HAYES™ radar

CROSSHAIR ALIGNMENT

45-31073

RADAR CALIPER SERVICE INSTRUCTIONS

This manual is intended to provide the information necessary for maintenance and service of the Hayes Radar disc brake calipers. These instructions can be downloaded from the Hayes Disc Brake website at www.hayesbicycle.com.

SAFETY INFORMATION

As a serious rider you are well aware of the need to practice safety in all aspects of the sport. This includes service and maintenance practices as well as riding practices. Before each ride, always check your brakes for proper function and the brake pads for wear. When you ride, always wear a helmet.

Warning: When you need to install any of the disc brake components, that installation work should be done by a qualified technician with the proper tools. Improper installation could cause severe or fatal injuries.

Warning: Wear safety glasses when working with compressed air.

Warning: This brake has been designed for use on a single person mountain bike. The use on any other vehicle or device will void the warranty and can cause serious injury.

Caution: With use, disc brake components may become very hot. Always allow components to cool before attempting to service your bike.

Warning: When following any of the procedures below, be sure to keep your hands and fingers from getting caught in the disc. Failure to do so could result in injury.

Warning: Do not adjust the caliper while the wheel is spinning.

Warning: Do not adjust the caliper while the caliper is hot.

Warning: If your bike is involved in a fall or crash it is recommended your brakes are checked by a qualified mechanic before riding to ensure they are functioning properly. The following checks should be performed: Check that all components are securely mounted to the handlebar,frame, fork, or wheel; check for proper pad installation and retention; check that the brake builds and holds pressure; check hose and fittings for kinks or leaks; check master cylinder body and caliper for damage. Always have a qualified bike mechanic check your brakes if you suspect damage.

Tools Required

- 8mm Open End Wrench
- 10mm Box End Wrench
- Hydraulic Hose Cutter
- Torque Wrench
- 5mm Allen Driver
- Hayes Radar Bleed Kit
- Pliers
- Safety Glasses

Piston(s) Pumped Out

If the brake lever is stroked without the disc between the pads (and this is possible when brake pads are being changed or the bike is being transported with the wheels off), the self-adjusting feature will allow the pads to push out. The caliper pistons will be pumped out of their bore. This would cause excessive drag on the disc when the wheel and disc are reinstalled, or even make it impossible to install the wheel and disc. To fix this problem:

1. Remove the brake pads from the caliper if they are not already removed. (See Installation & Set-up Instructions)
   Hint: If the pads are pushed together tight, slide the travel spacer between the pads and enlarge the gap until it is large enough to pull the pads out.
2. With the pads removed, push the pistons all the way back into the bore using the box end of an 10mm wrench. Walk the piston back and forth until the piston is all the way back in the bore. Do the same thing on the other side.
   Notice: Don't push the edge of the pistons as they may crack or chip.
3. When the pistons are back into their bores, install the pads.

Caliper Hose Removal/Installation

Removal

1. Remove the hose compression nut from the caliper using an 8mm open end wrench. **(FIG. 1)**
2. Pull the hose out of the caliper.
3. A new hose insert/compression bushing combination will be needed each time the hose is re-installed. Remove the old hose insert by cutting the hose next to it. The cut needs to be clean with no frayed ends.

Installation

1. If shortening the hose, cut the hose to desired length using hose or cable cutters. The cut end must be clean and perpendicular to itself.
2. Slide the hose nut onto the hose.
3. Push the end of the barbed hose insert into the end of the hose. Be sure it is inserted completely so the stop surface is flush with the end of the hose. Always use a new hose insert/compression bushing. **(FIG. 2)**
4. Slide the hose into the caliper and install the hose compression nut. Be sure that the hose is inserted completely into the caliper. Ensure that the hose remains inserted while tightening the hose compression nut down.
5. Using an 8mm open-end wrench, torque the hose compression nut to 70 ± 5 in/lb. [7.9±0.5 Nm]
6. Bleed the system. (See Radar Bleed Instructions)

Caliper Service

Piston Removal

1. Remove the caliper from the bike by removing the two M6x1.0 x 18.4mm mounting bolts.
2. If there is nothing wrong with the hose and the hose fitting, completely remove the caliper hose assembly. See hose removal section.
3. Remove the two bridge bolts - with a 5mm Allen wrench **(FIG. 3)** . When you remove the two bridge bolts, the caliper will come apart into two pieces. There will be an inner and an outer caliper half and an O-ring between.
4. Take the transfer port O-ring out and inspect it for any cuts or debris. This o-ring may be reused when the caliper is put back together. **(FIG. 4)**
   Notice: Do not scratch O-ring groove when removing the O-ring, as this could cause the O-ring to leak.
5. Remove the pistons from the caliper with pressurized air. Avoid chipping the piston. Blow it onto a clean, lint free rag or other soft surface. Ensure bleed plug is installed, angle the caliper so the piston is facing downward, then direct pressurized air thru the hole that connects the 2 halves together. This will force the piston out of the caliper. Be sure you are blowing the piston into a rag. The air pressure will force the piston out at a high rate of speed. **(FIG. 5 & 6)**
7. Carefully remove the square seal from inside the piston bore. The replacement kit will consist of a new piston and square seal.
   Notice: Do not scratch the groove in the piston bore. This can cause leakage. Use a sharpened wood or plastic stick.
8. Remove the piston and square seal from the opposing caliper half in the same way.
9. Clean all of the parts. Then rinse each part with isopropyl alcohol. Be sure to clean the caliper through all of the holes.
10. Wipe down each part to remove the residue. Then use compressed air to blow dry and remove all of the remaining dirt, etc. For both caliper halves, be sure to blow compressed air through both the bleeder hole and the transfer port, and all around the square seal groove. Take extra care to get the square seal grooves free of any hair, dirt, scratches, etc. that could cause the caliper to leak.

Piston Assembly

1. Begin re-assembly of the caliper by lightly lubricating the new square seals with Hayes Mineral Oil and installing the new seals in the caliper halves.
2. Carefully push the square seal into its seal groove – making sure that the seal is worked into the groove all of the way around - and that it is pushed all of the way to the back of the seal groove. **(FIG. 7)**
3. Put a coating of Hayes Mineral Oil all around the piston as a lubricant, and carefully push the piston into the bore, **(FIG. 8)** past the seal, until it seats at the bottom of the bore. **(FIG. 9)** The piston should push in easily, if it doesn't, take the piston out and again push the square seal all of the way to the back of the groove and then try again.

Caliper Assembly

1. Place the Transfer port o-ring into the o-ring seat in the outer caliper half.
2. Put the two caliper haves together and install the bridge bolts.
3. Torque the bridge bolts to 170 in.-lbs +/- 5 in-lbs [19.2 Nm +/-0.5 Nm]
4. Reattach the hose to the caliper.
5. Bleed the system. (See Radar Bleed Instructions).

FIG. 1

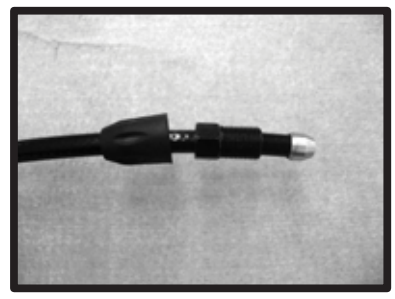

FIG. 2

FIG. 3

FIG. 4

FIG. 5

FIG. 6

FIG. 7

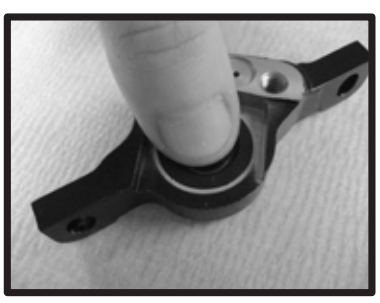

FIG. 8

FIG. 9

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