



Modification of Specification

Model : FF-130SH-07750

Spec. No.	Date	Description
TKS-71-D841	DEC. 12. 1996	First edition issued.
TKS-71-D841 	JAN. 28. 1997	Provisional deleted. Following item changed. 4-4 Cogging Torque: 20 g-cm max. → 10 g-cm max. Following item specified. 5. Life: 12 000 cycles min.
TKS-71-D841 	NOV. 17. 1997	Revised edition issued. Item 1-4 corrected. CW & CCW → CCW & CW Item 2-4 corrected. CW → CCW Item 5 corrected. Fan load → Pulley load

1. Standard Operating Conditions:

1-1 Rated Voltage:

13.0 V DC CONSTANT between motor terminals.

1-2 Operating Voltage Range:

9.0 V - 16.5 V DC CONSTANT between motor terminals.

1-3 Rated Load:

10 g-cm by pulley load.

1-4 Direction of Rotation:

CCW & CW**2. Measuring Conditions:**

2-1 Motor Position:

Motor to be held, with shaft horizontally.

2-2 Power Supply:

Regulated power supply which assures unquestionable measurement.

2-3 Environmental Temperature and Humidity:

The test is made in principle at a temperature between 10°C and 30°C, and at relative humidity between 30% and 95%. If the test result is questionable, it shall be judged from the test made at JIS Standard Testing Condition (20°C ± 2°C, 65% ± 5% RH).

2-4 Direction of Rotation:

CCW when viewed from output shaft side.**3. Electrical Characteristics (at initial stage):**

3-1 No Load Current:

30 mA max.

3-2 No Load Speed:

4750 ± 550 r/min

3-3 Rated Load Current:

80 mA max.

3-4 Rated Load Speed:

3500 ± 400 r/min

3-5 Stall Torque:

30 g-cm (min.) at rated load, measurement at two different load (0 g-cm & 10 g-cm).

3-6 Stall Current:

210 mA (max.) at rated load, rotor position to be 2/3R.
(R means the resistance in one pole.)

3-7 Insulation Resistance:

1.0 MΩ (min.) (DC 100 V)

between motor terminal and motor metal housing.

3-8 Dielectric Strength:

AC 100 V (50-60Hz) for one minute,

between motor terminal and motor metal housing.

3-9 Reference Characteristic Curve:

See spec. No. FF130-0049 attached.

4. Mechanical Characteristics:

4-1 External Appearance:

4-2 Shaft End Play:

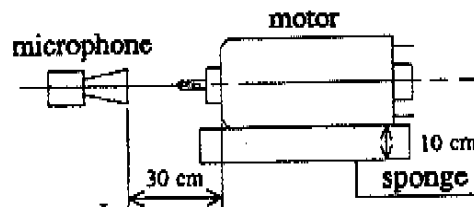
4-3 Mechanical Noise:

As per our Drawing No. K3-7678

0.05 - 0.4 mm

45 dB (max.) with following condition.

No load, rated voltage, (RMS) on JIS - A scale,
with motor to be set and measured as below.



4-4 Cogging Torque:

10 g-cm max.

5. Life:

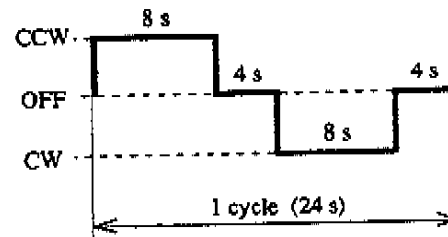
12 000 cycles (min.) total running time at the following condition.

Voltage: 13.0 V DC constant.

Load: Pulley load equivalent to 10 g-cm.

Duty cycle: As sketched below.

< Test cycle >



< Ambient Temperature >

+25°C ± 5°C	: 2 000 cycles
-40°C ± 3°C	: 1 000 cycles
+40°C ± 3°C	: 1 000 cycles
95% ± 5%	: 1 000 cycles
+85°C ± 3°C	: 1 000 cycles

: 5 000 cycles

× 2 times = 10 000 cycles

+ +25°C ± 5°C : 2 000 cycles

= TOTAL : 12 000 cycles

6. Anti-Shock Test:**6-1 Vibration Test:**

All the specifications in Item 3. and 4. are to be satisfied after motors subjected to the acceleration 4.4G and 2000CPM in X.Y.Z. directions for 4hours each.

6-2 Shock Test:

All the specifications are to be satisfied after motors subjected to the maximum acceleration 100G under interaction time 6msec. in X,Y,Z directions for 100times each total 300times.

7. Environmental Test:**7-1 Storage test under
high temperature:**

All of the specifications in Item 3. and 4. are to be satisfied after motors exposed to +80°C for 96hours and then to temperature/humidity of Item 2-3 for 24hours.

**7-2 Storage test under
low temperature:**

All of the specifications in Item 3. and 4. are to be satisfied after motors exposed to -30°C for 96hours and then to temperature/humidity of Item 2-3 for 24hours.

**7-3 Storage test under
high temperature / humidity:**

All of the specifications in Item 3. and 4. are to be satisfied after motors exposed to +50°C / 95% RH for 96hours and then to temperature/humidity of Item 2-3 for 24hours.

8. Rejects:

Motors which do not meet with the specifications mentioned above or which are apparently judged as faulty due to poor workmanship.

9. Other:**9-1 Disc Varistor:**

$E_{10} = 17.6 \text{ V} - 26.0 \text{ V}$

$\alpha = 2.5 \text{ min.}$

REFERENCE ONLY



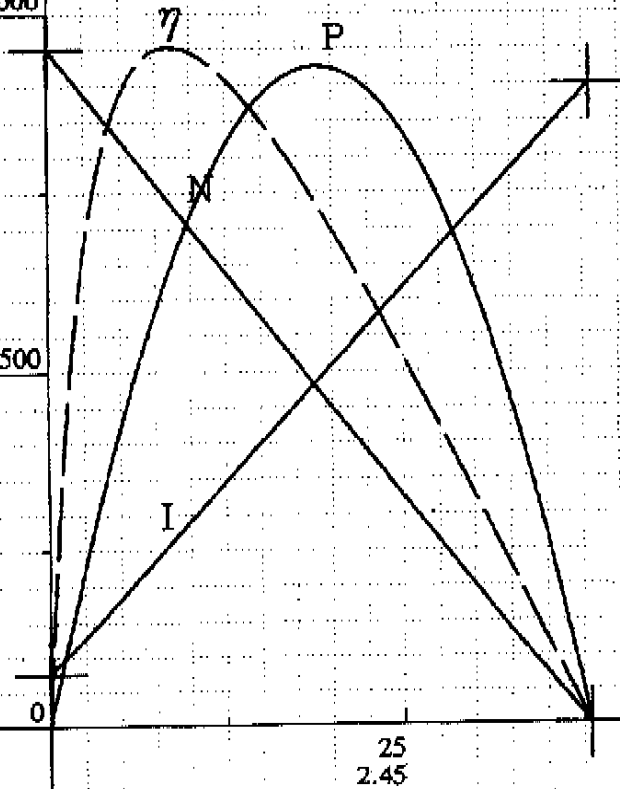
DATE 96.11.20
approx. 25deg.

MODEL **FF-130SH** (07750)

VOLTAGE 13.0 V
Constant

CCW(0)/CW(0)

EFFICIENCY [%]	OUT PUT [W]	CURRENT [A]	SPEED [r/min] (rpm)
75	0.75	0.3	7500
50	0.5	0.2	5000
25	0.25	0.1	2500
0	0	0	0



η	P	I	N	T	TORQUE
					[g-cm]
					[mNm]
					25
					50
					4.9

1 [mNm] = 10.197 [g-cm] 1 [g-cm] = 0.098 [mNm]

n = 30

----- Computed Value -----
 N (max η) : 3686 [rpm]
 I (max η) : 0.052 [A]
 P (max η) : 0.322 [W]
 T (max η) : 8.51 [g-cm]
 η (max η) : 47.64 [%]

No. **FF130-0049**

**General Instructions for Use of Mabuchi Motors:
- DO'S and DON'TS to Keep Your Motors in order -**

1. If silicon materials, which contain low molecular silicon compounds, adhere to the motor's commutator, brush or other parts, then upon rectification of the electric energy the silicon breaks down into SiO_2 , SiC and other constituents which produce a rapid increase in the contact resistance between the commutator and brush. Therefore great care should be taken when silicon material is used in a unit and check well at the same time that such binding agents or sealing materials are not generating gases of detrimental nature, whether used for motor mounting or applied during your product assemblies. Care must be taken for an optimum selection, especially when using those of cyanic adhesive and sulfur gas.

2. When mounting your motors by means of binding agents, DON'T allow any adherence to the bearings nor intrusion into the motors.

3. Axial thrust on the output shaft could have an adverse effect on the motor life. i.e. As is produced by worm gears, fans, etc.,
Check the service life expected under the actual operating conditions by testing the motors installed in your application products. For heavy thrust loads, consider using something mechanical to retain the shaft end.

4. There are occasions when the internal resistance of the motor driving power source (Which contains an electrical circuit) can influence the life span of the motor.
In instances where there is a low input of voltage to the motor, the internal resistance of the power source is large which may well result in an inferior motor after a short time, conversely in instances where high cyclic voltages are applied, this internal resistance is small and the motor life span is shortened. When the temperature deviates from the normal room temperature as is the case in low and high temperature situations, please note the conditions.

5. Motor life may be affected adversely by heavy radial load such as produced by rotating eccentric cams, etc., and also by vibration given from outside.
DO check over such negative factors by testing the motors to the actual operating conditions in your application products.

6. If when mounting the motor and assembling the unit, equipment which emits ultrasonic waves is used there is a danger that some of the internal parts of the motor might be damaged so please take care.
7. DON'T store motors under environmental conditions of high temperature and extreme humidity. DON'T keep them also in an atmosphere where corrosive gas may be present, as it may result in malfunction.
8. Ambient and operating temperatures exert an affect more or less on motor performance and life. DO pay particular attention to the surroundings when it is hot and damp.
9. When press fitting a pulley, gear etc., onto the motor output shaft, always support the shaft at the other end or its retaining metal pad in a proper and correct way.
10. When soldering, BE SURE to finish your work quickly so as not to develop plastic deformation around the motor terminals nor to give them any forced bend or inward depression. In doing so, special care must be taken not to allow solder debris and flux to spatter into motors and precautionary measures should be taken if necessary, by covering up all the nearby holes and apertures. Any motors having snap-in terminals must also be attended carefully so as not to get flux in along the terminals, as it may cause failure in electrical conduction.
11. DON'T leave motor shaft locked while power is applied, as even a short-time lock-up may cause excess heat build up resulting in burning damage to the motor depending on its specifications.

For more information, please contact us directly or through our sales and representative offices.

