

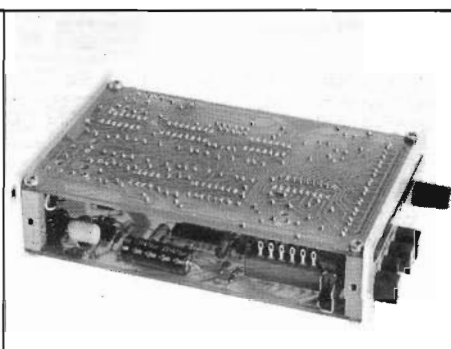
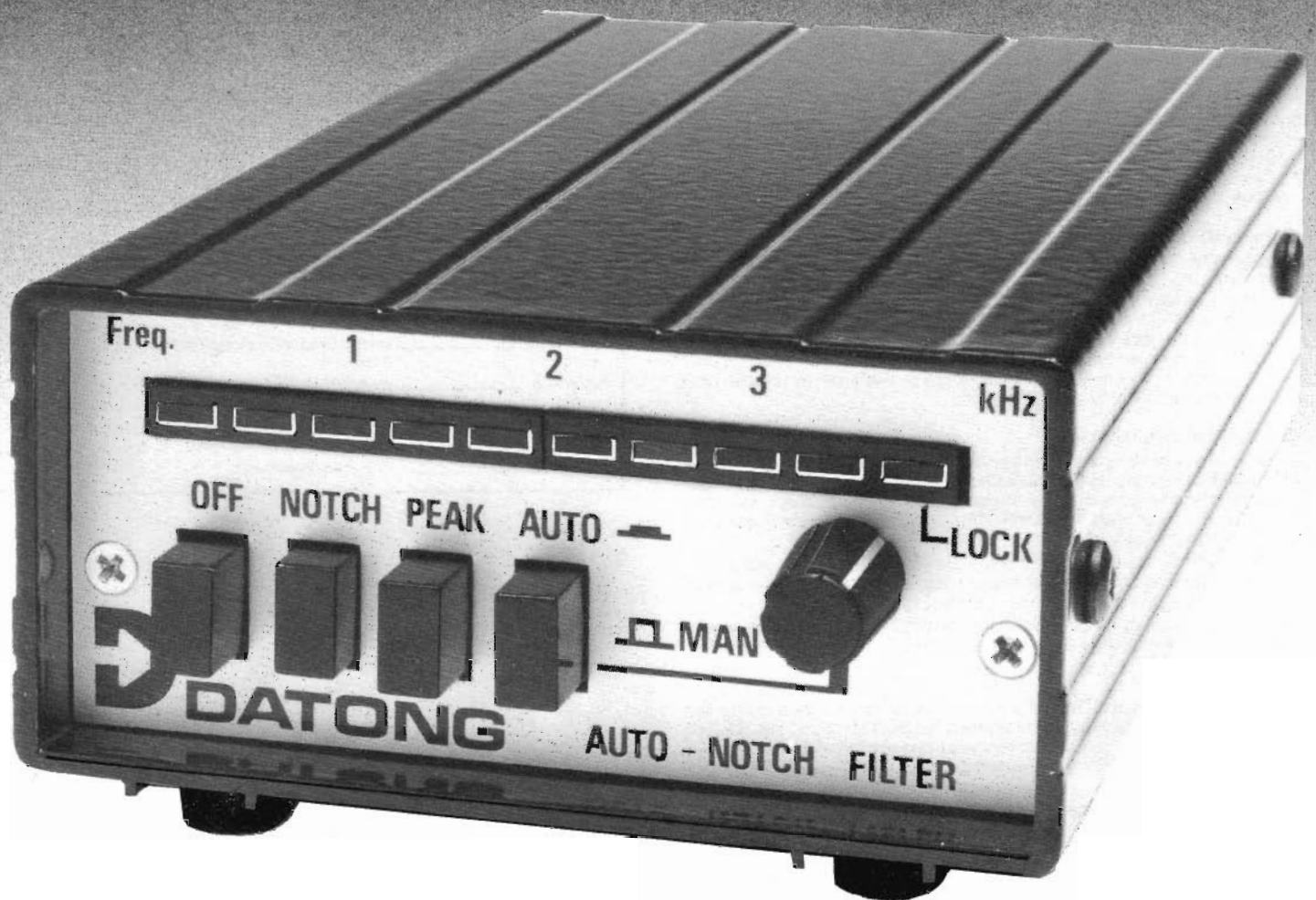


DATONG

ELECTRONICS LIMITED

AUTOMATIC AUDIO NOTCH FILTER PLUS CW FILTER

Clears tune-up whistles from SSB automatically



MODEL ANF

As the HF communication bands become more and more congested there is an increasing need for counter measures over and above the facilities built into current transceivers.

The Datong Model ANF is designed specifically to solve the problem of unwanted heterodyne whistles. In addition it performs as an effective CW filter.

FEATURES

- Removes tune-up whistles or other heterodynes automatically.
- 10 LED bar-graph type display of audio notch frequency shows search-and-lock mode in action.
- Built-in fully tunable 4 pole CW filter.
- Connects in series with speaker on any receiver.
- Built to professional quality standards.

Automatic whistle removal

Heterodyne whistles on DX stations occur more and more frequently and are caused by unmodulated transmissions of all kinds, whether random or deliberate. Model ANF continuously and silently searches the receiver's audio output looking for persistent tones anywhere in the speech frequency range (270 to 3500 Hz). When it locates a tone it switches from "search" mode to "track" mode and tunes a very deep and narrow notch filter onto the tone.

The effect is dramatic. The interference simply disappears from audibility within about one second and the complete process needs no help at all from the operator.

Why automatic?

Model ANF is based on the philosophy that the primary job for you the operator is to copy the wanted signal. The more automatic the hardware the more you can concentrate on the DX.

Compared with manually operated notch filters Model ANF is a major advance. The reason is that tuning a narrow notch filter is no easy task. To be effective it has to be narrow, yet if it is narrow it has to be continually readjusted to allow for any drift in the interference or adjustments to the receiver's tuning. The result is that manual notch filters are often not worth the trouble and inconvenience of using them.

In contrast Model ANF is a delight to use. It is fast enough even to take most of the annoyance from random "tuner-uppers". It will also track drifting interference sources – over the full range from 270 to 3500 Hz if necessary. Remembering that every time you adjust the receiver tuning the interference also shifts, this is an important benefit.

Line of LEDS displays frequency

Although Model ANF is automatic it still keeps the user firmly in control. It does this by displaying on a line of LEDs the actual frequency of the notch filter at any instant. In the search mode the spot of light moves back and forth over the full frequency scale. Whenever the movement stops you know not only that the filter is locked onto a whistle but also its approximate frequency. By pressing both the "NOTCH" and "PEAK" button together, you can temporarily bypass the filter to hear what it would have been like without the notch.

Auto assisted manual mode

Occasionally some help from the operator may be needed. For example if Model ANF remains locked to a weak heterodyne when a second stronger one is causing more annoyance you can select MANUAL mode and tune the notch by hand onto the worst offender. Here again the frequency display is a useful feature.

However, remembering the comments in **Why automatic?**, Model ANF still provides some assistance. It features automatic frequency control with a pull-in range of about 100 Hz.

As soon as you have tuned the filter within 100 Hz of the interference it automatically tunes itself for the best notch depth.

Built-in CW filter

A very effective 4-pole CW filtering capability is provided using the "PEAK" mode. The bandwidth is chosen for best all round results (see technical data) and the centre frequency can be tuned over the full range of 270 to 3500 Hz with continuous indication on the LED display.

Compondor gives full performance at any volume setting

Since Model ANF connects in series with the loudspeaker on a receiver you might expect the performance of the automatic circuitry to depend on the receiver's volume setting. In fact the conventional solution to this would be to have a separate volume control on the ANF (as did the pioneering Datong FL1).

However two volume controls are a nuisance and for Model ANF we developed a quite different solution. We placed the complete filter circuitry in the middle of a precision "compondor" circuit.

The compondor consists of two precision automatic gain control circuits linked together. The first one, right at the input to the complete system, keeps the input to the system constant no matter how the receiver volume control is set. The second, connected at the output of the filter readjusts its output level so that any gain or loss in the first a.g.c. circuit is exactly cancelled out.

The result is that the overall system still has unity gain from input connector to output connector and the overall volume remains controlled by the receiver volume control. Yet inside the filter and automatic tuning circuitry the signal level is always constant and the circuits always work at maximum efficiency and with maximum signal-to-noise ratio.

Quality construction

Not only the circuitry inside Model ANF is state-of-the-art. The new case design is based on a rugged yet stylish aluminium extrusion which slides over the dual PCB assembly. Built, flow soldered and tested as a single board the glass fibre PCB is snapped apart at final assembly and the two pieces (still linked by a strip cable) bolted onto four brass corner pieces as a 'sandwich'. The result is a very rigid assembly with excellent reliability.

Performance details

Overall audiogain:	_____ unity.
Supply voltage:	_____ 11 to 18 volts DC.
Supply current:	_____ 75 mA quiescent, 400 mA maximum output.
Input impedance:	_____ 100K.
Filter tuning range:	_____ 270 to 3500 Hz.
Notch depth:	_____ better than 40 db at 3.5 kHz.
Notch filter type:	_____ 2-pole, Q = 30, state variable.
Input threshold for correct operation:	_____ 1mV rms (ie, well below usable listening levels).
Lock threshold:	_____ will lock onto tones 6 db below noise level. Adjustable by internal preset.
Locktime:	_____ An interfering tone will be removed within typically one second.
CW filter bandwidth:	_____ 60 Hz at -3 db at 800 Hz centre frequency. Filter comprises two cascaded 2-pole sections with Q's of 30 and 10.
Audio power output:	_____ 2 watts into 8 ohms with 15v supply. 1.5 watts into 4 ohms with 10v supply.
Connections:	_____ input and output by phono jack, power supply by standard coaxial power jack, phones by 3.5mm jack.
Functions:	_____ OFF – disconnects power and connects input jack to output jack NOTCH – switches filter to notch mode for removing whistles. PEAK – switches filter to bandpass mode for CW reception. MAN/AUTO – selects manual tuning via knob or automatic search and lock mode. BYPASS – (press NOTCH & PEAK together) allows user to monitor the input to the filter.
Display:	_____ line of 10 red LEDs shows filter frequency at all times.
Protection:	_____ the unit is protected against reversed supply polarity and loudspeaker short circuit or overload
Dimensions:	_____ 150 x 90 x 44 mm (5.9 x 3.5 x 1.7 inches). Feet add 4mm (0.15 inches).
Weight:	_____ 475 gms (17 ounces).



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