METAFONT mode_def Settings
for Various TeX Output Devices

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As Neenie Billawala explained in the preceding article, the marking characteristics of different print engines must be taken into account in order to assure legible, attractive output. For the Computer Modern family, this is done by tuning several parameters built into the METAFONT design. The settings for all printers used at Stanford appear in the file WAITS.MF. Other settings are frequently requested and (less frequently) communicated in TeXhax or Laser-Lovers.

Here is a typical mode_def setting, adapted from PLAIN.MF (The METAFONT book, page 270) for 200 dpi devices (such as the Xerox XGP, the original TeX output device); it has been augmented by the parameter aspect_ratio (required for non-square rasters; the default value is given).

```
mode_def lowres =
 proofing:=0;        % not making proofs
 fontmaking:=1;      % we are making a font
 tracingtitles:=0;   % don't show titles
 pixels_per_inch:=200;
 blacker:=.65;   % make pens a bit blacker
 fillin:=.2;  % adjust for diagonal fillin
 o_correction:=.4;  % less overshoot
 aspect_ratio:=1/1; % vertical/horizontal
 enddef;
```

For all font "production", typical settings are proofing = 0 and fontmaking = 1. tracingtitles is usually set to 0 for low-resolution fonts (400 dpi or less) and to 1 for higher-resolution fonts, to reassure one that the computer is still in operation and to indicate how far it has progressed during a long job. The standard proof settings can be found in PLAIN.MF as already noted.

For more guidance, see Adapting to local conditions, The METAFONT book, page 278.

The table at the bottom of the page contains a summary of the relevant settings gleaned from available sources. The print engines cited in the table are listed below, along with an indication of whether they are write-black (wb) or write-white (ww), if known, and the names of some of the output devices into which they have been built.

Canon CX (wb)	Apple LaserWriter, Cordata, HP LaserJet, Imagen 8/300, QMS and Talaris 8 ppm printers
Canon LBP-10	Imagen 10/240
Canon (wb)	Imagen 3320, Imagen 7320
Ricoh 4080	DEC LN03; TI OmniLaser 2115
Ricoh LP4120	HP 2688A, Imagen 12/300
Xerox XP-12 (ww)	DEC LN01, QMS 1200, Talaris 1200, Xerox 2700
Xerox XP-24 (ww)	Imagen 24/300, QMS 2400, Talaris 2400, Xerox 3700

Additions and corrections to this list are solicited, as are suggestions for other subjects on which such an overview might be useful.

Typical mode_def parameter settings

		pixels_per_inch	blacker	fillin	o_correction	aspect_ratio
PLAIN.MF						
proof		2601.72	0	0	1	
lowres		200	.65	.2	.4	
WAITS.MF and other sources						
dover	(Xerox Dover)	384	1.2	0	.6	
imagen	(Canon CX)	300	0	.2	.6	
qms	(Xerox XP-12E)	300	.75*	0*	.5*	
qms[1]		300	.8	.2	.4	
decln[2]	(Ricoh 4080)	300	.9	.2	.5	
aps	(APS-Micro5)	722.909	.2	.2	1	
crs	(Alphatype CRS)	4000+4000/3	.4	0	1	
boise	(HP 2680A)	180	.55	.1	.3	
DD	(DataDisc terminal)	70	0	0	.2	
canon	(Canon LBP-10)	240	.2	.2	.4	
newDD	(DataDisc terminal)	70	0	0	.2	4/3
cg	(Compugraphic 8600)	1301.5	.2	.2	1	1569/1301.5
epson		240	0	0	.2	9/10

*A note in WAITS.MF states that these settings are conjectural.

All settings are from PLAIN.MF or WAITS.MF except for:

[1] Charles Karney, appeared in TeXhax 1986, issue 4   [2] Charles LaBrec, appeared in TeXhax 1986, issue 6