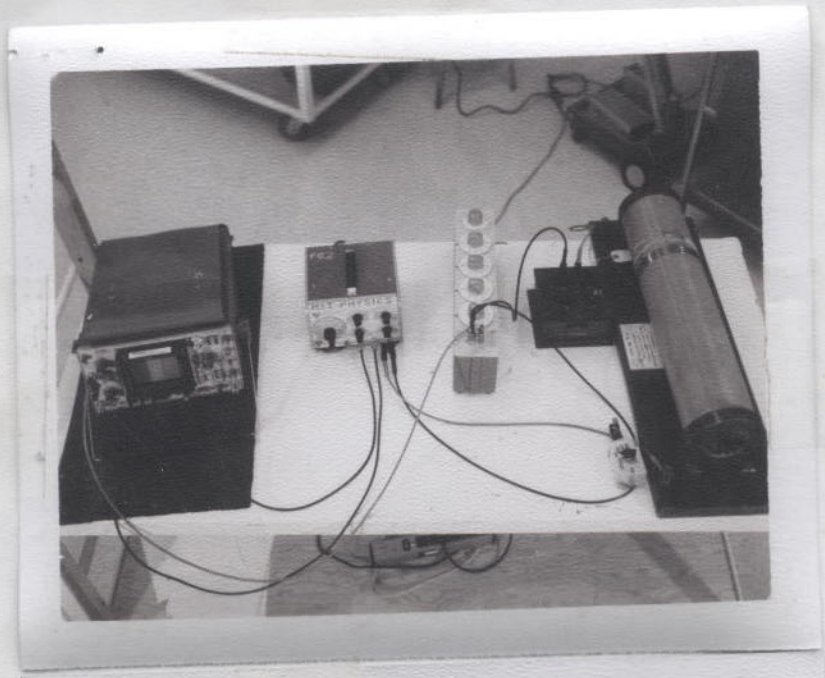
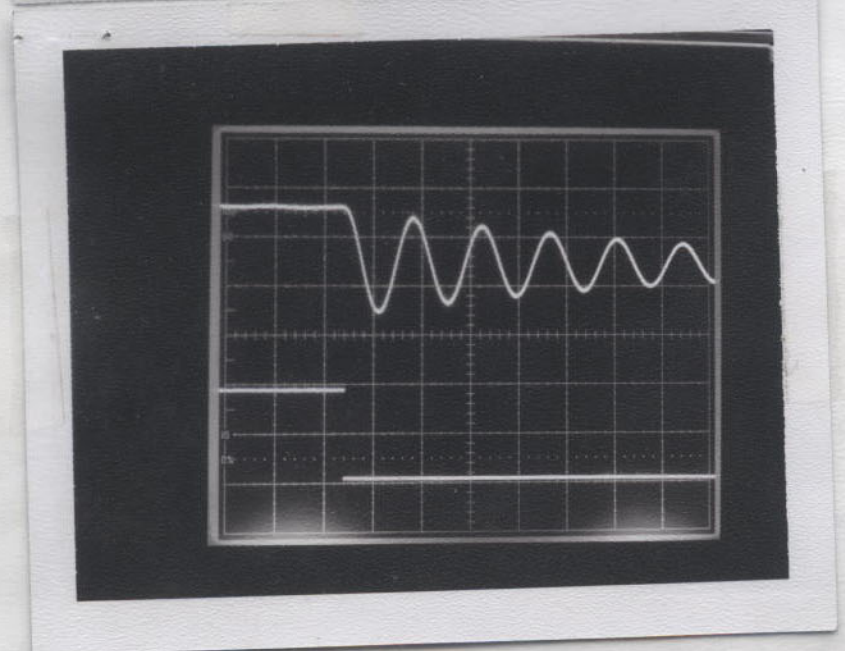
DAMPED RLC CIRCUIT

LC & RLC CIRCUITS - Damped Oscillations

A series circuits consisting of a decade resistor, a decade capacitor, and a variable induc
are driven by a square wave generator. The damped signal across any of the circu
components can be displayed on a oscilloscope.





H. Bradt
September 3, 1987

X80. Damping in LC(R) Circuit; CRT - 10M

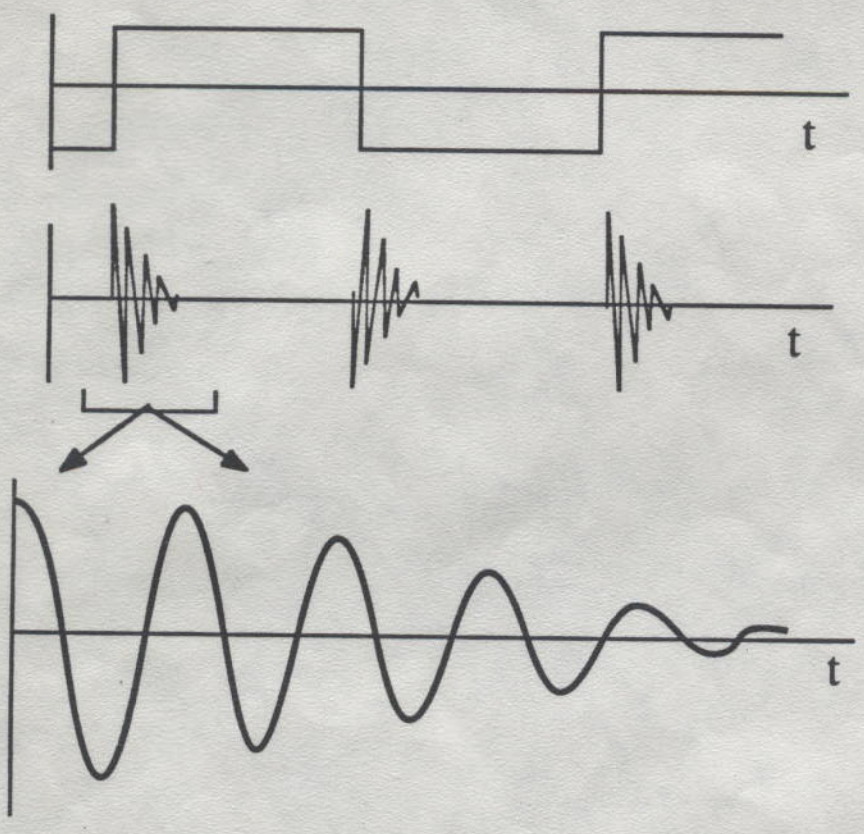
Purpose: Show the effect (damping) of resistance in an LC (R) circuit.. Display waveforms on a CRT.

Equipment: LC circuit (values??); square wave generator; CRT

Procedure:

The intrinsic R does the damping.
Pulse (or 'excite') the LRC Circuit with edges of pulse from square wave generator.
Set decay time to be a lot less than time between edges.
Show square wave on scope.
Show multiple excitations in LRC circuit
Each excitation damps out rather quickly
Increase sweep speed to show decay from one excitation.
Could compare decay time to that predicted by theory (approx. equal to RC)

B80



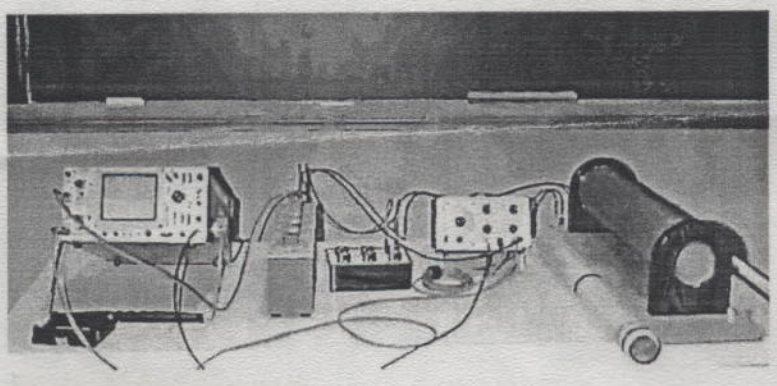
L2a DAMPED RLC CIRCUIT (ACROSS RESISTOR) L2

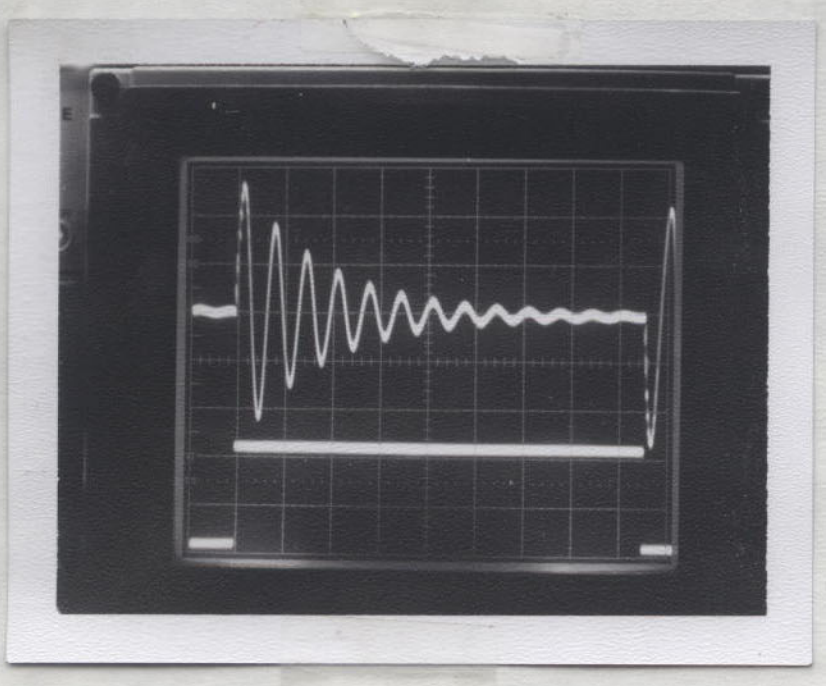
DAMPED OSCILLATIONS - Damped RLC Circuit

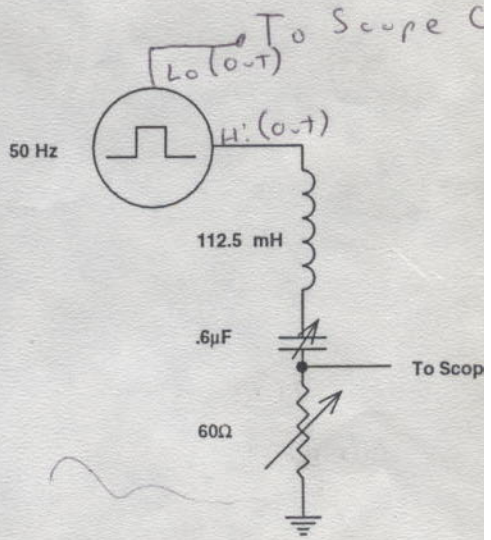
A series circuit consisting of a decade resistor, decade capacitor and a variable induc driven by a square wave generator. The damped signal across ~~any of~~ the circu ~~components are~~ displayed on a oscilloscope.

Res

is

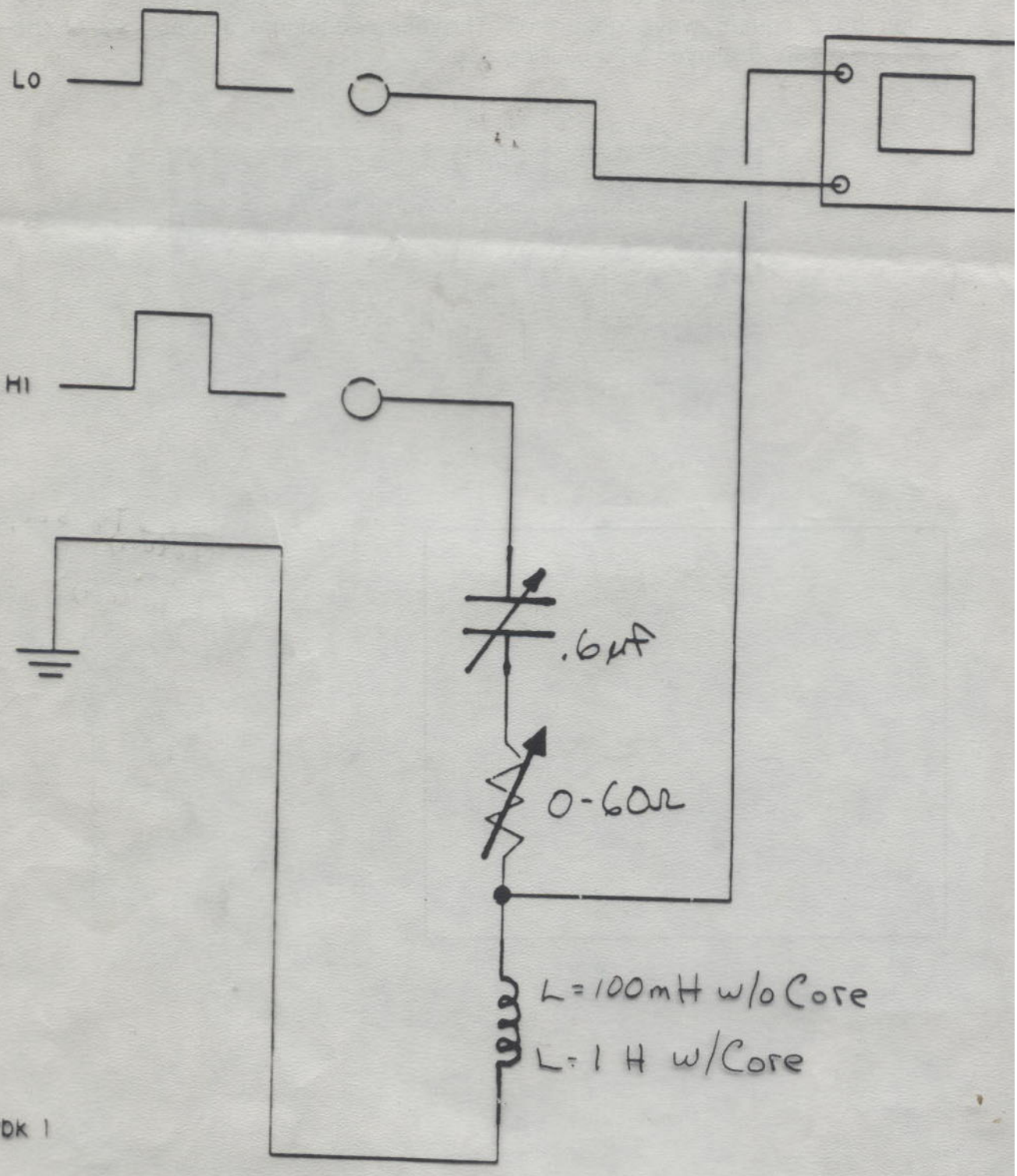






L2

DAMPED RLC CIRCUIT

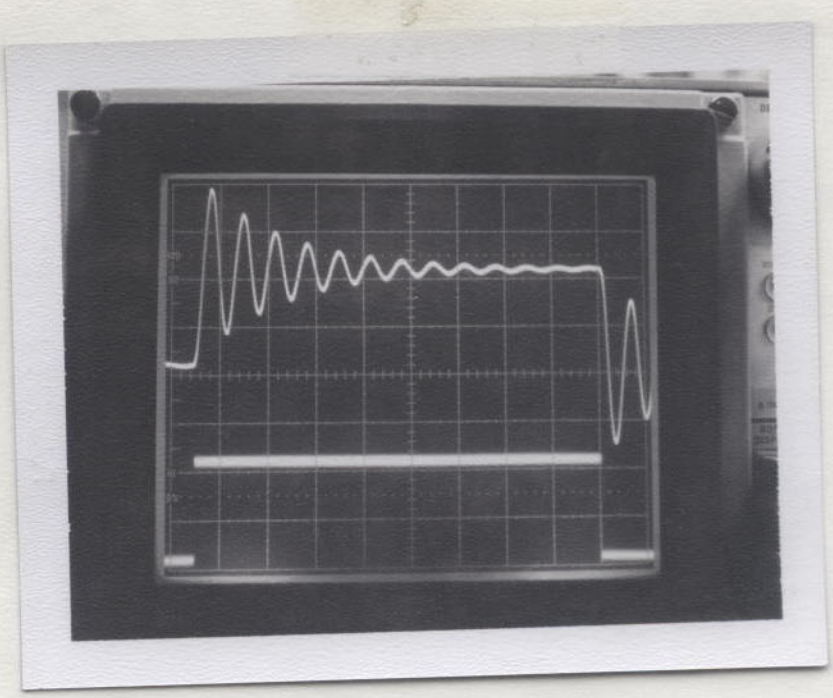


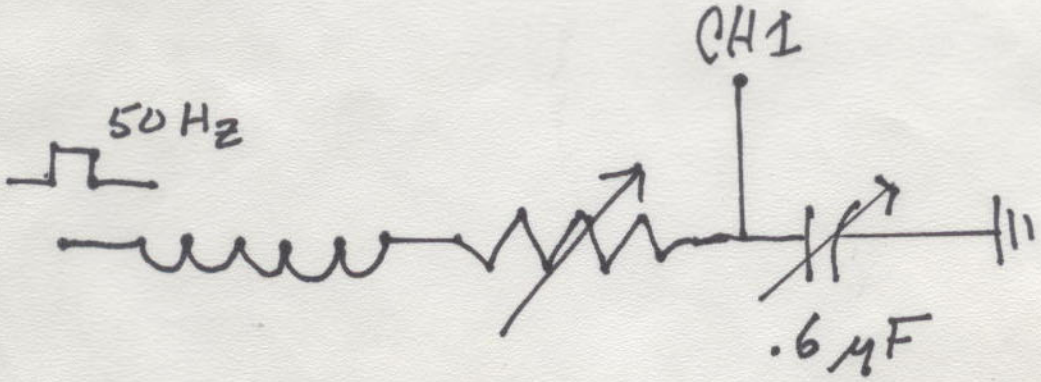
Drdk 1

L2b DAMPED RLC CIRCUIT (ACROSS CAPACITOR) L2

DAMPED OSCILLATIONS - Damped RLC Circuit

A series circuit consisting of a decade resistor, decade capacitor and a variable induc driven by a square wave generator. The damped signal across any of the circu components are displayed on a oscilloscope.





L26

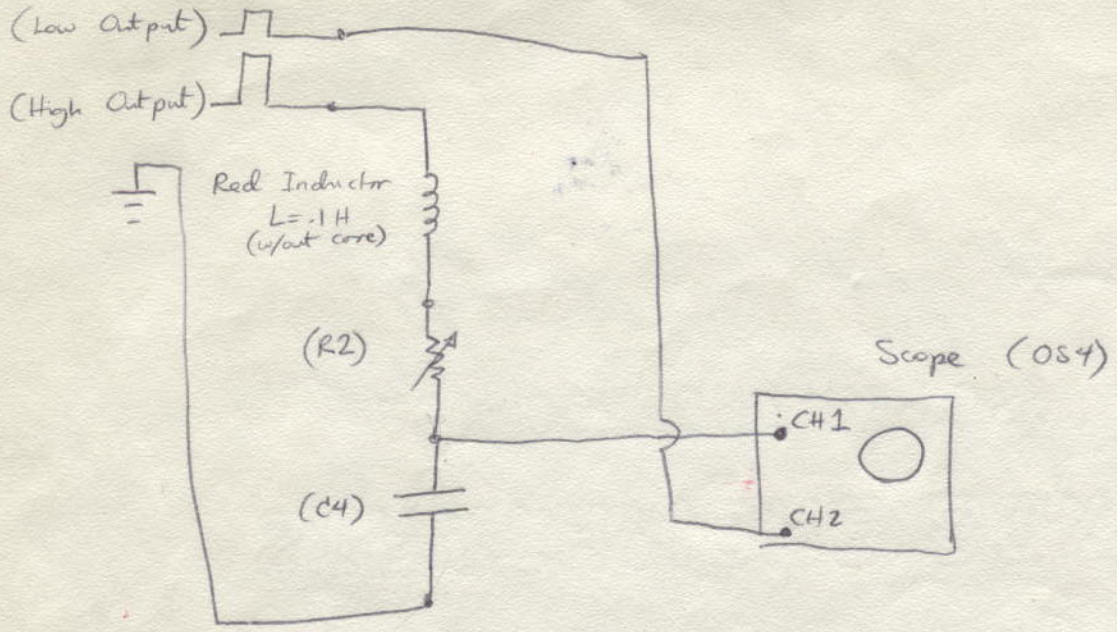
DAMPED RLC
ACROSS CAPACITOR

$T = 2\pi\sqrt{LC}$ L

(read across C)

1. Circuit Set Up:

Function Gen (FG2)



2. Specifications:

- **FG2**:
  - Function: SQ
  - Range: ~~1~~ 10 ; knob < 5
  - DC offset: 0
  - Sync Output: → to Scope A Trigger
  - High Output Level: → to Inductor
  - Low Output Level: → to Scope Ch.2

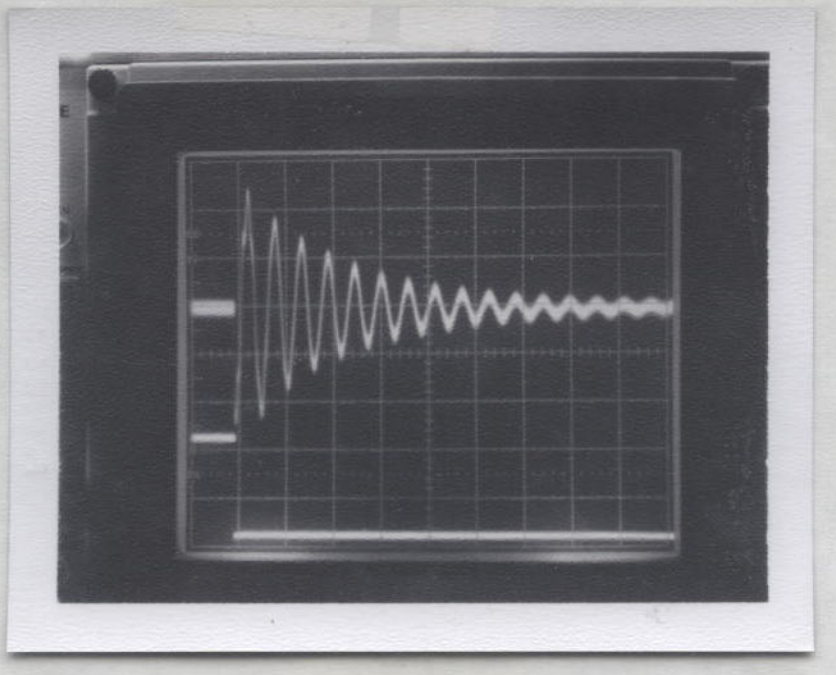
- **R2**:
  - Originally set @ 0 Ω

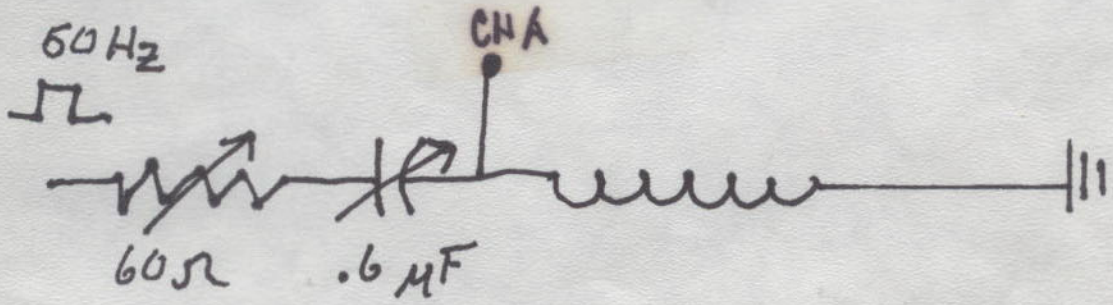
DAMPED RLC CIRCUIT (ACROSS INDUCTOR)

L2c

DAMPED OSCILLATIONS - Damped RLC Circuit

A series circuit consisting of a decade resistor, decade capacitor and a variable induc
driven by a square wave generator. The damped signal across any of the circu
components are displayed on a oscilloscope.





L2d DAMPED RLC CIRCUIT (SERIES / PARALLEL) L2

DAMPED OSCILLATIONS - Damped RLC Circuit

A series circuit consisting of a decade resistor, decade capacitor and a variable induc driven by a square wave generator. The damped signal across any of the circu components are displayed on a oscilloscope.