

A comment from White's Circuit Designer Steve Elliot

July 28, 1994

The XLT takes advantage of powerful digital signal processing techniques. One of the significant problems confronting the digital circuit designer is the switching noise generated by digital circuits. If the noise gets back into the very sensitive analog receiver circuits, detector sensitivity can be seriously degraded.

The analog signals that White's detectors receive are in the range of fractions of a micro volt (one millionth of a volt) and current to voltage phase angles are measured in the range of fractions of a degree, detector sensitivity is a function of the signal to noise ratio. Super sensitivity is of no value, if the target is masked by noise. Any system noise (especially digital switching noise) will degrade the detectors over all performance. Noise reduction was a major XLT design goal.

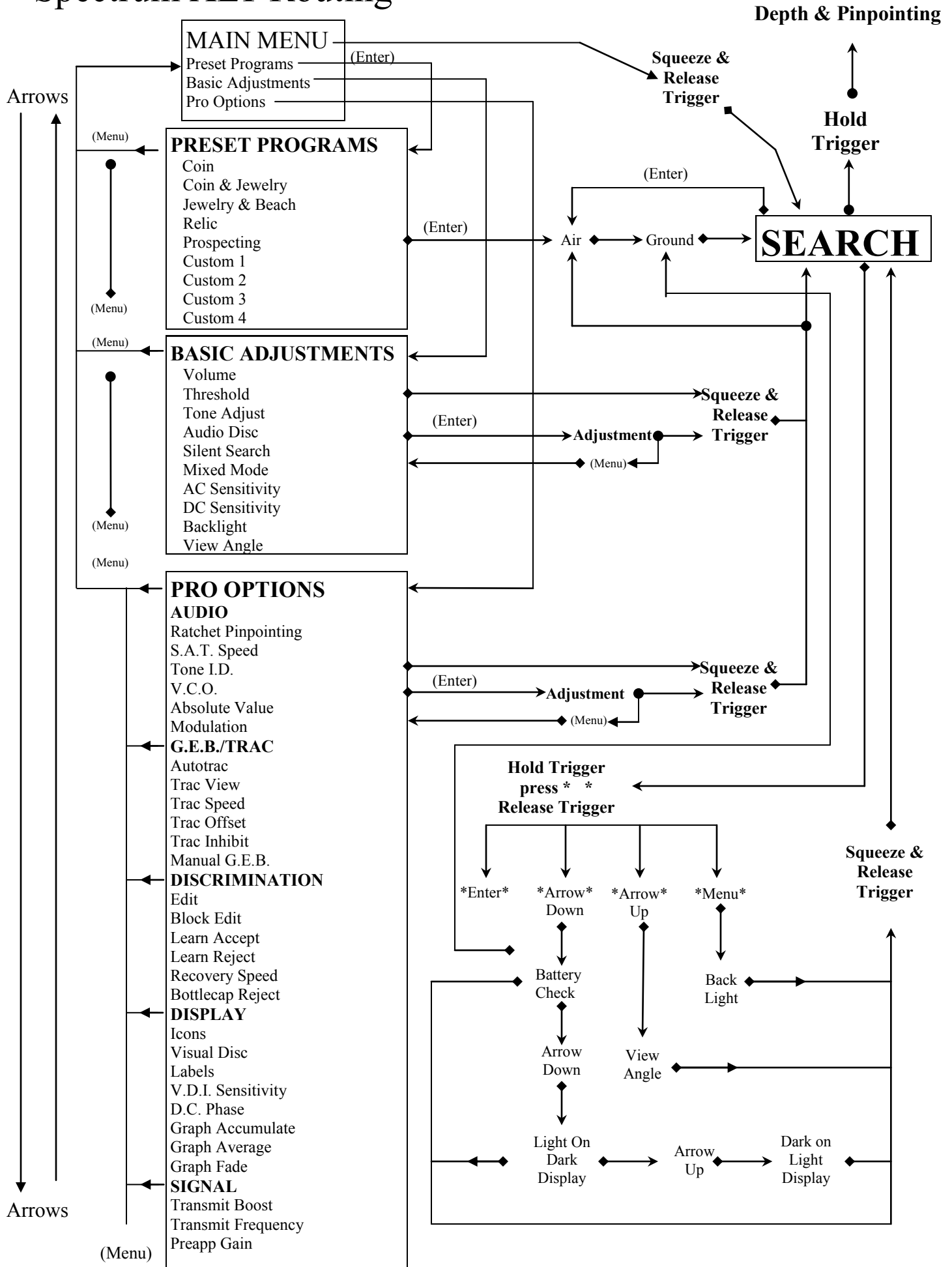
In addition to careful circuit design engineering, the XLT printed circuit board was designed with noise reducing power and ground distribution networks that are quieter and more extensive than on any other product that White's has ever developed.

Re PCB size:

Spectrum Main PCB	8.6" x 4.574" = 39.3354"
Spectrum PreAmp PCB	3.9" x 1.3" = 5.07"
combined total area	<u>44.4064"</u>

XLT Main PCB	6.015" x 4.5" = 27.0675
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Spectrum XLT Routing



SPECTRUM XLT

MAIN MENU

Menu Listings	Explanations	Tips
MAIN MENU	The beginning of all option and search choices	Access adjustments or search modes
Preset Programs	Factory or your personally saved programs ready for use	Ready to search modes
Basic Adjustments	Commonly used metal detectors adjustments	Personal preference & conditions
Pro Options	Intricate features reserved for advanced operators	Study and experiment prior to use

SPECTRUM XLT

PRESET PROGRAMS

Menu Listings	Explanations	Tips
<u>Preset Programs</u>		
Coin	Basic heavy trash rejection (pull tab reject) program for general use	Searching heavy trash conditions
Coin & Jewelry	Good general use program, medium discrimination (pull tab accept)	Searching medium to low trash
Jewelry & Beach	Beach settings, low discrimination	Beach use
Relic	Responds to all non-iron targets, rejects some small and large iron, detects medium size iron	Use when searching for valued relics
Prospecting	All metal program with display I.D. of ferrous (iron) metals	Searching for natural gold nuggets
Custom 1-4	Provides storage of your own programs, with or without battery	Save the common changes you make to the Preset Programs for future use

SPECTRUM XLT

BASIC ADJUSTMENTS

Menu Listings		Explanations	Tips
Basic Adjustments	Control Range		
Volume	45-63	Loudness of target response "beep". Higher numbers reduce battery life.	Use a level you can clearly hear
Threshold	0-42	Loudness of Threshold (background sound), a minor battery concern	Lowest level you can still hear
Tone Adjust	1-255	Pitch (treble/bass) of audio sound. Settings below 100 will pulse.	Personal Preference
Audio Disc.	ON-OFF	Turns ON/OFF Audio Discrimination (sound rejection of trash metal)	Trash rejections, or all metal response
Silent Search	ON-OFF	Allows searching without a Threshold (no continuous background noise)	Reduced threshold recommended
Mixed Mode	ON-OFF	Combines Discrimination (when loop is swept) and all metal modes	General use (advanced users)
AC Sens (motion)	1-80	Sensitivity of the Disc. motion modes stability and responsiveness	Maintain stability & maximize depth
DC Sens (no motion)	1-60	Sensitivity of the non-disc mode & pinpointing (stability & response)	Maintain stability & pinpointing
Backlight	0-6	Display lighting, reduces battery life, not part of memory, manual on/off	Off except in low light conditions
View Angle	0-50	Adjusts display for better viewing, hot, cool, bright, dark conditions	Adjust display to weather conditions

SPECTRUM XLT

PRO OPTIONS

Menu Listings		Explanations	Tips
Pro Options	Control Range		
Audio Ratchet Pinpointing	ON-OFF	Automatic pinpointing features detunes for target center location	On ease of use, off manual pinpointing
S.A.T	ON-OFF	Smooths threshold & adds stability (required motion in non-disc modes)	On for greater stability
S.A.T. Speed	1-10	Controls S.A.T. aggression (quickness S.A.T. resets threshold)	Faster for bad ground conditions
Tone I.D.	ON-OFF	The higher the V.D.I. number the higher the audio pitch (treble/bass)	General Use (advance users)
V.C.O.	ON-OFF	In non-disc modes & pinpointing, target strength controls audio pitch	Great aid in pinpointing
Absolute Value	ON-OFF	Used only with Bigfoot, elongated loop design	Bigfoot loop only
Modulation	ON-OFF	When ON allows target strength to determine audio volume (deeper targets [produce softer sounds])	Recommended, average coin use
G.E.B/Trac Autotrac	ON-OFF	Automatically updates ground rejection setting during searching	Recommended, average coin use

SPECTRUM XLT PRO OPTIONS

continued

Menu Listings		Explanations	Tips
Pro Options	Control Range		
Trac View	ON-OFF	“TRAC” appears on display when Autotrac makes adjustments	Use if experimenting Trac speed
Trac Speed	1-20	Controls Autotrac aggression (ground change required to Autotrac)	Trac 3rd pass, quicker bad ground
Trac Offset	(-5) - (+5)	Autotracs more or less than perfect balance (accommodates bad ground)	Advanced user for extreme ground
Trac Inhibit	ON-OFF	Disables Autotrac during the detection of metals (desirable if corroded)	OFF prospecting, ON coin & relic
Manual G.E.B.	Automatic	Automatic is activated with beginning AIR/Ground Balance	Automatic recommended
	Manual	Allows full manual control of ground balance (Autotrac must be OFF)	Advanced users can offset ground balance for the same reasons Trac Offset is used, manually balance to their preferences
	Coarse 0-255	Has one hundred degrees of phase control over ground rejection (V.D.I. -95 -- +10)	
	Fine 0-255	Concentrated fine control of area around coarse setting	
Discrimination Edit	(-95) - (+95)	Allows each specific V.D.I. number to be changed Accepted or Rejected	Accept/Reject any V.D.I. number
Block Edit	Same as Edit	Same as Edit only allows dragging accept/reject through V.D.I. range	Change V.D.I. numbers rapidly
Accept	ON-OFF	Sample targets can be used to train the program to accept them (no iron).	Teach accept with sample targets
Reject	ON-OFF	Sample targets can be used to train the program to reject them (no iron).	Teach reject with sample targets
	OFF	Off must always be selected once Accept/Reject training is complete as the program will continue to learn each new target that is detected.	OFF when not teaching
Recovery Speed	1-40	How quickly targets can respond when close together (varies with loop).	Higher number for trashy areas
Bottlecap Reject	1-20	Improves iron rejection, may compromise close to iron targets, changes discrimination sounds for good and bad targets.	Use 1-3 in difficult iron trash
Icons	ON-OFF	Turns ON/OFF graphic target display representations.	On most conditions, OFF speeds display
Visual Disc.	ON-OFF	Prevents V.D.I. and label from appearing on display if rejected.	ON prevents reject display information
Labels	ON-OFF	Turns ON/OFF labels Iron, Foil, Nickel, Pull Tab, etc.	OFF for other than USA coin targets
V.D.I. Sens	1-99	Controls strength of target required to activate display indication.	Low # accuracy, high # depth
DC Phase	ON-OFF	Allows V.D.I. number to appear during pinpointing (ground + target).	Extra information ground/target
Graph Accumulate	ON-OFF	Gathers multiple bits of information for the SignaGraph bar graph.	Several sweeps of information shown
Graph Average	ON-OFF	Takes an average of the information and displays it on the SignaGraph.	Shows most predominate indications
Graph Fade Rate	0-15	Resets SignaGraph information to clear bar chart for new readings. “0” requires manual resetting with handle trigger switch.	Automatic clearing of old information
Signal Transmit Boost	ON-OFF	ON most conditions, maximum strength, off extreme ground overload.	OFF When overload appears regularly

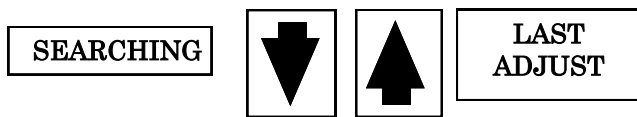
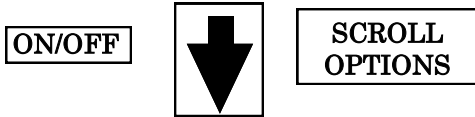
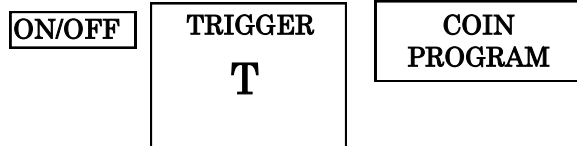
SPECTRUM XLT

PRO OPTIONS

continued

Menu Listings		Explanations	Tips
Pro Options	Control Range		
Transmit Frequency	1-7	Changes operating frequency to avoid interference from other detectors.	Competition or buddy hunts
Preamp Gain	1-15	Major stability, Overload, and sensitivity control, all modes. can be used anytime increases in depth are desired. If Low Transmit Power is selected much of the depth (lost due to lower transmitted signal) can be regained by increasing Preamp Gain. Use the highest stable setting that doesn't Overload or cause erratic responses. Re-ground balance after all Transmit Power and Preamp Gain adjustments.	When maximum depth is desired

Spectrum XLT SHORT CUTS

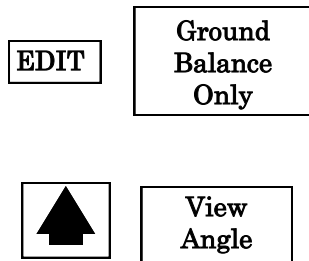
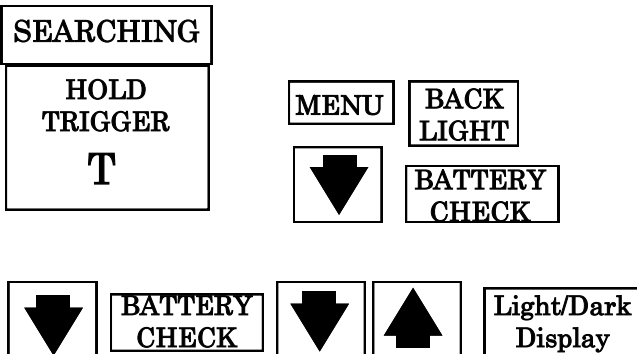


I. When first turned **ON**, after battery check squeeze and release **TRIGGER** to access the **COIN preset program**.

II. When first turned **ON**, after battery check, use the **ARROW** down control to scroll through all the options and adjustments to view current settings, or **develop a custom program**.

III. During searching, press **ENTER** to re-Air/ Ground Balance.

IV. During searching, press either **ARROW**, to return to the **last adjustment** screen used.



V. During searching, hold the **Trigger** and press

A. **Menu**, to access **Backlight**, release **TRIGGER**.

B. **ARROW DOWN** to access **BATTERY CHECK**,

1. Continue to hold **TRIGGER** to continue **BATTERY CHECK**.
2. Continue to hold **TRIGGER** and press either **ARROW** to select **dark on light** or **light on dark display**.
3. Release **Trigger** to return to searching.

C. Press **ENTER** to re-Ground Balance Only, Air remains the same.

D. Press **ARROW UP** to access **View Angle**, release **TRIGGER**.