pulse is between 1.0 Vdc and 1.3 Vdc. In PAL mode this method is not suitable, since the ramp isn't available to drive the PAL flip–flop. Another means of inhibiting the burst pulse is to set Pin 1 either above 1.3 Vdc or below 1.0 Vdc for the duration that burst is not desired.

Color Reference Oscillator/Buffer

As stated earlier in the general description, there is an on–board common collector Colpitts color reference oscillator with the transistor base at Pin 17 and the emitter at Pin 18. When used with a common low–cost TV crystal and capacitive divider, about 0.6 V_{pp} will be developed at Pin 17. The frequency adjustment can be done with a series 30 pF trimmer capacitor over a total range of about 1.0 kHz. Oscillator frequency should be adjusted for each unit, keeping in mind that most monitors and receivers can pull in 1200 Hz.

If an external color reference is to be used exclusively, it must be continuous. The components on Pins 17 and 18 can be removed, and the external source capacitively coupled into Pin 17. The input at Pin 17 should be a sine wave with amplitude between 0.5 V_{pp} and 1.0 V_{pp}.

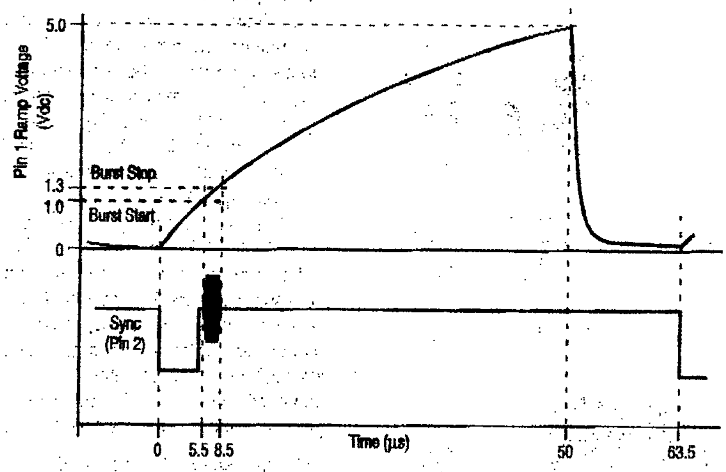
Also, it is possible to do both; i.e., let the oscillator "free run" on its own crystal and override with an external source. An extra coupling capacitor of 50 pF from the external source to Pin 17 was adequate with the experimentation attempted.

Voltage Controlled 90°

The oscillator drives the (B–Y) modulator and a voltage controlled phase shifter which produces an oscillator phase of 90° ± 5° at the (R–Y) modulator. In most situations, the result of an error of 5° is very subtle to all but the most expert eye. However, if it is necessary to adjust the angle to better accuracy, the circuit shown in Figure 11 can be used.

Pulling Pin 19 up will increase the (R–Y) to (B–Y) angle by about 0.25°/µA. Pulling Pin 19 down reduces the angle by the same sensitivity. The nominal Pin 19 voltage is about 6.3 V, so even though it is unregulated, the 12 V supply is best for good control. For effective adjustment, the simplest approach is to apply RGB color bar inputs and use a vectorscope. A simple bar generator giving R, G, and B outputs is shown in Figure 26.

Figure 9. Ramp/Burst Gate Generator



Residual Feedthrough Components

As shown in Figure 9(d), the composite output at Pin 9 for fully saturated color bars is about 2.6 V_{pp}, output with full chroma on the largest bars (cyan and red) being 1.7 V_{pp}. The typical device, due to imperfections in gain, matching, and modulator balance, will exhibit about 20 mV_{pp} residual color subcarrier in both white and black. Both residuals can be reduced to less than 10 mV_{pp} for the more exacting applications.

The subcarrier feedthrough in black is due primarily to imbalance in the modulators and can be nulled by sinking or sourcing small currents into clamp Pins 11 and 12 as shown in Figure 12. The nominal voltage on these pins is about 4.0 Vdc, so the 8.2 V regulator is capable of supplying a pull up source. Pulling Pin 11 down is in the 0° direction, pulling it up is towards 180°. Pulling Pin 12 down is in the 90° direction, pulling it up is towards 270°. Any direction of correction may be required from part to part.

White carrier imbalance at the output can only be corrected by juggling the relative levels of R, G, and B inputs for perfect balance. Standard devices are tested to be within 5% of balance at full saturation. Black balance should be adjusted first, because it affects all levels of gray scale equally. There is also usually some residual baseband video at the chroma output (Pin 13), which is most easily observed by disabling the color oscillator. Typical devices show 0.4 V_{pp} of residual luminance for saturated color bar inputs. This is not a major problem since Pin 13 is always coupled to Pin 10 through a bandpass or a high pass filter, but it serves as a warning to pay proper attention to the coupling network.

Figure 10. Adjusting Modulator Angle