eTap® HRD™ Caliper/Hose Replacement Electronic Subassembly Replacement





SRAM® LLC WARRANTY

EXTENT OF LIMITED WARRANTY

Except as otherwise set forth herein, SRAM warrants its products to be free from defects in materials or workmanship for a period of two years after original purchase. This warranty only applies to the original owner and is not transferable. Claims under this warranty must be made through the retailer where the bicycle or the SRAM component was purchased. Original proof of purchase is required. Except as described herein, SRAM makes no other warranties, guaranties, or representations of any type (express or implied), and all warranties (including any implied warranties of reasonable care, merchantibility, or fitness for a particular purpose) are hereby disclaimed.

LOCAL LAW

This warranty statement gives the customer specific legal rights. The customer may also have other rights which vary from state to state (USA), from province to province (Canada), and from country to country elsewhere in the world.

To the extent that this warranty statement is inconsistent with the local law, this warranty shall be deemed modified to be consistent with such law, under such local law, certain disclaimers and limitations of this warranty statement may apply to the customer. For example, some states in the United States of America, as well as some governments outside of the United States (including provinces in Canada) may:

- a. Preclude the disclaimers and limitations of this warranty statement from limiting the statutory rights of the consumer (e.g. United Kingdom).
- b. Otherwise restrict the ability of a manufacturer to enforce such disclaimers or limitations.

For Australian customers:

This SRAM limited warranty is provided in Australia by SRAM LLC, 1000 W. Fulton Market, 4th Floor, Chicago, IL, 60607, USA. To make a warranty claim please contact the retailer from whom you purchased this SRAM product. Alternatively, you may make a claim by contacting SRAM Australia, 6 Marco Court, Rowville 3178, Australia. For valid claims SRAM will, at its option, either repair or replace your SRAM product. Any expenses incurred in making the warranty claim are your responsibility. The benefits given by this warranty are additional to other rights and remedies that you may have under laws relating to our products. Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and for compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.

LIMITATIONS OF LIABILITY

To the extent allowed by local law, except for the obligations specifically set forth in this warranty statement, in no event shall SRAM or its third party suppliers be liable for direct, indirect, special, incidental, or consequential damages.

LIMITATIONS OF WARRANTY

This warranty does not apply to products that have been incorrectly installed and/or adjusted according to the respective SRAM user manual. The SRAM user manuals can be found online at sram.com, rockshox.com, avidbike.com, truvativ.com, or zipp.com.

This warranty does not apply to damage to the product caused by a crash, impact, abuse of the product, non-compliance with manufacturers specifications of usage or any other circumstances in which the product has been subjected to forces or loads beyond its design.

This warranty does not apply when the product has been modified, including, but not limited to any attempt to open or repair any electronic and electronic related components, including the motor, controller, battery packs, wiring harnesses, switches, and chargers.

This warranty does not apply when the serial number or production code has been deliberately altered, defaced or removed.

This warranty does not apply to normal wear and tear. Wear and tear parts are subject to damage as a result of normal use, failure to service according to SRAM recommendations and/or riding or installation in conditions or applications other than recommended.

Wear and tear parts are identified as:

Stripped threads/bolts (aluminium, Dust seals Handlebar grips Transmission gears Bushings titanium, magnesium or steel) Shifter grips **Spokes** Air sealing o-rings Brake sleeves Jockey wheels Free hubs Glide rings Brake pads Disc brake rotors Aero bar pads Rubber moving parts Chains Wheel braking surfaces Corrosion Foam rings Sprockets Bottomout pads Tools Rear shock mounting hardware and Cassettes Motors Bearings main seals Shifter and brake cables (inner and Bearing races **Batteries**

Upper tubes (stanchions) outer) Pawls

Notwithstanding anything else set forth herein, the battery pack and charger warranty does not include damage from power surges, use of improper charger, improper maintenance, or such other misuse.

This warranty shall not cover damages caused by the use of parts of different manufacturers.

This warranty shall not cover damages caused by the use of parts that are not compatible, suitable and/or authorised by SRAM for use with SRAM components.

This warranty shall not cover damages resulting from commercial (rental) use.



SAFETY FIRST!

We care about YOU. Please, always wear your safety glasses and protective gloves when servicing SRAM® products.

Protect yourself! Wear your safety gear!

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<u>SRAM® e</u>Tap® HRD™ Brake Systems

We recommend that you have your SRAM eTap HRD components serviced by a qualified bicycle mechanic. Servicing SRAM components requires knowledge of bicycle mechanics as well as the special tools and lubricants/fluids used for service.

SRAM brake systems need to be serviced periodically to optimize braking function. If brake fluid is leaking from any area of the brake there may be damage or wear and tear to the internal moving parts. If the system has been contaminated with the wrong fluid there may be damage to all rubber and plastic internal parts. If your brake was damaged in a crash, there may be damage to the lever blade, pushrod, and housing assemblies. Inspect and replace these parts to restore proper brake function.

Visit www.sram.com/service for the latest SRAM Spare Parts catalog and technical information. For order information, please contact your local SRAM® distributor or dealer.



For recycling and environmental compliance information, please visit www.sram.com.

Information contained in this publication is subject to change at any time without prior notice. Your product's appearance may differ from the pictures contained in this publication.

SAFETY INSTRUCTIONS

Do not use mineral oil or DOT 5 fluid. If the brake system has been contaminated with mineral oil or DOT 5 fluid, the braking system (e.g. the brake-shift lever, caliper, and hose) will need to be replaced.

For best results, use only SRAM High-Performance DOT 5.1 brake fluid. If SRAM brake fluid is not available, only use DOT 5.1 or 4 brake fluid.

Use only DOT compatible grease.

Always wear safety glasses and nitrile gloves when working with DOT brake fluid.

Used DOT brake fluid should be recycled or disposed of in accordance to local and federal regulations.

Never pour DOT brake fluid down a sewage or drainage system or into the ground or a body of water.

Do not allow any brake fluid to come in contact with the brake pads. If this occurs, the pads are contaminated and must be replaced.

Place an oil pan on the floor underneath the area where you will be working on the brake.

Servicing your brakes removes all of the brake fluid from the system. You must bleed your brakes after you service the brake caliper. Consult the eTap HRD Hose Shortening and Bleed Manual at www.sram.com/service.

NOTICE

Before beginning service, thoroughly clean the exterior of the product to avoid contamination of internal sealing part surfaces.

DOT brake fluids will damage painted surfaces. If any fluid comes in contact with a painted surface (e.g. your frame) or printing on the brakes, wipe it off immediately and clean it with isopropyl alcohol or water. Damage to painted and/or printed surfaces by DOT brake fluid is not covered under warranty.

When using a crowfoot socket and torque wrench, install the crowfoot socket at 90 degrees to the torque wrench.

Disc Brake Pad Advancement Procedure

NOTICE

Do not apply DOT brake fluid or grease to caliper pistons when performing troubleshooting procedures. Use of DOT brake fluid or grease can diminish braking performance and cause rotor rubbing.

If your brakes exhibit excessive lever throw or spongy feel, perform the following steps before bleeding the system:

1

Clamp the bicycle into a bicycle work stand and remove the wheel according to the wheel manufacturer's instructions.



Remove the brake pads and install the pad spacer.





Squeeze the brake lever several times until both pistons have advanced and contact the pad spreader. One piston may move faster than the other; continue to squeeze the lever until the second piston touches the spacer.





Use a plastic tire lever to push the pistons back into the caliper bores.

Repeat steps 3-5 until both pistons move freely.



Reinstall the brake pads and install the wheel according to the manufacturer's instructions.







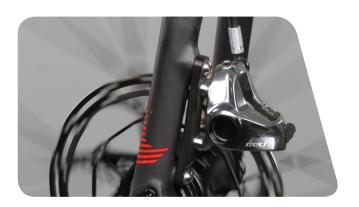
Loosen the caliper bolts.

Center the caliper on the rotor, and tighten.





Spin the wheel and check the brake function. The pistons should move freely and there should not be excessive brake lever throw.

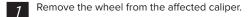


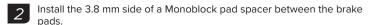
If there is no improvement in the brake function, proceed to <u>Caliper Service</u>.

NOTICE

Do not apply DOT brake fluid or grease to caliper pistons when performing troubleshooting procedures. Use of DOT brake fluid or grease can diminish braking performance and cause rotor rubbing.

If the brake lever was squeezed without a pad spacer or rotor installed in the caliper, the pad gap may have been reduced. If this happens the rotor might not have enough clearance in the caliper without rubbing. Perform this procedure to reset the pad gap:





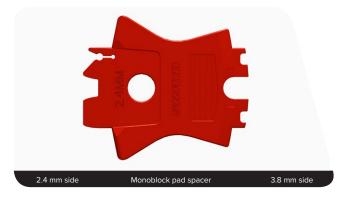
Squeeze the brake lever hard 5 times (approximately 22 lbs).

Remove the spacer from the caliper, and install the 2.4 mm side of the SRAM spacer between the brake pads.

Squeeze the brake lever *lightly* 5 times (approximately 4 lbs or less).

Remove the pad spacer.

Re-install the wheel, and re-center the caliper.



Disc Brake Pad Retraction Reset - Monoblock caliper only

NOTICE

Do not apply DOT brake fluid or grease to caliper pistons when performing troubleshooting procedures. Use of DOT brake fluid or grease can diminish braking performance and cause rotor rubbing.

If there is still insufficient clearance between the brake pads and rotor after performing the pad gap reset procedure, perform this overnight procedure to reset the retraction distance between the caliper pistons:

Remove the wheel from the affected caliper.

Install the 3.8 mm side of a Monoblock pad spacer between the brake pads and remove it without squeezing the brake lever.

Install the 2.4 mm side of the Monoblock pad spacer between the brake pads.

Squeeze the brake lever *lightly* 5 times (approximately 4 lbs or less).

Allow the system to sit, untouched, for 12-24 hours.

Remove the pad spacer.

Re-install the wheel, and re-center the caliper.



SRAM® eTap® HRD™ Caliper Service

Parts, Tools and Supplies

Parts

• eTap HRD Caliper Piston Service Kit - 21 mm

Safety and Protection Supplies

- Apron
- · Clean, lint-free rags
- · Nitrile gloves
- · Oil pan
- · Safety glasses

Lubricants and Fluids

- · Isopropyl alcohol
- SRAM DOT 5.1 brake fluid
 If SRAM fluid is not available, only use DOT 5.1 or 4 brake fluid
- · SRAM DOT assembly grease

SRAM Tools

- Monoblock caliper 21 mm piston removal tool
- · Piston plug
- · Monoblock bleed block

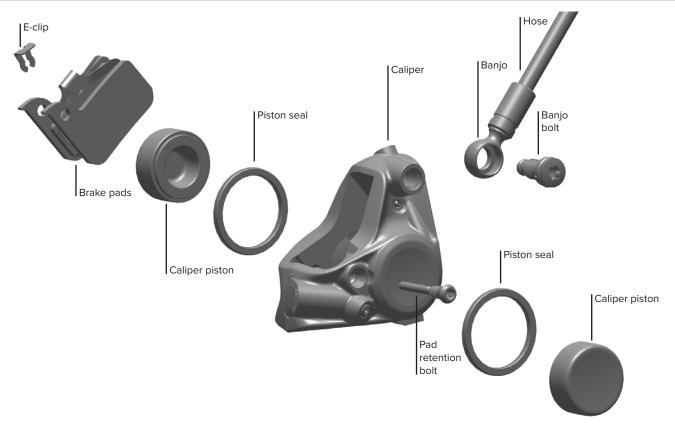
Bicycle Tools

· Bicycle work stand

Common Tools

- · Needle nose pliers
- · 2.5 mm hex wrench
- 2.5 mm hex bit socket
- T25 TORX® wrench
- · T25 TORX bit socket
- Air compressor with rubber-tipped air chuck nozzle
- · Digital caliper
- Pick
- Torque wrench
- · Soft rubber or piece of inner tube

eTap HRD Caliper Exploded View



Caliper Brake Pad Removal

- Remove the caliper from the frame, then remove the mounting bracket and the hardware from the caliper. Set them aside in the order that they were removed.
- 2 Remove the E-clip from the pad retention bolt, then remove the pad retention bolt from the caliper.



Remove the brake pads from the caliper.

NOTICE

Brake pads must be replaced if the total thickness of the backing plate and pad friction material is less than 3 mm.





NOTICE

DOT brake fluid will damage painted surfaces. If any fluid comes in contact with a painted surface (e.g. your frame) or printing on the brakes, wipe it off immediately and clean it with isopropyl alcohol or water. Damage to painted and/or printed surfaces by DOT brake fluid is not covered under warranty.



Remove the banjo bolt and hose.

NOTICE

Fluid will drip. Place an oil pan and/or rag under the hose.



2 Insert the piston removal tool, then install the pad retention bolt into the caliper.

ACAUTION

The pad retention bolt must be installed. If the pad retention bolt is not installed, the piston removal tool may dislodge rapidly from the caliper, which can lead to bodily injury or damage to the parts.



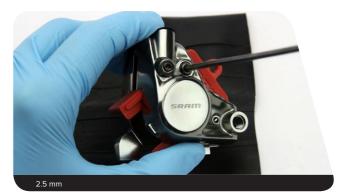
Firmly press a rubber-tipped air chuck nozzle into the banjo port. Hold the caliper securely against a rubber surface and force air into the banjo port to dislodge the piston from the caliper.

△CAUTION - EYE HAZARD

Wear safety glasses. The caliper piston may dislodge rapidly from the caliper, which can lead to bodily injury or damage to the parts. Point the caliper piston toward a rubber surface to prevent the piston from becoming a projectile.



Remove the pad retainer bolt, then remove the piston and the piston removal tool from the caliper.





Insert the piston plug so that it fits snugly into the empty piston bore and is flush with the inside of the caliper.



6 Insert the piston removal tool so that it will capture the still-installed piston. Make sure the horseshoe opening is aligned with the tab on the piston plug.

Install the pad retention bolt to hold the piston removal tool in place.

ACAUTION

The pad retention bolt must be installed. If the pad retention bolt is not installed the piston removal tool may dislodge rapidly from the caliper, which can lead to bodily injury or damage to the parts.





Firmly press a rubber-tipped air chuck nozzle into the banjo port. Hold the caliper securely against a rubber surface and force air into the banjo port to dislodge the piston from the caliper.

∆CAUTION - EYE HAZARD

Wear safety glasses. The caliper piston may dislodge rapidly from the caliper, which can lead to bodily injury or damage to the parts. Point the caliper piston toward a rubber surface to prevent the piston from becoming a projectile.



8

Remove the retention bolt, the piston removal tool, the piston, and the piston plug from the caliper.





9

Remove the piston seals from each piston bore.

ACAUTION

Do not scratch the seal gland with the pick. Scratches could cause fluid to leak when the brake is applied, which will contaminate the brake pads and could lead to a brake failure.





5 Spray isopropyl alcohol inside each piston bore, the inside and the outside of the caliper, and all of the removed parts and clean them with a rag.

NOTICE

Do not use mineral oil or DOT 5 fluid. If the brake system has been contaminated with mineral oil or DOT 5 fluid, the braking system (e.g. the brake-shift lever, caliper, and hose) will need to be replaced.

For the best braking performance, use only SRAM® DOT 5.1 brake fluid. If SRAM fluid is not available, use only DOT 5.1 brake fluid or 4 fluid.



NOTICE

DOT brake fluid will damage painted surfaces. If any fluid comes in contact with a painted surface (e.g. your frame) or printing on the brakes, wipe it off immediately and clean it with isopropyl alcohol or water. Damage to painted and/or printed surfaces by DOT brake fluid is not covered under warranty.

1

Apply a small amount of SRAM® 5.1 DOT brake fluid to new piston seals and install the piston seals into each piston bore.



2 Inspect the caliper pistons for damage and replace the pistons if necessary.

Use your gloved finger to apply a small amount of SRAM DOT 5.1 brake fluid to each piston, then install each piston into each piston bore.

NOTICE

For the best braking performance, use only SRAM DOT 5.1 brake fluid. If SRAM fluid is not available, use only DOT 5.1 or 4 brake fluid. Do not use grease. Grease will prevent the pistons from fully retracting into the caliper bores which will reduce braking performance.





Tip: If a piston is difficult to install into a piston bore, lay the caliper on a flat surface. Slide a thin wrench through the caliper, then gently and evenly press the piston into the bore.



3

Remove the o-rings from the banjo bolt.

Install the new o-rings and apply a thin layer of grease.



4

Tighten the banjo bolt with the banjo boot at the desired angle.



5

Insert the Monoblock bleed block into the caliper, then install the pad retention bolt.

ACAUTION

You must bleed your brakes before reinstalling the brake pads. Installing the brake pads prior to bleeding the brakes could contaminate the brake pads and could lead to a brake failure.



6

Spray isopropyl alcohol on the caliper and clean it with a rag.



Visually check your work. If any of the o-rings protrude from the banjo fitting or banjo bolt, remove and replace the o-ring, then repeat the installation process.

ACAUTION

Servicing your brakes removes all of the brake fluid from the system. You must bleed your brakes after you service the brake caliper. Consult the $eTap^{\otimes}$ HRD^{\cong} Hose Shortening and Bleed Manual at www.sram.com/service.

SRAM® eTap® HRD™ Hose Replacement

Perform the hose replacement service if the hose needs to be replaced. For hose shortening instructions, consult the eTap HRD Hose Shortening and Bleed Manual at www.sram.com/service.

Parts, Tools and Supplies

Parts

• Disc Brake Hydraulic Line Kit - SRAM RED eTap HRD

Safety and Protection Supplies

- Apron
- · Clean, lint-free rags
- · Nitrile gloves
- · Oil pan
- · Safety glasses

Lubricants and Fluids

- · Isopropyl alcohol
- SRAM DOT assembly grease

SRAM Tools

- · SRAM hydraulic hose cutter tool
- · Monoblock bleed block

Common Tools

- · Needle nose pliers
- · 2.5 mm hex wrench
- · 2.5 mm hex bit socket
- T8 and T25 TORX® wrenches
- · T25 TORX bit socket
- 8 mm flare nut wrench
- 8 mm crowfoot wrench
- 10 mm open end wrench
- · Torque wrench
- Marker

Hose Removal

1

Remove the wheel from the bicycle according to the manufacturer's instructions.

Remove the E-clip from the pad retention bolt, then remove the pad retention bolt from the caliper.



NOTICE

Brake pads must be replaced if the total thickness of the backing plate and pad friction material is less than 3 mm.





Install the Monoblock bleed block into the caliper, then install the pad retention bolt.



Loosen and remove the compression nut and hose from the valve body.





6 Loosen and remove the banjo bolt and the hose from the caliper.

NOTICE

Fluid will drip. Place an oil pan and/or rag under the caliper.



7 Remove the hose from the frame, according to your frame manufacturer's instructions.

To remove the hose from internally routed frames, first cut the hose near the compression fitting and remove the compression nut from the hose.

Hose Installation

1

Internally routed frames: Insert the hose and route it through the frame or fork

Externally routed frames: Loosely connect the hose to the frame or fork.

Apply a thin layer of grease to the banjo bolt o-rings, then install the banjo bolt into the banjo.



Install the new banjo onto the caliper.



To shorten the hose, hold the hose up to the shift-brake lever with a length that creates a gentle bend in the hose and allows the handlebar to freely turn from side to side.

Mark your cut location, then cut the hose.

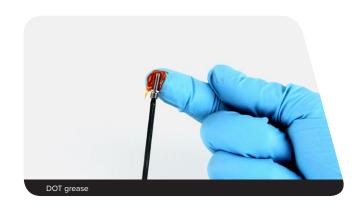
NOTICE

You must cut the hose at the lever. Cutting the hose at the caliper will remove the crimped banjo from the hose, and it will need to be replaced.









Thread the hose barb into the hose until it is flush with the end of the hose.

Install the compression nut onto the hose.

NOTICE

Do not overtighten the hose barb. Overtightening may cause damage to the hose liner. $\,$



Thread a new compression fitting over the hose barb, counterclockwise, until it is flush or slightly lower than the hose barb.

The compression fitting is reverse threaded.

NOTICE

You must install a new hose barb and compression fitting before reconnecting the brake lever to the hose.



Apply a thin layer of grease to the compression fitting and compression nut.





Install the hose into the lever body while threading the compression nut into the valve body by hand. Tighten the compression nut.





ACAUTION

Hydraulic hose replacement removes all of the fluid from the system. You must bleed your brakes after you service the brake caliper. Consult the $eTap^{\otimes}$ HRD^{∞} Hose Shortening and Bleed Manual at www.sram.com/service.

Electronic Subassembly Replacement

Perform the Electronic Subassembly replacement if your brake lever, shifter, or battery box has been damaged.

Parts, Tools and Supplies

Parts

 SRAM® RED eTap® Hydraulic Road Brake Lever Assembly - Left or Right

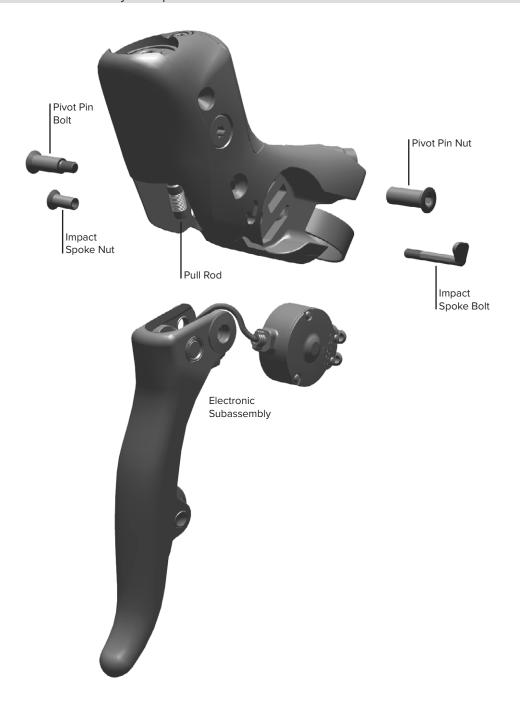
Safety and Protection Supplies

- Apron
- · Nitrile gloves
- Safety glasses

Common Tools

- 2.5 mm and (2) 3 mm hex wrenches
- 2.5 mm and 3 mm hex bit sockets
- · Flat blade screwdriver
- · Torque wrench

Electronic Subassembly Exploded View



Electronic Subassembly Removal



Fold the hood cover forward and remove the SRAM® eTap® Blips or seal plugs from the electronic sub-assembly.



Fold the hood cover backward.



Use your finger to hold the impact spoke nut in place, and remove the impact spoke bolt and nut from the hood.





Use a 3 mm hex wrench to hold the pivot pin nut in place, then use another 3 mm hex wrench to unthread the pivot pin bolt from the hood. $\frac{1}{2} \left(\frac{1}{2} \right) = \frac{1}{2} \left(\frac{1}{2} \right) \left(\frac{1}{2} \right$





Rotate the reach adjust bolt clockwise to unthread the lever from the hood.

The reach adjust bolt is reverse-threaded.





Use a flat blade screwdriver to remove the battery box, then slide the electronic sub-assembly wire through the slot to remove the electronic sub-assembly from the hood.





1 Remove the seal plugs from the new electronic sub-assembly.







Insert the lever into the hood assembly. Insert a 2.5 mm hex wrench into the reach adjust bolt hole in the lever and align the wrench with the pull rod. Push the lever into the hood assembly, and rotate the bolt counter-clockwise to tighen the bolt to hand tight.

The reach adjust pull rod is reverse-threaded.

NOTICE

Do not pinch the wire between the lever and the hood when installing



Install the pivot pin nut and the pivot pin bolt into the hood. Use a $3\ \text{mm}$ hex wrench to hold the nut in place, then use another $3\ \text{mm}$ hex bit socket to tighten the bolt.

Visually check that the battery box wire is installed above the pivot pin nut and bolt.





Install the impact spoke bolt and impact spoke nut, and tighten.

NOTICE

Do not overtighten the impact spoke bolt. Overtightening can cause the lever to seize.





Adjust the reach to your desired setting.



Fold the hood cover up, then install SRAM® eTap® Blips or seal plugs into the electronic subassembly. Fold the hood cover down.



Your eTap system must be paired before riding. Consult the *Quick Start Guide RED eTap* or the *eTap Systems User Manual* for pairing information at www.sram.com/service.







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