Congratulations. You have purchased a Hayes Disc Brake system. This Manual is intended to provide the information necessary for normal maintenance and service of the Hayes Disc Brake system. Although the steps and procedures are relatively simple, they should not be attempted until you are thoroughly familiar with the entire set of procedures. Images have been provided to help you in the steps and procedures.

SAFETY INFO

Warning: 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: 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.

Warning: 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: For riders using the brakes in downhill conditions, it is recommended that you use the 8" disc version of the Hayes Brake. Not all frames and forks will accept and 8" disc. Please check with your frame or fork manufacturer or www.hayesdiscbrake.com for 8" disc compatibility. Consistently using the 6" disc in downhill conditions may cause the brake fluid to boil.

STARTING OUT

Personal Preference and Adjustment
In most cases, the Hayes Disc Brake system has been pre-assembled for your bike. However there are a couple of adjustments that you can make to match your particular physical characteristics or personal preferences.

- **Positioning the Master Cylinder and Lever**
  1. Loosen, but do not remove, the handle bar clamp screw
  2. Then, position the Master Cylinder and Lever on the handlebar in your desired position.
  3. Torque the handlebar clamp screw to 15-20 in-lbs (1.7-2.26 Nm)

- **Power Adjustment Dial (Figure 1)**
  Adjusting the amount of power the brake provides can be done by turning the “Power Adjustment Dial”. Turning the dial clockwise will reduce the amount of power the brakes provides. Turning the dial counter clockwise will increase the power the brake provides.
  Warning: DO NOT attempt to force the “Power Adjustment Dial” beyond its limits.
  Note: When adjusting the “Power Adjustment Dial” it will change the lever reach. Follow the instructions to set your lever reach.

- **Lever Reach Adjustment (Figure 1)**
  Adjust the brake lever reach by turning the reach adjustment knob. Turning the knob counter clockwise will adjust the lever closer to the handle bar. Turning the knob clockwise will adjust the lever farther from the handle bar.
  Warning: Do not attempt to force the adjustment screw beyond its limits.
  Warning: Due to the different diameters of grips and twist shifters, DO NOT adjust the reach adjustment screw too far counter clockwise. Doing so could allow the lever blade to contact the grip, which may reduce braking power.

- **Caliper Hose Routing (Figure 1)**
  The banjo on the caliper can be rotated to accommodate your frame or fork. Loosen the banjo bolt ¼ turn and rotate the banjo to the desired location. (Note: loosening the banjo bolt more than ¼ turn may introduce air in the system). Tighten the banjo bolt to 60 +/- 5 in/lb (6.7 +/- .5 Nm).

Burnish
Disc brakes require a special burnish period to achieve maximum braking power. This burnish period will last for about 30-40 stops. During this period some noise may occur.

Recommended Fluids and Lubricants
Use only DOT 3 or DOT 4 brake fluid. Do not use any petroleum-based lubricants, as this will cause the rubber parts to swell. Hayes recommends the use of DOT 3 or DOT 4 brake fluid. Clean the disc and pads only with isopropyl alcohol.
A. Tools Required

<table>
<thead>
<tr>
<th>Tool</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Torx T25 driver</td>
<td>Small Phillips screwdriver</td>
</tr>
<tr>
<td>Open-end wrenches; 6mm, 8mm, 9mm</td>
<td>Small flathead screwdriver</td>
</tr>
<tr>
<td>Scissors or cable cutters</td>
<td>Allen Drivers: 2.5mm, 4mm, 5mm</td>
</tr>
<tr>
<td>Torque Wrench</td>
<td>Hayes Caliper Bore Plug Tool</td>
</tr>
</tbody>
</table>

B. Mounting the Disc to the hub (Figure 2)

**Note:** Mounting the brake disc to the wheel is a simple matter, but one that requires care. If the wheel has to be rebuilt, have it done by a qualified technician using a 3 cross spoke pattern. We recommend the use of steel, quick-release skewers only.

1. Clean the disc and hub mounting surface with isopropyl alcohol (not disc brake cleaners).
2. Place the disc on the hub mounting surface. Be sure that the disc is pointing in the same direction as that of the forward wheel rotation.
3. Using a Torx T25 driver, install, tighten, and torque the disc screws to 50 +/- 5 in-lb (5.65 +/- .55Nm), in a star pattern sequence.

C. Mounting the Caliper to the Frame or Fork

**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.

1. Remove the wheel(s).
2. For some installations it will be necessary to mount a mount bracket to accept the Hayes Disc Brake caliper. Mount the mount bracket to the frame or fork using (2) M6 x 1.0 /18.4mm long mount bolts. Torque the bolts to 110 in-lbs (12.43 Nm).
3. Mount the caliper to the frame or mount bracket using (2) M6 x 1.0 / 18.4mm long mount bolts and (2) mount washers. Snug the bolts, but leave them loose enough so that caliper will move on its slots.

**Caution:** For Manitou forks you will need to use (2) M6 x 1.0 /22mm long mount bolts. These bolts are supplied in your aftermarket kit or supplied from the bike manufacture.

**Warning:** Be sure to line up any mounting holes that the caliper needs to move in. Failure to do so will cause the caliper to function improperly.

3. Using a Torx T25 driver, install, tighten, and torque the caliper mounting screws to 50 +/- 5 in-lb (5.65 +/- .55Nm) in a star pattern sequence.

4. Re-install the wheel(s).
5. Squeeze and hold the brake lever. While holding the brake lever, shake the caliper to position it in its natural centered position over the disc. While squeezing the lever, tighten the mounting bolts.

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

6. Release the lever, spin the wheel. Check that it spins freely and that the gaps, between the pad and the disc, are equal. If the gaps are unequal, or if there is drag, adjust the caliper position by loosening the mounting bolts and adjusting the caliper as needed. Hint: A white piece of paper can be used as a background to help sight down the disc looking for equal clearance between the pads and disc.

7. When the gaps are equal and the wheel spins freely (without drag), torque the mounting bolts to 110 in-lbs (12.43 Nm).

**Caution:** For Manitou forks, torque the mounting bolts to 80 in-lbs (9.0 Nm).

8. Repeat above procedure for other wheel.

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**SERVICE**

A. Hose Removal and Assembly

The follow procedures are to be used when replacing or removing the hose.

**Master Cylinder Hose Removal (Figure 5)**

1. To take the hose off of the master cylinder end, slide the hose cone down the hose.
2. Using a 8mm box wrench, remove the hose nut and slide it all the way down the hose. Note: sometimes it is best to first cut the hose and use the box end of the 8mm wrench to better grab the 8mm hose nut.
3. Slide the hose out of the end of the master cylinder. There will be some residual fluid in the hose and master cylinder / caliper. Be careful to avoid spilling that fluid.
4. A new hose insert/compression bushing combination will be needed each time the hose is re-installed. Remove the old compression bushing and hose insert by cutting the hose next to the compression bushing. The cut needs to be clean with no frayed ends.

**Master Cylinder Hose Assembly**

1. Locate the end of the hose without the permanent crimper.
2. Cut the hose to the desired length with good scissors or cable cutters. The cut end must be clean and perpendicular to the hose itself.
3. Slide the hose cone onto the master cylinder side of the hose.
4. Slide the hose nut over the hose.
5. Push the longer end of the barbed hose insert/compression bushing combination into the end of the hose. Be sure it is inserted flush with the end of the hose. Always use a new hose insert/compression bushing combination.
6. Slide the hose into the master cylinder and install the hose nut. Be sure that the hose is inserted completely into the master cylinder end. Be sure the hose remains inserted while tightening.
7. Using a 8mm open-end wrench, torque the hose nut to 70 +/- 5 in-lb.
8. Bleed the system.

**Caliper Hose Removal (Figure 5)**

1. To take the hose off the caliper end, remove the banjo bolt using a 4mm Allen wrench.
2. When removing the banjo assembly completely from the caliper, be sure that the two banjo o-rings are not lost.

**Note:** The end of the El Camino caliper hose is a permanent crimper. Therefore the connection cannot be trimmed to size or repaired. Shortening of the hose must be done at the master cylinder end. If the caliper hose connection is damaged, the hose must be completely replaced with a new hose with a permanent crimper attached.

**Caliper Hose Assembly**

1. Install the banjo bolt through the banjo. Be sure that there is a banjo o-ring on each side of the banjo.
2. Position the angle of the banjo to your desired location for your frame or fork.
3. Tighten the banjo bolt to 60 +/- 5 in-lb (6.7 +/- .5 Nm).
B. Bleeding

Air trapped in the hydraulic system of the disc brakes can decrease performance of the system and should be removed by “bleeding” the system and replenishing the system with new brake fluid. The system is filled by pumping fluid from the lowest point (at the caliper), through the system, to the highest point, the bleeder on the master cylinder.

Caution: Use only new DOT 4 or DOT 3 brake fluid from a closed, sealed container. Use of any other fluid can cause the rubber parts to degrade and cause the brake to fail.

Caution: DOT 4 or DOT 3 brake fluid will strip paint. Use extreme caution to avoid getting DOT 4 or DOT 3 brake fluid on paint. If DOT 4 or DOT 3 brake fluid comes in contact with paint, wipe it off immediately and rinse with isopropyl alcohol.

Warning: If you get any brake fluid on the brake pads, discard them and replace with new pads. If you get any brake fluid on the disc, clean it thoroughly with isopropyl alcohol.

Warning: DOT 4 and DOT 3 brake fluid can be an irritant when it comes into contact with human tissue. For skin contact, brake fluid should be washed off in flowing water. For eye contact, the eye area should be irrigated with flowing water immediately and continuously for 15 minutes. Consult with medical personnel. If effects occur from inhaling brake fluid fumes, move to an area with fresh air. Consult a physician. If brake fluid is ingested, induce vomiting and consult medical personnel. Used brake fluid should be disposed of in accordance with local laws.

- Bleed Kit Assembly (Figure 4 C)
  1. Screw the cap onto the end of the bottle.
  2. Cut a 2" section of hose
  3. Push the short section of hose over the cap until it slips past the ridge on the cap
  4. Push the long section of hose into the master cylinder bleed fitting.

NOTE: There are three fittings with the kit. The black plastic fitting is to be used with the "El Camino".

- Bleeding the System
  1. Remove the wheel.
  2. Remove the brake pads so that any spilled fluid does not contaminate the pads. (See "Maintenance" instructions for pad removal)
  3. Push the caliper pistons all the way into their bores using the box end of a 9mm end wrench. Caution: Don’t push on the post in the center of the piston because that will bend the post.
  4. Position the bike in a stand so that the brake caliper bleed screw is perpendicular to the ground, and the reservoir bleeder screw on the master cylinder is the highest point on the brake system. NOTE: For the "El Camino" the bike should remain horizontal to the ground, and the lever should remain in its normal riding position.
  5. Remove the master cylinder bleed screw and press the fitting with the hose into the hole (note: there is one on each side of the master cylinder body, when bleeding only remove the bleed screw pointing up). The other end of the hose should go into a cup or bottle to catch the excess fluid. (Note: you will need to provide your own catch bottle) Be sure not to submerge the end of the hose in fluid. Hint: Taping a spoke to a bottle and bending it to hook around the handlebars makes a convenient hanger (Figure 4 B)
  6. Completely remove the caliper bleeder’s rubber cap.
  7. Fill the plastic filler bottle with fresh DOT 3 or DOT 4 brake fluid.
  8. Close the caliper bleeder.
  9. Place the hose from the fluid bottle onto the caliper bleeder. Pump the fluid bottle until there is no air in the hose. (Figure 4 C)
  10. Open the caliper bleeder 1/4 turn.
  11. Squeeze the fluid bottle firmly – forcing fluid into the caliper for a count of five. Stop squeezing until the bottle returns to its natural shape. When the squeeze is released, air should be drawn out of the caliper. Continue alternately squeezing the fluid bottle, for a count of five, and releasing until no air bubbles come out of the caliper.
  12. After all the air is out of the caliper; squeeze the bottle until fluid comes out at the master cylinder with no air bubbles.
  13. While squeezing the bottle, quickly stroke the lever to the handlebars, and release. Repeat this until no more air bubbles come out of the master cylinder.
  14. With the bottle still being squeezed, close the caliper bleeder. Torque should be only to seal the bleeder. Do Not Over-torque! Then release and remove the bottle and filler cap.
  15. Remove the hose and fitting from the master cylinder and insert the bleed screw.
  16. Clean the caliper and master cylinder with isopropyl alcohol. Take great care to remove all brake fluid because if the fluid comes into contact with the disc or brake pads, performance will forever be greatly reduced.
  17. Clean the disc with isopropyl alcohol if it is contaminated with oil or brake fluid.
  18. Replace the caliper’s rubber bleeder cap, the brake pads, and the wheel/disc assembly.
  19. Pump the brake lever to push the pads to the proper location.
  20. Center the caliper over the disc.

C. Master Cylinder Service (Figure 5)

The right hand and left hand master cylinders are identical and will be rebuilt in the same manner. Rebuilding must be done with the master cylinder removed from the bike.

NOTE: The Power Adjustment Dial is a non-serviceable item. DO NOT try to repair or replace the assembly.

- Master Cylinder Hose Removal
  (See instruction under Hose Assembly and Removal)

- Lever Blade Removal
  1. Remove the lever blade by first removing the two 2.5mm Allen head bolts on each side of the master cylinder.
  2. Remove the two plastic bushings that fit between the sides of the lever and the body.
  3. Firmly grab and pull the "push rod reach adjustment knob" and remove it from the push rod.
  4. Using a 2.5mm Allen wrench, turn the push rod clockwise until it is removed from the adjuster bushing and the thread retention bushings.

- Lever Blade Assembly
  1. Put the adjuster bushing and thread retention bushings into the hole in the lever. Using a 2.5mm Allen wrench, thread the push rod through the hole in the bushing.
  2. Firmly push the reach adjustment knob onto the end of the push rod. Note: Be sure it securely snaps over the retaining ring.
  3. Put both plastic lever bushings into the lever, and then slide the lever into place. Line up the washers with the hole in the lever and the holes in the master cylinder body.
  4. Drop the pivot pin through the body, lever bushings, and lever hole. Tighten the 2.5mm Allen heads bolts until tight.

- Master Cylinder Piston
  Note: it is not necessary to remove the hose from the master cylinder
  1. Remove the lever blade. (Note: see instructions)
  2. Remove the push rod, master cylinder piston, and spring by removing the snap ring and washer using a snap ring tool. DO NOT attempt to take the rubber seals off of the master cylinder piston.
  3. Clean and inspect the inside of the master cylinder and all parts. Replace those parts that are damaged with new service parts. Thoroughly clean all of the parts by spraying them with isopropyl alcohol and wiping them with a clean rag.
4. Begin reassembly by dropping the spring and master cylinder assembly into the lever body.
5. Place a small amount of the yellow Versilube onto the ball end of the pushrod.
6. Install the ball end of the threaded push rod into the master cylinder piston. Push on the threaded push rod to assure that all parts are properly in place.
7. Place the retaining washer over the threaded end of the push rod.
8. Using a snap ring tool, install the snap ring into the snap ring groove on the inside of the master cylinder body. Push on the threaded push rod to assure that all parts are properly in place.
9. Install Lever Blade (Note: see instructions)
10. Put the completed master cylinder back onto the handlebars.
11. Bleed the system.

D. Caliper Service (Figure 5)

To repair the caliper, it must be removed from the bike and disassembled.

- Piston Removal

1. Remove the caliper from the bike by removing the two mount bolts.
2. Remove the brake pads.
3. Completely remove the caliper hose assembly.
4. Using the Hayes Caliper Plug Tool, remove the outer caliper plug. (Figure 5)
5. Completely remove the outer caliper piston by pushing it towards the center of the caliper.
6. Remove the inner caliper piston with compressed air.
Warning: Wear safety glasses.

C. Cleaning and Care

The brake disc and pads should only be cleaned with isopropyl alcohol (not disc brake cleaner).
**WARRANTY INFORMATION**

Any Hayes Disc Brake found by the factory to be defective in materials and/or workmanship within two years from the date of purchase will be repaired or replaced at the option of the manufacturer, free of charge, when received at the factory with proof of purchase, freight prepaid. Any other warranty claims not included in this statement are void. This includes assembly costs (for instance by the dealer), which shall not be covered by Hayes Disc Brake. This warranty does not cover breakage, bending, or damage that may result from crashes or falls. This warranty does not cover any defects or damage caused by alterations or modifications of new Hayes Disc Brakes or parts or by normal wear, accidents, improper maintenance, damages caused by the use of parts of different manufactures, improper use or abuse of the product, or failure to follow the instructions contained in an instruction manual for Hayes Disc Brake. Any modifications made by the user will render the warranty null and void. The cost of normal maintenance or replacement of service items, which are not defective, shall be paid for by the original purchaser. This warranty is expressly in lieu of all other warranties, and any implied are limited in duration to the same duration as the expressed warranty herein. Hayes Disc Brake shall not be liable for any incidental or consequential damages.

If for any reason warranty work is necessary, return the brake to the place of purchase. In the USA, contact Hayes Disc Brake for a return authorization number (RA#) at (888) 686-3472. At that time, instructions for repair, return, or replacement shall be given. Customers in countries other than USA should contact their dealer or local Hayes Disc Brake distributor.

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**TORQUE CHART**

<table>
<thead>
<tr>
<th>Component</th>
<th>Torque (in-lbs)</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disc Screws</td>
<td>50 +/- 5</td>
<td>(5.65 +/- .55 NM)</td>
</tr>
<tr>
<td>Handle Bar Master Cylinder Clamp Screw</td>
<td>15-20</td>
<td>(1.7-2.26 Nm)</td>
</tr>
<tr>
<td>Caliper Bleeder</td>
<td>35 +/- 5</td>
<td>(3.95 +/- .5 Nm)</td>
</tr>
<tr>
<td>Caliper Mount Bolts</td>
<td>74mm caliper with mount bracket</td>
<td>110 +/- 10 (12.42 +/- 1.1 Nm)</td>
</tr>
<tr>
<td>74mm Caliper with Manitou Forks</td>
<td>80 +/- 5</td>
<td>(9.0 Nm)</td>
</tr>
<tr>
<td>Banjo Bolt</td>
<td>60 +/- 5</td>
<td>(6.7 +/- .5 Nm)</td>
</tr>
<tr>
<td>Hose Connections</td>
<td>70 +/- 5</td>
<td>(7.9 +/- .55 Nm)</td>
</tr>
<tr>
<td>Reservoir Cap Screws</td>
<td>2.5 +/- .5</td>
<td>(0.28 +/- .05 Nm)</td>
</tr>
<tr>
<td>Bore Plugs</td>
<td>240 +/- 12</td>
<td>(27.1 +/- 1.4 Nm)</td>
</tr>
<tr>
<td>Lever Pins</td>
<td>17 +/- 3</td>
<td>(1.9 +/- .34 Nm)</td>
</tr>
<tr>
<td>MC bleed Screws</td>
<td>2.0 +/- .5</td>
<td>(.22 +/- .05 Nm)</td>
</tr>
</tbody>
</table>

(Torque to Seal, Do not Over-torque)
1. **STARTING OUT**

   - Lever Reach Adjustment
   - Power Adjustment Dial
   - Banjo Assembly

2. **Disc Screw Torqueing Sequence**

   - 1
   - 2
   - 3
   - 4
   - 5
   - 6

3. **Pad Removal from Caliper Top**

   - Inner Pad
   - Outer Pad
   - Travel Spacer

4. **BLEEDING THE SYSTEM**

   - A
   - B
   - C
**Kit description**

1. Black Lever Blade
2. Lever Pin Kit
3. Master Cylinder Body
4. 2 Piece Clamp
5. Reservoir Kit
6. Bleed Screw
7. Internal Kit
8. Push Rod Kit
9. Adjuster Pivot/Bushing Kit
10. Complete Master Cylinder Assembly. (includes items 1-9)

**Kit description**

11. Nose Cone
12. Compression Nut
13. Hose Insert and Compression Bushing
14. Banjo Bolt
15. O-Ring Seal
16. Hose Kit (includes hose and items 11-15)

**Kit description**

17. Complete caliper
18. Service tool for bore cap
19. Bore Cap/Seal Kit
20. Piston Kit
21. Caliper Bleeder Fitting Kit
22. Brake pads