SECTION 9 - TIMING

The timing of the EMIDEC machine is regulated by the clock-track on the magnetic drum. The clock rate is 100Kc/s, and the time of one clock pulse is 10 microseconds. Approximate times for the various functions are given in the table of the instruction code in Appendix II. More accurately, the times in microseconds are as follows:-

Function	Time				Remarks
0	(a) 300	(b) 390			Conditional halt with condition not satisfied; (a) alarm digits zero (b) alarm digits non-zero
1	120				
2 } 3	(a) 150	(b) 160 + 10m			(a) for shifts of zero places (b) where n is the number of places of shift
4 } 5	(a) 190	(b) 200 + 10n			
6 } 7	140				
8	150				
9	1,260				
10	1,440				An extra 30 microseconds required for negative divisor
11	(a) 140	(b) 190			(a) if register tested < 0 (b) if register tested $\geqslant 0$
12	(a) 140	(b) 190			
13	150				
14	140				
15 } 16					Head-switching plus access plus transfer - see note 1.
17	1,190				
18	1,130				
19 } 20					See note 2
21	340				

Function	Time		Remarks	
22	2,990			
23	3,220			
24	290			
25	(a) 190	(b) 230	(a) if register 7 < 0	
			(b) if register 7 $\geqslant 0$	
26	290			
27	310			
28	3,720			
29	110			
30	(a) 160	(b) $130 + 30n$	(a) if $n = 0$	
			(b) if $1 \leqslant n \leqslant 39$	

Note 1   Drum time consists of three parts: head switching, access and transfer.

(i)   Head switching; Fn 15: $4600 \overset{+}{-} 900$ Fn 16: $4250 \overset{+}{-} 800 \mu S$.

(ii) Access time;   average $\frac{1}{2}$ drum revolution, 11.5 millisec.

(iii) Transfer time;   23 msec per complete track, 1.45 millisec.

per 4-word block.

Note 2   In terms of the number of clock-pulses required, the formulae for input conversion times are:-

19.   decimal $20 + 7r + 3n$

20.   sterling $19 + 7r + 3n + 3t$

where r = number of characters

$t = 1$ if r 2, otherwise 0.

$n = 1$ if negative number, otherwise 0.

It may be arranged for sterling inputs to be converted into binary halfpence. In this case the input conversion time is $16 + 7r + 3n + 3v - s$.

Where $v = 1$ if $r = 3$, otherwise 0, and

$s = 1$ if $r = 1$, otherwise 0.

The number of clock pulses required may be converted into microseconds by multiplying by 10.