

HOLLOWGRAM[®]

WHEEL SET

OWNER'S MANUAL



WARNING

Read this manual carefully. It contains important information. Keep it for future reference.

cannondale

Safety Messages

In this supplement, particularly important information is presented in the following ways:

**WARNING**

Indicates a hazardous situation which, if not avoided, may result in death or serious injury.

NOTICE

Indicates special precautions that must be taken to avoid damage.

This Owners Manual

This manual provides important safety, maintenance, and technical information. It is not intended as a comprehensive assembly, use, service or repair guide.

You can download Adobe Acrobat PDF versions of any manual/supplement from our website: <http://www.cannondale.com>.

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CONTENTS

Safety Information	2-5
Specifications	6
Tire Installation.....	7
Asymmetric Integration Ai Offset.....	8-9
Carbon Wheel Inspection	10-11
Pre-Ride Checklist	12

Seek Professional Service

To make sure your wheels are serviced and maintained correctly, and that you protect applicable warranties, please coordinate all service and maintenance through your Authorized Cannondale Dealer.

NOTICE

Unauthorized service, maintenance, or repair parts can result in serious damage and void your warranty.

Patent Information

Hollowgram 64 KNØT wheels are covered by one or more of the following U.S. Patent Nos.: 8,888,195 and 9,463,666

SAFETY INFORMATION

Before you use your wheels, please read each of the WARNING listed in this section. Each one is focused on a specific safety risk which you must understand.

WARNINGS

INTENDED USE: For bicycle use only. Using this product the wrong way is dangerous. For Intended Use of your specific model wheel, see "Specifications" in this manual. For more ASTM and Intended Use information go to www.cannondale.com.

PERFORM THE PRE-RIDE INSPECTION BEFORE EVERY RIDE: A pre-ride inspection is important to identify and correct potential problems before you use the wheels. See "Pre-Ride Inspection in this manual."

COMPATIBILITY: Before using a wheelset on a bike, make sure the wheelset is compatible with the frame and fork (e.g., clearance, chain line, brake type, dropout spacing). Confirm specifications in frame manufacturer instructions for the frame.

WEIGHT LIMIT: HollowGram Wheels have a weight limit. The limit for a specific HollowGram Wheel model is found in the "Specification" section of this manual. The weight limit is the total combined weight of the Rider, the bike and any items carried on the bike/rider.

DO NOT MAKE CHANGES OR MODIFY THE WHEELS: Wheelsets are manufactured and tested using approved components (e.g., hubs, rims, rim tape/strip, spokes, spoke nipples, valves, and specified tire type). Changing or substituting any of these parts can result in damage to the wheel assembly leading to an accident or voiding of applicable warranties.

YOU CAN BE SEVERELY INJURED, PARALYZED OR KILLED IN AN ACCIDENT IF YOU IGNORE THESE WARNINGS.

 **WARNINGS**

INSPECTION & CRASH/IMPACT DAMAGE: After any crash or impact, immediately stop riding. Have the the entire wheel (rim, hub, spokes, tire, and frame) inspected by a trained professional bicycle mechanic for any damage (e.g., bending, cracks, deep scratches or scoring, missing, bent, deformed, or loose spokes). See “Wheel Inspections” in this manual for the kinds of damage that can occur following a crash or impact.

MAXIMUM AIR PRESSURES (Tire and Rim): Exceeding the maximum pressure of either tire or rim could lead to tire or rim failure, or both. Find the maximum air pressure marked on the rim. Find the maximum air pressure indicated on the tire sidewall marking. Do not exceed the lower maximum air pressure value. See “Specifications” for maximum rim pressure.

USE ONLY BICYCLE AIR PUMPS: Do not use gas station air hoses or other air high volume air compressors. These pumps move a large volume of air very rapidly and will raise the pressure in your tire very rapidly, which could cause the tube to explode. **CAUTION:** Pencil type automotive tire gauges can be inaccurate and should not be relied upon for consistent, accurate pressure readings. Instead, use a high quality dial gauge.

WHEEL INSTALLATION/REMOVAL: Follow the manufacturer instructions when installing and removing a wheel using thru-axle mechanisms. If attached incorrectly, the wheels may wobble or fall off the bicycle, or suddenly stop the wheel, which can cause serious injury or death. Be careful not to damage the disc, caliper or brake pads when re-inserting the disc into the caliper. Remember, do not activate a disc brake’s control lever unless the disc is correctly inserted in the caliper. Activating the lever without the wheel/brake rotor installed may close the caliper pads, interfering with wheel installation.

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WARNINGS

FOREIGN OBJECTS: Do not ride over sticks or debris (foreign objects). Foreign objects can be kicked up, enter the spokes of the front wheel, and be swept around and either break the fork or stop the wheel. Riding can be littered with a great variety of debris such as sticks, branches, auto parts and trash. Scan ahead and if you see debris ride around it. Before moving from your predictable path of travel, look over your shoulder to be sure you can do so safely. If you are riding with a group and at the front, point out debris.

TIRE SIZES: See "Specifications" in this manual for the tire size range applicable to your model wheel. Mounting the wrong size tires can result in the tires hitting the fork or frame when riding. If this happens, you can lose control of your bike and you can be thrown off. The actual measured size of a tire may be different than its sidewall marking. Follow the specified tire clearance recommendations of the frame manufacturer. Each time you mount a new tire, take the time to inspect the actual clearance between the rotating tire and all parts of the frame. The U.S. Consumer Product Safety Commission (CPSC) requires at least 1/16" (1.6 mm) tire clearance from any part of the bike. Allowing for lateral rim flex and a wheel or rim that is out-of-true will likely mean choosing a rear tire that provides even more clearance than the CPSC recommends. To measure clearance: Inflate tire to operating air pressure. Measure the space between the tire and frame. Take measurement along the full length of possible interference. If the measured clearance is less than specified, the tire is not compatible and must not be used.

STORING: Clean wheels to remove contaminants and release air pressure before storage. Store in cool, dry areas and protect from incidental damages during storage and from dirt accumulation. Do not hang wheels from hooks.

TRANSPORTING: Protect the wheels from damage during storage. Do not use a clamp on any part of the wheel rim, spokes, or hubs. When transporting on an automobile rack, make sure wheels are not within 18" of the hot exhaust pipe.

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 **WARNINGS**

FOLLOW BRAKE MANUFACTURER INSTRUCTIONS: Follow the brake manufacturer instructions for installing, using, and maintaining brake system parts (e.g., disc, calipers, pads).

DISC BRAKES ON ROAD BIKES: Relative to conventional rim brakes, disc brakes are less affected by water, do not wear or heat the rims, and are therefore more consistent. Disc brakes also may be more powerful. To minimize risk of injury or accidents: Understand that road bikes have a relatively small tire contact patch (part of the tire that touches the road). In order to apply the brakes safely and effectively, you may need more or less braking force in different situations. You need to take into account various road and weather conditions that can affect traction. Disc brakes are excellent, but not some kind of magic. Take some time riding your new disc brake road bike in lower-risk circumstances to get used to the feel and performance of the disc brakes and tires.

DISC BRAKE ONLY RIMS: Do not use disc brake only wheels with rim brakes. There is no required rim braking surface on disc brake only wheel rims. Only disc brakes can be used. See "Specifications" for applicable brake types and limitation for your specific wheels.

EXTREME TEMPERATURE: Do not expose the wheels (and/or bike) to heat such as in strong sunlight under the glass of a hatchback auto. Exposure to excessive heat can damage the wheel leading to wheel failure. When transporting on an automobile rack, make sure wheels are not within 18" of the hot exhaust pipe.

MAINTENANCE: Establish a wheel/bike maintenance and inspection schedule appropriate for how you ride and use the wheels. Inspect more often when riding aggressively and in extreme environmental conditions. Have all inspection and maintenance performed by a trained professional bike mechanic. See "Maintenance" in this manual.

CLEANING: As with your bicycle, clean with dish soap and water. : Never use solvents, spray oils, or chemical spray cleaners to clean. These can damage/weaken the structure of the wheel and cause decals, labels, and paint to come off. Do not use a pressure washer, which can cause damage by forcing dirt and debris into the wheel.

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SPECIFICATIONS

HollowGram Road Wheel Sets

Brake Type	Disc Only									
Maximum Tire Air Pressure	<table border="1"> <thead> <tr> <th>Tire Size</th> <th>Pressure</th> </tr> </thead> <tbody> <tr> <td>700 x 23</td> <td>125 psi</td> </tr> <tr> <td>700 x 25</td> <td>110 psi</td> </tr> <tr> <td>700 x 28</td> <td>95 psi</td> </tr> </tbody> </table>		Tire Size	Pressure	700 x 23	125 psi	700 x 25	110 psi	700 x 28	95 psi
	Tire Size	Pressure								
	700 x 23	125 psi								
	700 x 25	110 psi								
700 x 28	95 psi									
▲ Intended Use	ASTM CONDITIONS 1-2, High-Performance Road, General Purpose Riding, Cyclocross. Not Intended: For off road or mountain bike use, or jumping. Cyclocross riders and racers dismount before reaching an obstacle, carry their bike over the obstacle and then remount. Cyclocross bikes are not intended for mountain bike use.									
Tire compatibility:	Tube type clincher with tube, tubeless ready clincher with sealant									
▲ Maximum Weight Limit : (bike + rider + all equipment):	285 lbs / 126 kg									

HollowGram Mountain Wheel Sets

Item	Specification							
Brake	Disc Only							
Maximum Tire Air Pressure	<table border="1"> <thead> <tr> <th>Tire Size</th> <th>Pressure</th> </tr> </thead> <tbody> <tr> <td>2.25 in</td> <td>45 psi</td> </tr> <tr> <td>2.5 in</td> <td>40 psi</td> </tr> </tbody> </table>		Tire Size	Pressure	2.25 in	45 psi	2.5 in	40 psi
	Tire Size	Pressure						
	2.25 in	45 psi						
2.5 in	40 psi							
▲ Intended Use	ASTM CONDITION 3, Cross-Country, Hardtails Not Intended: For use in extreme forms of jumping/riding such as hardcore mountain, Freeriding, Downhill, Sending, Dirt Jumping, Hucking etc.							
Tire compatibility:	Tube type clincher with tube, tubeless ready clincher with sealant							
▲ Maximum Weight Limit : (bike + rider + all equipment):	305 lbs / 138 kg							

TIRE INSTALLATION

Tubed Rims

NOTICE

- Do not use metal tire levers. These can damage the surface of the rim, tire, or inner tube.
- Use only valves with a suitable diameter and of an adequate length. Do not modify the valve hole.
- Use only rim tapes, inner tubes and tires which fit the dimensions of the rim.
- Do not use latex tubes with your carbon rims.

WARNING

Incorrect tire and tube removal/ installation can result in damage leading to an accident. If you are not already skilled at changing tires and tubes, have a trained professional bicycle mechanic do the work.

Tubeless Rims

WARNING

Incorrect tubeless tire removal/installation can result in damage to the tire or rim or a tire insufficiently sealed on the rim resulting in air loss. If you are not already skilled at changing tubless tires and tubes, have a trained professional bicycle mechanic do the work.

WARNING

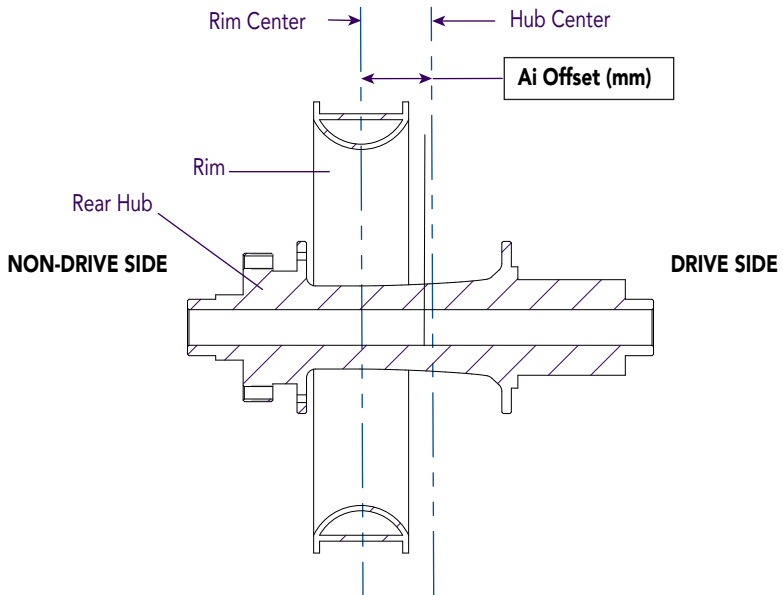
Follow the tire and tube sealant manufacturer instructions.

ASYMMETRIC INTEGRATION - AI OFFSET

Ai offset rear wheels have equal spoke angles and tension on both sides (non-dished wheel) which improves wheel stiffness, strength.

The Ai Offset (of a rear wheel assembly) is indicated on the removable wheel spoke label.

The Ai Offset of a rear wheel must match the frame specified Ai wheel offset.



Rear Hub Spacing	Ai Offset
142 mm	6 mm
148 mm	3 mm

NOTICE

Installing a wheel with an incorrect offset for the frame can result in insufficient tire-to-frame clearance with serious frame or wheel damage. This kind of damage is not covered by the Limited Warranty.

Building/Truing a Wheel

If you chose to build, or true the wheel, make sure the Ai Offset matches the frame specification. Consult with a Cannondale Dealer if you have any questions.

CARBON WHEEL INSPECTION

Clean the wheel before inspecting it. See "Cleaning" in this manual.

Examples of serious wheel damage are:

Cracks:

Cracks on any part of the wheel are serious. Look carefully for cracks, broken, or splintered areas.

Delamination:

Delamination is serious damage. Composites are made from layers of fabric. Delamination means that the layers of fabric are no longer bonded together. Do not ride any bicycle or component that has any delamination.

These are some delamination clues:

- A cloudy or white area. This kind of area looks different from the ordinary undamaged areas. Undamaged areas will look glassy, shiny, or "deep," as if one was looking into a clear liquid. Delaminated areas will look opaque and cloudy.
- Bulging or deformed shape. If delamination occurs, the surface shape may change. The surface may have a bump, a bulge, soft spot, or not be smooth and fair.
- A difference in sound when tapping the surface. If you gently tap the surface of an undamaged composite you will hear a consistent sound, usually a hard, sharp sound. If you then tap a delaminated area, you will hear a different sound, usually duller, less sharp.

Unusual Noises:

Either a crack or delamination can cause creaking noises while riding. Think about such a noise as a serious warning signal. A well maintained bicycle will be very quiet and free of creaks and squeaks. Investigate and find the source of any noise. It may not be a crack or delamination, but whatever is causing the noise must be fixed before riding.



WARNING

Do not ride on wheels with any delamination or crack, even a small one.

Any crack is serious. If you ride a delaminated or cracked wheel it may completely break apart with risk of accident.

If you see any crack, or anything you are unsure of, please take your wheel(s) to a trained professional bicycle mechanic for evaluation.

You can be severely injured, paralyzed or killed in an accident if you ignore this warning.

Hub and Spokes:

Inspect the hub flange, where the heads of the spokes are hooked (or otherwise attached) to the hub flange, for cracks. Inspect the rim where the spokes meet the rim. It is not uncommon to see cracks form where the spokes meet the rim.

PRE-RIDE CHECKLIST

 **WARNING**

Complete the following Pre-Ride Checks before every ride and after any crash or impact.

STOP RIDING IMMEDIATELY If any problems are found with the following items, have the wheels examined and corrected by a trained professional bicycle mechanic.

- Check to make sure the wheels are secured in the dropouts correctly. Follow the quick-release or through axle manufacturers attachment instructions.
- Check the tire air pressure. Inflate according to tire and rim pressure limits. Use a bicycle tire pump with a dial type pressure gauge.
- Check the brakes for proper function.
- Check the wheel rotation; The wheels should spin freely and quietly. The wheel should not wobble or make noise. Spin each wheel and check for brake clearance and side-to-side wobble. If a wheel wobbles side-to-side even slightly, take the bike to a qualified bike shop to have the wheel trued.
- Check the tire condition. Spin each wheel slowly and look for cuts in the tread and sidewall. Replace damaged tires before riding the bike.

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