```
CLEAR STORAGE 1     ,008015,022026,030037,044,049,053053N000000N00001026                              1
CLEAR STORAGE 2     L068116,105106,110117B101/I9I#071029C029056B026/B001/0991,001/001117I0?           2
BOOTSTRAP           ,008015,022029,036040,047054,061068,072/061039              ,0010011040           3

                          UNBLOCK AND PRINT/PUNCH                                                 PAGE    1

 SEQ PG LIN  LABEL  OP    OPERANDS                                          SFX CT  LOCN  INSTRUCTION TYPE  CARD

 101                JOB   UNBLOCK AND PRINT/PUNCH
 102                CTL   6611
 103         *
 104         * READ CARDS THAT SPECIFY HOW TO UNBLOCK FILES, FROM WHICH TAPE,
 105         * AND WHAT TO DO (PRINT AND/OR PUNCH) THEM
 106         *
 107         * COLUMN 1-3 -- RECORD SIZE AS MACHINE ADDRESS
 108         * COLUMN 4-6 -- BLOCKING FACTOR
 109         * COLUMN 7   -- INPUT TAPE NUMBER
 110         * COLUMN 8   -- W PRINT/PUNCH WITH COLUMN 1 OF THE RECORD MEANING
 111         *                 BLANK -- SINGLE SPACE
 112         *                 0     -- DOUBLE SPACE
 113         *                 1     -- TOP OF PAGE
 114         *                 &     -- PUNCH FIRST 80 COLUMNS
 115         *            -- P PUNCH AT MOST FIRST 80 CHARACTERS
 116         *            -- DIGIT -- OUTPUT TAPE NUMBER, UNBLOCKED
 117         * COLUMN 9   -- STACKER SELECTOR FOR PUNCHING IF NOT BLANK
 118         *
 119         * HALTS INDICATED BY A ADDRESS REGISTER CONTENTS
 120         *  086 -- BAD ,,WHAT,, COLUMN (NOT W, P OR DIGIT).
 121         *  66X -- TAPE ERROR ON UNIT X.
 122         *  777 -- HALT AFTER PROCESSING LAST CARD.  START STARTS OVER.
 123         *
 124         RSIZE  EQU   3                   1-3  RECORD SIZE                           0003
 125         BLKFAC EQU   6                   4-5  BLOCKING FACTOR                       0006
 126         INTAPE EQU   7                   6    INPUT TAPE NUMBER                     0007
 127         WHAT   EQU   8                   7    WHAT TO DO                            0008
 128         STACK  EQU   9                                                              0009
 129         *
 130         X1     EQU   089                 ADDRESS IN BLOCK & 1 OF INPUT REC          0089
 131         X3     EQU   099                 ADDRESS OF END OF RECORD AREA              0099
 132         *                                INPUT BLOCK ADDRESS IS 2&X3
 133         *
 134         * CLEAR CORE DOWN TO RBUF
 135         *
 136         START  BLC   DONE                                                        5  0333  B 879 A              4
 137                SW    RBUF                                                        4  0338  , |00                4
 138                SBR   CLEAR&3,332         START CLEARING AT PRINT AREA            7  0342  H 352 332            4
 139         CLEAR  CS    0-0                 CLEAR A CENTURY                         4  0349  / 000                4
 140                SBR   CLEAR&3             KEEP TRACK                              4  0353  H 352                4
 141                BW    CLEAR,RBUF          DONE WHEN WM CLEARED                    8  0357  V 349 |00 1          4
 142         *
 143         * PROCESS THE JOB SPECIFICATION
 144         *
 145                SW    1,RBUF                                                      7  0365  , 001 |00            4
 146         K1     R                                                                 1  0372  1                    5
 147                BCE   1,1,,               NEW PROGRAM                             8  0373  B 001 001 ,          5
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SEQ PG LIN  LABEL  OP    OPERANDS                                          SFX CT  LOCN  INSTRUCTION TYPE  CARD

148                MN    INTAPE,READ&3                                         7  0381  D 007 711             5
149                SBR   X3,RBUF-1                                             7  0388  H 099 999             5
150                MA    RSIZE,X3           ADDRESS OF END OF RECORD AREA      7  0395  # 003 099             5
151                LCA   GMWM,1&X3          END OF RECORD BUFFER               7  0402  L 922 0?1             5
152                SBR   REMAIN,0           RECORDS REMAINING IN BLOCK         7  0409  H 912 000             6
153                MN    STACK,SS&4         STACKER SELECTOR                   7  0416  D 009 672             6
154         *
155         * COMPUTE HOW TO MOVE FROM THE RECORD AREA TO THE PRINT AREA
156         *
157                SBR   PRINT&3,0&X3       END OF INPUT RECORD FOR PRINTING   7  0423  H 634 0?0             6
158                SBR   PRINT&6,199                                           7  0430  H 637 199             6
159                MA    RSIZE,PRINT&6      END OF PRINT LINE                  7  0437  # 003 637             6
160                C     RSIZE,@134@        Q. RECORD LONGER THAN 133          7  0444  C 003 915             7
161                BH    *&8                NO, USE WHAT WAS COMPUTED          5  0451  B 463 U               7
162                MCW   MPRINT&6,PRINT&6   USE THE 132-CHAR DEFAULT VERSION   7  0456  M 894 637             7
163         *
164         * COMPUTE HOW TO MOVE FROM THE RECORD AREA TO THE PUNCH AREA
165         *
166                SBR   PUNCH&3,0&X3       END OF INPUT RECORD FOR PUNCHING   7  0463  H 655 0?0             7
167                SBR   PUNCH&6,100                                           7  0470  H 658 100             7
168                MA    RSIZE,PUNCH&6      END OF PUNCH                       7  0477  # 003 658             8
169                C     RSIZE,@081@        Q. RECORD LONGER THAN 80           7  0484  C 003 918             8
170                BH    *&8                NO, USE WHAT WAS COMPUTED          5  0491  B 503 U               8
171                MCW   MPUNCH&6,PUNCH&6   USE THE 80-CHAR DEFAULT VERSION    7  0496  M 901 658             8
172         *
173         * CHECK ,,WHAT,, FIELD
174         *
175                MN    WHAT,WRITE&3       IN CASE IT IS OUTPUT TAPE NUMBER   7  0503  D 008 806             8
176                BWZ   LOOP,WHAT,2        ,,WHAT,, IS A DIGIT                8  0510  V 550 008 2           9
177                BCE   LOOP,WHAT,P                                           8  0518  B 550 008 P           9
178                MA    @001@,PUNCH&3      ACCOUNT FOR & IN COLUMN 1 OF REC   7  0526  # 921 655             9
179                BCE   LOOP,WHAT,W                                           8  0533  B 550 008 W           9
180                NOP   086                                                   4  0541  N 086                 9
181                H                        ,,WHAT,, IS INCORRECT              1  0545  .                     9
182                B     START                                                 4  0546  B 333                10
183         LOOP   S     K1,REMAIN                                             7  0550  S 372 912            10
184                BM    BLOCK,REMAIN       FINISHED THE BLOCK                 8  0557  V 673 912 K          10
185                C     X1,ENDBLK                                             7  0565  C 089 907            10
186                BE    BLOCK              FINISHED SHORT BLOCK               5  0572  B 673 S              10
187                MA    RSIZE,X1                                              7  0577  # 003 089            10
188                MCW   15999&X1,0&X3      COPY INPUT RECORD TO OUTPUT AREA   7  0584  M IZI 0?0            11
189                BWZ   WRITE,WHAT,2       ,,WHAT,, IS A DIGIT                8  0591  V 803 008 2          11
190                BCE   PUNCH,WHAT,P       PUNCH WHOLE RECORD                 8  0599  B 652 008 P          11
191                BCE   PUNCH,RBUF,&       PUNCH STARTING IN CC 2             8  0607  B 652 |00 &          11
192                BCE   TOP,RBUF,1                                            8  0615  B 642 |00 1          11
193                BCE   SKIP,RBUF,0                                           8  0623  B 647 |00 0          12
194         *
195         * PRINT A RECORD
196         *
197         PRINT  MCW   0-0,0-0                                               7  0631  M 000 000            12
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SEQ PG LIN  LABEL  OP    OPERANDS                                         SFX CT  LOCN  INSTRUCTION TYPE  CARD

198                W     LOOP                                                  4  0638  2 550                12
199         TOP    CCB   PRINT,1                                               5  0642  F 631 1              12
200         SKIP   CCB   PRINT,J                                               5  0647  F 631 J              12
201         *
202         * PUNCH A RECORD
203         *
204         PUNCH  MCW   0-0,0-0                                               7  0652  M 000 000            12
205                P                                                           1  0659  4                    12
206                BCE   LOOP,STACK,                                           8  0660  B 550 009            13
207         SS     SSB   LOOP,                                                 5  0668  K 550                13
208         *
209         * READ A BLOCK FROM TAPE
210         *
211         BLOCK  MCW   BLKFAC,REMAIN                                         7  0673  M 006 912            13
212                MN    NOISE&7,14&X3                                         7  0680  D 744 0A4            13
213                MZ    *-6,14&X3          A-ZONE TO 12TH CHAR OF BLOCK       7  0687  Y 687 0A4            13
214                MZ    *-6,NOISE&7          AND D-MODIFIER OF TEST           7  0694  Y 694 744            14
215                SBR   X1,2&X3            INPUT BLOCK BUFFER                 7  0701  H 089 0?2            14
216         READ   RT    0,2&X3             READ A BLOCK                       8  0708  M %U0 0?2 R          14
217         KP8    SBR   ENDBLK             ADDRESS AFTER GM AFTER BLOCK       4  0716  H 907                14
218                MA    AM1,ENDBLK         ADDRESS OF GM AFTER BLOCK          7  0720  # 904 907            14
219                BEF   START                                                 5  0727  B 333 K              14
220                BER   RDERR                                                 5  0732  B 749 L              15
221         NOISE  BCE   READ,14&X3,        NOISE IF STILL A-ZONE              8  0737  B 708 0A4            15
222                B     LOOP                                                  4  0745  B 550                15
223         RDERR  S     K1,INERR                                              7  0749  S 372 908            15
224                BM    HALTIN,INERR                                          8  0756  V 780 908 K          15
225         BSPIN  MN    READ&3,*&4                                            7  0764  D 711 774            15
226                BSP   0                                                     5  0771  U %U0 B              16
227                B     READ                                                  4  0776  B 708                16
228         HALTIN MCW   KP8,INERR          RESET ERROR TOLERANCE TO 8         7  0780  M 716 908            16
229                MN    READ&3,*&4                                            7  0787  D 711 797            16
230                NOP   660-0                                                 4  0794  N 660                16
231                H                                                           1  0798  .                    16
232                B     BSPIN                                                 4  0799  B 764                16
233         *
234         * WRITE A RECORD TO TAPE
235         *
236         WRITE  WT    0,RBUF                                                8  0803  M %U0 |00 W          17
237                BER   WTERR                                                 5  0811  B 820 L              17
238                B     LOOP                                                  4  0816  B 550                17
239         WTERR  S     K1,OUTERR                                             7  0820  S 372 909            17
240                BM    HALTOT,OUTERR                                         8  0827  V 851 909 K          17
241         BSPOT  MN    WRITE&3,*&4                                           7  0835  D 806 845            17
242                BSP   0                                                     5  0842  U %U0 B              18
243                B     WRITE                                                 4  0847  B 803                18
244         HALTOT MCW   KP8,OUTERR                                            7  0851  M 716 909            18
245                MN    WRITE&3,*&4                                           7  0858  D 806 868            18
246                NOP   660-0                                                 4  0865  N 660                18
247                H                                                           1  0869  .                    18
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SEQ PG LIN  LABEL  OP    OPERANDS                                          SFX CT  LOCN  INSTRUCTION TYPE  CARD

248                SKP   0                   SET THE SKIP SWITCH                  5  0870  U %U0 E             18
249                B     BSPOT                                                    4  0875  B 835               19
250         *
251         * FINISHED
252         *
253         DONE   NOP   777                                                      4  0879  N 777               19
254                H                                                              1  0883  .                   19
255                B     START                                                    4  0884  B 333               19
256         *
257         MPRINT MCW   RBUF&132,332        DEFAULT MOVE TO PRINT AREA           7  0888  M /32 332           19
258         MPUNCH MCW   RBUF&79,180         DEFAULT MOVE TO PUNCH AREA           7  0895  M |79 180           19
259         AM1    DSA   16000-1             ADCON TO SUBTRACT 1 FROM ADDRESS     3  0904  I9I                 19
260         ENDBLK DCW   #3                  ADDR OF FIRST CHAR AFTER INPUT       3  0907                      20
261         INERR  DCW   8                   INPUT ERROR COUNTER                  1  0908                      20
262         OUTERR DCW   8                   OUTPUT ERROR COUNTER                 1  0909                      20
263         REMAIN DCW   #3                  RECORDS REMAINING IN BLOCK           3  0912                      20
264                LTORG *                                                                  0913
                   DCW   @134@                                                    3  0915             LIT      20
                   DCW   @081@                                                    3  0918             LIT      20
                   DCW   @001@                                                    3  0921             LIT      20
265         GMWM   DCW   @}@                                                      1  0922             GMARK    21
266                ORG   *&X00                                                              1000
267         RBUF   DCW   #1                                                       1  1000                      22
268                END   START                                                             / 333 080
```

SYMBOL	ADDRESS	SYMBOL	ADDRESS	SYMBOL	ADDRESS	SYMBOL	ADDRESS	SYMBOL	ADDRESS	SYMBOL	ADDRESS	SYMBOL	ADDRESS
AM1	904	BLKFAC	6	BLOCK	673	BSPIN	764	BSPOT	835	CLEAR	349	DONE	879
ENDBLK	907	GMWM	922	HALTIN	780	HALTOT	851	INERR	908	INTAPE	7	K1	372
KP8	716	LOOP	550	MPRINT	888	MPUNCH	895	NOISE	737	OUTERR	909	PRINT	631
PUNCH	652	RBUF	1000	RDERR	749	READ	708	REMAIN	912	RSIZE	3	SKIP	647
SS	668	STACK	9	START	333	TOP	642	WHAT	8	WRITE	803	WTERR	820
X1	89	X3	99										