

**73 Review**reviewed by *Bill Clarke WA4BLC*Downloaded by  
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# Datong's Great Add-On Filters

*Super audio accessories*

Datong Products

Price of FL3: \$229.95

Price of FL2: \$159.95

Price of ANF: \$119.95

*Happy are they that hear their detractors and can put them to mending. —Shakespeare*

When I first received the Datong audio filters for review I thought, "Uh huh, more audio filters, just what the world really needs!" Well, I was wrong for thinking such negative thoughts. The Datong filters are just what the world needs.

For my primary operations I use a Kenwood TS-430 and ICOM 751A. The backup rig is a Drake TR3. Don't laugh! That old tube burner can still hear with the best of them, talk with the best of them, and I can fix it when it breaks, unlike the best of them. But, here lies the problem—it doesn't select with the best of them.

Operating in a crowded band is where the Datong audio filters shine. Like most older tube rigs, the Drake lacks top dollar receiver selectivity and the all important notch filter... the device that gets rid of the carriers produced by tuner-uppers and foreign broadcasts. I won't even mention what happens in certain parts of the seventy-five meter band where some AM is still spoken.

Now, by using the Datong audio filter, I can make the Drake sound as good as the best of them. In fact, with something only the Datong filter offers, I can make it better. More on that later.

## Descriptions

The Datong filters come in three makes. The most complete is the FL3, followed by the FL2 and the ANF.

The FL3 offers a notch/peak filter, variable low cut-off filter, variable high cut-off filter, and an automatic notch filter.

The FL2 has the same line up of features as the FL3, except the automatic notch filter is not included.

The ANF is an automatic notch/peak filter with LED tracking.

The ANF is in a smaller box than the FL series filters.

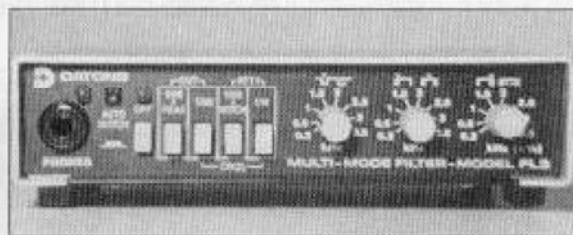


Photo A. The FL3 is full featured to provide complete control of received audio.



Photo B. Notice the 10 segment LED bar graph at the top of the ANF for displaying search and lock action.



Photo C. The ANF is the best "black box" I have seen in a very long time. I strongly recommend it.

## Features

The secret to a good receiver is selectivity. The better the selectivity, the better the receiver. A filter with very steep skirts is required for razor sharp selectivity. Using 5 pole computer optimized elliptic function filters, Datong provides just such filters.

The FL3 provides two filters, each with skirts that are movable from 200 to 3500 Hz. One filter is used for low cut-off and the other for high cut-off. Each filter section is independently voltage controlled. There is also a two-pole notch filter that can double as a peak filter. These filters can provide received audio equal to, or surpassing, that attainable from receivers having IF shift or Pass Band Tuning.

The automatic notch filter is perhaps the best feature of the FL3 (it's not found on the FL2). At the mere push of a button, any single steady tone that appears on the received signal is notched out. Now, let's try that again—is automatically notched out. The operator doesn't have to fiddle around with an overly sensitive notch filter control. The filter unit itself will do all the work.

## Installation

The FL3 is almost as simple to hook-up as an external speaker. Just supply 12 VDC to the back panel, plug in an external speaker, and run a patch cord from the receiver's audio output to the filter input. This takes about two minutes. Other Datong filters install in a similar manner.

## Operation

Before reading about my operational experiences with the Datong filters, please understand that I enjoy top quality audio. Anything less is not enjoyed (allowed) in my shack. To this end I have

used various external speakers, have tried many kinds of filters, and attempted a little voodoo. I even have an audio equalizer.

I did most of my testing on the seventy five meter phone band in the early evening hours. I feel this is the place that puts receiver selectivity to task as nothing else can.

The old Drake came out like gang busters. I was able to get on all my usual nets and listen for hours with virtually no interference. I used the high cut-off and low cut-off variables to create a narrow SSB filter effect, thereby eliminating the abundant squeaks and squawks that normally plague seventy five meters.

While I was listening, I selected various speakers and switched between the Drake, the 430, and the 751A. The results were amazing. The TR3 breathed with new life. The FL3's controls gave me the necessary receiver flexibility, similar to using the 430's IF shift and 1.8 kHz filter or the Pass Band Tuning and tone control on the 751A, to clean up the TR3's received signals. In most cases I found my receive audio much the same on all three receivers.

Notch filter action is good, very deep and quite sharp, yet typically difficult to tune (most are). Ah, however, there is the automatic notch filter. Its action is truly extraordinary.

In the past, when a tuner upper appeared on frequency, I had to reach for the notch control and slowly turn it until the offending whistle disappeared. Often it went away by itself before I could tune it away. Now, by merely turning on the automatic notch filter, the offensive signals disappear by themselves. No effort to me.

The automatic notch filter operates by continuously sweeping the 200 to 3500 Hz band searching for tones. When it finds one, it locks on it, then notches it out. The typical lock on time is less than a second. Not only is the acquisition speed of the automatic notch impressive; so is the depth of the notch. It took out every carrier I heard.

At first I wasn't sure the automatic notch was working. True, I was hearing no carriers, and the LED indicated lock on. But I didn't know for sure. By turning the filter on and off I confirmed that the filter was indeed doing its work. The manual notch can be used in conjunction with the automatic notch, allowing the elimination of two simultaneous unwanted signals.

I should mention this: Don't forget to turn the automatic notch filter off when operating CW or RTTY. It will effectively notch out the desired signals as quickly as it does away with offensive ones. It's automatic, not smart!

The FL3 has a CW mode that combines the low and high pass filters with the peak filter. The result is an excellent skirt effect with a peaked response. The peak frequency is easily tunable and the bandwidth is continuously variable from 100 to 1750 Hz. The filters provide a pleasing CW note, with no ringing. Ringing has plagued many audio filters, making them unpleasant, uncomfortable, or totally unusable.

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***"Uh huh, more  
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I also tested the ANF (Automatic Notch Filter). This unit is a stand alone notch filter providing manual and/or automatic notch and peak functions. It works as well as the notch filter found in the FL3 and provides a visual tracking of tone searching.

For CW usage put the ANF in PEAK mode. The unit will then peak desired signals just

as effectively as the notch locks them out. Operating within the automatic peak mode, I found it was not very effective. The unit is so fast in seeking out signals that it jumps around between CW characters. It's best to tune for peak with the manual control. I did find this control quite sensitive, but remember, the filter is only 60 Hz wide in the peak mode.

Although the following is a small point, I feel it is worth mentioning. The ANF unit is very light-weight, and when set on top of a receiver it might be expected to slip and slide around. Not so! The little box has small foam feet that hang on like glue.

#### Recommendation

I tested and used the FL3 and ANF for several weeks before writing this article. I am impressed with both. They do everything they are supposed to, yet don't appear to have any bad habits. I really cannot say enough good about the automatic notch filter.

I have tested other audio filters in the past, was not pleased with them, therefore never wrote product reviews about them.

Would I recommend the Datong filters? Sure do! In fact, I have mine in the main station speaker line, where it can be switched to any rig by the turn of a knob. It's an adjunct to all my rigs, not just the old Drake.

I think the ANF is a "must have" item for any shack. It sits quietly while it works and needs no attention except to turn it on or off. Considering the investment most of us have in our stations, I think the price of the ANF is quite modest.

The FL3 is the ideal match up for an older radio (Drake, Collins, Swan, National, Heathkit, etc.). It updates them into the modern world of high selectivity. The cost of an FL3 is considerably less than that of a new solid state transceiver.

I must note that I really didn't realize that the technology of audio filtering had progressed to the point where Datong has brought it. I think that the manufacturers of amateur/SWL receivers should take note of these fine products, in particular the Automatic Notch Filter. **73**

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Datong filters and other products are available from:

Gilfer Shortwave  
52 Park Avenue  
Park Ridge, NJ 07656  
Orders 1-800-GILFER-1

Electronic Equipment Bank  
516 Mill Street NE  
Vienna, VA 22180  
Orders 1-800-368-3270

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### Specifications

#### FL3

Input impedance: 5000  $\Omega$

Nominal overall gain: unity

Filters: Low cut-off

High cut-off

Notch/peak

Automatic notch

Low and high pass filter frequency range: 200 to 3500 Hz

Minimum stop band rejection: 40 dBs

Rate cut off: 40 dBs in 500 Hz at 2 kHz

40 dBs in 120 Hz at 500 kHz

Notch and peak filter frequency range: 200 to 3500 Hz

Notch width: 200 Hz

Notch depth: 30 dBs

RTTY bandwidth: 100 to 1750 Hz at -6 dBs

CW bandwidth: 70 to 700 Hz at -6 dBs

Power output: max 2 watts

Power requirements: 10 to 20 VDC at 50 to 350 mA

Dimensions: 7.2 x 6.0 x 1.7"

Weight: 39 oz.

Accessories: comes with patch cords.

#### ANF

Input impedance: 100k $\Omega$

Nominal overall gain: unity

Filter: 2 pole (Q of 30)

Notch and peak filter frequency range: 270 to 3500 Hz

Notch width: 200 Hz

Notch depth: 40 dBs

CW bandwidth: 60 Hz at -3 dBs (800 Hz)

Power output: max 2 watts

Power requirements: 11 to 18 VDC at 75 to 400 mA

Dimensions: 5.9 x 3.5 x 1.7" Weight: 17 oz.

Accessories: comes with patch cords.