

- (12) Generate a post-record delay as specified in Table 2 according to speed.
- (13) Subsequent operation can now be performed as desired.

3-3. VERTICAL PARITY GENERATION

The vertical parity bit (VRC) recorded in Channel P on 9-track systems is generated so that the total number of "1" bits in each data character (not the CRCC or LRCC) is always odd. On 7-track systems, even parity is used when writing BCD.

3-4. CRC GENERATION (9-TRACK SYSTEMS ONLY)

The CRCC is based on a modified cyclic code and provides a more rigorous method of error detection than using the VRC or LRC checks only. When reading, it can also be used in conjunction with the VRC and LRCC checks for error correction, provided that the errors are confined to a single channel. For a more detailed description of CRCC refer to PEC Application Note, Document No. 70701.

The CRCC can be generated according to the following rules:

- (1) Each data character is added to the contents of a CRC register (CRCR) without carry - each bit being exclusively ORed to the corresponding bit of the CRCR.
- (2) This information then undergoes a circular shift right of one place, such that each bit is copied into the adjacent CRCR flip-flop:

(CRCP → CRC0, etc.)

- (3) If the bit entering CRCP is a "1", the bits entering CRC2, CRC3, CRC4, and CRC5 are inverted.
- (4) Steps (1), (2), and (3) are repeated for each data character of the record.
- (5) The contents of all CRCR positions, except CRC2 and CRC4, are inverted and the resultant character is written onto the tape.

Figure 9 shows a block diagram of a CRCR. Note that this circuit requires one clock pulse for each data character, and that no extra shift is required after the last data character.

If it is required to regenerate the CRCC during a Read Reverse command, the significance of the data bits entering the CRCR must also be reversed.

The CRCC has the following properties.

- (1) It can be an all-zeroes character.
- (2) Its value is such that the LRCC always has odd parity (therefore the LRCC can never be all-zeroes).
- (3) It has odd parity if there are an even number of data characters, or even parity for an odd number of data characters.

For compatibility reasons, the correct CRCC should always be written onto tape even though it is intended not to make use of it for read checking.