

In video recorders operating in accordance with the VHS system, a rotating head wheel with two video heads is used to record fields consecutively in each case on oblique tracks of a magnetic tape. The recording takes place with no interspace, so-called "grass", between the tracks. The gap width of the video head is greater than the width of the tracks recorded on the tape. Thus during the recording a part of the previously recorded track is in each case overwritten by the new track.

On playback, the gap width of the video head is thus greater than the geometric width of the scanned tracks, so that the head automatically also reads signals from the neighbouring tracks, with the result that cross-talk occurs. For the luminance signal this cross-talk is substantially reduced by the opposing azimuthal angles of the two video heads. For the chrominance carrier, at the frequency of which the azimuthal losses caused by the different azimuthal angles are no longer sufficiently effective, the cross-talk is reduced by so-called comb filters. The comb filters effect an addition of the chrominance carriers from chronologically consecutive lines, whereby the useful signal components are added and the cross-talk components extinguish one another.

Video recorders are also known which, in addition to so-called standard-play operation, facilitate long-play operation. In long-play operation the recording takes place using a second pair of video heads, the gap width of which is approximately half that in the case of standard-play operation. Furthermore, the longitudinal speed of the magnetic tape is halved. By means of this design, with a slightly reduced recording quality the playing time can be doubled by halving the track width.

US-A- 4633332 has disclosed a video recorder with first heads for standard-play operation and second heads for long-

play operation. In DE-A- 2 551 968 playback takes place using magnetic heads, the head mirrors of which are narrower than those of the recording heads.

The aim of the invention is, in a video recorder of this type with standard-play and long-play operation, to avoid cross-talk on playback, in particular for the chrominance carrier in standard-play operation.

This aim is fulfilled by the invention described in Claim 1.

In the design according to the invention, in standard-play operation playback thus takes place using the video heads which are not themselves provided for standard-play operation and have also not been used for recording in this operating mode. It has proved that it is precisely as a result of this type of playback that several advantages are achieved in particular in terms of cross-talk. Here the fact that the gap width of the video heads for long-play operation is smaller than the track width for standard-play operation is advantageously exploited. The video heads provided for long-play operation can thus scan the wide tracks, recorded in standard-play operation, for playback in such manner the heads do not pick up the neighbouring tracks and thus cross-talk is avoided. This applies in particular to the chrominance carrier so that in the case of standard-play operation it is possible to dispense with the previously used comb filter in the path of the chrominance carrier on playback. This has the advantage that a reduction is obtained in the fusion of the signals from lines 1 and 3, 2 and 4 etc. caused by the comb filter in PAL operation, and the quality loss in the case of repeated re-recording. It has proved that, apart from a slight reduction in the playback level, no noticeable impairment of the signal-to-noise ratio occurs. Instead, the quality of the reproduced luminance signal is even improved. These improvements are

possible while retaining compatibility with the existing system. In the case of devices with DTF (dynamic track following), in picture freeze operation and - with a small reduction in quality - also in search operation it is possible to dispense with the comb filter, thereby reducing the circuitry outlay. If compatibility with existing systems (VHS, Beta) is dispensed with, optionally the known phase switch-over of the chrominance carrier during recording can also be omitted.

The invention will be explained making reference to the drawing in which:

Fig. 1 shows the track pattern in the case of standard-play operation and

Fig. 2 shows the track pattern in the case of long-play operation.

In Fig. 1 in standard-play operation oblique tracks 1 are recorded on the magnetic tape 1. The geometric width b_1 of said tracks is smaller than the gap width w_1 of the video heads K_1 .

In Fig. 2 for long-play operation tracks 2 with half the geometric width b_2 compared to b_1 are recorded on the magnetic tape T, here using a second pair of video heads K_2 with a gap width w_2 which is likewise greater than the track width b_2 .

As illustrated in Fig. 1, playback in standard-play operation, thus in the case of tracks 1 with the width b_1 , takes place not using the video heads K_1 provided for this purpose but using the video heads K_2 with the smaller gap width w_2 , themselves provided for long-play operation according to Fig. 2. Although w_2 is greater than b_2 , it is smaller than b_1 . Therefore, as shown in Fig. 1, the video

heads K2 can in each case scan the tracks 1 without picking up the neighbouring tracks. The precise position of the heads K2 in the centre of a track 1 can be adjusted by the so-called servo control of the head wheel. By virtue of the fact that the heads K2 no longer pick up the neighbouring tracks, the cross-talk is substantially reduced. This results in the previously described advantages in terms of low cross-talk attenuation in particular for the scanned chrominance carrier.

As indicated by the opposing inclinations of the gaps, the two video heads K1 and K2 possess different azimuthal angles for the reduction of cross-talk from the neighbouring tracks. In practice the following values apply for example to the parts shown in Fig. 1 and 2:

b1 = 49	μm
b2 = 24.5	μm
w1 = 60 - 80	μm
w2 = 35	μm.

Claims

A video recorder with standard-play and long-play operation, wherein in the case of standard-play operation the tracks (1, 2) are recorded and read using first video heads (K1) with a first gap width (w1) at a first tape longitudinal speed and in the case of long-play operation are recorded and read using second video heads (K2) with a second, smaller gap width (w2) at a second, lower tape longitudinal speed, characterised in that playback takes place using the second video heads (K2) in the case of standard-play operation (Fig. 1) and using the first video heads (K1) in the case of standard-play operation (Fig. 1) during special operating modes such as picture freeze, search and the like.