

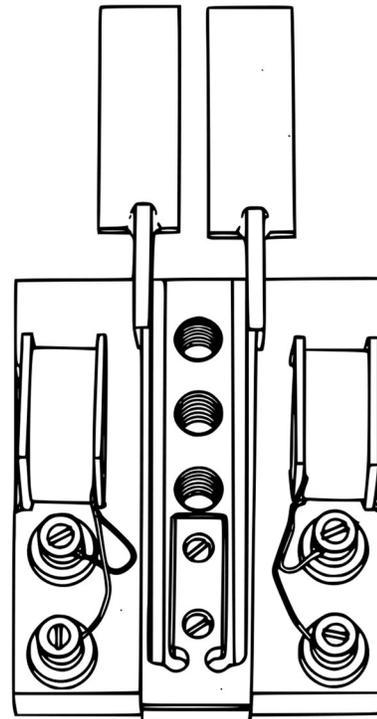
CH-20 Resonant Chopper

The CH-20 fixed-frequency resonant tuning fork chopper is an electromagnetically driven chopper with vanes, attached to moving tines, that modulate a light beam. The mirror assembly is attached to a torsion spring. The modulating frequency range of the CH-20 chopper is from 200 Hz to 4 kHz, fixed at any one value within the range. The chopping aperture is inversely proportional to the frequency and is a function of tine size. Operation at the resonant frequency is sustained by a feedback amplifier and driver, supplied separately.

FEATURES AND ADVANTAGES

- One fixed frequency up to 4 kHz
- Aperture up to 5mm
- No lubrication needed, maintenance free
- Small size/lightweight
- Low power heat dissipation
- Low power drive electronics
- Rugged, no wearing parts
- High reliability, long life
- High frequency stability
- High amplitude stability
- Withstands shock and vibration
- Ultra-high vacuum operation¹
- High/low temperature operation¹
- Jitter free operation
- No radiated electromagnetic interference (EMI)
- Reference signal available
- Single vane for alternate beam chopping¹
- Metal vanes standard, mirrors, prisms, and lenses optional¹

¹ Available on special order



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SPECIFICATIONS

Mechanical

Frequency range	200 Hz to 4 kHz
Aperture	Up to 5 mm, as a function of frequency and vane size
Frequency accuracy	±2% at 25 °C, closer accuracy available upon request

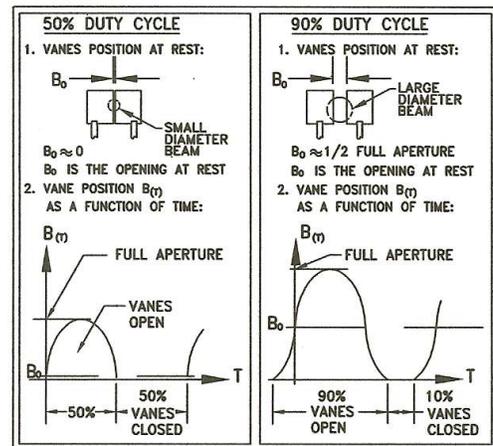
Electrical

Drive coil resistance (Ω)	150 to 1,000, as a function of frequency
Sense coil resistance (Ω)	1,000
Cable length	1 meter
Connector	Female 4-pin plug on 0.1” centers, Molex P/N 22-01-3047 or equivalent

Typical chopper frequency as a function of full aperture.

Frequency Hz	50% Duty Cycle mm (Inches)	90% Duty Cycle mm (Inches)
200	2.5 (0.10)	5.0 (0.20)
400	1.5 (0.06)	3.0 (0.12)
800	1.0 (0.04)	2.0 (0.08)
1,000	0.8 (0.03)	1.7 (0.07)
1,500	0.7 (0.03)	1.4 (0.06)
2,000	0.4 (0.02)	0.8 (0.03)
2,500	0.25 (0.01)	0.5 (0.02)
3,000	0.2 (0.008)	0.4 (0.016)
4,000	0.18 (0.007)	0.38 (0.015)

THE ABOVE SHOULD SERVE AS GUIDELINES ONLY



Notes:

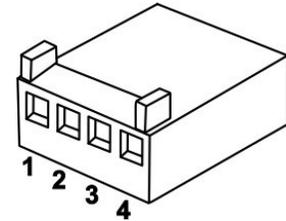
- For 50% duty cycle, opening at rest is zero.
- For 90% duty cycle, opening at rest is half of full aperture.
- The vane motion is sinusoidal.

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CONTROL SIGNALS

The SC-30 includes a 4-pin female Molex connector (PN 22-01-3047 or equivalent) for signal transmission.

Pins 1 and 4 receive a drive signal at the chopper's resonant frequency. Pins 2 and 3 output a sense signal relating to the vane position.



DRIVERS

EOPC manufactures the following specialized drivers to operate the SC-30.

AGC Driver: Provides superior amplitude stability (0.01%), the AGC driver provides a sine wave reference signal for position output, TTL level square wave reference signal, and adjustment of the phase relationship between the vane position and output signals.

PLD-1C Driver: Achieves synchronization to an external clock input. Perfect for scenarios where synchronization of the chopper to other system components is paramount.

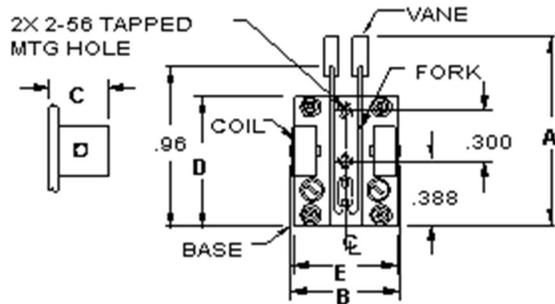
PLD-2C Driver: Enables synchronized operation of two choppers.



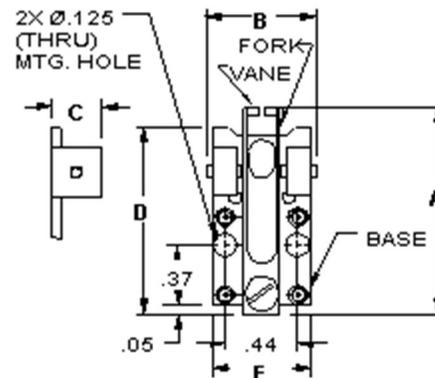
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DRAWINGS

CH-20 (200 Hz to 1000 Hz)



CH-20 (1000 Hz to 4000 Hz)



Frequency Hz	Chopper			Base	
	A (Length)	B (Width)	C (Height)	D (Length)	E (Width)
200	1.70	0.70	0.35	0.83	0.70
400	1.40	0.70	0.35	0.83	0.70
800	1.30	0.70	0.35	0.83	0.70
1,000	1.62	0.68	0.30	1.15	0.66
1,500	1.33	0.68	0.30	1.15	0.66
2,000	1.25	0.68	0.30	1.15	0.66
2,500	1.06	0.68	0.30	1.15	0.66
3,000	0.96	0.68	0.30	1.15	0.66
4,000	0.84	0.68	0.30	1.15	0.66

Dimensions in inches

ORDERING INFORMATION

TYPE [CH-20]; DUTY CYCLE [%]; VANE [B=bright or D=dark]; FREQUENCY [Hz]

Example: PART NO. CH-20-50D3000. This part number specifies the model CH-20 chopper, with 50% duty cycle, dark vanes, and a 3kHz operating frequency.

Special vane configurations, modulating waveforms and shapes are available on special order. Consult factory. Drive electronics with different packages, regulation, and reference signal and power supply options are available.

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Mailing Address: Electro-Optical Products, Corporation, 939 S. Andreasen Drive, Escondido, CA 92029, USA

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