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MODEL 340CD VARIABLE FREQUENCY OPTICAL CHOPPER WITH 200MM BLADE



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1 INTRODUCTION

The model 340 optical chopper consists of a remotely mounted chopping head connected by a cable to a control unit.

2 UNPACKING

When the Model 340 is shipped, the control unit, chopping head, chopping discs and interconnecting cable are individually packed. The chopping discs are packed between pieces of plywood or polystyrene and must be unpacked with extreme care.

3 SAFETY

The 200mm disc rotates at over 3300 rpm. This equates to a tip speed of approximately 80 mph. For obvious reasons, please ensure that it is not possible to touch the blade whilst the chopper is in motion.

The chopper head should be securely bolted into position before the chopper is operated.

4 ASSEMBLY

Using the cable supplied, connect the chopping head to the socket on the rear panel of the control unit.

BEFORE CONNECTING THE POWER LEAD, ENSURE THAT THE VOLTAGE INDICATED ON THE REAR OF THE UNIT IS CORRECT. DAMAGE TO THE UNIT COULD RESULT IF THE WRONG VOLTAGE IS APPLIED. A voltage selection switch is mounted inside the unit. To remove the instrument cover remove four screws, two on either side of the instrument case and lift the cover. MAKE SURE THAT THE MAINS LEAD IS DISCONNECTED BEFORE OPENING COVER.

It is essential that the chopper head is clamped securely before it is operated.

Do not move the chopper head whilst it is still moving as any twisting motion could cause the blades to be damaged due to gyroscope forces.

Do not pick up the chopper blades by their rims as they can be easily damaged. Lifting from the middle is best.

It is important not to mix and match the 200mm system (340CD) with our standard control units (300CD). The power output of the control unit has been increased to compensate for the extra load of the 200mm disk and for the power losses in the cable. If a normal (102mm) chopping head is connected with a standard cable, there is a possibility that the motor will be overdriven and its lifetime will be reduced.

Boston Electronics Corporation, 91 Boylston St, Brookline MA 02445 USA

(800)347-5445 or (617)566-3821 ** fax (617)731-0935 ** choppers@boselec.com

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5 OPERATION

5.1 On/Off

Power to the control unit is controlled by the ON/OFF switch located on the right side of the front panel. The frequency display of the model 300CD lights when the power is switched on.

5.2 Chopping Frequency

The model 340CD chopper control unit is fitted with an LED display which reads the chopping frequency correctly for all discs. The frequency is set by the front panel mounted FREQUENCY control knob. Due to the high inertia of the 200mm blade, it is recommended that the speed control is increased slowly to its maximum to give the blade time to pick up speed. If the speed control is rotated quickly to its maximum or the unit is switched on with the control knob at its maximum then the life time of the motor and the control unit will be reduced.

5.3 Reference

The reference signal is output from a BNC socket on the front panel of the control unit. This signal is a HCT TTL square wave at the chopping frequency and has a constant phase relative to the chopping action.

5.4 Frequency range

The special 200mm 2 slot blade was able to operate over the chopping frequency range of 5 to 110Hz. This corresponds to 150 to 3300rpm.

Please note that when rotating at maximum speed the outside edge of the chopper blade will be turning at 80 mph.

5.5 External Control

The instrument can be externally controlled via the front panel mounted BNC type socket. For this mode of operation the EXT/INT switch must be placed in the EXT position. The chopping frequency is then controlled by an externally applied voltage. Maximum input voltage is 15v, input impedance is 20 k Ω . In this mode the frequency control is used to set the proportionality between the input voltage and chopping frequency.

A common fault is to have the frequency dial set to 0 when applying an external voltage. With the dial in this position the motor will not turn, no matter what the applied voltage. The usual position for the dial when in external mode is turned clockwise to its maximum.

5.6 Fuse

The line fuse in this instrument is mounted on the printed circuit board. Before changing the fuse, ensure that the unit is isolated from the line supply. Replace only with a 1 Amp 20mm x 5mm semi-delay fuse.

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