

SYNC STRETCH PROCESSOR UNIT

Richard L. Carden VK4XRL

Why a sync stretch processor you may ask. It's been a while since we have seen one presented her in CQ-TV the last one being THE BIG SYNCs by Trevor Brown G8CJS.

The sync stretch processor is required because of the non linearity associated with both valve and transistor power amplifiers. Also while some maybe contemplating going digital, FM and AM will be around for some time due to the costs associated with digital. Therefore those still using AM this unit could be a bonus providing correct sync levels while driving your power amplifiers a little harder.

The circuit is not new and in fact way back Mike Cox in CQ-TV 49 had a video processor amplifier. Also in the old yellow book 'Amateur Television' John Lawrence describing a vidicon camera had a very similar video processor. The only thing with these units were that these had been designed for B&W and used blanking pulses to

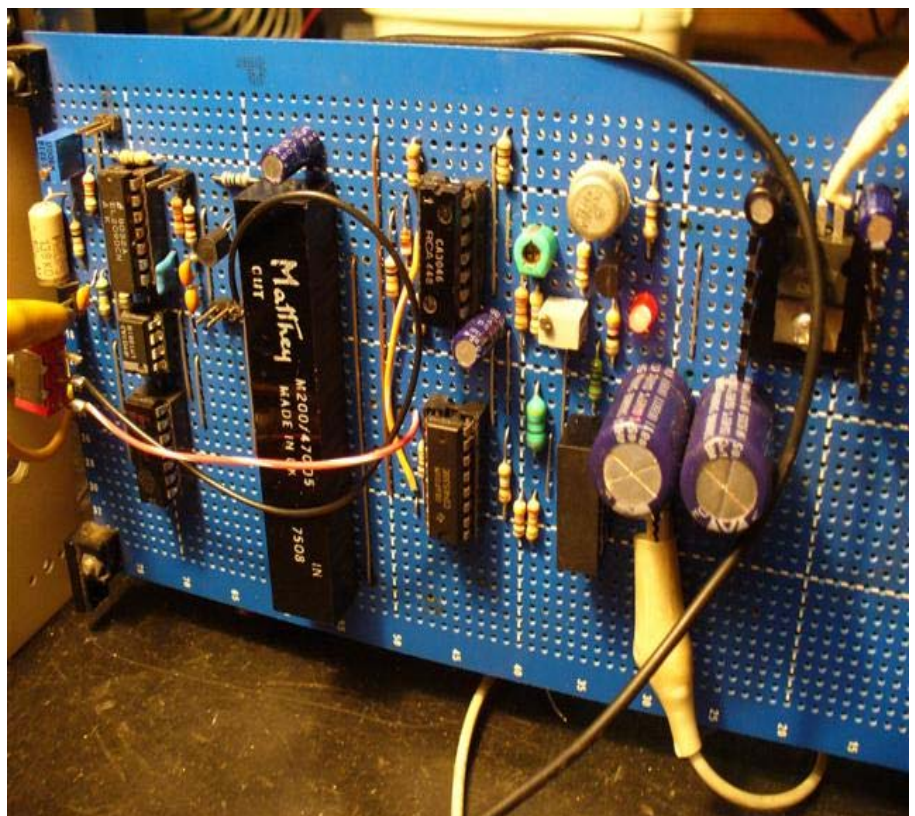
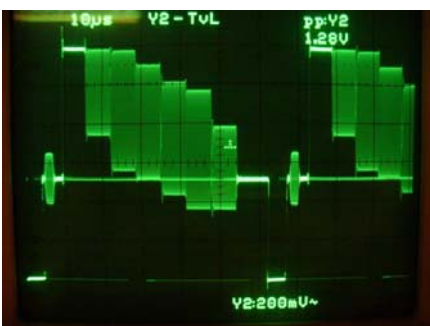
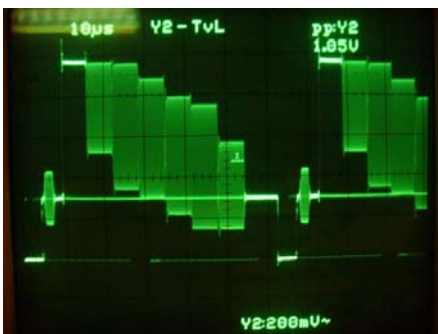
set black level as well as sync pulses added to the output waveform.

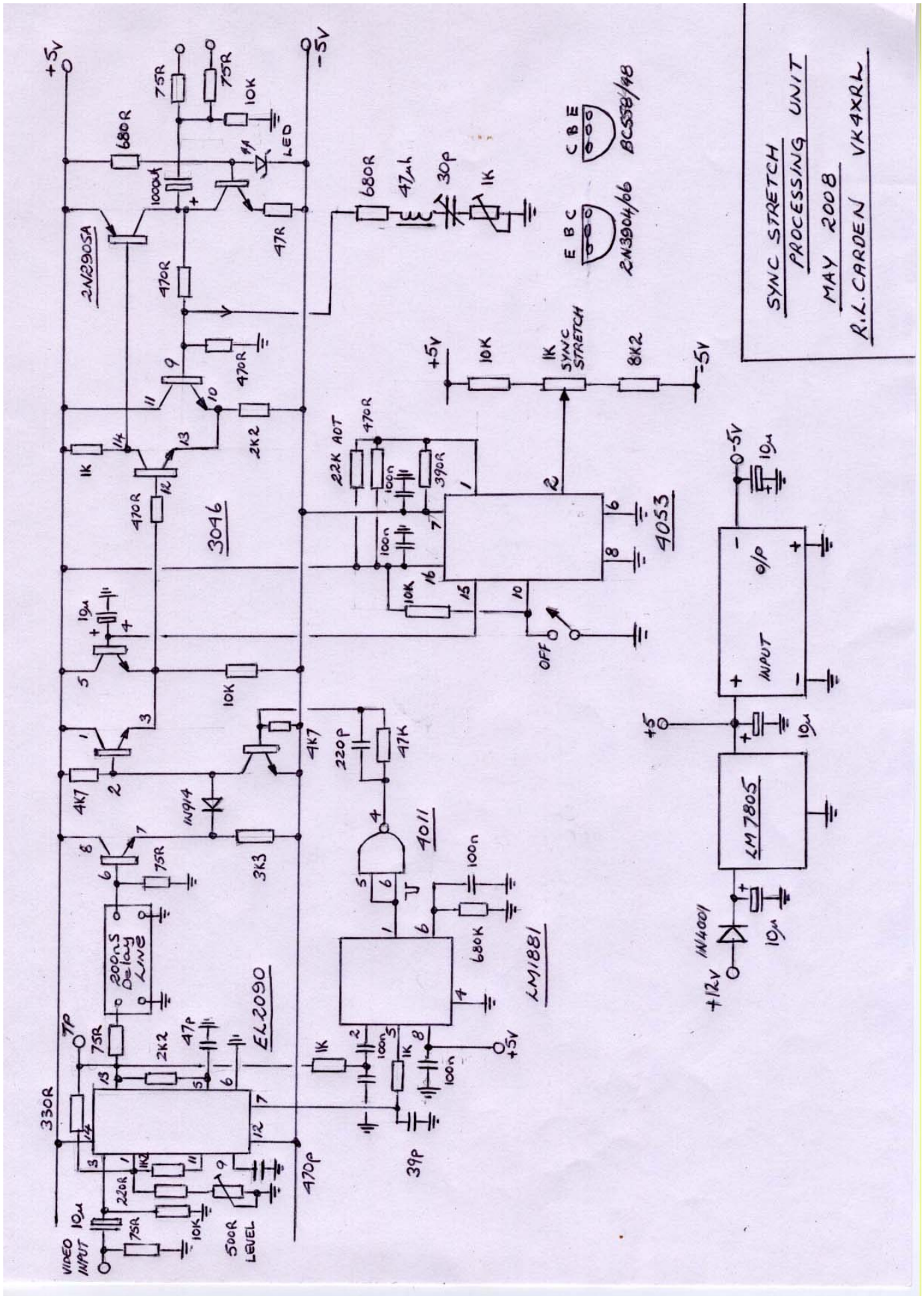
Now we don't need blanking as with colour we don't want to disturb the colour burst on the back porch. We still need to clamp to clamp the video input before we can add syncs and this is performed in the EL2090 plus we also use the LM1881 or its equivalents to derive the clamp pulses and providing separated sync pulses which we will later use.

The EL2090 provides clamped video at its output (pin 13) and also provides some video gain (level) control. Clamp pulses from pin5 of the LM1881 feed pin7, the clamp sample and hold circuit within the EL2090. The output from the EL2090 feeds a 200ns delay line, this makes up for the slight delay in forming the separated sync pulses via the LM1881. Sync pulses from pin 1 (LM1881) are inverted in the 4011 and feed to the video and sync adder circuit. The level of the sync pulses are then controlled by the DC voltage feed to pin 4 of the CS3046 multi-transistor integrated circuit. Discreet components could also be used if the IC is not available. The sync level is feed via a 4053 switch, this therefore allows for

correct sync level in the non sync stretch mode for testing and is set via the potential divider formed by the 390 ohm and 470 ohm resistors, and the 22k AOT sets the correct level. Pin 2 of the 4053 has a variable Dc voltage formed from another voltage divider to allow for increased sync level for compensating for the non linearity within the AM transmitter power amplifiers.

A small amount of video boost at the chroma frequency is applied to the video output via the series resonant circuit. The trimmer sets the frequency while the trimmer resistor sets the required correction needed. Setting up is straight forward. The video level control is set for 0.7v, while in the non sync stretch mode the 22k AOT resistor sets the sync level to 0.3v. In the sync stretch mode the variable sync level is adjusted so that the received sync level as seen on a reference receive is at the correct level. Note that the unit has been built on matrix board, and a small capacitor (10P) has been added across the base and emitter of the output transistor to stop some tenancy for the output stage to oscillate.





SYNC STRETCH
PROCESSING UNIT
 MAY 2008
 R.L.CARDEN VK4XRL