Appendix B
Installation Procedures

B.1. Introduction

The $\mathcal{A}\mathcal{M}\mathcal{S}$-TEX software can be used with any implementation of TEX. Many TEX distributions include $\mathcal{A}\mathcal{M}\mathcal{S}$-TEX, ready to run; check the documentation that came with the TEX distribution you are using. When a new version of $\mathcal{A}\mathcal{M}\mathcal{S}$-TEX is released, all distributors are notified, so if your TEX system is up to date, it is likely that you don't need to do anything at all.

Most up-to-date TEX installations are organized according to the TEX Directory Structure (TDS). This is a tree structure whose root is identified as something like `/usr/local/share/texmf` or `c:\sw\texmf`. In the following instructions, we will use the name `TEXMF` to identify the root directory of a TDS or similar structure.

When installing a new release of $\mathcal{A}\mathcal{M}\mathcal{S}$-TEX, you may want to first back up your old version, if you have existing documents that use it. Although new releases are intended to be backward compatible, a backup provides insurance in case something goes wrong.

B.2. Location of $\mathcal{A}\mathcal{M}\mathcal{S}$-TEX Files in a TDS Tree

Files in the $\mathcal{A}\mathcal{M}\mathcal{S}$-TEX distribution fall into four categories: files for use with TEX, source files, documentation, and formats. The following list shows all the files in the current distribution, along with their recommended locations in a TDS tree.

```
TEXMF/
  tex/amstex/base/
    amstex.tex
    amstex.ini
    amsppt.sty
    amsppt.sti
    amsppt1.tex
  tex/plain/amsfonts/
    amssym.def
    amssym.tex
  source/amstex/
    README
    amsppt.doc
    amstex.bug
  doc/ams/amstex/
    amsguide.tex
    amsguide.ps
    amsppt.faq
    amstinst.tex
    amstinst.ps
    joyerr.tex
    joyerr2.tex
  ⟨TeX-implementation⟩/formats/
    amstex.fmt
```

The $\mathcal{A}\mathcal{M}\mathcal{S}$-TeX distribution can be retrieved in bundled form from the AMS web site, e.g., as a `.zip` or `.tar` file. In this form, the files are already arranged according to the TDS structure. (The format file is not included in the distribution. It is platform-specific, and must be created as part of the installation; see below.) To install the collection from a TDS-formatted bundle, place the bundled file into a convenient directory and unpack it using the `TEXMF` directory as the "Extract to" target. Some examples:

WinZip:	Click on "Extract" and then in the "Extract to" box, enter `\sw\texmf` (or whatever TEXMF is on your system)
gzip:	`gzip -dc amstex.tgz | (cd TEXMF; tar xvf -)`
unzip:	`unzip amstex2.zip -d TEXMF`

The bundled file may be deleted after unpacking.

If the files are obtained from CTAN (where they are mirrored from the AMS server), they are not in TDS order. Use the above list to place the files into the proper location.

Note: If you currently have any of the following files from very old releases of $\mathcal{A}\mathcal{M}\mathcal{S}$-TeX, delete them before installing the new release. They are either irrelevant or superseded in the new version of $\mathcal{A}\mathcal{M}\mathcal{S}$-TeX, and it is best to remove them to avoid confusion. If you back up your existing $\mathcal{A}\mathcal{M}\mathcal{S}$-TeX files before installing the new version, these files should be included.

`amsfil.chg`	`amsplain.tex`	`amsppt.mor`	`amstex.chg`
`cyracc.def`	`cyrmemo.def`	`cyrmemo.tex`	`amsplain.fmt`

The TFM files for some of AMSFonts 2.2 (`msam*`, `msbm*`, and `eufm*`) are needed to run $\mathcal{A}\mathcal{M}\mathcal{S}$-TeX with the AMSPPT document style, even if you don't plan to actually print anything using the AMSFonts. (These fonts *are* needed to process and print the User's Guide of which this appendix is a part.) TFM files are available from the AMS web site, `www.ams.org/tex/amsfonts.html`, or by anonymous FTP from `ftp.ams.org`. They should be placed in the directory `TEXMF/fonts/tfm/ams/`.

B.3. What if Your TeX System Isn't in a TDS Tree?

If your TeX system is arranged in some other way, you must consult the user documentation for guidance. The hints that follow are just that—hints. If your TeX system documentation recommends something different, you should follow that procedure.

We recommend placing $\mathcal{A}\mathcal{M}\mathcal{S}$-TeX files into distinct subdirectories or folders, to simplify installation of future versions.

First, determine where TeX will look for files to be input. If `amstex.tex` and `amssym.def` are already present, place the files listed in section B.2 under `tex/amstex/base/` and `tex/plain/amsfonts/` into those same areas. If neither of these files is already present, look for the file `plain.tex`. Create appropriate subdirectories under the area where you find this file for the new $\mathcal{A}\mathcal{M}\mathcal{S}$-TeX files.

If there isn't any obvious place to put source or documentation files (the ones listed in section B.2 under `source/amstex/` and `doc/ams/amstex/`), you can put them in with the input files. Consult the documentation for your TeX distribution.

Once all the files are installed, you are ready to create a format file.

B.4. Creating a Format File

Every implementation of TEX uses format files to preload the macros, fonts, and hyphenation patterns that define basic user environments such as AMS-TEX. Although it is not strictly necessary to use a format file for AMS-TEX, preloading will save startup time, especially on slower systems. Note: Each format file takes up 150K–300K of disk space (depending on your TEX implementation).

If your TEX system already includes the format file `amstex.fmt`, you may not have to create a new one; recent changes to `amstex.tex` are cosmetic, and will not affect any math formatting features. If the AMSPPT preprint style has been included in the format, then a new format file is in order. (We recommend using the name `amsppt.fmt` for a format file with AMSPPT preloaded so that there is no question which is present; see below.)

Creating a format file (also known as "initialization") requires a special version of TEX, a particular switch, or item in a menu. Read the documentation for your TEX distribution to learn how to create a format file.

Before creating your format file, you will want to consider whether you habitually use the AMSPPT document style. If you use other document styles rarely or never, then you would benefit from the use of a format file with `amsppt.sty` preloaded. If you are likely to use other document styles periodically, then you probably do not want to preload `amsppt.sty`. To make a simple AMS-TEX format file, proceed with the next paragraph. To make a format file with `amsppt.sty` preloaded, edit the file `amstex.ini` and remove the percent sign (comment character) at the beginning of the line `%\documentstyle{amsppt}`, just before the `\dump` command. Save this file with the name `amsppt.ini`.

If you intend to use Type 1 outline versions of AMSFonts, read Appendix C before proceeding. Users of *Textures* will have to comment out one more `\input` statement; read the instructions.

Update the file name database (if one is used) so that TEX will be able to find `amstex.ini` (or `amsppt.ini`) and the other files. This may be done by a command such as `texhash` or via a menu option. Consult the documentation for your TEX distribution for instructions on how to perform this update.

Now run the "initialization" version of TEX on `amstex.ini` (or `amsppt.ini`). This will create an AMS-TEX format file named `amstex.fmt` (or `amsppt.fmt`). Some implementations of TEX will automatically place the format file in the proper directory; otherwise you should move this file manually into the TEX formats directory. Once again update the file name database to make the format file visible to TEX.

B.5. Using AMS-TEX 2.0+

With some TEX implementations, a format file can be specified by preceding its name with an ampersand:

`tex &amstex filename` ⟨*return*⟩

Other implementations treat the name of the format file as a command:

`amstex filename` ⟨*return*⟩

Still other implementations allow the installation of this name as a menu option. For details of how to use format files with your implementation of TEX, see your documentation.

B.5. Getting a printed copy of the User's Guide

The $\mathcal{A}\kern-.1667em\lower.5ex\hbox{$\mathcal{M}$}\kern-.125em\mathcal{S}$-TeX User's Guide can be obtained as a PDF file from the AMS web site. It is also included in the distribution as a PostScript file, ready to print (`amsguide.ps`). Or, you can use your newly created $\mathcal{A}\kern-.1667em\lower.5ex\hbox{$\mathcal{M}$}\kern-.125em\mathcal{S}$-TeX or AMSPPT format file to typeset the file `amsguide.tex`; even if you print out this guide from another source, we recommend using the file `amsguide.tex` as a test to make sure that your newly installed $\mathcal{A}\kern-.1667em\lower.5ex\hbox{$\mathcal{M}$}\kern-.125em\mathcal{S}$-TeX is working properly.

Appendix C
Before Installing $\mathcal{A}_{\mathcal{M}}\mathcal{S}$-TeX: Facts About Fonts

C.1. Using AMSFonts in PostScript Type 1 Form

The AMSFonts Version 2.2 have been converted to PostScript Type 1 outlines in two forms:

The AMS web site (`www.ams.org/tex/type1-fonts.html`) holds the canonical distribution. This is a collection containing all the typefaces, but only in 5, 7, and 10 point sizes; other sizes must be created by scaling. The $\mathcal{A}_{\mathcal{M}}\mathcal{S}$-TeX preprint style provides a way for authors to indicate that fonts should be loaded under this alternative scaling convention. If you are using this version of AMSFonts, insert the line `\PSAMSFonts` in the preamble of your file, before the `\topmatter` line; see section C.3, below, for instructions on making this your local default.

Basil Malyshev has created a collection, called BaKoMa, containing the Computer Modern fonts as well as all sizes of the AMSFonts used in mathematics, but excluding the `wncy*` cyrillic fonts. The BaKoMa fonts can be used with no special action; however, for papers or monographs to be published by the AMS, `\PSAMSFonts` should be specified.

C.2. Using AMS Symbol Fonts

The preprint style automatically loads the Fraktur font (`eufm`) and both fonts of extra symbols (`msam` and `msbm`), as well as all the symbol names, as described in the sections **Fonts** and **Symbol Names**. If these will not be used, and you want a version of `amsppt.sty` that requires less memory than the default version, you can suppress the loading of these resources. If `amsppt.sty` is to be included in your format file, you must make this change before creating the format file. See the next section for instructions.

C.3 Setting Local Default Options

An "initialization file", `amsppt.sti`, contains settings for some options that a user may wish to change locally. This file is read in automatically by `amsppt.sty`.

Two lines in `amsppt.sti` affect the inclusion of AMS symbol fonts:

```
\loadeufm \loadmsam \loadmsbm
\message{symbol names}\UseAMSsymbols\message{,}
```

To use `amsppt.sty` without AMSFonts, comment out both lines (place a `%` at the beginning of each line); to disable just the symbol names, comment out the second line. In either case, remove the `%` sign from the beginning of the line

```
%\define\square{\vrule width.6em height.5em depth.1em\relax}
```

This is required for using `\qed` to indicate end of proof. Extra math symbols can be loaded on demand with `\newsymbol` or by including `\UseAMSsymbols` in the preamble of a particular document.

In order to make the Type 1 versions of the AMSFonts as distributed from the AMS web site your local default, activate the line

```
%\PSAMSFonts
```

by removing the `%` sign from the beginning of the line.