



FORCETUBE DOCUMENTATION

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2020.07.01

1 - Button

To power a ForceTube on, you only need to press the on/off button (the red ProTubeVR logo near the USB-C port). You should see two lights when it is on.

To power it off, make sure you unplugged it and press the on/off button for more than 3 seconds. If a light was blinking, it should freeze and emit a little rumble feedback when you can release the button.

Another “Hard Reset” bouton can be used to restart the ForceTube when it freezes on rare cases.

Troubleshooting:

In some rare cases, we saw the ForceTube totally freeze, with microcontroller, LEDs and motors no more responding to Bluetooth and shutdown requests.

If you meet this problem, you should take the small Allen key you received with your ForceTube, and introduce its longer part in the little hole you can observe in the middle of the ProTubeVR white logo printed in the ForceTube (see picture below). Here it is a button, which, once pushed, will force the ForceTube microcontroller to restart and stop this bug.



2 - Battery and LED

There are 2 LEDs inside the ForceTube.

The first little one is always red and means the ForceTube microcontroller is on.

The other LED (the battery level LED) is red when you have low batteries, green at 30-80% and white at 80-100%. This LED blinks (near 1 Hz) when the ForceTube is not connected to an application (not to be confused with not paired to PC/Quest/phone) and is steady when connected. It blinks red very quickly (3 Hz) if you

have a battery cell with a too low charge level to work. In this state, the ForceTube will not function and needs to be charged.

You can charge the ForceTube with the provided USB-C to USB charging cable. Plug the USB-C connector into the ForceTube's USB port below the power button at the top of the front, and then plug the USB connector into a USB port on your computer. Important: trying to use a USB-C to USB-C or an electrical outlet instead of your PC can result in the ForceTube not receiving any charge. You should use it as instructed above for it to charge!

The battery level LED turns orange when the ForceTube is charging. After 6 to 8 hours of charge, your ForceTube should be fully charged. You can check it by unplug it (restart it if it shutdown at unplug) and check the battery level LED is white. It is recommended when you first receive the ForceTube to immediately charge it until white LED.

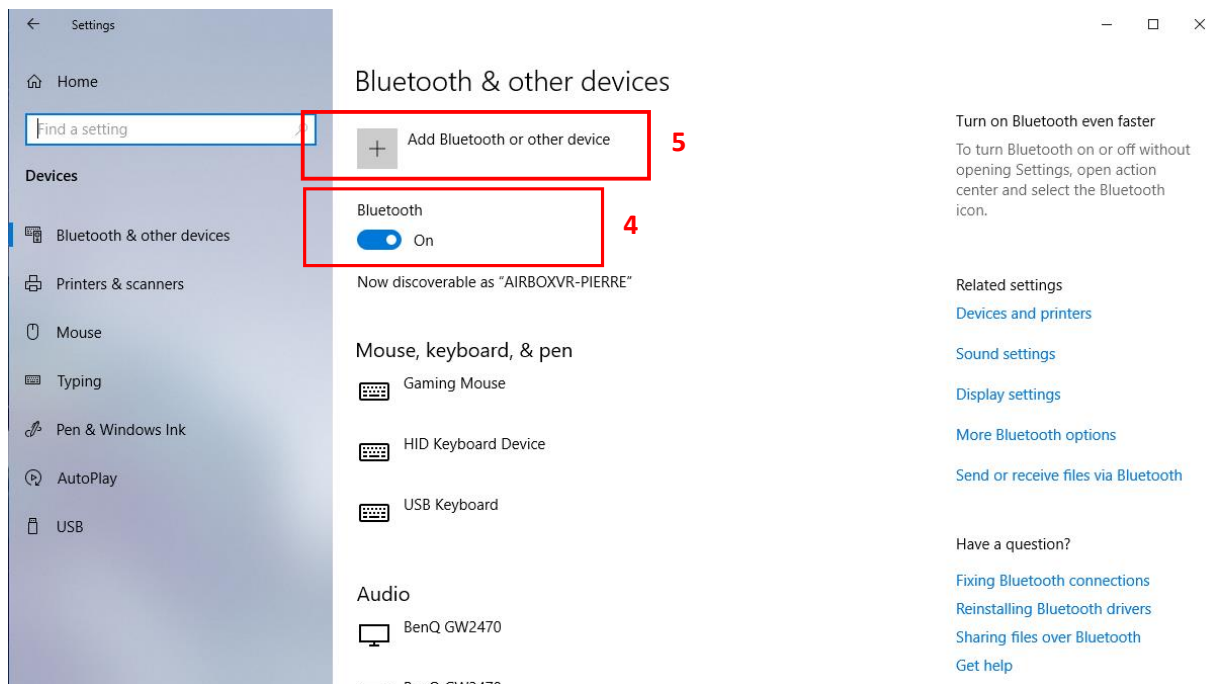
3 - Bluetooth pairing

To use the ForceTube, you first need to power it on and to pair it by Bluetooth in your OS (Android for Oculus Quest and Windows for PC HMDs).

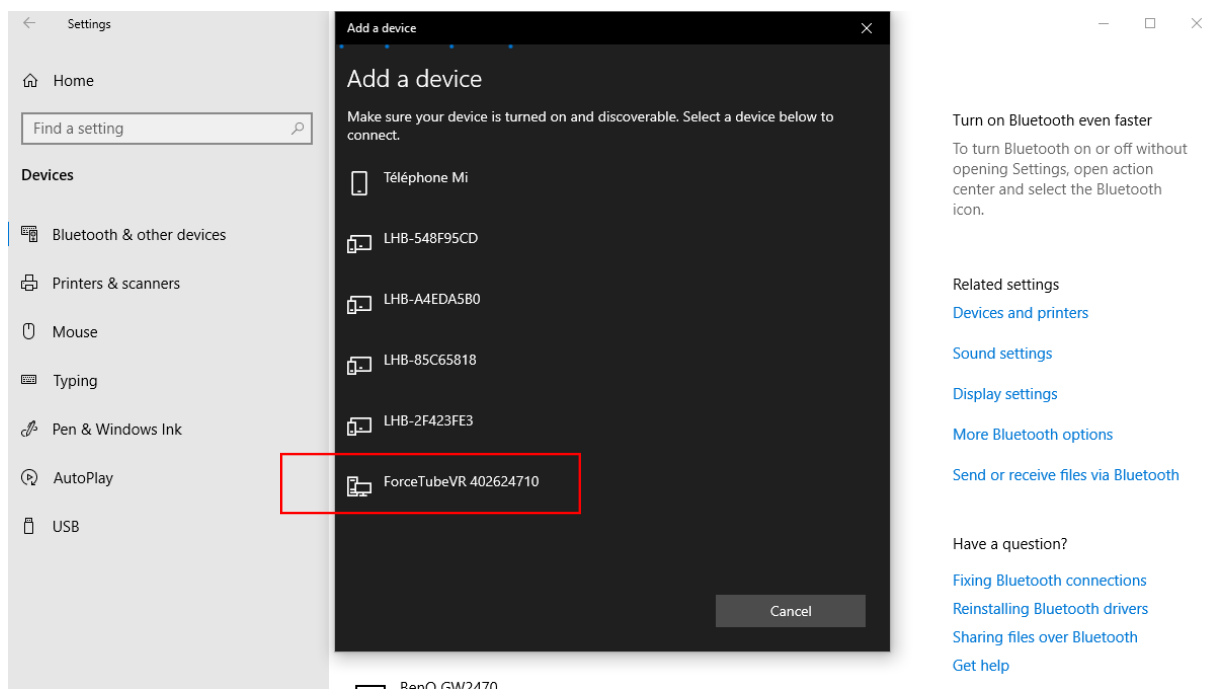
3.1 - On Windows

If your computer does not have Bluetooth, plug in the included Bluetooth dongle and enable Bluetooth. To pair it to Windows 10, power your ForceTube on and make sure it is not connected to another computer/phone/Quest before (the batteries level LED should blink).

1. Open the Windows settings,
2. click "Devices"
3. Click "Bluetooth and other devices".
4. Turn on the Bluetooth if it isn't done
5. Click "Add Bluetooth or other device" > "Bluetooth".



6. Your ForceTube should appear with numbers aside. It's your ForceTube's ID.



7. Click on your ForceTube.
8. Wait a few seconds while your ForceTube is paired to Windows.

Troubleshooting:

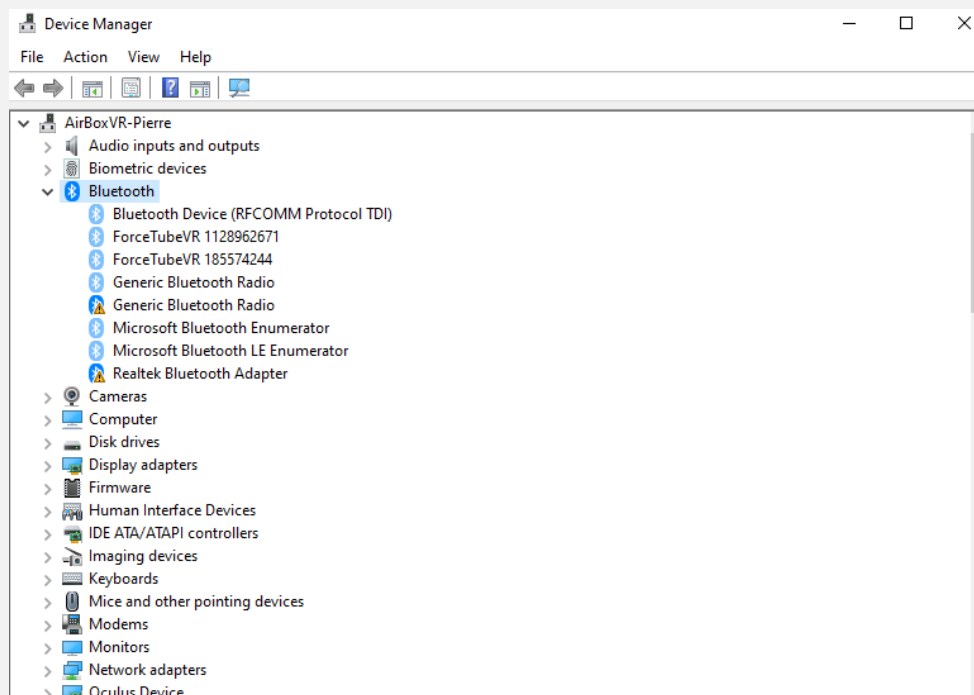
If your ForceTube is paired on Windows but cannot connect in games or Companion Application, it may be due to a pairing to the bad Bluetooth transmitter (mainly Windows problem).

Windows usually works with one Bluetooth transmitter, but all devices ever paired to one transmitter cannot be paired to another from the same computer. This problem can occur if you have different Bluetooth transmitters installed or even if you moved your Bluetooth dongle to a new USB port and Windows had difficulties to recognize it, assuming it is a new Bluetooth dongle even if it isn't.

So, you should try to remove the ForceTube to pair it again. If you have difficulties to remove it:

1. go to your Device Manager
2. click "View"
3. "Show Hidden Devices"
4. open the "Bluetooth" tab
5. in this "Bluetooth" tab, uninstall all unconnected devices (they have clearer icons) by right-clicking them and selecting "Uninstall device" and restart your computer
6. once done, try to pair again your ForceTube on Windows

If you accidentally remove a device you should not, try to unplug it, restart your computer and plug it again.



If you have the bug just described, uninstall all clearer devices from the Bluetooth tab.

Additional Connection Troubleshooting:

If after the troubleshooting steps you still cannot get the ForceTube to connect to the companion app or games, or perhaps to be seen by Bluetooth to pair, here are some more steps to try:

1. If you have an android phone, install the ForceTube's Android application APK on your phone (you can download it here : <https://github.com/ProTubeVR/ForceTubeVR-User-Content/tree/master/Android%20Application>) and try to pair the ForceTube to your phone (like a normal Bluetooth device) with the application running.
 - If you see it and it pairs, then the problem is somewhere on your computer.
 - If it does not connect even to phone, try resetting the ForceTube. There is a hole in the ForceTube where the logo is with enough size for the small Allen key sent with the ForceTube to fit inside. Use that to press the reset button to reset the ForceTube CPU. Hold it for 5ish seconds and try connecting again.
 - If it still does not connect, contact support about the issue by submitting a ticket at <https://www.protubevr.com/en/sav>
2. If the problem is on your computer, the first thing to check is the Bluetooth dongle.
 - If you were using one you already had, try uninstalling it and using the provided dongle.
 - If you were using the provided dongle, try uninstalling it, restart your computer and reinstalling it on different USB ports.
 - If after trying various USB ports it still does not work, then the issue is likely the Bluetooth dongle. Go to <https://www.protubevr.com/en/sav> to submit a ticket to have your Bluetooth dongle replaced ASAP. Alternatively, simply acquire another Bluetooth dongle to test. It must be 4.0 Bluetooth compatible at least.

3.2 - On Oculus Quest

To pair a ForceTube on Oculus Quest, power the ForceTube and the Oculus Quest on and, in the Oculus Quest home, click "Settings" > "See all" > "Experimental features".

Next to "Bluetooth pairing", click "Pair". Scroll the list of devices and when you find your ForceTube, click it. After some seconds, click "Pair".

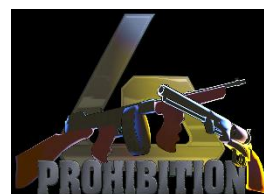
4 - Play

4.1 - Native integration in games

Some games integrate the ForceTube to be natively compatible.

All following games natively integrated the ForceTube:

- Onward (SteamVR): to use your ForceTube, go in your SteamVR library, right click on “Onward”, select “Properties”, in “General” tab, click “Set launch options”, write “-forcetube” (without the “ ”) and restart the game if it was launched. Be sure the “FORCETUBEVR” option is set to “ENABLED” in the main menu settings.
- Stand Out (PC)
- War Dust (PC)
- Contractors (PC/Oculus Quest)
- Hot Dogs, Horseshoes & Hand Grenades (PC)
- Pavlov (PC): to use your ForceTube, you need to enable the “forcetube haptics” option in Pavlov settings
- GunClub VR (PC/Oculus Quest)
- Virtual Battlegrounds (PC)
- ProHibition (Quest via SideQuest)



These natively compatible games only need you to keep a powered on paired ForceTube when you launch them, and it will automatically connect.

You can adjust the power and duration of ForceTube feedbacks if you use the **Companion Application**.

For more details, go to 5.3 part.

Troubleshooting:

If you cannot get a game to connect, you might have to update the library file, with a .dll extension. You can find the latest .dll file on our Companion Application install folder you can download at : <https://github.com/ProTubeVR/ForceTubeVR-User-Content/raw/master/ForceTubeVR%20Companion/ForceTubeVR%20Companion%20Application.rar>

To update the .dll, go to the local files for the game in question and find the ForceTube .dll file. It will be named something like ForceTubeVR_API_x32.dll or ForceTubeVR_API_x64.dll.

Copy and paste the new .dll (take the x32 if you replace the x32, and x64 if you replace the x64) to this location, add "old" to the name of the existing one, and then rename the new one to the existing one's name before you added old.

Restart the game you changed and try connecting again.

If it still doesn't connect, contact support <https://www.protubevr.com/en/sav>

4.2 - Backward compatibility with SteamVR

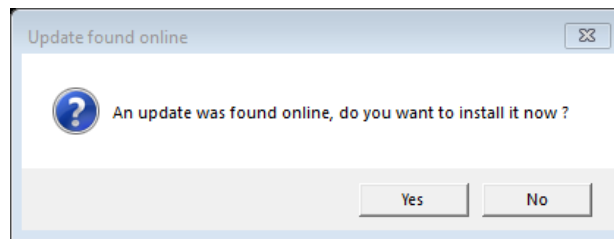
Other games work with ForceTube if you launch them with **SteamVR** and you use the **Companion Application**.

For more details, go to 5.2 part.

5 - Companion Application for Windows

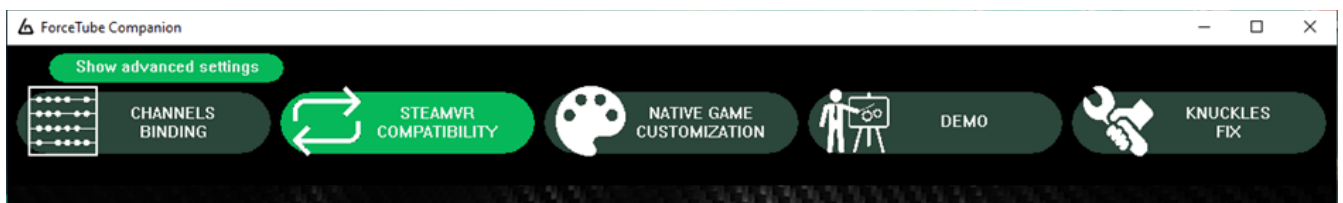
You can download it here:

<https://github.com/ProTubeVR/ForceTubeVR-User-Content/raw/master/ForceTubeVR%20Companion/ForceTubeVR%20Companion%20Application.rar>



It will automatically ask you the permission to auto-update at launch when a new version is available.

In the Companion Application, you have 3 tabs called "SteamVR Backward compatibility", "Native Game Personalization" and "Demo".



In all these tabs, you have some options, but the bottom of the window is common to all tabs.

It is another button visible in the top of the user interface, titled "Show advanced settings". When it is off, the user can only see the more often useful options. For example, the "Channels binding" tab and the "Targeted channel" combo box in the bottom of the user interface, mainly useful for users which have more than one ForceTube, are hidden if "Show advanced settings" is off. In this situation, all the settings visible and the output you can trigger in the "Demo" tab indifferently target all the ForceTube channels.

If "Show advanced settings" is on, the "Channels binding" tab, the "Knuckles fix" tab and the "Targeted channel" combo box in the bottom of the user interface are visible, and all the settings visible and the output you can trigger in the "Demo" tab target the ForceTube channel selected in the "Targeted channel" combo box.

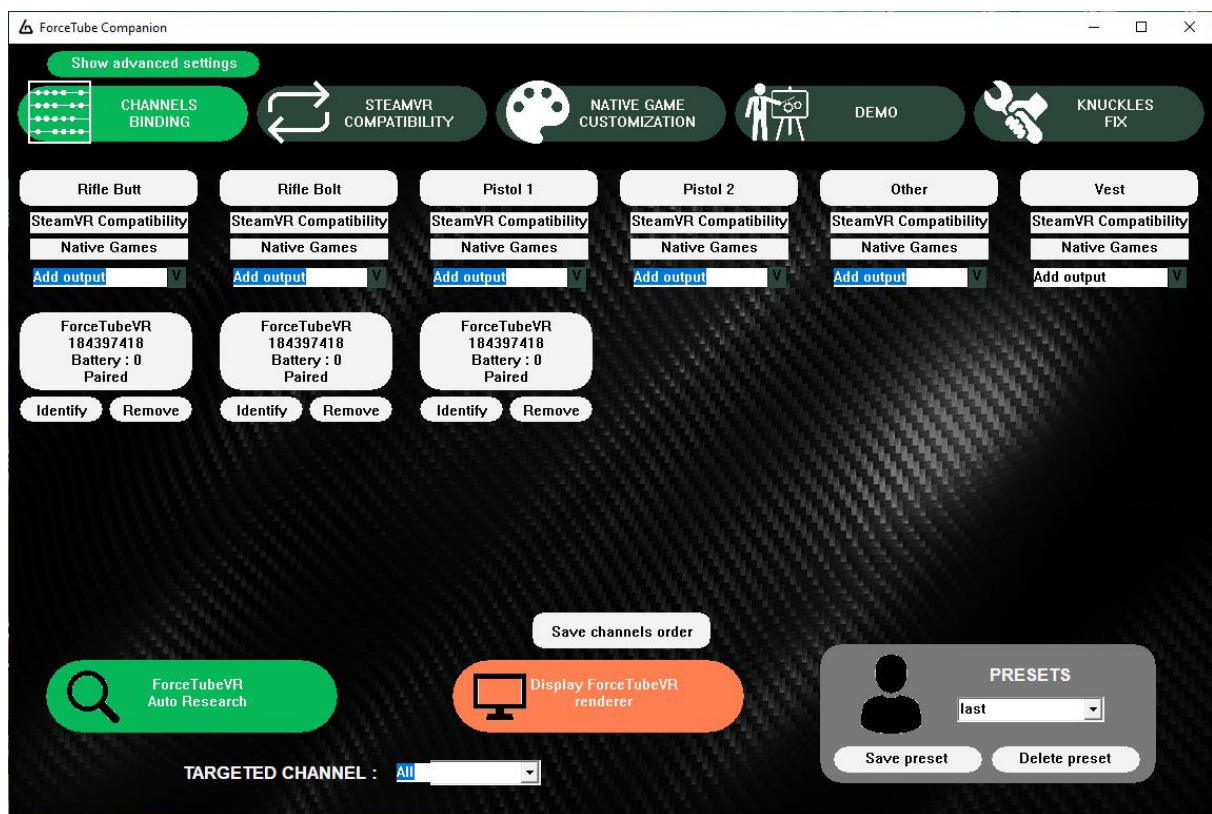
Lots of other options are only visible if the "Show advanced settings" is on.

5.1 - Channel binding

In this tab, you can see the six channels, in six columns, used to send targeted commands to your ForceTuberVR.

By default, most of games send requests to both "Rifle" channels (RifleButt and RifleBolt), but some games are designed to send requests to specific channels.

It enables players to apply different setups (one by channel) at the same time. It is useful if you have multiple ForceTubes.



In all these channels, you can click "Add output" to add a ForceTube. A ForceTube can be placed in different channels simultaneously, it simply receives the signals from all these channels.

You can:

- Remove a ForceTube from a channel by clicking the "Remove" button below,
- Make it rumble by clicking the "Identify" button also below,
- Make rumble an entire channel by clicking the channel name.

To custom the signals received by each channel, you can click "SteamVR Compatibility" and "Natives Games" in the channel column.

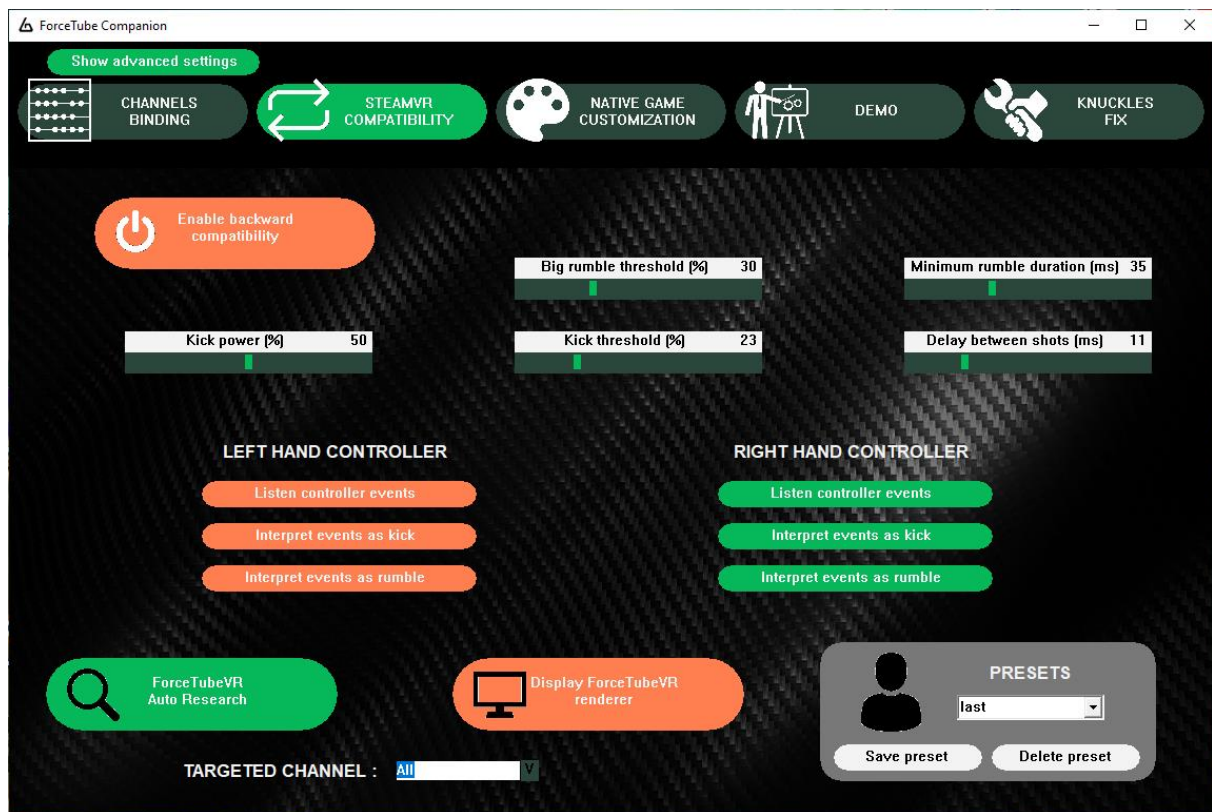
It respectively switches to the "SteamVR Backward Compatibility" and "Native Game Personalization" tabs and selects the channel to edit (you can see the selected one in the combo box "Channel" on the bottom) to match with the column where you clicked.

You can also see a "Save channels order" button in the bottom of this tab. It saves the ForceTube you forced in channels. If you quit and restart the application, you will keep it like you saved it.

5.2 - SteamVR Backward Compatibility

You can use it to re-use the rumble requests sent by SteamVR to your VR controllers and transmit them to your ForceTube under some conditions. You must keep the Companion Application open in background and launch the target game by SteamVR (not by the Oculus application). You can find a list of all natively compatible games and eventual steps to enable their ForceTube compatibility in the 4.1 section. These listed games do not need to use the SteamVR backward compatibility.

Remember: when you change something here, you only do it for the selected channel. You can see it in the "Channel" combo box on the bottom. To edit another channel, select it in this combo box before.



The "Enable backward compatibility" button let you enable or disable the SteamVR listener. Remember to enable it before use because it is disabled by default.

All the following sliders are useful to properly isolate the controller rumble signals corresponding to shoots, and to render them into realistic ForceTube feedbacks:

- The "**Kick power**" slider let you choose the strength of the ForceTube kicks generated by the backward compatibility.
- The "**Kick threshold**" slider let you choose the minimum power required by the Companion Application to make kick the ForceTube. All weaker signals will only trigger the rumble motors of the ForceTube.
- The "**Big rumble threshold**" slider let you choose the minimum power required to activate the bigger rumble motor of the ForceTube. All weaker signals will only trigger the smaller rumble motor of the ForceTube.

Troubleshooting:

- Too high shot frequencies can solicitate too much the kick motor and makes you feel misfires.
- It isn't the same problem with the rumble motors, because they do not need to get back to be reactivated, in this case you just have to reduce the kick power (because directly linked to the motor activation duration).

- The "**Minimum rumble duration**" let you choose the minimum duration of a rumble performed by the ForceTube. All shorter rumble duration requests will be bring to this value. This slider is hidden if "Show advanced settings" is off. The aim of this function is to driver the rumble motors long enough to be felt by the player.
- The "**Delay between shots**" slider let you choose a minimum delay between two shots. After a request is transmitted, all request after this one will not be transmitted during the duration you chose. This slider is hidden if "Show advanced settings" is off.

Below these sliders, there are two columns: "Left hand controller" and "Right hand controller". For each of these controllers, you have the following options:

- The "**Listen controller events**" buttons let you choose to spy or not the events from the VR controller left or right.
- The "**Transmit controller to kick**" buttons let you choose to transmit or not the events from the VR controller left or right to the kick motor (solenoid) of the ForceTube. These sliders are hidden if "Show advanced settings" is off.
- The "**Transmit controller to rumble**" buttons let you choose to transmit or not the events from the VR controller left or right to the rumble motors of the ForceTube. These buttons are hidden if "Show advanced settings" is off.

5.3 - Native Game Customization

You can use the Companion Application to custom the ForceTube requests sent by natively compatible games. It needs you keep the Companion Application open in background. You can find a list of all natively compatible games and eventual steps to enable their ForceTube compatibility in the 4.1 section.

Remember when you change something here, you only do it for the selected channel. You can see it in the "Channel" combo box on the bottom. To edit another channel, select it in this combo box before.



The "**Native kick power multiplier**" let you choose to increase or reduce the kick powers of ForceTube requests from the natively compatible games.

The "**Native rumble power multiplier**" let you choose to increase or reduce the rumble powers of ForceTube requests from the natively compatible games.

The "**Native rumble duration multiplier**" let you choose to increase or reduce the rumble durations of ForceTube requests from the natively compatible games.

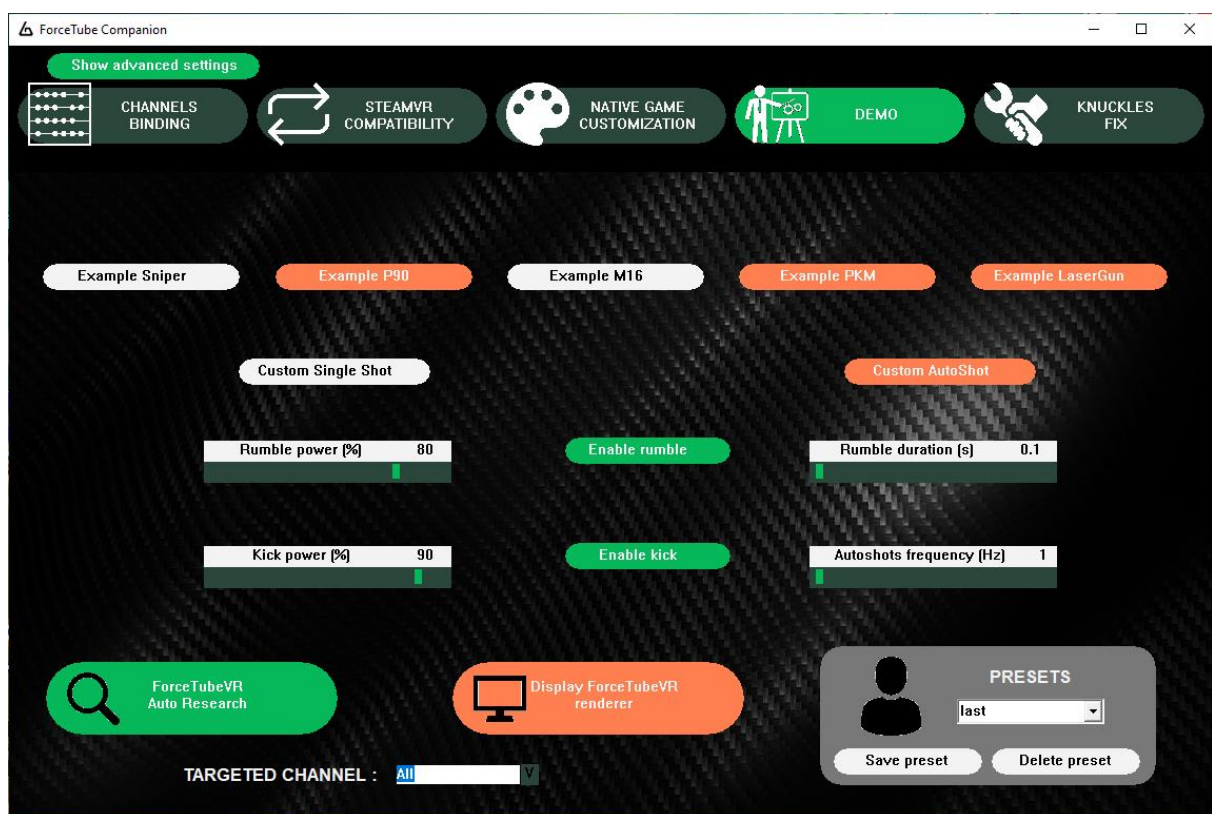
Their values are in percent, so:

- 200 means +100% (the same as x2),
- 100 means +0% (the same as x1),
- 0 means -100% (the same as x0).

5.4 - Demo

Here you can do all the tests you want, for example to test the behavior of a channel or to simply show the ForceTube possibilities.

Remember the requests you send from here are only sent to the selected channel. You can see it in the "Channel" combo box on the bottom. To target another channel, select it in this combo box before.



The top is a set of pre-calibrated typical requests like you should often find in natively compatible games. The bottom part is a toolkit to generate custom requests to ForceTube. This bottom part is hidden if "Show advanced settings" is off.

- The "Example sniper" button sends a unique powerful shot.
- The "Example p90" button sends high frequency shots while enabled.
- The "Example m16" button sends a burst of three little shots.
- The "Example PKM" button sends powerful shots with a low frequency while enabled.
- The "Example lasergun" button triggers an increasing rumble when it is clicked the first time (simulating a power loading lasergun) and sends a powerful shot (with a rumble power relative to the loading duration) when it is clicked the second time.

The "Custom single shot" button sends a request containing a kick if the "Enable kick" button is enabled and a rumble if the "Enable rumble" button is enabled.

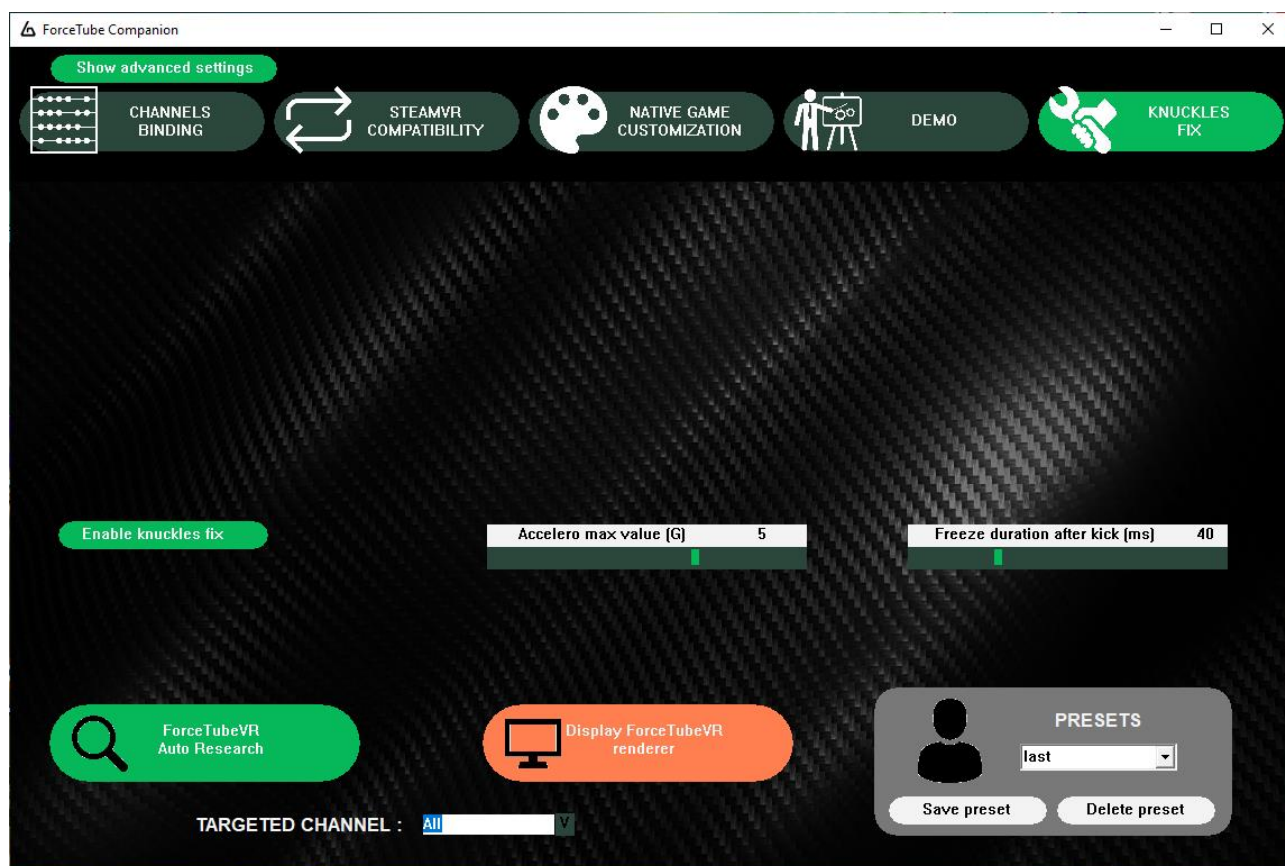
The kick will have a power equal to the "Kick power" slider value. The rumble will have a power equal to the "Rumble power" slider value and a duration equal to the "Rumble duration" slider value.

If the "Custom autoshot" button is enabled, it regularly sends a "Custom single shot" button request. The frequency (the number of shots by second) is equal to the "Autoshot frequency" slider value.

5.5 – Knuckles Fix

This tab is dedicated to knuckles (the Valve Index controllers, initially sold for HTC Vive) users to fix a common bug due to a poor calibration of their accelerometers: knuckles overestimate the high accelerations. Consequently, you may see your knuckles chaotically “jump” when the ForceTube kicks, and especially during shoots bursts.

If you meet this bug, you should install the SteamVR driver we made to fix it. You can find it in the “Valve Index Knuckles driver” folder directly in the Companion Application directory. Open it, close SteamVR and execute “InstallDriver.exe”. The “Knuckle fix” tab in your Companion Application is now functional.



Once done, the button “Enable knuckles fix” let you enable or disable the following fix: when enabled, the knuckles accelerations in SteamVR will be limited to the “Accelero max value” slider (unit is “g” and “1 g” equals to the earth gravity acceleration) value and the knuckles positions will be frozen on kick requests during a number of milliseconds equals to the “Freeze duration after kick” slider value.

For more information, like any advice about this tab calibration, you can join us by going to our discord dedicated channel at : <https://discord.gg/bXN5P3P>

6 - Other features

These features are visible from all tabs.

6.1 - ForceTube Auto Research

When the "**ForceTube auto research**" button is enabled, the Companion Application will automatically look for all unconnected but paired ForceTube in background. It is useful to quickly recover the connection after a ForceTube disconnection.

But if you have an off paired ForceTube, it can cause some audio noise in Bluetooth headphone. To prevent this, unpair the off paired ForceTube or, simpler, disable this button.

When you launch the Companion Application, the natively compatible games stop their ForceTube researches and let the Companion Application do it for them.

So, to prevent the audio noise in Bluetooth headphones in games if you have an off paired ForceTube, you have two solutions:

- Launch the Companion Application, wait for your ForceTube connection and uncheck the "ForceTubeVR Auto research" button.
- You can also simply unpair your off paired ForceTube.

6.2 – Targeted Channel Combo box

It shows the channel which is customized by the "SteamVR Backward Compatibility" and "Native Game Personalization" tabs and targeted by requests from the "Demo" tab.

You can change it by clicking and selecting the new one you want to edit or target.

When you select a new channel, you should see the "SteamVR Backward Compatibility" and "Native Game Personalization" values change to the ones of the new selected channel.

6.3 - Display ForceTubeVR Renderer

The "Display ForceTubeVR renderer" button open a transparent window containing a ForceTube picture.

The back of the ForceTube picture kicks when the Companion Application or a natively compatible game sends a kick request to your ForceTube.

The picture entirely vibrates when the Companion Application or a natively compatible game sends a rumble request to your ForceTube.

It is useful to easily illustrate the ForceTube behavior, for example during a live streaming on Twitch.

6.4 – Presets Section

Here you can create, edit and delete presets. These presets remember all the settings from the "SteamVR backward compatibility" and "Native games customization" tabs when you click "Save preset". It is useful to save settings you found appropriate for a game, or a game mode, and to be able to quickly switch when you change of game mode, or when you launch another game. It is some default presets we created for some games we tested. Feel free to edit them as you prefer: above all, we want you to live the best gaming experience.