

Instrumentation channel

1. X
 2. $K_1 \frac{dx}{dt}$
 3. F
 4. $K_3 (K_2 F \cdot K_1 \frac{dx}{dt})$ (Power)
 5. $\int \text{Power (work)}$
- (K = scale factors)

Calibration

1. X (known distance full scale, = 7 ft)

~~3.8~~ 4.42

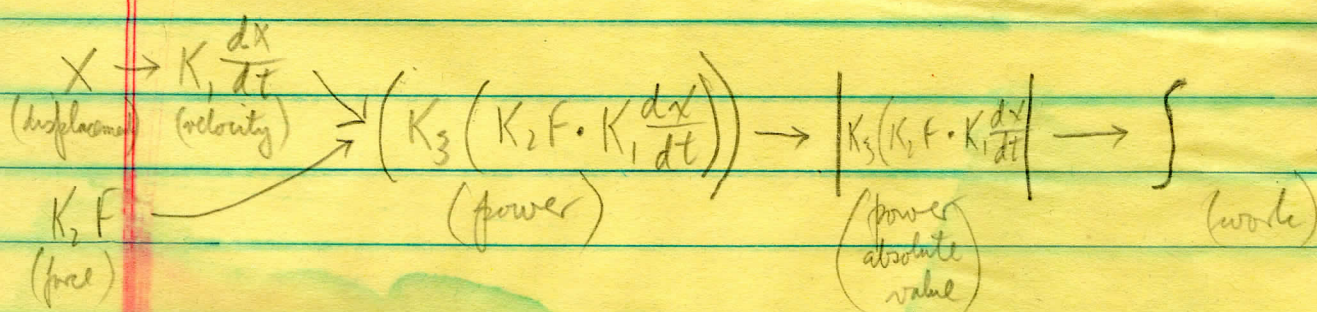
2. $K_1 \frac{dx}{dt}$ = read off ^{slope} X against strip chart travel
 4.17 ft/sec. $10.5 \text{ mm} = 4.17 \text{ ft/sec}$

Cal $\therefore 0.397 \text{ ft/sec/mm deflection}$

4. Power (step function into both $F + V$ channels, including neg. veloc.) product of 2 + 3 against deflection
 $12.5 \text{ ft lb sec}^{-1} / \text{mm}$

3. Weights on handle, $8 \text{ mm} = 25.28 \text{ lb}$ 3.16 lb/mm

5. Slope extrapolated - against power + chart travel
 58.8 ft lb / mm



calibration weights $5875 \text{ gm} = 25.28 \text{ lb}$

X $80 \text{ mm} = 7 \text{ ft}$ $1 \text{ mm} = .175 \text{ ft}$

Force channel $\frac{25.28 \text{ lb}}{8 \text{ mm}} = 3.16 \text{ lb/mm}$

Velocity $\frac{7 \text{ ft}}{42 \text{ mm} / 25 \text{ mm/sec}} = 4.17 \text{ ft/sec}$

$\frac{4.17}{10.5 \text{ mm}} = 0.397 \text{ ft sec}^{-1} / \text{mm}$

Power (veloc. $12 \text{ mm} \cdot 0.397 = 4.76 \text{ ft sec}^{-1}$)

(force $5 \text{ mm} \cdot 3.16 = 15.80 \text{ lb}$)

$\frac{4.76 \times 15.80}{6 \text{ mm}} = 12.54 \text{ ft lb sec}^{-1} / \text{mm}$

Work

(Power $12 \text{ mm} \cdot 12.5 = 150.48 \text{ ft lb sec}^{-1}$)

$\frac{150 \cdot 3.92 \text{ sec}}{10 \text{ mm}} = 58.89 \text{ ft lb/mm}$

Re: dynamic effects F + I loading

Hillie

J Physiol 110: 249, 1950
Electron. Eng. 22: 435, 1950

Sonometric contact

Constant velocity imposed

Hill

PRS 126B

Inertia wheel

Hill

PRS 128B; 263, 1940

Bed rest exercise benefit

Prin

P. V. Buyanov, et al : Prolonged hypokinesia
as a factor changing the functional condition
of the cardiovascular system of a well man.
PP 97-98