

ANN ARBOR INSTRUMENT WORKS, INC.

ENGINEERING LABORATORY EQUIPMENT

CONSULTING ~ DESIGN ~ MANUFACTURE

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FATIGUE TESTING MACHINE Cabinet Model F-1C

GENERAL FEATURES

This machine uses $\frac{1}{2}$ " dia. specimens which are chucked in the collets. The rear bearing housing assembly is movable so that it may be moved back and forth to accommodate specimens of different lengths. A hand wheel for adjusting the rocker support is mounted under the machine. The load is applied by adding the desired weights to the loading pan which, acting through the load equalizing bar, produces bending in the specimen.

The machine is equipped with an automatic shut-off switch located directly under the left yoke which stops the motor whenever the specimen breaks. The red knob located in the front of the machine is the starting switch.

MACHINE DATA

Moment arm -8"

Tare weight of loading pan and rod, load equalizing bar, spindles, and bearing housing -7 lbs.

Gear reduction ratio for counter 100:1

Spindle speed 1,725 rpm

LUBRICATION

Spindle Bearings: Shielded greased ball bearing. The bearings will not require further lubrication.

Gear Reduction Box and Counter: The gear reduction box contains light machine oil and should be replenished occasionally. The revolution counter reads directly in hundreds of revolutions, a maximum reading of 99,999,900 can be read before the counter automatically returns to zero.

MAXIMUM FLEXURAL STRESS CALCULATIONS

$$S = \frac{Mc}{I} = \frac{W+T}{2} \times \frac{Ld}{2} = \frac{16(W+T)L}{d^3}$$

M= Bending moment in inch-lbs.
c= radius of specimen
I= Moment of Inertia

T = Tare Weight = 7 lbs.
L = Moment Arm = 8 inches
W = Weight on pan in lbs.
d = diameter of test section
in inches

SPECIFICATIONS

MOTOR: Capacitor type, 110 volt, 60 cycle, 1/6 H.P., 1725 R.P.M.

CONTROL: Automatic throw-out Micro Switch operated when specimen fails.

REVOLUTION COUNTER: Durant, 6 figures, 100:1 worm-gear reduction

LOADING ARMS: Ball bearings packed in grease, shielded

SUPPORTS AND SHACKLES: Cast aluminum filled with hardened steel adjustable cone-points

BASE: Cast aluminum, machined ways

MOUNTING: F-1C, steel cabinet, ~~XXXXXX~~, 1 steel shelf, latch doors that lock

DIMENSIONS: F-1C 24" deep, 39½" long, 45" high

WEIGHT: 250 lbs. (approximately)

SPECIMEN: Test section Max. ½" diameter, 0"-6" length reduced section

FEATURES

The Fatigue Machine is readily adjustable for various length specimens often required for research on high temperature, corrosion, and surface-effect fatigue.

The specimen design is simple, requiring machining only on the tested portion, the ends being cylindrical ½ diameter stock, easily inserted and positively gripped in the collets.

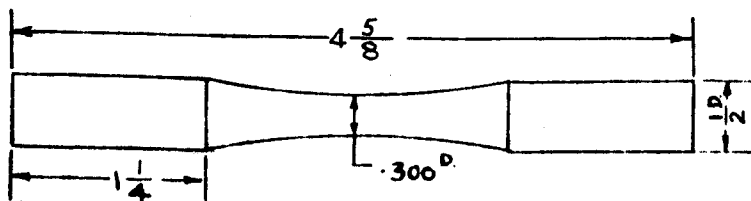
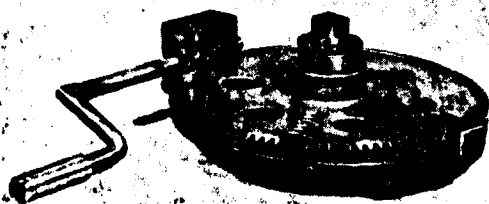
Catalog#
X402 & X403

Dead-weight pan is spring suspended and necessary weights available in 1, 2, 5, 10, 20, and 50-pound sizes.

Catalog #
W-1, W-2, W-5,
W-10, W-20, W-

The Radius Tool, F-IRT, is used for making fatigue specimens for the Pure Bending Fatigue Machines.

The Radius Tool consists essentially of an iron casting which attaches to the compound of a lathe, a worm and gear, hand crank and tool holder.



X403 Fatigue Specimen

*F-IRT, W-1 - W-50, and X402 X403 are NOT included in price of F-1