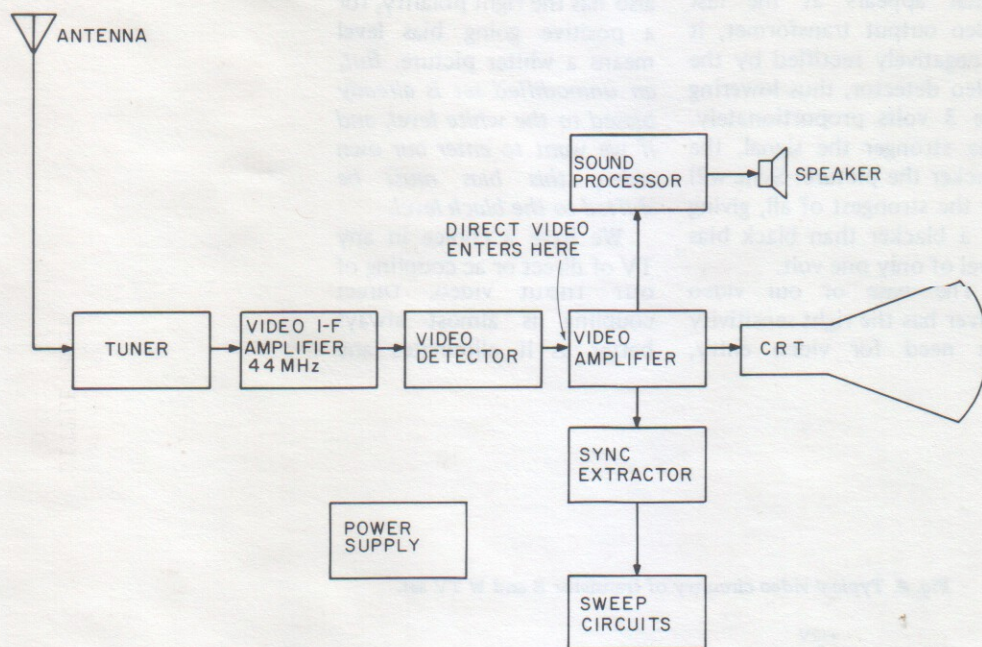


Fig. 3. Block diagram of typical B and W television.



optimum amount of intentional smear is usually the value of capacitance that is needed to just close the inside of a "W" presented to the display.

Adding a Video Input

Video inputs are easy to add to the average television set, provided you follow some reasonable cautions. First and foremost, you must have an accurate and complete schematic of the set to be modified, preferably a Sams Photofact or something similar. The first thing to check is the power supply on the set. If it has a power transformer and has the chassis properly safety isolated from the power line, it's a good choice for a TVT monitor. This is particularly

true of recent small screen, solid state portable TV sets. On the other hand, if you have a hot chassis type with one side of the power line connected to the chassis, you should avoid its use if at all possible. If you must use this type of set, be absolutely certain to use one of the safety techniques outlined later in Fig. 8.

A block diagram of a typical TV set appears in Fig. 3. UHF or VHF signals picked up by the tuner are downconverted in frequency to a video i-f frequency of 44 MHz and then filtered and amplified. The output of the video i-f is transformer coupled to a video detector, most often a small signal germanium diode. The video detector output is filtered to

remove the carrier and then routed to a video amplifier made up of one or more tubes or transistors.

At some point in the video amplification, the black and white signal is split three ways. First, a reduced bandwidth output routes sync pulses to the sync separator stage to lock the set's horizontal and vertical scanning to the video. A second bandpass output sharply filtered to 4.5 MHz extracts the FM sound subcarrier and routes this to a sound i-f amplifier for further processing. The third output is video, which is strongly amplified and then capacitively coupled to the cathode of the picture tube.

The gain of the video amplifier sets the contrast of the display, while the bias setting on the cathode of the picture tube (with respect to its grounded control grid) sets the display brightness. Somewhere in the video amplifier, further rejection of the 4.5 MHz sound subcarrier is usually picked up to minimize picture interference. This is called a sound trap. Sound traps can be a series resonant circuit to ground, a parallel resonant circuit in the video signal path, or simply part of the transformer that is picking off the sound for more processing.

The video detector output is usually around 2 volts peak to peak and usually subtracts from a white level bias setting. The stronger the signal, the more negative the swing, and the blacker the picture. Sync tips are blacker than black, helping to blank the display during retrace times.