OAK CATV EQUIPMENT - CABLE TV "UNSCRAMBLING"

Some facts and fiction about OAK brand CATV equipment: OAK models N-12, M35B, TC35/TC35B, TC56/RTC56, V-26, KDM-400/RKDM-400 are all designed to use on what is known as SINE WAVE SCRAMBLING. A sine wave signal 270° out of phase with the horizontal sync pulse signal is modulated over the video signal to reduce the effective height of the horizontal sync pulse about 6 DB. This supresses the sync pulse so that a TV tuned to this scrambled signal cannot lock its horizontal oscillator to the picture, making an unwatchable result on the screen. A variation of this system is known as VARI-SYNC SCRAMBLING: instead of only a 15,750 HZ signal being used as the scramble waveform-a randomly switched sinewave of either 15,750HZ or 31,500Hz is used to scramble the picture.
The converter box has a circuit to pick a correction waveform off the sound carrier of a given channel and apply it to the AGC of the converter and thus restore the video waveform to its original strength and make the horizontal sync pulse amplitude normal for the TV to utilize it.

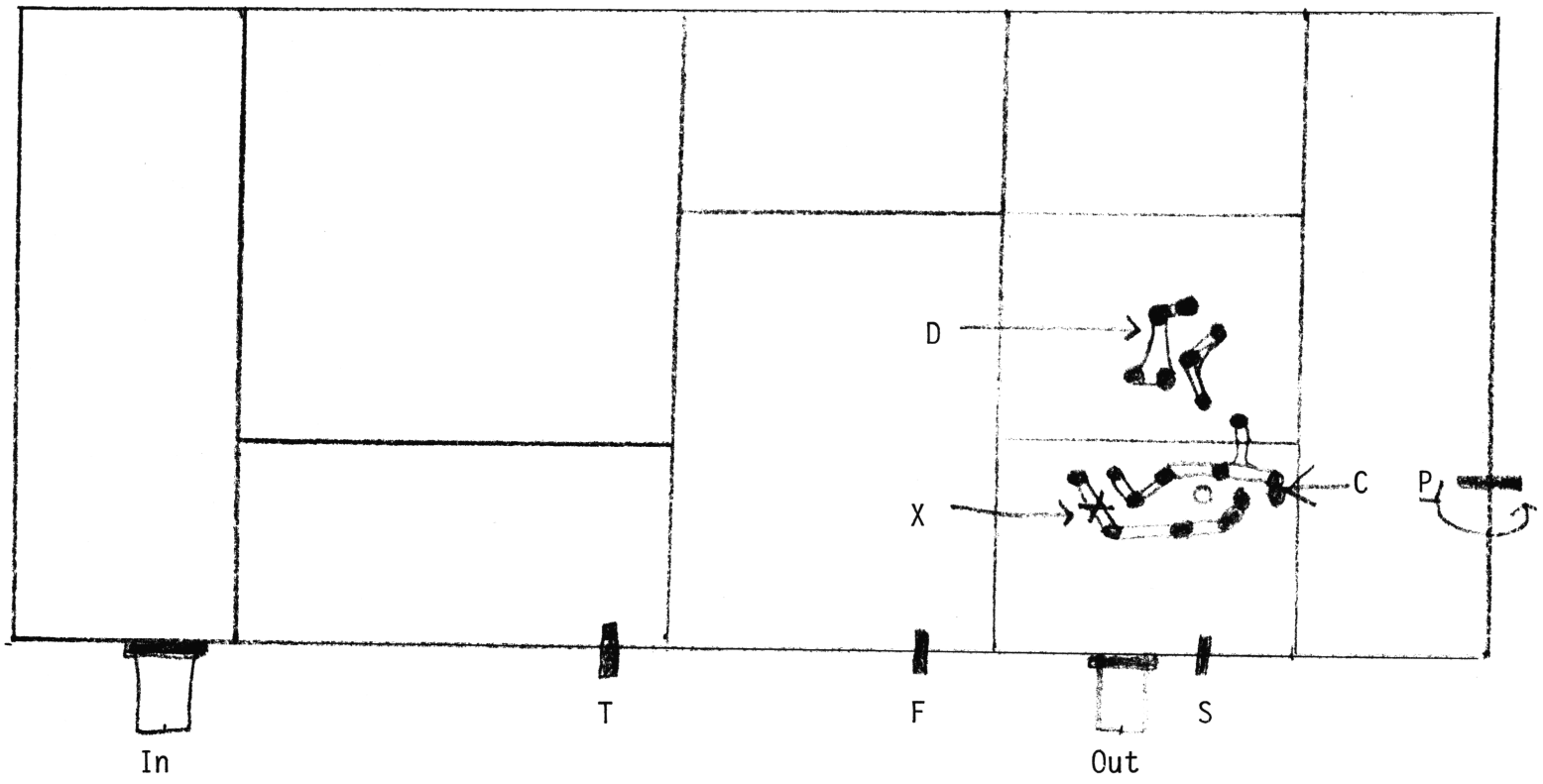
Models TC35/TC35B, TC56/RTC56, and KDM400/RKDM400 are computer addressed by the CATV company to turn off the converters operation and descrambling ability if switched to channels not paid for. Many CATV companies perpetrate the false notion or rumor that they can tell the operation of the converter from their control center. While they do this to try to prevent tampering with their equipment-this is not true-the addressibility is strictly one-way--the CATV converter does not send back any signals to their computer controlled scrambling equipment! Any TOTAL CONTROL series OAK CATV equipment will function anywhere in the city its digital code appears in. Yes, your CATV converter will work at your neighbors or at a theifs house until you report it stolen or fail to pay your monthly cable bill!

Some CATV companies utilizing TOTAL CONTROL series model converters use what is known as PSEUDO-SCRAMBLE switching to prevent the use of modified unauthorized equipment that customers may buy mail order. This means that jumped-on decoders will scramble basic channels and descramble premium channels only part of the time. Authorized boxes receive signals to tell the boxes descrambling circuit to switch on and off as necessary to function.
The ASM series modules receive the signals telling the box to turn on or off the descrambler for the channel switched to while ignoring the digital code that tells the box if it is supposed to function on the channel it is tuned to. Thus a box with the ASM switching module installed will function on all standard and premium channels offered in the CATV system it is connected to.

Oak Model M35B units with Vari-Sync and ASM-2C modifications will function wherever the TC35, TC56 and KDM400 models are utilized by the CATV company. When furnished equipment is N-12, V26, V31 or M35B (or numerous other OAK discontinued models) the M35B-VS-ASM2C may need a manual control toggle switch because such systems may not have the computer control signals to tell the unit whether or not a given channel is scrambled. Occasionally CATV companies install channel traps that look like a coax jumper on one premium channel. This results in weak, snowy, black & white signals on the trapped channel and sometimes washed out pictures on the adjacent channel.

OAK CATV EQUIP. 'MOD.'

OAK Multicode M35B bottom (foil side) of main compartment



OAK CATV equipment uses "Sine-Wave" scrambling techniques. Model M35B has channels 2-13 plus channels A thru W. Channels A thru W are shown as 14 thru 36 on digital readout models of TV converter/descrambling equipment. Model M35B "Black Box" can be used when CATV furnished equipment is OAK models V-26, V-31, M35B, TC-56, RTC-56, KDM-400, or RKDM-400. Model M35B "Black Box" needs to have a vari-sync modification if being used in place of TC-56, RTC-56, KDM-400, and RKDM-400. The "Black Box" can also be used in place of OAK N-12 Mini-Code descramblers as well as TC-35, RTC-35 RPM-35 and other OAK models.

VARI-SYNC MODIFICATION

Vari-Sync modification is required if the encoding equipment switches between 15,750 Hz and 31,500 Hz scrambling signals. Refer to drawing above: Cut circuit foil at "X" as shown. Solder tuned circuit "Vari-Sync" Kit Parts across the cut in the illustrated foil trace.

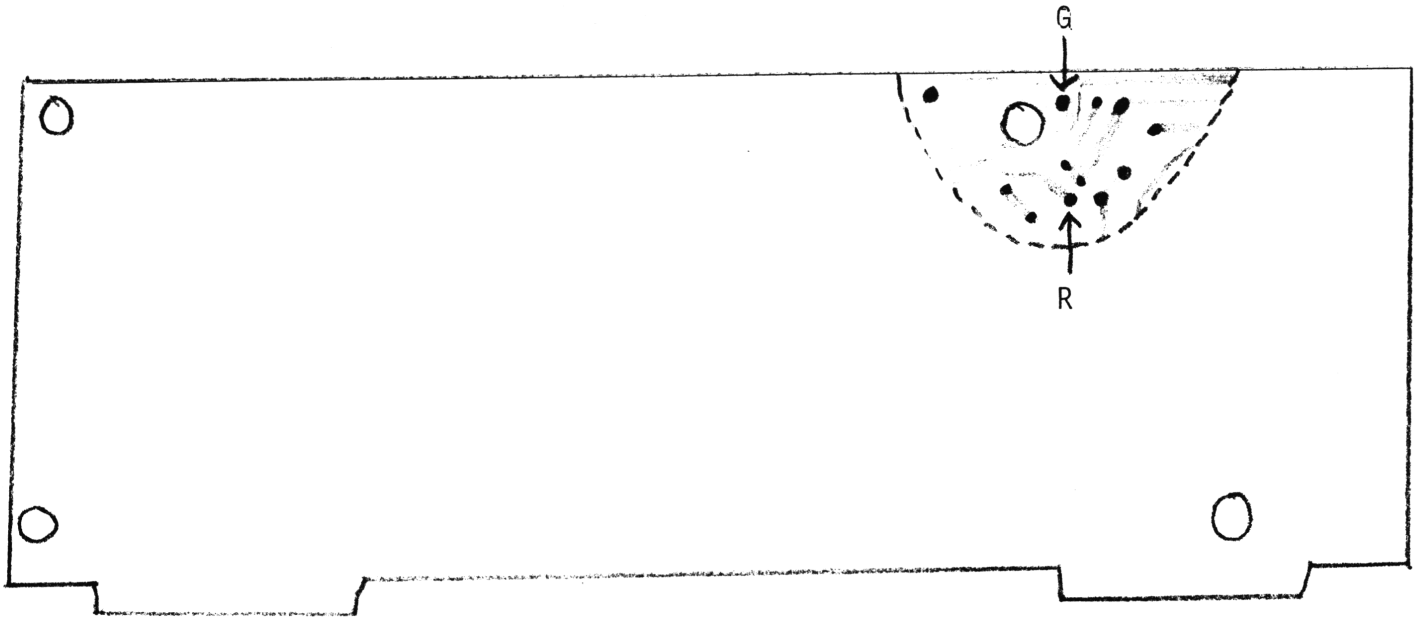
Descrambler Turn-On Modification

Model M35B units have a channel selector switch which CATV companies program connections on to select which channels function for descrambling and which channels work only as standard-non-premium channels. Refer to drawing above: Point "S" is a feedthru cap with a (usually green) wire leading to the channel selector switch. To enable the user to manually select decoder operation simply cut this (green) wire and install a SPST switch (Vanco SM-25) in series across the cut wire. When the switch is ON the box will be in the "standard" mode. If the switch is OFF the box functions in the "premium" mode.

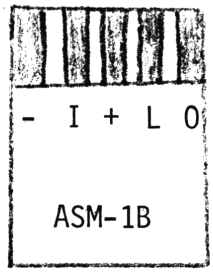
ASM-2B Automatic Switching Module Installation

ASM-2B is designed to fit vertically behind the front panel in front of the individual channel tuning pots. "T" is the testpoint for tuning voltage for channel alignment. "F" is the AFC testpoint which must be shorted to ground before attempting channel alignment. "P" is +24VDC to connect to "+" of module. "C" is the collector of Q353 and hooks to module output. "D" is D351 cathode for module input. "-" lead is ground and can be soldered to chassis. No connection to test points of module.

Bottom View of Blue potted Module of OAK TC-56 & RTC-56

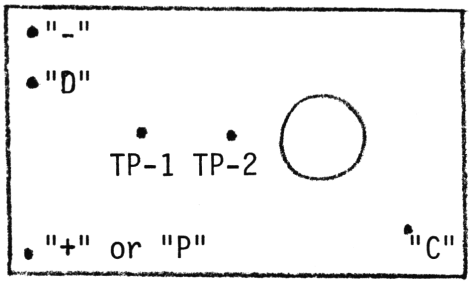


To turn on this model OAK TOTAL CONTROL computer tag addressed converter/descrambler requires chipping away some of the blue epoxy as illustrated in figure above. Add a 33 ohm 1/4W or 1/2W resistor from point R to point G (ground) as shown. Turn blue module back right side up and find 7 pin plug going to main circuit board. One of the seven wires is blue-this blue wire needs to be cut in two or pulled out of its plug. Also on the top of the blue module are a pair of coax leads with RCA plugs, a small 1K white pot, and 2 IF style cans. The white pot needs to be turned to its extreme clockwise position. Do not tamper with the tuning cans as these peak the 15,750 and 31,500 correction signal sine waves. Next to the shorter coax is a coil labeled L216 on the main circuit board. The end of L216 next to the jack this shorter coax plugs into is the point for "O" (output) of the ASM-1B. (This jack will be labeled J-5 AGC IN.) Underneath the blue module is a small circuit board with 3 IC's mounted on short plastic snap-in standoffs. Pin 7 of U901 (MC14538B) on this small board goes to "I" (input) of the ASM-1B. A red wire labeled "+5V" is the "+" source for the ASM-1B and a black wire is the "-" (gnd.) source for the ASM-1B. (The red "+" and black "gnd" wires are on the small board containing U901, U902, and U903). Model ASM-1B comes with a red LED between "+" and "L" on it.



Model ASM-1B automatic switching module for OAK TC-56

Model ASM-2B automatic switching module for OAK M35B



The reason model ASM-1B and ASM-2B were developed is because many CATV companies use "pseudo-scrambled" techniques to "jam" the customer owned equipment and try to make it useless. These automatic switching modules decide whether the box should be in the standard or premium mode at any given instant. These modules switch pratically instantly preventing the loss of any program scenes due to the efforts of CATV companies to make the use of customer owned equipment impratical. These modules work only on the OAK models that hookup instructions are given for and will not function with other brands of CATV equipment.