

R00001 WE ARE DEEPLY INDEBTED TO THE ONE, THE ONLY, THE GREAT JOHN SHAW FOR THE FOLLOWING STRONG MAGIC....

R0002 \*JSOCTLI

0003 \* SETLOC,2 SIZ PASS 1 B1

0004 \* MASKGRP,3 S,1 F,1

R0005 THE AGC4 PART OF PASS 1 CONTAINS THE FOLLOWING DATA:

R0006 MAXIMUM LEGAL NUMERIC OPERATION CODE, GREATEST ADDRESS OF A MEMORY LOCATION, DITTO + 1, BLOCK SIZE - 1,  
 R0008 SHIFT AMOUNTS FOR CONVERTING A BLOCK NUMBER TO AN ADDRESS AND FOR STORING A NUMERIC OPERATION CODE, A TABLE  
 R0010 SHOWING WHICH LOCATIONS IN AGC4 ARE ERASABLE, FIXED, AND SPECIAL/NONEXISTENT, AND A TABLE OF SYMBOLIC OPERA-  
 R0012 TION CODES, EACH WITH EITHER CODED BINARY INFORMATION (INSTRUCTION CODES) OR AN ADDRESS (CLERICAL CODES).  
 R00132 IN AGC4, THIS TABLE IS LOCATED IN BANK 5.

R0014 CODING IS ALSO PROVIDED HERE TO PROCESS (PARTLY) THE ADDRESS FIELD OF POLISH OPERATOR CARDS.

R0016 \*QUANTITIES FILLED IN FOR REFERENCE BY GENERAL PASS 1.

0017	A4 OP THRS SPEC			OP THRS
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0018	A4 MAX NOP FXBIN	7		
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0019	A4 MAX LOC OCT	- 71777		
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0020	A4 ADRI LIM OCT	- 72000		
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0021	A4 BLCK IS OCT	-1777		
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0022	A4 SHIFTS OCT	0000 0042 24		
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0023	A4 TYP TAB CAC	COUNT STA	1024	AGC4 MEMO	-
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00231	A4 SJ3 LOC EQUALS	A4 TYP TAB			
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00232	A4 COJNSP EQUALS	A4 TYP TAB			
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0024	*A4 SPCIAL TS	C,+1	OP FOUND	SEG TEST	
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0025	TS	AGC4 MXR	Z,MXR	POLISH Q	
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00251	A4 ELEFT P CAC	6149		GOT ELEFP	
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00252	*A4 FLEFT P CAC	6165	1024	A4 FLEFTO	-
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0026	AGC4 MEMO OCT	-1000 0057			
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0027	OCT	-4000 1777			
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0028	OCT	-2003 1777			
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00281	OCT	-1004 1777			
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00282	OCT	-2007 1777			
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0029	DEC	BB00 FFFF			
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00291	*SEG MEMO OCT	-1007 1777			
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00292	* DEC	BB00 FFFF			
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0030	* RESERVE	20			
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00302	*SEG TEST	EX	SWITCH	BIT 7	SEG TEST	
00304	*	LA	SEG TEST	ZERO	POST SPEC	
00306	*	TN	SEG MEMO	2	AGC4 MEMO +2	
00308	*	TS	-	-	POST SPEC	

EXIT IF NOT IN A SEGMENT ASSEMBLY.  
 CHANGE FIXED TO SPEC/NON AND EXIT.

P0031 FIELD AND SHIFT MASKS FOR THE AGC4 PART OF PASS 1.

00319	B,VMASKM	OCT	0
0032	B,C1T5M	OCT	7777 7777 7777
0033	B,ONESM	OCT	7777 7777 7777 7777
0034	B,B18T24M	OCT	0000 0177
0035	B,B22T25M	OCT	0000 0007 4
0036	B,B22T32M	OCT	0000 0007 776
0037	B,B25T31M	OCT	-7740 0000
0038	B,BIT29M	OCT	-0200 0000
0039	B,C7T8M	OCT	-7777
0040	B,B37348M	OCT	-4001
0041	B,B41T45M	OCT	-370
0042	B,TWOM	OCT	-2
0043	B,ONEM	OCT	-1
00431	B,CHAR7M	OCT	-7700
00432	B,CHAR8M	OCT	-77

R0044 CONSTANTS.

00441	B34T38M	OCT	-76000
00442	OCT 2000	OCT	-2000
00443	OCT 5777	OCT	-5777
0045	AGC4 MXR	MASKBASE	S,1 F,1
0046	SPECND 7	OCT	-70
0047	SPECND 12	OCT	-120
0048	2 POLDP 7	OCT	-0340 0000
0049	2 POLDP 17	OCT	-0740 0000
0050	2 POLDP 27	OCT	-1340 0000

R00501 SPECIAL ROUTINE IN PASS 1 FOR AGC4 TO ALLOCATE LEFTOVER INSTRUCTIONS AND CONSTANTS TO FIXED BANKS.

00502	A4 FLEFTO	LA	LOC CTR	OCT 5777	FF OR ERAS	
005022		LA	ONES	LOC CTR	FF OR ERAS +1	IF BAD LOC CTR, ANYWHERE IN FIXED IS OK.
00503		SS	LOC CTR	B34T38M	C,+2	IF LOC CTR IS IN A BANK, SO IS LEFTOVER.
00504		TS	C,+1	COMMON +2	GOT FLEFP	
00505		CAC		6149		
00506	FF OR ERAS	LA	OCT 2000	LOC CTR	GOT FLEFP	IF FIXED FIXED, ORIG. PARAMETER WAS OK.
00507		TS	C,+1	COMMON +2	GOT FLEFP	IF ERASABLE, ANYWHERE IN FIXED IS OK.
00508		CAC		6581	1024	

B238991

P0051 SPECIAL ROUTINE IN PASS 1 FOR AGC4 TO RESPOND TO THE FINDING OF AN INSTRUCTION OPERATION CODE. IF  
R0053 THE CODE IS A POLISH OR STORE ADDRESS CONSTANT, RESETS THE BEGINNING-OF-EQUATION INDICATOR (BIT 29 OF SWITCH)  
R0055 AND RETURNS TO THE GENERAL INSTRUCTION-PROCESSING PROCEDURE. IF THE CODE IS A POLISH OPERATOR, THE SEVEN-BIT  
R0057 EQUIVALENT IS PLACED IN BITS 18-24 OF HEALTH AND THE BEGINNING-OF-EQUATION INDICATOR IS EXAMINED. IF IT IS  
R0059 RESET (AS IS TRUE INITIALLY), IT IS NOW SET AND 07 IS SUPPLIED AS THE SECOND OPERATOR, TO INDICATE THAT PASS 2  
R0061 IS TO DECODE AN OPERATOR WORD COUNT FROM THERE. OTHERWISE, THE ADDRESS FIELD IS INTERPRETED AS FOLLOWS...  
R0063 BLANK; OPERATOR 00, NUMERIC; OPERATOR 07 (ASSUME NEW EQUATION), SYMBOLIC WITH MODIFIER; OPERATOR 17 (ILLEGAL  
R0065 FORMAT), SYMBOLIC; VALUE FROM OPERATION CODE TABLE IF POLISH OPERATOR, OR OPERATOR 27 OTHERWISE.

0067	POLISH Q	NA, ONEM	4,0	ZERO	POLISH OP	
0068		SWS, B22T32M	N,X4	16,L	HEALTH	SEND BITS AS USUAL IF NOT POLISH.
0070		NA, TWOM	4,0	ZERO	A4 P1 EXIT	EXIT IF AN IMPLIED-ADDRESS CODE.
0072		LA, B41T45M	4,0	SPECOND 7	A4 P1 EXIT	
0073		LA, B41T45M	SPECON 12	4,0	A4 P1 EXIT	BRANCH IF NOT A POLISH OR STORE ADDRESS.
0075		TS, BIT29M	ZERO	SWITCH	A4 P1 EXIT	RESET INDICATOR, EXIT.
0077	POLISH OP	SWS, B18T24M	N,X4	21,L	HEALTH	SEND EQUIVALENT OF LEFT OPERATOR.
0079		SM	HEALTH	BIT 32	HEALTH	INDICATE POLISH OPERATOR WORD.
0081		NA, BIT29M	SWITCH	ZERO	TWO POLES	BRANCH IF NOT BEGINNING OF EQUATION.
0083		SM	HEALTH	2 POLOP 7	HEALTH	SEND INDICATION TO PASS 2.
0085		TS, BIT29M	ONES	SWITCH	A4 P1 EXIT	SET INDICATOR AND EXIT.
0087	TWO POLES	TX	P1 MASKS	-	Z,MXR	
0088		TS	Z,SC	Z,X4	ADR FIELD	DECODE ADDRESS FIELD.
0090		LA	FIELD COD	ZERO	INSTRUCT	FAST EXIT FOR BLANK (VACUOUS) OPERATOR.
0092		TX	AGC4 MXR	-	Z,MXR	
0093		NA	FIELD COD	BIT 1	POLISH Op +3	BRANCH IF ADDRESS FIELD IS NOT SYMBOLIC.
0095		LA	FIELD COD +1	ZERO	C,+2	BRANCH IF NO MODIFIER.
0097		TS, B25T31M	2 POLOP 17	HEALTH	A4 P1 EXIT	INDICATE IMPROPER ADDRESS FIELD, EXIT.
00982		NA, CHAR8M	ADR WD	ASTRISKS	C,+3	BRANCH IF NO DETACHED ASTERISK.
00984		NA, CHAR7M	ADR WD	BLANKS	POLE FAIL	BRANCH IF OPERATOR SYMBOL TOO LONG.
00986		TS, CHAR8M	BLANKS	ADR WD	POLE SEEK	BLANK OUT ASTERISK, LOOK UP CODE.
0099		NA, C7T8M	ADR WD	BLANKS	POLE FAIL	BRANCH IF MORE THAN SIX CHARACTERS.
00992		TS	N L CHAR 6	Z,X4	C,+2	REVERSE BASE FOR SET OF CHARACTER MASKS.
00994		NA, VMASKM	ADR WD	BLANKS	C,+2	SCAN TO LEFT UNTIL A CHARACTER IS FOUND.
0100		TS	N,X4,1	N,MXR	C,-1	
01002		NA, VMASKM	ADR WD	ASTRISKS	POLE SEEK	PROCEED WITH SEARCH IF NO ASTERISK.
01004		SS	BLANKS	N,MXR	ADR WD	BLANK OUT ATTACHED ASTERISK.
0101	POLE SEEK	TX	A4 OP THRS	-	Z,X4	
0102		SWS, B22T25M	ADR WD	17	C,+1	
0103		SWE, ONESM	4,0	0	Z,X4	SELECT SECTION OF OP CODE LIST.
0105		TX	Z,SC,1	-	-	
0106		LA	N,X4,1	ZERO	POLE FAIL	BRANCH IF OP CODE NOT FOUND.
0108		NA, C1T6M	ADR WD	4,0	C,-1	SEARCH THROUGH SELECTED SUBLIST.
0110		LA, B37B48M	ONES	4,0	C,+2	BRANCH IF POLISH OPERATOR FOUND.
0112	POLE FAIL	TS, B25T31M	2 POLOP 27	HEALTH	A4 P1 EXIT	INDICATE FAILURE AND EXIT.
0114		SWS, B25T31M	N,X4	14,L	HEALTH	SEND EQUIVALENT OF RIGHT OPERATOR.
0116	A4 P1 EXIT	TS	P1 MASKS	Z,MXR	INSTRUCT	

P01161 SPECIAL BLOCK CODE INTRODUCTION.

01162 MASKGRP S,0 F,0

01163	AGC4 BLOK	TS	C,+1	BLOCK SHIF	BLOCK		MODIFY AND ENTER BLOCK/BANK ROUTINE.
01164		TS	C,+1	BLOCK SHIF	C,+2	C	RESTORE ROUTINE AND DO SPECIAL SHIFT.
01165		SPE, FIXMAG	ADR WD	10,L	LOC VALUE		
01166		SPE, FIXMAG	ADR WD	8,L	LOC VALUE	S	

01167 AGC4 BANK TS C,-2 BLOCK SHIF BLOCK JUST IN CASE BLOCK FAILED TO RESTORE.

R011681 SPECIAL PROCESSING FOR COUNT\* CODE.

011682	COUNT STA	NA, CHAR1	ADR WD	DOLLARS	ILL COUNT	C	
011683		NA, CHAR2	ADR WD	DOLLARS	ILL COUNT	C	
011684		SS	ZERO	CHAR2	ADR WD	C	
011686		SWS, ACO2	LOC CTR	22	ADR WD	C	
011688		SWS, CHAR1	LOC CTR	19	ADR WD	S	REPLACE DOLLAR SIGNS WITH BANK NUMBER.

01169 SETLOC,3 0 B5

011692 SETLOC,4 15 B5

R0117 OPERATION CODE THREADS AND TABLES FOR AGC4, USED IN PASS 1.

0118	OP THRS	CAC	CODES 01	BAD CODE
0119		CAC	CODES 11	CODES 10
0120		CAC	CODES 21	CODES 20
0121		CAC	CODES 31	CODES 30
0122		CAC	CODES 41	BAD CODE
0123		CAC	CODES 51	CODES 50
0124		CAC	CODES 61	CODES 60
0125		CAC	CODES 71	CODES 70

R01256 AGC4 OPERATION CODE TABLES. PLEASE IGNORE THE BANK ERRORS.

0126	CODES 01	M,A,MA	A,SK	A,	B,7400
0127		M,A,DE	A,C	A,	DECIMAL
0128		M,A,DA	A,D	A,	B,4341
0129		M,A,DD	A,V	A,	B,4641
0130		M,A,HE	A,AD	A,	HEAD TAIL
0131		M,A,ME	A,MO	A,RY	LATE MEM
0133	BAD CODE	OCT	0		
0134	CODES 11	M,A,DV	A,	A,	B,6600
01341		M,A,MS	A,K	A,	B,7400
0135		M,A,DS	A,U	A,	B,4441
01351		M,A,DS	A,Q	A,	B,5331
0136		M,A,MX	A,V	A,	B,5241
0137		OCT	0		

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P01375 AGC4 OPERATION CODE TABLES CONTINUED. PLEASE IGNORE THE BANK ERRORS.

0138	CODES 10	M,A,MP	A,	A,	B,6200
0139		M,A,DM	A,P	A,	B,4541
0140		M,A,DM	A,PR	A,	B,5101
0141		M,A,DO	A,T	A,	B,5641
0142		M,A,UN	A,IT	A,	B,4231
0143		M,A,DM	A,OV	A,E	B,5531
0144		M,A,DO	A,UB	A,LE	B,7002
0146		OCT	0		

0148	CODES 21	M,A,AD	A,	A,	B,7000
01481		M,A,ND	A,X	A,	B,5040
0149		M,A,VA	A,D	A,	B,5341
0150		M,A,AC	A,OS	A,	B,4731
0151		M,A,AB	A,S	A,	B,4531
0152		M,A,AB	A,VA	A,L	B,4331
0153		M,A,VD	A,EF	A,	B,5731
0154		M,A,AD	A,RE	A,S	B,4060
0155		M,A,RE	A,TU	A,RN	B,4006
01551		M,A,NE	A,XT	A,	B,5711
0156		M,A,RE	A,LI	A,NT	B,5016
0157		M,A,RE	A,SU	A,ME	B,5026
0158		OCT	0		

0159	CODES 20	M,A,	A,	A,	B,4100
0160		OCT	0		

0161	CODES 31	M,A,IS	A,	A,	IS EQUALS
0162		M,A,EX	A,TE	A,ND	B,5132
01621		M,A,EV	A,EN	A,	EVEN
0163		M,A,IT	A,C	A,	B,4041
01631		M,A,IT	A,CQ	A,	B,5751
0164		M,A,VX	A,M	A,	B,5301
0165		M,A,VS	A,U	A,	B,4141
0166		M,A,VS	A,RT	A,	B,5501
0167		M,A,VS	A,LT	A,	B,5541
0168		M,A,VX	A,SC	A,	B,4101
0169		M,A,VX	A,V	A,	B,5701
0170		M,A,EX	A,IT	A,	B,4011
0171		M,A,RT	A,B	A,	B,4051
0172		M,A,AX	A,T,	A,1	B,4111
0173		M,A,AX	A,T,	A,2	B,4151
01731		M,A,AX	A,C,	A,1	B,5211
01732		M,A,AX	A,C,	A,2	B,5251
01733		M,A,VS	A,Q	A,	B,4431
0174		M,A,AS	A,T,	A,1	B,5111
0175		M,A,AS	A,T,	A,2	B,5151
0176		M,A,AS	A,IN	A,	B,4631
0177		M,A,IT	A,A	A,	B,5511
0178		M,A,IT	A,CI	A,	B,5551
0180		OCT	0		

P01801 AGC4 OPERATION CODE TABLES CONTINUED. PLEASE IGNORE THE BANK ERRORS.

0181	CODES 30	M,A,IN	A,DE	A,X	B,5040
0182		M,A,EQ	A,UA	A,LS	IS EQUALS
0183		M,A,ER	A,AS	A,E	ERASE
0184		M,A,NO	A,LO	A,D	B,5411
01841		M,A,NO	A,LO	A,A0	B,5411
0185		M,A,RO	A,UN	A,D	B,5451
0186		M,A,VM	A,OV	A,E	B,4131
0187		M,A,IN	A,CR	A,,1	B,4611
0188		M,A,IN	A,CR	A,,2	B,4651
01881		M,A,VP	A,RO	A,J	B,5741
0189		M,A,NO	A,OP	A,	B,5402
0190		M,A,IN	A,HI	A,NT	B,5022
0191		OCT	0		
0193	CODES 41	M,A,OC	A,T	A,	OCTAL
0194		M,A,OC	A,TA	A,L	OCTAL
0195		M,A,2D	A,EC	A,	2DECIMAL
0196		M,A,SE	A,TL	A,OC	SETLOC
01961		M,A,BA	A,NK	A,	AGC4 BANK
0197		M,A,BH	A,IZ	A,	B,4401
0198		M,A,BD	A,SU	A,	B,4501
0199		M,A,BD	A,DV	A,	B,4701
0200		M,A,SI	A,GN	A,	B,5201
0201		M,A,SI	A,N	A,	B,5031
0202		M,A,SG	A,N	A,	B,5201
0203 *		M,A,SE	A,GN	A,UM	LATE MEM
0204		OCT	0		
0205	CODES 51	M,A,SU	A,	A,	B,7200
02051		M,A,ST	A,OR	A,E	B,4110
0206		M,A,OV	A,SK	A,	B,6402
0207		M,A,OV	A,IN	A,D	B,6420
02071		M,A,SW	A,IT	A,CH	B,5651
0208		M,A,BZ	A,E	A,	B,5401
0209		M,A,ST	A,Z	A,	B,4241
0210		M,A,BV	A,SU	A,	B,5441
0212		M,A,SX	A,A,	A,1	B,4411
0213		M,A,SX	A,A,	A,2	B,4451
0214		M,A,SU	A,BR	A,O	SJBRO
0215		OCT	0		
0217	CODES 50	M,A,BP	A,L	A,	B,5601
0218		M,A,BM	A,N	A,	B,4201
0219		M,A,BO	A,V	A,	B,4301
0220		M,A,SQ	A,RT	A,	B,5231
0222		M,A,SM	A,OV	A,E	B,5631
0223		M,A,2O	A,CT	A,	2OCTAL
0224		M,A,2O	A,CT	A,AL	2OCTAL
02241		M,A,BL	A,OC	A,K	AGC4 BLOK
0225		M,A,SQ	A,UA	A,RE	B,6202
0226		OCT	0		

P0227 AGC4 OPERATION CODE TABLES CONCLUDED. PLEASE IGNORE THE BANK ERRORS.

0228	CODES 61	M,A,TC	A,	A,	B,4000
0229		M,A,XC	A,H	A,	B,5400
0230		M,A,CC	A,S	A,	B,4430
0231		M,A,CA	A,F	A,	B,5410
02311		M,A,TE	A,ST	A,	B,5611
0232		M,A,XC	A,HX	A,,1	B,4511
0233		M,A,XC	A,HX	A,,2	B,4551
0234		M,A,XA	A,D,	A,1	B,4711
0235		M,A,XA	A,D,	A,2	B,4751
0236		M,A,TI	A,X,	A,1	B,5311
0237		M,A,TI	A,X,	A,2	B,5351
02371		M,A,TA	A,D	A,	B,4741
0238		M,A,TC	A,R	A,	B,4000
0239		M,A,TC	A,AA	A,	B,6412
0240		M,A,XA	A,Q	A,	B,4002
0241		M,A,CA	A,DR	A,	B,4070
02411		M,A,XC	A,AD	A,R	B,4120
0242		M,A,TA	A,IL	A,	HEAD TAIL
0246		OCT	0		
0247	CODES 60	M,A,=	A,	A,	IS EQUALS
0248		M,A,P	A,	A,	B,4100
0249		OCT	0		
0250	CODES 71	M,A,CS	A,	A,	B,6000
0251		M,A,TS	A,	A,	B,6450
0252		M,A,TS	A,U	A,	B,5141
0253		M,A,TS	A,RT	A,	B,5041
0254		M,A,TS	A,LT	A,	B,4601
0255		M,A,TS	A,LC	A,	B,5001
0256		M,A,LX	A,A,	A,1	B,4211
0257		M,A,LX	A,A,	A,2	B,4251
0258		M,A,LX	A,C,	A,1	B,4311
0259		M,A,LX	A,C,	A,2	B,4351
0260		M,A,XS	A,U,	A,1	B,5011
0261		M,A,XS	A,U,	A,2	B,5051
0264		OCT	0		
0265	CODES 70	M,A,CO	A,M	A,	B,6002
0266		M,A,LO	A,C	A,	SETLOC
0267		M,A,LO	A,DO	A,N	B,5711
0268		M,A,TM	A,OV	A,E	B,4031
0269		M,A,TP	A,	A,	B,4031
0270		M,A,CO	A,MP	A,	B,5431
0271		M,A,CO	A,S	A,	B,5131
0272		M,A,CO	A,UN	A,T	COUNT
02721		M,A,=P	A,LU	A,S	EQU PLUS
02722		M,A,=M	A,IN	A,US	EQU MINUS
0273		OCT	0		