

SMART BRAKE MOUNTING MANUAL

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ABOUT THIS MANUAL

This manual is for a complete mounting and setup. Do not begin a new section before completing the previous sections.

SmartBrake components are only compatible with other SmartBrake components and calipers using mineral oil, from Tektro and Magura. Consult www.mysmartbrake.com for compatibility information, and in case a separate manual is referenced in this document.

PRODUCT TYPE DESCRIPTION

SmartBrake is an electrical brake system that is mounted on bikes (with 2, 3 or 4 wheels), and in some cases sleds and wheelchairs for adaptive sports. The brake system uses supplied brake calliper for disc brake or a V-brake calliper for rim brake, that is activated from a servomotor via a hydraulic hose and chamber. The servomotor is electrically controlled from an electrical circuit. The electrical circuit is controlled via RF/Bluetooth (2,4GHz) from three different remotes: A hand controller, a thumb trigger remote and a brake lever remote.

RELATION TO OTHER DOCUMENTS

BOOKLET STRUCTURE

SmartBrake series manuals are split among several booklets, as described below. The latest manuals are available on our website www.mysmartbrake.com.

NAME	DETAILS
SmartBrake User Manual	www.mysmartbrake.com
SmartBrake Mounting Manual	www.mysmartbrake.com
SmartBrake Declaration of Conformity	www.mysmartbrake.com
Tektro Auriga Twin User Manual	www.tektro.com
Magura MT2 User Manual	www.magura.com
Magura HS11 User Manual	www.magura.com

IMPORTANT NOTICE

- This dealer's manual is intended primarily for use by professional bicycle mechanics. Users who are not professionally trained for bicycle assembly should not attempt to install the components themselves using the dealer's manuals. If any part of the information on the manual is unclear to you, do not proceed with the installation. Instead, contact your place of purchase or a distributor for assistance.
- Make sure to read all manuals included with each product.
- Do not disassemble or modify the product other than as stated in the information contained in this dealer's manual.
- All manuals and technical documents are accessible online at www.mysmartbrake.com
- For consumers who do not have easy access to the internet, please contact a SmartBrake distributor or SmartGroup directly to obtain a hardcopy of the User's Manual.
- Please observe the appropriate rules and regulations of the country, state or region in which you conduct your business as a dealer.

For safety, be sure to read this dealer's manual thoroughly before use and follow it for correct use.

LEGEND

The following instructions must be observed at all times in order to prevent personal injury and physical damage to equipment and surroundings. The instructions are classified according to the degree of danger or damage which may occur if the product is used incorrectly

⚠ WARNING	Failure to follow the instruction will result in death or serious injury
⚠ WARNING	Failure to follow the instruction could result in death or serious injury
NOTICE	Failure to follow the instruction could cause personal injury or physical damage to equipment and surrounding.

SMART BRAKE COMPONENTS



Hand Control



Brake Lever



Brake Unit



Thumb Brake

ADDITIONAL COMPONENTS

Additional components may vary in different kits.



Tektro Disc Brake Caliper



Magura Rim Brake Caliper

TO ENSURE SAFETY WARNING

⚠️ WARNING

Be sure to follow the instructions provided in the manuals when installing the product. Only use SmartBrake compatible parts. Consult SmartGroup for compatibility information. If a component or replacement part is incorrectly assembled or adjusted, it can lead to component failure and cause the rider to lose control and crash.



Wear approved eye protection while performing maintenance tasks such as replacing components.

⚠️ WARNING

If you use SmartBrake equipment, **it is your responsibility** to learn proper use of the equipment, and you accept all risks, including those of injury, paralysis and death. SmartBrake equipment is specially designed for bicycles and wheelchairs, has limitations, and must not be used for other purposes.

Improper use or misuse increases the risks.

ALWAYS MAKE SURE TO OPERATE 2 – TWO – SEPARATE BRAKE SYSTEMS ON YOUR VEHICLE. DO NEVER TRUST A SINGLE BRAKE SYSTEM TO PROVIDE SUFFICIENT SAFETY DURING USE! BOTH SYSTEMS MUST BE FUNCTIONAL AND TESTED PRIOR TO ANY USE!

⚠️ WARNING

Whenever you use the SmartBrake products, you risk death or serious injury from loss of control, collisions, and falls. To use SmartBrake safely, you must read and follow **all instructions and warnings in the User Manual**. In addition, you shall for any activity and application have a **secondary brake system (electronic, mechanical, manual), ready to use**.

Always wear a helmet when using a bicycle. Use an approved helmet that fits properly with the chin strap in place and provides protection for the back of your head. Avoid obstacles and slippery surfaces that could result in a loss of balance or traction and cause a fall

Pay attention to all warnings and alerts from the SmartBrake products. They indicate unsafe operating conditions. You must learn about and understand the SmartBrake products safety alerts described in the User Manual and respond as instructed.

⚠ WARNING

Never attempt to use a SmartBrake product without the **SmartBrake Technology properly installed, charged and updated**. Using your SmartBrake products without all parts properly installed could damage your SmartBrake products and result in serious injury from loss of control, collisions, and falls. Apply good judgement in all use of SmartBrake products.

Do not modify the SmartBrake products. Modifications to the SmartBrake products without the prior written approval could interfere with the operations of the SmartBrake products, **could result in serious injury and/or damage, and could void the SmartBrake Limited Warranty**.

NOTICE

Learning to use your SmartBrake products

- 1) Follow all the instructions and warnings in the User Manual, and supplementary Instruction Videos (www.mysmartbrake.com)
 - 2) Make sure the SmartBrake products are fully charged and functional, prior to your trip
 - 3) Before each trip, Make sure your secondary brake system is functional and ready to use in any situation
 - 4) Start slow, learn to operate the SmartBrake in safe locations at low speed
 - 5) If any safety alert or irregularity occurs, stop use of SmartBrake immediately
-

BRAKE CALIPERS AND BRAKING CHARACTERISTICS

SmartBrake is assembled with a variation of three different calipers

- a. Tektro Auriga Twin HD-T525 – Hydraulic Disc Brake
- b. Magura MT2 Sport – Hydraulic Disc Brake
- c. Magura HS11 –Hydraulic Rim Brake

NOTICE

SmartBrake does not have any certifications with use together with any of these calipers and cannot guarantee the same technical specifications as stated by the manufactures.

Performance will always differ, where some of the most important factors are:

- Total weight of user and vehicle
- Disc size and brand/type
- Wheel size
- Cleanness and maintains of vehicle and caliper
- Speed
- Climatic

⚠WARNING

This may cause longer braking distance resulting in hazards or fatal situations. Be sure to familiarize yourself with any changes in the braking characteristics of your vehicle during the first few rides.

Before assembling to your vehicle, make sure to check the calipers owner's manual for safety and specifications (as a guideline).

BRAKING LEAD TIME

The brake system is activated from a servomotor that works almost with a linear speed from 0 to maximum brake force. This means that it will take about 0.6+ seconds from initiating a braking sequence to achieving full power of the SmartBrake. The time it takes to achieve full brake power on your vehicle depends on the distance the brake pads is set from the braking surface and system bleeding.

⚠WARNING

PRACTICE WITH SMARTBRAKE AT A SAFE PLACE BEFORE GETTING INTO POTENTIAL HAZARDOUS SITUATIONS

SIGNAL RANGE AND INTERFERENCE

- The remotes have some difference in signal distance due to transmitter tuning. Signal ranges within overhead line without obstacles for the SmartBrake product are as a reference:
- Brake Lever works about 30 meters.
- Thumb Brake works about 30 meters.
- Hand Control works about 40 meters.

NOTICE

Signal distance will vary depending on signal interference. This may be caused by physical objects, transmitters working on the same frequency or high voltage power lines. To obtain less interference, make sure that there is a free path between the brake remotes and brake unit.

FAIL-SAFE

If the signal gets broken between a remote and a brake unit for more than a second, the SmartBrake Fail-Safe will automatically initiate. This causes the brakes to apply without the user's activation.



FOR INSTALLATION TO THE BICYCLE AND MAINTENANCE

⚠WARNING

- When operating the caliper, be careful not to allow your fingers to be caught between the brake pads. The motor in the brake unit is powerful enough to be operated without stopping until the piston position is reached and may cause serious injury if your fingers interfere with the brake motion.
 - Be sure to fully close any lids in front of charging ports.
-

HYDRAULIC CABLES

Secure the hydraulic cables with zip tie's minimum every 20 cm to secure that they do not interfere with the chainrings, sprockets or tires.

⚠WARNING

When installing to the bicycle, do not forcibly bend the hydraulic cable. It may result in an oil leak where the result is lack of brake force which could result in serious injury or death.

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TOOLS TO BE USED

TOOLS AND CONSUMABLES

No special tools are necessary for installing the SmartBrake kit, the list below gives an overview of the required equipment:

- TORX driver T25 (included in the Magura kit)
- Hex Allen key 3mm
- Cable ties
- Mounting hardware, e.g. M5 screw with locknut (the required hardware will depend on the vehicles mounting options)

Tools for disassembly of existing brake system will come in addition to this list if applicable.

INSTALLATION/REMOVAL

INTRODUCTION

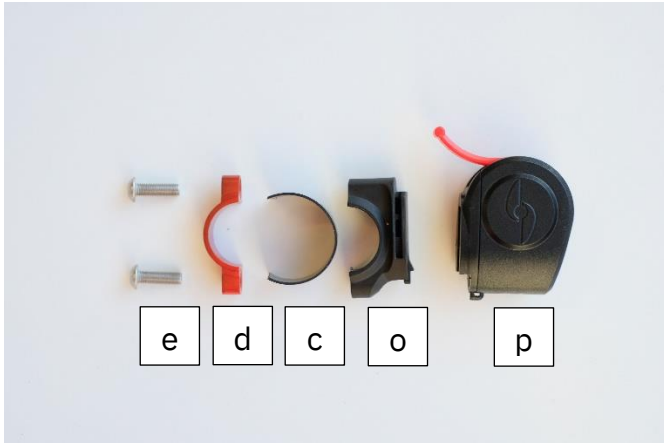
Congratulations on buying your very own SmartBrake kit! Assembling the product on your vehicle is not more complicated than installing an ordinary brake system, and this document will guide you through proper installation.

Please read this document carefully before commencing the installation of the product. The intended reader of this instruction is a trained technician with traditional tools as found in a bikeshop. Required tools are listed in section TOOLS.

⚠WARNING

Failure to observe and adhere to the instruction in this document can lead to serious or fatal accidents.

Braking characteristics of your vehicle may change after installation, familiarize yourself with the vehicle carefully.



- a. Brake lever
- b. Lever bracket
- c. Elastomer strip
- d. Lever clamp
- e. Lever mounting screws
- f. Magura Owner's Manual
- g. Charger
- h. Lock pins
- i. Mounting bracket
- j. Companion/Parental control
- k. Magura hardware
- l. Magura fasteners
- m. SmartBrake
- n. (SmartBrake unit, part of SmartBrake)
- o. Thumb brake bracket
- p. Thumb brake
- q. Magura MT2
- r. Tektro auriga twin Left
- s. Tektro auriga twin Right



A disclaimer and user manual are also included in the kit.

SAFETY



Use eye protection under the whole installation. Installation is to be done by trained technicians.



Use hand protection when working with mineral oil. Installation is to be done by trained technicians.

NOTICE

Recommendation on personal protection equipment (PPE) is based on the described installation in this document. Use PPE according to local regulations, if other hazardous operations are required then it is the technician's responsibility to utilize the required PPE.

INSTALLATION

INSTALLATION OF THE RIM BRAKE

In the SmartBrake kit, the brake caliper is a Magura HS11. Mounting the caliper must be done in accordance with Magura's instructions. See the booklet delivered with the kit or www.magura.com.

NOTICE

Make sure the SmartBrake unit is turned off before mounting the rim brake to the caliper mount.

INSTALLATION OF THE DISC BRAKE

In the SmartBrake kit, the brake caliper is a Magura MT2/4 or Tektro Auriga Twin. Mounting the caliper must be done in accordance with Magura's or Tektro's instructions. See the attachments or www.tekro.com.

BEST PRACTICES FOR MOUNTING A DISC BRAKE CONNECTED TO A SMARTBRAKE UNIT

1. Make sure the SmartBrake unit is turned off before mounting the disc brake to the caliper mount. Remove the plastic spacer from the caliper. Then set the caliper onto the rotor and fix it by screwing in the bolts. Do not screw in the screw completely.
2. Turn on the SmartBrake unit and activate the parking brake, the brake pads will tighten to the rotor and align the caliper. Tighten the caliper bolts slightly.
3. Release the parking brake, align the caliper, and tighten the caliper bolts to the required torque.
4. Afterward, check for the correct positioning of the caliper. The wheel should now turn freely.

NOTICE

After mounting, spin the wheel in the air and listen for any noises.

- If the caliper touches the rotor while spinning, you will need either a new caliper mount adapter or use a washer to provide more space between the caliper mount and the caliper.
 - If the disc pads touch the rotor while spinning, you will need to check for correct alignment. After some use the brake pads will tear and the brake pads might not be touching the rotor. If the brake pads are so close that it is not possible to spin the wheel, contact us by phone or www.mysmartbrake.com
-

BEST PRACTICES FOR MOUNTING SMARTBRAKE UNIT

Installation of the SmartBrake brake system varies from vehicle to vehicle, and it is therefore not possible to give a specific instruction that fits all applications. Some best practices and things to be aware of are therefore provided as a guiding reference. Installations that result in an inability of the SmartBrake kit to function may lead to serious or fatal injuries.

⚠WARNING

Ensure that the SmartBrake unit never is in risk of:

- Colliding with the ground while the vehicle is in use
- Colliding with parts of the vehicle, e.g. bike chain, wheels
- Obstructing the user while using, entering, or exiting the vehicle
- Confusing other road users or vehicles by having the red brake light facing the front of the vehicle

- Damaging the hydraulic hose by excessive bending during and after installation
 - Falling onto the ground or by other means collide during installation
-

The brake unit is not sensitive to orientation, so a horizontal or vertical installation can be freely chosen based on the available mounting options.

Keep in mind that the charging port must be easily accessible for the user after installation.

Routing of the hydraulic hose must be done in a secure fashion, recommended maximum distance between fixture points is 150mm.

NOTICE

Use cable ties of good quality when fixing the hydraulic hose. Ensure that they are made of a water and UV-radiation tolerant material.

Fixing the SmartBrake unit to the vehicle is to be done with the provided mounting bracket and locking pins. The locking pins have an interference fit with the bracket and unit is held in place with friction. Ensure that the locking pins are fully engaged with the bracket as shown in Figure 1. Orientation of the mounting bracket can be done both ways.



Figure 1 Mounting bracket fixed to the SmartBrake unit properly with the locking pins.

Installation of the bracket to the vehicle is to be done by bolting it to a rigid part of the vehicle. Use mounting hardware that is rated for outdoor use and vibrations.

⚠️ WARNING

Using mounting hardware not rated for outdoor use can lead to corrosion and premature failure. Using mounting hardware not rated for vibrations will risk the SmartBrake unit loosening.

Modifications to the mounting bracket can lead to a degraded structural integrity. Failure of the mounting bracket can lead to damage or critical failure of the SmartBrake unit.

MOUNTING AND ADJUSTING THE BRAKE LEVER

Always use the supplied elastomer strip between the tube and the clamp for the brake lever holder. Ensure that the brake lever is mounted so that the clamp opens upwards, as shown in Figure 2.

NOTICE

Torque the supplied hex-head screw to 0.23Nm, tighten with care as over-torquing can damage the brake lever holder.

Users might have different grip reaches to operate the brake lever. Adjusting the orientation of the brake lever so that the lever moves closer or further away from the handlebar may be necessary. Simply lift open the clamp as shown in Figure 2 and rotate the brake lever housing.



Figure 2 Correct mounting of the Brake Lever, the bracket is in open position in the figure to the right, this must be closed before delivery.

⚠ WARNING

Make sure the clamp is properly closed. Deviation may cause the remote to drop off which may cause serious or fatal injuries to the user.

When the brake lever is sat in a new position, the top brake force may be reduced due to software settings. After five full brake cycles from no brake to full brake with the Brake Unit responding, the software calibrates the new lever position to gain full brake force. This is signaled by a blue light at the brake lever. If you do not see a blue light, place the lever further away from the handlebar to get more movement in the lever and do five full brake cycles. If you do not gain full brake force, contact your SmartBrake dealer, or visit www.mysmartbrake.com for support.

MOUNTING THE THUMB BRAKE

Always use the supplied elastomer strip between the tube and the clamp for the thumb brake bracket.

NOTICE

Torque the supplied hex-head screw to 0.23Nm, tighten with care as over-torquing can damage the thumb brake bracket.



Figure 3 Example of a mounted thumb brake on a handlebar.

The thumb brake slides onto the thumb brake bracket.

⚠ WARNING

Make sure that you hear an audible “click” sound when mounting the thumb brake on the thumb brake bracket. There is a snap connection that holds the thumb brake in place.

CHARGE BRAKE UNIT AND LEVER

Give the SmartBrake unit and brake lever a charge cycle before shipping the product to the user. The battery in the SmartBrake unit is not stored with a full depth of charge. Full charge is approximately reached after 3.5 hours for the brake unit and 2.5 hours for the brake lever.

⚠ WARNING

Make always sure that the screw cap on the SmartBrake unit is tightened, and the silicon lid on the brake lever is properly sealed after charging. Poor sealing may cause damage to electronics parts which may cause unforeseen deviations in function which can lead to serious or fatal injuries to the user.



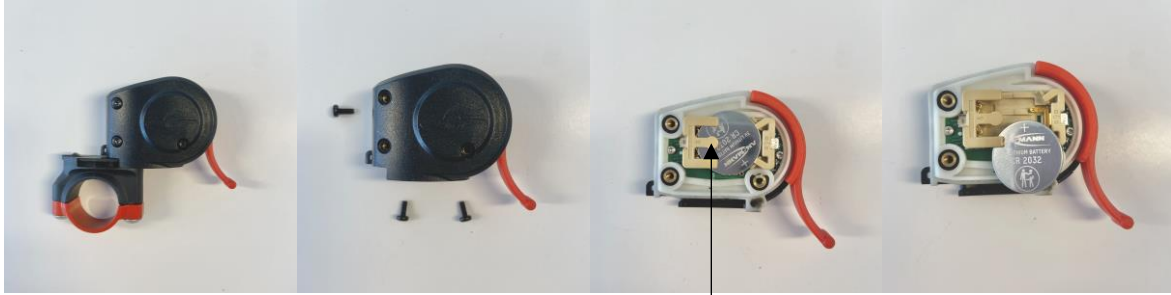
Illustrations above shows the charging ports in their open position – ensure that these are properly closed.

CHANGE BATTERY AT THUMB BRAKE/HAND CONTROL

THUMB BRAKE

The thumb brake uses a CR2032 battery and cannot be charged. Under is a guide to change the battery.

1. Remove the thumb brake from the bracket
2. Use a Torx8 screwdriver to remove the three screws
3. Carefully remove the CR2032 battery by pushing down the pin with the arrow.
4. Add a new CR2032 battery and assembly the thumb brake.



3. Push down to eject the battery.

HAND CONTROL

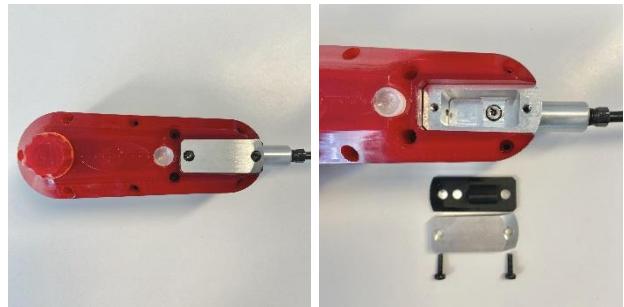
The hand control uses a CR2032 battery and cannot be charged. Under is a guide to change the battery.

1. Turn the hand control around.
2. Open the lid with a coin or an object that fits the trace.
3. Turn counterclockwise until the latch pops up.
4. Add a new Lithium 3V CR2032 battery and screw the lid in place.



BLEEDING AND MOUNT A CALIPER TO THE BRAKE UNIT

To bleed the brake unit, start by turning off the brake unit. Then unscrew the two Torx8 screws on the lid. Inside the aluminum container is a bleeding screw. Use a Torx10 screwdriver to open.



NOTICE

The container is not a reservoir.

⚠ WARNING

When tightening the bleed nut, do not use force. The O-ring will get destroyed and this will cause an oil leak.

Illustration of the cable connection point to the brake unit.



IF THE HYDRAULIC HOSE IS NOT THE CORRECT LENGTH

Contact our support at:
(+47) 64959444
post@mysmartbrake.com

⚠️WARNING

Attempting to extend or shorten the hydraulic hose and bleeding the system is not allowed. This requires specialized personnel. Errors introduced from attempting this can cause failure of the SmartBrake system and serious or fatal injuries to the user.

START AND TEST

Your SmartBrake kit is delivered fully bled and synchronized with the remotes. To test the kit; start by pushing the activation button on the brake unit. At the start-up, the system will go in safety brake until the administrator control is activated and is within signal range. Activate a control by triggering the button or lever.

If the brake unit is still going into safety brake you will need to detect the error by reading the User Manual.

ADMINISTRATOR REMOTE

When you have two remotes set up, it is important to distinguish between the one that is intended as fixed to the bicycle and the one that is handheld or should be on an accompanying bicycle. The control to be used with distance to the bike is the administrator, and it is only this remote that wakes up the brake system at start-up.