speed	100 V AC	○	○	—	**ASEN80211**
			115 V AC	○	○	—	**ASEN80212**
			200 V AC	—	—	○	**ASEN80214**
			230 V AC	—	—	○	**ASEN80216**
□80 × 38	Lead wire type	Standard speed	100 V AC	○	—	—	**ASEN80411**
			115 V AC	○	○	—	**ASEN80412**
			200 V AC	○	—	—	**ASEN80414**
			230 V AC	○	○	—	**ASEN80416**
	2-terminal type	Standard speed	100 V AC	○	—	—	**ASEN804519**
			115 V AC	○	○	—	**ASEN804529**
			200 V AC	○	—	—	**ASEN804549**
			230 V AC	○	○	—	**ASEN804569**
□92 × 25	Lead wire type	Standard speed	100 V AC	○	○	—	**ASEN90211**
			115 V AC	○	○	—	**ASEN90212**
			200 V AC	○	—	—	**ASEN90214**
			230 V AC	○	○	—	**ASEN90216**
	2-terminal type	Standard speed	100 V AC	○	○	—	**ASEN902519**
			115 V AC	○	○	—	**ASEN902529**
			200 V AC	○	—	—	**ASEN902549**
			230 V AC	○	○	—	**ASEN902569**
□120 × 25	Lead wire type	Standard speed	100 V AC	○	○	—	**ASEN10211**
			115 V AC	○	○	—	**ASEN10212**
			200 V AC	○	—	—	**ASEN10214**
			230 V AC	○	○	—	**ASEN10216**
	2-terminal type	Standard speed	100 V AC	○	○	—	**ASEN102519**
			115 V AC	○	○	—	**ASEN102529**
			200 V AC	○	—	—	**ASEN102549**
			230 V AC	○	○	—	**ASEN102569**
□120 × 38	Lead wire type	Standard speed	100 V AC	○	○	—	**ASEN10411**
			115 V AC	○	○	—	**ASEN10412**
			200 V AC	○	○	—	**ASEN10414**
			230 V AC	○	○	—	**ASEN10416**
	2-terminal type	Standard speed	100 V AC	○	○	—	**ASEN104519**
			115 V AC	○	○	—	**ASEN104529**
			200 V AC	○	○	—	**ASEN104549**
			230 V AC	○	○	—	**ASEN104569**
150 × 172 × 38	2-terminal type	Standard speed	100 V AC	○	—	—	**ASEN50751**
			115 V AC	○	○	—	**ASEN50752**
			200 V AC	○	—	—	**ASEN50754**
			230 V AC	○	○	—	**ASEN50756**

Notes: 1) Although "standard speed" is used as the standard fan rotation speed, middle speed and low speed types can be special ordered.
(for □60 × 30 and □80 × 25: standard speed only, for □120 × 25: standard speed and low speed only respectively.)
2) 220 V AC and 240 V AC types can be special ordered.

Accessories

Plug Cord for AC Fan Motor

Product name	Specifications	Standards	Part No.
Plug code for 2-terminal type	For inside of appliance, L = 1,000 mm 39,370 in	—	**ASE51100**
	L = 1,000 mm 39,370 in	Compliant with Electrical Appliance and Material Safety Law	**ASE51107**
	L = 1,000 mm 39,370 in	UL Standard	**ASE51109**

Fan Guard for DC and AC Fan Motor

Product name	Standards	Part No.
Fan Guard for □40	Adopted for UL/CSA	**ASFN48001**
Fan Guard for □60	Adopted for UL/CSA	**ASFN68001**
Fan Guard for □80	Adopted for UL/CSA	**ASFN88001**
Fan Guard for □80	—	**ASEN88001**
Fan Guard for □92	Adopted for UL/CSA	**ASFN98001**
Fan Guard for □92	—	**ASEN98001**
Fan Guard for □120	Adopted for UL/CSA	**ASFN18001**
Fan Guard for □120	—	**ASEN18001**
Fan Guard for □150 × 172	Adopted for UL/CSA	**ASEN58001**

Filter for DC and AC Fan Motor

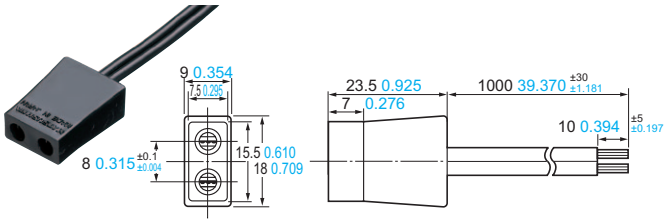
Product name	Part No.
Fan Motor Filter for □60	**ASEN68002**
Fan Motor Filter for □80	**ASEN88002**
Fan Motor Filter for □92	**ASEN98002**
Fan Motor Filter for □120	**ASEN18002**

Dimensions (mm in)

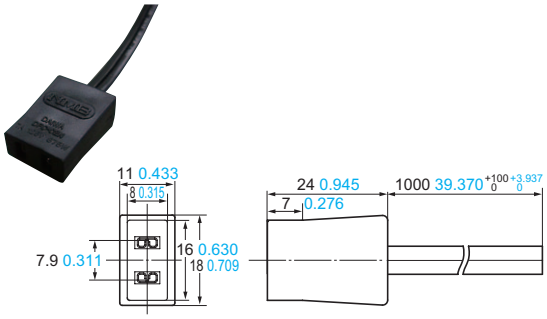
Plug cord for AC Fan Motor

2-terminals type

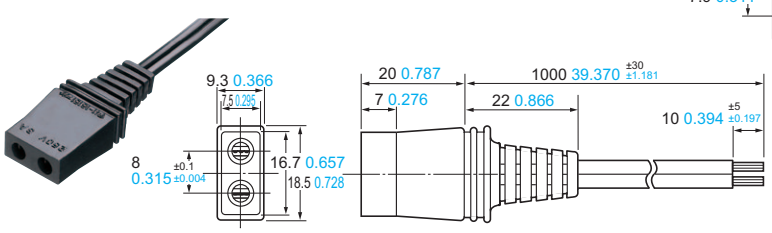
ASE51100
For inside of appliance
Flat type 2-core cord (20/0.18)



ASE51109
UL Standard: File No. E46484
CSA: LR23669
Thermoplastic, flat type 2-core cord
UL SPT-1AWG18

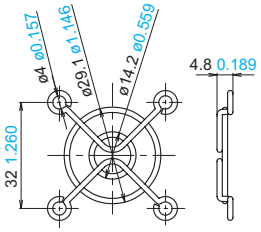


ASE51107
Flat type 2-core cord (30/0.18)

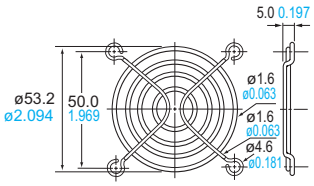


Fan guard

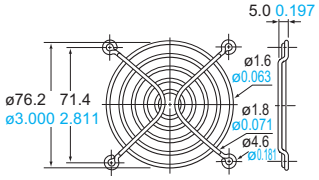
ASFN48001
Adopted for □40 by UL/CSA
Material used: Steel, ø1.6 ø0.063



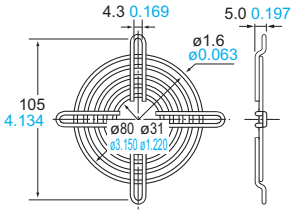
ASFN68001
Adopted for □60 by UL/CSA
Material used: Steel, ø1.6 ø0.063



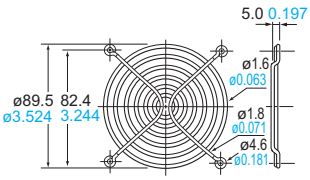
ASFN88001
Adopted for □80 by UL/CSA
Material used: Steel, ø1.6 ø0.063



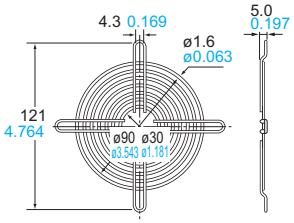
ASEN88001
For □80
Material used: Steel, ø1.6 ø0.063



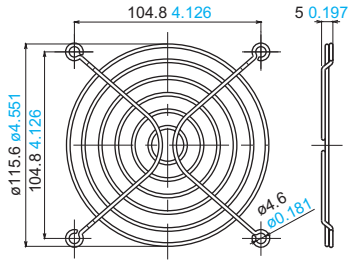
ASFN98001
Adopted for □92 by UL/CSA
Material used: Steel, ø1.6 ø0.063



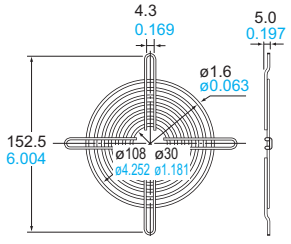
ASEN98001
For □92
Material used: Steel, ø1.6 ø0.063



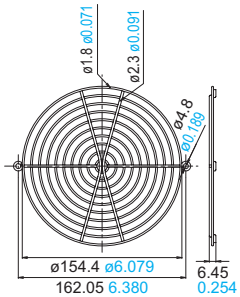
ASFN18001
Adopted for □120 by UL/CSA
Material used: Steel, ø1.6 ø0.063



ASEN18001
For □120
Material used: Steel, ø1.6 ø0.063



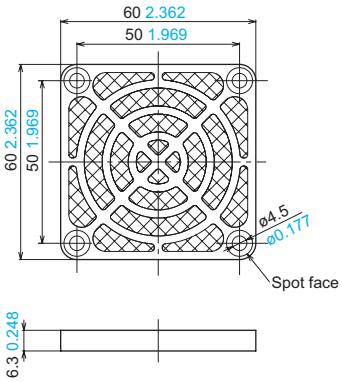
ASEN58001
Adopted for 150 × 172 by UL/CSA
Material used: Steel, ø2.3 ø0.091



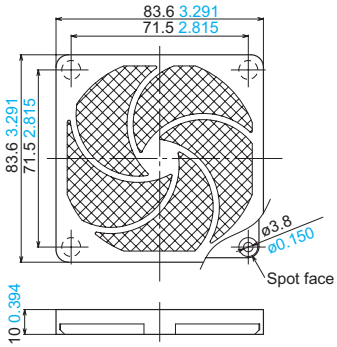
Fan motor filter

(**ASEN18002**)

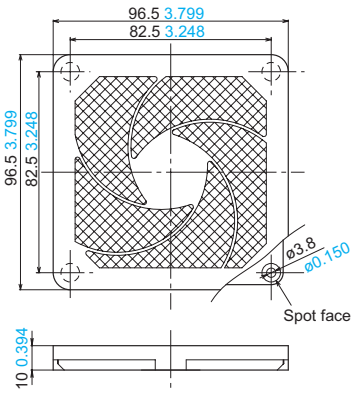
ASEN68002
For □60



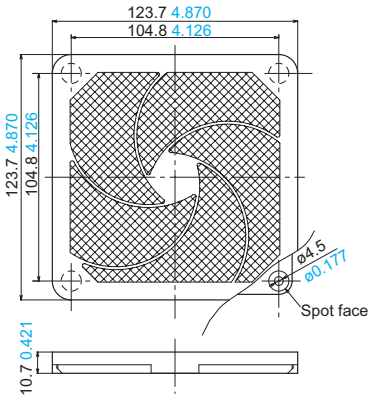
ASEN88002
For □80



ASEN98002
For □92



ASEN18002
For □120

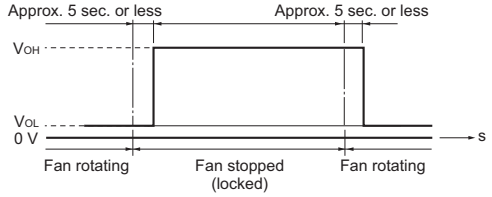


FUNCTIONS OF DC FAN SENSOR

In case of 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 adopt the method that uses a logic circuit.

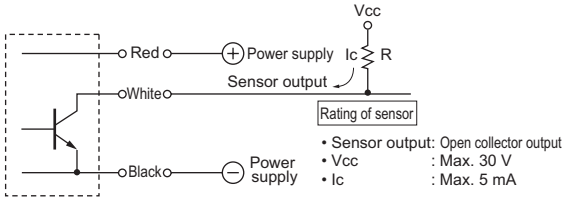
Lock sensor specifications

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.

Sensor output circuit



Notes: 1) Set the resistance value (R) so that the sensor circuit current (Ic) does not exceed 5 mA.
2) When using at TTL level, the sensor circuit current (Ic) should be approximately 2 mA.
* Exceeding the values above may lead to IC damage.

SAFETY PRECAUTIONS

To prevent injury and accidents, be sure to observe the following instructions.

Make sure to read the operating instructions and the following precautions for use before installation, operation, maintenance, or inspection. Before using the product, the users must have a thorough understanding of the equipment, safety information, and miscellaneous precautions for its use.

Warning Indicates a possible hazard that will result in death or serious physical injury of the operator in the event of incorrect handling.

Caution Indicates a possible hazard that will result in physical injury of the operator or only property damage in the event of incorrect handling.

Caution

- Incorporate a protective device if the equipment body can overheat in case the fan stops.
- Do not touch the rotating blade. Otherwise, this may result in injury.
- Make sure to ground this product. Otherwise, this may result in an electric shock. (AC fan motor only)
- Do not touch the terminals while the power is on. Otherwise, this may result in an electric shock. (AC fan motor only)

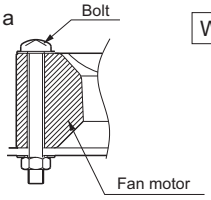
DC fan motor

- 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.
- 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.

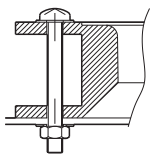
DC fan motor and AC fan motor

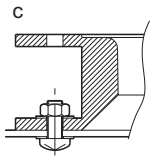
- Since our fan motor employs precision ball bearings, due care should be taken not to apply any shock in handling.
- Due to the bearing mechanism, the noise level will increase in proportion to the length of time the fan is used. Avoid use where the temperature is high or where there is a lot of dirt.
- 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.
- Do not apply unnecessary force to the internal parts when handling the product. Also, do not use a fan that has been dropped.
- Installation
  Install according to the diagrams below.

With rib a



Without rib b





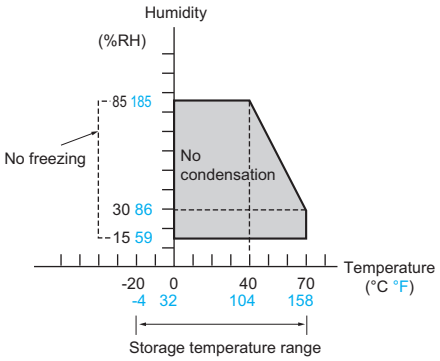
Recommended tightening torque
DC fan motor: Max. 0.67 Nm
AC fan motor: Max. 0.98 Nm
When there is no rib, we recommend securing as shown in Fig. c.

- 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.

AC fan motor

As a guide, use a Faston terminal mounting pressure of Max. 49 N.

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



- No freezing between –20 °C to 0 °C –4 °F to +32 °F
- No condensation in the range above between 0 °C to +70 °C +32 °F to +158 °F
- 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.
- Freezing
  At temperatures 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.
- 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.
- When storing, avoid places of high temperature and high humidity or where corrosive gas is present.
- Do not store the fan any longer than six months.

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