User Manual

Demo-Program JP_Demo2.rexg

Supplement to the book: *Air Drag in Small Arms Ballistics*
by Jochem Peelen*

1 Purpose of this Program

This program is made available free of charge for educational purposes, in particular to give the user a feel of how to determine form factors from velocity data.

I tested the program on several computer models and German Windows versions without problems. When used with reasonable input data, output data also was reasonable.

> This free of charge demonstration program was not formally tested. No guarantee for error-free function or correct results can be given.

1.1 Requirements for Installation and Use

Requirements for installation and use of the progam are:

- A computer running the Microsoft Windows XP (or later) operating system.
- The user must know how to install software on this computer, using an account that has sufficient administrator rights.
- The user must also know how to unpack a ZIP file.
- It is necessary to install the freely available *Open Object Rexx* language interpreter software (in short: *ooRexx*), version 4.2.0 or later. Required disk space is about 40 MB. Section 2 on page 2 explains the installation steps.
- The demo program itself consists of the following files from a ZIP file:

  `JP_Demo2.rexg` is the main program that controls the graphical user interface window. Apart from the English texts, it is functionally identical to the German program version `JP_Demo.rexg`.

  `JP_LWMod.rex` is the *ooRexx* library of the drag models.

  `JP_Formtab.rex` is used by the main program to prepare the output table of form factors.
- For downloading the *ooRexx* installation file and the demo program ZIP file, an Internet connection is required. Once these are stored on the local computer, no Internet is needed.

*epubli GmbH, Berlin 2015. ISBN 978-3-7375-7768-7

If the above requirements are not met, the program cannot be installed and used.

2 Installing ooRexx

Open Object Rexx (ooRexx) is a programming language available free of charge. It is called an interpreter language, because it does not require a compiler run. The program statements are normal text and are executed line by line (interpreted). *ooRexx* recognizes the program file by its extension `.rex` or, in case of a graphic user interface, by extension `.rexg`.

Downloading the Installation Program

Open the following Internet URL in your Web browser:

`www.sourceforge.net/projects/oorexx/file/oorexx/`

After the usual harassing of the user by a cookie pop-up window, a list of the available *ooRexx* versions is shown. At the time of writing (November 2015) the newest stable release is **4.2.0**, while version 5.0.0 is still under development and should not be used.

The user will then be presented a long list of installation files, most of them for one of the countless Unix derivatives.[1] Scroll down to the bottom of the list, where you find:

`ooRexx-4.2.0.Windows.x86_32.exe`

Clicking on that file name will show an advertisement screen (Do not click anywhere on it!) and begin the download after a delay of a few seconds. Save the file in a directory of your choice; size is about 18 Megabytes.

Users knowing that they are using 64 bit Windows may optionally use the 64 bit installation program (identified by 64 instead of 32 at the end of the name). It should work, but was not tested by me. The 32 bit version mentioned above will also run on a 64 bit Windows. If you are unsure, use the 32 bit installation file.

Installing ooRexx

Double clicking on the downloaded installation program will start installation of *ooRexx*. Several windows will pop up, allowing to change options. But, **–with the following exceptions–** you can accept the pre-selected options:

ooRexx will be installed into the system directory reserved for programs, which may be named (depending on Windows version and country), for example:

```
C:\Programs\ooRexx
C:\Program Files\ooRexx
```

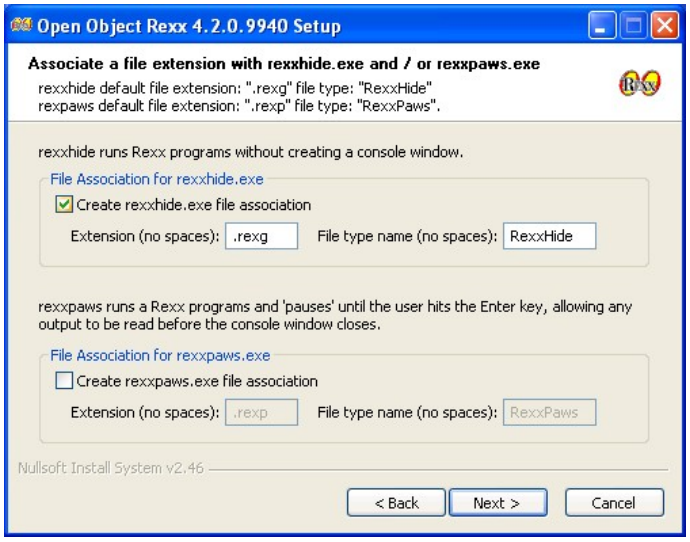
If installing (as recommended) the 32 bit program on a 64 bit Windows the directory is:

`C:\Program Files (x86)\ooRexx`

Write down the directory name shown by the installation program.

[1] JP_Demo2 runs on Windows only, because it depends on the graphical user interface component of *ooRexx*.

When the following pop-up is displayed, **change it** as follows:



Activate the top check box (Create rexxhide...) as shown in the figure above.

This tells *ooRexx* that program files with extension `.rexg` make use of the graphical interface It avoids automatic opening of an additional command line window, as would usually be done.

The remainder of the installation requires no more changes by the user.

This completes installation of *ooRexx* on your computer. Restarting is not required. From now on, *ooRexx* programs can be run by:

- Entering the program name in a command line window,
- double clicking on the program in the Windows Explorer or
- double clicking on its desktop icon (provided you created one; see below).

3 Installing JP_Demo2

Open the following URL in your Web browser:

`www.jochempeelen.de`

You will be shown the book cover you know. To the right of it is a hyperlink to file:

`ballkk.zip`

Click on it to download this ZIP file to your computer and save it in a directory of your choice. File `ballkk.zip` is the same for German and English editions of the book.

Then **unpack** the contents of the ZIP file into any directory. You can also use an USB stick, if you prefer to keep it separate.

3.1 Extended Installation

The extended installation is **optional**. It has the advantage of automatically separating the output files from the program files, which is highly recommended.

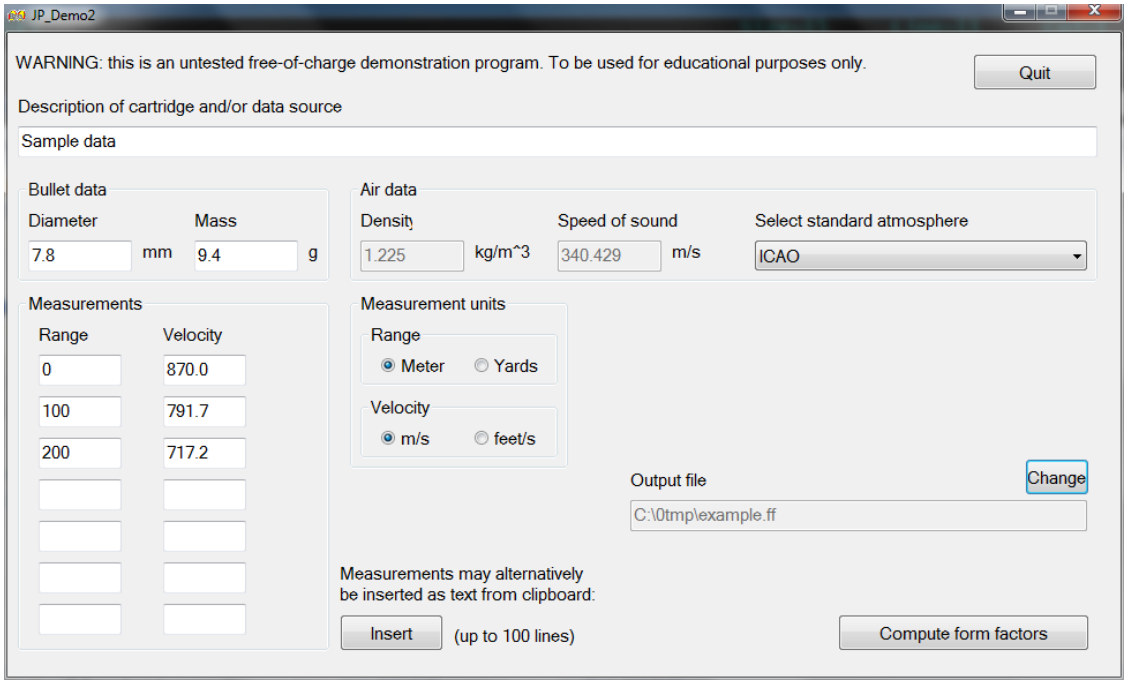
For extended installation, the program files are moved to the *ooRexx* program directory. In addition, a desktop icon is created. The necessary steps are:

- Make sure you are working from an administrator account.
- Move files `JP_Demo2.rexg`, `JP_LWMod.rex` and `JP_Formtab.rex` to the *ooRexx* installation directory you noted (see page 2). Use the Windows Explorer for this.
- Then right-click on `JP_Demo2.rexg` in its new directory. Select *Send to...* from the menu.
- Choose *Desktop* as target. This creates an icon on the Desktop.
- Change to the Desktop.
- Right-click on the `JP_Demo2.rexg` icon just created and select *Properties* from the menu.
- Field *Execute in...* will display the program installation directory. You must overwrite this with the directory where you want `JP_Demo.rexg` to save its output files.

This directory will then be used by default for output files, but still can be changed via the *change* button in the program.

4 Using JP_Demo2

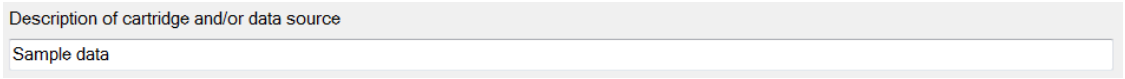
Open the Windows Explorer and double click on file `JP_Demo2.rexg` to start the program. If you did an extended installation, you can also click on the Desktop icon you created. The following window will be displayed:



At any time the program can be stopped by clicking on the *Quit* button or on the cross in the top right of the window frame.

Step 1: Describe the Data

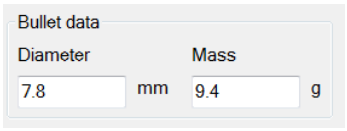
Overwrite the text *Sample data* with a meaningful description of the type of cartridge and the source of the data.



The text you enter will appear in the header part of the result file.

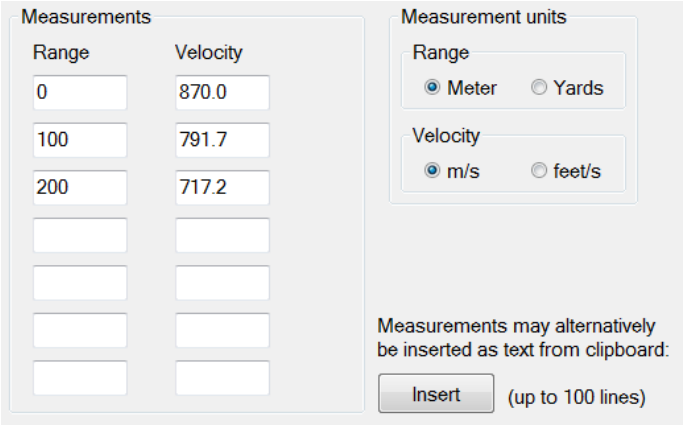
Step 2: Bullet Data

Enter bullet diameter and mass into the data fields.



Step 3: Range-/Velocity Pairs

Enter range and associated velocity in two fields of the same row. If range is given in yards or velocity in feet per second, activate the corresponding "radio button" to the right of the data fields.

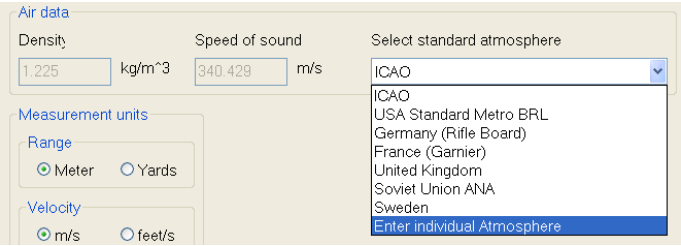


Alternatively, a block of range and velocity pairs can be copied from the clipboard. This way more pairs can be entered than via the entry fields: up to 100. The data in the clipboard has to be in text format, not in a graphical format. Values must be separated by blanks or tab characters ("white space"). For example:

- If the data is in a text editor, mark it in the usual way.
- Then, using <Ctrl><C>, copy it to the clipboard.
- Then click on the *Insert* button (shown above) to import it into the program.

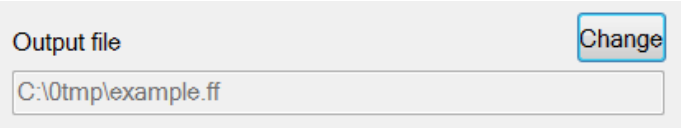
Step 4: Change Atmospheric Data

Apart from ICAO, the following standard atmospheres are predefined:



If *Enter individual atmosphere* is selected, the grayed out fields for atmospheric density and speed of sound become unlocked to enter individual values.

Step 5: Define Output File



The demo program uses output file `example.ff` unless the user changes it. The output directory is dependent on how the program was started.

- Should the program determine that it is running in the standard program installation directory of Windows, it takes the Windows directory *Users* and chooses the subdirectory of the currently running account. This is to prevent writing data files to a system directory.
- If started via an icon on the Desktop, output files are written to the directory defined in the icon properties, as described in section *Extended Installation* previously.
- In all other cases the output files are written to the directory where the program resides.

Clicking on button *Change* starts the Window file dialog and gives the user the opportunity to change output directory and file name as desired.

> Do not forget to change the filename `example` into something more meaningful for your data.

Step 6: Compute Form Factors

By clicking on button *Compute form factors* the computation is started and the output file is created.

After finishing, the Windows system editor (known as Notepad) is started to display the result on the screen.

In the ZIP file you will find a file named `example0.ff` which shows the result as computed from the sample data shown.

The form factor result files from the problems listed in the book can be found in directory `fftab` of the ZIP file `balkk.zip`. They have the same basic layout, but were created with the German version of the program.

Much success when computing form factors for your own data!