DB4002 11" (279.4 mm) BANDPASS CAVITIES 118-174 and 406-512 MHz

DECIBEL

Four models are offered, DB4002-A for 118-148 MHz, DB4002-B for 144-174 MHz, DB4002-C for 406-420 MHz, and DB4002-D for 450-512 MHz. Installed between the antenna and the transmitter or receiver, the cavities reduce interference that is frequency rejectable.

Each cavity is supplied with adjustable loops which can be set to a nominal insertion loss of 0.5, 1.0 or 3.0 dB.

The cavity should be mounted in a vertical position on a flat surface that is unexposed to the elements.

Design and Construction

The DB4002 provides greater selectivity than smaller or aluminum-made cavities. It has an 11" (279.4 mm) diameter and, with all current carrying surfaces made of copper or silver-plated brass, it has a very high "Q" factor. This is especially important when the attenuated frequency is close to the passed frequency.

To tune the cavity, the tuning knob is turned to vary the piston length in the center coaxial conductor. Contact is maintained by beryllium copper fingerstock with spring compression.

An Invar rod - with nearly zero expansion - assures frequency stability over a wide temperature range.

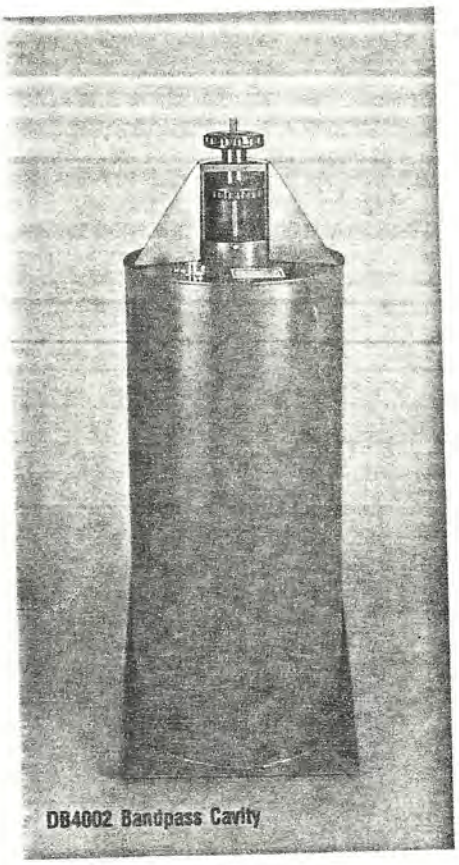
For greater selectivity, two or more cavities can be used in series.

Ordering Information

Order DB4002-A or DB4002-2A two cavity for 118-148 MHz, DB4002-B or DB4002-2B two cavity for 144-174 MHz, DB4002-C or DB4002-2C for 406-420 MHz, and DB4002-D or DB4002-2D for 450-512 MHz. A mounting bracket is included, also instructions for field tuning the cavity.

-20dB@ 1MHz

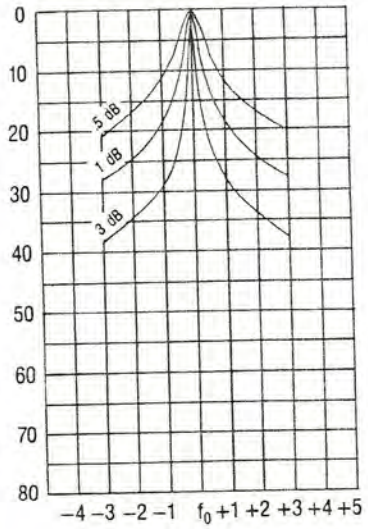
Equivlent to Motorola TU-312H. TU-312H has fixed insertion loss of 0.5 dB. Installed on Mt. San Hedren 10/20/89. /170.150' MHz



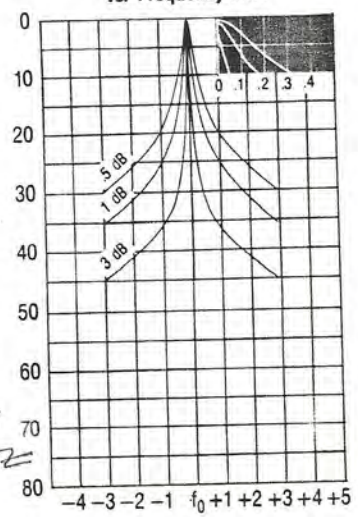
DB4002 Bandpass Cavity

The three curves correspond to the adjustable loops supplied with the cavity (0.5, 1.0 and 3.0 dB). The black insets expand the frequency scale in the region of 0 to 0.5 MHz.

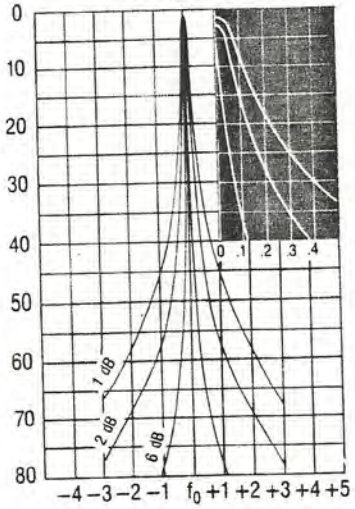
DB4002-D Attenuation-dB vs. Frequency-MHz



DB4002-B Attenuation-dB vs. Frequency-MHz



DB4002-2B Attenuation-dB vs. Frequency-MHz



Technical Data

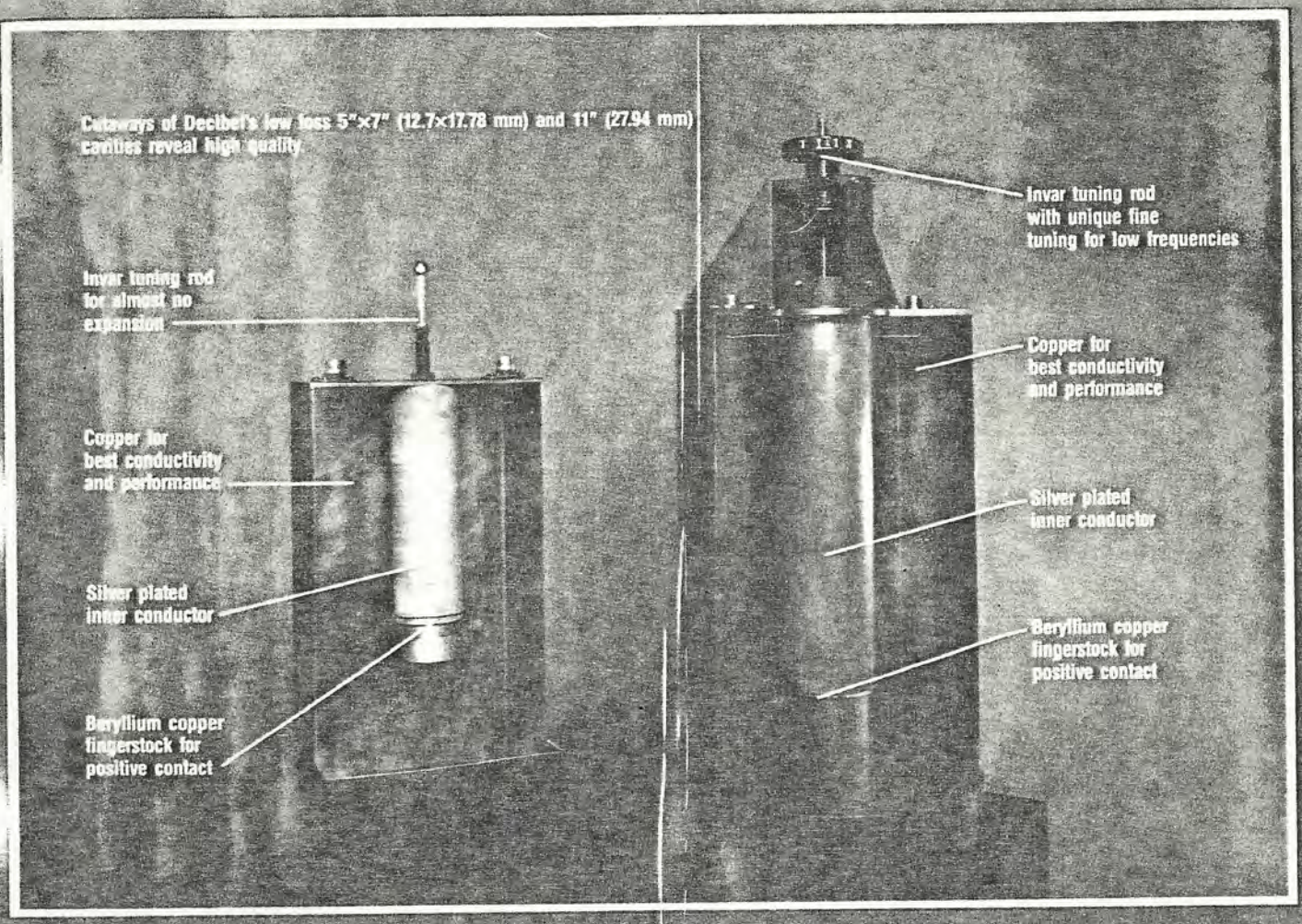
	All models
Materials:	
Outer conductor	Copper
Inner conductor	Copper & Brass
End Plates	Copper & Brass
Coupling loops	Copper
Tuning rod	Invar
Dimensions — in. (mm)	
Individual cavity	11 (279.4) dia. × 31 (787.4)
Maximum, outside (with tuning rod extended)	12 (304.8)×12 (304.8)×35 (889)
Connector terminations	UHF Female
Finish	Decibel Tek Black™
Net weight — lbs. (kg)	39 (17.69)
Shipping weight — lbs. (kg)	48 (21.77)

Electrical Data

Frequency Ranges — MHz	118-148, 144-174, 406-420, 450-512
Insertion loss (desired frequency) loops supplied — dB	.5, 1.0 & 3.0
Attenuation (undesired frequency) - dB	See curves
Nominal impedance — ohms	50
Maximum power input (continuous) with insertion loss per cavity — watts	
At 0.5 dB	400
At 1.0 dB	350
At 3.0 dB	200
Temperature range (for negligible frequency shift) — C°	−30 to +60
Cavity electrical length — wavelength	0.25 @ 118-174 MHz, 0.75 @ 406-512 MHz

30-512 MHz

DECIBEL



Filters—the Quest for Quality!

Decibel's high Q cavities are the basic building blocks of Decibel's high quality filters, duplexers, combiners, etc.

To achieve superior performance, Decibel uses good workmanship and many special techniques and materials. Some of the more important ones include:

☐ The tuning piston is made of a threaded Invar steel rod with almost no expansion, which keeps it tuned in all temperatures.

☐ Copper cavities, completely soldered, are used for highest performance. Less costly aluminum cavities are also used when requirements are less stringent.

☐ Current carrying elements are made of copper or silver plated brass, including the center conductor.

☐ Beryllium copper fingerstock with spring compression is used to maintain positive contact between the fixed and moving parts of the center conductor.

☐ Unique resonators with helical steel or copper pistons are used in some of Decibel's cavities to achieve a 3 to 1 size reduction.

Decibel has also updated products and added new ones, such as SHAPE FACTORED FILTERS®, to meet frequency requirements and customer expectations.

Of course, Decibel's new products — like its standard ones — maintain Decibel's quest for the highest quality.

If you want quality, you want Decibel filters, cavities, duplexers and combiners.

SHAPE FACTORED FILTER is a registered trademark of Decibel Products, Inc.