



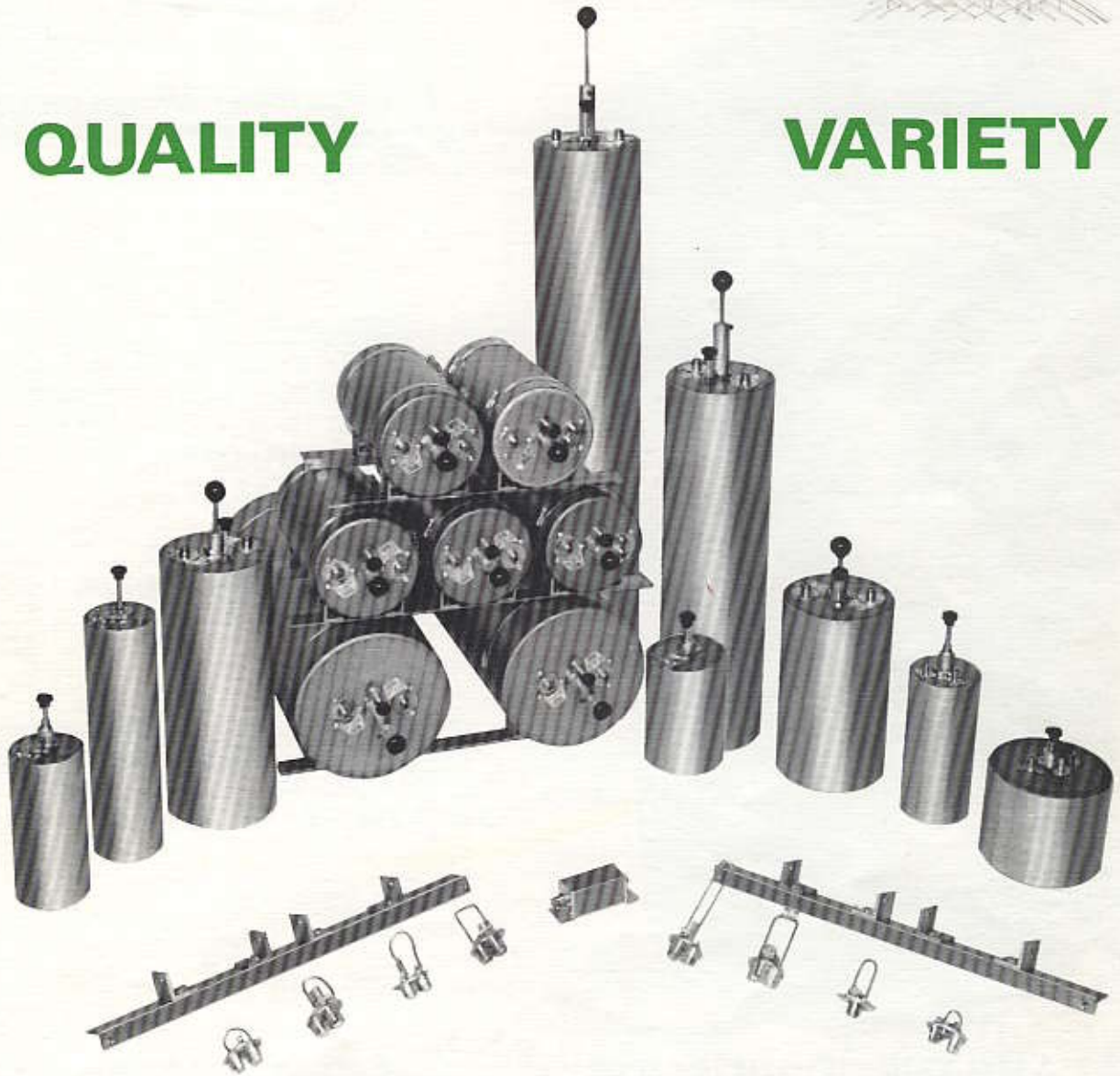
MULTICOUPLERS
DUPLXERS
CAVITY FILTERS

**30 MHz
TO
960 MHz**

FLEXIBILITY

QUALITY

VARIETY

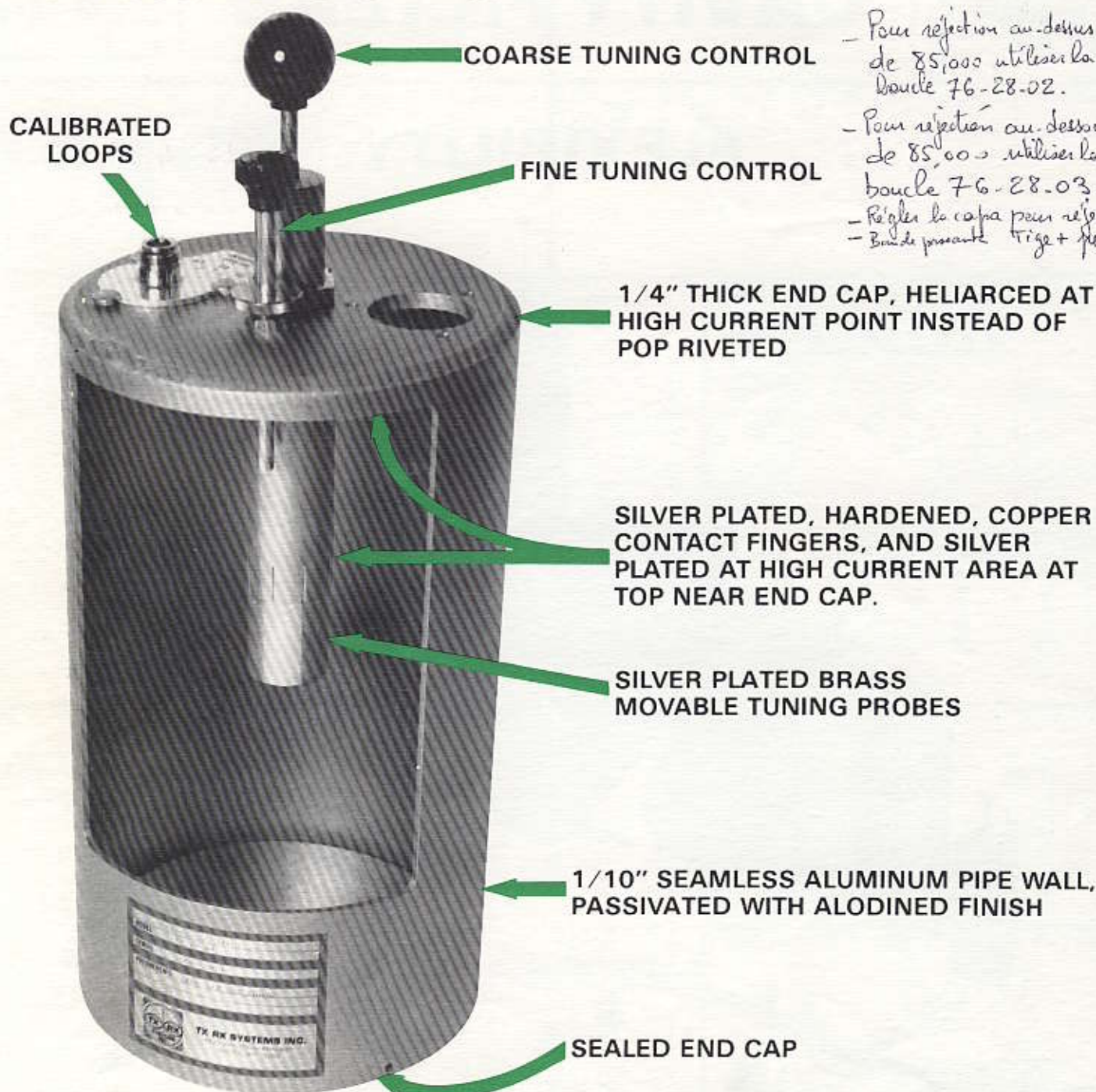


VARI-NOTCH® • SERIES NOTCH® • NOTCH • BANDPASS
(PATENTED) (PATENTED)

WE COULDN'T BUILD OUR EXTENSIVE LINE OF DUPLXERS AND MULTICOUPLER SYSTEMS
IF OUR RESONANT CAVITY FILTERS DIDN'T HAVE DESIGNED-IN FLEXIBILITY
AND HIGHEST QUALITY CONSTRUCTION.

110D2

THE QUALITY . . . THAT MEETS THE HIGH STANDARDS DEMANDED BY OUR DUPLEXERS AND MULTICOUPLER SYSTEMS!



- Pour rejection au-dessus de 85,000 utiliser la boucle 76-28-02.
 - Pour rejection au-dessous de 85,000 utiliser la boucle 76-28-03 -
 - Régler la capa pour rejection
 - Boucle présente Tige + petite tige

WHAT ARE THE "DIVIDENDS" OF THESE HIGH STANDARDS?

OUR 1/4" THICK TOP CAP HELIARCED AT HIGH CURRENT POINTS MEANS the elimination of unwanted noise generated and need for periodic retuning caused by poor metal to metal contact when pop rivets are used.

OUR 1/10" SEAMLESS ALUMINUM PIPE WALL MEANS that our cavities do not dent and detune as thin walled copper type resonators do. Our non-corrosive passivating coating (alodine) is applied inside the shell as well as outside, unlike some others available on the market.

WE AVOID ERRATIC TUNING PROBLEMS, noise, high loss, degraded selectivity, and the extra repair labor caused by the corrosion of tuning probe contacts because we **SILVER PLATE** ours.

EXCESSIVE TUNING TIME IS NOT INCURRED because our cavities have both a **coarse** and **fine** tuning control as well as calibrated and easily adjustable loops.

IT ISN'T NECESSARY TO THROW AWAY our 6.625" or 10" cavities when you have a change in requirements at your site because **they are convertible** in the field from one circuit style to another (see page 4).

OUR REMOVABLE BOTTOM END CAP MEANS ease of access into the cavity should service ever be required.

THE VARIETY... THAT ALLOWS SELECTION OF A FILTER FOR ALMOST ANY APPLICATION!

GENERAL FILTER APPLICATIONS

Resonant cavity filters are the building blocks of duplexers and many types of multicouplers. However, their use is not limited to these applications.

Individual or cascaded filters may be used for a variety of interference fighting chores, such as cleaning up the performance of existing duplexers that have inadequate isolation or off-channel interference rejection. At crowded antenna sites, filters are ideal for quieting noisy transmitters or for preventing transmitter IM mixing. Receiver front-end selectivity can be greatly enhanced by the use of filters, thus eliminating desense, IM, and overload problems.

When used in conjunction with a spectrum analyzer or tunable receiver, cavity filters can allow a detailed analysis of lower-level transmitter spurious output. This lower-level noise is one of the major sources of interference at multi-transmitter sites. Cavity filters can stand alone as pieces of test equipment for analyzing many receiver IM problems and can also help determine the best type of filter to use for a permanent fix.

Because of the convertibility feature of our 6" and 10" diameter filters, there is little chance of not having the right filter for the job. One or two filters and a complete set of conversion assemblies for a given frequency band can be a powerful tool for determining the cause and cure of interference problems.

Specific filter applications are shown below to help you determine the type of filter needed. A "comparative circuit" chart (below) shows the performance of each filter type in the 144-174 MHz band. These curves may be scaled to give approximate data for other bands of frequencies (multiply by three for UHF). Detailed filter data Tech-Aids are available for most filter types, and when available, are included with the purchase of TX RX cavity filters. A Tech-Aid availability list will be found in the technical file section of our catalog.

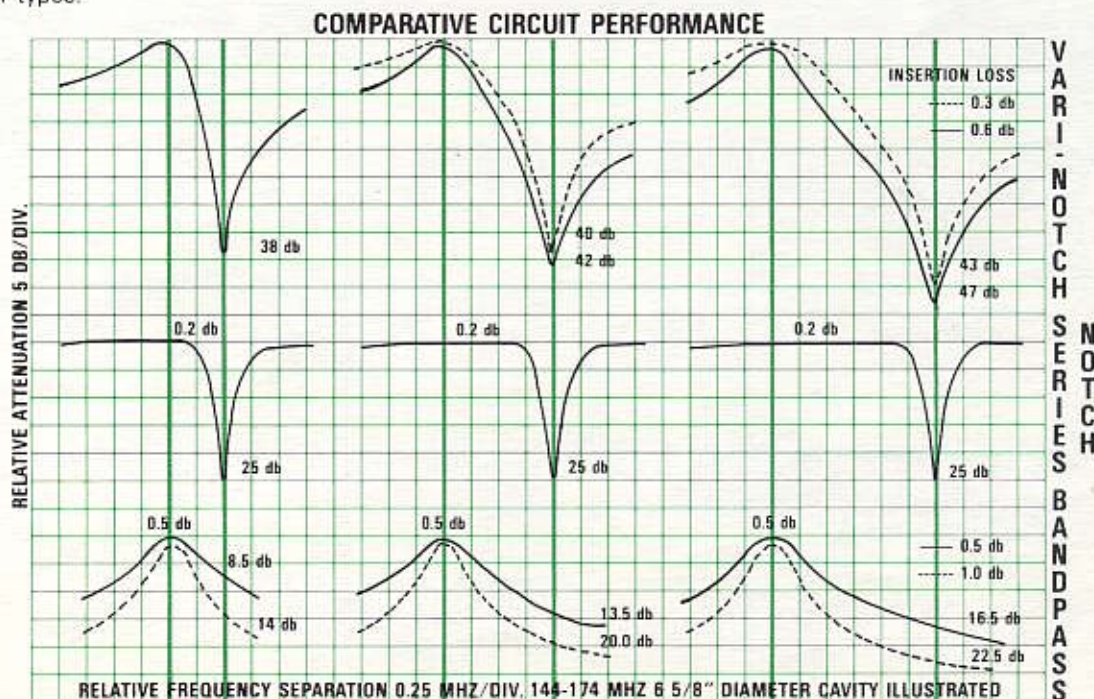
SPECIFIC FILTER APPLICATIONS AND SELECTION

- BANDPASS CAVITY FILTER** — Passes one narrow band of frequencies and attenuates all others with increasing attenuation above and below the pass frequency. A great filter for general transmitter spurious clean up and sharpening of receiver front end selectivity with or without amplification (loop/amp). TX RX bandpass cavities (4", 6", and 10") have adjustable selectivity characteristics (rotatable loops) to allow a trade-off between insertion loss (0.5-3.0 db) and selectivity. Maximum power handling is determined by insertion loss setting (see available Tech-Aids). This filter is the best choice when interfering frequencies are not known to any degree of accuracy or when very broad band filtering is needed.
- SERIES NOTCH® (NOTCH)** — Passes a relatively wide band of frequencies while rejecting a very narrow band of frequencies. Notch depth is variable from 15-25 db. Both pass and notch frequencies must be known. Best filter for very close separations (70 KHz and greater in low band, 70 KHz to 200 KHz in highband, and 200-400 KHz in the UHF band). The wide passband can be an advantage when filtering multiple channel transmitters and receivers.
- VARI-NOTCH®** — Passes a relatively narrow band of frequencies and rejects (notches out) a relatively wide frequency band. This filter has the greatest notch depth when compared to other types. Notch depth is adjustable but is referenced to a passband insertion loss (0.3 db or 0.6 db typical). Best filter type for moderately close to wide separations (200 KHz and greater in highband, 400 KHz and greater in UHF).
- T-PASS™** — A special type of filter for expandable multicoupler applications. Characteristics are identical to a bandpass filter but has a third port for coupling to other channels. This filter is covered in the T-Pass multicoupler brochure.

CASCADING FILTERS

All filter types mentioned above may be cascaded to achieve an arithmetic sum of individual filter attenuation. Up to 6 db of additional attenuation can be obtained between filter pairs if the proper length interconnecting cable is used. (This additional 6 db does not occur in the filter passband but, only at frequencies where moderate to high attenuation occurs).

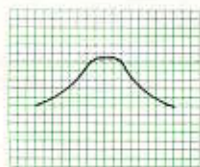
The correct cable is provided when dual or triple cavity model numbers are ordered and are available as separate items. See Tech-Aid list in the catalog "Technical File" for additional information. Consult factory for cable advice when interconnecting dissimilar filter types.



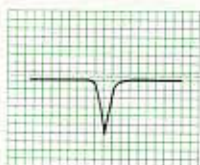
THE FLEXIBILITY... THAT GIVES BROAD MULTICOUPLER SYSTEM DESIGN CAPABILITY, AVOIDS OBSOLESCENCE, AND MAKES STOCKING CONVENIENT

You will not see any TX RX cavities sitting in the corner of a shop gathering dust because our 6" and 10" filters can easily be converted for other applications in the field; at any time.

Instead of using an old fashioned coupling loop mechanism that is permanently attached to the cavity body, dooming the resonator to one application for ever and ever, TX RX developed the **CONVERSION ASSEMBLY** with non-obsolescence in mind. Simply put, conversion assemblies are a variety of different but interchangeable coupling loop assemblies that allow our basic cavity resonator shell (the most expensive part of a cavity filter) to operate in a number of filter modes thus providing an optimum filter response characteristic (curve) for almost any application. *Power Junction*
With convertibility, any of our 6" and 10" cavities can be made to take on a Bandpass, Vari-Notch, Series Notch or T-Pass response. Our unique loop amplifier may be used in conjunction with a bandpass or T-Pass loop assembly to provide substantial RF gain as well as selectivity for receiver applications.



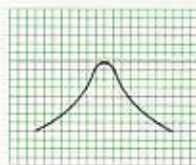
LOOP AMPLIFIER



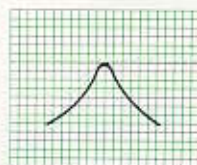
SERIES NOTCH®



VARI-NOTCH®



T-PASS™



BANDPASS

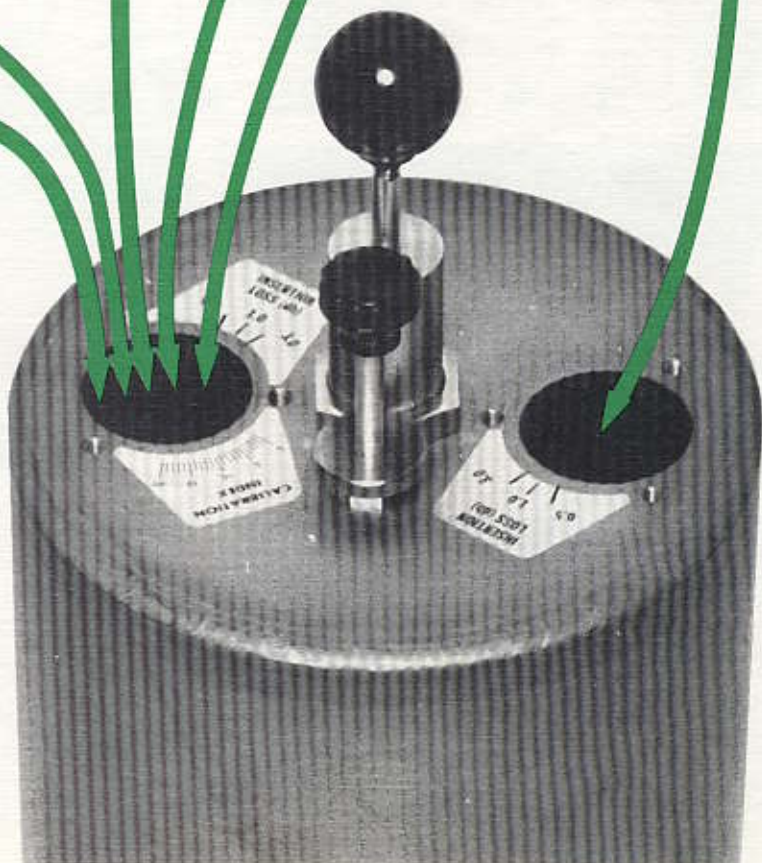


Conversion assemblies are not only interchangeable, they are also continuously adjustable within their range for various frequency separations without the need for cumbersome tuning stubs which have to be fashioned and manually trimmed for each frequency or tuning condition. Adjustability allows a tradeoff of selectivity for reduced power loss in many situations thus allowing the interference trouble shooter or designer to tailor a filter response for his specified need. Calibration scales are provided with each assembly for easy reference when making adjustments.

Radio system managers can now, with minimum investment, stock a few filters and a set of conversion assemblies which can help him to diagnose and correct a multitude of RF interference problems. When these filters are used in conjunction with a spectrum analyzer and other TX RX test equipment, almost any interference source is easy to isolate.

Filter convertibility has allowed TX RX to solve many complex filtering and multicoupling problems with relative ease. Filter convertibility has saved money for many of our duplexer customers because they could convert their duplexer cavities into multicoupling cavities or for other uses when the need arose.

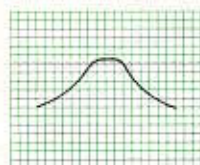
PUT FILTER CONVERTIBILITY TO WORK FOR YOU THE NEXT TIME YOU BUY A FILTER, DUPLEXER, OR MULTICOUPLER. SEE PAGE 5 FOR ADDITIONAL SELECTION INFORMATION.



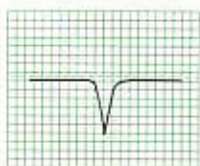
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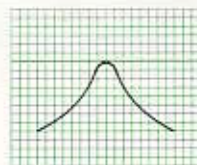
LOOP AMPLIFIER



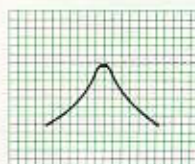
SERIES NOTCH®



VARI-NOTCH®



T-PASS™



BANDPASS

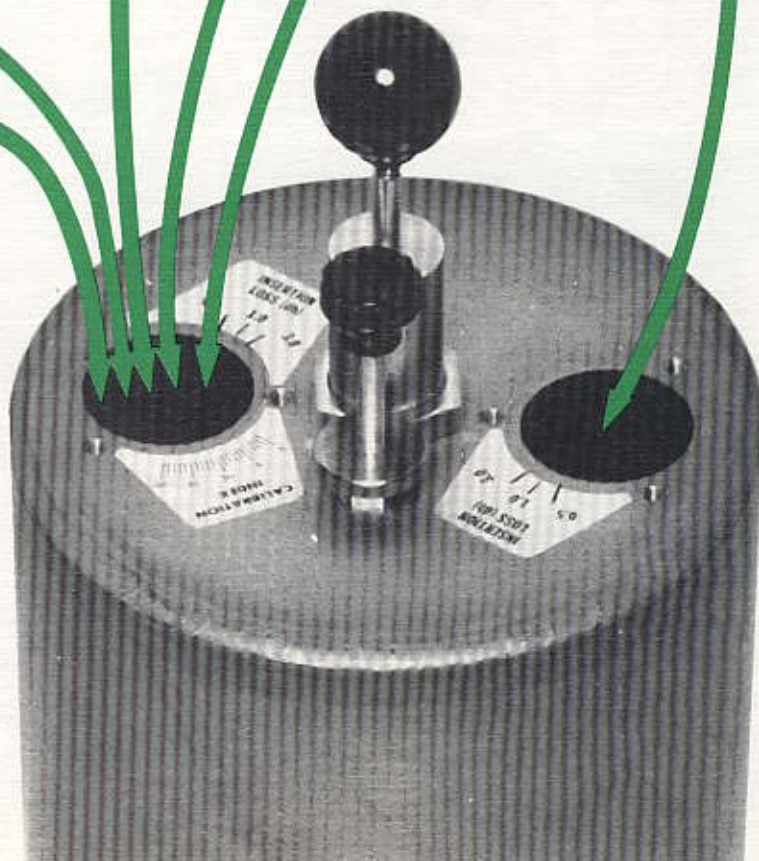


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PUT FILTER CONVERTIBILITY TO WORK FOR YOU THE NEXT TIME YOU BUY A FILTER, DUPLEXER, OR MULTICOUPLER. SEE PAGE 5 FOR ADDITIONAL SELECTION INFORMATION.



Iran
de l'ige

6.625" and 10" FILTERS

6.625" DIA.	ADD FOR		10" DIA.	ADD FOR	
	1/4A	3/4A		1/4A	3/4A
SINGLE = 01	-11		SINGLE = 05	-25	
DUAL = 02	-12		DUAL = 06	-26	
TRIPLE = 03	-13		TRIPLE = 07	-27	

Filter model number must be completed by selecting third digit-pair for the diameter and number of cavities desired. 3/4(A) wave cavities are only available in 10" dia. 406-512 MHz and 6.625" dia. 800-960 MHz bands. (10" dia. filters are not available in the 806-960 MHz band.)

The information on pages 3 and 4 should allow easy selection of the desired filter (left hand column and bottom of page) and conversion assemblies (chart below).

FILTER ELECTRICAL SPECIFICATIONS

Detailed specifications are provided in Tech-Aid form for Vari-Notch, Series Notch, and Bandpass filters, and consists of network analyzer photos and tabulated data. The paragraphs entitled "General Filter Applications" will aid in selecting the proper filter types. Our Multicoupler Systems Sales department can provide specific performance data for your particular filter requirement.

FILTERS

FREQUENCY RANGE MHz	PARTIAL MODEL NO.
VARI-NOTCH	
66-88	15-28
88-108	15-29
108-136	15-35
132-150	15-36
144-174	15-37
220-330	15-54
300-400	15-55
406-420	15-65
442-470	15-70
470-512	15-69
SERIES NOTCH	
66-88	20-28
88-108	20-29
108-136	20-35
132-150	20-36
144-174	20-37
406-420	20-65
442-470	20-70
470-512	20-69
STD. NOTCH	
30-40	12-13
38-50	12-14
BANDPASS	
30-40	11-13
38-50	11-14
66-88	11-28
88-108	11-29
108-136	11-35
132-150	11-36
144-174	11-37
220-300	11-54
300-400	11-55
406-420	11-65
442-470	11-70
470-512	11-69
806-821	11-86
851-866	11-87
890-960	11-88

CONVERSION ASSEMBLIES

BANDPASS MODEL NO (PAIR)	VARI-NOTCH		SERIES NOTCH		T-PASS MODEL NO
	LOW PASS MODEL NO	HIGH PASS MODEL NO	LOW PASS SYMMETRICAL MODEL NO	HIGH PASS MODELS NARROW SEP	
76-28-01	76-28-02	76-28-03	76-28-04	76-28-05	76-28-07
76-29-01	76-29-02	76-29-03	76-29-04	76-29-05	76-29-07
76-35-01	76-35-02	76-35-03	76-35-04	76-35-05	76-35-07
76-36-01	76-36-03	76-36-04	76-36-05	76-36-06	76-38-01
76-37-01	76-37-03	76-37-04	76-37-05	76-37-06	
76-54-01	N/A	N/A	N/A	N/A	76-53-01
76-55-01	N/A	N/A	N/A	N/A	
76-65-01	76-65-03		76-65-04	76-65-05	76-67-01
76-70-01	76-70-03		76-70-04	76-70-05	
76-69-01	76-69-03		76-69-04	76-69-05	
76-28-01	76-28-02	76-28-03	76-28-04	76-28-05	76-28-07
76-29-01	76-29-02	76-29-03	76-29-04	76-29-05	76-29-07
76-35-01	76-35-02	76-35-03	76-35-04	76-35-05	76-35-07
76-36-01	76-36-03	76-36-04	76-36-05	76-36-06	76-38-01
76-37-01	76-37-03	76-37-04	76-37-05	76-37-06	
76-65-01	76-65-03		76-65-04	76-65-05	76-67-01
76-70-01	76-70-03		76-70-04	76-70-05	
76-69-01	76-69-03		76-69-04	76-69-05	
N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A
76-28-01	76-28-02	76-28-03	76-28-04	76-28-05	76-28-07
76-29-01	76-29-02	76-29-03	76-29-04	76-29-05	76-29-07
76-35-01	76-35-02	76-35-03	76-35-04	76-35-05	76-35-07
76-36-01	76-36-03	76-36-04	76-36-05	76-36-06	76-38-01
76-37-01	76-37-03	76-37-04	76-37-05	76-37-06	
76-54-01	N/A	N/A	N/A	N/A	76-53-01
76-55-01	N/A	N/A	N/A	N/A	
76-65-01	76-65-03		76-65-04	76-65-05	76-67-01
76-70-01	76-70-03		76-70-04	76-70-05	
76-69-01	76-69-03		76-69-04	76-69-05	

Cavities at left available in 3/4 λ only.

FILTER CONVERSION

Conversion assembly model numbers shown in the six right-hand columns serve two purposes. Any filter model ordered comes with the required assembly or assemblies, usually pretuned to specified frequencies on order. Note that VARI-NOTCH and SERIES-NOTCH will have either a high pass or low pass conversion assembly per cavity. The chart shows, as a point of information, the conversion assembly installed in each cavity. Conversion assembly model numbers shown are per-cavity and apply to both 6.625" and 10" diameter. Secondly, when converting any filter type, the chart shows the model number of the conversion assembly to be ordered (considering high pass/low pass tuning) for each cavity. For example, to convert a 15-37-03 three cavity VARI-NOTCH to BANDPASS, order three each 76-37-01 conversion assemblies. New filter interconnect cables may be required when converting. Tech-Aid 80011 provides detailed information and part numbers applicable to the most common filter conversions.

T-Pass cavity filters are covered in the T-Pass Multicoupler Brochure #147/48MO, but since most filters can be converted to T-Pass types for expandable multicoupler application, the T-Pass conversion assemblies are noted for this unique system conversion. New generation T-Pass conversion assemblies should not be intermixed with previous models on the same multicoupler, as antenna thru-line cable cutting charts may be different. Consult our Multicoupler Systems Sales department for making the necessary conversion assembly changeover.

Four inch diameter filters are not designed for convertibility. Some interchangeability is possible between Vari-Notch coupling assemblies for various frequency separations. Factory guidance should be sought in this regard.

4", 2", 1.25" x 2" & 1.3" FILTERS

FREQUENCY RANGE MHz	MIN. SEP. MHz	INSERTION LOSS db	POWER RATING WATTS	LOW PASS MODEL NO.	HIGH PASS MODEL NO.
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4" DIA. VARI-NOTCH®

132-150	0.5	0.6-0.7	125	15-36-09	15-36-10
132-150	1.0	0.4-0.5	125	15-36-11	15-36-12
132-150	3.0	0.2	400	15-36-13	15-36-14
144-174	0.5	0.6-0.7	125	15-37-09	15-37-10
144-174	1.0	0.4-0.5	125	15-37-11	15-37-12
144-174	3.0	0.2	400	15-37-13	15-37-14
144-174	3.0	0.5	400	15-37-15	15-37-16
215-250	1.2	0.4	250	15-52-01	
406-420	1.5	0.2	350	15-65-11	
406-420	0.75	0.4	250	15-65-12	
450-470	1.5	0.2	350	15-70-11	
450-470	0.75	0.4	250	15-70-12	
470-512	1.5	0.2	350	15-69-11	
470-512	0.75	0.4	250	15-69-12	
806-866	2.5	0.2-0.4	125	15-89-01	15-89-02
890-960	2.5	0.2-0.4	125	15-88-01	15-88-02

2" SQUARE VARI-NOTCH®

132-150	1.5	0.6	50	15-36-15	15-36-16
132-150	2.0	0.45	75	15-36-15	15-36-16
132-150	4.0	0.3	100	15-36-17	15-36-18
148-174	1.5	0.6	50	15-41-01	15-41-02
148-174	2.0	0.45	75	15-41-01	15-41-02
148-174	4.0	0.3	100	15-41-03	15-41-04

1.25" x 2" RECTANGULAR VARI-NOTCH®

406-420	4.5	0.4	100	15-65-13	
450-470	5.0	0.4	100	15-70-13	
470-490	3.0	0.45	100	15-71-01	
490-512	3.0	0.45	100	15-72-01	

FREQUENCY RANGE MHz	MODEL NO.
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4" DIA. BANDPASS

132-150	11-36-09
144-174	11-37-09
215-250	11-52-01
406-420	11-65-09
450-470	11-70-09
470-512	11-69-09
806-960	11-90-05

FREQUENCY RANGE MHz	MIN. SEP. MHz	NOTCH DEPTH db	POWER RATING WATTS	LOW PASS MODEL NO.	HIGH PASS MODEL NO.
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2" SQUARE SERIES NOTCH®

132-150	2.0	0.3	100	20-36-01	20-36-02
132-150	4.0	0.15	100	20-36-01	20-36-02
148-174	2.0	0.3	100	20-41-01	20-41-02
148-174	4.0	0.15	100	20-41-01	20-41-02

1.3" SQUARE STANDARD NOTCH®

132-150	2.0	0.45	30	12-36-01	12-36-02
132-150	4.0	0.2	60	12-36-01	12-36-02
148-174	2.0	0.45	30	12-41-03	12-41-04
148-174	4.0	0.2	60	12-41-03	12-41-04

CONNECTORS standard, unless specified as optional, as follows:

CAVITY DIA.	VARI-NOTCH	SERIES NOTCH	NOTCH	BANDPASS
4"				
6.625"	'N' type	'N' type	'N' type	'N' type BNC female, only single cavity models supplied UHF optional.
10"	'N' type	'N' type	'N' type	'N' type

WRITE FOR



VARI-NOTCH 80012

SERIES and STD. NOTCH 80013

BANDPASS 88-108 MHz 80007

BANDPASS 144-174, 450-470 MHz 77003

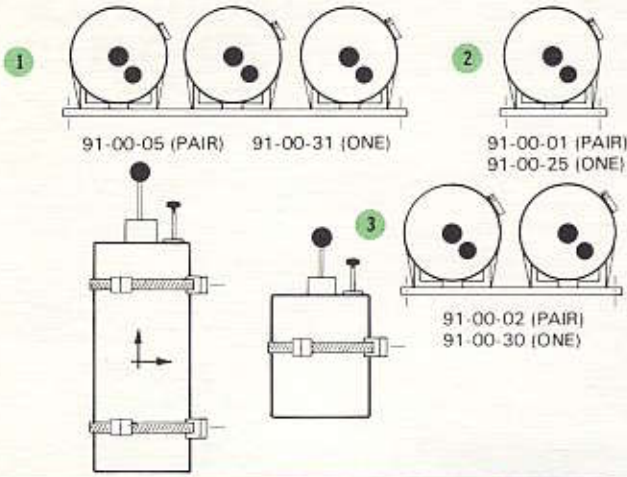
MOUNTINGS, DIMENSIONS 80010

INTERCONNECT CABLES 80011

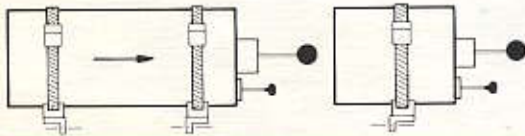
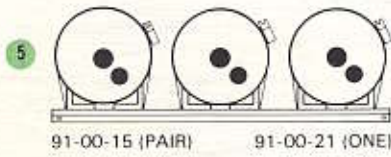
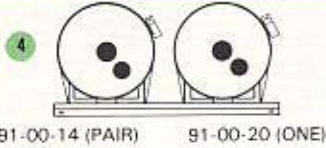
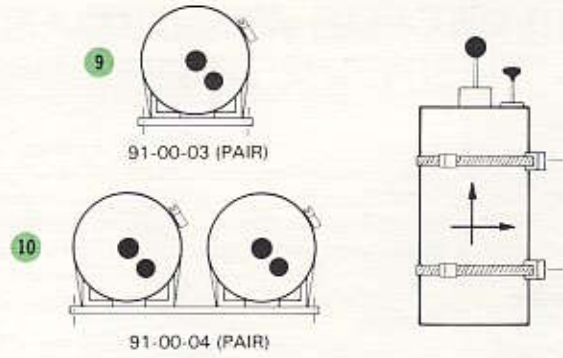
CONVERSION 80002

Refer to page 2 of the PRICE LIST (#600) for complete ordering information.

BRACKETS FOR 6.625" CAVITY FILTERS

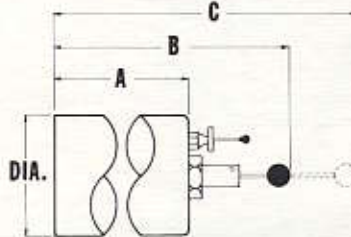


BRACKETS FOR 10" CAVITY FILTERS



FILTER MOUNTING AND HARDWARE

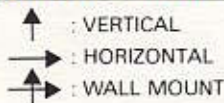
Mounting bracket model numbers are shown under end-view drawings. Those showing "one" bracket models are recommended for 6.625" dia. single, dual, and triple cavities in the 400-960 MHz range. For overall mounting dimensions, write for Tech-Aid #80010. CAVITY LENGTH, DETERMINED BY FREQUENCY AND PROBE TRAVEL SINGLE CAVITY (INCHES)



FREQUENCY RANGE (MHz)	6.625" DIA. CAVITY		
	A	B	C
30-40	103	107	132
38-50	82	86	101
66-88	49	53	65
88-108	36	40	47
108-136	32	36	42
132-150	26	31	34
144-174	24	29	32.5
220-300	17	21	25
300-400	14	18	21
406-512	11.5	14.5	17.5
806-960	6	8	9

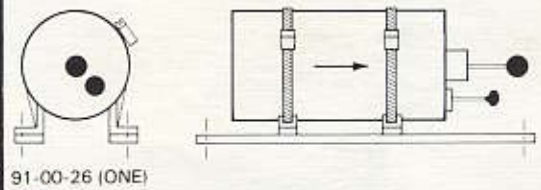
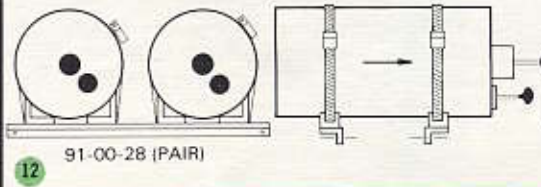
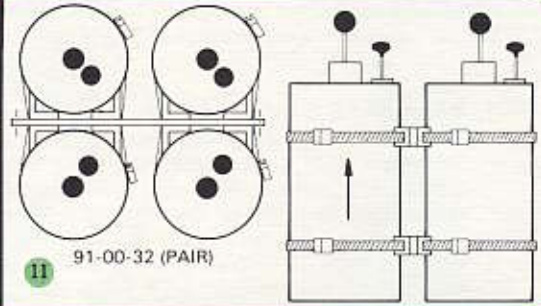
10" DIA. CAVITIES			
30-40	105	109	134
38-50	84	88	103
66-88	51	55	67
88-108	40	44	51
108-136	34	38	44
132-150	28	32	38
144-174	26	31	34
220-300	18	22	26
300-400	15	19	22
406-512	12.5	15.5	18.5

MOUNTING PLANES



ADAPTORS

- N to UHF 94-00-01
- BNC to N 94-00-02
- BNC to UHF 94-00-03



13 See TA #80010 for 6.625" version No. 91-00-27

MOUNTINGS FOR 4" CAVITY FILTERS

