Section 2
Normal Procedures

The Pro Flight Trainer Evolution BL is a HID USB Device that Plug & Play to any compatible Operating System. It will be recognized as a USB Input Device with 5 axis, 6 buttons, and 1 hat-switch. All you need is to plug in the USB Cable to a free USB slot on your computer, and it will be automatically recognized and installed by your operating system.

The following section introduces suggested procedures and settings for well know flight simulators software. It doesn’t mean that the controls are limited to those programs, and the manual will be extended and revised as needed to add additional software.

The actual product may vary slightly from the pictures. Design and specifications are subject to change without notice. Copyright © Pro Flight Trainer

NOTE!

Make sure to perform a calibration before starting to train with the controls, as each unit will have slightly different raw data outputs on maximum and minimum control range and center position. You can follow our calibration guide listed in this section or use your preferred most familiar method.
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2.1 Assembling the unit

2.1.1 Assembling the frame

After carefully unpacking all pieces, make sure to check the content as described below, and overall condition of all parts. Make sure to react fast if you find visual damages to any parts, because most shipment companies have very limited complain reaction time.

All Bolts and Nuts are torqued at standard value. Don’t over torque or damage will occur to the tube assemblies.

M4 Socket Cap Screw: 3 Nm
Pedal Screws: 24 Nm

If you do not have any measurement tool, proceed as follow:

M4 Socket Cap Screws: tighten till no free room, then an additional 0.5 -1 complete turn.

Pedal Screws: tighten just enough to prevent movement, then align, then tighten strong enough to prevent movement when applying pedal during flight.
Box content - black lynx - (BL version):

- Pedal Base Assy and Pedal Assy

- Collective Base Assy and Collective Assy

- Cyclic Base Assy and Cyclic Assy (Cyclic Base Assy might be in 3 single parts)

- USB Cable, Socket Cap Screws and Tools

- Flight Manual
Follow the instruction below to assemble the flight controls.

Tighten the screw just enough to prevent movement, don't over tight as damage can occur to the aluminum tubes.

step 1a

1 - insert those 2 screws (30mm)
don't tighten completely! allow some movement to adjust pieces when assembling to other assemblies

tighten only once the whole assy is assembled

depending on shipment type you'll need to assemble those 3 pieces together
step 1b

1 - adjust the pedal base over the collective base and insert the screw to attach them together

don't tighten the screw now!
step 2

Remark:

Those 4 holes might appear to be 0.5 mm to tight. This is done on purpose to provide a perfectly stable cyclic mixer assembly.

1 - adjust the mixer assy over the pedal base and collective base, and insert the 4 screws (30mm)

(1 for each leg of the mixer assy, 2 on this side and 2 on the other side)

don't tighten the screws now!
step 3

1 - tighten this screw
step 4

1 - insert the 2 upper screws (45mm)
don't tighten the screws now!
step 5

1 - push and hold this leg towards the collective base

2 - tighten this screw
step 6

1 - push and hold this leg towards the collective base

2 - tighten this screw
1 - Tighten the last 2 screws of the mixer assy/cyclic base
step 7

1 - tighten the 2 upper screws
step 8

1 - adjust the collective tube to fit the holes - and tighten the 2 screws (50mm)
step 8b

1 - remove the 2 lower screws (if inserted)

2 - align the grip over the collective base tube and reinsert the screws

3 - tighten just enough to prevent movement
step 9

1. remove the 2 screws on the cyclic bar
2. adjust the joystick grip assy over the mixer assy bar to match holes

(insert the 3 cables straight down through the square piece)

3. reinsert the 2 holding screws and tighten strong enough to prevent movement

Remark:

It is absolutely normal for the cyclic grip to be off-center.
This is mainly done for ergonomic reasons, to provide the best hands-on experience and comfort on long flights.
step 10

1 - insert the 2 pedal assy bolts into the holes on the pedal base

2 - tighten just enough to prevent it from moving

3 - level up the pedals and adjust to be straight/perpendicular with the pedal base

4 - tighten just strong enough to prevent rotation when flying
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2.1.2 Wiring the Black Box

Follow these steps to connect all axes to the black box.

Step 1

- Wiring for cyclic, joystick and pedal
  - 3 joystick cables
  - 2 cyclic cables
  - 1 pedal cables
  - Pass all cables under the square piece (calibration square)
pass all 6 cables behind the USB Board
remove 2 Lock Nuts M4 to open the black box
step 4

You can find the USB Board Wiring Diagram under Section 5.2.6

wire the USB Board using the USB Board wire diagram
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2.2 Adjustments

2.2.1 Adjusting Friction

Tool needed:
- 12 mm wrench or ½ inch wrench

The friction can be adjusted by tightening or un-tightening the adjustment lock nut located at the end of the axis.

**WARNING!**

Be gentle when adjusting the friction nut. Never pull more than necessary and never force the nut. Only gentle pressure should be needed to adjust it. Never adjust a full turn at a time; 90 degree is usually more than enough to almost completely block the axis.

Locate the adjustment lock nut at the end of the axis you wish to adjust and slowly tighten it, in case you need to increase friction, or unscrew it to decrease friction.

The following picture shows the location of the adjustment lock nut on the cyclic axis.
2.2.2 Adjusting the pedal Friction and Distance

Tool needed:
- 10 mm wrench

The pedal distance can be adjusted by un-tightening and removing the lock nut located under the pedal base, drill new holes to match your exact position wishes, and re-tightening the lock nut.

The friction can be adjusted by tightening or un-tightening the adjustment lock nut located at the end of the axis.

**WARNING!**
Be gentle when tightening the lock nut. Never pull more than necessary and never force the nut. Only gentle pressure should be needed to tighten it. Tightening the lock nut with too much torque could damage the pedal assembly or cause unsmooth friction and movement on the axis.

The following picture shows the location of the lock nuts.
2.2.3 Adjusting collective height

Tool needed:

- 7 mm wrench (provided with the unit package)
- Hex-Key Nr. 3 (provided with the unit package)

The collective height can be adjusted by un-tightening and removing the hex-cap screws located on the collective base, choosing a new hole set, and re-tightening the screw.

The following picture shows the location of the screws.
2.3 Calibration Procedures

2.3.1 Main calibration under Windows

The main calibration is not related to any simulator software and enables accurate axis information for the operating system. Since the controls won’t use the standard maximum and minimum range defined automatically after the Plug&Play process, and has different centered position information, this calibration is critical to the precision of the unit.

Once you have plugged the USB cable into a free USB port of your computer, you will need to access the properties of the Pro Flight Trainer Evolution BL device.

If you are struggling with our “quick-start” guide below, watch a full calibration movie on our website under: www.pro-flight-trainer.com/support

**NOTE!**

Omitting this procedure will result in poor flying sensitivities and bad axis responses.
“Quick-start guide” windows 7 users

- Hit the start Button, enter “usb game” in the “search programs and files” and select “Set up USB game controllers”

- Choose the Pro Flight Trainer controller (usually listed as “PFT EVO”) and select “Properties”
-> Select “Settings”

-> Select “Calibration” and follow the instructions. Make sure to read the instruction carefully and to follow each step as instructed.
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2.4 Recommended Settings under FSX

**NOTE!**

The preinstalled rotorcraft under FSX and FSX Acceleration do not have advanced aerodynamic settings, neither make use of throttle input axis. Make sure to install an advanced add-on to make use of the full potential of the controls.

Make sure to read the user manual when using add-on Software to find out what exact axis needs to be assigned on your particular software model and version.

Pro Flight Trainer or Pro Flight Trainer US doesn’t take any responsibilities towards damages to your settings or computer due to the change suggested here; those suggestions are hints from our high-pilots and designers and shared in a “free to follow” basis.

2.4.1 Sensitivity Settings

Select “Settings” and select “Controls”
Make sure that the correct Controller Type is selected and that the option “Advanced Controls” is selected.

Adjust the axis sensitivity and Null Zone as follow:

- Ailerons axis  Sensitivity – full right  Null Zone – full left
- Elevator axis  Sensitivity – full right  Null Zone – full left
- Throttle axis  Sensitivity – full right  Null Zone – full left
- Rudder axis  Sensitivity – full right, then 10 steps left  Null Zone – full left, then 5 steps right

**NOTE!**

Feel free to adjust to your own wishes and feelings once you get familiar with the controls and the software model your flying with. Having the Null Zone all the way left prevent response delays in the inputs, and best meet realistic flight controls inputs, but some software might be to responsive to those settings.
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2.4.2 Axis assignment

The best way to make sure if all axis for your particular model in FSX has been assigned correctly is to switch to Virtual Cockpit View (standard Key assignment is “A” and “S” for view changes), Zoom out to at least “0.40 Zoom” (standard Key assignment is “-“) or at least enough to see all Controls, make sure FSX is not in pause mode, and move the controls around, checking if everything single axis moves in the virtual cockpit when moved on the controls, if they move the right way, and seems to move the full way.

Be aware that some preinstalled helicopter in FSX and X-plane do not include true throttle axis simulation, there for this axis will never react the realistic expected way, if working at all.

If any axis doesn’t move the right way, you’ll need to assign them under the FSX Settings, Controls, Control axes.
Set the axis as follow (refer to “software add-on” user manual as it might be different from standard assignment)

Select “Ailerons axis”, select “Change Assignment” and move the corresponding control axis. Select “OK” to accept change.

Follow the same procedure for all other axis needing new assignment. Most Rotorcraft model will use the “Throttle axis” as collective axis, the “Propeller axis” as throttle axis, and the “Rudder axis” as pedal axis.

*Add pic for sample axis assignment.*

### 2.4.3 Realism Settings

Select “Settings” and select “Realism”
Select the option you wish to enable. We suggest high “realistic” settings. Most important is to disable “autorudder” on the low right corner.

2.4.4 Display Settings

They are no specific Settings that need to be adjusted towards using the flight controls.

NOTE!

Be aware that having maximum visual settings might decrease the frame rate during flight, affecting the responsiveness of the controls. Be careful when setting them to maximum level, and reduce those settings anytime you feel some delay in control response. It is a good reference to allow your computer to have at least 25 FPS during flight sessions. (Make sure you have FSX Service Pack 2 installed if you do not use the Acceleration Pack, as this will increase your FPS performance.)
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2.5 Recommended Settings under X-Plane

NOTE!

The preinstalled rotorcraft under X-Plane do not have all advanced aerodynamic settings, neither make use of throttle input axis. Make sure to install an advanced add-on to make use of the full potential of the controls.

Make sure to read the user manual when using add-on Software to find out what exact axis needs to be assigned on your particular software model and version.

2.5.1 Sensitivity Settings

Select “Settings” and select “Joystick & Equipment”
Select “Center” and adjust slider as shown.

NOTE!

Feel free to adjust to your own wishes and feelings once you get familiar with the controls and the software model your flying with. Having the stability-augmentation all the way left prevent response delays in the inputs, and best meet realistic flight controls inputs. However, Some software package might need different settings, feel free to adjust as suggested in the manufacturer guide or as needed to meet your specific wishes.
2.5.2 Axis assignment

Select “Settings” and select “Joystick & Equipment”

Select “Axis” and follow the detailed instruction on the top portion of the screen

NOTE!

Don’t forget to perform a calibration and set the center point as instructed, as this is critical to precise and accurate flight control inputs.
2.5.3 Realism Settings

Some Add-On Software have adjustable realism settings for their model. Refer to the manufacturer User/Flight Manual for additional information.

2.5.4 Rendering Options

They are no specific Settings that need to be adjusted towards using the flight controls.

**NOTE!**

Be aware that having maximum visual settings might decrease the frame rate during flight, affecting the responsiveness of the controls. Be careful when setting them to maximum level, and reduce those settings anytime you feel some delay in control response. It is a good reference to allow your computer to have at least 25 FPS during flight sessions.
2.6 Recommended Settings under DCS Black Shark

2.6.1 Axis assignment

Select “Options” in the root menu

Select “Controls”, select the category “Axis Commands” and follow the instructions
2.6.2 Sensitivity Settings

No specific adjustment needed for the Pro Flight Trainer controls.

2.6.3 Realism Settings

No specific adjustment needed for the Pro Flight Trainer controls.

2.6.4 Display Settings

No specific adjustment needed for the Pro Flight Trainer controls.

NOTE!

Be aware that having maximum visual settings might decrease the frame rate during flight, affecting the responsiveness of the controls. Be careful when setting them to maximum level, and reduce those settings anytime you feel some delay in control response. It is a good reference to allow your computer to have at least 25 FPS during flight sessions.