It's Not Rocket Science, It's Bicycle Maintenance

A Comprehensive Bicycle Maintenance Manual for All Riders

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Introduction

It’s a warm sunny day and you decide it is the perfect day for your first bicycle ride of the season. Without hesitation you head to the garage, load up your bicycle, and hit the road. Upon arrival to your destination you unlatch your bicycle and take to the great outdoors. About 5 minutes into your nature ride you go to make a sudden stop and realize your brakes are not working properly. You fly face first into the hard, dry, and sun scorched ground. You are injured. There is no one around and town is 20 miles away. Now what? Perhaps you should have performed routine maintenance on your bicycle before taking to the road. This is just an example of what could happen if your bicycle is not maintained regularly.

Whether you are an avid cyclist, a casual bicycle rider, or someone who just enjoys watching your children ride their bicycles up and down the street, knowing how to maintain your bicycle will help keep you safe. Keeping your bicycle tuned and road worthy is an important aspect of cycling. For anyone who rides bicycles there are a couple of things you can do to keep your bicycle safe and working properly. With this manual you will become familiar with the bicycle parts, what it takes to keep your bicycle in good condition, and how to ensure your bicycle is ready for a trip down the street, across campus, or through town.

Ask any avid cyclist and they would argue that bicycles are perhaps the most reliable and efficient mode of transportation available to everyone. Bicycles give us the opportunity to go green, save on fuel costs, and get in a bit of exercise all at the same time. Still, bicycles require maintenance in order to keep them running safely and properly. Without routine maintenance a bicycle has potential for mechanical failure. Most minor mechanical problems with bicycles are preventable if you perform scheduled maintenance, and can be fixed by you, the cyclist.

No one wants to make trips to the local bicycle shop for menial repairs. It can be expensive and time consuming. So we have developed a do it yourself (DIY) bicycle upkeep and routine maintenance manual to help keep you and your bicycle roadworthy. Whether you own the newest 20 speed on the market or a second hand pick up with thousands of miles on it, you need a quick reference manual to help guide you through the necessary steps required to keep you and your bicycle safe on the road.

We have developed a manual that meets the basic needs of a beginning bicycle rider to the most advanced cyclist. Keep in mind; no matter how many times you have put your wheels on the road a bicycle without maintenance is an accident waiting to happen. This manual will guide you through the process of basic bicycle maintenance through easy to follow step-by-step directions and the use of images for a comprehensive understanding. It’s not rocket science, it’s bicycle maintenance, in an easy to use manual for all cyclists.

Are you ready to ensure you and your bicycle are ready for the road? If so, let’s get started.
This manual will cover:

- Cleaning your bicycle
- Lubricating the Chain and Derailleurs
- Adjusting the Brakes
- Adjusting the Gears

**Required Materials**

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<th>Item</th>
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<tr>
<td>Empty spray bottle</td>
</tr>
<tr>
<td>Liquid dish soap</td>
</tr>
<tr>
<td>Water</td>
</tr>
<tr>
<td>Empty bucket and sponge</td>
</tr>
<tr>
<td>Degreaser</td>
</tr>
<tr>
<td>Small nylon bristled brush</td>
</tr>
<tr>
<td>Small flat head screw driver</td>
</tr>
<tr>
<td>Lint-free towel</td>
</tr>
<tr>
<td>Bicycle lubricant</td>
</tr>
<tr>
<td>5 mm hex wrench</td>
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<tr>
<td>Small Phillips head screwdriver</td>
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Chapter 1
Chapter 1: Cleaning the Bicycle

Why?

Having a clean bicycle allows the bicycle to work as efficiently as possible by making sure the parts are free from dirt and grime. This allows the parts to move freely and avoids unnecessary friction.

What will I need?

- Empty spray bottle
- Liquid dish soap
- Water
- Empty bucket and sponge
- Degreaser
- Small nylon bristled brush
- Small flat head screw driver
- Lint-free towel

How long will it take?

15 minutes
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How to Clean the Bicycle

1. Create Cleaning Solution.
   1.1 Squeeze 3-4 drops of liquid dish soap into an empty spray bottle.
   1.2 Fill the rest of the spray bottle with water.
   1.3 Shake to mix.

2. Spray the entire bicycle with the cleaning solution.
   ➢ Let the solution soak in for approximately 3-5 minutes.
   [Note] While waiting, fill the bucket with water and toss the sponge in the bucket.

3. Wipe down the bicycle with a wet sponge.
   ➢ Start at the top of the bicycle, and work your way down.
   [Note] Rinse the sponge out frequently, keeping it as clean as possible.

4. Apply the degreaser to the rear sprockets. (Fig. 1)
5. Brush Away Dirt and Grime.

5.1 Use the nylon brush to brush away dirt and grime in the front and rear sprockets. (Fig. 2)

5.2 Crank the pedals clockwise to allow access to all areas of the sprockets.

[Note] If the nylon brush isn't sufficient in clearing dirt and grime, scrape it away with the flat head screw driver.

6. Degrease and scrub the chain.

6.1 Apply the degreaser to the chain.

6.2 Brush the chain with the brush to remove any dirt and grime.

[Note] Be sure to rotate the pedals clockwise to allow access to all areas of the chain.

7. Wipe down all parts of the bicycle with a lint free towel.

➢ Inspect the bicycle and make sure it is dry and free of any excess degreaser.
Chapter 2
Chapter 2: Lubricating the Chain and Derailleurs

Why?

A properly lubricated bicycle allows parts to move easily and efficiently. This will provide faster, easier riding, as well as avoid the need to replace parts as frequently.

What will I need?

- Bicycle lubricant
- Lint-free towel

How long will it take?

5 Minutes
How to Lubricate the Chain and Derailleurs

CAUTION: Getting lubricant on the rims may cause breaks to slip when applied.

1. Apply the lubricant sparingly to the chain while cranking the pedal clockwise.
   - Spin the chain at least once.
   - **Note** Over lubricating will attract dirt and defeat the purpose of cleaning and lubricating.

2. Wipe away excess lubricant on the chain.
   2.1 Wrap a towel around the chain and feed the chain through the towel by cranking the pedal clockwise.
   2.2 Fully rotate the chain at least 3 times.

3. Apply the lubricant sparingly to the front (Fig. 3) and rear (Fig. 4) derailleurs.
4. **Wipe away any excess lubricant on the derailleur**s.
   - Use the towel to wipe away excess lubricant on the front and rear derailleur(s).

5. **Crank the pedals clockwise and shift through all gears twice.**

6. **Wipe away excess lubricant using the towel.**
Chapter 3
Chapter 3: Adjusting the Breaks

Why?

Properly adjusted brakes provide safety to the cyclist as well as those around the cyclist.

What will I need?

- 5 mm hex wrench
- Small Phillips head screw driver

How long will it take?

30 Minutes
Adjusting Brake Pad position

1. Adjust the brake pad height. (Fig. 5)

- Loosen the screw that attaches the brake pad to the brake arm using the 5 mm hex wrench.
- Adjust the top of both the front and rear ends to approximately 1.5 mm underneath the rubber tire, directly lined up to the wheel rim.

**Note** it is important that the brake pad is making contact with only the wheel rim, not the rubber tire.
2. Adjust the brake pad position.
   2.1 Adjust the front and rear ends an equal distance away from the wheel rim.
   2.2 Make the pads completely parallel to the wheel rim. *(Fig. 5)*
   2.3 Squeeze the brake lever to engage the brakes.
   [Note] *Verify the brake pads are in contact with the wheel rim.*

3. Reassemble the brake pads.
   3.1 Tighten the screw attaching the brake pad to the brake arm using the 5 mm hex wrench.
   3.2 Release the brake lever and check to make sure the brake pads did not move out of position.
   [Note] *Verify the brake pads are in contact with the wheel rim.*

4. Repeat steps 1-6 for the other three brake pads.
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Adjusting Brake Arm Position

BEFORE YOU BEGIN: Check to see if the left and right brake pads are at an equal distance from the wheel rim for both the front and rear brakes. If they are, move on to Adjusting Brake Tension. If they are not, continue on to step 1 of this section.

1. Locate the brake arm adjustment screw. *(Fig. 6)*

2. Adjust the screw.
   
   2.1 Use the Phillips head screwdriver to adjust, keeping in mind:

   ⇒ Turning the screw *counter clockwise* will move that brake arm and pad *closer* to the wheel rim.

   ⇒ Turning the screw *clockwise* will move that brake arm and pad further *away* from the wheel rim.

   2.1 Turn the screw in ¼” rotations until the left and right brake pads are at an equal distance from the wheel rim.

3. Test the brake arm.

   3.1 Engage the brake 3-4 times and make sure the brake arm and pad stay in position.

   3.2 Repeat step 2 as necessary.

4. Repeat steps 1-3 for the second set of brakes.
Chapter 3

(Fig. 6)
**Adjusting Brake Tension**

BEFORE YOU BEGIN: When the brake lever is fully engaged there should be a distance of at least 1” between the brake lever and the handle bar. If the distance is less than 1” follow the steps below to create more tension. Both the front and rear brakes involve the same instructions listed below.

1. **Locate where the brake cable enters the brake lever** *(Fig. 7)*
   - Find the two adjustable components:
     - Barrel adjuster, the nut closest to the cable.
     - Locking nut, the nut closest to the brake lever.

2. **Loosen the barrel adjuster.**
   - Turn counter clockwise 4 revolutions.
   - Note: *This shortens the cable creating more tension.*

3. **Tighten the locking nut.**
   - Turn clockwise until it will no longer turn.
   - Note: *This locks the barrel adjuster into place.*

4. **Engage the brake lever.**
   - Inspect to see if the distance of 1” between the brake lever and the handle bar has been met.
     - If it has, you are finished adjusting brake tension.
     - If it has not, continue on to step 5 of this section.
5. **Locate the brake cable screw.** *(Fig. 8)*
   - Follow the brake cable down to the brake arm.

6. **Loosen the screw.**
   - Turn counter clockwise using a 5 mm hex wrench.

7. **Reassemble the brake arms.**
   7.1 Squeeze the brake arms together with a free hand so that both brake pads are in contact with the wheel rim.
   7.2 Pull any slack in the brake cable through the brake arm.
   7.3 Tighten the screw attaching the end of the brake cable to the brake arm.
8. Check the Brake Levers.
   - Engage the brake lever to see if the distance of 1” between the brake lever and the handle bar has been met.

   [Note] If you aren’t at 1”, you can make minor adjustments by going back to steps 2 and 3.

9. Repeat steps 1-12 for the second set of brakes.
Chapter 4
Chapter 4: Adjusting the Gears

**Why?**

Properly adjusted gears allow the cyclist to more easily tackle changes in terrain.

**What will I need?**

- No tools required

**How long will it take?**

10 Minutes
How to Adjust the Gears

1. Turn the Bicycle upside-down.
   - Rest it on the seat and handlebars.

2. Check the gears.
   2.1 Crank the pedal clockwise and shift the rear gear to the smallest sprocket.
   2.2 Continue cranking the pedal.
   2.3 Click the rear gear shifter once to move to the next largest sprocket.
      ⇒ If the gear shifts with hesitation shift back down to the next smallest sprocket, and move on to step 3
      ⇒ If the gear shifts without hesitation repeat step 2.3

3. Locate the barrel adjuster. *(Fig. 9)*
   - Turn the barrel adjuster ¼ turn counter clockwise.

4. Repeat steps 2 and 3 as necessary until the gear shifts without hesitation.

5. Repeat steps 2, 3 and 4 for all gears.

*Note* At this time the chain should be on the largest sprocket. It is now time to work back down to the smallest sprocket.
6. Repeat steps 2-5, except move from the largest sprocket to the smallest sprocket.
   
   6.1 Move to the next largest sprocket, instead of to the next smallest.
   
   6.2 Shift up to the next largest sprocket if the gear does shifts with hesitation.

**Note** *At this time the chain should be back on the smallest sprocket.*

7. Shift up and down through all gears 3 more times to make sure all gears shift without hesitation.

**Use these same steps to adjust the front gears. The only difference is the barrel adjuster for the front gear is located where the front gear cable enters the front gear shifter near the handlebar, not near the derailleur. (Fig. 10)**
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(Fig. 9)

(Fig. 9)
Trouble Shooting
## Trouble Shooting

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<td>Bent tire</td>
<td>See bicycle mechanic</td>
</tr>
<tr>
<td>Jump in chain link while pedaling</td>
<td>Bent chain</td>
<td>See bicycle mechanic</td>
</tr>
<tr>
<td>Gears not properly shifting after adjustments</td>
<td>Worn gear cables</td>
<td>See bicycle mechanic</td>
</tr>
<tr>
<td>Decreased braking power</td>
<td>Worn brake pads</td>
<td>Purchase and install new brake pads</td>
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