ROBIN DR400-140 B

WARNING

Here is the XPFR version of the DR400-140B initially developed by Cédric Dufour and reworked by XPFR in agreement with him.

We know that this plane is under GPL-v2 license but the sources are too many and heavy files, so we decided, by mutual agreement, to make them available on the XPFR website.

You can find these sources at this address: www.xpfr.org

You will find a paintkit to make your own liveries and all the files that have been used to create this aircraft.

There are two versions of the DR400-140B created by XPFR: a 2D version and a 3D version

2D VERSION:

• It has a functional 2D panel and an inert 3D cockpit (it is only an aesthetic feature for the 3D view mode).

Why have we developed this version?: The use of a cockpit 2D, in addition to the fact that it is particularly easy to use with a mouse, is that the less heavy technique for the computer. Employing this technique achieves a very interesting performance level for low machines(also if you fly over heavy sceneries).

The other major advantage of this technique is that it allows each user to easily modify his instrument panel via Plane-Maker (possibility of customize your plane) what is almost impossible with a 3D cockpit.

Anyway, we provided a 3D cockpit with this version but this one is very simplified and completely dummy (no functional instruments). It is only an aesthetic feature to give a pleasant cockpit in 3D view while preserving the performances of your computer (impossible with a 3D cockpit with active instruments).

3D VERSION:

• this version has a 3D cockpit more elaborated visually than on the 2D version and it is entirely functional! In fact, there is no "2D cockpit" on this version. This version is not customizable by the user and is intended for the machines a little more powerful, but it is the most realistic version concerning the cockpit.

FLIGHT MODEL:

The flight models of the 2D and 3D versions are identical. XPFR has taken back the flight model as close as possible to the official charts of the aircraft.

Anyway, we are conscious that there may be some refinement to do.

If you have certain real experience on this machine, feel free to let us know your comments!

PRESENTATION

This plane is replica of the real plane HB-KFQ property of the "Groupe Vol à moteur de Sion" (Switzerland), it includes a livery and interior design according to the original model. It is likely that there are differences in appearance or installation compared to the similar models which you can know or practice.
Cedric Dufour, real pilot of this aircraft, modelled it for his personal training, that means as close as possible to reality regarding to the aerodynamic behavior, the profiles of wing, the performances and piloting, within the limits of X-Plane possibilities.
The XPFR's team, attracted by the quality of this model, decided to bring her competences to supplement this work, always based on the HB-KFQ specifications.

- This plane is equiped by a 160 HP Lycoming O-320-D2A.
- You can carry out a weight and balance faithful to reality.
- It is provided with French and English pdf checklists, with the permission of GVM (see file CHECKLIST.DISCLAIMER.TXT)
- It includes files that make it compatible with Goodway and the Checklister's plugin.

The acf was entirely created from scratch, with the experiment and the knowledge of the author about Robin DR400, as well as the information collected in all the documentation (handbook of the plane, masses and centering, etc) of the real plane, and the equipment publicly available on the Internet.

The profiles and their characteristics were created using JavaFoil, XFLR5/XFoil and Trans-Foil (see the acknowledgments in the section below for more details).
Some extrapolations are made concerning the choice of certain profiles, because of the lack of information available on the subject.

The characteristics of this model (cf Plane-Maker) were calculated from the flight manuals of the aircraft (different versions) and were «refined» and sometimes diverted from the real value to get a plane behavior as realistic as possible in X-Plane.

The 3D model was created using Plane-Maker and Blender.
All textures were created starting from the images of the "Groupe Vol à moteur de Sion" Robin DR400.

INSTALLATION
Unzip the DR400-140B.zip file and install the folder which contains the file «dr400.acf» in entirely in your X-Plane/Aircaft/General Aviation folder(or the folder of your choice).

PARAMETER SETTING
Loading the plane, it is in front cockpit view.

On the «3D» Version, to discover the totality of the cockpit you will have to use the key combination "Ctrl+O" and to surf with your mouse.

To have a realistic model of flight compared to the true DR400, go to the "Settings/Joystick, keys and Equipment" menu, in the part "Center":
- Set the sensitivity of the joystick to 75% on the 3 left cursors
- Set the nullzone cursor to 0%
It is also recommended to set the value to 2 or 3 in the "Settings/Operations and Warnings/Flight Model Per Frame" menu, just to make sure that the plane has a nonfaded flight model (abnormal comportment when getting near performances limits of the computer for example)

Adjust the field of view in "Settings/Rendering Options/Lateral Field of View" menu to a value between 60 and 70 degrees.

If you wish to know the name of the instruments of the instrument panel, check the box: "Aircraft/Show instrument descriptions". A tooltip will appear with description.

SPECIAL FEATURES
- Canopy opening is done only in 3D, while clicking on the lever above your head.

- A map located in the glove-compartment (right-hand) is consultable with a click. To remove it, just click another time in the glove-compartment. This map covers by default a french area (East part). You can customize it by changing texture of "Carte.png" which is in the "objects" folder of the aircraft.

- This model has an auxiliary fuel tank of 50l.
**CAUTION: in case of multiple tanks, X-Plane selected the tank that contains less fuel as first used tank by default (BUG). In the DR400, it is the secondary 50l one...
Therefore,if you do not want to run out of petrol very quickly, you do set the selector to OFF.**
- In cold start, it is indicated in the checklist
- In starting engines running, it is necessary to set OFF, then to set ON. A blow of ignition key and that starts again.

TO ACCOMPLISH A COMPLETE FLIGHT

Make sure you have unchecked the box of the menu «Settings/Operations and Warnings/Start each flight with engines running». If not, then uncheck it and reload the aircraft.

Starting:

1-2• Set the battery and the alternator "ON"

3• Set the Mixture "ON" (full rich)

4• Set the Magnetos key on "IGN" (then "Both")

5• Avionics and lights "ON"

Takeoff:

• Set the Flaps down to 15 ° [key "2" once]

• Adjust trim pitch (white indicator sector) [large disc in the low center]

• Adjust trim roll [press 20x on the key "0"; "9" in the center ", 8" towards the left]

• Remove the brakes [press on the key "V"]

• Set power to 100%

• Relieve the nose wheel near 50 kts (IAS)

• take off when 60 kts (IAS)

• Initial climb speed: 70 kts (IAS)

• With 1000ft-top of the level of ground (AGL): close the flaps [key "1"]

• Normal climb speed 80 kts (IAS)

• Cruising: 2.400 to 2.500 RPM

Landing:

Downwind:
• Maintain speed in "the white sector" of the IAS
• Set the flaps down to 15 ° [1x key "2"]
• Constrain speed to 80 kts (IAS)
Final:
• Set the flaps down to 60 ° [2x key "2"]
• Constrain speed to 70 kts + 1/2 head-wind (IAS)
Over runway threshold:
• 0% of power
• smooth your landing

Shutdown (fast way):
• Set Mixture to "off" (full poor) [red handle in the bottom center]
• Set Magnetos to "off" [left lower corner]
• Set Battery and Alternator to "off" [left lower corner]

For more details procedures: see and follow the checklists availables in the aircraft folder ! ; -)

SHORT CUTS KEYBOARD (the numeric keypad is not concerned)

• Key 1 : Increase of the flaps notch by notch
• Key 2: Decrease of the flaps notch by notch
• Key V: parking brakes maximum effort

ACKNOWLEDGMENTS

The author and XPFR make a point of expressing their thanks with all those which made possible the creation of this aircraft:

- Austin Meyer and his team without whom we would not have as much pleasure to steal (HTTP virtually: /www.x-plane.com/)

- All members of the team "Blender"
(HTTP: /www.blender.org/)

- Marginal for its essential tools and espcially "Xplane2Blender"
(HTTP: /www.marginal.org.uk/x-planescenery/tools.html)

- The team of Gimp
(HTTP: /www.gimp.org/)

- The development team of the audio editor "Audacity"
(HTTP: /audacity.sourceforge.net/)

- Martin Hepperle and his tool "JavaFoil" for the design of profile of wing
(HTTP: /www.mh-aerotools.de/airfoils/)

- Drela Mark and its team for "XFOIL"
(HTTP: /web.mit.edu/drela/Public/web/xfoil/)

- X-Andre and his team for "XFLR5 airfoil"
(HTTP: /xflr5.sourceforge.net/)

- Lance Prior and its program "FoilTrans airfoil whodunnits translator" for X-Plane
(HTTP: //forums.x-plane.org-/index.php? app=downloads&showfile=7896)

- Danklaue for its video tutorials on Plane-Maker and Blender
(HTTP: /www.youtube.com/user/danklaue)

- All members and contributors of the X-Plane community and forums, for their invaluable comments and ideas
(HTTP: /www.x-plane.org/- HTTP: /www.x-plane.fr/)

- My friends of the "Groupe Vol à moteur de Sion" (Swiss), for their invaluable comments, ideas and patience (when they treat with the real DR400!) (HTTP: /www.gvmsion.ch/)

We hope this document will answer most of your questions about this achievement and will help you as best as possible.

GOOD FLIGHTS; -)!

The XPFR Team