TEST

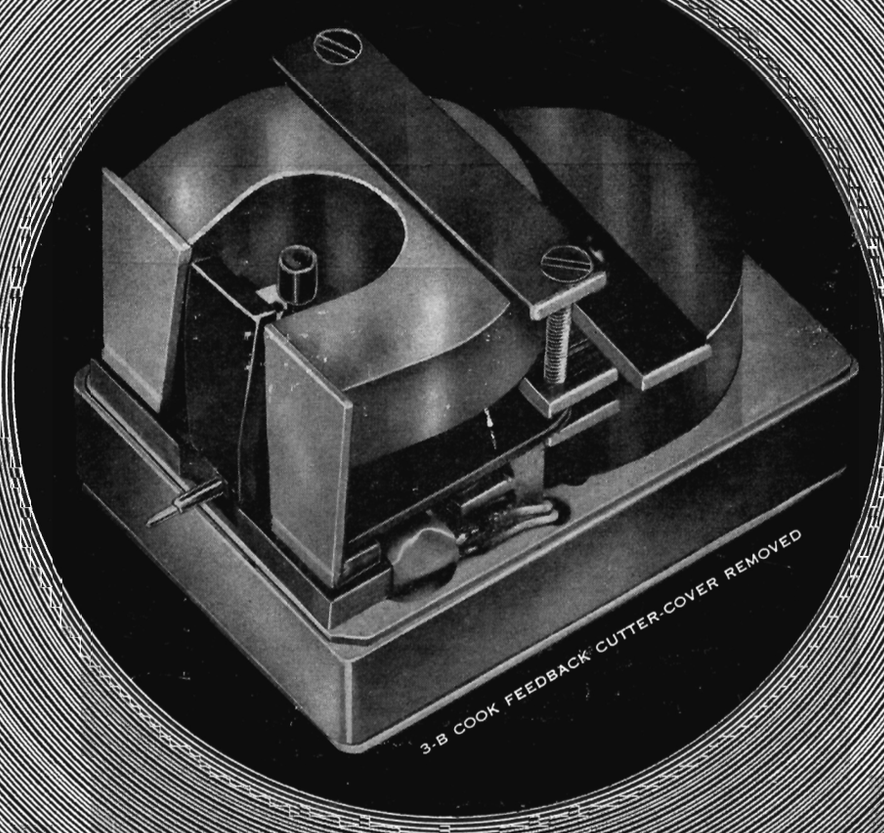
Mastered with the **COOK** *Feedback Cutter*

used for all **COOK** *records*

series **10LP**

FREQUENCY & INTERMODULATION 33⅓rpm

(greatest convenience)



3-B COOK FEEDBACK CUTTER-COVER REMOVED

COOK FREQUENCY AND INTERMODULATION TEST RECORD - SERIES 10——10 LP

Technical Bulletin

The Cook Series 10 record is a wide range low distortion test disc, produced under exacting standards of production control. It may be used for precision frequency and distortion measurements, determination of arm resonance, tracking and translation loss. Recorded with the COOK 3-B FEEDBACK CUTTER, it satisfies the need for an accurate calibration record to measure the performance of cartridges.

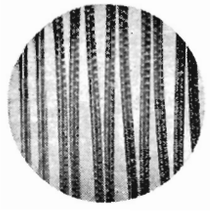
INTERMODULATION - 2% ON THE RECORD

The intermodulation cuts on the Series 10 record are within specifications and thus will be below the intermodulation in most reproducing systems.

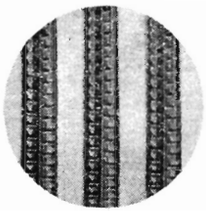
Two fairly high volume levels 4 db apart were chosen to provide a means of measurement of the SLOPE of the distortion vs. amplitude curve of the reproducing channel. If the two levels were too nearly equal, small errors of measurement would cause large errors in computation.

Failure to confirm the specified percentages on the record points to at least one of the below listed factors as deficient.

(1) The transducer must be fundamentally capable of low intermodulation.
(2) The reproducing stylus must be free of "flats" worn on the sides of the tip by groove abrasion.
(3) There must be sufficient vertical pressure to produce lateral tracking.
(4) There must be only a small tangential tracking error.
(5) Equalizing and amplifying circuits following the transducer must be linear and not introduce distortion themselves.
(6) Intermodulation is under 4% in production pressings for the first months of life, but may increase even if not played unless stored in a constant-temperature; after many temperature cycles it is probably no more than 6% and no further increase may be expected unless through playback wear.



Intermodulation Cut



20,000 cycle groove

EFFECT OF WEAR ON SPECIFICATIONS

The playing of the high frequency bands on side A repeatedly either with a stylus which has developed serious flats on the tip, or with a reproducer with large moving mass will result in a gradual erasure of the highest frequencies. It will also cause increase of intermodulation in side B. If intermodulation content of this band were higher, i.e., 10%, this effect would be less noticeable, but due to the high degree of perfection, a minor wear or abrasion by improper playback will cause an increase over the stated figure.

FREQUENCY CALIBRATION

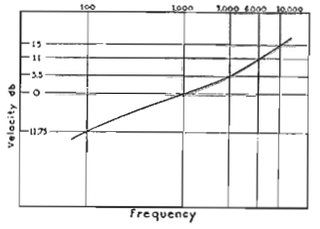
SIDE "A"

This is the calibration side, and uses frequencies recorded on a constant velocity (flat) basis above 1,000 cycles. This side will not play back flat on an ordinary phonograph because the high frequencies are not pre-emphasized. A theoretically perfect phonograph mechanism with a playback characteristic which is down 14db at 10kc, 500 cps turnover will measure this voltage characteristic at the speaker terminals.

FREQUENCY	RELATIVE VOLTAGE
20,000	- 0.1
17,000	- 0.125
15,000	- 0.137
12,000	- 0.16
10,000	- 0.20
9,000	- 0.22
8,000	- 0.25
7,000	- 0.29
6,000	- 0.33
5,000	- 0.39
4,000	- 0.45
3,000	- 0.55
2,000	- 0.70
1,500	- 0.85
1,000	- 1.0
1,000 to 20	- 1.0

"A" Side -(Series 10LP only) - At the inside diameter is a band of 1,000 - 10,000 - 1,000 cps. This is for determining translation loss, a convenient method of identifying a worn stylus condition. Compare the reading from 10,000 cps at the outer edge of side A with that of this same frequency at the inner diameter:

10 Kc OUTSIDE	10 Kc INSIDE	STYLUS CONDITION
1.0	0.40	good
1.0	0.33	fair
1.0	0.25	poor



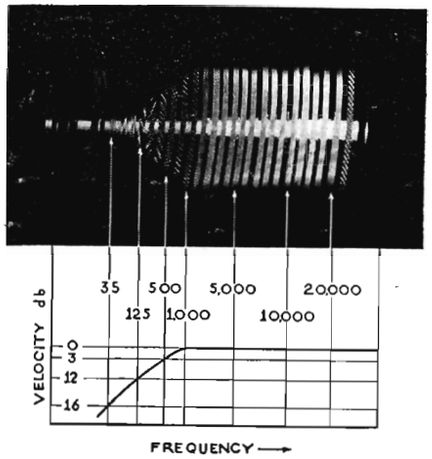
FREQUENCY CALIBRATION FOR LP SYSTEMS
---Band 1, side "B"

Recorded frequencies (starting outside):
100-1,000-3,000-6,000-10,000

Volume level: 1.2cm/sec at 1,000 cps
Level Tolerance: 1 db
Characteristic: Published LP curve (see fig. at left)

FREQUENCY CALIBRATION (Side-A)

An actual photograph of the reflection pattern is shown at right, response curve drawn below (Crossover 500 cps.)



TEST FOR ARM RESONANCE, TRACKING ABILITY, and 350 CYCLE CROSSOVER

Remainder of side "B"

Recorded frequencies: Sweep from 1,000 - 35 cps
Identifying breaks: 500-350 (spiral) - 100 - 50 cps
Frequency tolerance: 1 db referred to RMA 350 cycle crossover curve (500 cps crossover is used in the Series 10-LP).
Db down at crossover: 3

NOTES: Because of the high recorded signal, the point at which arm resonance or tracking deficiency occurs can be quickly determined.

INTERMODULATION DISTORTION MEASUREMENTS

Bands 2 & 3 - side "B"

Discreet frequencies: 100 cps, 7,000 cps
Amplitudes, peak-to-peak:
.0045" outer band
.0028" inner band
Intermodulation distortion:
under 4% outer band
under 2% inner band
Relative volume level: 7,000 cps 12 db under 100 cps based on flat (not de-emphasized) playback

NOTES: The measurement of low I.M.D. on these test bands is dependent on all equipment in the reproducing channel.

another SOUNDS OF OUR TIMES recording by
COOK LABORATORIES - STAMFORD, CONN.