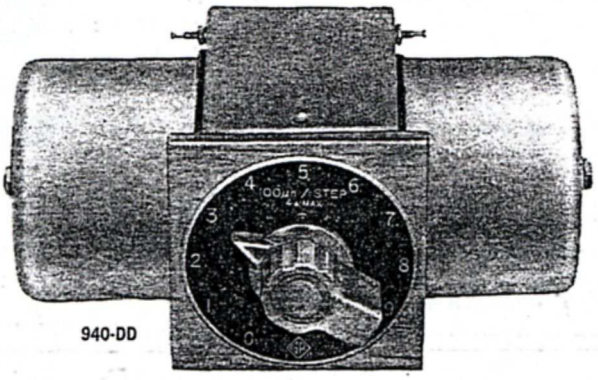
Type 940 DECADE-INDUCTOR UNIT



940-DD

Each 940 Decade-Inductor Unit is an assembly of four inductors (relative values, 1, 2, 2, 5) wound on molybdenum-permalloy dust cores, which are combined by switching to give the eleven successive values from 0 to 10. The decade switch has high-quality ceramic stator-and-rotor members and well-defined ball-and-socket detents. All contacts are made of a silver alloy and have a positive wiping action.

specifications

Accuracy: Each unit is adjusted so that its inductance at zero frequency and initial permeability will be the nominal value within the accuracy tolerance given in the following table:

Unit	940-DD	940-E	940-F	940-G	940-H
Inductance per step	100 μH	1 mH	10 mH	100 mH	1 H
Accuracy	±2%	±2%	±1%	±0.6%	±0.6%

Under our standard warranty, this accuracy is guaranteed for 2 years if the inductor has not been damaged.

Frequency Characteristics: For any specific operating frequency, Figure 2 shows the percentage increase in effective series inductance (above the value when f = 0), which is encountered with the extreme settings of each of the five decade-inductor units when the chassis is floating. Interpolation may be used for intermediate settings.

Change in Inductance with Current: Fractional change in initial inductance with ac current for each type of toroid is shown in the normal curves, Figure 1, in terms of the ratio of the operating current, I, to I_t, the current for 0.25% change, solid line (0.1%, broken line). For ratios below unity, inductance change is directly proportional to current. Values of I_t, listed below, are approximate and are based on the largest inductor in the circuit for each setting.

Incremental Inductance: Dc bias current I_b will reduce the initial inductance as shown in the incremental curves, Figure 1.

Switch Setting	RMS I_t (mA) 0.1% Increase	0.25% Increase			
	940-DD	940-E	940-F	940-G	940-H
1	141	17	5.4	1.7	0.54
2, 3, 4	100	12	3.8	1.2	0.38
5, 6, 7, 8, 9, 10	63	8	2.4	0.8	0.24

Storage Factor Q: See Figure 3:

Dc Resistance: Approx 45 Ω per henry.

Temperature Coefficient: Approx −25 ppm per degree C between 16° and 32°C.

Max Safe Current: Approx 200 times the pertinent I_t value (30 times for the 940-DD). Max current engraved on dial.

Terminals: Solder lugs. Circuit insulated from chassis.

Mounting: Hardware included, with dial plate and knob.

Dimensions (width x height x depth): 8 x 3½ x 4¼ in. (205 x 90 x 110 mm).

Weight: Net, 3½ lb (1.6 kg); shipping, 6 lb (2.8 kg).

Catalog Number	Description	Inductance Total	Inductance Steps
	Decade Inductor		
0940-9810	**940-DD**	1 mH	100 μH
0940-9705	**940-E**	0.01 H	0.001 H
0940-9706	**940-F**	0.1 H	0.01 H
0940-9707	**940-G**	1 H	0.1 H
0940-9708	**940-H**	10 H	1 H

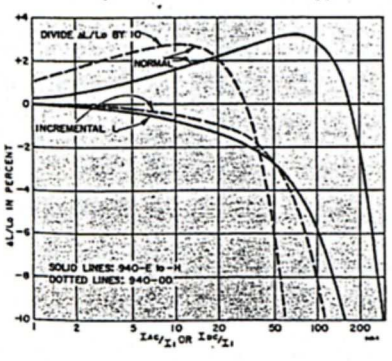


Figure 1. Percentage change in normal and incremental inductance with ac and bias current. Incremental curve is limited to an ac excitation less than I_t.

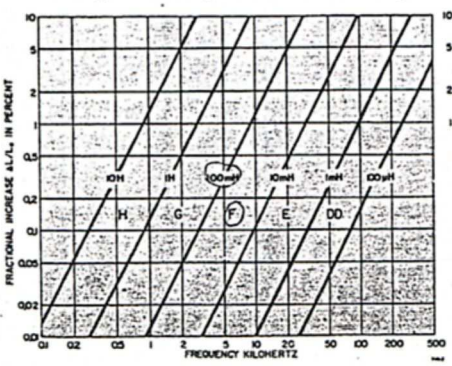


Figure 2. Change in effective inductance with frequency for the 940 Decade-Inductor Units.

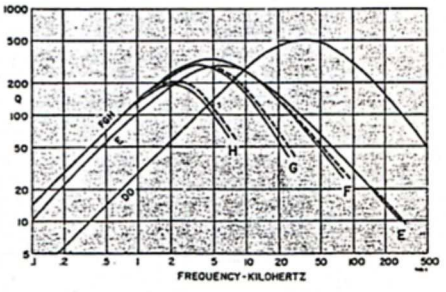


Figure 3. Variation of Q for the maximum inductance of each 940 Decade-Inductor Unit at low excitation levels. Dashed curves correspond to use with chassis floating.