

# VERY IMPORTANT!

Please be aware that you are working with a high-pressure hydraulic system that can generate very high pressures and forces. Make sure that no one operates the pedals while any servicing or other work is conducted on them.

Never operate the brake or clutch without a load or spring on the slave cylinder. Failure to do so may result in hydrolocking the system.

## Quick Start Guide

### General Information

#### Hydraulics

The Racewerk Pro and Competition pedals are hydraulic and shipped “wet”, meaning that we have filled and bled the hydraulics during assembly in our workshop.

In most cases they are “ready to run” upon arrival. However sometimes they can require some extra attention when setting up.

**Remove the sticker(s) from the reservoir cap(s). They have only been installed for shipping and must be removed before using the system.**

If the pedals have leaked during shipment, which sometimes happens, just clean them with brake cleaner or a mild detergent and wipe them down. Be careful as brake fluid is aggressive and can stain materials such as wood or fabric.

### Initial Setup

The Racewerk S1 design lets you choose from several settings and combinations. When you receive the pedals, they have a basic setup that should fit most needs. Before installation, you have the option to make the following adjustments:

#### Throttle pedal:

- Adjustable pedal height
- Adjustable pedal angle and travel

#### Brake pedal

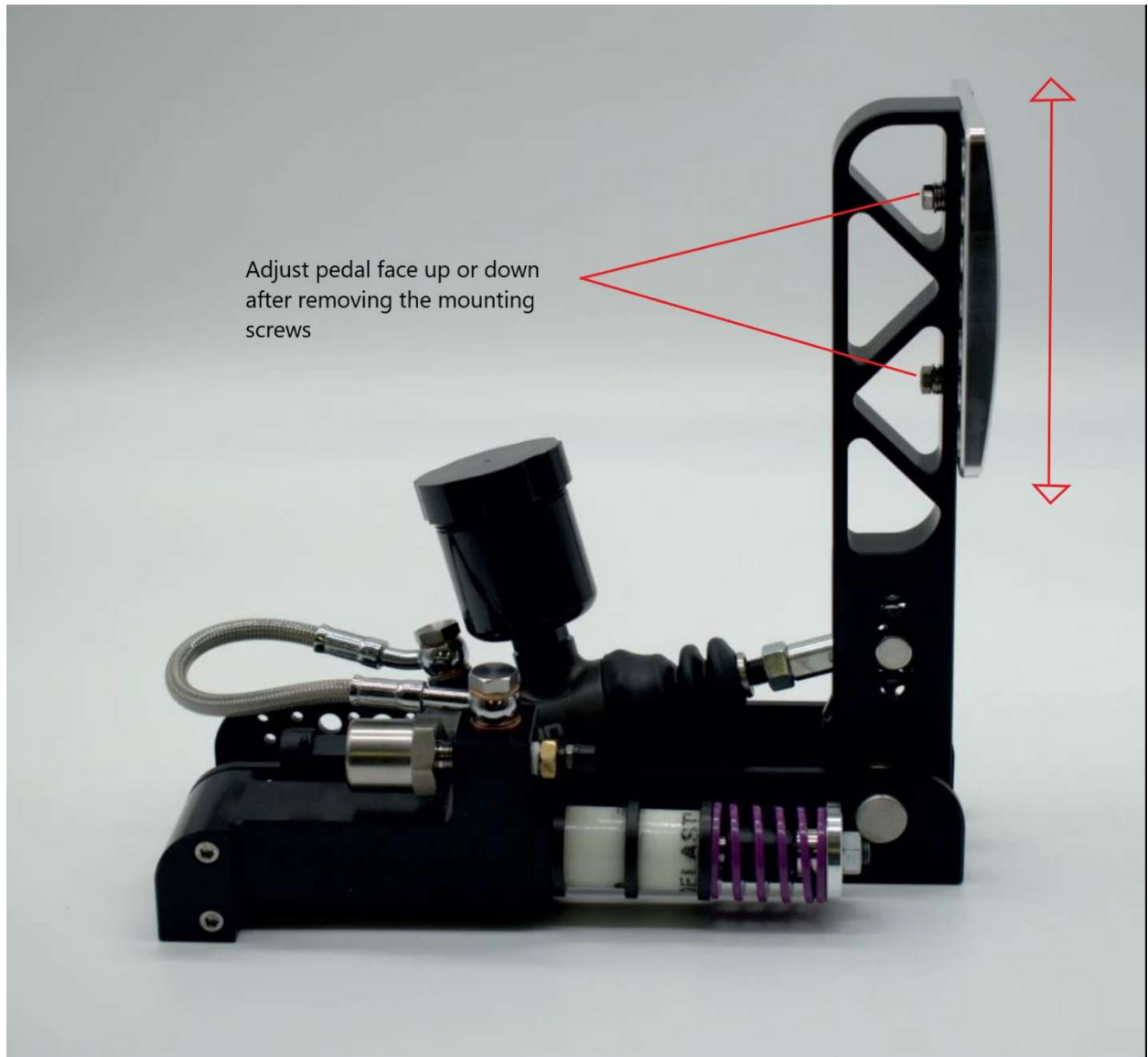
- Adjustable pedal height
- Adjustable pedal angle
- Adjustable pedal ratio (stiffness and travel)

#### Clutch pedal

- Adjustable pedal height
- Adjustable pedal angle
- Adjustable pedal ratio (stiffness and travel)

## How to adjust pedal height

There are two sets of M4 mounting points at the backside of each pedal face. You have the option to choose pedal height by moving the pedal faces after removing the mounting screws.

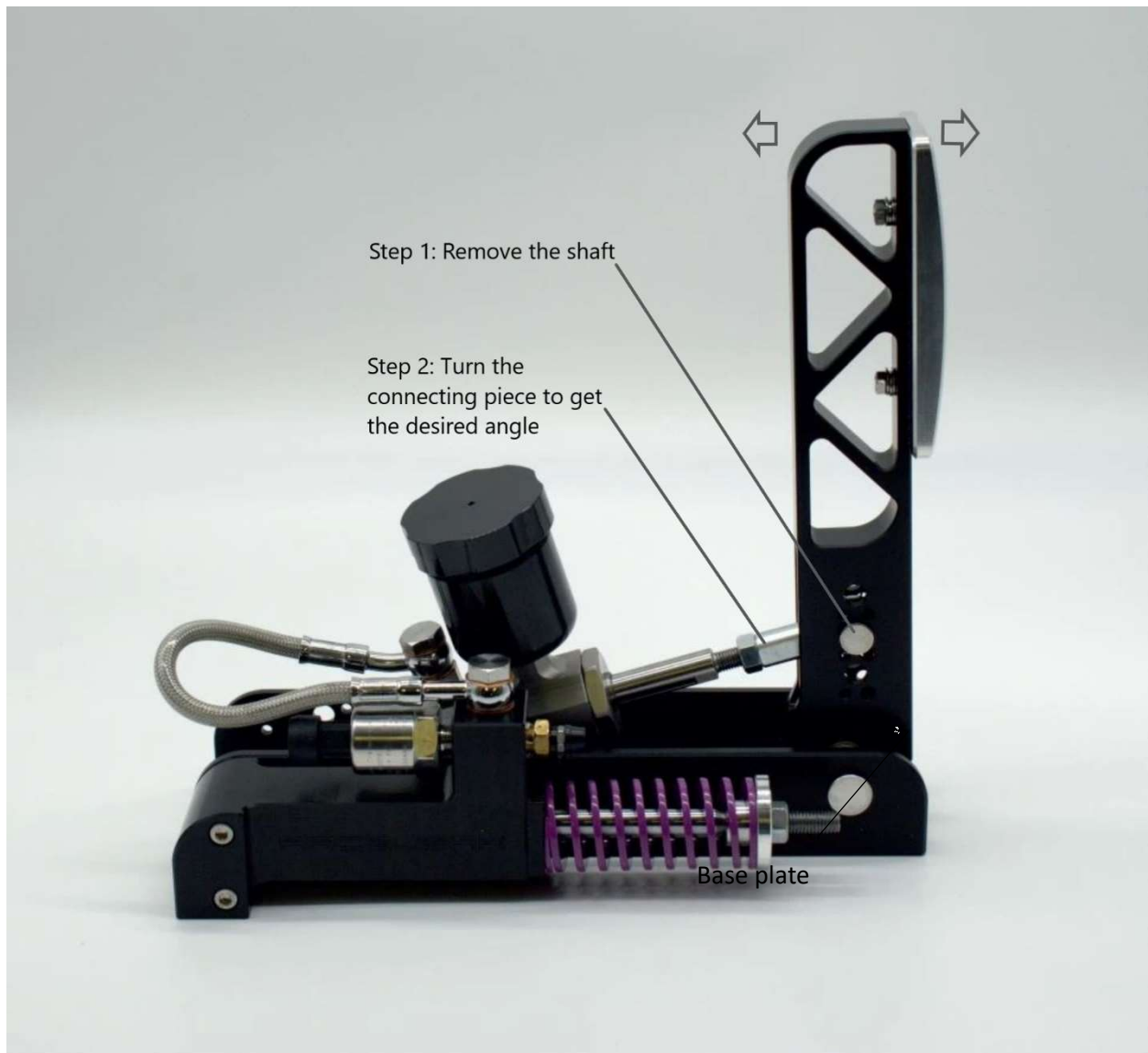


## How to adjust the pedal angle on brake and clutch

The pedal angle for the clutch and brake is widely adjustable.

The base plates have numerous mounting points for the master cylinders. You can change the angle of the pedal arm by using these. You can also finetune the angle using the mounting shaft.

After unlocking the mounting shaft, you can turn the connecting piece clockwise or anticlockwise to reach the desired pedal angle.



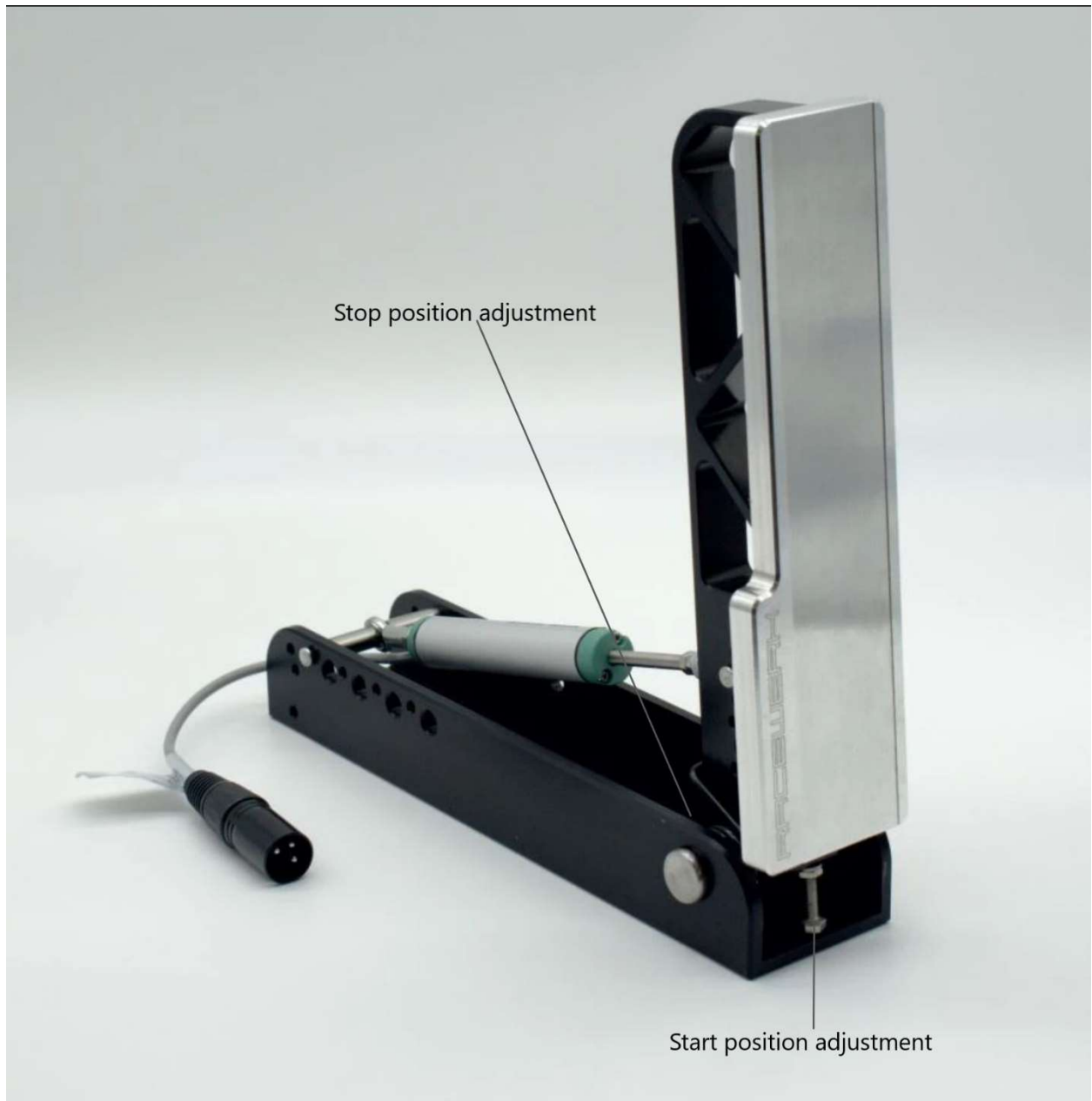
## How to adjust throttle pedal angle

The throttle pedal has set screws to govern the minimum and maximum angle.

These screws are adjustable so you can set up the desired pedal travel and angle.

The set screw for the initial position is easy to reach, while the set screw for the maximum position is a bit more challenging

**If you make physical adjustments on the throttle, always re-do your software calibration!**



## How to adjust brake or clutch pedal ratio

You can easily change pedal ratios by using the different mounting points available on the pedal arm.

Pedal ratios will change pedal pressure, travel and load characteristics in a very major way. This is the first adjustment that you should be making in order to change the feel you get from the brake and clutch pedals.

On the pedal arm, there are 3 holes in which you can fasten the master cylinder. They offer you 3 “quick sets”

<b>The lowest one:</b>	Street car feel. Servo assisted long travel with soft feel. Loads of 20-40kg
<b>The middle one:</b>	Preset. GT3 feel. Medium travel / medium force. Usable with loads of 30-70kg
<b>The upper one:</b>	Formula & Prototypes. Minimum travel, maximum loads, very tight pedal for loads of 50-120kg

### Some theory on that:

The higher you put the connection of the master cylinder on the pedal arm, the lower the ratio,

- You move more fluid, making a larger movement in the slave cylinder, with a lower pressure.

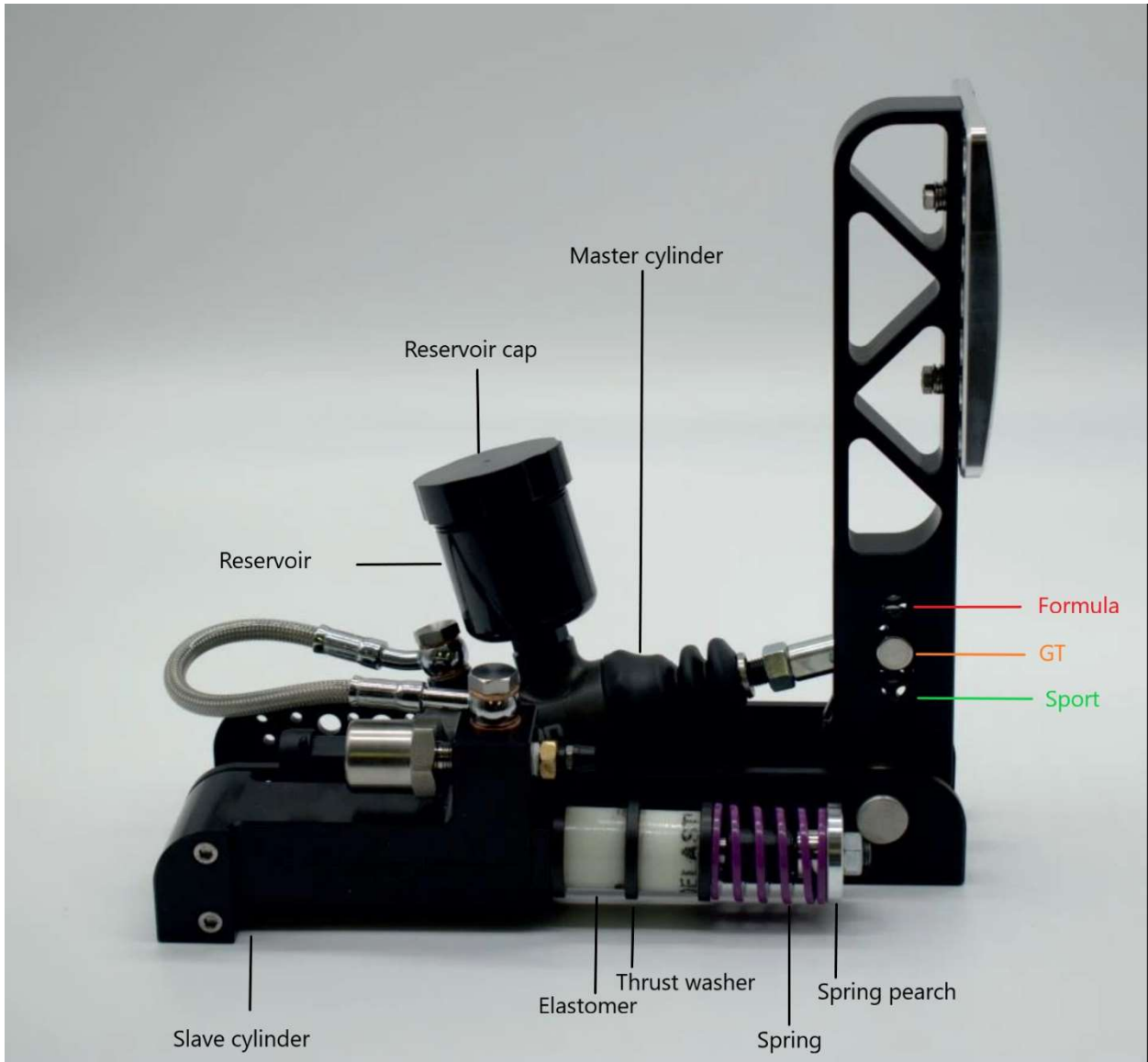
The lower you put the connection of the master cylinder on the pedal arm, the higher the ratio,

- You move less fluid, making a smaller movement in the slave cylinder, with a higher pressure.

### In practice:

With a given set of elastomers, the further up the master cylinder connects to the pedal arm, the more pedal force is needed build up brake pressure, and the pedal travel will be shorter to build that pressure. Keeping this in mind might make it easier for you to understand how the pedals work and select a combination of elastomers and ratio to find a setup that fits you.

We spent a ridiculous amount of time searching for the sweet spot in regards of elastomers and springs and the installed setup is the result of our work.



## Mounting the Pedals.

The pedal base has mounting holes that you can use to fix them to your rig. We prefer not to use powder coated mounting plates, and we recommend mounting the pedals as tight as possible. We prefer to use anodized aluminium profiles across the width of the pedals to provide the most stable platform.



Take your time doing this and find the right position. Make sure that they are mounted without any flex as this will affect the feel a lot.

Check that the spacing between the pedals is the way you want it. ( Toe / Heel )

Please use M8 or equivalent mounting screws. We have provided 20mm adjustability on each pedal, so you can have the brake closer to you to help heel and toe braking.

## Hooking up to a Simucube2.

The harness consists of 2 parts, the pedal harness, and the extension cable. The pedal harness has 3 connectors leading to a 15 pin D-Sub connector.

The 3 connectors are throttle, brake, and clutch.

Throttle is evident as it can only fit the throttle. Of the other two smaller connectors one is marked "BRAKE" and hooks up to the sensor on the brake pedal. The final one only comes to use if you are using the optional clutch in your setup.

When hooking it up make sure that all connections are firmly made and that you tighten the screws on the D-Sub connectors on both ends.

Route and fasten the harness so that it is out of your way when driving and make sure that it isn't put under strain. If the included cable is too short, you can buy a longer standard straight 15 Pin D-Sub extension cable and it will fit.

After hooking up the pedals to your Simucube 2 unit you must **enable** them up in the "True Drive" software that you use for your Simucube 2. Documentation for the software setup can be found at :

[https://granitedevices.com/w/images/c/c5/Simucube\\_2\\_Accessory\\_Port\\_Application\\_Guide.pdf](https://granitedevices.com/w/images/c/c5/Simucube_2_Accessory_Port_Application_Guide.pdf)

### 4.1 Hooking up the harness with the optional USB interface

If you have ordered your set with the optional USB interface, connect the D-Sub 15 connector on one side and the supplied USB cable on the other side of the interface. Download and install the Racewerk USB software. Follow the supplied instructions to setup the interface.



## Maintenance

### Lubrication

The pedals are sliding on high quality bearings, but keeping the pedals clean is a key step to long term reliability.

The throttle spring is known to sometimes make noises. Should it happen, just apply some lubrication to it. Repeat after every 100 hours of use. You can use any kind of common lubricant such as machine oil or even WD40

It is NOT advised to lubricate the elastomers on the brake and clutch.

### Tightening the screws

Your Racewerk S1 pedals come assembled and key mounting screws are glued in using medium strong Loctite. If you encounter a wobbly pedal, loose feel or measurement, it is always smart to check and tighten all mounting points. If you have trouble loosening a glued screw, just apply some heat with a heatgun or hairdryer. The glue will dissolve at ca 80°C (175°F)

Be careful not to damage any electrical parts when heating.

### Checking if bleeding is necessary.

Included in the set is dot 4 brake fluid. Please make sure that you only use dot 4 fluid for this system. Other fluids may affect the seals in the system and will void any warranty on behalf of Racewerk.

Before trying the pedals, check the fluid level in the reservoirs

**Firmly hold the body of the reservoir with one hand** and unscrew the lid counterclockwise with your other hand. Sometimes the lid can be very tight, but it should loosen by hand. You can try to use a cloth to get a better grip on the lid. Make sure that the reservoir stays fixed and tight to the master cylinder.

Fil the reservoir to 2/3. Do not overfill it.

Once you have checked the fluid level, try the feel of the clutch and brake pedal.

Both pedals will have some inevitable mechanical play in their travel, but it should not be much. If you want to minimise the travel, you can increase the preload by turning the spring perch clockwise a few turns.

When operating the pedals:

- the clutch should just have a linear medium force resistance.
- the brake should start soft, reach the brakepoint and end with a strong and firm resistance.

## **Bleeding the system.**

**Please read this section completely through before attempting to bleed the system.  
Don't bleed the system unless there is a real need for it.**

### **General description of the process.**

When you bleed the system, air pockets from the master and slave cylinder will be purged out. Take care to refill the reservoir as the fluid is filling up the system. Never let the reservoir run dry. Other than in your car, you can reuse the fluid that has run through the system.

After a few cycles, the system will be filled, and you will see fluid coming out of the bleed valve. Keep cycling until no air bubbles are leaving the system and you have a clean airless liquid running through the hose. Once you have reached that point tighten the valve and remove the hose. Don't use excessive force on the valve as that will damage the threads and the valve seat. Check the reservoir for correct (2/3) level and fill up if necessary.

Fill excess liquid from the bleeding process back in the brake fluid bottle and store it for topping of the system if you need to.

Only dispose of brake fluid in a proper way and under no circumstances dispose of it into wastewater or house waste. Be responsible and protect our nature.

### **Filling and bleeding Step by Step**

Firmly hold the body of the reservoir with one hand and loosen the cap counterclockwise with the other hand. Make sure that the reservoir stays fixed and tight to the master cylinder.

Open the bleed valve that is mounted on the side of the slave cylinder with the 1/4 wrench from the toolkit. Fingertighten the valve down again. Slip the small plastic hose over the top of the valve. Put the loose end of the hose into a glass or small container.

1. Fill up the reservoir 2/3 with Dot 4 braking fluid and lightly close the cap.
2. Open the bleeding valve 1-2 turns.
3. With the bleeding valve open enough so that you can depress the pedal arm, push the pedal fully down.
4. Fingertighten the bleed valve down to stop air from entering.
5. Slowly release the pedal arm.
6. Repeat this several times until clear fluid without air bubbles is coming out of the bleed valve.
7. Close the bleed valve with the ¼ wrench. Don't use excessive force on the small valve.

Finish bleeding with tightening the bleed valve and removing the hose. Check the fluid level in the reservoir is 2/3 and fill up if needed. Fingertighten down the cap of the reservoir. Wipe down the pedals from any excessive fluid.

Fill excess liquid from the bleeding process back in the brake fluid bottle and store it for topping of the system if you need to. Don't use this fluid in your car on any other real-life application. Only for your Racewerk pedals.

Only dispose of brake fluid in a proper way and under no circumstances dispose of it into wastewater or house waste.

Be responsible and protect our nature.