Nidec

SPECIFICATION FOR DC BRUSHLESS MOTOR

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We will interpret for you to have accepted for this specification when you return it in two weeks pass.

REV					
	APPROVED			MODEL	20N704V170
	DESIGNED				
APPROVED		Z.HAN	2023-06-25	DRAWING No.	3DSPC233001
CHECKED		Q.ZHANG	2023-06-25		
DESIGNED		JUN.ZHANG	2023-03-06	DC BRUSHLESS MOTOR	Sheet 1 of 17
DRAWN		SIC.YAN	2023-03-05		

NIDEC CORPORATION

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SPECIFICATION FOR DC BRUSHLESS MOTOR

Change history 変更履历

Date	Rev.	No.	Change history	Design	Approved
2023.06.26	-	-	Original version	Q.ZHANG	Z.HAN

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SPECIFICATION FOR DC BRUSHLESS MOTOR

Application 适用

This document defines the specification for DC brushless blower fan.
本式样书适用于带有叶轮风扇的直流无刷马达。

1. Soft Version 软件版本

日期 Date	校验码 Check Sum	说明 Note
2023.4.2	56A6	初版正式程序

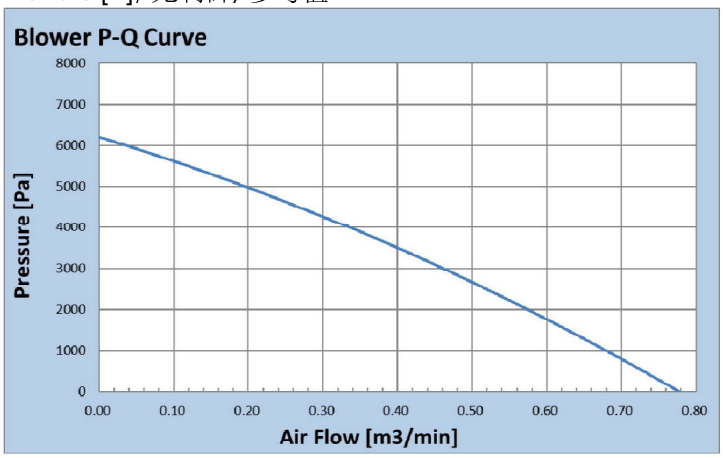
2. Ratings 额定

No.	Item 项目	Specification 规格	Note 备注
1	Rated voltage 额定电压	DC 15.8 [V]	-
2	Minimum operating voltage 最小工作电压	DC 10.8 [V]	-
3	Maximum operating voltage 最大工作电压	DC 16.8 [V]	-
4	Maximum operating speed 最大工作转速	33000 [min^{-1}]	进风口 0mm 时，最大转速 33000 [min^{-1}]，使用时长不得超过 2 分钟
5	Type 形式	3phases 12poles brushless motor with 3 hall sensors. 3 相 12 极带霍尔元件马达	-
6	Rotation direction 回转方向	**CCW** 逆时针回转	View from impeller side 叶轮侧观察
7	Insulation level 绝缘等级	CLASS B	130℃
8	Starting torque 启动扭矩	14.5mNm	参考值

3. Characteristics 特性

- Characteristics should be specified at a temp. of 20 ±5[℃] and normal humidity.
  以下特性为常温(温度:20±5[℃]),常湿条件下的规格。

No.	Item 项目	Specification 规格	Note 备注
1-1	Rated current 额定电流	2.2[A] Max	DC15.8 [V], Free air, Duty 100%, 10[s] after started. DC15.8[V], 开放环境, Duty 100%, 回转开始 10 秒后测定
1-2	Orifice 0mm rated current 进风口 0mm 额定电流	3.5[A] Max	DC15.8 [V], Orifice 0mm, Duty 100%, 10[s] after started. DC15.8 [V], 进风口 0mm, Duty 100%, 回转开始 10 秒后测定 ※仅供测试使用,使用时长不得超过 2 分钟
2-1	Rated speed 额定转速	16500[min-1] ±8%.	DC15.8 [V], Free air, Duty 100%, 10[s] after started. DC15.8 [V], 开放环境, Duty 100%, 回转开始 10 秒后测定
2-2	Orifice 0mm rated speed 进风口 0mm 额定转速	32500[min-1] ±8%.	DC15.8 [V], Orifice 0mm, Duty 100%, 10[s] after started. DC15.8 [V], 进风口 0mm, Duty 100%, 回转开始 10 秒后测定、 ※仅供测试使用,使用时长不得超过 2 分钟
3-1	Vertical Vibration 垂直振动	1 [m/s²] Max	DC15.8 [V], Free air, No controlled, Set on F-TESTER JIG. Vibration pickup set on the jig in the vertical direction. DC15.8 [V], 开放环境, 无制御, 将马达放置于 F-TESTER 治具上, 振动拾取器放置垂直方向,一次成分值测定
3-2	Horizontal Vibration 水平振动	2.5 [m/s²] Max	DC15.8 [V], Free air, No controlled, Set on F-TESTER JIG. Vibration pickup set on the jig in the horizontal direction. DC15.8 [V], 开放环境, 无制御, 将马达放置于 F-TESTER 治具上, 振动拾取器放置水平方向,一次成分值测定
4	Max. airflow 最大风量	0.76[m³/min] (Nominal)	DC15.8 [V], No controlled, Zero static pressure DC15.8 [V], 无制御, 静压 0[Pa]时 ※出货检查项目对象外

5	Max. static pressure 最大静压	6000 [Pa] (Nominal)	DC15.8 [V], No controlled, Zero airflow DC15.8[V], 无制御, 风量 0[m³/min]时 ※出货检查项目对象外
6	P-Q Curve P-Q 曲线	DC15.8 [V], No controlled, Reference only DC15.8 [V], 无制御, 参考值 	
8	动平衡 Unbalance	U 面 15[mg·cm] Max L 面 15[mg·cm] Max S 值 8[mg·cm] Max	初期值,转子(带叶轮)状态 Initial value, impeller ass'y status
9	叶片端跳 Impeller runout	0.3mm Max	初期值,转子(带叶轮)状态 Initial value, impeller ass'y status
10	噪音 Noise	72dB Max	DC15.8 [V], PWM100% Free air, Set on sponge. Microphone at 1[m] aligned on the motor axis. DC15.8 [V]，开放环境，pwm100%，风机放置于海绵上，麦克风距离马达 1[m]

4. Ambient condition 环境条件

No.	Item 项目	Specification 规格	Note 备注
1	Operating condition 工作条件	Dry bulb temp.: -10～+40[℃] 干球温度 Relative humidity: -10～90[%] 相对湿度	No condensation 无结露
2	Storage condition 保存条件	Dry bulb temp.: -30～+65[℃] 干球温度 Relative humidity: 10～90[%] 相对湿度	No condensation 无结露

5. Temperature ratings 允许温度

- It should observe the following maximum temperature ratings, by on-board actual equipment at maximum operating temperature.
- 实机状态下的最大工作温度请严格遵守以下规定。

No.	Item 项目	Specification 规格	Note 备注
1	Maximum permissive IC surface temperature IC 表面最大允许温度	80 [℃]	Refer to Fig.5-1
2	Maximum permissive FET temperature FET 最大允许温度	110 [℃]	Refer to Fig.5-1

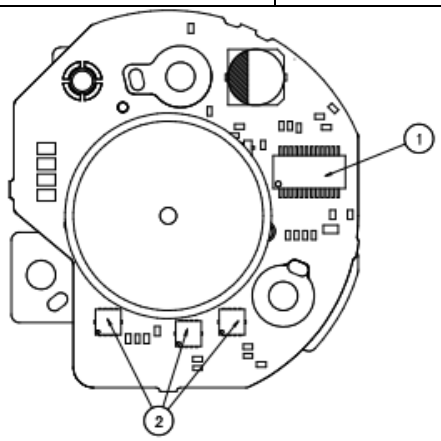


Fig.5-1 measurement position 测试位置

6. Circuit protection 回路保护机能

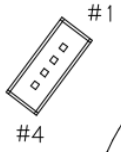
No.	Item 项目	Specification 规格	Note 备注
1	Current limit 电流制限	5.0[A] MAX	peak value
2	Motor lock protection 马达锁住保护	2.5[s] MAX	After motor is locked, motor lock protection function works within set time (2s Max) and motor stops operating. Motor restarts automatically during the certain time. Motor is still in the locked status until it restarts five times and will stop completely. Return to normal after power on/off or PWM again. 马达锁住后，在规定时间 2.5s 内，锁住保护机能动作，马达停止运行。经过一定时间后，马达自动重启，直到重启 5 次电机仍然处于锁住状态，将完全停止。再次开关电源或 PWM 后恢复正常。
3	Overcurrent protection 过电流保护	9[A] MAX	When motor is monitored that abnormal coil current reaches design value, overcurrent protection function works and motor stop operating within 1 μs. Motor restarts automatically during the 2s. It is monitored that abnormal current still exceeds design value until it restarts five times and will stop completely. Return to normal after power on/off or PWM again. 当马达监测到异常相间电流达到设计值时，1μs 内过电流保护机能动作，马达停止运行。2s 后，马达自动重启，直到重启 5 次，仍然监测到异常电流超过设计值，将完全停止。再次开关电源或 PWM 后恢复正常。
4	Overvoltage protection 过压保护	20[V] Typical	When the motor is detected that the voltage exceeds 20V and the duration exceeds 50ms, overvoltage protection is implemented and the motor stops. If the voltage is lower than 19V and the duration exceeds 50ms, the operation will be resumed. 当马达监测到电压超过 20V 且持续时间超过 50ms，执行过压保护，马达停止运行。若电压低于 19V 且持续时间超过 50ms，恢复运行。
5	Undervoltage protection 低电压保护	8[V] Typical	When the motor is detected that the voltage is lower than 8V and the duration is more than 50ms, the undervoltage protection is implemented and the motor stops. If the voltage is higher than 9V and the duration exceeds 50ms, the operation will be resumed. 当马达监测到电压低于 8V 且持续时间超过 50ms，执行欠压保护，马达停止运行。若电压高于 9V 且持续时间超过 50ms，恢复运行。

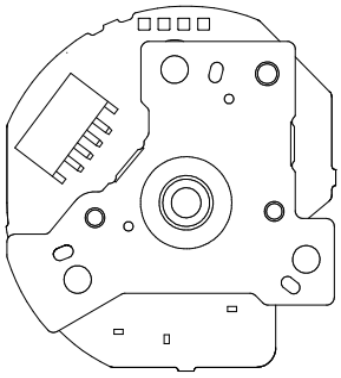
7. Interface 接口

Pin No.	I/O	Signal name 信号	Specification 规格	Note 备注
1	OUT	**FG**		You need to pull up for FG terminal, so that the terminal is open-drain output. 由于FG信号的输出形态为开路漏极状态，因此需要在外部进行拉升。
		VOH	5 [V] Max	
		VOL	1 [V] Max	
		Sink 电流	1 [mA] Max	
		The number of FG output pulse FG 信号脉冲数	6 Pulse / round 6 脉冲/回转	
2	IN	**PWM**		
		Input voltage range 输入电压范围	0[V] ～ 5[V]	High/ Motor ON Low/ Motor OFF ※PWM 不可悬空
		VIH	VIH 3.5[V] Min	
		VIL	VIL 1.0[V] Max	
		PWM input frequency PWM 输入频率	25[kHz]	Our recommending PWM frequency range is between 15[kHz] to 25[kHz]. PWM 输入频率推奖范围 15[kHz]到25k[Hz]。 PWM start Duty:12%min PWM 起动 Duty：12%以上 PWM stop Duty:6%max PWM 停止 Duty：6%以下
3	IN	**GND**	Ground	Ground
4	IN	**VM**	DC 15.8 [V] (12V~16.8V)	Power supply 电源电压

□Pin assignment

No.	SIGNAL
1	FG Output
2	PWM(Hi Active)
3	GND
4	VM (14.4V)





Recommended Sequence 推荐的通电顺序

*马达起动时*When motor starting

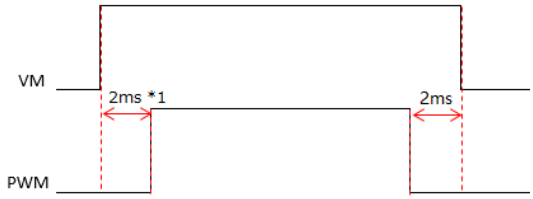
・以 VM ON⇒PWM 信号 ON 的顺序驱动。

・Operate in the following order ; VM ON ⇒PWM signal ON

*马达停止时*When motor stop

・以 PWM 信号 OFF⇒VM 信号 OFF 的顺序停止。

・Stop in the following order ; VM OFF ⇒ PWM signal OFF

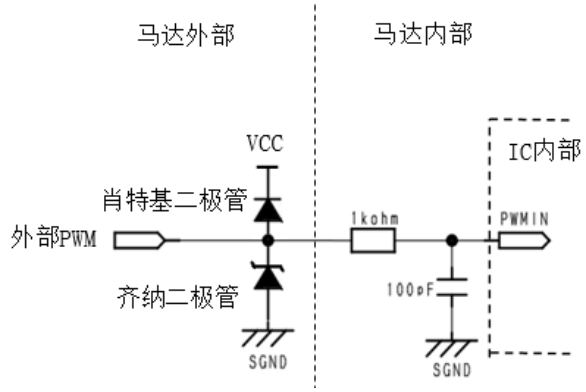


*1 请在 VM 上电达到定格电压（VM 上电时间请根据整机状态测试），2ms 后 PWM ON。

*1 Please turn on the PWM for more than 2ms after the VM is powered on and reaches the fixed voltage (the VM power-on time should be tested according to the state of the Robot Vacuum).

Internal Circuit 内部回路图

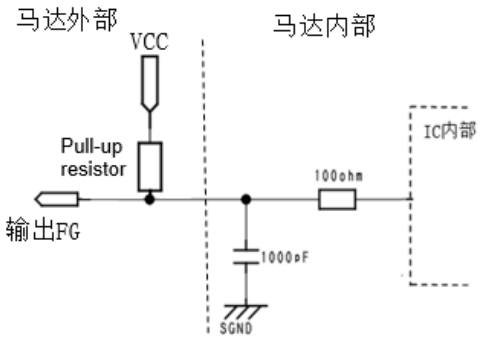
PWM



* 如果出现超过定格电压以上的浪涌电压的场合，请检讨追加齐纳二极管或肖特基二极管。

* If there is a surge voltage exceeding the rated voltage, please review and add a Zener diode or Schottky diode.

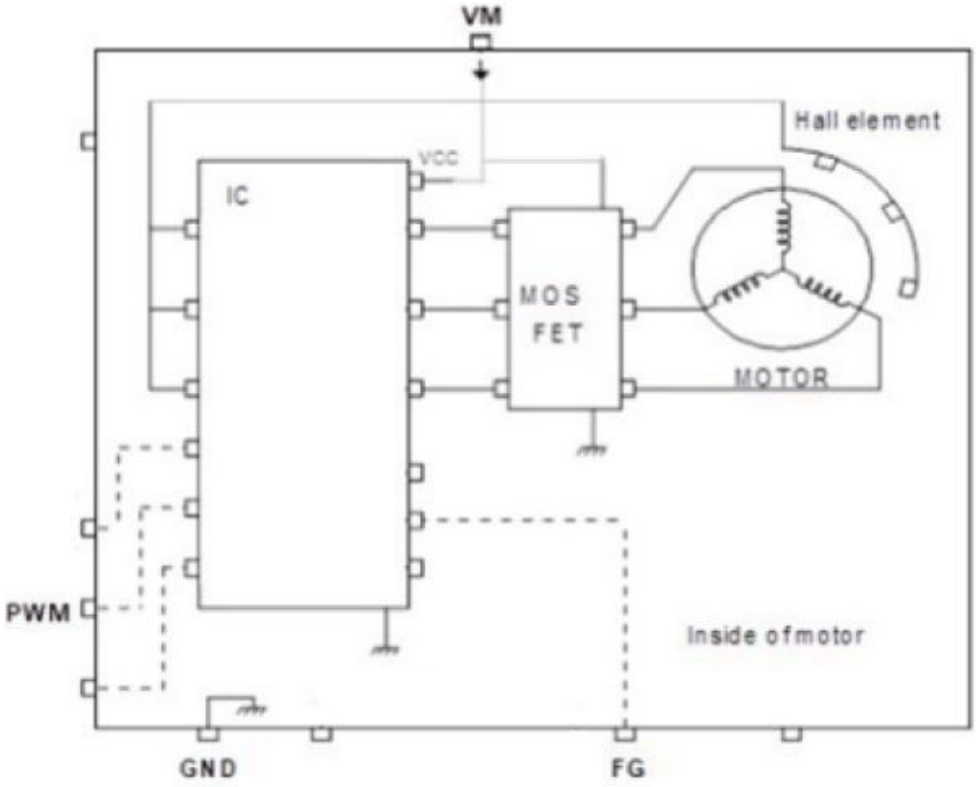
FG



REV					
	APPROVED			MODEL	20N704V170
	DESIGNED				
APPROVED		Z.HAN	2023-06-25	DRAWING No.	3DSPC233001
CHECKED		Q.ZHANG	2023-06-25		
DESIGNED		JUN.ZHANG	2023-03-06	DC BRUSHLESS MOTOR	Sheet 9 of 17
DRAWN		SIC.YAN	2023-03-05		

8. Block diagram of circuit 回路图

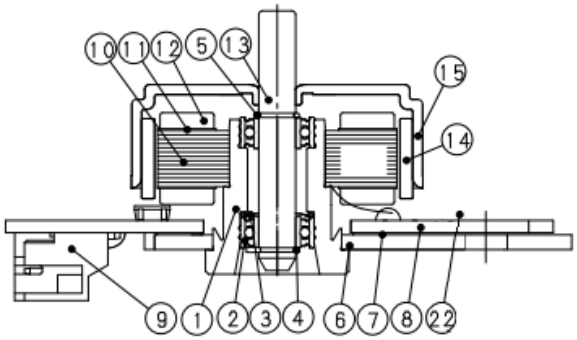
<Standard circuit example 标准回路示例>

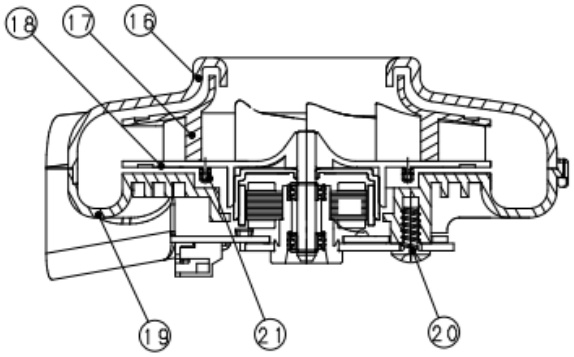


9. Parts list 部品表

No.	Parts	Material or Type	UL		Manufacture
			Grade	File No.	
1	Bearing Bush	C3602BD/C3604BD	-	-	-
2	Ball Bearing	SUJ2	-	-	NMB, NSK,SII
3	Wave Washer	SUS301	-	-	-
4	O-Ring 1	SWP-Bφ0.4	-	-	-
5	O-Ring 2	SWP-Bφ0.4	-	-	-
6	Mounting plate	SECC	-	-	-
7	Adhesive Tape	JKD PTS202	-	-	Dalian free trade zone J electronic Co.,Ltd
8	PCB	FR-4	94V-0	E203640	JiangMen Benlida Printed Circuit Co.,Ltd
9	Connector	HA2001-4A-S	94V-0	-	HangZhou Waho Electronics Technology Co.,Ltd
		WF20004-01206	94V-0	-	Shenzhen Atom Technology Co.,Ltd
		PH-4AWBJ(NL14)	94V-0	-	CWB Electronics（Zhejiang）Co.， Ltd
10	Stator lamination	35A250/35A440	-	-	-
11	Stator Coating	SCOTCH CAST#266	B TYPE	E35075	3M Company Infrastructure Protection Division
		EX-1101	B TYPE	E98667	Sumitomo Bakelite
12	Copper wire	FBWMBAU	F TYPE	E135754	Sumitomo Electric Wintec Co.,Ltd
		SEUW-N	F TYPE	E135754	
		SF.B.LOCK	F TYPE	E339330	FURUKAWA MAGNET WIRE Co.,Ltd
		SF.BY(L)	F TYPE	E339330	
		UEW-Y	F TYPE	E164502	Guangdong Rosen Super Micreo-Wire
		2-UEWFE TAI-I	F TYPE	E234896	Tai-I Copper (Guangzhou) Co., Ltd.
		2-UEW+NY MW80-C	F TYPE	E197768	Ta Ya Electric Wire & Cable Co., Ltd
13	Shaft	SUS420J2, 420J2, 3Cr13	-	-	-
14	Magnet	Nd-Fe-B	-	-	Epson, Chengdu Galaxy, Sky Surpass,Highmag
15	Rotor Holder	SECC	-	-	-

16	Housing Cover	ABS(GFABS-R30)	94V-0	E171666	GuangZhou KingFa Sct&Tec.Co.,Ltd
17	Impeller Upper				
18	Impeller Lower				
19	Housing				
20	Screw	SWCH-16A	-	-	-
21	Balance Chip	SUS301	-	-	-
22	PCB coating	EA6106M	-	-	H.B.Fuller
		UV890SF			H.B.Fuller
		UV890ECO			H.B.Fuller





10. Application Note for Design and Handling 设计及取用时的注意事项

When safety of the blower fan is in question, please notify us and conduct design review.
如果对本制品的安全性有任何疑问，请务必与敝司联络，敝司会进行相关的技术检证。

Safety (Caution)	(1)For connection to power source terminal of the blower fan, please be careful not to deform the terminal. 连接本制品的电源端子时请注意，不要破坏端子原有形状。 Please connect securely following pin arrangement on drawing. 请按照图面规定的端子顺序进行安全适当的连接。 (2)For use of lead wires, a switch, a relay, etc., please use a compliant product to applicable standards, fully considering current amount and heat-resistance. 使用导线，开关，继电器等部品时请充分考虑电气容量，耐热性等是否满足产品的规格。 (3)Never touch a rotational part with hands or fingers during applying electricity. 禁止在马达通电状态下用手或手指触摸马达的回转部分。 (4)Never touch the blower fan with hands or a part of body during operation and immediately after stop. 禁止用手或身体其他部位在马达回转及停止瞬间触摸扇叶。 (5)Please do not touch the blower fan terminal part when electrostatic is charged on body. 禁止在身体带有静电的状态下触摸马达的端子部分。
How to Use/ Handling	(6)Please do not use the blower fan under an environment which moisture, water drop, dirt, dust, or others intrude into inside of the motor. 请避免在水蒸气・水滴・尘埃容易进入马达内部的环境中使用风机。 (7)Please do not operate with hands wet. When moisture intrudes, fully dry the blower fan, and then apply electricity. Never apply electricity with moisture. 手湿时操作马达。禁止在有水分侵入马达的情况下进行通电。如果有水分侵入马达内部，请将马达充分干燥后，再度通电。 (8)Please operate the blower fan being securely fixed. 请在风机固定牢固后再开始运转。 (9)When fixing the blower fan, please do not apply pressure which may deform the blower fan body. 在固定风机时，请避免风机本体发生损伤或变形。 (10)In case that abnormality occurs, please turn off immediately. 如果有异常情况发生，请立刻切断电源。 (11)Please do not connect reversely the lead wires of power and ground. 请不要将连接线的电源端和接地端反接。 (12)For connecting and disconnecting the connector to the blower fan, be sure to turn off the power and the blower fan stops the rotation. If it is connected or disconnected while applying electricity or rotating, drive circuit may be broken, leading to blower fan rotational malfunction. 连接或断开连接本产品时请务必切断电源，在马达停止回转后再进行操作。如果在通电状态或马达回转状态下操作，驱动电路可能会被损坏，可能会导致马达不回转。 (13)For external impact by noise, surge, instant power failure, malfunction by electrostatic, circuit breakage, or terminal noise, please confirm with your finished product. Especially for long lead wire, please confirm impact by noise, etc. 噪音，浪涌，电压跌落，静电，电路破坏以及端子部干扰等测试，请在贵司的整机状态下进行。特别是带有长导线的制品，请确认干扰等项目。

How to Use/ Handling

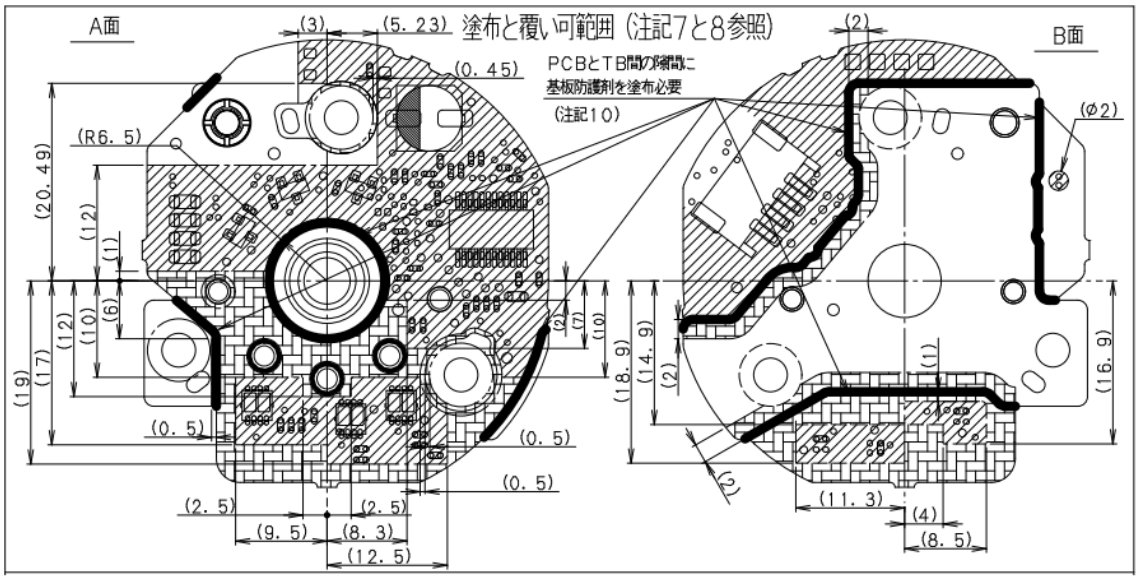
(14)If the blower fan is dropped or shocked equivalent to drop, please do not use the blower fan because it may cause insulation or bearing failure.
由于可能发生绝缘不良，轴承不良等问题，在本制品跌落后或者受到了较大的冲击后，请不要使用本制品。
(15)Please do not rotate the blower fan with external force. It may break the motor with back EMF.
请不要使用外力驱动马达。反电动势可能会使马达遭到破坏。
(16)In case of operating the blower fan adjacent to a machine generating high frequency, induced current by high frequency may damage the bearing part such by electric corrosion. Please provide enough shielding.
如果需要在会产生高周波的仪器附近使用，高周波引起的诱导电流可能会损伤轴承。请采取充分的保护措施。
(17)To protect burnout by excessive current, please insert a fuse to the power source line. For fusing current, please select more than start-up current.
为了防止过电流烧损马达，请在电源端加入保险丝。保险丝的切断电流请大于起动电流。
(18)Please do not store the blower fan in the environment of corrosive gases and toxic gases mentioned above, and the temperature and humidity other than -10 deg.C~ 60 deg.C & 10 ~ 90 % (no dew). Especially for long term stock, please pay attention extraordinarily. In addition, a section of plated steel sheet may proceed rust.
马达保存时请避免以下环境：腐蚀性气体或有害气体环境，超过温度范围（-30℃～65℃），湿度范围（10～90%）无结露的环境。长期在库保管时需特别注意。另外镀层钢板的切断面可能会生锈。
(19)Exposure of this product's bearing to corrosive gas may cause corrosion, which may affect the blower fan's characteristics and durability. Therefore, the blower fan's characteristics cannot be guaranteed if any wooden packing materials are fumigated together with packing boxes containing the product. Please check your transportation before mass production.
本产品的轴承暴露在腐蚀性气体中会引起腐蚀，马达的特性及寿命可能受到影响。因此，在进出口过程中，对于木质包装材料的烟熏法处理，特别是包装箱内有我公司产品并同时进行烟熏法处理的情况，马达的特性不能进行保证。请务必在流通前进行确认。
(20) After the expiration of the life of our products or your company's products, please comply with the relevant laws and regulations of the country where the products are to be re-used or disposal.
敝司马达或者贵司制品寿命终止后，请贵司遵照制品所在国的相关法律法规进行再利用或者废弃等处置。

(21) The electronic parts on the motor will be covered with bond. That will damp proof to a certain extent. But that cannot satisfy with the classification of waterproof. The cover area please refer to Fig. 11-1, as shown in the shaded area; The uncover area please refer to Fig. 11-2, as shown in the shaded area。

马达PCB上的电子部品表面会覆盖一层胶水，表面胶水厚度0.2mm。会一定程度上增强马达的防水能力，但不保证相关防水等级。具体的覆盖区域和禁止覆盖区域请参考下图。

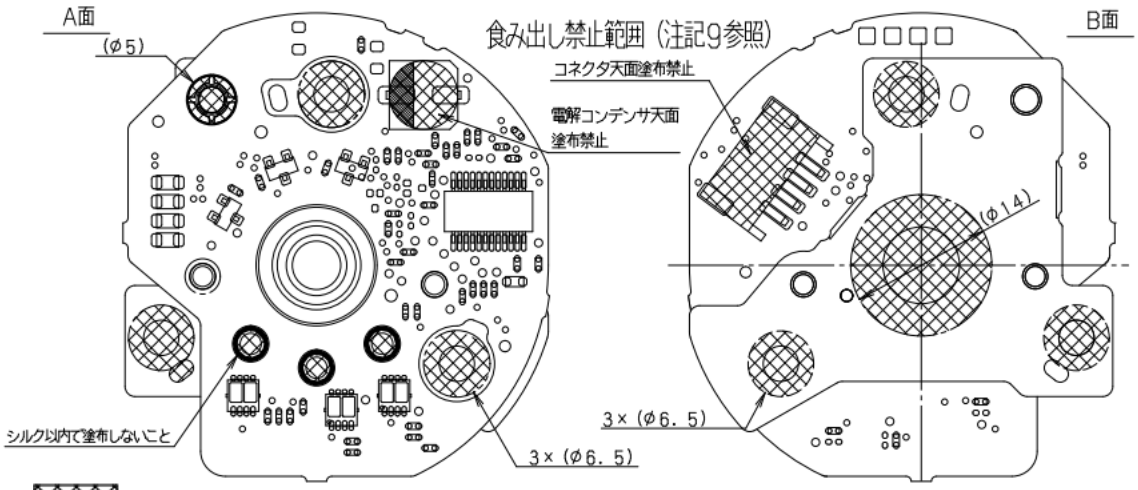
Bond：UV890SF or UV890ECO or EA6106M (made by H.B.Fuller)

Fig. 11-1 Diagram of the bond cover area(Just for reference)



The shades show application area; The shades show overflow area

Fig. 11-2 Diagram of the bond uncover area(Just for reference)



The shades show uncover area

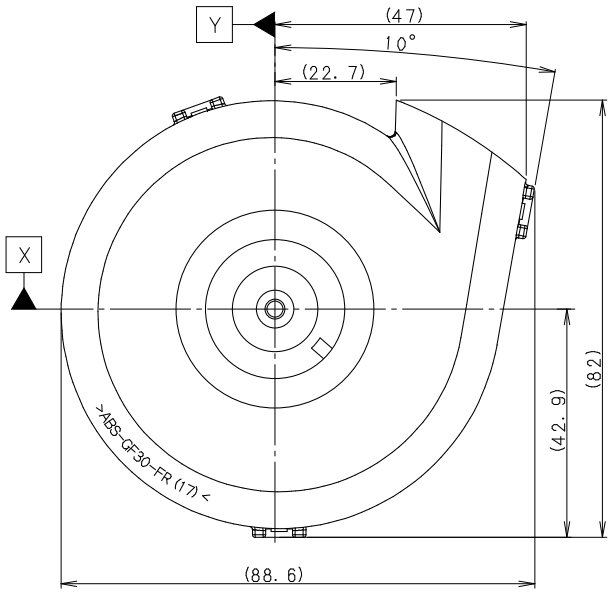
REV					
	APPROVED			MODEL	20N704V170
	DESIGNED				
APPROVED		Z.HAN	2023-06-25	DRAWING No.	3DSPC233001
CHECKED		Q.ZHANG	2023-06-25		
DESIGNED		JUN.ZHANG	2023-03-06	DC BRUSHLESS MOTOR	Sheet 15 of 17
DRAWN		SIC.YAN	2023-03-05		

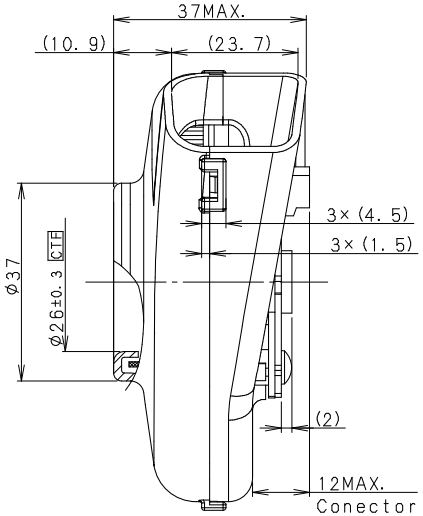
11. Reliability Test 可靠性试验

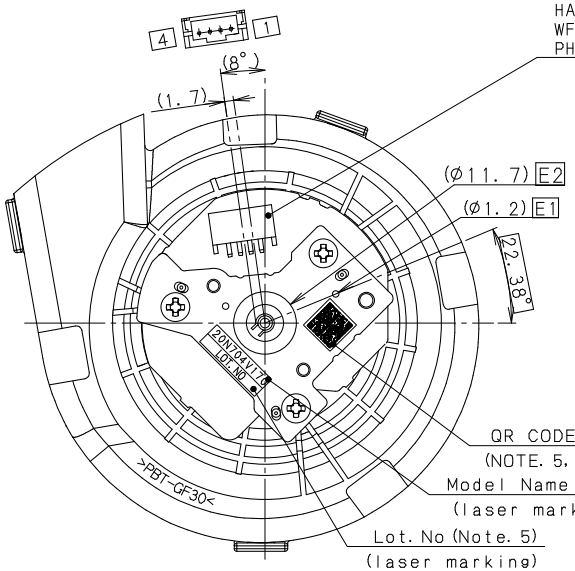
No.	Item 项目	Condition 条件	Judgment 判定基准
1	Low temperature operating test 低温运行试验	<Remark > ▪Ambient temperature : -10 [℃] ▪Test time : Stored at -10 [℃] temperature for 0.5 [h] then do the test, 72 [h] <条件> ▪试验温度 ：-10 [℃] ▪试验时间 ： 试验箱-10 [℃]条件达到后，风机放置 0.5[h]后, 运行 72 [h]	Stored at room temperature for 2 hours then do the test, and the test result should be meet the following judgment. • The appearance has no obvious changed. • The characteristics should be meet the specifications 常温放置 2 小时后测试，测试结果需满足下记基准 ▪外观无明显变化 ▪特性满足规格要求
2	High temperature High Humidity operating test 高温高湿运行试验	<Remark > ▪Ambient temperature : 45 [℃] ▪Ambient Humidity : 93 [%] ▪Test time : 72 [h] <条件> ▪试验温度 ：45 [℃] ▪试验湿度 ：93 [%] ▪试验时间 ：72 [h]	
3	Thermal Shock test 冷热冲击试验	<Remark > ▪Ambient temperature : -30[℃] 2H/ 65[℃] 2H ▪Switch time : within 3 [min] ▪Test cycle : 9 cycle <条件> ▪试验温度 ：-30 [℃]运行 2 小时。 65 [℃]运行 2 小时 ▪转换时间 ：3 [min]以内 ▪循环次数 ：9 次	

12. Life 寿命

No.	Item 项目	Guaranteed Life 保证寿命	Test Condition 测试条件	NG Judgment NG 判定基准
1	Continuous operating test 1 连续运转 1	1,500[hr]	14.4V, duty 100% Open air 风口全开 Rated voltage 额定电压 Rated Speed 额定转速 Room temperature 室温	▪When shaft and sleeve is locked. 轴和轴承锁住时 ▪When Impeller Rotor height become lower 0.2 [mm] MIN. 叶轮转子高度比初期值变化大于 0.2[mm]时 ・The characteristics should be meet the specifications ▪特性满足规格要求
2	ON/OFF operating test 1 ON/OFF 试验 1	30000 次循环	14.4V, duty 100% Open air 风口全开 Rated voltage 额定电压 Rated Speed 额定转速 15s ON/15s OFF 15s 开/15s 关 Room temperature 室温	







Conector Housing
HA2001-4A-S (華虹)
WF20004-01206 (ATOM)
PH-4AWBJ (NL14) (CWB)

□Pin assignment

No.	SIGNAL
1	FG Output
2	PWM (Hi Active)
3	GND
4	VM (15.8V)

QR CODE
(NOTE. 5, 6)
Model Name (Note. 5)
(laser marking)
Lot. No (Note. 5)
(laser marking)

3 1 14 BC S

- Shift & Location No.
  :CHINA (NIDEC DALIAN LTD. ···D, E)
  :CHINA (NIDEC SHAOGUAN LTD. ···S, T)
- Area & Line No.
  DALIAN:01, 02
  SHAOGUAN:A~Z (I, O, Xの外.)
- DAY:01~31
- MONTH:1~9 (OCT:X, NOV:Y, DEC:Z)
- YEAR:THE LAST DIGIT OF 2023.

注記 NOTES.

1. CTF表示重要機能寸法。CTF means Critical To Function.
2. ( ) 寸法只供参考，不適用一般公差。
   ( ) dimensions are just a reference and not suitable with normal tolerance.
3. X軸是E1和E2中心的連線，回転22.38°。Y軸是X軸以E2為中心回転90° 的線。
   The X axis is the line connect the center of E1 and E2, rotate 22.38°.
   The Y axis is the line that rotate X axis by 90° at the center E2.
4. 如果對外觀有疑問，別途限度樣品進行確認。
   When there is any objection to the appearance, the sample should be exchanged for other limits.
5. QR CODE&機種名&Lot. NO是激光刻印対応。
   QR CODE、Model Name & Lot.No are laser markings.
6. 該区域用于QR激光刻印。
   The area is for QR laser marking.
   (1) QR尺寸：6mm×6mm
   QRsize:6mm×6mm

   (2) 内容如下：
   The content of it is as following:
   EXAMPLE: F000931E0000001S16
   ① ② ③ ④ ⑤

No.	Content	Note
①	F0009	客先番号 Components type
②	31E(例)	製造年月日（3位）：OCR（例）是2023／1／14， 年月日記載方法可参照表1。 Date code:(example:2023/1/14), recording method refer to Table 1
③	00	版本号（2位）Version No. (2 number)
④	00001	序列号（5位）：00001～99999 Serial No.:serial number, total 5 numbers
⑤	S16	供応商号（3位)Vendor Code

表1：製造年月日記載 Table1:recording method of Date

①年（1位）：年末位 Year(1 number):The last digit of the year
②月（1位）：1～9、10（A）、11（B）、12（C）.
Month(1 number):1~9, 10(A), 11(B), 12(C).
③日（1位）：1～9、10～31記載為下記A～X（除I、O）
Day(1 number):1~9, 10~31:A~X(Excapt:I, O)

日 Day	10	11	12	13	14	15	16	17	18	19	20
表記record	A	B	C	D	E	F	G	H	J	K	L
日 Day	21	22	23	24	25	26	27	28	29	30	31
表記record	M	N	P	Q	R	S	T	U	V	W	X

REV			
	ISSUE	0	Fig.
	ECO No.		
	APPROVED		
	DESIGNED		
APPROVED	Z. HAN		2023-06-28
CHECKED	Q3. ZHANG		2023-06-28
DESIGNED	T2. ZHENG		2023-06-27
DRAWN	T2. ZHENG		2023-06-26

No.	PART No.	PART NAME	NOTE	Q'ty	UNIT	MARKS/MTL
					MTL.	
					MODEL	20N704V170
					PARTS	DCブラシレスモータ DC Brushless Motor
					DWG.	外形図 Out-line Drawing

TOLERANCE
UNLESS OTHERWISE SPECIFIED
LINEAR
~ALL:±0.5
~ :±
~ :±
ANGULAR :±1°
CORNER
OUTSIDE:C
INSIDE :R

TREAT.
FINISH
UNIT mm
SCALE 1／1
A3

DWG. No. K98119220O

1 OF 1 SHEETS