SIMGRADE°

VX-PRO PEDALS

Manual v.1.6

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1. General

Please read the manual carefully as it contains important information regarding the pedals and safe usage of them. Do not use the pedals before reading the

The latest version of the manual and software can be found at: https://simgrade.fi/support/

Contact the manufacturer: info@simgrade.fi

Pictures on the manual might not represent your actual pedal configuration exactly.

Thank you for choosing the VX-PRO's, we hope you will enjoy your new pedals.

Best regards,

Team SIMGRADE°

1.1 Varoitukset ja ohjeet turvalliselle käytölle

- **VAROITUS: TUKEHTUMISVAARA - sisältää pieniä osia, käyttö vain aikuisen valvonnassa! Älä anna lasten käyttää polkimia, tai mitään toimitettua osaa tai työkalua ilman aikuisen valvontaa.**
- Älä koskaan käytä vahingoittunutta tai millään tavalla viallista tuotetta, lopeta käyttö ja ota yhteys jälleenmyyjään tai valmistajaan.
- Sisältää teräviä reunoja ja kulmia sekä sulkeutuvia välejä, **älä koske polkimiin käytön aikana.**
- **Käytä suojahanskoja kun vaihdat tai lisäät osia polkimiin, tai poistat osia polkimista.**
- Älä käytä maaöljypohjaisia voiteluaineita polkimien kanssa, ne vahingoittavat osia polkimista. Mikäli voitelua tarvitaan, suosittelemme PTFE-kuivavoitelusuihketta.
- Varmista, että kaikki jotka polkimia käyttävät, ovat lukeneet ja ymmärtäneet käyttöohjeen sisällön (ajantasaisen käyttöohjeen löydät: https://simgrade.fi).
- Varmista aina, että kaikki liitokset ovat kireällä ennen kuin käytät polkimia. Kiristä liitos aina mutterin puolelta kun sellainen on käytössä.
- ÄLÄ avaa ohjausboxia.
- Polkimia tai niiden osia ei saa käyttää kuin siihen tarkoitukseen, johon ne on suunniteltu. SIMGRADE° VX-PRO PEDALS on tarkoitettu käytettäväksi USB-peliohjaimena tietokoneella. Valmistaja ei vastaa vahingoista, jotka voivat syntyä tuotteen ohjeiden vastaisesta käytöstä.
- Kiinnitä aina polkimet M6-pulteilla (4kpl / poljin) tukevaan alustaan. Käyttäjä vastaa siitä, että alusta kestää polkimien käytön.

1.1.1. Käyttöympäristö ja turvalliset säilytysolosuhteet

- 15°C – 35°C lämpötila, tiivistymätön kosteus.
- Älä altista polkimia tai muita sen osia suoralle auringonvalolle tai kosteudelle.
- Vain sisäkäyttöön ja varastointiin.

1.1.2. Takuu

Tuotteella on 3 vuoden takuu, poislukien tilanteet ja tapahtumat joissa:

- Käyttö- tai hoito-ohjeita on laiminlyöty.
- Tuotetta on käytetty väärin tai huolimattomasti.
- Tuotteen luovutuksen jälkeen on sattunut onnettomuus tai muu tapahtuma, jossa tuote on vahingoittunut ulkoisten tekijöiden toimesta.
- Normaali kuluminen käytössä.

1.1.3. CE-Merkintä

Tuote täyttää EU:n terveys-, turvallisuus- ja ympäristönsuojelustandardit.

- Valmistaja: SimGrade Oy
- Valmistajan osoite: Piispanpelto 8, 02200 Espoo
- Tuotteen nimi / tunnus: SIMGRADE° VX-PRO

1.1. Warnings & instructions for safe usage

- **WARNING: CHOKING HAZARD - Small parts, adult supervision required! Never let children use the pedals, or any of the provided parts or tools without supervision by an adult.**
- Never use damaged or in any way defective product, stop using it and contact the reseller or the manufacturer.
- There are sharp edges and corners and closing gaps, **keep away from the pedals while they are being used.**
- **Use protective gloves when changing or adding parts to the pedals, or when removing parts from them.**
- Do not use petroleum based lubricants with the pedals, these will damage some of the parts in the pedals when in contact. If you need to use some lubricant, we recommend dry PTFE-spray.
- Always make sure everyone using the pedals have read and understood the content of the manual (up-to-date manual can be found: simgrade.fi).
- Always check that all connections are tightened before using the pedals. Always tighten from the nut side when one is used.
- DO NOT open the controller box.
- Pedals or any of their parts may not be used on any other purpose than what they were designed for. SIMGRADE° VX-PRO PEDALS are meant to be used as an USB-input device on a computer. The manufacturer is not liable for any damage or injury that may result from using the product in violation of the instructions.
- Always fasten the pedals to the support base with M6 bolts (4 pcs / pedal). It is the user's responsibility to ensure that the platform can withstand the use of the pedals.

1.1.1. Operating environment and safe storage conditions

- 15°C – 35°C temperature, non-condensing humidity.
- Do not expose the pedals or any provided part to direct sunlight or moisture.
- Indoor use and storing only.

1.1.2. Warranty

The product has a 3-year warranty, excluding situations and events where:

- Instructions for use or care have been disregarded.
- The product has been used incorrectly or carelessly.
- An accident or other event has occurred after the product has been handed over, in which the product has been damaged by external factors.
- Normal wear and tear in use.

1.1.3. CE-Marking

Product meets EU standards for health, safety, and environmental protection.

- Manufacturer: SimGrade Oy
- Manufacturer address: Piispanpelto 8, 02200 Espoo
- Product Model name / identification: SIMGRADE° VX-PRO

1.2. Mounting the pedals

- **A proper racing rig with a sturdy mounting platform is required**.
- Always use all 4 mounting bolts (M6) with washers on each pedal. The mounting pattern for one pedal is 80 mm x 24 mm (lateral). Do not use different bolts with higher heads under the brake pedal load cell (they might restrict the load cell bending).
- Position / orient the pedals in such a way, that they are directly facing your leg / foot. The force should be applied perpendicularly to the pedal face.
- By opening the rear side bolts and tilting the pedal forward, you can make fastening the rear mounting bolts easier.

1.3. Connecting the pedals to the controller box and to the PC

It is recommended to connect the pedals directly to the motherboard of the PC (back of the computer), into a USB 2.0 slot.

- Throttle = RIGHT = Z | Brake = MIDDLE = Y | Clutch = LEFT = X

1.4. Maintenance

Pedals do not need any added lubrication in normal conditions. If you add some regardless, only use dry PTFE-spray. Clean the pedals only with a dry cloth.

1.5. Pedal alignment

- Force should be applied to the middle of the pedal face and perpendicularly to it.

1.6. Let us know how you feel about the pedals - add a review - Thank You!

- Follow the link and leave a comment on the product page: https://simgrade.fi/product/vx-pro-pedals/#reviews

2. Adjustments / General info

2.1. General - read carefully!

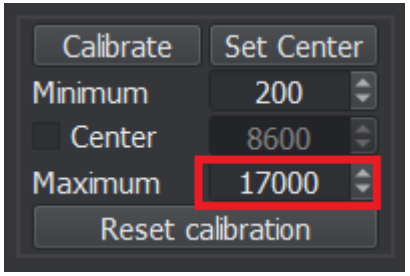
- **To prevent accidents - only adjust the pedals while they are securely mounted on a firm base (for example on a rig).**
- All pedals are load based, which means every time you change any mechanical setting on a pedal (related to pedal feel), you need to recalibrate that particular pedal. See the “Software” section for more details.
- The angle of the pedal can be changed (8,5 degrees away from the driver) by opening the rear bolts on the side, and rotating the pedal.
- Preload is adjusted with the two finger nuts on top of the spring(s).
- General stiffness is adjusted by changing the location of the spring cradle. Loosen preload to make adjusting possible.
- See Section 6. for resetting to factory defaults.

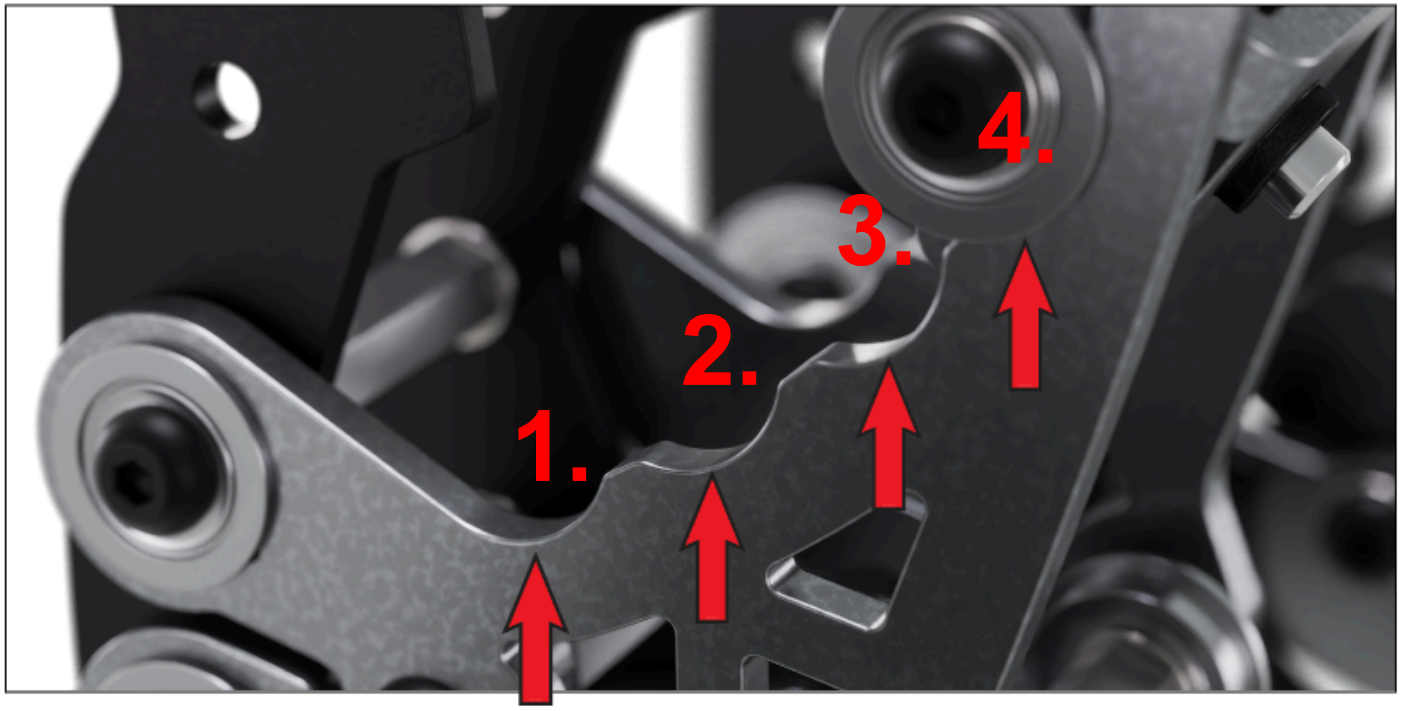
2.1.1. Braking force

1. Do not use higher than **90 kg braking force on the pedal face.**
2. The recommended maximum raw values in relation to the mechanical progressivity setting (see also 2.1.5.) are:

   1: 14000
   2: 15000
   3: 16000
   4: 17000 (shown in the picture on the right →)

   These roughly correspond to the allowed 90 kg of force on the pedal face. Both of these limits should be respected (actual numerical values for the max load might vary between pedal sets due to the factory setup.





2.1.2. Adjusting the pedal face height

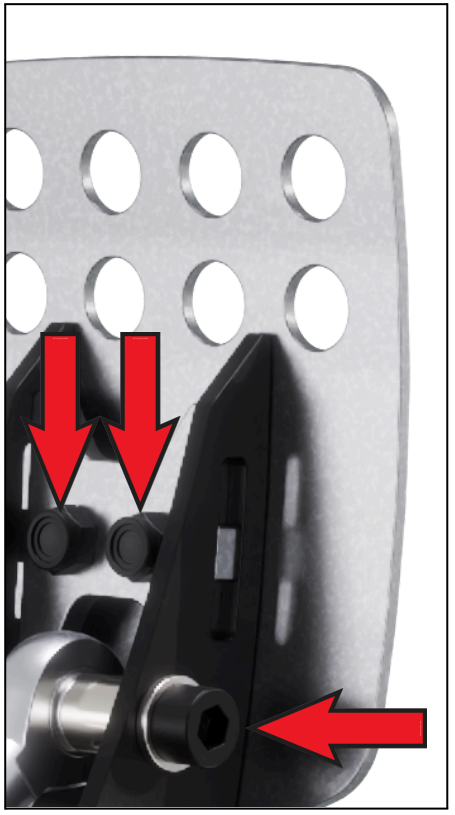
1. To adjust the height, loosen up the two M4 nuts at the back, and also the lateral bolt. Do not tighten from the bolt heads, instead always tighten / loosen the nuts only.
2. Adjust the pedal face height and once done with that, tighten the lateral bolt on the side first (see point 3. below). While tightening the two M4's, **do the final torquing by tightening the nut**, not the bolt from the front (this will prevent rounding the hex hole)
3. Tighten the M6 (throttle & clutch) / M5 (brake) nut on the side, optimal tightening torques:

   throttle & clutch pedal M6-nuts: ~10-15 Nm

   brake pedal M5-nut: ~5-7 Nm

   ^In practise these equal normal firm tightening, without a need for excess force

4. If the pedal face is loose after tightening the above, you need to remove spacers / washers between the stainless steel plates (behind the pedal faceplate). After this only tighten the M4 nuts so that the faceplate stays in place - do not use excess force after that.



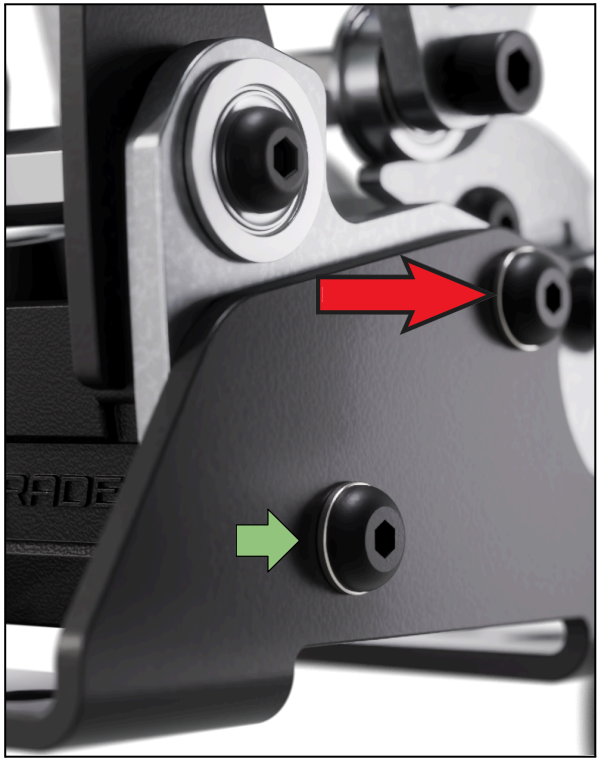
2.1.3. Adjusting preload

- Two finger nuts are used to adjust the spring preload in all pedals

2.1.4. Adjusting pedal angle

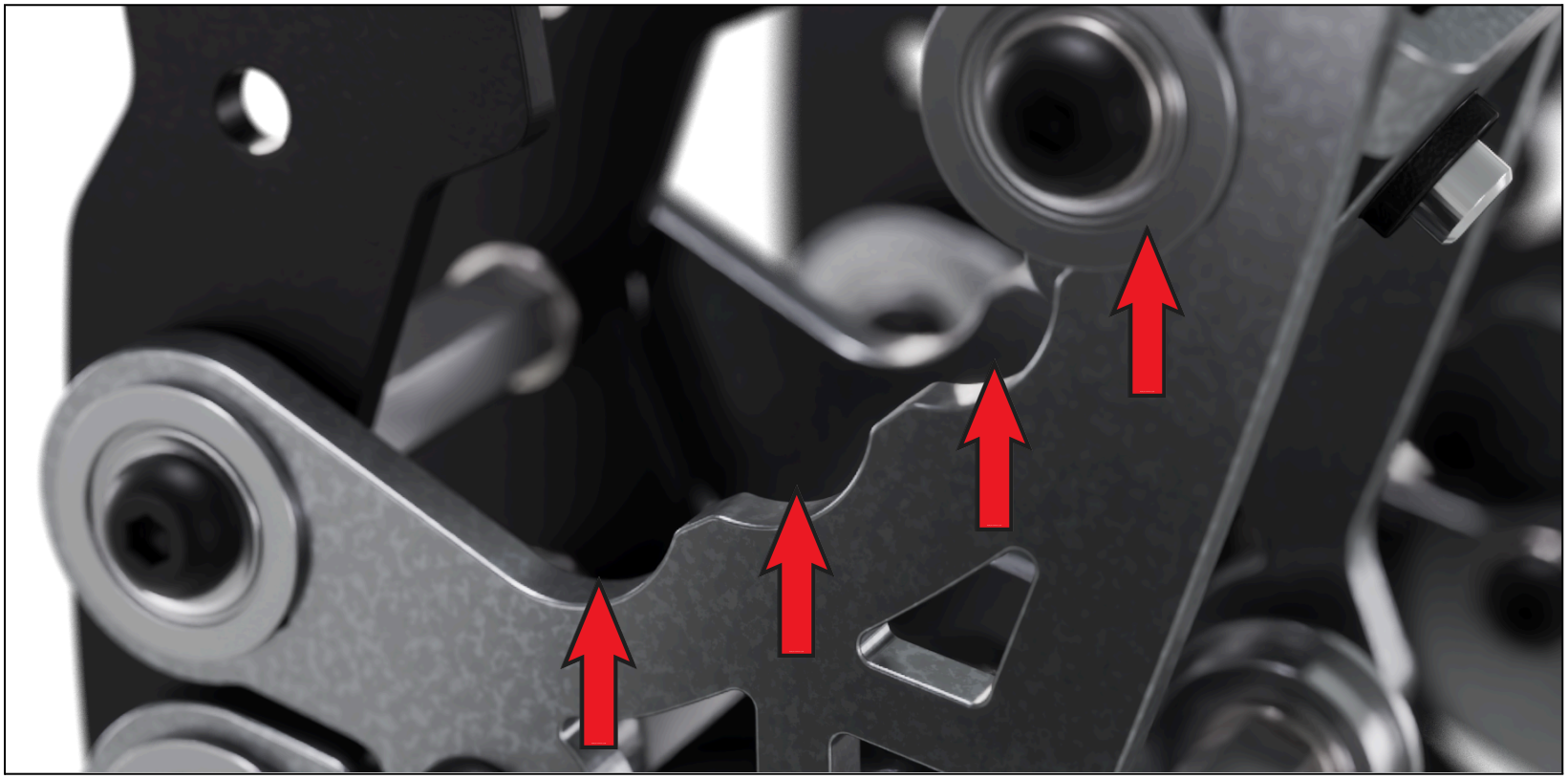
- Remove the bolts marked with red arrow (both sides)
- Loosen up the bolts marked with green arrow (both sides)
- The pedal can be tilted backwards (away from the driver) 8,5 degrees.

  (there is a second set of threaded holes available to adjust the pedal angle)



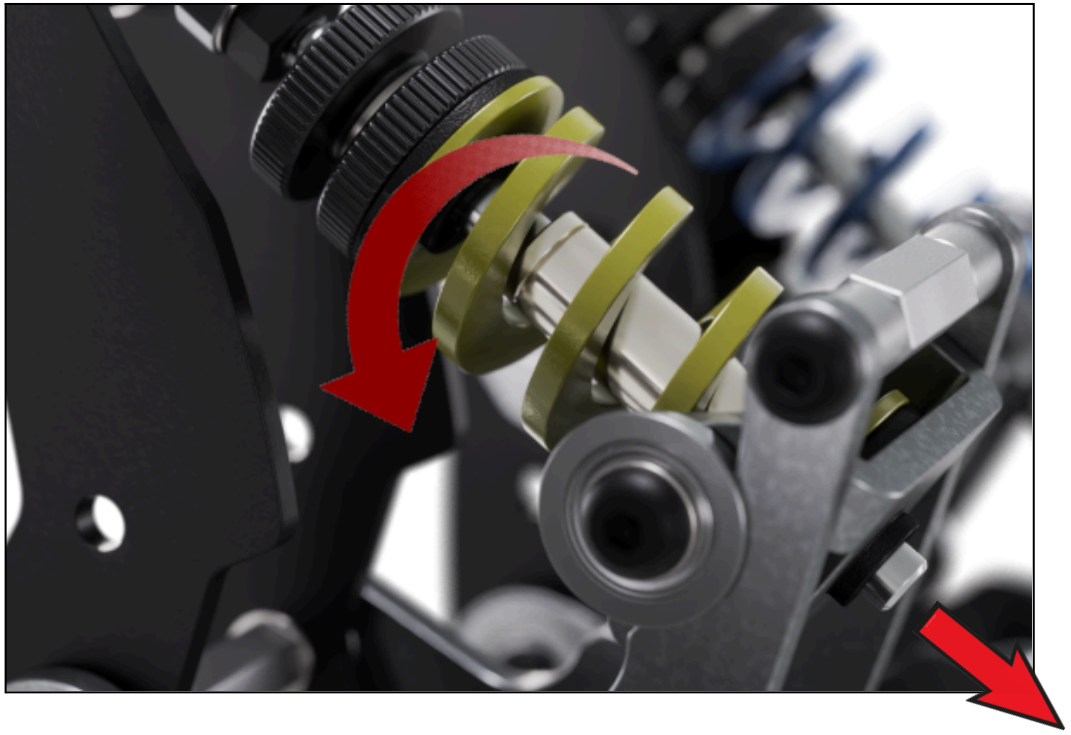
2.1.5. Adjusting the progressivity / stiffness / feel of the pedal

- Remove preload by loosening the finger nuts
- Change bearing location. The closer the pedal arm the bearings are, the softer the pedal will feel.
- See 2.1.6. (page 15) for how to easily achieve the best adjustment setting for you.



2.1.6. Adjusting the brake “2nd stage” / changing the spring

- Adding or removing spacers inside the brake spring (or changing the spring) is done by totally loosening the preload and turning the spring cradle assembly 90 degrees so it can fit between the plates and slide out from the back. We recommend using the extra M6-bolt delivered with the pedals to catch the spacer / washer stack inside the spring (just align it with the push rod when pulling out the spring cradle assembly). Install doing the reverse.



Recommended process for the brake stiffness adjustment:

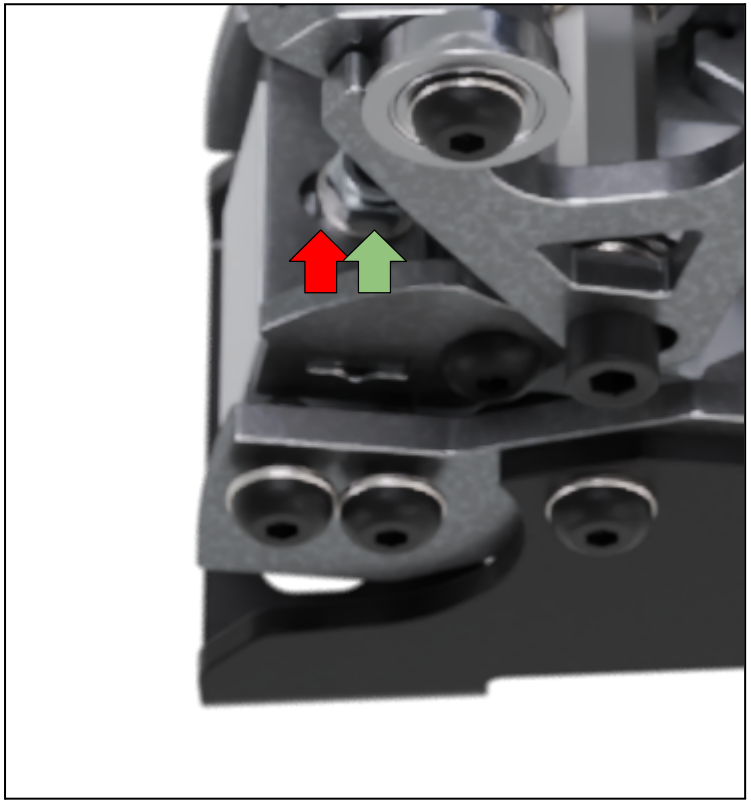
1. Test what stiffness setting is correct for you (i.e. results in the wanted amount of travel with the preferred level of force applied).
2. Adjust the amount of spacers and washers inside the spring so that the 2nd stage "cuts off” travel on the optimal point for you.
3. Finetune with software (adjust the "maximum" value on the brake).

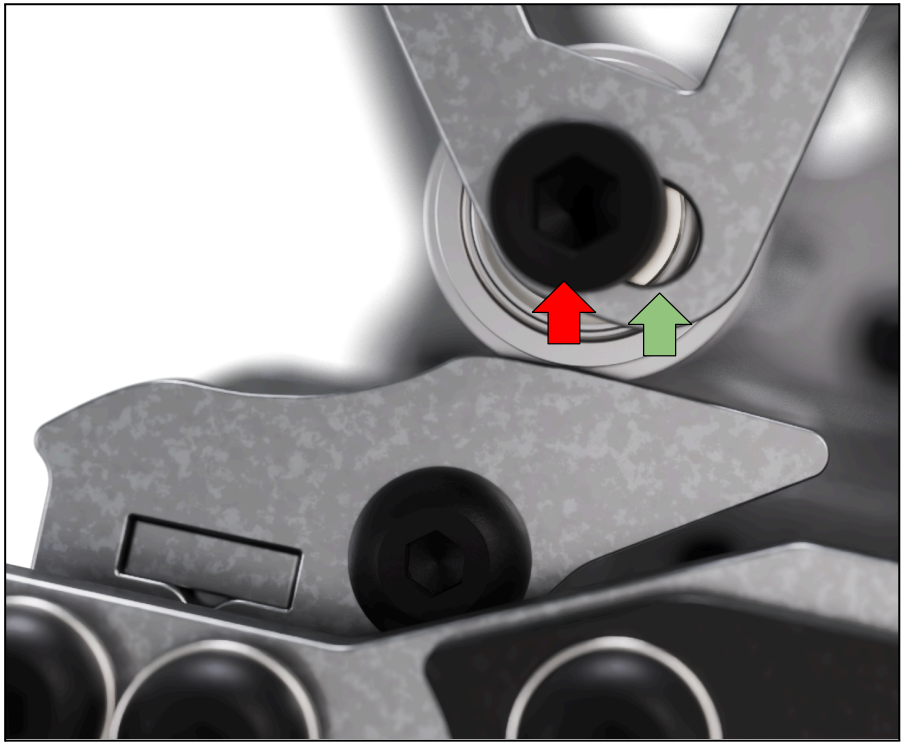
   Remember to use the "write config to device"after changes to apply them.

We recommend you to adjust the location of the 2nd stage activation so that you can feel the contact just before hitting the amount of braking pressure that would cause the tires to lock. Every corner is a bit different (+ other variables change all the time), so leave a decent room between hitting the 2nd stage and locking the tires. Usually adjusting for the braking zone that requires the biggest braking pressure on a track, is a good way to start experimenting.

2.1.7. Adjusting the clutch throw

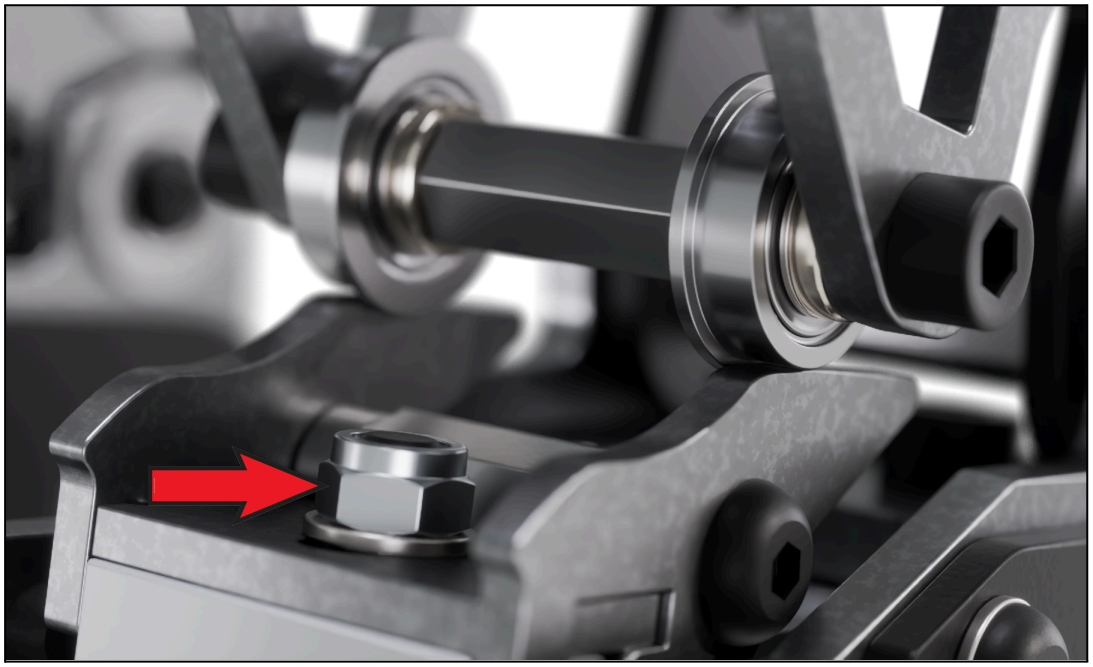
- Use the additional holes to adjust the throw
- Use holes marked with a green arrow to make the throw longer
- Use the holes marked with a red arrow to make the throw shorter. **Note: Adding preload makes the throw slightly longer.**





2.1.8. Changing the clutch profile plate

- Loosen up the spring preload (unscrew the finger nuts)
- Remove the M5 nut (red arrow)
- Remove the profile plate assembly from the load cell - change the plates.



2.1.9. Increasing the amount of travel

- Loosen up the spring preload (unscrew the finger nuts)
- Tilt the pedal backwards (remove the spring assembly and tilt more if needed)
- Remove the plastic end stopper (see pic, red arrow)
- Note that doing this will create extra travel towards the driver, so you might need to adjust your pedal angle on your rig

NOTE: It is also possible to remove the plastic caps from the bolt heads on the back → this will also increase the travel slightly. Additionally, this will make the end stop feel more “direct”, although there will be a metal-metal contact which means a slightly higher noise level.

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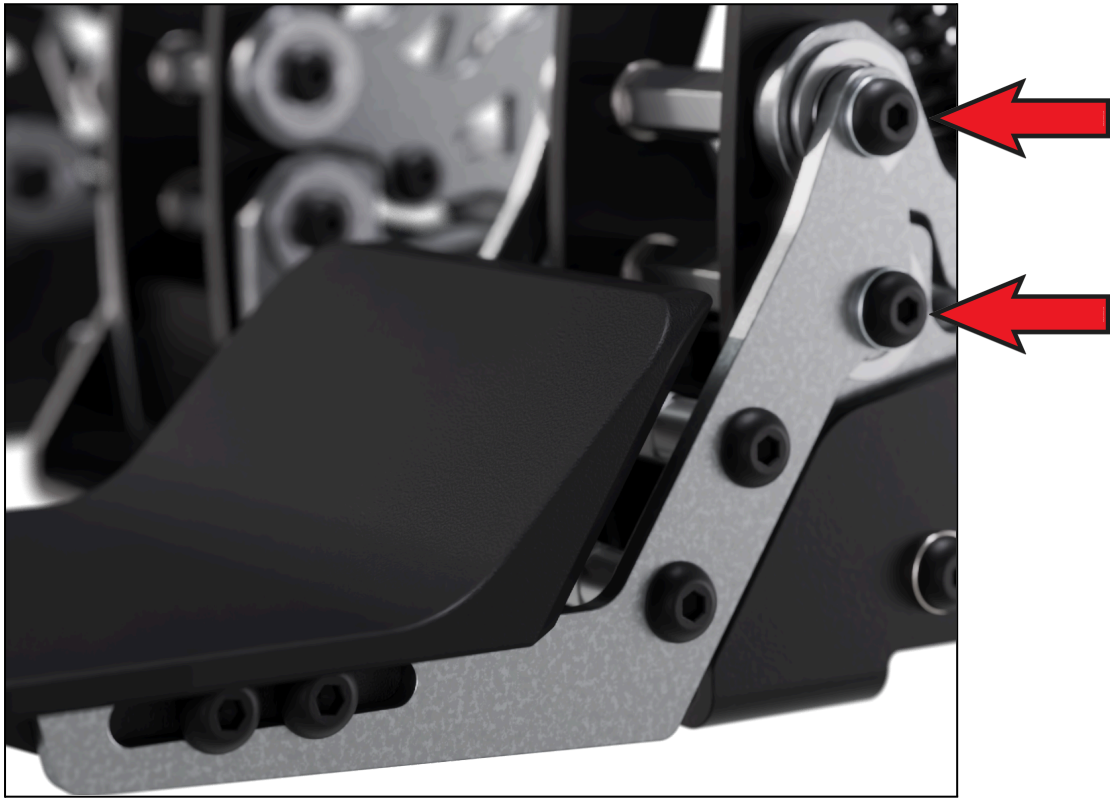
2.2. Installing the Tilting Heel Plate

- Loosen up the four M5 bolts (**do not totally unscrew them** - just enough that there is 3mm free space to slide in the steel plates of the heel support.
- Position the plates so that the thin washers sit between the bearing and the plate.



2.3. Installing the Side Support

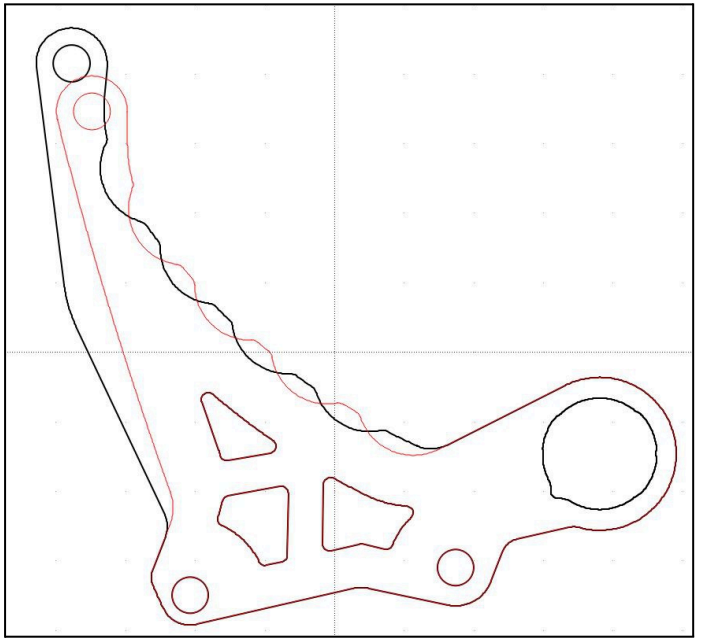
- Remove the pedal face
- Install the Side Support between the pedal face and the pedal arm
- Use M4x16 bolts to mount the pedal face to the arm
- The default amount of washers / spacers between the pedal face and the holder plate is 4,5mm. With the side support installed these washers / spacers are located between the side support and the holder plate (i.e. no washers between the pedal face and the side support).

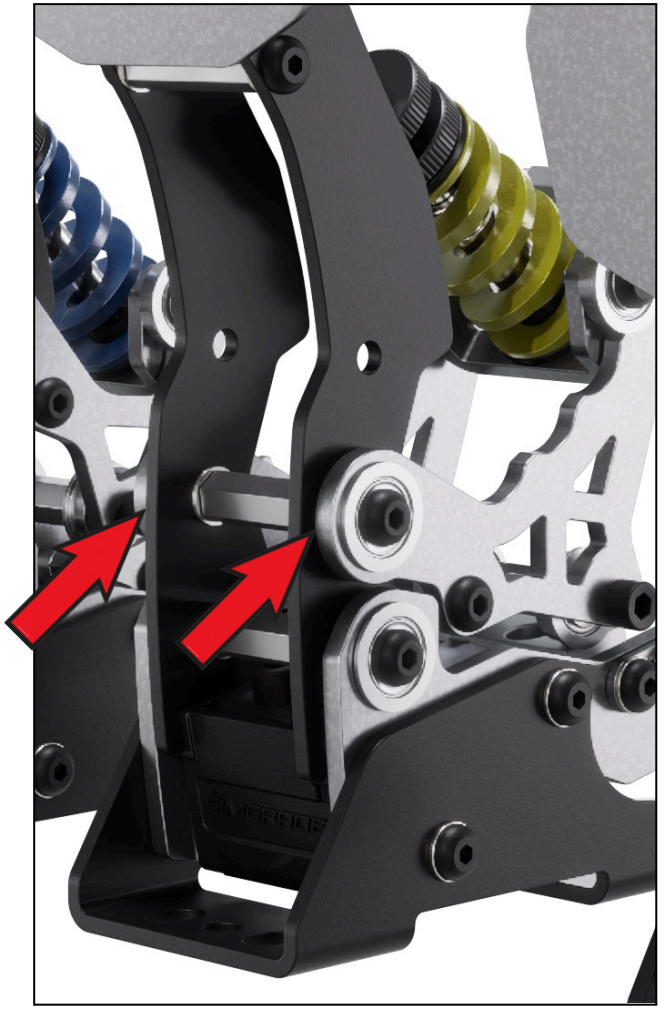
2.4. Installing the Brake Kit V1 (or any other kit with new loading plates)

- Between the pedal arm and the new loading plate (that was included in the kit), **a total of 1,5mm of washers need to be installed / maintained.** Use the same that were installed there originally. See the arrows in the picture. There either is two washers (1,0mm + 0,5mm) or a single 1,5mm washer.

We recommend first trying the new (red / blue) springs with the default plates, this way you will find out which springs give the "correct" range of resistance, and then it's only a matter of judging if you need to use the new plates or are the default ones OK.

Black shape = Brake Kit V1 →





3. Software

- Connect the Controller Box to the PC, then connect the pedals to the Box.
    - Throttle = RIGHT = Z | Brake = MIDDLE = Y | Clutch = LEFT = X
- Download the software from https://simgrade.fi/support/
- Open the software.
- Click [**Read config from Device**]
- Calibrate pedals, if needed
    - 1. Click [**Calibrate**] while the pedal is in zero position
    - 2. Push the pedal down and release
    - 3. Click [**Stop & Save**]
    - 4. Apply new values with the [**Write config to Device**] button
    - ^repeat 1-3 for all pedals / channels individually

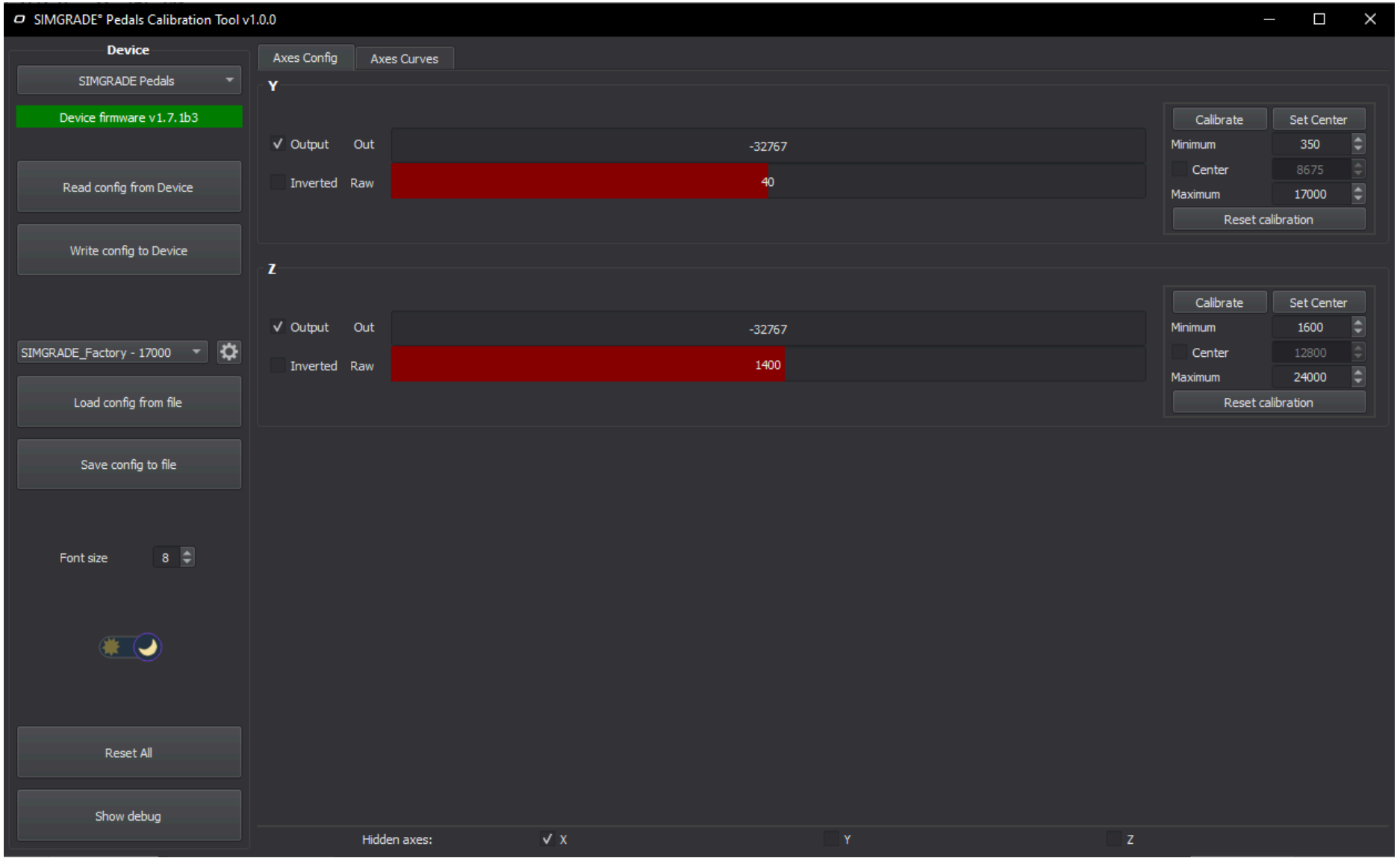
You can also manually type in the values. **Deadzones are added by adjusting the "Minimum" and "Maximum" values manually.**

Every change needs to be sent to the PCB using the [**Write config to Device**] button before it is taken into effect. So you can play around and test things freely on the app, nothing will be used by the game until you do this.

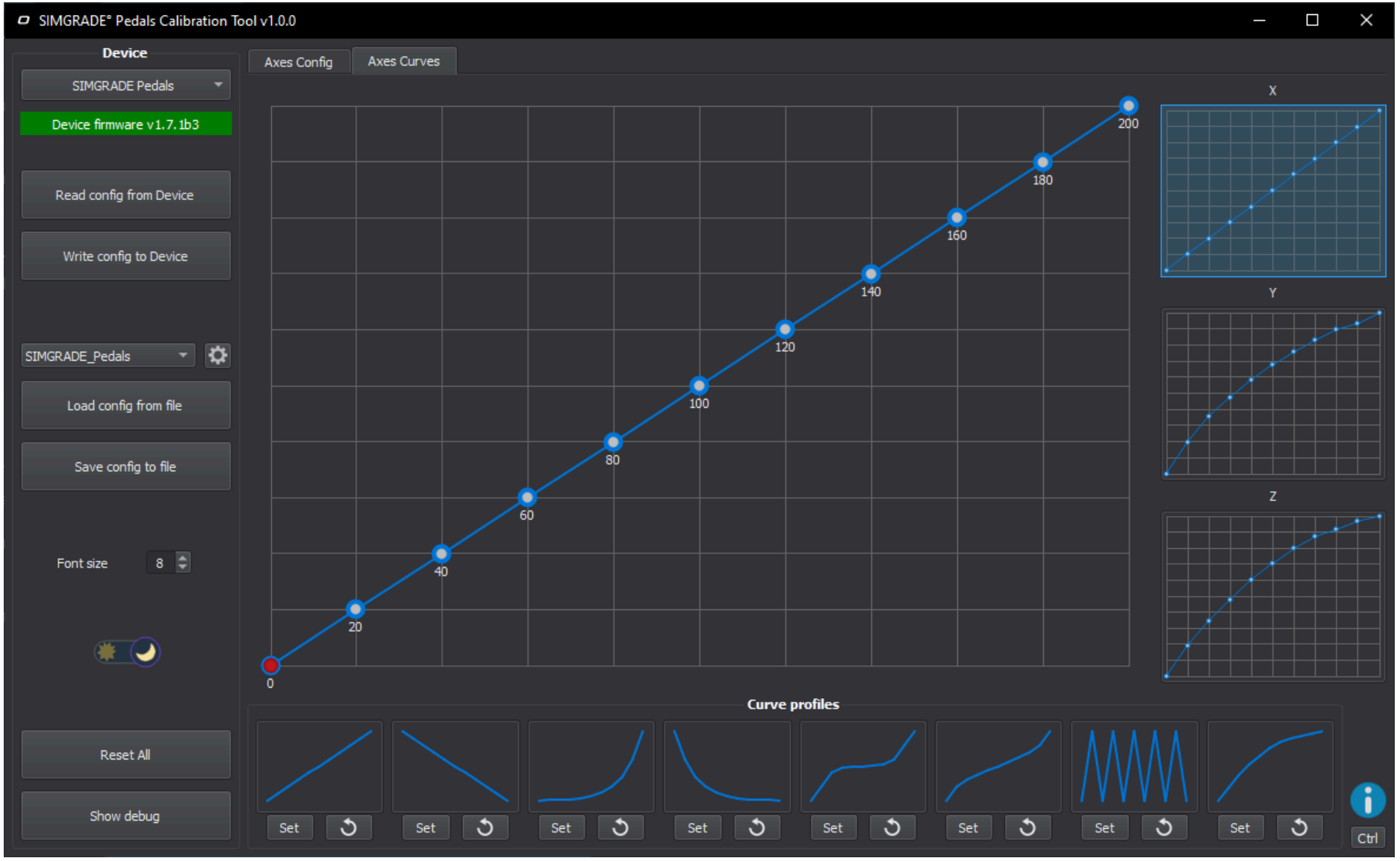
- You can save settings to a file using the [**Save config to file**] button and load settings from the file using the [**Load config from file**] button.
- Drop down menu shows the recently used files.
- Under the gear icon, you can choose the default directory for saving the settings.
- You can enable / disable channels from the bottom (on the next picture, the X axis (clutch) has been disabled).
- On the "Axes Curves" tab, small curve profile "slots" can be used as storage for different curve shapes. Store the current curve to a slot by using the "**Set**" button. Select the channel (X, Y, Z) you want to edit from the right, active channel is highlighted with a blue tint.
- Do not use the "Inverted" tick box - it is not meant to be used with racing pedals.
- If you have trouble configuring the pedals, see sections 6. & 7.

If you disconnect the USB-cable, you need to close the app and open it again after the USB has been reconnected to the PC.

4. Software Layout: “Axes Config” Tab



5. Software Layout: “Axes Curves” Tab



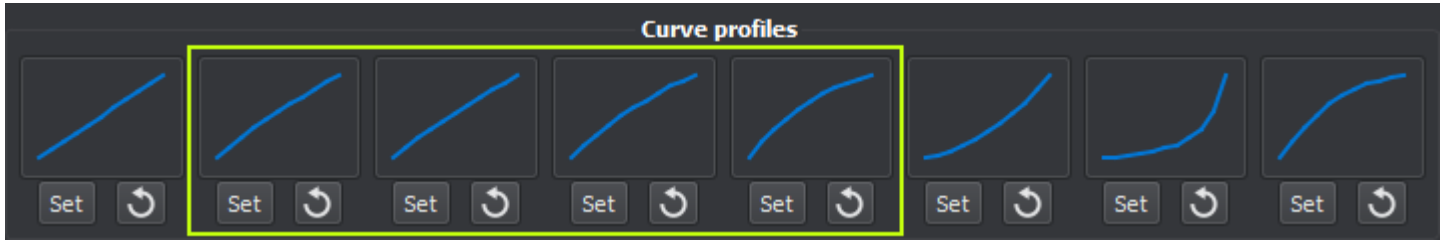
6. Software: Reset to Factory defaults

1. Download our default profile (“SIMGRADE_Factory_…..2023.cfg”) from here:

   https://drive.google.com/drive/folders/1-eYLxy8xybP9b80pAnt_rqGty7ul9En5?usp=drive_link

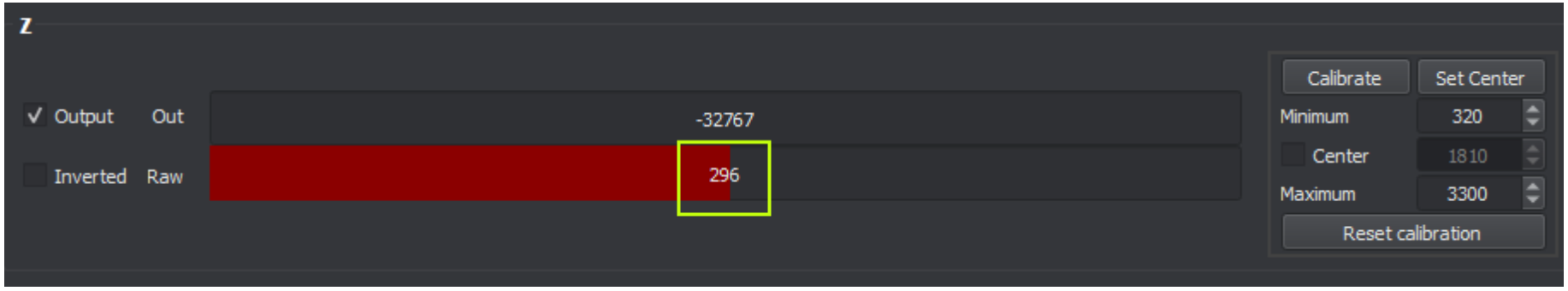
2. Make sure the pedals are connected to the PC with USB-C
3. Close the software if it is open
4. Open the software
5. Load the downloaded default profile file using "load config from file"
6. Write the loaded settings to the PCB, with "write config to device"

Note, the file contains some example profile shapes to make the throttle feel more linear:

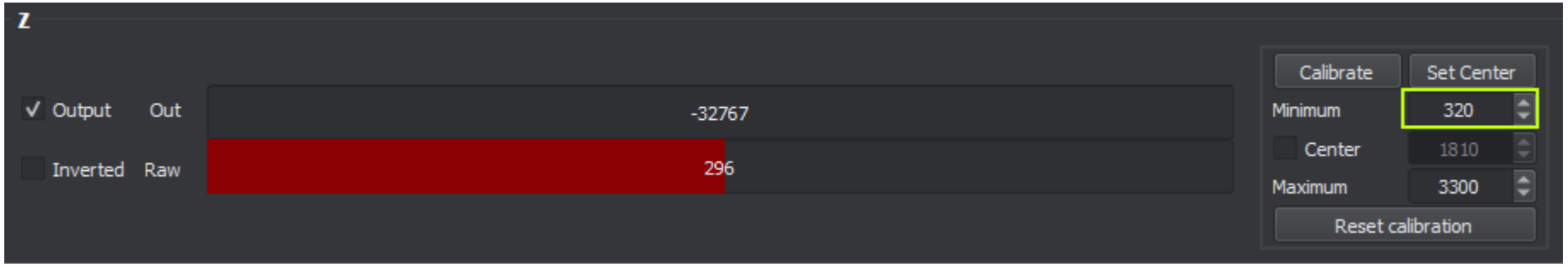


7. Software: Manual Calibration (any pedal)

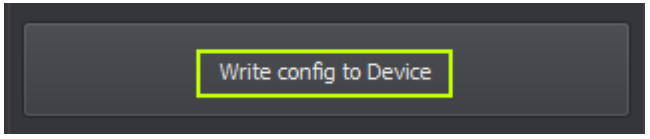
1. Check what is your "default **raw value**" in zero position (pedal is not being pressed):



2. Input the "default **raw value**" plus some margin (in this example, +24 is used to create a small deadzone) to the "Minimum":



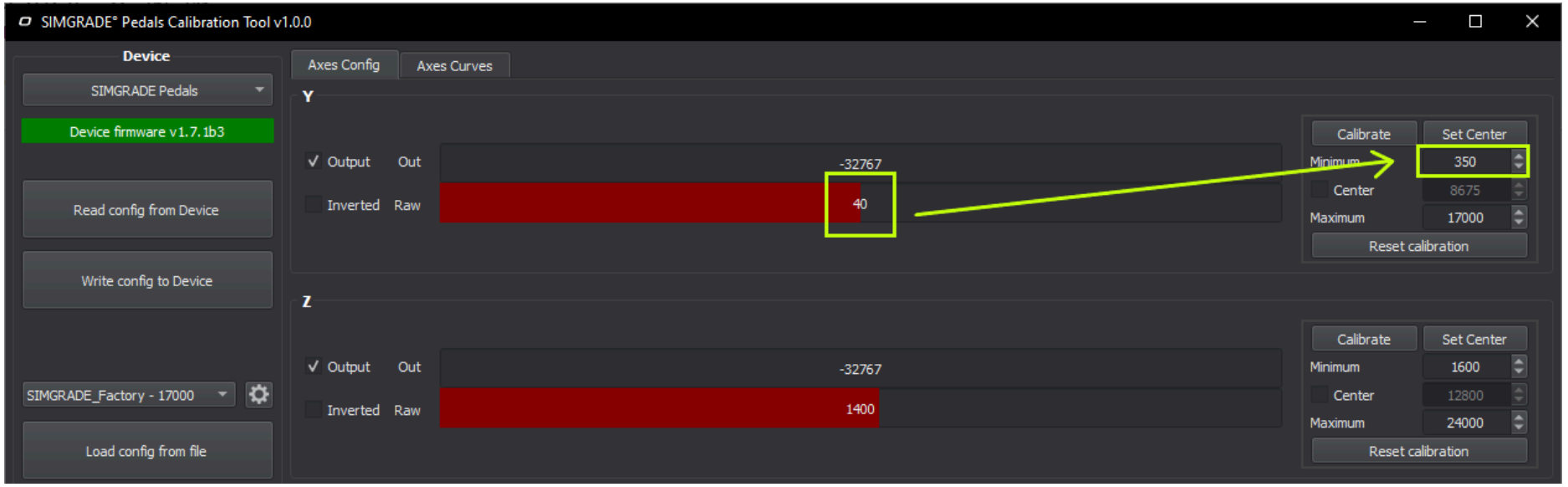
3. Push down the pedal and see what the "max **raw value"** is.
4. Input the "max **raw value**" to the "Maximum" (for throttle pedal use slightly smaller number to create top end deadzone)
5. Click "Write config to Device" to save the changes.

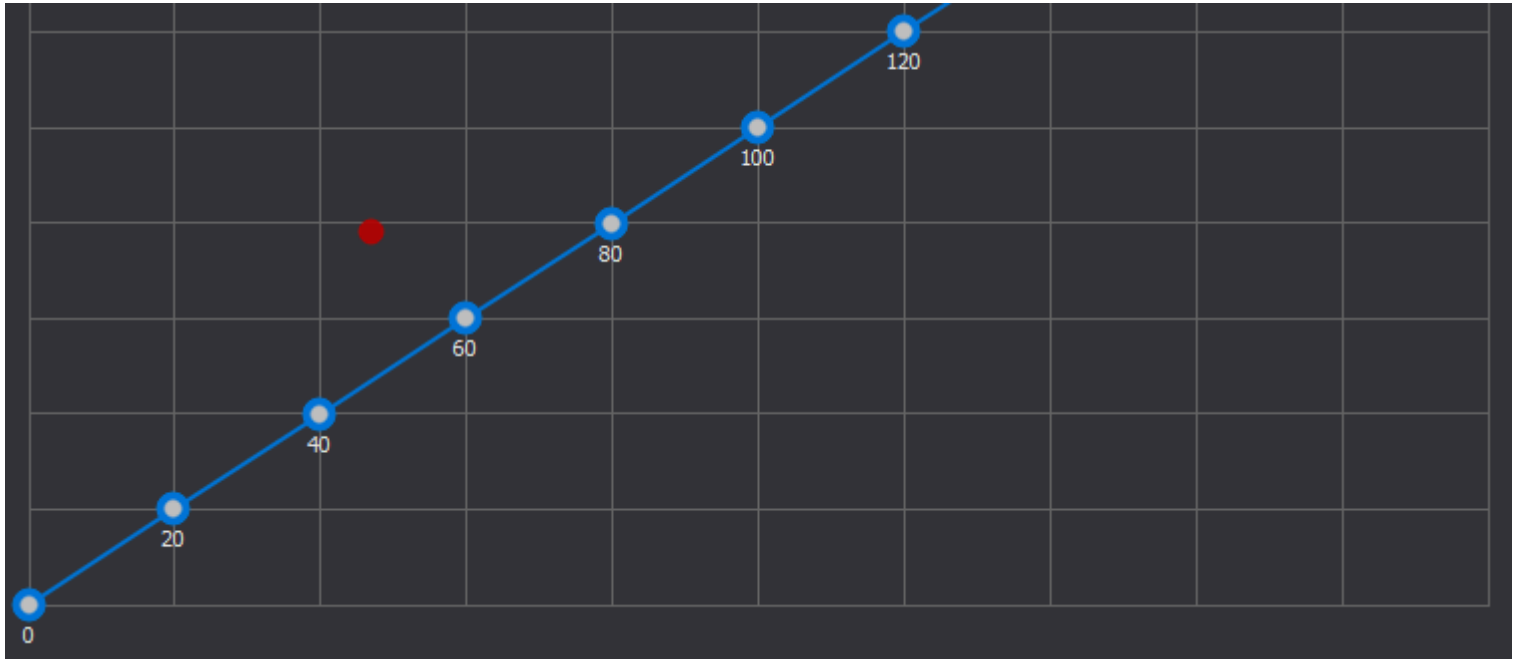


Example #1: Adjusting a pedal bottom deadzone (pedal in “zero” position):

1. Check the “Raw” value while pedal is stationary (40 in the picture below)
2. Type in a value slightly bigger as the “Minimum”. The bigger the gap between the values (Raw vs. Minimum), the bigger deadzone you’ll have in the start of the pedal travel. **In this example we would recommend changing the value 350 to around 80.**
3. Apply the new value by using the [**Write config to device**] button.

Note, that the amount of preload will affect the “Raw” value in pedal zero position.



Example #2: Red balloon (indicates pedal position) is not following the curve:

1. This happens when you have changed the curve, but not yet sent the changes to the PCB.
2. Use the [**Write config to device**] button to apply the curve changes, and the ball will start to follow the curve.