

## CANNONDALE WARRANTY

Your Cannondale Super V or Super V Raven frame is warrantied against manufacturing defects in materials and/or workmanship for the lifetime of the original owner. Under this warranty we will repair any defective frame, or at our discretion, we will replace a defective frame with the same or comparable model (due to product evolution.) See the standard Cannondale Owner's Manual for more details.

All other components, including HeadShok forks, suspension parts, frame fixtures and finishes (paint and decals) are warrantied against manufacturing defects in materials and/or workmanship for a period of one year from the date of purchase.

For complete information regarding your Cannondale Limited Warranty, please refer to your Cannondale Bicycle Owner's Manual.

## GETTING IN TOUCH WITH CANNONDALE

For warranty related questions or for more information on this or any Cannondale product, please feel free to contact us.

USA and Canada:	(800) BIKE-USA
Europe (EC):	(31) 5415-89898
Japan:	(81) 722-99-9399
Australia:	(612) 9979-5851

<http://www.cannondale.com>  
[custserv@cannondale.com](mailto:custserv@cannondale.com)



## CANNONDALE® SUPER V™ AND SUPER V RAVEN™ OWNER'S MANUAL

Congratulations and thanks for purchasing the world's most innovative and best performing full suspension design, the Cannondale Super V. Please take a moment to read this supplement and the other literature included with the bike, including the Cannondale Bicycle Owner's Manual and the HeadShok® specific supplement to familiarize yourself with the information they contain. These will provide important safety warnings and performance tips which will make for many miles of safe, high output riding pleasure. If you have any questions about your frame or the contents of this manual, don't hesitate to contact us. See the back page for phone numbers and E-mail contacts.

Your Cannondale Super V or Raven should have also included the standard owner's manual and a front suspension specific manual. If you did not receive both the Cannondale Bicycle Owner's Manual and the HeadShok owner's manual, please download and print them from the Cannondale website Tech Center or call our customer service line at 1-800-BIKE-USA in the U.S. or Canada to have one sent to you.

Please note that this manual is meant to supplement, not to replace, the Cannondale Bicycle Owner's Manual. The owner's manual contains valuable information regarding safe operation, adjustment, and maintenance of your bicycle, as well as more complete warranty information. Please read the Cannondale Bicycle Owner's Manual thoroughly before riding your bicycle, and keep it and this booklet for future reference.

Because the Super V bicycles are so unique, there are some important facts and warnings of which you need to be aware. The warnings are written as appropriate throughout this manual, and also at the end of the text. Please read and heed all warnings, the information is here for your benefit.

## MAINTAINING THE APPEARANCE OF YOUR SUPER V FRAME

To keep your Super V frame looking its best, we recommend cleaning it regularly with mild soap and water. Regular cleaning will minimize the chances of corrosion. Do not use abrasive cleansers or solvents. Aluminum Super V and most Raven frames have a thin coating of clear paint over the whole frame (including the decals.) A coating of wax can be applied if desired.

## COMPONENT COMPATIBILITY AND PRECAUTIONS FOR ALL SUPER V AND RAVEN MODELS

### FORKS

The new Super V Raven frame is only compatible with in-headtube type HeadShok forks (such as the Fatty®, Fatty Ultra®, and Super Fatty®) and the new Lefty™ fork. The new Raven frame is not compatible with any kind of double crown triple clamp fork. It is not to be used with a Moto Freeride or Moto 120 fork.

***WARNING: New Raven frames (2000 model year) were not designed to use triple clamp forks. If you do so you may break, damage, or shorten the life of the Cannondale frame, with resulting risk of injury or death to the rider. If you do so you will also void your Cannondale frame's warranty.***

Aluminum Super V frames are compatible with Cannondale's double crown triple clamp forks such as the Moto Freeride and the Moto 120. See the note below about the use of HeadShok headset adapter cups with the 1 1/8" steerer tube on the Moto forks. Aluminum Super Vs are also compatible with all other HeadShok forks, including the new Lefty.

### HEADSET

The Super V frame's head tube is designed to accept HeadShok forks and HeadShok headset cups only. The frame will accept a fork with a 1 1/8" steerer tube with the use of CODA headset adapter cups. Only CODA / HeadShok bearings or adapter cups should be used. For more information, contact a Cannondale or HeadShok Authorized Retailer.

### FRONT DERAILLEUR

All Super Vs require a standard "bottom-pull" type front derailleur with a 31.8mm clamp diameter. Because the front derailleur mounts to the rear swingarm, and has a limited range of vertical adjustment, some derailleur designs (e.g. Shimano "Top Swing" derailleurs) are not compatible.

### FRONT DERAILLEUR ADJUSTMENT

The Super V's rear suspension design places the front derailleur on the rear swingarm. This arrangement requires very precise adjustment of the front derailleur. Adjust the front derailleur so that the derailleur cage is approximately 1mm above the large chainring when there is no weight on the bike. The rear end of the derailleur cage will rock up and away from the chainrings as the suspension is compressed (see Fig.1.)

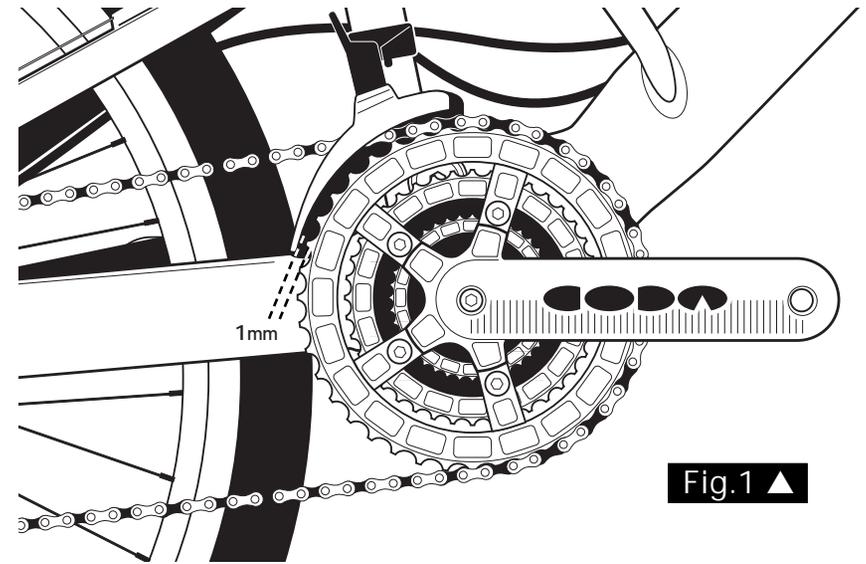


Fig.1 ▲

**CAUTION: DO NOT MACHINE (OR "FACE") EITHER THE HEADTUBE OR THE BOTTOM BRACKET SHELL. THESE SURFACES ARE ACCURATELY FACED AT THE FACTORY SO THIS TRADITIONAL FRAME PREPARATION STEP IS NOT NECESSARY, AND COULD DAMAGE THE FRAME.**

### CHAINRING SIZE LIMITATIONS

The design of the Super V's swingarms limit the maximum usable chainring size to 46 teeth. Use of any larger chainring may damage the swingarm or result in contact between the front derailleur cage and the large chainring.

### SHIFTING PRECAUTIONS / CHAIN LENGTH

The chain on a Super V must be kept long enough to prevent damage to the rear derailleur when the rear suspension compresses to its full travel with the chain on the large chainring and one of the larger rear cogs. Remember that on any bicycle, the gearing combinations of the smallest front chainring / smallest rear cog, and the largest chainring / largest rear cog should never be used. These gear combinations (called "cross chaining") place undue stress on the chain, chainrings, and rear cogs. Duplicate or similar gear ratios can be achieved in other combinations using the middle chainring.

## SWINGARM PROTECTOR

The swingarm on your Super V is made of thin wall aluminum tubing and some CNC-machined aluminum parts. To protect the CAAD 4 swingarm (found on some Raven models) from damage inflicted by the chain slapping against the chainstay, we have supplied a self-adhesive vinyl protector for the swingarm. This protector should be applied to the top of the right (drive side) chainstay, near the chain. Please inspect this protector frequently. If the protector becomes damaged, abraded, or peels off, it should be replaced to prevent damage to the swingarm. To obtain a new swingarm protector, see an Authorized Cannondale Retailer. The elevated swingarm doesn't have a traditional "chainstay", but the protector can be applied to the bottom of the drive side to protect the paint from chain slap.

## ALTERNATIVE BRAKES

Hydraulic brakes are a popular upgrade on many suspension bicycles. When selecting a hydraulic brake system for your Super V, choose one that mounts to the frame using only the existing cantilever brake studs or disc brake caliper mounts. Do not attempt to modify the existing cantilever brake studs or to clamp, weld, or to in any other way add new or different mounts for a hydraulic brake or disc brake. Any attempt to modify the frame, swingarm, fork, or related components will void the warranty and may weaken or damage the frame. For installation instructions and other warnings, refer to the literature provided by the brake's manufacturer. The mounts on the Super V's swingarm and fork are designed to fit a CODA Compact Disc Brake caliper. Other brands of disc brakes which conform to the international mounting standard may fit as well.

## WATER BOTTLE USE

Do not use a large water bottle (taller than 8" [20cm]) in a water bottle cage on the underside of the Super V Raven frame if you are also using the new Lefty fork. With the fork fully compressed, a large bottle may interfere with a front wheel mounted to the Lefty, with risk of losing control of the bicycle. **If you lose control of the bicycle you risk a serious crash and possible injury or death.**

If in doubt about using a specific water bottle, perform the following test: First, remove all air from the air spring Schrader valve at the bottom of the fork leg. While keeping the Schrader valve depressed, fully compress the Lefty to the bottom of its travel. With the fork fully compressed, make sure that the water bottle and/or water bottle cage do not interfere with the front wheel. When done, re-inflate the air spring on the Lefty.

## CABLE ROUTING

The cables on the Super V must be routed correctly to ensure proper operation of the derailleurs and brakes, and to prevent the cable housing from being pinched when the rear suspension is compressed. Also, be sure to use lengths of cable housing which will not impede steering control and will not contact wheels or tires. Based upon the type of Super V you have purchased, see the appropriate section below for cable installation instructions.

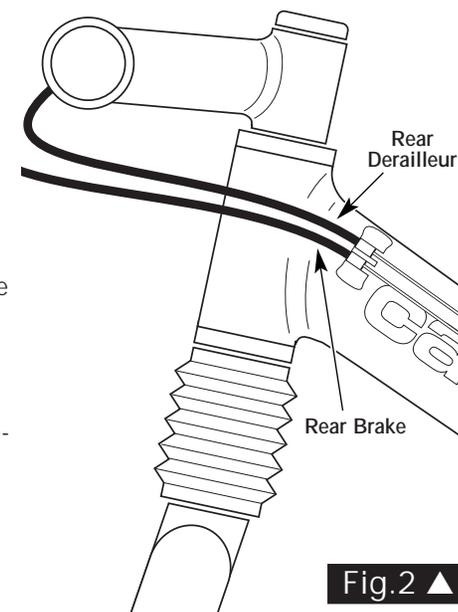
## ALUMINUM SUPER V CABLE ROUTING

### FRONT BRAKE

Run cable housing or hydraulic line directly from the front brake lever to the front brake.

### REAR BRAKE

Run cable housing from the rear brake lever to the lower slot in the double housing stop on the left side of the down tube (see Fig. 2.) Run exposed brake cable to the housing stop on the downtube near the rear shock mount. Run cable housing from this housing stop on the downtube to the rear brake. If using hydraulic brakes, run hydraulic line directly from the rear brake lever to the rear brake, securing the line to the frame with the hardware supplied with the brake.



### FRONT DERAILLEUR

Run cable housing from the front shifter to the housing stop on the right side of the downtube. Run exposed cable to the housing stop at the lower end of the downtube. Run cable housing (approx. 38cm.) from this downtube stop, through the housing guide under the bottom bracket to the housing stop on the swingarm just behind the rear suspension pivot. Be sure to leave enough slack in this piece of housing to allow for the movement of the swingarm. It is easiest to first position the housing into the stop on the swingarm, and then to run the cable through the housing and out the hole towards the front derailleur.

## REAR DERAILLEUR

Run cable housing from the rear shifter to the upper slot in the double housing stop on the left side of the downtube (see Fig.2.) Run exposed cable down to the housing stop on the left side of the downtube near the rear shock absorber mount. Run cable housing from this stop, under the seat area, across to the housing stop insert on the right side of the swingarm under the cantilever brake stud. Run bare cable to the housing stop lower on the right side of the swingarm, and then run housing from this stop to the rear derailleur.

## SUPER V RAVEN CABLE ROUTING

The Raven frame uses long, unbroken pieces of cable housing for the front and rear derailleurs, and for the rear brake. Note that the Raven uses 4mm derailleur housing only.

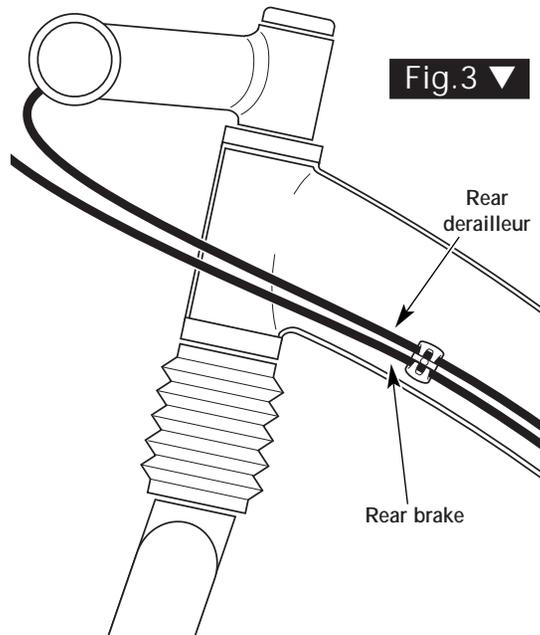
### FRONT BRAKE

Run cable housing or hydraulic line directly from the front brake lever to the front brake.

### REAR BRAKE

For rim brakes, run cable housing or hydraulic line from the rear brake lever through the cable housing guides on the left side of the downtube, ending at the rear brake (see Fig.3.) The cable housing will snap into the bottom of the cable guides on the left side of the frame.

For disc brakes, run the cable housing or hydraulic line from the rear brake lever through the cable housing guides on the left side of the downtube. Continue the housing or hydraulic line through the guides on the rear swingarm to the disc brake on the left drop-out. Because the cable housing will snap into the bottom of the cable guides on the left side of the frame, you won't need to cut the hydraulic line to route it through the guides.



## FRONT DERAILLEUR

Run 4mm derailleur cable housing from the front shifter through the snap-in cable housing guides on the right side of the downtube. Run the cable and housing under the bottom bracket to the housing stop on the swingarm just behind the rear suspension pivot. Be sure to leave enough slack in this piece of housing to allow for the movement of the swingarm. It is easiest to first position the housing into the stop on the swingarm, and then to run the cable through the housing and out the hole towards the front derailleur.

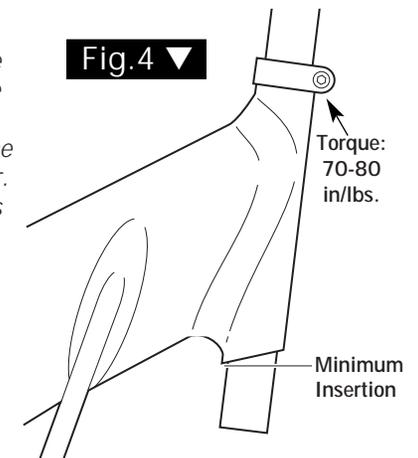
## REAR DERAILLEUR

Run 4mm derailleur cable housing from the rear shifter through the top of the snap-in cable housing guides on the left side of the downtube (see Fig.3 on previous page.) Route the housing across the bike (under the seat area) to the housing stop on the right side of the swingarm. Run bare cable to the rearward housing stop on the swingarm. Run cable housing from the rear housing stop on the swingarm to the rear derailleur.

## ALUMINUM SUPER V SEATPOST MOUNTING

The Super V will accept any 27.2mm diameter seatpost. The seatpost must be inserted all the way through and out the bottom end of the seattube (see Fig. 4.) Grease the seatpost clamp bolt threads and tighten it to 70-80 In-Lbs (8-9 Nm.)

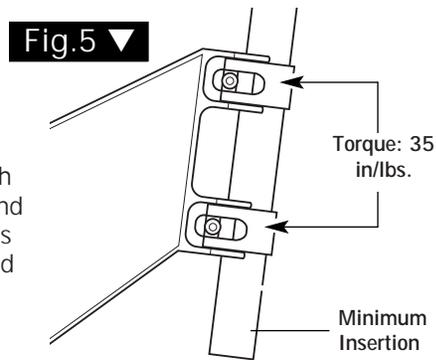
*IMPORTANT: Make sure that the end of the seatpost will not come into contact with the rear shock and/or swingarm as the suspension is compressed. To do so, first adjust the seatpost height for the bike's intended rider. Then compress the rear suspension as far as possible in order to bottom out the suspension travel. If necessary, cut the bottom of the seatpost to provide at least 1/2" of clearance between it and the suspension parts when the suspension is fully compressed. Repeat this check each time the seat height is readjusted.*



**WARNING: Use only a 27.2mm diameter seatpost and be sure that the seatpost is held securely by the seatpost collar. The seatpost collar clamp bolt must be torqued to 70-80 In-Lbs (8-9 Nm.) Failure to properly torque the collar could lead to slippage, loss of control and risk of serious injury or death.**

## SUPER V RAVEN SEATPOST MOUNTING

The Super V Raven will accept any 27.2mm diameter seatpost. It is critical that the seatpost is inserted through both of the frame's seatpost clamps, and is clamped securely. Grease the threads on the frame's seatpost clamp bolts and tighten both of the seatpost clamps to 35 In-Lbs (4 Nm) (see Fig.5.)



**IMPORTANT:** Make sure that the end of the seatpost will not come into contact with the rear shock and/or swingarm as the suspension is compressed. To do so, first adjust the seatpost height for the bike's intended rider. Then compress the rear suspension as far as possible in order to bottom out the suspension travel. If necessary, cut the bottom of the seatpost to provide at least 1/2" of clearance between it and the suspension parts when the suspension is fully compressed. Repeat this check each time the seat height is readjusted.

**WARNING:** Use only a 27.2mm diameter seatpost and be sure that the seatpost is held in both seatpost clamps. Both clamp bolts must be torqued to 35 In-Lbs (4 Nm.) Failure to properly torque the clamps could lead to slippage, loss of control and risk of serious injury or death.

## REAR SUSPENSION ADJUSTMENT FOR ALL SUPER V MODELS

All Super V and Super V Raven models use Fox shock absorbers to provide 120mm of plush rear wheel travel, except for Raven SL models which use shorter travel Fox shocks for 80mm of travel. The shorter travel is more ideal for lightweight cross country use, but the SL models can be upgraded to a longer travel shock if desired. To get the best performance from the rear suspension, the preload pressure in the rear shock should be adjusted to suit the rider's weight. Based upon which type of shock you have on your Super V, refer to the appropriate section below.

**NOTE:** Rear suspension preload is a matter of personal preference. We encourage riders to experiment with different preload settings and find the setting that suits them best. If too much preload is set, the suspension will be stiff and unresponsive over small bumps. Alternately, if the preload is too soft, the rider may feel some amount of "bouncing" while climbing or sprinting, and may tend to bottom out the shock (compress it to the limit of its travel) on large bumps.

## FOX FLOAT AIR / OIL SHOCKS

The Fox FLOAT shocks use an air spring to adjust the stiffness of the rear suspension and oil to damp the suspension movement. Before adjusting air spring preload, clean any dirt from the area around the Schrader valve on the shock absorber.

1. With rider off of the bike, attach a high pressure precision air pump with gauge to the threads and add air pressure equal to the rider's weight (in p.s.i.). Then compress the suspension once to charge the negative air spring. This inflation is a good starting point, but can be fine tuned by following the remaining steps.
2. With rider off of the bike, measure distance between the centers of the bolts at each end of the shock which anchor the shock to the bike and the swingarm.
3. Have the rider sit on the bike in a normal, relaxed cycling position, with both feet on the pedals and weight on the seat. It may be easiest for the rider to lean against a wall or post. It is important that the rider not bounce the bike.
4. Again measure the distance between the centers of the bolts at each end of the shock. The difference between this measurement and the uncompressed measurement is the suspension "sag."
5. Most riders prefer to set the preload so that the bike's rear shock compresses about 1/4" when the rider is seated in a normal, relaxed riding position. Add or release air pressure to the suspension, compress the shock once, and recheck your measurements to achieve the desired sag setting.

## FOX VANILLA COIL SHOCKS

The Fox Vanilla shocks use a coil spring to adjust the stiffness of the rear suspension and oil to damp the suspension movement. Note that the spring rate (stiffness) of the coil spring is printed on the outside of the coil, and that coils of different spring rates are available from Fox.

1. With rider off of the bike, measure distance between the centers of the bolts at each end of the shock which anchor the shock to the bike and the swingarm.
2. Have the rider sit on the bike in a normal, relaxed cycling position, with both feet on the pedals and weight on the seat. It may be easiest for the rider to lean against a wall or post. It is important that the rider not bounce the bike.

3. Again measure the distance between the centers of the bolts at each end of the shock. The difference between this measurement and the uncompressed measurement is the suspension "sag."

4. Most riders prefer to set the preload so that the bike's rear shock compresses about 1/4" when the rider is seated in a normal, relaxed riding position. With the rider off of the bike, turn the adjusting ring clockwise to compress the coil (decreasing the amount of sag,) or counter-clockwise to increase the amount of sag compression. Recheck your measurements to achieve your desired sag setting. If more than 4-5 turns of preload are required to achieve the correct amount of sag, it is recommended that the coil be replaced with the next heavier spring rate. If the suspension is still too stiff with the adjusting ring applying no pressure to the spring, it is recommended that the coil be replaced with the next lighter spring rate.

#### REBOUND DAMPING ADJUSTER KNOB

Rebound damping controls the speed at which the suspension returns to its extended position after being compressed by a bump. The rebound damping on some Fox rear shocks can be tuned by turning the red adjuster knob, located on the shock body. To set the rebound damping to a heavier position (for slower suspension return), turn the adjuster knob clockwise. Conversely, to set damping lighter (for quicker suspension return), turn the knob counter clockwise.

Rebound should be as fast as possible without kicking back and pushing the rider off the saddle when riding the bike in rough terrain. If the rebound is too slow the suspension will not allow the wheel to follow the changing terrain. Determining the proper rebound setting may take a number of rides. During the first few rides adjust the damping and note the different ride characteristics. You may want to change your rebound setting for different riding conditions.

#### COMPRESSION DAMPING ADJUSTER

Some Fox rear shocks also have a compression adjuster which changes the rate at which the shock compresses through the shock stroke, stiffening the shock against small bumps. Determining the proper compression setting is a matter of personal preference. During the first few rides adjust the two position lever to vary the compression characteristics. Note that different trail conditions may favor different compression settings.

#### WARNINGS FOR ALL CANNONDALE FRAMES:

**WARNING:** *Inspect the frame carefully for damage after any crash, drop, impact to the frame, or other harsh treatment. Riding a cracked frame could lead to complete bicycle failure. Like other high-performance structures, this frame should be inspected periodically for cracks. DO NOT RIDE a bike with any crack, even a small one. See your authorized Cannondale retailer or call 1-800-BIKE-USA. A crack will weaken the frame and could lead to failure, with risk of serious injury or death to the rider.*

#### RAVEN SPECIFIC WARNINGS:

**WARNING:** *Do not ride your Super V Raven if you see any sign of damage, such as broken, splintered, or delaminated thermoplastic carbon fiber. A delamination or break in the adhesive bond between the backbone and the thermoplastic carbon fiber may be present if the seam has turned white. You should also periodically inspect the magnesium backbone for cracks. If you have any questions, contact your Cannondale retailer, or contact Cannondale directly. Continuing to ride a damaged frame increases the chances of frame failure, with the possibility of injury or death of the rider.*

**WARNING:** *New Raven frames (2000 model year) were not designed to use triple clamp forks. If you do so you may break, damage, or shorten the life of the Cannondale frame, with resulting risk of injury or death to the rider. If you do so you will also void your Cannondale frame's warranty.*

**CAUTION:** **IT IS POSSIBLE FOR SOME WATER TO ACCUMULATE IN THE FRAME WHEN THE BIKE IS RIDDEN IN WET CONDITIONS, CARRIED ON TOP OF A CAR IN THE RAIN, OR WASHED. THIS WATER MUST BE DRAINED OUT, PARTICULARLY IF FREEZING TEMPERATURES ARE POSSIBLE. KEEP THE DRAIN HOLE LOCATED ON THE UNDERSIDE OF THE DOWNTUBE (NEAR THE BOTTOM BRACKET) OPEN.**

**CAUTION:** **DO NOT TRY TO SAND OR POLISH SCRATCHES FROM THE FINISH OF THE RAVEN FRAME. SANDING WILL RESULT IN A FLAT, DULL FINISH. SIGNIFICANT SANDING COULD THIN AND WEAKEN THE FRAME.**

**CAUTION:** **DO NOT PAINT YOUR RAVEN FRAME. CANNONDALE CANNOT FORESEE ALL POSSIBLE PAINT PREPARATION TECHNIQUES AND PAINTING SOLVENTS. TO AVOID DAMAGE WE SIMPLY RECOMMEND AGAINST PAINTING THE RAVEN FRAME. PAINTING THE FRAME COULD LEAD TO DEGRADATION OF THE THERMOPLASTIC MATERIAL AND WILL VOID THE FRAME'S WARRANTY.**