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Acorn

Custom Page Sizes for PostScript™ Printing

This note decribes how to create custom paper sizes for use with RISC OS 3 !Printers and PostScript-equipped typesetters To make use of the information in this note, you will need the following software:-

RISC OS 3, version 3.10 or later
!Printers 1.22

Applicable Hardware :

Related Application Notes:

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Background

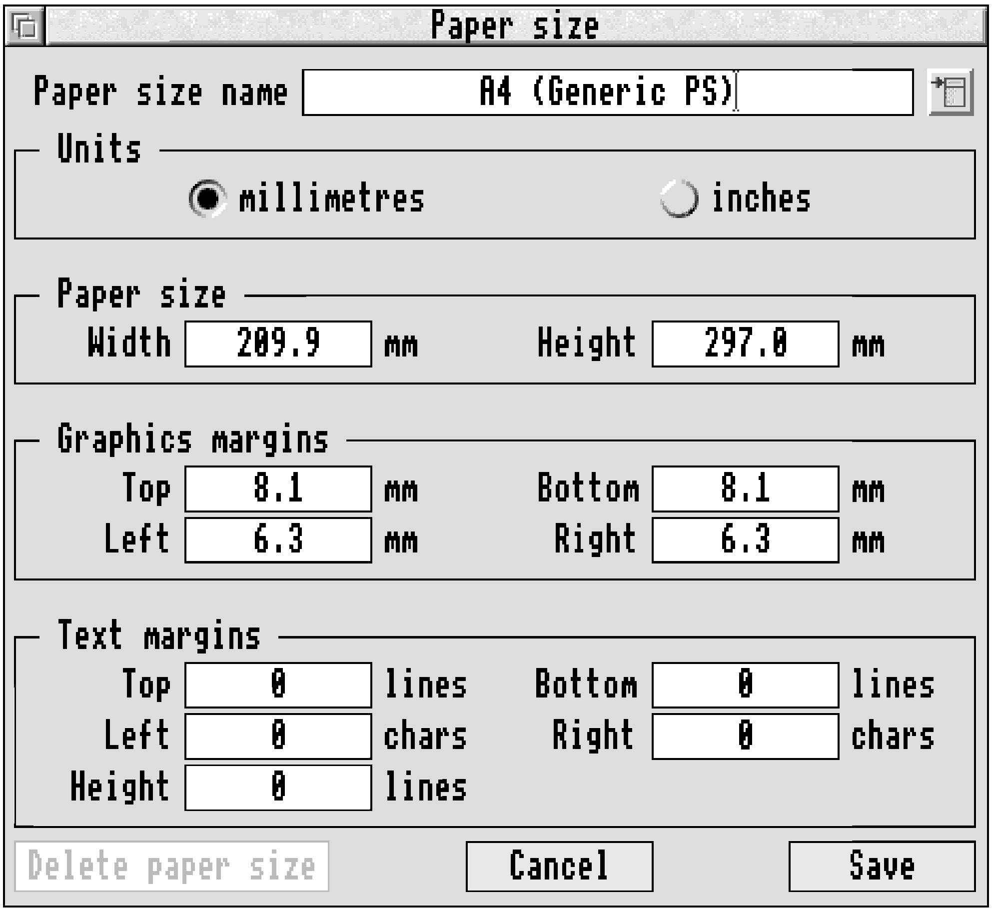
The PostScript printer driver sets the output device's page size in the following manner. At the start of the print job, it looks up the paper size name (as set in the Configuration window of !Printers). This name, up to the first space character, is converted to lowercase and sent to the printer. Thus the paper size called "A4 (Generic PS)" is converted to the command "a4". The printer understands this command to mean "arrange for the imageable area to be of A4 dimensions", and also understands a small number of other well-known paper size names like "legal" and "letter". On an A4 laser printer, the "a4" command has little effect since that is the default page size. An A3 typesetter, on the other hand, will set up an imageable area exactly the size of an A4 page, and arrange for it to be suitably positioned on the A3 media.

The need for custom page sizes arises when there is a requirement to place the printed image on a typesetter's film in a non-standard location or at a non-standard size. For example, when printing an A4 document on an A3 typesetter, it is useful to include crop marks for accurate cutting. Applications that provide this facility attempt to centre the expanded A4 image on the paper. It is therefore necessary to arrange for the typesetter's imageable area to be slightly larger than A4 so that the crop marks are visible.

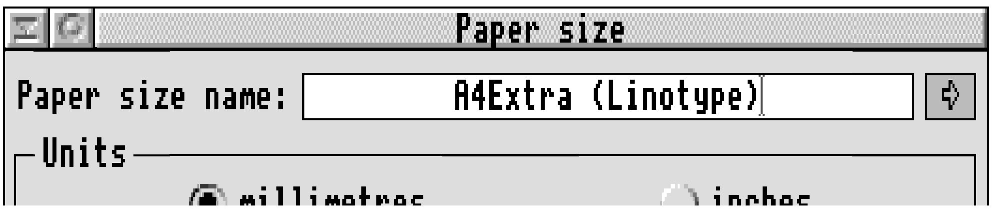
There are two steps involved in producing a custom page size. First you must define a paper size in !Printers so that the printer driver and the application are aware of the imageable area. This is done using the Paper Size dialogue box The paper size should be set up with your desired dimensions and a suitable name. Then you must provide a small PostScript procedure to do the actual work of altering the size and position of the image on the media. This involves editing one of !Printer's internal files, which is explained below.

Editing the paper size

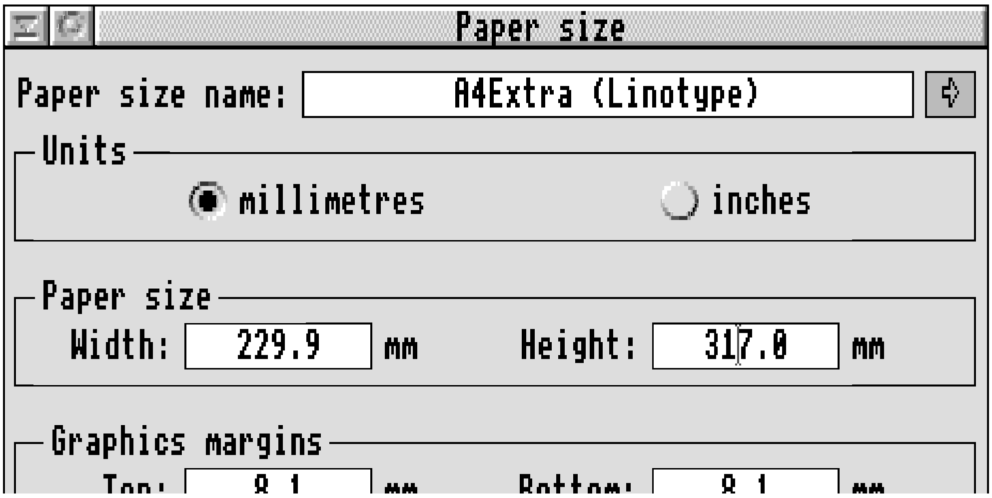
This process will be explained in terms of creating a paper size to print an A4 page with extra space for crop marks on an A3 typesetter. The procedure is similar for other custom page sizes. Having loaded !Printers, use the iconbar menu to bring up the "Edit paper sizes" dialogue. Use the pop-up menu to the right of the "Paper size name" field to select "A4 (Generic PS)" as a suitable starting point. The dialogue box will be automatically filled in with the dimensions of an A4 page:-



Erase the name "A4 (Generic PS)" and replace it with the name you would like for your new page size. When choosing this name, bear in mind that it will be used to generate the page setup command in the manner described previously. A good choice of name might be "A4Extra (Linotype)" - note that there is no space between "A4" and "Extra". This name would result in the command "a4extra" being sent to the typesetter at page setup time. Your choice of paper names is limited by the fact that the resulting page setup command must not be an existing PostScript command - to avoid clashes, names of the form "*xx*Extra" and "*xx*Custom" are recommended.



Now alter the "Width" and "Height" fields of the dialogue box to give the required size of imageable area. To accomodate crop marks, it should be sufficient to add twenty millimetres to the width and height. If desired, the graphics margins may also be altered at this stage; setting them to zero is advisable if you are attempting to print crop marks.



Click OK to register the new paper size with !Printers. The new paper size is saved to disk automatically . Open the printer's configuration window and use the "Paper" menu to select the new paper size. You should now be able to see the size you have set up in relation to your document by turning on the display of print margins (if your application supports it). If you want the printer to use this paper size in future, choose "Save choices" from the !Printers iconbar menu.

Writing the page setup procedure

The next step is to enter a PostScript procedure to actually execute the required page setup commands. The procedure must be added to a special file held within a subdirectory of !Printers. Locate the icon for !Printers on your disc. Holding the SHIFT key, double-click on the icon to open the !Printers directory. Open the "ps" directory within it, and the the "PSfiles" directory within that. The file to be edited is called "PSProlog2"; make a backup copy of it in case you make a mistake. Then open the file in !Edit and scroll to the bottom. The exact contents of this file depends on your version of !Printers, but the end of it should look similar to this:-

```
copy OKA{[3 1 roll/MKACC cvx]cvx 2 I 3 1 roll
put}{pop }ifelse}forall/CharStrings exch def dup type/arraytype
eq{font Matrix 3 -1 roll 6 array CCM def}{pop }ifelse/Encoding
exch def currentdict end definefont pop}BD end
```

The commands to be added differ between the various makes and models of typesetters. We describe two common variants - one for typesetters that support the `setpageparams` command, and the other for Level 2 PostScript devices that support `setpagedevice`.

Method 1: setpageparams

The `setpageparams` method works with a large number of popular devices listed at the end of this section. It may also work with some other devices. If in doubt, consult the typesetter's documentation, your bureau or the typesetter manufacturer.

Add the following lines to the end of PSProlog2, replacing "a4extra" with your chosen name:-

```
% A4 with space for crop marks, for typesetters supporting setpageparams
/a4extra {
  statusdict begin
    652 899 0 1 setpageparams
  end
} def
```

The part of this procedure that actually does the work is **`652 899 0 1 setpageparams`**, and it is this that should be modified to suit your page size. The other lines should not normally be altered. The four numbers before the setpageparams command are its parameters; they specify the page size and will need to be adjusted to match those you entered into the Page Size dialogue box. The syntax of the **`setpageparams`** command is:-

width height margin orientation **`setpageparams`**

The first two parameters control the size of the imageable area. They are specified in points (72nds of an inch); to convert from millimetres to points, multiply by 2.835. The *width* parameter is measured along the fast scan direction of the typesetter (i.e at right angles to the direction of paper motion). The *height* parameter is measured along the slow scan direction (i.e in the direction of paper motion).

The *margin* parameter specifies how far the imageable area should be displaced from the start position of the fast scan. This is measured in points. *Margin* should normally be zero, but can be adjusted to correct for paper that has been loaded at an offset from the beginning of the fast scan.

The *orientation* parameter specifies how the image is positioned with respect to the paper. A value of 0 causes the image's axes to be oriented such that y increases along the fast scan direction and x increases along the slow scan direction. A value of 1 causes x to increase in the fast scan direction and y to decrease in the direction of slow scan.

The orientation can impact efficiency in terms of the amount of paper used per page. If, for example, the paper is 30cm wide, it is possible to fit the long side of an A4 page along the fast scan direction using orientation 0, thus minimising the length of paper used. For an image appreciably taller than A4, such as our A4Extra, the paper is not wide enough to do this and orientation 1 must be used instead.

Having modified and saved the file, test it by sending a one-page printout to the device. If all is well, you should observe that the position of the image on the paper is different than it was when printing with the typesetter's standard configuration. If there appears to be no difference, or if the typesetter issues an error message, or if there is simply no output, you should first check that you have set the paper size in the printer configuration window, and also double-check your changes to PSProlog2.

If the problem persists, or the typesetter produces an error message when it encounters the **`setpageparams`** command, it is likely that the typesetter does not support this command. If this is the case, consult your bureau or typesetter documentation to determine what equivalent commands are available. Put the correct commands in place of the **`setpageparams`** command. Another possibility is that your page size exceeds the device's capability. Consult the typesetter's documentation for the range of valid parameters to **`setpageparams`**.

There follows a non-exhaustive list of devices that support **`setpageparams`**.

AGFA-AccuSet
AGFA-AccuSetSF
AGFA-ProSet9400
AGFA-ProSet9400SF
AGFA-ProSet9550
AGFA-ProSet9550SF
AGFA-ProSet9600
AGFA-ProSet9600SF
AGFA-ProSet9700
AGFA-ProSet9700SF
AGFA-ProSet9800
AGFA-ProSet9800SF
AGFA-SelectSet5000
AGFA-SelectSet5000SF
AGFA-SelectSet7000
AGFA-SelectSet7000SF
AGFA-StudioSet2000
Agfa-Compugraphic 9400P
Autologic APS-1000 v52.3
Autologic APS-1560 v52.3
Autologic APS-4000 v52.3
Autologic APS-5000 v52.3
Autologic APS-6/108c v52.3
Autologic APS-6/108ch v52.3
Autologic APS-6/108chs v52.3
Autologic APS-6/108h
Autologic APS-6/108hs
Autologic APS-6/70 v52.3
Autologic APS-6/70c v52.3
Autologic APS-6/70ch v52.3
Autologic APS-6/70chs v52.3
Autologic APS-6/70vr v52.3
Autologic APS-6/80 v52.3
Autologic APS-6/84c v52.3
Autologic APS-6000 v52.3
Autologic APS-6600 v52.3
Autologic APS-7000 v52.3
Autologic APS-9800 v52.3
Autologic APS-AccuSet v52.3
Autologic APS-BroadSheet Imager v52.3
Autologic APS-ColorMaster v52.3
Autologic APS-PlateMaster v52.3
Autologic APS-ProSet v52.3
Autologic LZR-1200 v52.3
Autologic LZR-2600 v52.3
Linotronic 100
Linotronic 200
Linotronic 200 v49.3
Linotronic 200_230
Linotronic 260
Linotronic 300 v47.1
Linotronic 300 v49.3
Linotronic 300 v52.3
Linotronic 330
Linotronic 500 v49.3
Linotronic 500 v52.3
Linotronic 530
Linotronic 630_630P
Linotronic 830
Linotronic 930
Linotronic Pr60
Scantext 2030-51
Varityper 4000/5100A
Varityper 4000/5300A
Varityper 4000/5300B
Varityper 4000/5300C
Varityper 4000/5300EA
Varityper 4000/5300EB
Varityper 4000/5300EC
Varityper 4000/5330A
Varityper 4000/5330B
Varityper 4000/5330C
Varityper 4000/5500A
Varityper 4000/5500B
Varityper 4000/5500C
Varityper 4000/5510
Varityper 4000/5630A
Varityper 4000/5630B
Varityper 4000/5660
Varityper 4000/5860
Varityper 4000/L300
Varityper 4000/L330
Varityper 4000/L500
Varityper 4000/L530
Varityper 4990
Varityper 4990T
Varityper 5100E
Varityper 5100E
Varityper 5660E
Varityper 5860E
Varityper 5960E
Varityper 6000
Varityper 6990

Method 2: setpagedevice

Level 2 PostScript supports the **setpagedevice** command which, among other things, can be used to specify a custom page size. If you are unsure whether your device supports Level 2 PostScript, consult the typesetter's documentation, your bureau or the typesetter manufacturer.

Add the following lines to the end of PSProlog2, replacing "a4extra" with your chosen name:-

```
% A4 with space for crop marks, for devices supporting setpagedevice
/a4extra {
  4 dict dup begin
    /PageSize [652 899] def
    /Orientation 0 def
    /ImagingBBox null def
    /Policies 1 dict dup begin /PageSize 4 def end def
  end setpagedevice
} def
```

/PageSize [652 899] determines the size of the page. Replace the numbers in the square brackets with the width and height of your custom page size measured in points; to convert from millimetres to points, multiply by 2.835.

The **setpagedevice** command attempts to orient your custom page on the physical medium so that the shorter side of the custom page size lies along the shorter side of the medium. To select the other orientation change the **/Orientation** setting to 1, but do not alter the width and height settings. The relationship between the image and the page size remains the same, so this is not a way of achieving "landscape" printing. If the device is unable to honour your orientation setting it may ignore it.

The **/ImagingBBox** and **/Policies** lines should be copied verbatim from the example and not altered except on the explicit advice of your bureau.

Having modified and saved the file, test it by sending a one-page printout to the device. If all is well, you should observe that the position of the image on the paper is different than it was when printing with the typesetter's standard configuration. If there appears to be no difference, or if the typesetter issues an error message, or if there is simply no output, you should first check that you have set the paper size in the printer configuration window, and also double-check your changes to PSProlog2.

If the problem persists, or the typesetter produces an error message when it encounters the **setpagedevice** command, it is likely that the requested page size is outside the legal range for the device. If so, consult your bureau or typesetter documentation to determine what the allowed sizes are.

Note: the exact effect of the **setpagedevice** command cannot be guaranteed to be consistent across different devices. The range of legal **PageSize** values and the policy used when choosing how to fit the requested page size onto the available media are device dependent, and to some extent installation dependent. Consult your typesetter documentation, your bureau or the typesetter manufacturer if you encounter difficulties.