

~~TOP SECRET~~(b) Provision of Limited Upper Case Facilities on machines employing the BRUTUS principle.

(i) The direct encryption of ten upper case characters (the numerals 0-9) can be achieved by adopting the following basic wiring scheme on AFSAM 47 (PCM), AFSAM 7, SINGLET and such other U.K. or U.S. equipments as may be designed for BRUTUS working:-

X	Key to be taken through the X circuit							
Z	"	"	"	"	"	"	X	"
Space	"	"	"	"	"	"	Z	"
Y	"	"	"	"	"	"	Y	"
J	"	"	"	"	"	"	Y	"
Figures	"	"	"	"	"	"	J	"
Letters	"	"	"	"	"	"	Upper case V circuit	
Lower case V	"	"	"	"	"	"	V circuit	

(ii) If AFSAM 47(PCM) and SINGLET only were to work together the following additional eight upper case characters could be encrypted  
- ( ) / : ? , ..

(iii) In the present CCM(AJAX) cryptosystem the letter Z decrypts as X. In this scheme, in addition, the letter J will decrypt as Y.

(iv) For U.S. machines, the full scheme is incorporated in the present design for AFSAM 47(PCM) and the limited (numerals only) scheme is incorporated in the design for AFSAM 7.

(v) For U.K. machines:

(1) It will not be possible to introduce the schemes in paras. 3(b)(i) and 3(b)(ii) above until the U.K. Services cease to use Typex with a BRUTUS adaptor.

(2) For Combined working the bigramming feature on SINGLET/PENDRAGON will not be used.

(vi) In order to limit the differences between the above method for securing limited upper case facilities and the bigramming method of securing full teleprinter facilities the U.K. Services will use the following wiring system on SINGLET/PENDRAGON.

FIGURES KEY	to be taken through J circuit							
BIGRAM KEY	"	"	"	"	"	K	"	"
LETTERS KEY	"	"	"	"	"	V	"	"

4. The Working Party made the following recommendations:-

(a) that it be noted that until the U.K. and the U.S. Services cease to use their current equipments with the CCM(AJAX) or BRUTUS adaptors modification to provide upper case facilities other than for weather traffic will be extremely difficult.

(b) that until a Combined Communication Policy is agreed all cypher machines designed for UK/US use in the future should include at least the limited upper case facilities as set out in para. 3(b)(i) above.

(c) that should the CCM(AJAX) be used for weather traffic the particular cryptosystem in question must handle weather traffic exclusively.

20th July, 1951.

~~TOP SECRET~~

~~TOP SECRET~~

Telegraph and Cypher Machines.  
Comparative Table of Upper Case Characters.

Lower Case Key	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Remarks	
	Teletype	-	'	:	3	!	&	STOP	8	'	( )	.	,	9	ø	1	4	BELL	5	7	;	2	/	6	"			
Teleprinter	-	'	:	WHO R U	3	%	@	£	8	BELL	( )	.	,	9	ø	1	4	'	5	7	=	2	/	6	+			
COMBINED TELEPRINTER ALPHABET	-			3				8		( )	.	,	9	ø	1	4					5	7	2	/	6			Authorized by ACP 126
Typex	-	'	V	Z	3	%	X	£	8	( )	.	,	9	ø	1	4	/	5	7	↓	2	SPACE	6	↑			Z = figures circuit. X = space circuit. V = letters circuit.	
CSP 1700																											No upper case.	
AFSAM 7	A	B	C	D	3	F	G	H	8	↑	K	L	M	N	9	ø	1	4	S	5	7	↓	2	X	6	SPACE		
AFSAM 47 (PCM)	-	'	:	D	3	F	G	H	8	J	( )	.	,	9	ø	1	4	S	5	7	↓	2	/	6	SPACE		Current Production model J Key used for figures circuit.	
SINGLET	-	'	:	3	%	@	£	8	BIGRAM	( )	.	,	9	ø	1	4	'	5	7	=	2	/	6	+			To give full teleprinter facilities Z, B, K, J, LF, CR are bigrammed. Bigram key used J circuit.	
CSP 1700 with AFSAM 100 (Weather Switch)	A	B	C	D	3	F	G	H	8	J	K	L	M	N	9	ø	1	4	S	5	7	V	2	X	6	SPACE		

Upper Case Equivalent.

~~TOP SECRET~~