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**MODEL 320C AND MODEL 320CD VARIABLE FREQUENCY
OPTICAL CHOPPER**



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1 INTRODUCTION

The model 320 optical chopper consists of a remotely mounted chopping head connected by a cable to a control unit.

2 UNPACKING

When the Model 320 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 ASSEMBLY

First, slot the bottom edge of the chopping disc into the slot formed by the reference pick-up. Second, mount the disc onto the brass mounting boss fitted to the motor spindle using the three M3 screws provided. **DO NOT SLACKEN THE GRUB SCREWS FITTED TO THE BOSS OR ATTEMPT TO CHANGE THE POSITION OF THE BOSS ON THE SPINDLE.**

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

BEFORE CONNECTING THE POWER, 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 POWER IS DISCONNECTED BEFORE OPENING COVER.**

4 OPERATION

4.1 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 320CD lights when the power is switched on. The model 320C is fitted with a red LED indicator above the switch which lights when the unit is switched on.

4.2 Chopping Frequency

The model 320CD 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. The displayed chopping frequency can be swapped between the inside set of slots and the outside set of slots via the switch mounted on the back panel.

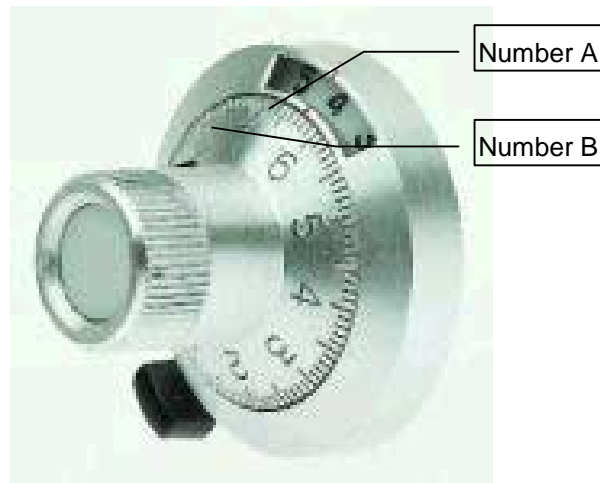




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The model 320C frequency control is fitted with a 10 turn dial. The current frequency in Hz can be calculated by appending number A to number B and then multiplying by the number of slots in the chopping blade being used. For example, on the dial below, A=4 and B=6.3. If a 30 slot blade is in use then the chopping frequency is $4\ 6.3 \times 30 = 1389\text{Hz}$.



$$\text{Chopping Frequency (Hz)} = \text{A B} \times \text{No of slots in blade}$$

4.3

Reference

The outside set of slots 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. The inside set of slots reference signal is output from a BNC socket on the back panel.

4.4

Frequency range

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

	Outside Set of Slots	Inside Set of Slots
3/30 slot blade	75 to 3000Hz	7.5 to 300 Hz
4/7 slot blade	18 to 700Hz	10 to 400 Hz
8/60 slot blade	150 to 6000 Hz	20 to 800 Hz
53/60 slot blade	150 to 6000 Hz	133 to 5300 Hz



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4.5

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

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.

