

WIDE MATCHING RANGE SLIDE SCREW TUNERS

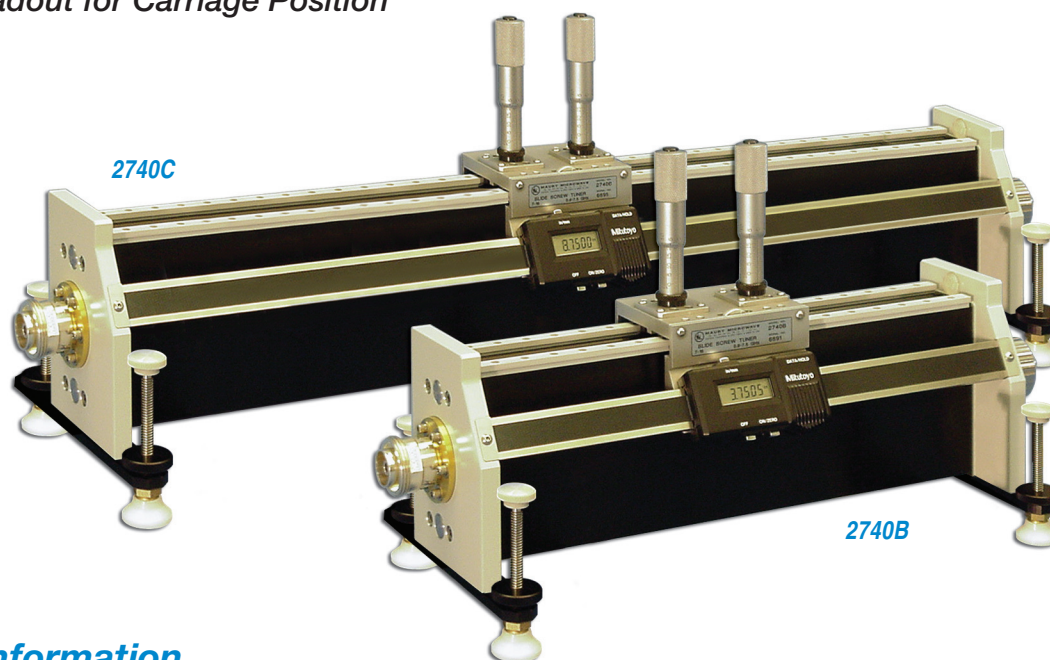
Series 1643, 2440, 2640, 2740, 7941, 8041, & 8045

Features

- Slab-line Transmission Structure
- Dual Probes for Improved Matching Characteristics
- LCD Readout for Carriage Position



8045N



2740C

2740B

General Information

The tuners in this series are similar to other slide screw manual tuners in the Maury line; however, their mechanical characteristics are optimized to provide increased matching ranges. Like all Maury tuners they utilize the slab-line transmission structure for broad frequency range coverage. Their probes are designed to be very close to one-quarter wavelength in the linear dimension at the mid-band of each range. Since each tuner has two probes, this results in improved matching characteristics for each unit. Another key feature of this series of tuners is the inclusion of a LCD position readout of the carriage position on those units operating below 18 GHz. Higher frequency tuners utilize a micrometer carriage drive. These are indicated in the Available Models Table on page 2.

The positional repeatability and high matching range of these tuners make them ideally suited for use as a variable impedance source in applications like device characterization. Such measurements depend upon the ability of the tuner to establish impedances out near the edge of the Smith chart and to reproduce the electrical characteristics as a function of mechanical position. The tuners in this series are also easy to use due to the nearly independent electrical results of the mechanical motions. The depth of penetration of the probe into the transmission line determines the magnitude of the reflection, while the position of the probe along the line determines the phase. While there is some interaction, the effects are almost independent of each other.



Functional Description

The dual probe structure in Maury coaxial slide screw tuners is designed so that one probe (the low frequency probe) covers the range from the lowest frequency to the crossover frequency listed in the Available Models Table below. The second probe (the high frequency probe) covers the range from the crossover frequency to the tuner's maximum rated frequency. The optimum crossover frequency varies from tuner to tuner.

As each micrometer-driven probe is introduced into the slab-line transmission structure it induces a mismatch in its frequency range. The magnitude of this impedance

mismatch is determined by the probe position (depth); the closer the probe approaches the center conductor, the greater the magnitude. The phase of the impedance mismatch is determined by the carriage position along the slab-line. The probes operate independently of each other with little or no interaction. Each probe will meet its specifications over its rated frequency range, and typically has considerably higher matching capability in the middle of its band. **Figure 1** shows responses that are typical of those seen in a low frequency/high frequency pair of probes.

Available Models Table

Model	Frequency Range (GHz)	Connector Type	VSWR Matching Range	Maximum Loss (Probes Retracted)	Probe Crossover Frequency	Power Handling ¹ (Ave/Peak Watts)	Dimension "A"		Dimension "B"	
							Inches	(CM)	Inches	(CM)
7941A	12.0 – 50.0	2.4mm ^{2,8}	10:1	1.0 dB	21.5 GHz	15/150	0.417	(1.059)	4.62	(11.735)
8041C	12.0 – 34.0	3.5mm ^{3,8}	10:1	0.7 dB	16.0 GHz	15/150	0.417	(1.059)	4.95	(12.573)
8045D1	1.8 – 18.0	3.5mm ³	12:1	0.4 dB	5.5 GHz	25/250	3.4	(8.636)	8.94	(22.708)
2640D1		7mm ⁵					3.4	(8.636)	8.88	(22.555)
1643D1		Type N ⁴					3.4	(8.636)	8.92	(22.657)
8045P	0.8 – 18.0	3.5mm ³	10:1	0.6 dB	4.6 GHz	25/250	7.8	(19.812)	13.34	(33.884)
2640P		7mm ⁵					7.8	(19.812)	13.28	(33.731)
1643P		Type N ⁴					7.8	(19.812)	13.32	(33.833)
1643N	0.8 – 2.5 2.5 – 8.0	Type N ⁴	25:1 18:1	0.5 dB	2.8 GHz	50/500	7.8	(19.812)	13.32	(33.833)
2640N	0.8 – 2.5 2.5 – 8.0	7mm ⁵	25:1 18:1	0.5 dB	2.8 GHz	50/500	7.8	(19.812)	13.28	(33.731)
8045N	0.8 – 2.5 2.5 – 8.0	3.5mm ³	25:1 18:1	0.5 dB	2.8 GHz	25/250	7.8	(19.812)	13.28	(33.731)
2740B	0.8 – 8.0	7-16 ⁶	35:1	0.1 dB	2.8 GHz	250/2500	7.88	(20.015)	14.48	(36.779)
2440B		14mm ⁷					7.88	(20.015)	13.07	(33.198)
1643L	0.6 – 6.0	Type N ⁴	10:1	0.5 dB	1.9 GHz	50/500	13.3	(33.8)	17.0	(43.2)
2740C	0.4 – 4.0	7-16 ⁶	25:1	0.1 dB	1.4 GHz	250/2500	14.95	(37.973)	22.76	(57.810)
2440C		14mm ⁷					14.95	(37.973)	21.35	(54.229)

¹ Within rated matching range.

² Precision 2.4mm per Maury data sheet 5E-064.

³ Precision 3.5mm per Maury data sheet 5E-062.

⁴ Precision type N per Maury data sheet 5E-049.

⁵ Precision 7mm per Maury data sheet 5E-060.

⁶ Precision 7-16 per Maury data sheet 5E-066.

⁷ Precision 14mm (GR900) per Maury data sheet 5E-068.

⁸ Non LCD readout model, micrometer-driven carriage.



Typical Responses

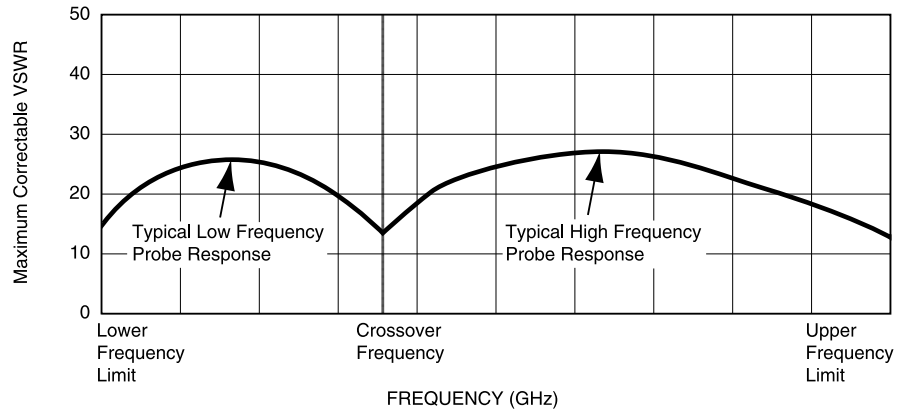
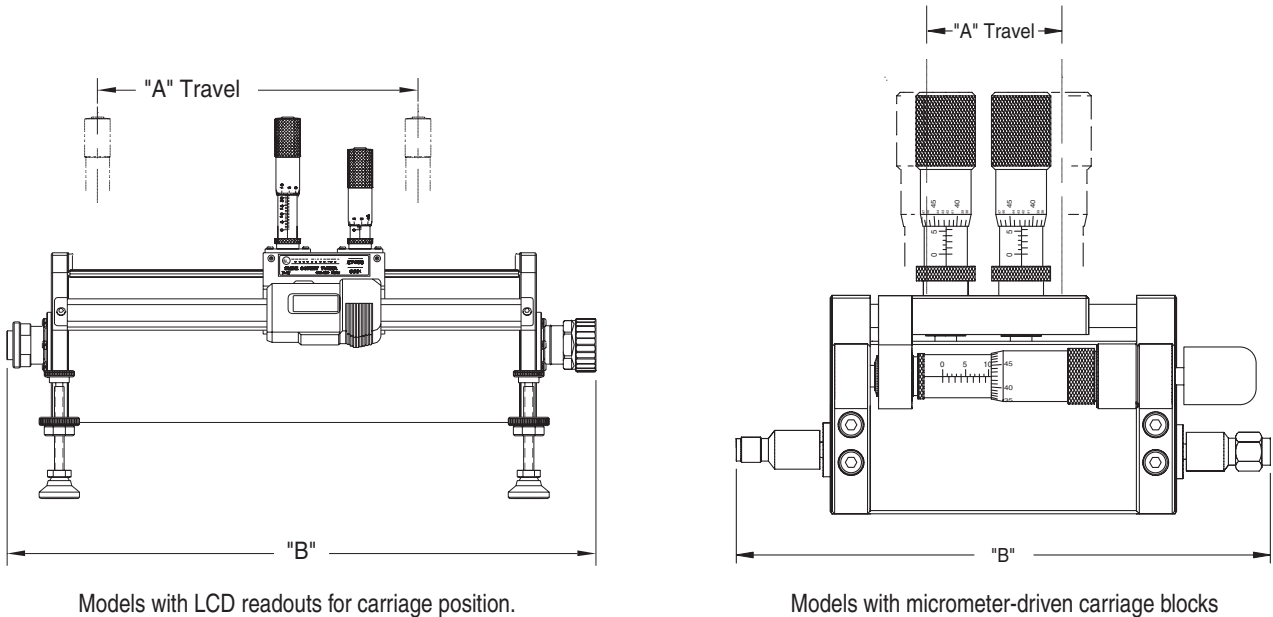


Figure 1. Typical responses seen in low frequency and high frequency probes as they are used in Maury coaxial slide screw tuners.

Typical Dimensions



Models with LCD readouts for carriage position.
 Note: The replacement battery for the LCD is a Duracell® 76S.

Models with micrometer-driven carriage blocks

Figure 2. Typical dimensions for Maury coaxial slide screw tuners. See the Available Models table on page 2 for model-specific dimensions at the "A" and "B" references.