```
                                        13000  SUBTTL  RST ROUTINES
                                        13020  RELOC 0
000000' 001000  000363                  13040  START:  DI                      ;DISENABLE INTERRUPTS
000001' 001000  000303                  13060          JMP     INIT             ;INIT IS THE INTIALIZE ROUTINE
000002' 000000  000000*
000003' 000000  000000
                                        13080                                   ;IT SETS UP CERTAIN
                                        13100                                   ;LOCATIONS DELETES FUNCTIONS IF
                                        13120                                   ;DESIRED AND
                                        13140                                   ;CHANGES THIS TO JMP READY
                                        13160  IFN     LENGTH-2,<
                                        13180          ADR(DEINT)               ;STORE HERE THE ROUTINE
                                        13200                                   ;TO TURN THE FAC INTO
                                        13220                                   ;A TWO-BYTE SIGNED INTEGER
                                        13240          ADR(GIVABF)>             ;STORE HERE THE ADDRESS
                                        13260                                   ;OF THE ROUTINE TO CONVERT (A,B)
                                        13280                                   ;TO A FLOATING POINT NUMBER IN THE FAC
                                        13300  IFE     LENGTH-2,<
000004' 000000  000000*                 13320          ADR(FRCINT)              ;TURN FAC INTO AN INTEGER IN (H,L)
000005' 000000  000000'
000006' 000000  000000*                 13340          ADR(MAKINT)>             ;TURN (H,L) INTO A VALUE IN THE FAC
000007' 000000  000004'
                                        13360                                   ;SET VALTYP FOR INTEGER
000010'                                 13380  RELOC 8
                                        13400  ;
                                        13420  ; SYNCHR LOOKS AT THE CURRENT CHARACTER TO MAKE SURE IT
                                        13440  ; IS A SPECIFIC THING (CONTAINED IN THE LOCATION AFTER THE CALL)
                                        13460  ; IF NOT IT CALLS THE 'SYNTAX ERROR' ROUTINE, OTHERWISE IT GOBBLES
                                        13480  ; THE NEXT CHARACTER AND RETURNS, (BY FALLING INTO CHRGET)
                                        13500  ;
                                        13520  ; ALL REGISTERS ARE PRESERVED EXCEPT (A)=NEW CHAR
                                        13540  ; AND (H,L) ENDS UP POINTING AT THE CHARACTER AFTER THE ONE
                                        13560  ; WHICH WAS CHECKED.
                                        13580  ;
000010' 001000  000176                  13600          MOV     A,M              ;GET THE CURRENT CHARACTER
000011' 001000  000343                  13620          XTHL                     ;GET CALL ADDRESS INTO (H,L)
                                        13640                                   ;PUT TEXT POINTER ON STACK
000012' 001000  000276                  13660          CMP     M                ;SEE IF (A) =CURRENT CHARACTER
                                        13680                                   ;IS THE RIGHT THING,
000013' 001000  000043                  13700          INX     H                ;FIX RETURN ADDRESS,
000014' 001000  000343                  13720          XTHL                     ;PUT RETURN ADDRESS BACK AND RESTORE
                                        13740                                   ;THE TEXT POINTER,
000015' 001000  000302                  13760          JNZ     SNERR            ;IF THE CHARACTER WASN'T RIGHT CALL
000016' 000000  002027'
000017' 000000  000000
                                        13780                                   ;THE 'SYNTAX ERROR' ROUTINE,
                                        13800                                   ;OTHERWISE FALL THROUGH
                                        13820                                   ;AND GET ANOTHER CHARACTER.
                                        13840  ;
                                        13860  ; CHRGET, USING (H,L) AS THE CURRENT TEXT POINTER FETCHES
                                        13880  ; A NEW CHARACTER INTO (A) AFTER INCREMENTING (H,L)
                                        13900  ; AND SETS CONDITION CODES ACCORDING TO WHATS IN (A)
                                        13920  ;       C=      NUMERIC    ("0" THROUGH "9")
```



```
                                        13940  ;       Z=      ":" OR END-OF-LINE (A 0)
                                        13960  ;
                                        13980  ; ALL REGISTERS SAVED EXCEPT (A)=NEW CHAR
                                        14000  ; (H,L)=(H,L)+1
                                        14020  ;
000020'                                 14040  RELOC 16
                                        14060  IFE     LENGTH,<CHRGTR:>
000020' 001000  000043                  14080          INX     H                ;UPDATE THE TEXT POINTER
000021' 001000  000176                  14100          MOV     A,M              ;GET NEW CHARACTER
000022' 001000  000376                  14120          CPI     ":"              ;MAKE ":" HAVE ZERO ON AND
000023' 000000  000072
                                        14140                                   ;CARRY OFF
                                        14160                                   ;ALL ALPHABETICS & RESERVED
                                        14180                                   ;WORDS GET ZERO & CARRY OFF
000024' 001000  000320                  14200          RNC                      ;,GT,":" GO BACK
000025' 001000  000303                  14220          JMP     CHRCON           ;NO ROOM FOR WHOLE ROUTINE
000026' 000000  003433'
000027' 000000  000016'
                                        14240  ;
                                        14260  ; THIS RST ROUTINE OUTPUTS THE CHARACTER IN (A) USING PRTFLG (LPT OR TTY)
                                        14280  ; CNTRFL (SUPRESS OUTPUT OR NOT), TTYPOS (PRINT HEAD POSITION),
                                        14300  ; TIMING ETC,. NO REGISTERS OR CONDITION CODES ARE CHANGED.
                                        14320  ;
000030'                                 14340  RELOC 24
000030' 001000  000365                  14360  OUTDO:  PUSH    PSW
                                        14380  IFN     CONTRW,<
000031' 001000  000072                  14400          LDA     CNTWFL           ;GET SUPPRESS FLAG
000032' 000000  001541'
000033' 000000  000026'
000034' 001000  000267                  14420          ORA     A>               ;SEE IF IT IS SET
                                        14440  IFE     LENGTH!CONTRW!LPTSW,<
                                        14460          LDA     TTYPOS>          ;USE RST BYTES, (A)=TTYPOS
000035' 001000  000303                  14480          JMP     OUTCON
000036' 000000  003065'
000037' 000000  000032'
                                        14500  ;
                                        14520  ; COMPAR COMPARES (H,L) WITH (D,E) UNSIGNED
                                        14540  ;
                                        14560  ;               (H,L) LESS THAN (D,E) SET CARRY
                                        14580  ;               (H,L) = (D,E) SET ZERO
                                        14600  ;
                                        14620  ; (A) IS THE ONLY REGISTER USED
                                        14640  ;
000040'                                 14660  RELOC 32
000040' 001000  000174                  14680          MOV     A,H
000041' 001000  000222                  14700          SUB     D
000042' 001000  000300                  14720          RNZ
000043' 001000  000175                  14740          MOV     A,L
000044' 001000  000223                  14760          SUB     E
000045' 001000  000311                  14780          RET
                                        14800
000046' 000000  000001                  14820  NULCNT: 1                        ;STORE HERE THE NUMBER OF NULLS
                                        14840                                   ;TO PRINT AFTER CRLF
```

```
000047'                         14860   TTYPOS: BLOCK   1               ;STORE TERMINAL POSITION HERE
                                14880   ;
                                14900   ;THE FSIGN  RST RETURNS A=+1 IF FAC IS LESS THAN 0
                                14920   ;       A=0 IF FAC=0
                                14940   ;       A=1 IF FAC GREATER THAN ZERO
                                14960   ; THE CONDITION CODES REFLECT THE VALUE OF [A]
                                14980   ; AND NO OTHER REGISTERS ARE MODIFIED.
                                15000   ; THIS WORKS ONLY WHEN THE FAC IS A SINGLE OR DOUBLE PRECISION NUMBER
                                15020   ; THE 'VSIGN' ROUTINE IS MORE GENERAL SINCE
                                15040   ; IT WILL TAKE THE SIGN OF INTEGERS AS WELL
                                15050   ; AND GIVES "TMERR" ON STRINGS.
                                15060   ;
000050'                         15080   RELOC   40
000050' 001000  000072          15100   SIGN:   LDA     FAC
000051' 000000  001642'
000053' 000000  000036'
000053' 001000  000267          15120           ORA     A
000054' 001000  000302          15140           JNZ     SIGNC
000055' 000000  000000*
000056' 000000  000051'
000057' 001000  000311          15160           RET
                                15180   ;
                                15200   ; THIS IS THE PUSHM RST
                                15220   ; EFFECT IS:
                                15240   ;       MOV     C,M
                                15260   ;       INX     H
                                15280   ;       MOV     B,M
                                15300   ;       INX     H
                                15320   ;       PUSH    B
                                15340   ; DIFFICULTY COMES IN BECAUSE OF THE
                                15360   ; RETURN ADDRESS.
                                15380   ;
000060'                         15400   RELOC   48
000060' 001000  000343          15420           XTHL                            ;SWITCH [H,L] AND RETURN ADDRESS
000061' 001000  000042          15440           SHLD    PUSHMA+1                ;FIXUP JUMP TO PLACE TO GO
000062' 000000  000101'
000063' 000000  000055'
000064' 001000  000341          15460           POP     H                       ;REGAIN [H,L]
                                15480   IFN     LENGTH,<
000065' 001000  000303          15500           JMP     $CODE+59                ;IN 8K ALLOW USER TO HAVE RST 7
000066' 000000  000073'
000067' 000000  000662'
                                15520                                           ;FOR INTERRUPT TRAPPING
000070'                         15540   RELOC   56
000070' 001000  000311          15560           RET                             ;INITIALLY NO INTERRUPT
                                15580                                           ;ROUTINE
000071' 001000  000000          15600           NOP
000072' 001000  000000          15620           NOP>
000073' 001000  000116          15640           MOV     C,M                     ;GRAB FROM MEMORY
000074' 001000  000043          15660           INX     H
000075' 001000  000106          15680           MOV     B,M
000076' 001000  000043          15700           INX     H
000077' 001000  000305          15720           PUSH    B                       ;PUSH [B,C] ONTO THE STACK
```



```
                                15740                                           ;SINCE IT CONTAINS [M]
000100' 001000  000303          15760   PUSHMA: JMP     PUSHMA                  ;RETURN  ADDRESS STORED HERE
000101' 000000  000100'
000102' 000000  000066'
                                15800   PAGE
```

```
                                                15820   SUBTTL DISPATCH TABLES,RESERVED WORDS, ERROR TEXT,,, ALL CONSTANT
                                                15840
000103' 000000  000000*                         15860   FUNDSP: ADR(SGN)
000104' 000000  000101'                         15880   IFN     LENGTH-2,<
                                                15900           ADR(INT)>
                                                15920   IFE     LENGTH-2,<
000105' 000000  000000*                         15940           ADR(VINT)>
000106' 000000  000103'
000107' 000000  000000*                         15960           ADR(ABS)
000110' 000000  000105'
000111' 000000  010776'                         15980   USRLOC: ADR(ILLFUN)             ;INITIALLY NO USER ROUTINE
000112' 000000  000107'
000113' 000000  007337'                         16000   IFN     LENGTH,<ADR(FRE)
000114' 000000  000111'
000115' 000000  010712'                         16020           ADR(FNINP)
000116' 000000  000113'
                                                16040   IFN     LPTSW,<ADR(LPOS)>
000117' 000000  007406'                         16060           ADR(POS)>
000120' 000000  000115'
000121' 000000  000000*                         16080   SQRFIX: ADR(SQR)
000122' 000000  000117'
000123' 000000  000000*                         16100   RNDFIX: ADR(RND)
000124' 000000  000121'
                                                16120   IFN     EXTFNC,<
000125' 000000  000000*                         16140           ADR(LOG)
000126' 000000  000123'
000127' 000000  000000*                         16160           ADR(EXP)
000130' 000000  000125'
000131' 000000  000000*                         16180   COSFIX: ADR(COS)>
000132' 000000  000127'
000133' 000000  000000*                         16200   SINFIX: ADR(SIN)
000134' 000000  000131'
                                                16220   IFN     EXTFNC,<
000135' 000000  000000*                         16240   TANFIX: ADR(TAN)
000136' 000000  000133'
000137' 000000  000000*                         16260   ATNFIX: ADR(ATN)>
000140' 000000  000135'
                                                16280   IFN     LENGTH,<
000141' 000000  011314'                         16300           ADR(PEEK)>
000142' 000000  000137'
                                                16320   IFN     DSKFUN,<ADR(DSK1$)>
                                                16340   IFN     STRING,<
000143' 000000  010501'                         16360           ADR(LEN)
000144' 000000  000141'
000145' 000000  007564'                         16380           ADR(STR$)
000146' 000000  000143'
000147' 000000  011042'                         16400           ADR(VAL)
000150' 000000  000145'
000151' 000000  010515'                         16420           ADR(ASC)
000152' 000000  000147'
000153' 000000  010532'                         16440           ADR(CHR$)
000154' 000000  000151'
```



```
000155' 000000  010552'                         16460           ADR(LEFT$)
000156' 000000  000153'
000157' 000000  010631'                         16480           ADR(RIGHT$)
000160' 000000  000155'
000161' 000000  010643'                         16500           ADR(MID$)>
000162' 000000  000157'

                                                16540   DEFINE ADRP(X),<ADR(X)>
                                                16560   IFE     LENGTH-2,<
                                                16580   DEFINE ADRP(X),<>>
000163' 000000  000171                          16600   OPTAB:  121                     ;OPERATOR TABLE CONTAINS
                                                16620                                   ;PRECEDENCE FOLLOWED BY
                                                16640                                   ;THE ROUTINE ADDRESS
                                                16660           ADRP(FADDT)
000164' 000000  000171                          16680           121
                                                16700           ADRP(FSUBT)
000165' 000000  000173                          16720           123
                                                16740           ADRP(FMULTT)
000166' 000000  000173                          16760           123
                                                16780           ADRP(FDIVT)
000167' 000000  000177                          16800   IFN     EXTFNC,<127
                                                16820           ADRP(FPWRT)>
                                                16840   IFN     LENGTH,<
000170' 000000  000120                          16860           80
                                                16880           ADRP(AND)
000171' 000000  000106                          16900           70
                                                16920           ADRP(OR)>

                                                16960   ;
                                                16980   ; TOKENS FOR RESERVED WORDS ALWAYS HAVE THE MOST
                                                17000   ; SIGNIFIGANT BIT ON
                                                17020   ; THE LIST OF RESERVED WORDS
                                                17040   ;
                        000177                  17060   Q=128-1
                                                17080   DEFINE  DCI(A),<Q=Q+1
                                                17090           XLIST
                                                17100           DC(A)
                                                17110           LIST>
                        000200                  17140           ENDTK==Q
                        000201                  17160           FORTK==Q
                        000203                  17240           DATATK==Q
                        000210                  17360           GOTOTK==Q
                        000212                  17420           IFTK==Q
                        000214                  17480           GOSUTK=Q
                        000216                  17540           REMTK=Q
                                                17660   IFE     LENGTH-2,<
                        000220                  17700           ELSETK==Q
                                                17760   IFN     DSKFUN,<DCI"DSKUS">
                                                17800   IFN     LPTSW,<DCI"LPRINT">
                                                17820   IFN     LENGTH,<
                        000231                  17880           PRINTK==Q
                                                17940   IFE     REALIO,<
                                                17960           DCI"DDT">
```

```
1001                                    18000   IFN     LPTSW,<OCI"LLIST>
1002                                    18060   IFN     CASSW,<OCI"CLOAD"
1003                                    18080           OCI"CSAVE">
1004                                    18100   IFN     CONSSW,<OCI"CONSOLE">
1005                    000237          18140           SCRATK=Q
1006                                    18160   ; END OF COMMAND LIST
1007    000371' 000000  000124          18180           "T"
1008    000372' 000000  000101          18200           "A"
1009    000373' 000000  000102          18220           "B"
1010    000374' 000000  000250          18240           "("+128
1011                    000240          18260           Q=Q+1
1012                    000240          18280           TABTK=Q
1013                    000241          18320           TOTK=:Q
1014                                    18340   IFN     LENGTH,<
1015    000377' 000000  000123          18360           "S"
1016    000400' 000000  000120          18380           "P"
1017    000401' 000000  000103          18400           "C"
1018    000402' 000000  000250          18420           "("+128                 ;MACRO DOESNT LIKE ('S IN ARGUMENTS
1019                    000242          18440           Q=Q+1
1020                    000242          18460           SPCTK=:Q>
1021                    000243          18500           FNTK=:Q>
1022                    000244          18540           USINTK=:Q>
1023                    000245          18580           THENTK=Q
1024                                    18600   IFN     LENGTH,<
1025                    000246          18640           NOTTK=:Q>
1026                    000247          18680           STEPTK=Q
1027                    000250          18720           PLUSTK=Q
1028                    000251          18760           MINUTK=Q
1029                    000007          18800           LSTOPK=:Q+1-PLUSTK      ;CRUNCH # OF HIGHEST OP+1-PLUSTK
1030    000437' 000000  000276          18900           190                     ;A GREATER THAN SIGN
1031                    000257          18920           Q=Q+1
1032                    000257          18940           GREATK=Q
1033                    000260          18980           EQULTK=Q
1034    000441' 000000  000274          19000           188
1035                    000261          19020           Q=Q+1                   ;A LESS THAN SIGN
1036                    000261          19040           LESSTK=Q
1037                                    19060   ;
1038                                    19080   ; NOTE DANGER OF ONE RESERVED WORD BEING A PART
1039                                    19100   ; OF ANOTHER
1040                                    19120   ; IE , , IF 2 GREATER THAN F OR T=5 THEN,,,
1041                                    19140   ; WILL NOT WORK!!! SINCE "FOR" WILL BE CRUNCHED!!
1042                                    19160   ; IN ANY CASE MAKE SURE THE SMALLER WORD APPEARS
1043                                    19180   ; SECOND IN THE RESERVED WORD TABLE ("INP" AND "INPUT")
1044                                    19190   ; ANOTHER EXAPMLE: IF T OR Q THEN ,,, "TO" IS CRUNCHED
1045                                    19200   ;
1046                    000266          19240           ONEFUN=Q
1047                                    19360   IFN     LPTSW,<OCI"LPOS">
1048                    000271          19420           SQRTK=:Q
1049                                    19460   IFN     EXTFNC,<
1050                    000300          19600           ATNTK=:Q>
1051                                    19620   IFN     LENGTH,<
1052                                    19660   IFN     DSKFUN,<OCI"DSKIS">
1053                                    19680   IFN     STRING,<
```



```
1054                    000306          19800   LASNUM==Q                       ;NUMBER OF LAST FUNCTION
1055                                    19820                                   ;THAT TAKES ONE ARG
1056    000563' 000000  000000          19900           0                       ;MARKS END OF RESERVED WORD LIST
1057
1058    000564' 000000  003474'         19940   STMDSP: ADR(END)
1059    000565' 000000  000161'
1060    000566' 000000  003154'         19960           ADR(FOR)
1061    000567' 000000  000564'
1062    000570' 000000  005225'         19980           ADR(NEXT)
1063    000571' 000000  000566'
1064    000572' 000000  004072'         20000           ADR(DATA)
1065    000573' 000000  000570'
1066    000574' 000000  004711'         20020           ADR(INPUT)
1067    000575' 000000  000572'
1068    000576' 000000  006500'         20040           ADR(DIM)
1069    000577' 000000  000574'
1070    000600' 000000  004760'         20060           ADR(READ)
1071    000601' 000000  000576'
1072    000602' 000000  004131'         20080           ADR(LET)
1073    000603' 000000  000600'
1074    000604' 000000  004010'         20100           ADR(GOTO)
1075    000605' 000000  000602'
1076    000606' 000000  003754'         20120           ADR(RUN)
1077    000607' 000000  000604'
1078    000610' 000000  004325'         20140           ADR(IF)
1079    000611' 000000  000606'
1080    000612' 000000  003446'         20160           ADR(RESTORE)
1081    000613' 000000  000610'
1082    000614' 000000  003770'         20180           ADR(GOSUB)
1083    000615' 000000  000612'
1084    000616' 000000  004044'         20200           ADR(RETURN)
1085    000617' 000000  000614'
1086    000620' 000000  004074'         20220           ADR(REM)
1087    000621' 000000  000616'
1088    000622' 000000  003472'         20240           ADR(STOP)
1089    000623' 000000  000620'
1090                                    20260   IFE     LENGTH=2,<
1091    000624' 000000  004074'         20280           ADR(ELSE)
1092    000625' 000000  000622'
1093    000626' 000000  003604'         20300           ADR(TON)
1094    000627' 000000  000624'
1095    000630' 000000  003605'         20320           ADR(TOFF)
1096    000631' 000000  000626'
1097    000632' 000000  000000*         20340           ADR(EDIT)>
1098    000633' 000000  000630'
1099    000634' 000000  010725'         20360   IFN     LENGTH,<ADR(FNOUT)
1100    000635' 000000  000632'
1101    000636' 000000  004271'         20380           ADR(ONGOTO)
1102    000637' 000000  000634'
1103    000640' 000000  005566'         20400           ADR(NULL)
1104    000641' 000000  000636'
1105    000642' 000000  010733'         20420           ADR(FNWAIT)>
1106    000643' 000000  000640'
```