THE DAIWA AF-606 AUDIO FILTER

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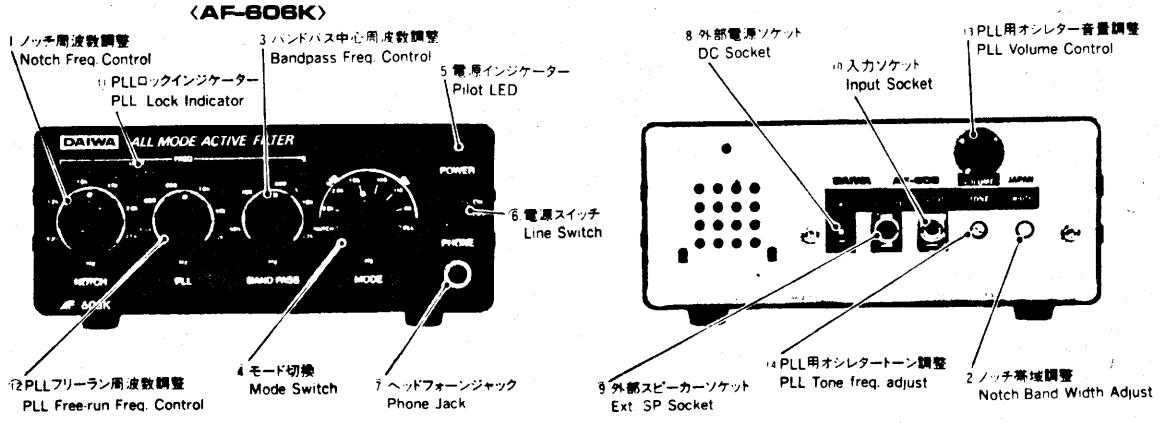
When reading any review of the stately NRD-515, one is not likely to find many critical comments on this fine receiver. Even after the Japan Radio Corporation discontinued production in 1986, the 515 remains a preferred receiver for the DXer today. While quick to tout the rig's strong attributes, most 515 owners will also list a couple of problem areas: "woolly" audio and the absence of a notch filter. The Daiwa AF-606K active audio filter is a help for both of these situations.

Audio filters can be useful for serious DXing, assuming your receiver already has good IF selectivity. It is often possible to clean up the audio portion of a signal well enough to lift an elusive ID from the noise. By notching an offensive hetrodyne or rolling off low and high frequency noise, the filter will decrease listening fatigue while it increases readability in an intense QRM situation.



(Fig.1) The Daiwa audio filter provides a notch filter with hi-lo roll off. The speaker is top mounted and angled slightly towards the listener.

I began my search to improve the 515 by looking for a notch filter. When a friend John Williams introduced me to the AF-606K, I knew that I had more than just a notch! The AF-606K exhibited an immediate benefit when used in the "notch only" mode. The receiver's excessive medium-low audio emphasis was reduced when using the 606K and the audio was brighter and more transparent. The notch frequency control, while set to @ 300 Hz, blocked out the "woollies"! Even when the notch is set to a different frequency to eliminate a het, a reduction in the 515's warm low end audio is still noticeable. Unless the mode control is switched to an SSB position, the audio bandwidth of the receiver is not narrowed significantly. You can leave the Daiwa in line constantly with the notch set to @ 300 Hz and enjoy improved intelligibility and fidelity.

I have experimented with the acclaimed Datong FL-3, which provides two notch filters and a passband filter with very steep curves. It did not exhibit the quality of processing I heard from the Daiwa however. The FL-3 limits the audio quite a lot when you choose to use it only as a notch filter. If it is in line it will limit audio bandwidth. Even when QRM problems require a narrow audio passband, I found the FL-3's audio quality to be lacking. The Fl-3's specs and design are impressive, but I clearly prefer the Daiwa in actual use.

The Daiwa has been used consistently in this past year with very satisfying results. Not only has it helped me extract vital information from a station in heavy interference, but it has also allowed for higher fidelity program listening.

Turkiye Polis Radyosu made an appearance this past winter on 6340 KHz. Both sidebands were cluttered with CW/RTTY QRM even when using the JRC 1.8 KHz filter. The AF-606K really helped to clarify the catch. I notched the CW in the USB and selected the 2.0 KHz audio bandwidth on the filter's mode control. Figure 4 will show you the band pass curves for all three "SSB" positions. Noise present above and below the roll off points was reduced. As a result, the signal appeared to be lifted out of the noise. Copy was easier now and a positive ID was made.

Program listening can also be enhanced. Take for example Radio Tahiti on 15170.7 KHz. During the summer months I enjoy tuning into this frequency for

Polynesian music. The signal is usually strong but is often disturbed by a het from 15170 KHz. Switching from the stock 6 KHz filter to the stock 2.4 KHz eliminates the het as well as the pleasant audio bandwidth afforded by the wide filter in AM. When the Daiwa's power is switched on and it's mode control is set to the "notch" position, the AF-606K will function as a notch filter only. The het can now be attenuated by adjusting the "notch frequency" control. Audio shaping is minimal in this mode except for the 700 Hz notch point. Practically all of the audio from the 515 in AM-wide is preserved as well as enhanced by the filter!

定格 SPECIFICATIONS

			AF-606K	AF-406K
MODE	NOTCH	Center Frequency	300~3,000Hz	
		Width	50~600Hz at Fo=750Hz −20dB	
	SSB	High Pass	500Hz − 6dB 12dB/OCT	
		Low Pass 2.5kHz	2.500Hz −10dB 12dB/OCT	
		2.0kHz	2.000Hz −10dB 24dB/OCT	
		1.5kHz	1.500Hz −10dB 36dB/OCT	
	CW	(Band Pass) Center Frequency	500~1.200Hz	
		Width	—	170Hz −3dB
			140Hz −3dB	140Hz −3dB
			110Hz −3dB	110Hz −3dB
			80Hz −3dB	80Hz −3dB
	PLL	Center Frequency	500~1,200Hz	—
		Lock Range	70Hz	—
		Input Voltage	0.1~2V	—
		Tone Frequency	500~2,500Hz	—
Input		Max	4V(2W)	
		Nominal	2V(0.5W)	
Power Output		Max	1.7W/8Ω	
Power Source		Voltage	DC13.8V(12~15V)	
		Consumpsion	200mA	
Dimensions			150W×62H×150Dmm	
Net Weight			1kg	

CONNECTION:

Power Supply — A power supply of 13.8 VDC (200 ma. min.) is required for the operation of the All Mode Filter. Connect your power supply to the external DC socket with the DC power cord supplied.

When using an AC adapter, make sure the maximum output voltage (with no load connected) is below 15 VDC.

External Speaker — An external speaker (8 ohms) can be connected to the socket with a RCA pin plug. The built-in speaker is disabled whenever the external speaker is connected.

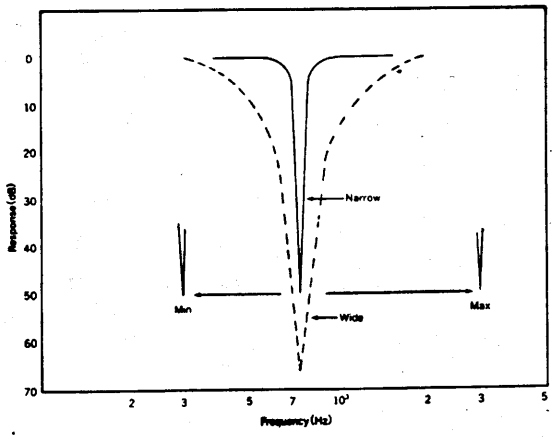
Input Signal — Connect a shielded cable with a RCA pin plug to the input socket and to the speaker terminals of your transceiver/receiver.

The headphone socket of your transceiver/receiver can be used as a signal source, but the normal speaker of your transceiver/receiver will be disabled. The output signal level from the built-in speaker of the AF406K/AF606K may be somewhat low when the power switch of the filter is in the OFF position.

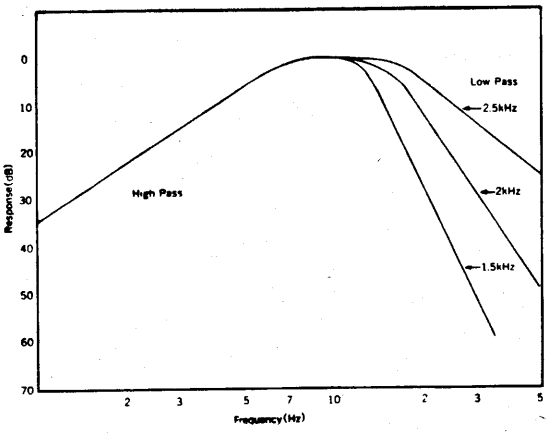
Headphones — Connect a stereo or mono headphone to the Phone Jack. The built-in speaker of the AF406K/AF606K is disabled whenever a headphone is used.

(Fig. 2) Please note that Daiwa does not include a power supply with the unit. A 13.8 VDC regulated supply or a battery pack of 12 VDC will power the AF-606K.

The Daiwa is esthetically pleasing and it's controls have a solid feel. The power switch is also the line in/out switch and there is a slight but annoying thump heard in the speaker each time the filter is switched on. The mode control adds a choice of one bandpass filter to accommodate a voice or CW signal troubled by QRM or QRN. The frequency control is on the front left while it's width control is on the back panel. My width control is usually set to slightly less than full narrow. The notch filter curve in figure 3 will indicate it's potential for nulling an offensive het.



(Fig. 3) Notch Filter Curve



(Fig. 4) SSB Bandpass Curves

The only front panel control that may appear to be peculiar is the PLL function on the mode switch and it's frequency control to the left. This feature is intended for CW use only. When a CW station is tuned, the mode switch can be set to "PLL". The audio from the receiver will then vanish. When the PLL pot is set to the audio frequency of the CW station, the Daiwa's oscillator will activate and duplicate the CW from the sending station. This results in noise free copy as long as the station remains strong enough to trigger the oscillator.

The internal speaker is a feature worthy of note. While rarely used at home, it does become useful while portable. The filter/speaker combination works well with my DX-pedition rig: a Yaesu FT-70G. The 70G is a small general coverage field transceiver with no internal speaker.

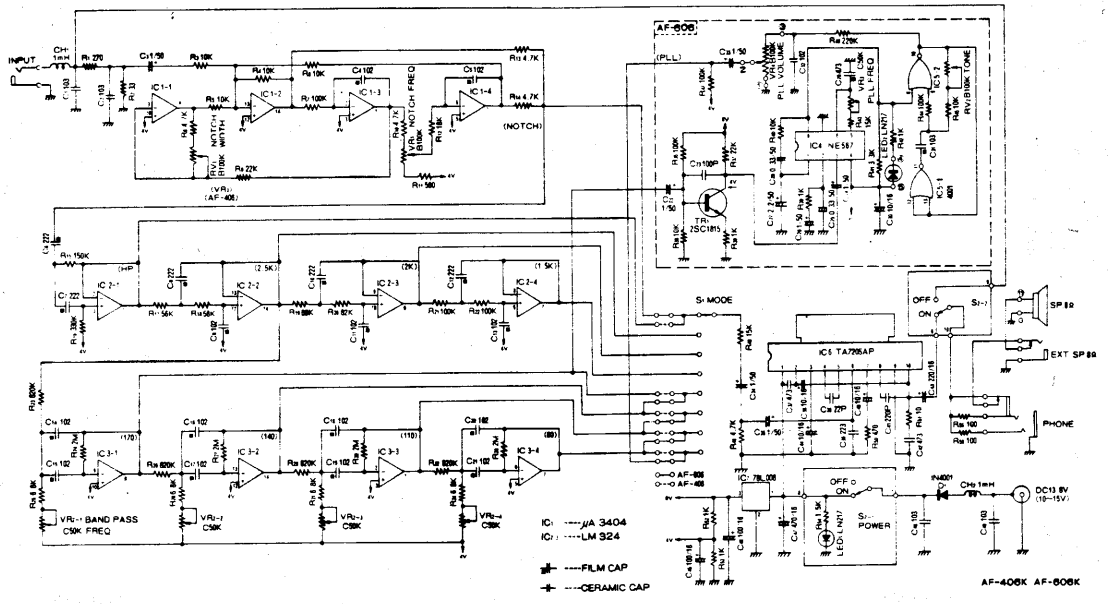
Processing recordings of your DX is possible with the filter. I use a Sony Walkman Professional (WM-D6C), the JRC speaker, and the AF-606K to clean up my

recorded DX. (A deck with a volume control on the headphone jack will be the most versatile.) Simply connect a patch cable from your deck's headphone out to the back panel audio input of the Daiwa. The taped signal can then be monitored via filter's internal speaker, headphone jack or and external speaker. I prefer to process the audio after recording it. Recording the audio output of the Daiwa is possible from the filter's speaker output to your cassette line input. Experiment to see which method works well for your receiver/recording system.

There are a few features that could make the AF-606K a more versatile device. A separate power and line in/out switch would be an easy modification. More involved design could give the DXer fully adjustable hi and low cut off frequencies with variable shape factors. (The AF-606K only has three fixed roll off points for high frequencies in the SSB mode.) A second notch would also be nice. Aside from this, the AF-606K remains a functional device for it's current level of development and cost.

Daiwa produces numerous devices for amateur radio use. There are many shops across the country that stock their tuners, amplifiers, meters and other related gear. The problem you may encounter is finding a dealer that stocks the AF-606K. I purchased my filter from R&L Electronics in Hamilton Ohio. This is the only shop I have located that actually stocks the unit.

The AF-606K lists at about $140.00. That's a fair price for the audio enhancing qualities and notching ability it will add to your 515.



- All mode active filtering removes interference on the desired signal and improves readability in CW, SSB, or AM modes.
- The All Mode Active Filter consists of four active circuit stages as well as low pass and high pass filters for clear reception.
- For CW reception, a four stage, low Q variable frequency bandpass circuit is included to provide clear CW reception with high S/N ratio.
- A PLL (Phase Locked Loop) Tone Decoder for noise-free reception.
- A 9 cm diameter speaker is also included.

(Fig. 5) Schematic of the AF-606K. The AF-406K is no longer is production.

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