

```

*   *   TTTT  Y   Y  PPPP  000
* * *   T    Y   Y  P   P  0 0 0
* * * * T    Y   Y  P   P  0 0 0
* * * * T    Y   Y  PPPP  0 0 0
*   *   T    Y   Y  P   P  0 0 0
*   *   T    Y   Y  P   P  000

```

TYPOGRAPHICAL PROGRAM

OREGON STATE UNIVERSITY
COMPUTER CENTER

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1. INTRODUCTION

COMPUTERIZED WORD PROCESSING IS A VERY VIABLE MEANS OF PRODUCING DOCUMENTATION, REPORTS, FORM LETTERS, ETC. THE TOTAL WORD PROCESSING SYSTEM AVAILABLE VIA OS-3 CONSISTS OF TWO MAJOR SUB-SYSTEMS. THE TEXT EDITOR [1] PROVIDES A MEANS FOR CREATING THE INPUT LINES FOR THE SECOND SUB-SYSTEM, *TYPO, WHICH IS DESCRIBED IN THIS MANUAL. SINCE *TYPO WAS USED TO PRINT THIS MANUAL, A FEW EXAMPLES OF INPUT TEXT AND THE PRINTED RESULT WILL BE SHOWN.

SOME ADVANTAGES OF PRODUCING MANUSCRIPTS IN MACHINE READABLE FORM RATHER THAN USING MANUAL METHODS ARE:

1. WHEN A CHANGE IS MADE, ONLY THE ALTERED TEXT ITSELF MUST BE PROOFREAD.
2. A CLEAN COPY CAN BE OBTAINED QUICKLY AND EASILY, EVEN AFTER MAJOR CHANGES HAVE BEEN MADE.
3. SYSTEMATIC CHANGES CAN BE MADE WITH THE ASSURANCE THAT NO OCCURRENCES OF THE WORD OR PHRASE TO BE CHANGED WILL BE OVERLOOKED.
4. TABLES OF CONTENTS AND/OR DIAGRAMS, AND INDEXES CAN BE PRODUCED AUTOMATICALLY.
5. FORM LETTERS CAN HAVE WORDS OR PHRASES CHANGED AS THEY ARE BEING PRODUCED.

*TYPO HAS EVOLVED SINCE JULY 1973 FROM A SIMPLE-MINDED READING/WRITING OF INPUT LINES, NUMBERING THE PAGES, AND PRODUCING A TABLE OF CONTENTS PROGRAM TO A SOPHISTICATED GENERAL PURPOSE TYPOGRAPHICAL PROGRAM. IT ACCOMMODATES THE NOVICE PRODUCING AN EASY STRAIGHTFORWARD REPORT, OR THE ADVANCED USER DEVELOPING DOCUMENTATION FOR A COMPLEX SYSTEM OR A FORM LETTER TO BE SENT TO A WIDE AUDIENCE.

SOME OF THE CAPABILITIES OF THE PROGRAM ARE AS FOLLOWS:

RIGHT-HAND MARGIN ALIGNMENT
OVER-PRINTING FOR ITALICS EFFECT
MAXIMUM NUMBER OF LINES PER INCH AND LINES PER PAGE
LEFT AND RIGHT MARGINS
COLUMNS IN A TABLE ALIGNED VIA THE TAB SPECIFICATION
ALLOWANCE FOR SPACE TO INSERT A DIAGRAM, PICTURE, ETC.
ALTERNATE THE HORIZONTAL PAGE ALIGNMENT SO A XEROX COPY CAN BE MADE ON BOTH SIDES OF A PAGE AND BOUND LIKE A BOOK
PRINT FOOTNOTES AT THE BOTTOM OF A PAGE, AT THE END OF A CHAPTER, OR AT THE END OF THE BODY OF TEXT
AUTOMATICALLY NUMBER THE SECTIONS
BEGIN A NEW PAGE WHEN TOO FEW LINES REMAIN ON THE CURRENT PAGE
PRINT THE SAME TEXT A NUMBER OF TIMES IN THE BODY OF THE TEXT, BUT ONLY ENTER IT ONCE
PRINT AN INDEX OF WORDS OR PHRASES
PRINT PAGE HEADERS AND/OR FOOTERS
SPECIFY LINE SPACING
SYNTAX DIRECTED TEXT
CONDITIONAL TEXT
PRINT THE FINAL DRAFT ON 8-1/2 X 11 1-PART PAPER WITHOUT LINES

2. CALLING THE PROGRAM

THE PROGRAM IS CALLED BY TYPING THE CONTROL MODE STATEMENT AS FOLLOWS:

[1] TEXT EDITOR, CCM 70-7(R)

*TYPO, INPUT=[LUN/NAME], OUTPUT=[LUN/NAME],
CONTENTS=[LUN/NAME], DIAGRAM=[LUN/NAME],
VALUE=[LUN/NAME], FINAL, LABEL=#USER NAME#,
XEROX, MULTIPLE=NUMBER OF INPUT FILES

THE MEANING FOR EACH OF THE ARGUMENTS IS:

1. CONTENTS
 - A. SPECIFIES FOR THE TABLE OF CONTENTS: 1) A LUN (EQUIP IT EXTERNALLY, NOT REWOUND BY THE PROGRAM), OR 2) A FILE NAME (MUST EXIST, PROGRAM REWINDS IT BEFORE WRITING).
 - B. IF ENTERED BUT NO LUN/FILE NAME IS SPECIFIED, THE PROGRAM DEFAULTS (ASSUMES) LUN 3.
 - C. YOU MUST ENTER THIS ARGUMENT IF SECTION HEADINGS ARE TO BE PRINTED.
 - D. MAXIMUM OF FIFTEEN PAGES IN THE TABLE OF CONTENTS.
2. DIAGRAM
 - A. SPECIFIES FOR THE TABLE OF DIAGRAMS: 1) A LUN (EQUIP IT EXTERNALLY, NOT REWOUND BY PROGRAM), OR 2) A FILE NAME (MUST EXIST, PROGRAM REWINDS IT BEFORE WRITING).
 - B. IF ENTERED BUT NO LUN/FILE NAME IS SPECIFIED, THE PROGRAM DEFAULTS TO LUN 4.
 - C. YOU MUST ENTER THIS ARGUMENT IF DIAGRAM NAMES ARE USED.
 - D. MAXIMUM OF FIFTEEN PAGES IN THE TABLE OF DIAGRAMS.
3. FINAL
 - A. PRODUCE A FINAL COPY ON PLAIN 8-1/2 X 11 1-PART PAPER.
 - B. MUST ALSO ENTER THE LABEL ARGUMENT.
4. INPUT
 - A. SPECIFIES FOR THE INPUT FILE: 1) A LUN (EQUIP EXTERNALLY, NOT REWOUND), OR 2) A FILE NAME (MUST EXIST, REWOUND BEFORE READING).
 - B. PROGRAM DEFAULTS TO LUN 1.
5. LABEL
 - A. SPECIFIES AN EIGHT CHARACTER LABEL, ENCLOSED IN QUOTES, FOR ALL OUTPUT.
 - B. DEFAULT TO BLANKS.
 - C. MUST BE ENTERED IF THE FINAL ARGUMENT IS USED.
6. MULTIPLE
 - A. SPECIFIES THE NUMBER OF INPUT FILES
 - B. DEFAULTS TO 1 INPUT FILE.
 - C. IF THERE IS MORE THAN 1 INPUT FILE, THE PROGRAM WILL ASK FOR THE NEXT INPUT FILE NAME WHEN THE CURRENT ONE IS FINISHED UNTIL ALL INPUT FILES HAVE BEEN DEPLETED.
7. OUTPUT
 - A. SPECIFIES FOR THE BODY OF THE TEXT (WHETHER IT IS A DOCUMENT, FORM LETTER, OR WHATEVER): 1) A LUN (EQUIP IT EXTERNALLY, NOT REWOUND BY PROGRAM), OR 2) A FILE NAME (MUST EXIST, PROGRAM REWINDS IT BEFORE WRITING).
 - B. PROGRAM DEFAULTS TO LUN 2.
8. VALUE
 - A. SPECIFIES FOR THE VAL-M SPECIFICATION IN A MACRO DEFINITION: 1) A LUN (EQUIP IT EXTERNALLY, NOT REWOUND BY PROGRAM), OR 2) A FILE NAME (MUST EXIST, PROGRAM REWINDS IT BEFORE READING) AS THE SOURCE OF THE TEXT TO BE INTRODUCED INTO THE MACRO.
 - B. IF ENTERED BUT NO LUN/FILE NAME IS SPECIFIED, THE PROGRAM DEFAULTS TO LUN 5.
 - C. YOU MUST ENTER THIS ARGUMENT IF VAL-M SPECIFICATIONS ARE USED IN A MACRO

DEFINITION.

- 9. XEROX
 - A. SPECIFIES THAT ALTERNATING PAGES ON EACH OF THE OUTPUT FILES ARE TO BE SHIFTED SO THE PAGES CAN BE XEROXED ON TWO SIDES AND THE FINAL COPY BOUND LIKE A BOOK.

3. DESCRIPTION OF INPUT FILE

THE INPUT FILE CONTAINS THE TEXTUAL MATERIAL WHICH WILL APPEAR IN THE FINAL COPY, PLUS INFORMATION TO SPECIFY THE LAYOUT OF THAT TEXT. WHEN PRODUCING THE INPUT FILE IN EDIT, THE OUT COMMAND MUST BE USED. DUE TO THE LIMITS OF THE LINE PRINTER THERE ARE ONLY UPPER CASE LETTERS. AS A MATTER OF RECORD, SO THE USER WILL KNOW WHAT CHARACTER WILL BE PRINTED ON THE LINE PRINTER, THE FOLLOWING CHARACTERS ARE AVAILABLE:

TELETYPE	CRT	LINE PRINTER
0	0	0
1	1	1
2	2	2
3	3	3
4	4	4
5	5	5
6	6	6
7	7	7
8	8	8
9	9	9
:	:	:
=	=	=
QUOTE	%	%
AMPERSAND	&	&
%	%	%
!	!	!
+	+	+
A	A	A
B	B	B
C	C	C
D	D	D
E	E	E
F	F	F
G	G	G
H	H	H
I	I	I
^	^	^
.	.	.
!	!	!
POUND SIGN	~	~
DOUBLE QUOTE	^	^
:	:	:
J	J	J
K	K	K
L	L	L
M	M	M
N	N	N
O	O	O
P	P	P
	CARRIAGE RETURN	
	SEND	

Q R EXCLAMATION POINT \$ * ↑ ↓ > SPACE /	Q R EXCLAMATION POINT \$ * ↑ ↓ > SPACE /	Q R BLANK \$ * ↑ ↓ > BLANK /
S T U V W X Y Z]	S T U V W X Y Z]	S T U V W X Y Z]
, (BACKSLASH BACKWARD ARROW QUESTION MARK	, (PARITY ERROR PRINT ^	, (P E M ^

ALL MATERIAL IN THE INPUT FILE IS TAKEN TO BE TEXT EXCEPT FOR THOSE LINES BEGINNING WITH A PERIOD. THESE ARE ASSUMED TO BE COMMANDS AND MUST MATCH ONE AS DESCRIBED BELOW. THE COMMANDS PROVIDE A PORTION OF THE LAYOUT INFORMATION, AND CONTROL VARIOUS OPTIONAL MODES OF OPERATION.

USUALLY THE TEXT IS FILLED AND JUSTIFIED AS IT IS PROCESSED. THAT IS, THE PROGRAM FILLS A LINE BY ADDING SUCCESSIVE WORDS FROM THE INPUT TEXT UNTIL ONE MORE WORD WOULD CAUSE THE RIGHT MARGIN TO BE EXCEEDED. THE LINE IS THEN JUSTIFIED, UNDER OPTION, BY MAKING THE WORD SPACINGS LARGER UNTIL THE LAST WORD IN THE LINE EXACTLY MEETS THE RIGHT MARGIN. JUSTIFICATION IS NOT DONE IF A WORD DOES NOT EXCEED THE RIGHT MARGIN OR IF THERE ARE THREE TIMES AS MANY BLANKS BETWEEN THE RIGHT MOST WORD AND THE RIGHT MARGIN AS THERE ARE EMBEDDED BLANKS BETWEEN THE RIGHT MOST TAB AND THE RIGHT MOST WORD.

THE USER MAY OCCASIONALLY WISH TO REPRODUCE THE INPUT TEXT EXACTLY, WHICH IS DONE BY USING THE .CENTER OR .COPY COMMAND.

SOME OF THE COMMANDS CAUSE A BREAK IN THE OUTPUT. A BREAK MEANS THAT THE CURRENT LINE IS PRINTED WITHOUT JUSTIFICATION, AND THE NEXT WORD GOES AT THE BEGINNING OF THE NEXT LINE. THIS ALSO OCCURS WHEN LINE SPACING IS SPECIFIED VIA THE CARRIAGE CONTROL CHARACTER.

THE PROGRAM WILL ADVANCE TO NEW PAGES AS NECESSARY, PLACING THE FOOTNOTES [1], THE PAGE FOOTER (IF SPECIFIED), AND THE PAGE NUMBER (IF IN TEXT MODE) AT THE BOTTOM OF THE PAGE JUST COMPLETED. THE NEW PAGE IS BEGUN WITH THE PAGE HEADER (IF SPECIFIED) AND THEN THE TEXT FOLLOWS. THE USER MAY EXPLICITLY CALL FOR A PAGE ADVANCE WHERE DESIRED.

3.1. SPECIAL CHARACTERS

A NUMBER OF OPTIONS AVAILABLE VIA THE COMMANDS, REQUIRE A CHARACTER TO IDENTIFY WHEN TO: 1) INITIATE OR 2) INITIATE AND TERMINATE (DELIMIT) THE OPTION DESIRED. THESE CHARACTERS CANNOT BE USED ELSEWHERE IN THE INPUT TEXT UNLESS THE CORRESPONDING OPTION IS TEMPORARILY TURNED OFF OR THE

[1] THIS IS AN EXAMPLE OF A FOOTNOTE IN PAGE MCDE

CHARACTER CHANGED.

3.2. FORMAT OF INPUT LINES

ALL INPUT LINES, EXCEPT THOSE ON THE VALUE FILE AND THOSE READ FROM THE TERMINAL FOR THE INP-M SPECIFICATION IN A MACRO DEFINITION, MUST BE IN THIS FORMAT:

<u>COLUMNS</u>	<u>CONTENT</u>
1- 1	MODE
	• SPACE . COMMAND IN COLUMNS 2-100. SINGLE SPACE IF THE PRINT LINE IS FULL, OTHERWISE CONTINUE TO ADD WORDS FROM THE INPUT TEXT TO THE RIGHT-HAND END OF THE PRINT LINE.
1	START A NEW PAGE AND A NEW LINE, UNLESS THERE IS NO TEXT ENTERED IN THIS INPUT LINE. IN THAT CASE IT IS EQUIVALENT TO A FULL PAGE DIAGRAM REQUEST.
0	DOUBLE SPACE AND START A NEW LINE.
-	TRIPLE SPACE AND START A NEW LINE.
L	SINGLE SPACE AND START A NEW LINE.
2-100	COMMAND OR INPUT TEXT

THE MODE SHOULD NOT BE ENTERED WHEN PROVIDING INPUT VIA THE EXCEPTIONS NOTED ABOVE.

4. DESCRIPTION OF OUTPUT FILES

ALL OUTPUT FILES FOLLOW THE LEFT AND RIGHT MARGINS AS SPECIFIED. LINE SPACING IS UNIQUE TO EACH INDIVIDUAL FILE.

4.1. TABLE OF CONTENTS

THE TECHNIQUE FOR IDENTIFYING THE SECTION HEADINGS WILL BE DISCUSSED LATER UNDER THE .SECTION COMMAND. SECTION HEADINGS ARE SINGLE SPACED UNLESS THERE IS A SINGLE DECIMAL POINT IN THE SECTION NUMBER WHICH CAUSES IT TO BE DOUBLE SPACED. IF THE TEXTUAL PORTION OF THE SECTION HEADING LINE IS LONGER THAN THREE CHARACTERS TO THE LEFT OF THE RIGHT MARGIN, IT IS TRUNCATED. IN THE BODY OF THE TEXT IT WILL FOLLOW THE RULES OF A NORMAL LINE OF TEXT THAT EXCEEDS THE RIGHT MARGIN. IF THERE ARE ANY TRAILING BLANKS IN THE SECTION HEADING IT WILL BE FILLED WITH PERIODS UP TO THE PAGE NUMBER. THE SECTION NUMBER STARTS AT THE LEFT MARGIN.

4.2. TABLE OF DIAGRAMS

ANY .DIAGRAM COMMAND WITH THE CHARACTER STRING WILL HAVE THAT STRING PRINTED, STARTING AT THE LEFT MARGIN. ALL LINES ARE DOUBLE SPACED AND HAVE TRAILING BLANKS FILLED WITH PERIODS. IF THE CHARACTER STRING IS ENTERED BUT NO TABLE OF DIAGRAMS FILE WAS SPECIFIED, AN ERROR DIAGNOSTIC IS PRINTED AND THE LINE BYPASSED.

4.3. BODY OF TEXT

LINE SPACING IN THE BODY OF THE TEXT IS UNDER THE CONTROL OF THE USER EXCEPT FOR THE PRINTING OF THE FOLLOWING LINES:

1. THE PAGE HEADER HAS A MINIMUM OF TWO BLANK LINES FOLLOWING IT AND IS THE FIRST LINE ON A PAGE.
2. A DIAGRAM HAS A MINIMUM OF ONE BLANK LINE FOLLOWING IT.
3. A PARTIAL LINE OF DASHES IS DOUBLE SPACED

- BEFORE STARTING TO PRINT THE FOOTNOTES.
4. FOOTNOTES ARE SINGLE SPACED.
 5. THE PAGE FOOTER HAS A MINIMUM OF TWO BLANK LINES PRECEDING IT.
 6. THE PAGE NUMBER, WHEN IN TEXT MODE, HAS A MINIMUM OF THREE BLANK LINES PRECEDING IT AND IS THE LAST LINE ON A PAGE.

A NEW LINE OF PRINT IS STARTED AUTOMATICALLY OR AT THE DISCRETION OF THE USER WHEN:

1. A WORD WILL EXCEED THE RIGHT MARGIN.
2. A NON-BLANK CARRIAGE CONTROL CHARACTER IS ENCOUNTERED (SEE MODE UNDER FORMAT OF INPUT LINES).
3. A NEW TAB POSITION IS SPECIFIED WHICH IS TO THE LEFT OF THE CURRENT PRINT POSITION. THE ONLY EXCEPTION TO THIS IS THE SPECIAL TAB TO POSITION ZERO WHEN THE TABS ARE NOT RELATIVE TO THE LEFT MARGIN.
4. INDENTATION WHICH MOVES BEYOND THE RIGHT MARGIN. THE NEW LINE WILL NOT BE INDENTED.
5. A DIAGRAM IS REQUESTED, WHICH FITS ON THE CURRENT PAGE. THE TEXT THAT FOLLOWS THE DIAGRAM SPECIFICATION WILL BE ON A NEW PRINT LINE. IF THE DIAGRAM DOES NOT FIT ON THE PAGE, THE TEXT IS CONTINUED UNDER THE RULES FOR CREATING A PRINT LINE.
6. CENTERING OF INPUT TEXT IS REQUESTED, AND EACH NEW LINE READ WHILE IN CENTERING MODE.
7. LINE SPACING IS SPECIFIED VIA THE .SKIP COMMAND.
8. A NEW PAGE IS SPECIFIED VIA THE .NEWPAGE COMMAND.
9. COPYING OF INPUT TEXT IS REQUESTED, AND EACH NEW LINE READ WHILE IN COPY MODE.

5. COMMANDS

THE FOLLOWING COMMANDS WILL BE RECOGNIZED IF THEY ARE STARTED IN POSITION ONE OF THE INPUT LINE WITH A PERIOD. ANY LINE IN THE INPUT FILE BEGINNING WITH A PERIOD IS ASSUMED TO BE ONE OF THESE COMMANDS. IF IT IS NOT, AN ERROR DIAGNOSTIC IS PRINTED AND THE LINE IS IGNORED.

IN THE FOLLOWING DESCRIPTIONS EACH COMMAND HAS A RECOGNIZED ABBREVIATION WHICH IS SHOWN OVER-PRINTED. ANY PART NOT OVER-PRINTED MAY BE OMITTED. IF THE COMMAND MAY BE OPTIONALLY PREFIXED WITH THE NO KEYWORD, THEN THIS IS INDICATED BY PREFIXING THE COMMAND WITH [NO]. USING THE NO KEYWORD ON AN APPROPRIATE COMMAND REVERSES THE NORMAL EFFECT AND DOES NOT REQUIRE ANY PARAMETERS SHOWN. ANYTHING ENCLOSED IN SQUARE BRACKETS IS OPTIONAL AND MAY BE OMITTED.

ANY OF THE COMMANDS THAT SET A CHARACTER CANNOT HAVE A CONFLICT OF CHARACTERS. IF SO, AN ERROR DIAGNOSTIC IS PRINTED AND THE CORRESPONDING COMMAND IGNORED. WITH THE EXCEPTION OF THE TAB CHARACTER, THIS CHARACTER CANNOT OCCUR ELSEWHERE IN THE TEXT.

5.1. TEXT LAYOUT

.DIAGRAM[N[XXXX...XXXX]]

SKIP N LINES TO MANUALLY ENTER A DIAGRAM. IF FEWER THAN N LINES REMAIN ON THE PAGE, THE DIAGRAM IS RETAINED UNTIL A NEW PAGE IS STARTED OR A SECOND DIAGRAM IS REQUESTED. IF A DIAGRAM IS RETAINED, THE INPUT TEXT CONTINUES TO BE PROCESSED AS THOUGH THE DIAGRAM HAD NOT BEEN REQUESTED. THE DIAGRAM NAME XXXX...XXXX, IF ENTERED, WILL BE CENTERED BETWEEN THE LEFT AND RIGHT MARGINS. IT IS ALSO PRINTED IN THE TABLE OF DIAGRAMS, AND MAY CONTAIN ANY VALID CHARACTER. IF THE DIAGRAM NAME IS TOO LONG TO CENTER, IT IS BYPASSED.

SHOULD N BE ZERO OR GREATER THAN THE NUMBER OF LINES PER PAGE, A WHOLE PAGE IS IMMEDIATELY SKIPPED. THE DIAGRAM NAME XXXX...XXXX IS NOT PROCESSED. INPUT TEXT WHICH FOLLOWS A FULL PAGE DIAGRAM SHOULD BE STARTED ON A NEW PAGE BY THE USER.

IF THE CHARACTER STRING IS DESIRED, N MUST BE ENTERED.

.DOUBLE

TURN DOUBLE SPACING, ONE BLANK LINE BETWEEN PRINTED LINES, ON. IF LINE SPACING IS SPECIFIED VIA THE CARRIAGE CONTROL CHARACTER THEN THIS COMMAND IS OVERRIDDEN FOR THAT PRINT LINE. THIS COMMAND IS PUT INTO EFFECT FOR THE NEXT NEW LINE TO BE PRINTED. DEFAULT IS TO SINGLE SPACING.

TEXT LAYOUT COMMANDS

•LEFT[,N]

SET THE LEFT MARGIN TO PRINT POSITION N. N MUST BE IN THE RANGE 2 THROUGH 124, ZERO, OR OMITTED. THERE MAY NEVER BE FEWER THAN TWELVE PRINTABLE POSITIONS BETWEEN THE LEFT AND RIGHT MARGINS INCLUSIVELY. UNDESIRABLE RESULTS MAY OCCUR IF CARE IS NOT TAKEN WHEN CHANGING THE LEFT AND RIGHT MARGINS DURING THE PROCESSING OF THE INPUT TEXT. THIS COMMAND TAKES EFFECT FOR THE CURRENT LINE TO BE PRINTED. IT DEFAULTS TO 10.

•NEWPAGE

IMMEDIATELY ADVANCE TO THE TOP OF A NEW PAGE.

•NUMBER[,N]

SET THE LINES PER INCH AND THE LINES PER PAGE VIA THE N PARAMETER, WHERE N IS:

6 = 6 LINES PER INCH, 57 LINES PER PAGE
8 = 8 LINES PER INCH, 76 LINES PER PAGE
XX = 30 THROUGH 76
8 LINES PER INCH, XX LINES PER PAGE
600 = 6 LINES PER INCH, 57 LINES PER PAGE
6XX = 630 THROUGH 657
6 LINES PER INCH, XX LINES PER PAGE
800 = 8 LINES PER INCH, 76 LINES PER PAGE
8XX = 830 THROUGH 876
8 LINES PER INCH, XX LINES PER PAGE

THE DEFAULT IS 8 LINES PER INCH AND 76 LINES PER PAGE.

•RIGHT[,N]

SET THE RIGHT MARGIN TO PRINT POSITION N. N MUST BE IN THE RANGE 12 THROUGH 136, ZERO, OR OMITTED. THERE MAY NEVER BE FEWER THAN TWELVE PRINTABLE POSITIONS BETWEEN THE LEFT AND RIGHT MARGINS INCLUSIVELY. UNDESIRABLE RESULTS MAY OCCUR IF CARE IS NOT TAKEN WHEN CHANGING THE LEFT AND RIGHT MARGINS DURING THE PROCESSING OF THE INPUT TEXT. IF THE FINAL ARGUMENT WAS USED WHEN CALLING THE PROGRAM, THE RIGHT MARGIN CANNOT BE SET TO THE RIGHT OF PRINT POSITION 80. THIS COMMAND TAKES EFFECT FOR THE CURRENT LINE TO BE PRINTED. IT DEFAULTS TO 80.

•[NO]RTAB

ALL TAB SPECIFICATIONS ARE RELATIVE TO THE LEFT MARGIN. THE LEFT MARGIN IS ZERO, ONE PRINT POSITION TO THE RIGHT OF THE LEFT MARGIN IS ONE, ETC. THESE TYPES OF TABS DO NOT ALLOW THE USER TO SET THE CURRENT PRINT POSITION AS THE TAB POSITION. DEFAULTS TO SPECIFIC PRINT POSITIONS FOR TAB SPECIFICATIONS OR OFF.

•SINGLE

TURN SINGLE SPACING ON. IF LINE SPACING IS SPECIFIED VIA THE CARRIAGE CONTROL CHARACTER THEN THIS OPTION IS OVERRIDDEN FOR THAT PRINT LINE. THIS COMMAND BECOMES EFFECTIVE FOR THE NEXT NEW PRINT LINE. THE DEFAULT IS SINGLE SPACING.

.SKIP,N

SKIP N LINES IMMEDIATELY. N MUST BE IN THE RANGE 1 THROUGH 1/2 THE NUMBER OF LINES PER PAGE. IF N IS NOT IN THIS RANGE, AN ERROR DIAGNOSTIC IS PRINTED AND THE LINE IGNORED. IF FEWER THAN N LINES REMAIN ON THE CURRENT PAGE, THE OUTPUT IS ADVANCED TO THE TOP OF A NEW PAGE.

.TAB,C

SET THE TAB CHARACTER TO C. IF THIS COMMAND IS NOT ISSUED, C DEFAULTS TO \uparrow .

.TRIPLE

TURN TRIPLE SPACING, TWO BLANK LINES BETWEEN EACH PRINTED LINE, ON. IF LINE SPACING IS SPECIFIED VIA THE CARRIAGE CONTROL CHARACTER THEN THIS OPTION IS OVERRIDDEN FOR THAT PRINT LINE. THIS COMMAND BECOMES EFFECTIVE FOR THE NEXT NEW PRINT LINE. DEFAULT IS SINGLE SPACING.

5.2. PROCESSING MODE SETTING

.[NO]CENTER[,M[,N]]

TURN CENTERING MODE ON AND SET THE LEFT MARGIN TO M AND THE RIGHT MARGIN TO N. IF M IS LESS THAN 2, SET IT TO THE CURRENT LEFT MARGIN. IF N IS ZERO OR TO THE RIGHT OF THE RIGHT MARGIN, SET IT TO THE CURRENT RIGHT MARGIN.

EACH LINE OF TEXT THAT FOLLOWS, UNTIL CENTERING IS TURNED OFF, IS READ AND CENTERED BETWEEN M AND N. THE TEXT IS PRINTED EXACTLY AS IT WAS READ WITH CARRIAGE CONTROL. IF THE LINE OF TEXT IS TOO LONG TO CENTER, AN ERROR DIAGNOSTIC IS PRINTED, THE LINE IS TRUNCATED AND PRINTED. THE DEFAULT IS OFF.

COPYING CANNOT BE DONE AT THE SAME TIME. CANNOT REPEAT TEXT WHILE IN CENTERING MODE.

.[NO]COPY

TURN COPY MODE ON. EACH LINE OF TEXT THAT FOLLOWS, UNTIL COPYING IS TURNED OFF, IS PRINTED EXACTLY AS IT WAS READ WITH CARRIAGE CONTROL. IF AN INPUT LINE EXCEEDS THE RIGHT MARGIN, AN ERROR DIAGNOSTIC IS PRINTED AND THE LINE IS TRUNCATED. THE DEFAULT IS OFF.

CENTERING CANNOT BE DONE AT THE SAME TIME. CANNOT REPEAT TEXT WHILE IN COPY MODE.

.[NO]JUSTIFICATION

TURN THE RIGHT MARGIN JUSTIFICATION ON. TAKES EFFECT IMMEDIATELY. DEFAULTS TO OFF.

PROCESSING MODE SETTING COMMANDS

.[NO]PADDING,C

TURN PADDING (NON-TRIVIAL BLANK) ON AND SET THE PADDING CHARACTER TO C. THIS CHARACTER WILL BE REPLACED IN THE PRINT LINE WITH A BLANK. IF THE RIGHT MARGIN IS BEING JUSTIFIED, THIS CHARACTER WILL NOT ALLOW MORE BLANKS TO BE INSERTED BETWEEN WORDS. DEFAULTS TO OFF.

.REPEAT

THE FOLLOWING INPUT LINES, THROUGH THE .UNTIL COMMAND, ARE TO BE REPEATED PER THE PARAMETER ON THE LATTER COMMAND. THE REPETITION OF TEXT CANNOT BE EMBEDDED NOR CAN A MACRO BE DEFINED WITHIN A REPETITION STRING. ALL OTHER COMMANDS ARE VALID INSIDE A REPETITION.

.[NO]SPACE

TURN ON THE EXTRA SPACE AFTER A PERIOD WHICH IS FOLLOWED BY A BLANK. THIS WILL ADD AN EXTRA SPACE WHEN A PERIOD IS FOLLOWED BY A SPACE, LIKE THE END OF THIS SENTENCE. DEFAULTS TO OFF.

.TEXT

TURN TEXT MODE ON. ALL SURSEQUENT NEW PAGES WILL BE NUMBERED. DEFAULT TO OFF.

.UNTIL(N)

THE PRECEDING INPUT LINES, STARTING AFTER THE .REPEAT COMMAND, ARE TO BE REPEATED N TIMES. WHEN N IS ZERO OR OMITTED, IT IS ASSUMED: 1) THAT A MACRO INVOCATION IS A PART OF THE TEXT BEING REPEATED, AND 2) WITHIN THE MACRO DEFINITION INP-M OR VAL-M SPECIFICATIONS ARE USED. TEXT WILL BE ACCEPTED FROM THE CORRESPONDING INPUT DEVICE UNTIL ALL TEXT IS DEPLETED (END-OF-FILE READ). THE ONLY TIME THE USER NEED BE CONCERNED WITH THE END-OF-FILE IS FOR THE INP-M SPECIFICATION. ON A TELETYPE IT IS CONTROL-W AND ON A CRT IT IS #.

5.3. MISCELLANEOUS

.AUTO

TURN AUTOMATIC SECTION NUMBERING ON. THIS OPTION PROVIDES THE USER WITH THE FREEDOM TO MOVE, ADD, OR DELETE SECTIONS AND GENERALLY NOT BE CONCERNED WITH WHETHER OR NOT THE SECTION NUMBERS ARE CORRECT. WHEN IN THIS MODE, SHOULD THE CURRENT PRINT POSITION BE THE SAME AS THE COLUMN SPECIFIED BY THE .SECTION COMMAND THEN THE INPUT LINE IS EXAMINED FOR A SECTION NUMBER LINE. IT IS IDENTIFIED AS FOLLOWS:

<PERIOD>[<PERIOD><PERIOD>...]<SPACE>
 THE SECTION NUMBER CREATED WITH
 THIS INPUT IS

-----	-----
..	1.
..	1.1.
..	1.2.
..	2.
..	2.1.
...	2.1.1.
...	2.1.2.
..	3.

IT SHOULD BE NOTED THAT NO REFERENCE CAN BE MADE TO SECTIONS BY NUMBER WHEN IN THIS MODE. THE TWO SPACES REQUIRED AFTER THE SECTION NUMBER ARE AUTOMATICALLY INSERTED BY THE PROGRAM (SEE .SECTION COMMAND). IT DEFAULTS TO OFF.

.[NO]BREAK,C

TURN BREAK ON AND SET THE CHARACTER, WHERE A BREAK IN A CHARACTER STRING OR WORD MAY OCCUR, TO C. IF A WORD OR CHARACTER STRING WILL EXCEED THE RIGHT MARGIN IT IS PERMISSABLE TO BREAK THE WORD BETWEEN PRINT LINES WHERE C OCCURS. WHEN THE WORD IS FINALLY PRINTED IT APPEARS AS THOUGH C WERE NEVER THERE. DEFAULTS TO OFF.

.DECREMENT[,M[,N]]

DECREMENT COUNTER M BY AMOUNT N. M MUST BE IN THE RANGE 1 THROUGH 9 AND N MUST BE GREATER THAN -1. IF THE VALUE OF COUNTER M DROPS BELOW THE SPECIFIED MINIMUM (SEE .MINIMUM) THEN IT IS SET TO THE MAXIMUM VALUE (SEE .MAXIMUM). M AND N DEFAULT TO 1 IF THEY ARE ZERO OR OMITTED.

.DEFINE XXXX...XXXX

DEFINE THE FOLLOWING INPUT LINES, UNTIL AN .END COMMAND, TO BE THE INPUT LINES TO PROCESS EACH TIME THE MACRO NAMED XXXX...XXXX IS INVOKED. THE MACRO NAME MUST BE CONTIGUOUS ALPHA-NUMERIC CHARACTERS (A-Z, 0-9). *TYPO USES THE FIRST SEVEN CHARACTERS OF XXXX...XXXX TO UNIQUELY DEFINE A MACRO NAME. THE DEFINITION OF A MACRO MUST BE COMPLETED ON ONE INPUT FILE.

.END

END A MACRO DEFINITION.

MISCELLANEOUS COMMANDS

.FOOTNOTE,C[,MODE]

TURN THE FOOTNOTE MODE ON, SET THE FOOTNOTE DELIMITING CHARACTER TO C, AND SET THE MODE FOR PLACEMENT OF THE FOOTNOTES TO PAGE, CHAPTER, OR DOCUMENT. THE FOOTNOTE SHOULD BE ENTERED IMMEDIATELY AFTER THE WORD TO BE REFERENCED AND ENCLOSED IN C*S. FOOTNOTES ARE SEQUENTIALLY NUMBERED FROM 1 THROUGH 3388607 BY THE PROGRAM. TABBING, INDEXING, AND MACROS ARE THE ONLY OPTIONS ALLOWED IN A FOOTNOTE. ANY TAB TO THE LEFT OF THE LEFT MARGIN WILL MERELY START A NEW LINE FOR THE FOOTNOTE. A MAXIMUM OF TEN PRINT LINES ARE ALLOWED FOR EACH FOOTNOTE AND NO FOOTNOTE MAY EXCEED ONE PAGE.

WHEN CHAPTER MODE IS SPECIFIED, A CHAPTER IS DEFINED BY THE FIRST NUMBER IN THE SECTION NUMBER. IF NOT SPECIFIED MODE DEFAULTS TO PAGE. THE INITIAL DEFAULT FOR .FOOTNOTE IS OFF.

.[NO]FTR[,M[,N]] XXXX...XXXX

TURN THE PAGE FOOTER ON SO THE FOOTER STRING XXXX...XXXX WILL BE PRINTED ON ALL SUBSEQUENT PAGES AFTER THE CURRENT ONE. IF PAGE FOOTERS ARE ALREADY BEING PRINTED, THEN THE FOOTER STRING TAKES EFFECT IMMEDIATELY. IT WILL BE PRINTED IN THE POSITION SPECIFIED AS FOLLOWS:

1. START THE FOOTER IN PRINT POSITION M
- ENTER M BUT NOT N.
2. CENTER THE FOOTER BETWEEN PRINT POSITIONS M AND N - ENTER M AND N.
3. CENTER THE FOOTER BETWEEN THE LEFT AND RIGHT MARGINS - DO NOT ENTER EITHER M OR N.

PAGE FOOTERS INITIALLY DEFAULT TO OFF.

.[NO]HDR[,M[,N]] XXXX...XXXX

TURN THE PAGE HEADER ON SO THE HEADER STRING XXXX...XXXX WILL BE PRINTED ON ALL SUBSEQUENT PAGES AFTER THE CURRENT ONE. IF PAGE HEADERS ARE ALREADY BEING PRINTED, THEN THE HEADER STRING TAKES EFFECT IMMEDIATELY. IT WILL BE PRINTED IN THE POSITION SPECIFIED AS FOLLOWS:

1. START THE HEADER IN PRINT POSITION M
- ENTER M BUT NOT N.
2. CENTER THE HEADER BETWEEN PRINT POSITIONS M AND N - ENTER M AND N.
3. CENTER THE HEADER BETWEEN THE LEFT AND RIGHT MARGINS - DO NOT ENTER EITHER M OR N.

PAGE HEADERS INITIALLY DEFAULT TO OFF.

.[NO]HYPHENATION,C

TURN HYPHENATION ON AND SET THE CHARACTER, WHERE HYPHENATION IN A WORD MAY OCCUR, TO C. IF A WORD WILL EXCEED THE RIGHT MARGIN IT IS PERMISSABLE TO HYPHENATE THE WORD WHERE C OCCURS. IF A WORD DOES NOT REQUIRE HYPHENATION IT WILL BE PRINTED AS THOUGH THE C*S WERE NEVER THERE. INITIALLY DEFAULTS TO OFF.

MISCELLANEOUS COMMANDS

.IF,M REL N TEXT

TEST THE RELATIONSHIP, GIVEN BY REL, BETWEEN COUNTER M AND THE VALUE N. IF IT IS TRUE THE TEXT, MACRO INVOCATIONS INCLUDED, IS INSERTED AT THIS POINT. OTHERWISE, IT IS IGNORED AND THE NEXT LINE OF TEXT IS READ. M IS IN THE RANGE 1 THROUGH 9 WHILE N MUST BE POSITIVE. THE VALID RELATIONSHIPS ARE: LT, LE, EQ, GE, GT, OR NE.

.INCREMENT[,M[,N]]

INCREMENT COUNTER M BY AMOUNT N. M MUST BE IN THE RANGE 1 THROUGH 9 AND N MUST BE GREATER THAN -1. IF THE VALUE OF COUNTER M EXCEEDS THE SPECIFIED MAXIMUM (SEE .MAXIMUM) THEN IT IS SET TO THE MINIMUM VALUE (SEE .MINIMUM). M AND N DEFAULT TO 1 IF THEY ARE ZERO OR OMITTED.

.INDEX,C [XXXX...XXXX]

TURN INDEXING ON AND SET THE INDEX DELIMITING CHARACTER TO C. IF THE CHARACTER STRING XXXX...XXXX WITH EMBEDDED BLANKS, IS PRESENT, PUT IT IN THE INDEX TABLE WITH THE CURRENT PAGE NUMBER. TO INCLUDE A CHARACTER STRING FROM THE INPUT TEXT IN THE INDEX, ENCLOSE IT IN C*S. NO MORE THAN TEN CHARACTER STRINGS CAN BE INDEXED IN ONE PRINT LINE. THE MAXIMUM LENGTH FOR ANY CHARACTER STRING BEING INDEXED IS 40 CHARACTERS. WHEN IT IS THE CHARACTER STRING XXXX...XXXX, IT IS IGNORED. OTHERWISE, IT IS TRUNCATED AND USED. INDEXING INITIALLY DEFAULTS TO OFF.

.[NO]ITALICS,C[,N]

TURN ITALICS (OVER-PRINTING) ON, SET THE DELIMITING CHARACTER TO C, AND THE NUMBER OF TIMES TO OVER-PRINT TO N. TO OVER-PRINT A CHARACTER STRING, ENCLOSE THE STRING IN C*S. N DEFAULTS TO 2. THE OPTION DEFAULTS TO OFF.

.[NO]LRI,N]

TURN ON THE TEST FOR TOO FEW LINES REMAINING. ON A PAGE AND SET THE MINIMUM NUMBER OF LINES DESIRED TO N. THE TEST IS MADE FOR EACH LINE OF TEXT TO BE PRINTED THAT HAS A CARRIAGE CONTROL CHARACTER OF DASH (-) OR ZERO. IF THERE ARE TOO FEW LINES THE OUTPUT ADVANCES TO THE TOP OF A NEW PAGE. IF N IS ZERO OR OMITTED, IT IS THE SAME AS USING THE NO KEYWORD. THIS COMMAND TAKES EFFECT IMMEDIATELY. THIS TEST INITIALLY DEFAULTS TO OFF.

.MACRO,C

TURN THE MACRO OPTION ON AND SET THE CHARACTER TO PRECEDE THE MACRO NAME, WHEN INVOKING IT, TO C. INITIALLY DEFAULTS TO OFF.

MISCELLANEOUS COMMANDS

.MAXIMUM[,M[,N]]

DEFINE THE MAXIMUM VALUE FOR COUNTER M TO BE N. IF THE CURRENT VALUE OF COUNTER M EXCEEDS THE NEWLY DEFINED MAXIMUM, RESET IT TO THE MINIMUM (SEE .MINIMUM). M MUST BE IN THE RANGE 1 THROUGH 9 WHILE N IS POSITIVE. M DEFAULTS TO 1 IF IT IS ZERO OR OMITTED. IF THIS COMMAND IS NOT ISSUED, THE VALUE FOR ALL NINE COUNTERS DEFAULTS TO 8388607.

.MINIMUM[,M[,N]]

DEFINE THE MINIMUM VALUE FOR COUNTER M TO BE N. IF THE CURRENT VALUE OF COUNTER M IS LESS THAN THE NEWLY DEFINED MINIMUM, IT IS RESET TO THE MAXIMUM (SEE .MAXIMUM). M MUST BE IN THE RANGE 1 THROUGH 9 AND N MUST BE POSITIVE. M DEFAULTS TO 1 IF IT IS ZERO OR OMITTED. IF THIS COMMAND IS NOT ISSUED, THE VALUE FOR ALL NINE COUNTERS DEFAULTS TO ZERO.

.RELEASE XXXX...XXXX

RELEASE THE USER DEFINED MACRO, NAMED XXXX...XXXX, FROM FURTHER USE. THIS MACRO NAME MUST HAVE BEEN PREVIOUSLY DEFINED.

.RESET[,M]

RESET COUNTER M TO ITS CORRESPONDING MINIMUM VALUE (SEE .MINIMUM). IF M IS ZERO OR OMITTED, ALL NINE COUNTERS WILL BE RESET.

.SECTION[,N]

SET THE PRINT COLUMN TO N WHERE THE SECTION NUMBER FOR A SECTION HEADING IS TO BE PRINTED. IF A SECTION HEADING IS BEING PRINTED IN THE BODY OF THE TEXT IT WILL ALSO BE PRINTED IN THE TABLE OF CONTENTS. SECTION HEADINGS ARE IDENTIFIED IN THE FOLLOWING MANNER:

<NUMBER><PERIOD>[<NUMBER><PERIOD>
<NUMBER>...] <MINIMUM OF TWO SPACES>
<SECTION HEADING>

ALL SECTION NUMBERS ARE CHECKED FOR SEQUENCE. IF ONE IS OUT-OF-SEQUENCE OR DUPLICATED AN ERROR DIAGNOSTIC IS PRINTED AND PROCESSING CONTINUES. IF THE COMMAND IS NOT ISSUED OR N IS ZERO OR OMITTED, N DEFAULTS TO PRINT POSITION 10.

MISCELLANEOUS COMMANDS

5.4. PRODUCING BOXES

.BOX(L,H[,C1[,C2...[,C20]]])

DEFINE A BOX STARTING IN LINE L (THERE WILL BE L-1 LINES BETWEEN THE LAST LINE OF TEXT AND THE TOP OF THE BOX WHEN DRAWN), WITH H LINES FOR THE HEIGHT OF THE BOX. VERTICAL COLUMNS ARE TO BE DRAWN AT C1, C2, ..., C20. THEY MUST BE IN ASCENDING ORDER. THE COLUMNS ARE TREATED THE SAME AS THOUGH THEY ARE TAB SPECIFICATIONS. WHEN THE BOXES ARE TO BE DRAWN (SEE .DRAW), A NEW PAGE WILL BE STARTED IF THE LARGEST BOX CURRENTLY DEFINED WILL NOT FIT ON THE CURRENT PAGE. THE PARAMETER DEFAULT VALUES ARE: L=1, H=10, C1=LEFT MARGIN, AND C2=RIGHT MARGIN. C3 THROUGH C20 HAVE NO DEFAULT VALUES. H SHOULD NOT EXCEED THE NUMBER OF LINES PER PAGE, MINUS TWO LINES, MINUS THREE LINES EACH FOR A PAGE HEADER AND PAGE FOOTER.

.DRAW

DRAW THE PREVIOUSLY DEFINED BOX(ES). IF BOXES ARE TO BE NESTED INSIDE OF ONE ANOTHER, THIS COMMAND SHOULD NOT BE ISSUED UNTIL AFTER THE LAST BOX HAS BEEN DEFINED AND TEXT ENTERED. ALL BOX DEFINITIONS ARE ERASED AFTER THEY HAVE BEEN DRAWN.

.ERASE

ERASE THE INSIDE OF THE BOX THAT WAS JUST DEFINED. THE ONLY PURPOSE OF THIS COMMAND IS TO ERASE ANY COLUMNS OF A LARGE BOX PASSING THROUGH A SMALLER BOX WHICH IS INSIDE.

.PUT,L,C TEXT

PUT THE TEXT INSIDE OF THE BOX THAT WAS JUST DEFINED. THE TEXT IS TO START ON LINE L AND AT TAB POSITION C INSIDE OF THE BOX. LINE L=1 IS THE FIRST LINE BELOW THE TOP OF A BOX. L CANNOT EXCEED THE HEIGHT OF THE BOX MINUS TWO. THE TAB POSITION IS TREATED THE SAME AS THE TAB SPECIFICATIONS. IT MUST BE IN BETWEEN THE LEFT SIDE AND THE RIGHT SIDE OF THE BOX. THE ONLY SPECIAL OPTION AVAILABLE IN THE TEXT IS A TAB SPECIFICATION. IF A CHARACTER STRING EXCEEDS THE RIGHT SIDE OF A BOX IT IS STARTED AT THE LEFT SIDE AND IN THE NEXT LINE DOWN.

COMMANDS TO PRODUCE BOXES

5.5. COMMAND RESUME

.AUT	NUMBER SECTIONS
.BOX	DEFINE A BOX
.DEC	DECREMENT COUNTER
.DEF	DEFINE MACRO
.DI	DEFINE A DIAGRAM
.DO	DOUBLE SPACING ON
.DRA	DRAW BOXES
.END	END MACRO
.ERA	ERASE INSIDE OF BOX
.FO	FOOTNOTE MODE ON
.IF	TEST COUNTER (CONDITIONAL TEXT)
.INC	INCREMENT COUNTER
.IND	INDEX WORDS ON
.LE	SET LEFT MARGIN
.MAC	MACRO ON
.MAX	SET MAXIMUM VALUE FOR COUNTER
.MIN	SET MINIMUM VALUE FOR COUNTER
.NE	START NEW PAGE
.NU	SET LINES PER INCH AND LINES PER PAGE
.PUT	PUT TEXT INSIDE OF BOX
.REL	RELEASE MACRO
.REP	REPEAT TEXT
.RES	RESET COUNTER
.RI	SET RIGHT MARGIN
.SE	SECTION NUMBER COLUMN
.SI	SINGLE SPACING ON
.SK	SKIP N LINES
.TA	SET TAB CHARACTER
.TE	START TEXT
.TR	TRIPLE SPACING ON
.UN	END TEXT REPETITION
.NO	TURN OFF THE FOLLOWING COMMANDS (E.G., .NOJU)
.BR	BREAK ON
.CE	CENTERING ON
.CO	COPY ON
.FI	PAGE FOOTER ON
.HO	PAGE HEADER ON
.HY	HYPHENATION ON
.IT	ITALICS ON
.JU	JUSTIFICATION ON
.LR	LINES REMAINING
.PA	PADDING ON
.RT	RELATIVE TABS ON
.SP	EXTRA SPACE ON

COMMAND RESUME

6. TAB SPECIFICATION

THE ABILITY TO BUILD TABLES, FORM A LEFT MARGIN (TO THE RIGHT OF THE LEFT MARGIN DEFINED WITH THE .LEFT COMMAND), OR INDENT THE BEGINNING OF A PARAGRAPH CAN BE ACCOMPLISHED BY USING A TAB SPECIFICATION. IT IS DEFINED AS FOLLOWS:
 <SPACE><TAB CHARACTER><1-3 DIGIT NUMBER><TAB CHARACTER>

THE NUMBER IS INTERPRETED TO MEAN ONE OF THE FOLLOWING:

- I. WHEN TABS ARE NOT RELATIVE TO THE LEFT MARGIN:
 1. THE PRINT POSITION OR COLUMN (NOT RELATIVE TO THE LEFT MARGIN) TO MOVE TO --
 2. THE NUMBER OF PRINT POSITIONS TO SKIP TO THE RIGHT --
 3. THE NEW TAB AND PRINT POSITION TO BE DEFINED AS:
 - A. THE PRECEDING PRINT POSITION --
 - B. THE CURRENT PRINT POSITION --
- II. WHEN TABS ARE RELATIVE TO THE LEFT MARGIN:
 1. TAB TO THE RIGHT OF THE LEFT MARGIN BY THIS AMOUNT --
 2. THE NUMBER OF PRINT POSITIONS TO SKIP TO THE RIGHT --
 - BEFORE PRINTING THE TEXT THAT FOLLOWS.

THE COLUMN MUST BE IN THE RANGE 3 THROUGH 136 OR 201 THROUGH 299. THE CORRESPONDING MEANING FOR EACH IS:

WHEN THE TAB IS NOT RELATIVE TO THE LEFT MARGIN:

0	DEFINE THE TAB POSITION AND PRINT POSITION TO BE THE PRECEDING PRINT POSITION (NO BLANK WILL OCCUR BETWEEN THE PRECEDING CHARACTER STRING AND THE CHARACTER STRING TO FOLLOW). A NEW LINE WILL NOT BE STARTED WHEN THIS TAB IS SPECIFIED.
1	DEFINE THE TAB POSITION TO BE THE CURRENT PRINT POSITION.
2-136	DEFINE THE STANDARD TAB POSITION AND CURRENT PRINT POSITION TO BE THE COLUMN SPECIFIED. A TAB BEYOND THE RIGHT MARGIN INITIATES AN ERROR DIAGNOSTIC AND THE TAB AND PRINT POSITION ARE SET TO THE CURRENT LEFT MARGIN.

WHEN THE TAB IS RELATIVE TO THE LEFT MARGIN:

0-134	DEFINE THE STANDARD TAB POSITION AND CURRENT PRINT POSITION TO BE TO THE RIGHT OF THE CURRENT LEFT MARGIN BY THE SPECIFIED AMOUNT. A RESULTING TAB BEYOND THE RIGHT MARGIN INITIATES AN ERROR DIAGNOSTIC AND THE TAB AND PRINT POSITION ARE SET TO THE CURRENT LEFT MARGIN.
-------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

REGARDLESS OF THE TYPE OF TAB:

201-299	INDENT 2XX MINUS 200 CHARACTERS BEYOND THE CURRENT PRINT POSITION. IF IT GOES BEYOND THE RIGHT MARGIN, A NEW LINE IS STARTED WITH NO INDENTATION. IF THE USER WANTS NN SPACES BETWEEN TWO WORDS, USE A TAB OF 2XX, WHERE: XX=NN-1.
---------	------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

WHEN A NEW LINE IS STARTED THE FIRST PRINT POSITION IS THE RIGHT MOST OF THE LAST TAB SPECIFICATION OR THE LEFT MARGIN. ONCE A TAB HAS BEEN SET TO THE RIGHT OF THE LEFT MARGIN, IT CONTINUES TO BE USED FOR EACH NEW PRINT LINE UNTIL A NEW TAB IS SPECIFIED. THE INDENTATION TAB IS MERELY TEMPORARY AND THE STANDARD TAB IS REVERTED TO WHEN A NEW LINE IS STARTED. IF A TAB IS SPECIFIED WHICH DOES NOT LEAVE ENOUGH PRINT

POSITIONS THROUGH THE RIGHT MARGIN, AN ERROR DIAGNOSTIC IS PRINTED AND THE WORD IS STARTED AT THE LEFT MARGIN. IF JUSTIFICATION IS IN EFFECT, THEN ONLY THE TEXT AFTER THE LAST TAB IS JUSTIFIED.

7. MACRO DEFINITION

A MACRO PROVIDES THE USER WITH THE EASE OF TYPING TEXT ONCE THAT IS TO BE REPEATED TWO OR MORE TIMES THROUGHOUT THE BODY OF THE TEXT. ALL INPUT LINES BETWEEN THE .DEFINE AND .END COMMANDS MAKE UP A MACRO. THESE INPUT LINES CAN BE: 1) ANY COMMAND EXCEPT .REPEAT, .UNTIL, OR .DEFINE, OR 2) A LINE OF TEXT WITH TABS, MACRO INVOCATIONS, ETC. WHEN A MACRO INVOCATION HAS A PARAMETER STRING, THERE ARE THREE RESERVED MACRO NAMES TO USE IN THE MACRO DEFINITION WHICH INDICATE THE SOURCE OF THE INPUT TEXT THAT IS TO BE INSERTED AT THAT POINT IN THE MACRO. THE LIMIT OF TEN, AS DESCRIBED UNDER MACRO INVOCATION, DOES NOT APPLY TO THESE RESERVED MACRO NAMES. THEY ARE:

1. **PAR-M**, WHERE M IS 1 THROUGH 9.
INSERT THE MTH PARAMETER STRING FROM THE MACRO INVOCATION IN THE TEXT AT THIS POINT IN THE MACRO.
2. **INP-M**, WHERE M IS 1 THROUGH 9.
THIS SPECIFICATION OPERATES IN AN INTERACTIVE MODE. THE MTH PARAMETER STRING FROM THE MACRO INVOCATION IS PRINTED ON THE TERMINAL. ONE INPUT LINE OF TEXT, WITHOUT CARRIAGE CONTROL, IS THEN READ FROM THE TERMINAL AND INSERTED IN THE TEXT AT THIS POINT IN THE MACRO. A BACKSLASH MAY BE USED TO CORRECT INPUT ERRORS.
3. **VAL-M**, WHERE M IS 1 THROUGH 9.
ONE INPUT LINE OF TEXT, WITHOUT CARRIAGE CONTROL, IS READ FROM THE VALUE FILE AND INSERTED IN THE TEXT AT THIS POINT IN THE MACRO. IF A VALUE FILE HAS NOT BEEN DEFINED, AN ERROR DIAGNOSTIC IS PRINTED AND PROCESSING CONTINUES AS THOUGH NO TEXT IS TO BE INSERTED.

MACRO INVOCATIONS MAY OCCUR IN THE TEXT BEING SUPPLIED FOR THE SPECIFICATIONS ABOVE. THE ONLY RESTRICTION IS THE INVOCATION MUST BE THE LAST ELEMENT IN THE LINE. IF ANYTHING FOLLOWS IT, THAT INFORMATION WILL BE IGNORED. THIS IS THE TECHNIQUE TO USE TO SYNTACTICALLY DIRECT THE TEXT.

THE **INP-M** OR **VAL-M** SPECIFICATIONS SHOULD NOT BOTH BE IN THE SAME INPUT TEXT. ANY NUMBER OF OCCURENCES OF THE **VAL-M** SPECIFICATION MAY BE USED IN A MACRO DEFINITION BUT M MUST BE IN THE RANGE INDICATED.

8. MACRO INVOCATION

ANY TIME A MACRO IS INVOKED, THE CORRESPONDING TEXT AND LAYOUT SPECIFICATIONS ARE INSERTED IN THE OUTPUT TEXT. THE MACRO INVOCATION IS IDENTIFIED AS FOLLOWS:

```
<MACRO CHARACTER><MACRO NAME>
<SPACE/PERIOD/COMMA/SEMI-COLON/COLON/PARENTHESIS>
OR
<MACRO CHARACTER><MACRO NAME><[PARAMETERS]>
<SPACE/PERIOD/COMMA/SEMI-COLON/COLON/PARENTHESIS>
```

THE MACRO CHARACTER MUST HAVE ALREADY BEEN DEFINED WITH THE .MACRO COMMAND, AND THE MACRO NAME WITH THE .DEFINE COMMAND. IF THERE ARE PARAMETERS THEY MUST BE ENCLOSED IN THE BRACKETS. THE COMPLETE INVOCATION CANNOT EXCEED ONE INPUT LINE. THERE ARE THREE TYPES OF PARAMETERS, EACH ONE BEING SEPARATED BY A COMMA:

1. CONTIGUOUS CHARACTER STRING, NO EMBEDDED BLANKS OR COMMAS ARE ALLOWED (E.G., CONTIGUOUSCHARACTERSTRING).
2. CHARACTER STRING, NO EMBEDDED QUOTES ARE

3. ALLOWED (E.G., #CHARACTER STRING, ABCDEF#).
MACRO INVOCATION WITH PARAMETERS, ALSO INCLUDED
IN THE LIMIT OF TEN INVOCATIONS.

NO EMBEDDED BLANKS ARE ALLOWED IN A MACRO INVOCATION EXCEPT AS INDICATED IN (2) ABOVE. A MACRO MAY INVOKE OTHER MACROS BUT CANNOT INVOKE ITSELF DIRECTLY OR VIA ANOTHER MACRO. THE MAXIMUM NUMBER OF MACRO INVOCATIONS FROM ONE MACRO TO ANOTHER IS TEN. THREE SYSTEM MACRO NAMES ARE AVAILABLE:

1. DATE, USES THE SYSTEM DATE OR CURRENT DATE (E.G., 11/12/76).
2. XDATE, USES DATE AND EXPANDS IT (E.G., NOVEMBER 12, 1976).
3. TIME, USES THE SYSTEM TIME OR CURRENT TIME (E.G., 10:25 AM).

A USER DEFINED MACRO WITH THE SAME NAME AS A SYSTEM MACRO OVERRIDES THE LATTER. OTHERWISE, THE FIRST SEVEN CHARACTERS OF A MACRO NAME MUST BE UNIQUE (SEE MACRO DEFINITION FOR RESERVED MACRO NAMES).

9. PRINTING THE COUNTERS

A SPECIAL MACRO IS AVAILABLE FOR THE USER TO PRINT THE COUNTERS AVAILABLE IN *TYPO (SEE .DECREMENT, .INCREMENT, .MAXIMUM, .MINIMUM, AND .RESET). PRT-M, WHERE M IS 1 THROUGH 9, IS THE NAME OF THE MACRO TO USE. M SPECIFIES WHICH COUNTER TO PRINT AS AN INTEGER WITH LEADING ZEROS SUPPRESSED. THE LIMIT OF TEN INVOCATIONS APPLIES TO THIS MACRO ALSO.

10. EXAMPLES OF INPUT/OUTPUT

OTHER THAN THE FACT THAT THE FOLLOWING INPUT LINES ARE SHORTER THAN THE ALLOWABLE SIZE OF 100 CHARACTERS, THESE EXAMPLES WILL AID THE USER IN VISUALIZING THE PRINTED TEXT THAT IS PRODUCED FROM THE SAMPLE INPUT.

10.1. BASIC EXAMPLE

10.1.1. INPUT

```

.FOOTNOTE,%PAGE
.ITALICS,>
.JUSTIFICATION
.INDEX,<
.AUTO
.RTAB
.HYPHENATION,+
.TEXT
0 ↑0↑... OUTPUT
0 ↑10↑ONCE A <TAB< IS SET PRIOR TO A PARAGRAPH IT NEED NOT
BE RESET BECAUSE IT CONTINUES TO BE IN EFFECT UNTIL A NEW
<TAB< IS SET.
0 ↑20↑THIS PARAGRAPH IS INDENTED INSTEAD OF BEING IN BLOCK
FORM AS WAS USED THROUGHOUT THIS MANUAL. THE LAYOUT
SPEC↑I↑FI↑CA↑TIONS FOR A TABLE WITH COLUMNS IS VERY
EASY TO SET UP AS FOLLOWS:
L ↑20↑A ↑30↑1 ↑20↑B ↑30↑2 ↑20↑C ↑30↑3 ↑20↑D ↑30↑4 ↑20↑E ↑30↑5
0 ↑10↑A DIAGRAM WHICH HAS A NAME TO PUT IN THE TABLE OF
DIAGRAMS WILL FOLLOW THIS SENTENCE (THE DIAGRAM HAS SIX
LINES).
.DIAGRAM 6 SAMPLE DIAGRAM
LA DIAGRAM SHOULD BE ABOVE THIS SENTENCE UNLESS IT WAS HELD.
ANOTHER OPTION TO SHOW IS OVER-PRINTING. THE FOLLOWING
CHARACTER STRING IS OVER-PRINTED: >OVER-PRINTED CHARACTER
STRING>. FOOTNOTES %FOOTNOTE EXAMPLE% ARE VERY USEFUL
WHEN PREPARING A MANUSCRIPT. SO MUCH FOR THE BASIC EXAMPLE.
THE THINGS SHOWN HERE SHOULD HELP THE USER PICK UP THE
OTHER AVAILABLE OPTIONS AND BECOME MORE SOPHISTICATED IN
DEVELOPING MANUSCRIPTS.
    
```

10.1.2. OUTPUT

ONCE A TAB IS SET PRIOR TO A PARAGRAPH IT NEED NOT BE RESET BECAUSE IT CONTINUES TO BE IN EFFECT UNTIL A NEW TAB IS SET.

THIS PARAGRAPH IS INDENTED INSTEAD OF BEING IN BLOCK FORM AS WAS USED THROUGHOUT THIS MANUAL. THE LAYOUT SPECIFICATIONS FOR A TABLE WITH COLUMNS IS VERY EASY TO SET UP AS FOLLOWS:

A	1
B	2
C	3
D	4
E	5

A DIAGRAM WHICH HAS A NAME TO PUT IN THE TABLE OF DIAGRAMS WILL FOLLOW THIS SENTENCE (THE DIAGRAM HAS SIX LINES).

SAMPLE DIAGRAM

A DIAGRAM SHOULD BE ABOVE THIS SENTENCE UNLESS IT WAS HELD. ANOTHER OPTION TO SHOW IS OVER-PRINTING. THE FOLLOWING CHARACTER STRING IS OVER-PRINTED: OVER-PRINTED CHARACTER STRING. FOOTNOTES [1] ARE VERY USEFUL WHEN PREPARING A MANUSCRIPT. SO MUCH FOR THE BASIC EXAMPLE. THE THINGS SHOWN HERE SHOULD HELP THE USER PICK UP THE OTHER AVAILABLE OPTIONS AND BECOME MORE SOPHISTICATED IN DEVELOPING MANUSCRIPTS.

 [1] FOOTNOTE EXAMPLE

10.2. MACRO EXAMPLE

10.2.1. INPUT

```
.MACRO,$
.DEFINE LETTER
.SKIP 4
↑20↑DEAR $PAR-1;
.SPACE
0 ↑204↑THIS QUESTIONNAIRE IS BEING DISTRIBUTED TO
STUDENTS IN THE SCHOOL OF ↑PAR-2, ENROLLED IN
$PAR-3.
0 ↑204↑YOUR COOPERATION IN RESPONDING BY $PAR-4,
WOULD BE MUCH APPRECIATED. PLEASE TURN THE
QUESTIONNAIRE INTO THE SCHOOL OFFICE.
-SINCERELY YOURS,
.SKIP 2
.NOSPACE
-S. DEAN
.END
$LETTER[↑JOE COOL↑,SCIENCE,↑CS 420↑,↑NOV. 30, 1976↑]
$LETTER[↑SANDY BEACH↑,BUSINESS,↑BA 350↑,↑NOV 30, 1976↑]
```

10.2.2. OUTPUT

DEAR JOE COOL:

THIS QUESTIONNAIRE IS BEING DISTRIBUTED TO STUDENTS IN THE
SCHOOL OF SCIENCE, ENROLLED IN CS 420.

YOUR COOPERATION IN RESPONDING BY NOV. 30, 1976, WOULD
BE MUCH APPRECIATED. PLEASE TURN THE QUESTIONNAIRE INTO THE
SCHOOL OFFICE.

SINCERELY YOURS,

S. DEAN

DEAR SANDY BEACH:

THIS QUESTIONNAIRE IS BEING DISTRIBUTED TO STUDENTS IN THE
SCHOOL OF BUSINESS, ENROLLED IN BA 350.

YOUR COOPERATION IN RESPONDING BY NOV 30, 1976, WOULD BE
MUCH APPRECIATED. PLEASE TURN THE QUESTIONNAIRE INTO THE
SCHOOL OFFICE.

SINCERELY YOURS,

S. DEAN

10.3. SYNTAX DIRECTED TEXT EXAMPLE

10.3.1. INFUT

```
.MACRO,$
.DEFINE PASTDUE
.SKIP 9
↑20↑$XDATE
.SKIP 2
$PAR-1
.END
.DEFINE PAST30
.NOSPACE
↑20↑DEAR $PAR-1:
.SPACE
OUR RECORDS SHOW THAT YOU HAVE NOT MADE A PAYMENT IN THE
LAST THIRTY DAYS. WE WOULD APPRECIATE A PAYMENT OF ANY SIZE
YOU CAN AFFORD AT THIS TIME.
IF YOU HAVE ALREADY SUBMITTED A PAYMENT PLEASE ACCEPT OUR
APOLOGIES.
-SINCERELY YOURS,
.SKIP 3
JOHN DOE, DELINQUENT ACCOUNTS, MGR.
.END
.DEFINE PAST60
↑20↑DEAR $PAR-1:
SINCE YOU DO NOT SEEM WILLING TO MAKE AN ATTEMPT TO PAY
EVEN A SMALL AMOUNT ON YOUR ACCOUNT, WE ARE GIVING YOUR
RECORDS TO OUR COLLECTION LAWYER. YOU SHOULD BE HEARING
FROM US FURTHER IN THE NEXT FEW DAYS.
-SINCERELY YOURS,
.SKIP 3
JOHN DOE, DELINQUENT ACCOUNTS, MGR.
.END
$PASTDUE[{$PAST60[≠MR. SMITH≠]]
$PASTDUE[{$PAST30[≠MS. BROWN≠]]
```

OSU - *TYPO

10.3.2. OUTPUT

JANUARY 18, 1977

DEAR MR. SMITH:

SINCE YOU DO NOT SEEM WILLING TO MAKE AN ATTEMPT TO PAY EVEN A SMALL AMOUNT ON YOUR ACCOUNT, WE ARE GIVING YOUR RECORDS TO OUR COLLECTION LAWYER. YOU SHOULD BE HEARING FROM US FURTHER IN THE NEXT FEW DAYS.

SINCERELY YOURS,

JOHN DOE, DELINQUENT ACCOUNTS, MGR.

JANUARY 18, 1977

DEAR MS. BROWN:

OUR RECORDS SHOW THAT YOU HAVE NOT MADE A PAYMENT IN THE LAST THIRTY DAYS. WE WOULD APPRECIATE A PAYMENT OF ANY SIZE YOU CAN AFFORD AT THIS TIME.

IF YOU HAVE ALREADY SUBMITTED A PAYMENT PLEASE ACCEPT OUR APOLOGIES.

SINCERELY YOURS,

JOHN DOE, DELINQUENT ACCOUNTS, MGR.

11. USAGE HINTS

1. USE A MINIMUM OF THE FIRST FOUR CHARACTERS OF THE COMMANDS IN CASE THE FUTURE VERSIONS OF *TYPO NEED FURTHER CLARIFICATION OF A COMMAND.
2. AVOID USING PADDING, IT'S TIME CONSUMING.
3. USE AUTOMATIC SECTION NUMBERING.
4. DO NOT CHANGE THE NUMBER OF LINES PER INCH.
5. DO NOT ALTER THE LEFT AND/OR RIGHT MARGINS UNLESS EXTREME CARE IS TAKEN.
6. DO NOT USE MACROS FOR SHORT STRINGS OF TEXT.
7. THE RIGHT MARGIN JUSTIFICATION IMPROVES THE FINAL DRAFT APPEARANCE SO MUCH THAT HYPHENATION IS NOT REALLY NECESSARY.
8. SEVEN CHARACTERS ARE QUITE ADEQUATE FOR A UNIQUE MACRO NAME, SO AVOID RELEASING MACROS.
9. CANNOT SKIP A FULL PAGE IMMEDIATELY AFTER ENTERING TEXT MODE.
10. DO NOT START PRINT LINES IN THE SAME PRINT POSITION AS SECTION HEADING NUMBERS ARE IN CASE THE TEXT HAPPENS TO HAVE A NUMBER IN THE SAME FORM AS A SECTION NUMBER. THAT LINE OF TEXT WILL BE PROCESSED AS THOUGH IT IS A SECTION HEADING LINE.
11. DO NOT INDEX A PART OF A WORD.
12. CHANGES CAN BE MADE MORE EASILY IF ALL 100 CHARACTERS OF THE INPUT LINE ARE NOT USED.

12. SUMMARY

I BELIEVE THE USER WILL FIND THE TOTAL WORD PROCESSING CAPABILITIES PROVIDED WITH EDIT AND *TYPO TO BE MOST ADVANTAGEOUS IN THE DEVELOPMENT OF DOCUMENTATION. THE EASE WITH WHICH PORTIONS OF THE DOCUMENT MAY BE CHANGED, ADDED TO, OR DELETED WILL ELIMINATE MUCH FRUSTRATION.

13. THE FUTURE

WORD PROCESSING WILL CONTINUE TO GROW IN THE FUTURE AS SALARIES INCREASE. LARGE VOLUME MAILINGS ARE BROUGHT BACK INTO SCOPE WITH THE POWER THAT WORD PROCESSING AFFORDS. IT IS MY HOPE THAT THE FUTURE OF *TYPO AT OREGON STATE UNIVERSITY WILL SEE UPPER AND LOWER CASE CHARACTERS IN ADDITION TO NEW INOVATIONS THAT WILL COME ALONG.

14. ERROR MESSAGE PROCESSING

AS THE INPUT TEXT IS BEING PROCESSED, THERE ARE LIMITATIONS THAT ARE CHECKED FOR AND IF THEY'RE EXCEEDED AN ERROR DIAGNOSTIC IS PRINTED. AFTER EACH DIAGNOSTIC THE APPROXIMATE INPUT LINE NUMBER AND THE ACTUAL LINE OF TEXT ARE PRINTED. THE DIAGNOSTICS ARE PROCESSED AS INFORMATIVE MESSAGES IN THAT THE PROCESSING OF TEXT CONTINUES AS MUCH AS POSSIBLE AS THOUGH THE ERROR NEVER OCCURRED. A BRIEF DESCRIPTION OF THE ERROR RECOVERY WILL BE GIVEN SO THE USER WILL KNOW WHAT TO EXPECT IN THE PRINTED TEXT.

14.1. ERROR DIAGNOSTICS

ERROR DIAGNOSTIC

MEANING OF ERROR DIAGNOSTIC: RECOVERY PROCEDURE

- (0) CONFLICTING CHARACTERS FOR .TA() .IT() .HY() .BR() .PA()
.FO() .MAC() .IND()
THE CHARACTER DEFINED BY .TAB, .ITALIC, .HYPHENATION, .BREAK, .PADDING, .FOOTNOTE, .MACRO, OR .INDEX CANNOT CONFLICT WITH ANOTHER CHARACTER ALREADY DEFINED AND CURRENTLY ACTIVE: THE COMMAND IS IGNORED.
- (0) INVALID CHARACTER FOR .TA() .IT() .HY() .BR() .PA()
.FO() .MAC() .IND()
THE CHARACTER DEFINED FOR .TAB, .ITALIC, .HYPHENATION, .BREAK, .PADDING, .FOOTNOTE, .MACRO, OR .INDEX CANNOT BE A COMMA OR PERIOD: THE COMMAND IS IGNORED.
- (1) TOO MANY WORDS TO INDEX IN PRINT LINE
A MAXIMUM OF TEN (10) CHARACTER STRINGS CAN BE INDEXED IN EACH PRINT LINE: CHARACTER STRING NOT INDEXED.
- (2) BAD TAB
THE SPECIFIED TAB POSITION IS NOT IN THE RANGE 0 THROUGH THE RIGHT-HAND MARGIN OR 201 THROUGH 299: TAB POSITION SET TO LEFT-HAND MARGIN.
- (3) DUPLICATE SECTION NUMBER
THE CURRENT SECTION NUMBER IS THE SAME AS THE LAST ONE: CONTINUE PROCESSING.
- (4) SECTION NUMBER OUT-OF-SEQUENCE
THE CURRENT SECTION NUMBER IS SMALLER THAN THE LAST ONE: CONTINUE PROCESSING.
- (5) NO TABLE OF CONTENTS LUN
THERE ARE SECTION HEADINGS TO PRINT BUT THERE IS NO FILE TO PRINT THEM ON: DO NOT PRINT THE SECTION HEADING IN THE TABLE OF CONTENTS AND CONTINUE PROCESSING.
- (6) ILLEGAL COMMAND
THE COMMAND THAT WAS ISSUED DOES NOT MATCH ANY OF THE COMMANDS AS DEFINED IN THIS MANUAL: IGNORE THE COMMAND.
- (7) PAGE SKIP NOT ALLOWED OUTSIDE OF TEXT MODE
A FULL PAGE DIAGRAM CANNOT BE SPECIFIED BEFORE ENTERING TEXT MODE: COMMAND IGNORED.

ERROR DIAGNOSTICS

- (8) INVALID LEFT MARGIN
THE LEFT MARGIN SPECIFIED IS NOT IN THE RANGE 2 THROUGH 125 OR THERE ARE FEWER THAN 12 PRINT POSITIONS BETWEEN THE LEFT AND RIGHT MARGIN INCLUSIVELY: SET THE LEFT MARGIN TO THE SMALLER OF THE TWO 1) TEN, OR 2) RIGHT MARGIN MINUS 11.
- (9) INVALID LINES REMAINING
THE MINIMUM NUMBER OF LINES REMAINING IS BEING SET TO A NUMBER LESS THAN ZERO OR GREATER THAN THE NUMBER OF LINES PER PAGE: IGNORE THE COMMAND
- (10) INVALID RIGHT MARGIN
THE RIGHT MARGIN SPECIFIED IS NOT IN THE RANGE 12 THROUGH 136 OR THERE ARE FEWER THAN 12 PRINT POSITIONS BETWEEN THE LEFT AND RIGHT MARGIN INCLUSIVELY: SET THE RIGHT MARGIN TO THE LARGER OF THE TWO 1) LEFT MARGIN PLUS 11, OR 2) 80.
- (11) INVALID MARGINS
THE RIGHT MARGIN IS TO THE LEFT OF THE LEFT MARGIN AS SPECIFIED BY .CENTER, .FTR, OR .HDR: IGNORE THE COMMAND.
- (12) CANNOT CENTER AND COPY AT THE SAME TIME
CANNOT HAVE .CENTER IMBEDDED INSIDE OF A .COPY OR VICE VERSA: COMMAND IGNORED.
- (13) NO TAB CHARACTER
.TAB ISSUED WITHOUT A CHARACTER: DEFAULT TO ↑.
- (14) INVALID LINES/INCH /PAGE
THE LINES PER INCH AND THE LINES PER PAGE SPECIFIED WAS NOT 6, 8, 30-76, 600, 630-657, 800, OR 830-876: DEFAULT TO 8 LINES PER INCH AND 76 LINES PER PAGE.
- (15) ITALICS STRING CURRENTLY BEING PRINTED
A .NOITALICS COMMAND WAS ISSUED AFTER THE BEGINNING OF A STRING TO BE OVER-PRINTED AND BEFORE THE END OF THAT STRING: IGNORE THE COMMAND.
- (16) NO ITALICS DELIMITER CHARACTER
NO CHARACTER WAS SPECIFIED ON THE .ITALICS COMMAND: IGNORE THE COMMAND.
- (17) INVALID COLUMN FOR SECTION HEADING
THE PRINT COLUMN SPECIFIED ON A .SECTION COMMAND WAS NOT IN THE RANGE 2 THROUGH THE RIGHT MARGIN MINUS 1: SET THE PRINT COLUMN TO 10, THE DEFAULT VALUE.
- (18) NO FOOTNOTE DELIMITER CHARACTER
NO CHARACTER WAS SPECIFIED TO DELIMIT ALL FOOTNOTES: IGNORE THE COMMAND.
- (19) NO PADDING CHARACTER
NO CHARACTER WAS SPECIFIED FOR PADDING: IGNORE THE COMMAND.
- (20) NO HYPHENATION CHARACTER
NO CHARACTER WAS GIVEN TO INDICATE WHERE HYPHENATION MAY OCCUR IN A WORD: IGNORE THE COMMAND.

ERROR DIAGNOSTICS

OSU - *TYPO

- (21) NO BREAK CHARACTER
NO CHARACTER WAS GIVEN TO INDICATE WHERE A BREAK MAY OCCUR IN A CHARACTER STRING: IGNORE THE COMMAND.
- (22) NO INDEX CHARACTER
NO CHARACTER WAS GIVEN TO BE USED AS DELIMITERS FOR CHARACTER STRINGS THAT ARE BEING INDEXED: IGNORE THE COMMAND.
- (23) NO MACRO CHARACTER
NO CHARACTER WAS GIVEN TO BE USED AS THE FIRST CHARACTER OF THE MACRO NAME WHEN INVOKING IT: IGNORE THE COMMAND.
- (24) ILLEGAL MACRO CHARACTER
THE MACRO CHARACTER CANNOT BE A COLON, SEMI-COLON, ZERO, DASH, ONE, OR L: IGNORE THE COMMAND.
- (25) INVALID MACRO NAME
THE FIRST CHARACTER OF THE MACRO NAME AS GIVEN IN THE .DEFINE COMMAND MUST BE A-Z OR 0-9: IGNORE THE COMMAND AND SCAN THE INPUT TEXT TO A .END.
- (26) NO MACRO NAME
NO NAME WAS GIVEN FOR THE MACRO IN THE .DEFINE COMMAND: IGNORE THE COMMAND AND SCAN THE INPUT TEXT TO A .END.
- (27) DUPLICATE MACRO NAME
THE CURRENT MACRO NAME AS GIVEN ON THE .DEFINE COMMAND IS THE SAME AS ONE ALREADY DEFINED: IGNORE THE COMMAND AND SCAN THE INPUT TEXT FOR A .END.
- (28) EMBEDDED MACRO DEFINITION
A .DEFINE WAS ISSUED BEFORE A .END: IGNORE THE COMMAND AND SCAN THE INPUT TEXT FOR A .END.
- (29) MUST HAVE MACRO CHARACTER
A .MACRO COMMAND MUST BE USED BEFORE A .DEFINE COMMAND CAN BE: IGNORE THE COMMAND AND SCAN THE INPUT TEXT FOR A .END.
- (30) NO .END FOR MACRO
THE MACRO WAS NOT COMPLETELY DEFINED ON ONE INPUT FILE: PROGRAM WILL ABORT.
- (30) REPETITION ILLEGAL IN MACRO
TEXT CANNOT BE REPEATED (.REPEAT) INSIDE OF A MACRO: IGNORE COMMAND AND SCAN THE INPUT TEXT TO A .END.
- (32) NO REPETITION TO TERMINATE
.UNTIL ISSUED WITHOUT A .REPEAT: IGNORE COMMAND. IF INSIDE OF A MACRO DEFINITION SCAN TO .END.
- (33) NOTHING TO END
A .END WAS ISSUED WITHOUT A .DEFINE: IGNORE COMMAND.
- (34) INVALID LINE SKIPPING
THE SPECIFIED NUMBER OF LINES TO SKIP IS LESS THAN 1 OR GREATER THAN ONE-HALF THE NUMBER OF LINES PER PAGE: IGNORE COMMAND.

ERROR DIAGNOSTICS

- (35) MACROS ILLEGAL IN REPETITION
A .DEFINE WAS ISSUED AFTER .REPEAT AND BEFORE
.UNTIL: IGNORE COMMAND AND SCAN TO .END.
- (36) NO .UNTIL FOR REPETITION
TEXT REPETITION WAS NOT COMPLETED ON ONE INPUT
FILE: PROGRAM WILL ABORT.
- (37) NO .REPEAT TO TERMINATE
.UNTIL ISSUED WITHOUT BEGINNING TEXT REPETITION
WITH .REPEAT: COMMAND IGNORED.
- (38) NO SUCH MACRO NAME
THERE IS NO SUCH USER DEFINED MACRO NAME TO
RELEASE: IGNORE COMMAND.
- (39) NO HEADER STRING
NO CHARACTER STRING WAS ENTERED IN THE .HDR
COMMAND: IGNORE COMMAND.
- (40) HEADER STRING TOO LONG
THE CHARACTER STRING ENTERED IN THE .HDR COMMAND IS
TOO LONG TO CENTER BETWEEN M AND N: IGNORE COMMAND.
- (41) NO FOOTER STRING
NO CHARACTER STRING WAS ENTERED IN THE .FTR
COMMAND: IGNORE COMMAND.
- (42) FOOTER STRING TOO LONG
THE CHARACTER STRING ENTERED IN THE .FTR COMMAND IS
TOO LONG TO CENTER BETWEEN M AND N: IGNORE COMMAND.
- (43) CHARACTER STRING TOO LONG
WHEN GETTING STRING OF CHARACTERS, BLANKS INCLUDED,
FROM AN INPUT LINE, THERE ARE MORE CHARACTERS THAN
FROM 1 THROUGH THE RIGHT MARGIN: TRUNCATE THE
CHARACTER STRING TO THE LENGTH OF A PRINT LINE
THROUGH THE RIGHT MARGIN.
- (44) NO DIAGRAM TABLE LUN
THERE IS A DIAGRAM NAME, FROM A .DIAGRAM COMMAND,
TO PRINT IN THE TABLE OF DIAGRAMS. THE DIAGRAM
PARAMETER WAS NOT USED WHEN CALLING *TYPO: DO NOT
PRINT THE DIAGRAM NAME IN A TABLE OF DIAGRAMS.
- (45) LINE TOO LONG TO CENTER
WHEN IN CENTERING MODE, THE LINE OF TEXT WILL NOT
FIT BETWEEN M AND N: START THE LINE AT THE LEFT
MARGIN AND TRUNCATE IT AT THE RIGHT MARGIN.
- (46) NO TEXT TO CENTER
A BLANK LINE, EXCLUDING CARRIAGE CONTROL, WAS
ENTERED WHEN IN CENTERING MODE: IGNORE LINE.
- (47) NO COMMANDS ALLOWED IN FOOTNOTE
A COMMAND WAS ISSUED INSIDE OF A FOOTNOTE: IGNORE
COMMAND.
- (48) FOOTNOTE NOT TERMINATED
A FOOTNOTE MUST BE COMPLETED ON ONE INPUT FILE:
PROGRAM WILL ABORT.
- (49) ITALICS INVALID
ITALICS WERE SPECIFIED INSIDE OF A FOOTNOTE OR A
BOX: IGNORE THE ITALICS.

ERROR DIAGNOSTICS

OSU - *TYPO

- (50) WORD WILL NOT FIT IN PRINT LINE
A CHARACTER STRING WILL NOT FIT BETWEEN THE LEFT AND RIGHT MARGINS: TRUNCATE THE CHARACTER STRING SO IT WILL FIT.
- (51) WILL NOT FIT BETWEEN TAB AND RIGHT MARGIN
A CHARACTER STRING WILL NOT FIT BETWEEN A TAB AND THE RIGHT MARGIN: START A NEW LINE WITH THIS CHARACTER STRING.
- (52) TOO MANY LINES FOR FOOTNOTE
THERE IS A MAXIMUM OF TEN LINES FOR ONE FOOTNOTE: OVERLAY THE TENTH LINE UNTIL FOOTNOTE DEPLETED.
- (53) WORD TOO LONG TO FOOTNOTE
A CHARACTER STRING WITH A FOOTNOTE REFERENCE IS AS LONG AS A PRINT LINE: BYPASS THE CHARACTER STRING AND ENTER THE FOOTNOTE REFERENCE.
- (54) FOOTNOTE REFERENCE WILL NOT FIT IN PRINT LINE
A CHARACTER STRING PLUS THE FOOTNOTE REFERNECE WILL NOT FIT IN A PRINT LINE: CONTINUE PROCESSING.
- (55) FOOTNOTE WILL NOT FIT ON ONE PAGE
A FOOTNOTE MUST FIT ON ONE PRINT PAGE ALONG WITH A PAGE HEADER AND/OR FOOTER: IF ONLY ONE LINE IN THE FOOTNOTE IGNORE THE FOOTNOTE AND CONTINUE PROCESSING, OTHERWISE USE ONE LINE OF THE FOOTNOTE AND TRY AGAIN.
- (56) CHARACTER STRING TOO LONG FOR INDEX
A CHARACTER STRING TO PLACE IN THE INDEX CAUSES THE MAXIMUM OF 40 CHARACTERS TO BE EXCEEDED: IGNORE THE CHARACTER STRING.
- (57) NO VALUE LUN
A VAL-M SPECIFICATION IS BEING USED IN A MACRO DEFINITION BUT THERE WAS NO FILE DEFINED IN THE CALL TO *TYPO (VALUE ARGUMENT): IGNORE THE VAL-M SPECIFICATION AND CONTINUE PROCESSING.
- (58) UNDEFINED MACRO
A MACRO IS BEING INVOKED WHICH HAS NOT BEEN DEFINED BY THE USER OR IS NOT A SYSTEM MACRO: IGNORE THE INVOCATION AND CONTINUE PROCESSING.
- (59) TOO MANY MACRO INVOCATIONS
ANOTHER MACRO IS BEING INVOKED WHICH EXCEEDS THE LIMIT OF TEN: IGNORE THE INVOCATION AND CONTINUE PROCESSING.
- (60) PROGRAM LOOP
WHILE SKIPPING LINES WITH A .DIAGRAM OR .SKIP COMMAND, *TYPO WENT INTO A LCOP: DEFINE THE CURRENT PAGE TO HAVE THE MAXIMUM NUMBER OF LINES AND CONTINUE PROCESSING.
- (61) DIAGRAM ID. TOO LONG
THE DIAGRAM NAME IS TOO LONG TO CENTER BETWEEN THE LEFT AND RIGHT MARGINS: IGNORE THE DIAGRAM NAME.
- (62) INVALID ARGUMENT FOR MACRO
A PARAMETER IN THE MACRO INVOCATION HAS EMBEDDED BLANKS WHERE THEY ARE NOT ALLOWED. SEE MACRO INVOCATION FOR CORRECT PARAMETERS: PROCESS THE REMAINDER OF THE INVOCATION STRING AS TEXT.

ERROR DIAGNOSTICS

- (63) MISSING ARGUMENT
TWO CONTIGUOUS COMMAS ARE IN THE MACRO INVOCATION
PARAMETER STRING: IGNORE THE SECOND COMMA.
- (64) NOT ENOUGH INPUT LINES
AN INP-M OR VAL-M SPECIFICATION IS BEING USED IN A
MACRO DEFINITION. AS THE INPUT IS BEING READ FROM
THE SPECIFIED INPUT FILE, AN END TO THE INPUT IS
ENCOUNTERED BEFORE ALL OF THE INPUT LINES NEEDED TO
SATISFY THE MACRO ARE READ: IGNORE THE REMAINDER OF
THE MACRO AND CONTINUE PROCESSING.
- (65) NO SUCH ARGUMENT
THE MTH PARAMETER IN THE MACRO INVOCATION DID NOT
EXIST OR WAS NOT RETAINED DUE TO AN ERROR: IGNORE
THE PARAMETER AND ASSOCIATED INPUT TEXT.
- (66) INPUT LINE TOO LONG
LINES OF TEXT FROM THE BASIC INPUT FILE CANNOT BE
LONGER THAN 100 CHARACTERS. LINES OF TEXT FROM THE
SPECIFIED INPUT FILE, INP-M OR VAL-M SPECIFICATION
IN A MACRO DEFINITION, CANNOT BE MORE THAN 99
CHARACTERS IN LENGTH: TRUNCATE THE INPUT LINE
ACCORDINGLY.
- (67) NO TEXT TO COPY
A BLANK LINE, EXCLUDING CARRIAGE CONTROL, WAS
ENTERED WHILE IN COPY MODE: IGNORE THE INPUT LINE.
- (68) LINE TOO LONG TO COPY
AN INPUT LINE OF TEXT EXCEEDS THE RIGHT MARGIN,
WHILE IN COPY MODE: TRUNCATE THE INPUT LINE.
- (69) CANNOT INDEX EXCEPT IN TEXT MODE
A .INDEX COMMAND WITH A CHARACTER STRING WAS ISSUED
BEFORE ENTERING TEXT MODE. THERE ARE NO PAGE
NUMBERS TO ASSOCIATE WITH THE CHARACTER STRING:
IGNORE THE COMMAND.
- (70) CANNOT REPEAT TEXT IN CENTER MODE
TEXT CANNOT BE REPEATED WHILE IN CENTERING MODE:
IGNORE THE COMMAND.
- (71) CANNOT REPEAT TEXT IN COPY MODE
TEXT CANNOT BE REPEATED WHILE IN COPY MODE: IGNORE
THE COMMAND.
- (72) MACRO INVOCATION INCOMPLETE
A PARAMETER IN THE MACRO INVOCATION WAS NOT
TERMINATED PROPERLY: PROCESS THE MACRO WITHOUT THE
LAST PARAMETER.
- (73) INVALID COUNTER
THE COUNTER REFERENCED IS NOT VALID: IGNORE THE
COMMAND.
- (74) INVALID RELATIONSHIP
THE RELATIONSHIP IN A .IF IS NOT VALID: IGNORE THE
COMMAND.
- (75) NO VALUE
NO VALUE WAS GIVEN IN THE .IF COMMAND: IGNORE THE
COMMAND.

ERROR DIAGNOSTICS

OSU - *TYPO

- (76) .IF INVALID IN CENTER OR COPY MODE
THE .IF COMMAND CANNOT BE USED IN CENTERING OR COPY
MODE: IGNORE THE COMMAND.
- (77) INVALID COLUMN
THE COLUMNS TO TAB TO FOR A BOX ARE NOT IN
ASCENDING ORDER, OR THE COLUMNS TO TAB TO WHEN
PUTTING TEXT IN A BOX IS INVALID: IGNORE THE
COMMAND.
- (78) BOX TOO LARGE FOR PAGE
A BOX MUST FIT ON ONE PAGE ALONG WITH THE PAGE
HEADER AND/OR FOOTER, IF SPECIFIED: IGNORE THE
COMMAND.
- (79) BOX TOO WIDE
A BOX IS WIDER THAN FROM THE LEFT MARGIN THROUGH
THE RIGHT MARGIN INCLUSIVELY: IGNORE THE COMMAND.
- (80) NO BOX DEFINED
THE LAST ATTEMPT TO DEFINE A BOX FAILED. NOW THERE
IS NO BOX TO ERASE OR PUT TEXT INTO. WHEN TRYING
TO DRAW THE BOXES THAT WERE DEFINED, THERE WAS NOT
EVEN ONE BOX DEFINED: IGNORE THE COMMAND.
- (81) INVALID LINE
THE LINE IN WHICH TEXT IS TO BE PLACED IN A BOX HAS
EXCEEDED THE INSIDE DIMENSIONS OF THE BOX: IGNORE
THE REMAINDER OF THE TEXT IN THAT COMMAND.
- (82) FOOTNOTE INVALID
FOOTNOTES ARE INVALID INSIDE OF A BOX: THE FOOTNOTE
ITSELF WILL BE PROCESSED AS TEXT TO BE PLACED IN
THE BOX.
- (83) MACRO INVALID
MACROS ARE NOT VALID INSIDE OF A BOX: THE MACRO
INVOCATION WILL BE PROCESSED AS TEXT TO BE PLACED
IN THE BOX.

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