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MODEL 360 OEM VARIABLE FREQUENCY MINIATURE OPTICAL CHOPPER

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1 INTRODUCTION

The model 360 OEM optical chopper consists of a remotely mounted chopping head connected by a cable to an OEM control unit.

2 UNPACKING

When the Model 360 OEM is shipped, the control unit PCB, mini motor and mini chopping disc are individually packed. Please unpack with extreme care.

3 CONNECTIONS

Connection details are made with reference to drawing 360-05 which is included on the back page.

3.1 Power

Power is supplied to the PCB via socket 1 (SK1). This socket will accept either a 2.1mm or 2.5mm standard low voltage power connector, the 2.1mm type is recommended. (Please note that these dimensions are for the centre connector. The outside dimensions are 5.5mm and 5.0mm respectively.)

The OEM PCB will operate from both AC and DC, regulated and unregulated supplies (not included). If you have a choice it is recommended that a 7.5V DC regulated supply is used.

With either AC or DC and at all power supply voltages, the steady state current required is 100mA typical, 120mA maximum when running at maximum speed. During rapid acceleration the maximum current drawn can increase to 200mA although the system will operate satisfactorily from a supply current limited to 120mA. It just takes a little longer to accelerate.

DC Operation

The OEM PCB will operate from a DC supply from 7.0V DC to 15V DC. The connector should be positive at the centre and 0V on the outside. There does not seem to be a standard arrangement for the polarity of wall mounted supplies so please check that it is centre positive before purchase. If you are unsure on the polarity of your supply then do not worry as the PCB will not be damaged from incorrect connection. (It will not work however.) Once power is connected to the PCB, the onboard LED will light.

AC Operation

The OEM PCB will operate from an AC supply from 5V AC RMS to 10.5V AC RMS. Once power is connected to the PCB, the onboard LED will light.

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3.2 Chopping Head

The control unit PCB should be connected to the 360 Chopping Head with the cable provided. The connection to the chopper head should be orientated so that the black marks align.

3.3 Reference Output

The chopper reference can be obtained by connecting a 3.5mm jack plug to socket 2 (SK2). The connections are as follows:

D Reference Output A

E Reference Output B (normally unused)

F 0v

3.4 External Control

The external control connection (SK4) can be used in a number of ways. These are explained in the following sections.

4 OPERATION

4.1 On/Off

The system can be switched on and off in two ways.

1. The power can be switched on, off or disconnected

2. A bare 3.5mm jack plug (no connections) can be inserted into SK4. This operates a switch within the socket and causes the motor to stop. The motor can started by either connecting together pins A and B or by removing the plug.

4.2 Chopping Frequency

The model 360C OEM chopper control PCB is fitted with a 10 turn potentiometer (marked "trim" on drawing 360-05) to control the motor speed. Turn the potentiometer clockwise to increase speed and anti-clockwise to decrease speed. This potentiometer will continue to turn once it reaches its end stops. It may be possible to hear a slight clicking noise when this occurs.

Do not over rev the motor.

The maximum speed allowed for the 360 mini motor is 12000 rpm. Please ensure that this speed is not exceeded.

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4.3 Reference

The reference signal is output from a 3.5mm jack socket (SK2) mounted on the control PCB. This signal is a HCT TTL square wave at the chopping frequency and has a constant phase relative to the chopping action.

4.4 Frequency range

The following table gives the maximum usable frequency range for each blade.

2 slot blade	7.5 to 400 Hz
4 slot blade	15 to 800 Hz
40 slot blade	150 to 8000 Hz

4.5 External Control

The motor speed can be controlled externally by plugging in a 3.5mm jack plug into the external control socket (SK4). By applying a voltage to pin A the motor speed will be controlled. 0V and a temperature compensated 3.3V are available for use from pins C and B respectively.

A simple way of generating this drive voltage is to connect a 1K ohm potentiometer to the three pins of the jack plug. The wiper should be connected to pin A.

The input impedance of the control input is 20K ohm and this should be taken into account when applying an external voltage.

The relationship between the applied voltage and the motor speed is controlled by the onboard trim potentiometer. Turning this potentiometer to maximum (anti-clockwise) will cause a 3.3V applied voltage to turn the motor at maximum speed. Turning the potentiometer clockwise will increase the voltage required to drive the motor at the same speed.

If the trim potentiometer is turned to its minimum position (clockwise) this will set the relationship so that the motor will not turn no matter what the applied voltage.

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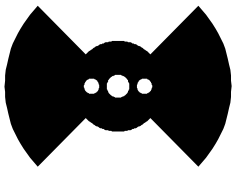
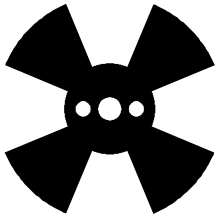
5 Spare Parts

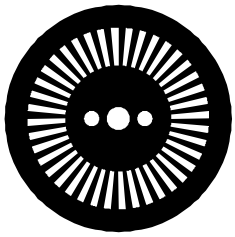
The following blades can be purchased separately and are compatible with the 360C OEM.



350-2



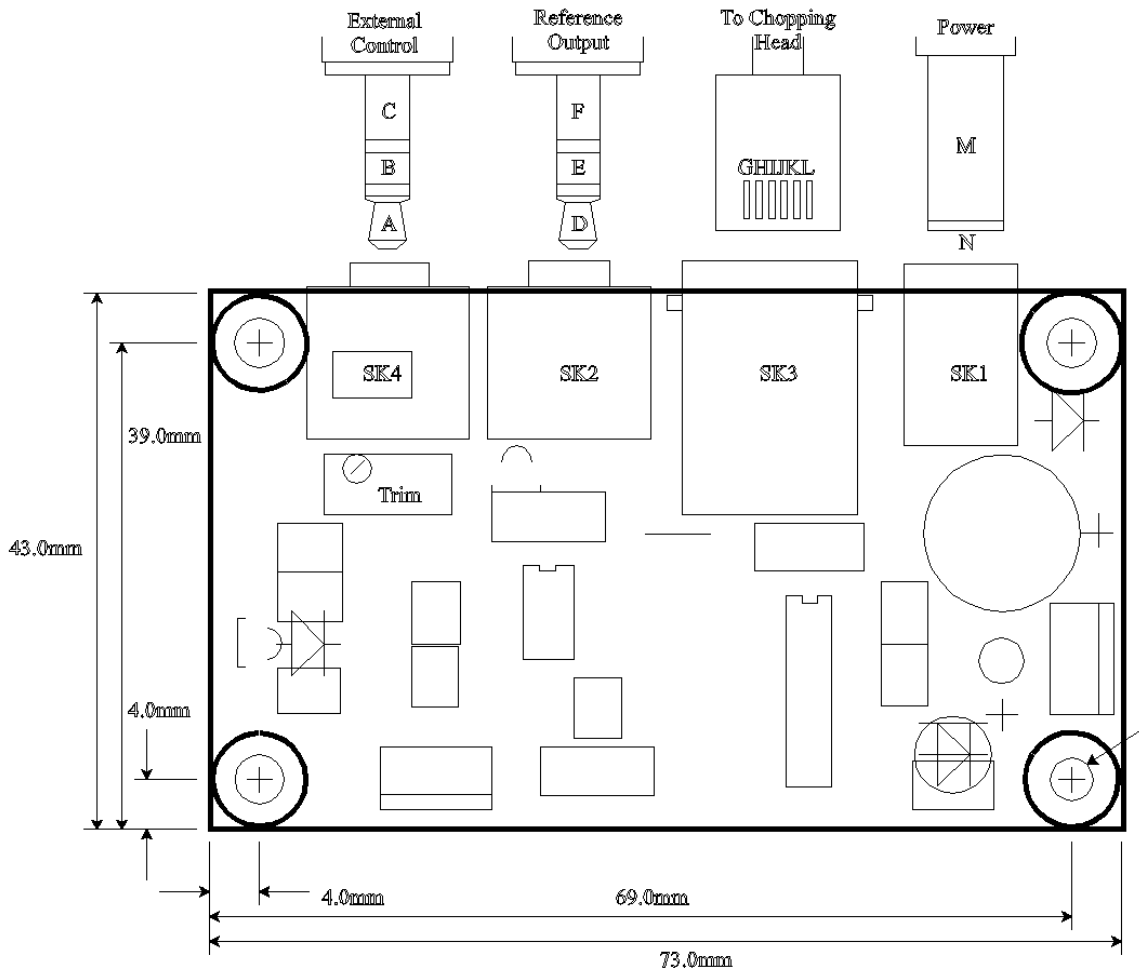
350-4



360-40

Special blades, made to customer requirements, can be made. Contact Scitec or your local representative for prices.

All blades can be gold coated at an additional cost.



Connections

External Control
A - Control In
B - 3.3V
C - 0V

Reference Output
D - Reference Output A
E - Reference Output B
F - 0V

Chopping Head
G - Motor Positive
H - +5V
I - Reference Input A
J - 0V
K - Motor Negative
L - Reference Input B

Power
M - 0V
N - Supply Positive

4 off 3.3mm diameter holes

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		TITLE: 360C PCB Drawing	SHEET 1 OF 2
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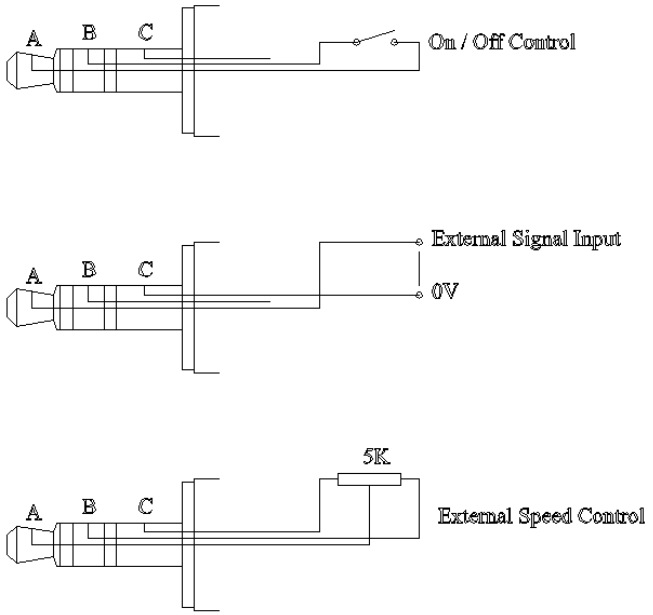
Various Methods of External Speed Control



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